

Panasonic
ideas for life

2009 ver.2

**Discrete Semiconductors
Selection Guide**



Request for your special attention and precautions in using the technical information and semiconductors described in this book

- (1) If any of the products or technical information described in this book is to be exported or provided to non-residents, the laws and regulations of the exporting country, especially, those with regard to security export control, must be observed.
- (2) The technical information described in this book is intended only to show the main characteristics and application circuit examples of the products. No license is granted in and to any intellectual property right or other right owned by Panasonic Corporation or any other company. Therefore, no responsibility is assumed by our company as to the infringement upon any such right owned by any other company which may arise as a result of the use of technical information described in this book.
- (3) The products described in this book are intended to be used for standard applications or general electronic equipment (such as office equipment, communications equipment, measuring instruments and household appliances).
Consult our sales staff in advance for information on the following applications:
 - Special applications (such as for airplanes, aerospace, automobiles, traffic control equipment, combustion equipment, life support systems and safety devices) in which exceptional quality and reliability are required, or if the failure or malfunction of the products may directly jeopardize life or harm the human body.
 - Any applications other than the standard applications intended.
- (4) The products and product specifications described in this book are subject to change without notice for modification and/or improvement. At the final stage of your design, purchasing, or use of the products, therefore, ask for the most up-to-date Product Standards in advance to make sure that the latest specifications satisfy your requirements.
- (5) When designing your equipment, comply with the range of absolute maximum rating and the guaranteed operating conditions (operating power supply voltage and operating environment etc.). Especially, please be careful not to exceed the range of absolute maximum rating on the transient state, such as power-on, power-off and mode-switching. Otherwise, we will not be liable for any defect which may arise later in your equipment.
Even when the products are used within the guaranteed values, take into the consideration of incidence of break down and failure mode, possible to occur to semiconductor products. Measures on the systems such as redundant design, arresting the spread of fire or preventing glitch are recommended in order to prevent physical injury, fire, social damages, for example, by using the products.
- (6) Comply with the instructions for use in order to prevent breakdown and characteristics change due to external factors (ESD, EOS, thermal stress and mechanical stress) at the time of handling, mounting or at customer's process. When using products for which damp-proof packing is required, satisfy the conditions, such as shelf life and the elapsed time since first opening the packages.
- (7) This book may be not reprinted or reproduced whether wholly or partially, without the prior written permission of our company.

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If you have any inquiries or questions about this book or our semiconductor products, please contact one of our sales offices listed on the back or our sales division.

How to Read This Document

Structure of this document

This document consists of the part number list, application block diagrams, recommended types by classification, package outlines, discontinued types, planned discontinued types, maintenance types, and planned maintenance types. Types are classified according to the ECALS glossary.

ECALS is the general term for all standardization activities, including the distribution of composite components technology information (offering of and searching for information via the internet) about electronic equipment, semiconductors, electronic components, etc. as well as support administration such as the ECALS glossary, etc.

Part numbers

The part numbers used in this document are part numbers for catalog use, and are partially abbreviated Global part number. Numbers indicating ranks, packing specifications, etc. are not listed. Conventional part numbers (C Part No.) are part numbers used prior to the operation of the Global part number in 2000, and are listed only for those part numbers which are drastically different from the Global part number. They may also be listed in parentheses together with the part number.

Package outlines (package)

Recommended products listed in this document are lead-free packages.

Discontinued types, planned discontinued types, maintenance types, and planned maintenance types

We offer a variety of product information at the following URL:

http://panasonic.net/sc/en/common_info

Discontinued Types : These types have been discontinued and no further handling can be performed.

Planned Discontinued Types : These types are scheduled to be discontinued.

Customers who have used these types in the past are hereby notified that sales of these types have ended.

Maintenance Types : Because sales of these types are planned to be discontinued, new sales of such types are not possible. Further, existing customers with new applications should switch to replacement types.

Planned Maintenance Types : These types are scheduled to become maintenance types.

For new applications, please refrain from using these types.

Symbols used for recommended types

○: Under planning

▲: Under development

△: Microcomputers, application-specific standard-product ICs: ES available types; Discrete components, opto electronic devices: Tentative standard

★: Newly listed in this document

Homepage Introduction

We offer a variety of product information on Panasonic semiconductor products.

<http://panasonic.net/sc/en>

Catalog List

Our company's lineup of catalogs is listed below. Please select the catalog according to your purpose.

Common Catalog

- Semiconductor Selection Guide
- Semiconductor Package
- Lead-free Package

Product Catalog

Microcomputers

- Microcomputer Family AM Series
- Microcomputer AM Series Selection Guide

Image Pickup Devices

- CCD Image Sensor

Application-Specific Standard-Product ICs

- Panasonic Integrated Platform for Digital Appliances Uniphier
- 3D Sound Reproduction Technology Solutions
- IPD for Switching Power Supply Solution Guide

Gallium Arsenide Devices

- GaAs Device for W-LAN Solution Guide

General Purpose Discrete

- Diode Series
- MOS FET Series
- Discrete Semiconductors Selection Guide

Opto Electronic Devices

- Laser / Hologram Unit for Optical Disk
- Surface Mount Chip LEDs

Solution Catalog

- IP Camera Solution (Network Camera Solution)
- Digital Television Solution
- Mobile Phone Solution

* If you would like a printed catalog, please request one at the following URL. Catalog PDFs are available on our company's homepage.

URL: <https://www.semicon.panasonic.co.jp/semi-spt/general/?lang=en&>

Note: The above catalog lineup is subject to change without notice. Please check for the latest status on our company's homepage.

Halogen Free Activities

What is the meaning of 'Halogen Free'?

The product material does not contain any compounds derived from halogenated compounds.

Background

The public consciousness of the hazardous halogenated products has required the cell phone and computer manufactures to restrict the use of halogenated products and push the market trend to halogen-free products.

Activities of Panasonic Semiconductor Discrete Devices Co., Ltd.

Panasonic discrettes comply with RoHS requirements which limit PBB and PBDE content ratio.





















Panasonic Semiconductor Discrete Devices Co., Ltd. expands the halogen free product line up to meet customers environmental needs.

In addition to the halogen-free standards, Panasonic Semiconductor Discrete Devices Co., Ltd. puts a maximum limit (1000 ppm or less) on red phosphorous (P), Antimony (Sb) and Antimony Oxide (Sb₂O₃).

Halogen free products as well as other normal products of Panasonic Semiconductor Discrete Devices Co., Ltd. meet UL94, V0 flammability rating.

Halogen Free Package Line-up

(○ : under mass production ◌ : work on)

| | Mini | SMini | SSMini | SSSMini | Leadless | USSMini |
|---------|---|--|--|--|---|---|
| 2 Pin |  | (JEITA:SC 90)  | (JEITA:SC 80)  | (JEITA:SC-104A)  |  |  |
| | 2.6X1.6X0.8 | 1.7X1.25X0.7 | 1.2X0.8X0.6 | 1.0X0.6X0.52 | 1.0X0.6X0.39 | 0.85X0.6X0.38 |
| 3 Pin | (JEITA:SC 59A)  | (JEITA:SC 85)  | (JEITA:SC 89)  | (JEITA:SC-150AA)  |  | |
| | 1.5X2.9X1.1 | 1.25X2.0X0.9 | 0.85X1.6X0.7 | 0.8X1.2X0.52 | 1.0X0.6X0.39 | |
| 5/6 Pin | (JEITA:SC 74A)  |  |  |  |  | |
| | 1.5X2.9X1.1 | 1.25X2.0X0.9 | 1.2X1.6X0.55 | 0.8X1.0X0.37 | 1.0X0.9X0.4 | |
| | SO | WMini | WSMini | WSSMini | | |
| 6 Pin | | |  |  | | |
| | | | 1.7X2.0X0.7 | 1.4X1.6X0.5 | | |
| 8 Pin |  |  | | | | |
| | 5.0X5.0X0.95 | 2.4X2.9X0.8 | | | | |

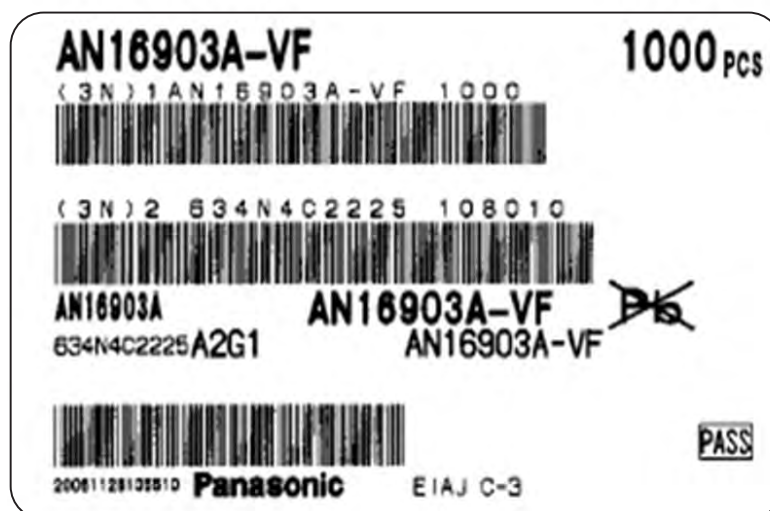
【Unit:mm】

Regarding work on halogen free packages, please contact your local sales representative with your company's requirements.

Precautions on label indication of lead-free products (RoHS compliance)

To conform to RoHS Directive restrictions, the products supplied by our company will be marked in the following two ways on C3 labels on each package unit.

1. On the lead-free label, the “Pb” letter are crossed out with × marking.
(For compliance with RoHS Directive 2002/95/EC)
2. Date of manufacture will be indicated by the first 8 digits of the 14-digit number at the bottommost left.
(For compliance with China RoHS)



Example of Label Indication

Please pay attention to the relevant marking and manage products properly to avoid mixing lead-containing products with lead-free products. Note that C3 labels are attached to outer boxes, inner boxes, reels, etc.; please check packaging before opening.

If you have any inquiries or questions about this matter, please contact one of our sales representatives.

| | |
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*: Newly listed in this document △: Tentative

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| UP04387G | | SSMini 6P | H21 | ★ XN04315G | | Mini 6P | H20 | | XP01554 | XP1554 | SMini 5P | H12 |
| UP04390G | | SSMini 6P | H21 | ★ XN04316G | | Mini 6P | H20 | | XP01601 | XP1601 | SMini 5P | H13 |
| UP04401G | | SSMini 6P | H13 | ★ XN04322G | | Mini 6P | H20 | | XP01878 | | SMini 5P | H4 |
| UP04501G | | SSMini 6P | H12 | ★ XN04381G | | Mini 6P | H21 | | XP02210 | XP2210 | SMini 5P | H18 |
| UP04532G | | SSMini 6P | H12 | ★ XN04401G | | Mini 6P | H13 | | XP02211 | XP2211 | SMini 5P | H18 |
| UP04534G | | SSMini 6P | H12 | ★ XN04402G | | Mini 6P | H13 | | XP02215 | XP2215 | SMini 5P | H18 |
| UP04598G | | SSMini 6P | H12 | ★ XN04404G | | Mini 6P | H13 | | XP02401 | | SMini 5P | H13 |
| UP04599G | | SSMini 6P | H12 | ★ XN04501G | | Mini 6P | H12 | | XP02501 | XP2501 | SMini 5P | H12 |

★: Newly listed in this document ▲: Under development △: Tentative

Part Number List (Alphabetical order)

| Part No. | C Part No. | Package | Page |
|----------|------------|----------|------|
| XP03311 | | SMini 5P | H20 |
| XP03312 | | SMini 5P | H20 |
| XP03316 | | SMini 5P | H20 |
| XP03383 | | SMini 5P | H21 |
| XP03389 | | SMini 5P | H21 |
| XP03390 | | SMini 5P | H21 |
| XP03391 | | SMini 5P | H21 |
| XP04111 | XP4111 | SMini 6P | H19 |
| XP04112 | XP4112 | SMini 6P | H19 |
| XP04113 | XP4113 | SMini 6P | H19 |
| XP04114 | XP4114 | SMini 6P | H19 |
| XP04115 | XP4115 | SMini 6P | H19 |
| XP04116 | XP4116 | SMini 6P | H19 |
| XP04117 | XP4117 | SMini 6P | H19 |
| XP0411M | XP411M | SMini 6P | H19 |
| XP04210 | XP4210 | SMini 6P | H18 |
| XP04211 | XP4211 | SMini 6P | H18 |
| XP04212 | XP4212 | SMini 6P | H18 |
| XP04213 | XP4213 | SMini 6P | H18 |
| XP04214 | XP4214 | SMini 6P | H18 |
| XP04215 | XP4215 | SMini 6P | H18 |
| XP04216 | XP4216 | SMini 6P | H18 |
| XP04217 | XP4217 | SMini 6P | H18 |
| XP0421M | | SMini 6P | H18 |
| XP04286 | | SMini 6P | H21 |
| XP04311 | XP4311 | SMini 6P | H20 |
| XP04312 | XP4312 | SMini 6P | H20 |
| XP04313 | XP4313 | SMini 6P | H20 |
| XP04314 | XP4314 | SMini 6P | H20 |
| XP04315 | XP4315 | SMini 6P | H20 |
| XP04316 | XP4316 | SMini 6P | H20 |
| XP0431M | | SMini 6P | H20 |
| XP0431N | | SMini 6P | H20 |
| XP04387 | | SMini 6P | H21 |
| XP04401 | XP4401 | SMini 6P | H13 |
| XP04501 | XP4501 | SMini 6P | H12 |
| XP04506 | XP4506 | SMini 6P | H12 |
| XP04601 | XP4601 | SMini 6P | H13 |
| XP04654 | XP4654 | SMini 6P | H13 |
| XP04878 | | SMini 6P | H5 |
| XP0497A | | SMini 6P | H5 |
| XP05501 | XP5501 | SMini 6P | H12 |
| XP05531 | | SMini 6P | H12 |
| XP05534 | | SMini 6P | H12 |
| XP05553 | | SMini 6P | H12 |
| XP05554 | | SMini 6P | H12 |
| XP05601 | XP5601 | SMini 6P | H13 |
| XP06111 | XP6111 | SMini 6P | H19 |
| XP06112 | XP6112 | SMini 6P | H19 |
| XP06113 | XP6113 | SMini 6P | H19 |
| XP06114 | XP6114 | SMini 6P | H19 |
| XP06115 | XP6115 | SMini 6P | H19 |
| XP06116 | XP6116 | SMini 6P | H19 |
| XP06210 | XP6210 | SMini 6P | H18 |
| XP06211 | XP6211 | SMini 6P | H18 |
| XP06212 | XP6212 | SMini 6P | H18 |
| XP06213 | XP6213 | SMini 6P | H18 |
| XP06214 | XP6214 | SMini 6P | H18 |
| XP06215 | XP6215 | SMini 6P | H18 |
| XP06216 | XP6216 | SMini 6P | H18 |
| XP06401 | XP6401 | SMini 6P | H13 |
| XP06435 | XP6435 | SMini 6P | H13 |
| XP06501 | XP6501 | SMini 6P | H12 |
| XP06534 | XP6534 | SMini 6P | H12 |
| XP06543 | | SMini 6P | H12 |
| XP0B301 | XP1B301 | SMini 5P | H13 |
| XP0C301 | XP1C301 | SMini 5P | H13 |

★: Newly listed in this document ▲: Under development △: Tentative

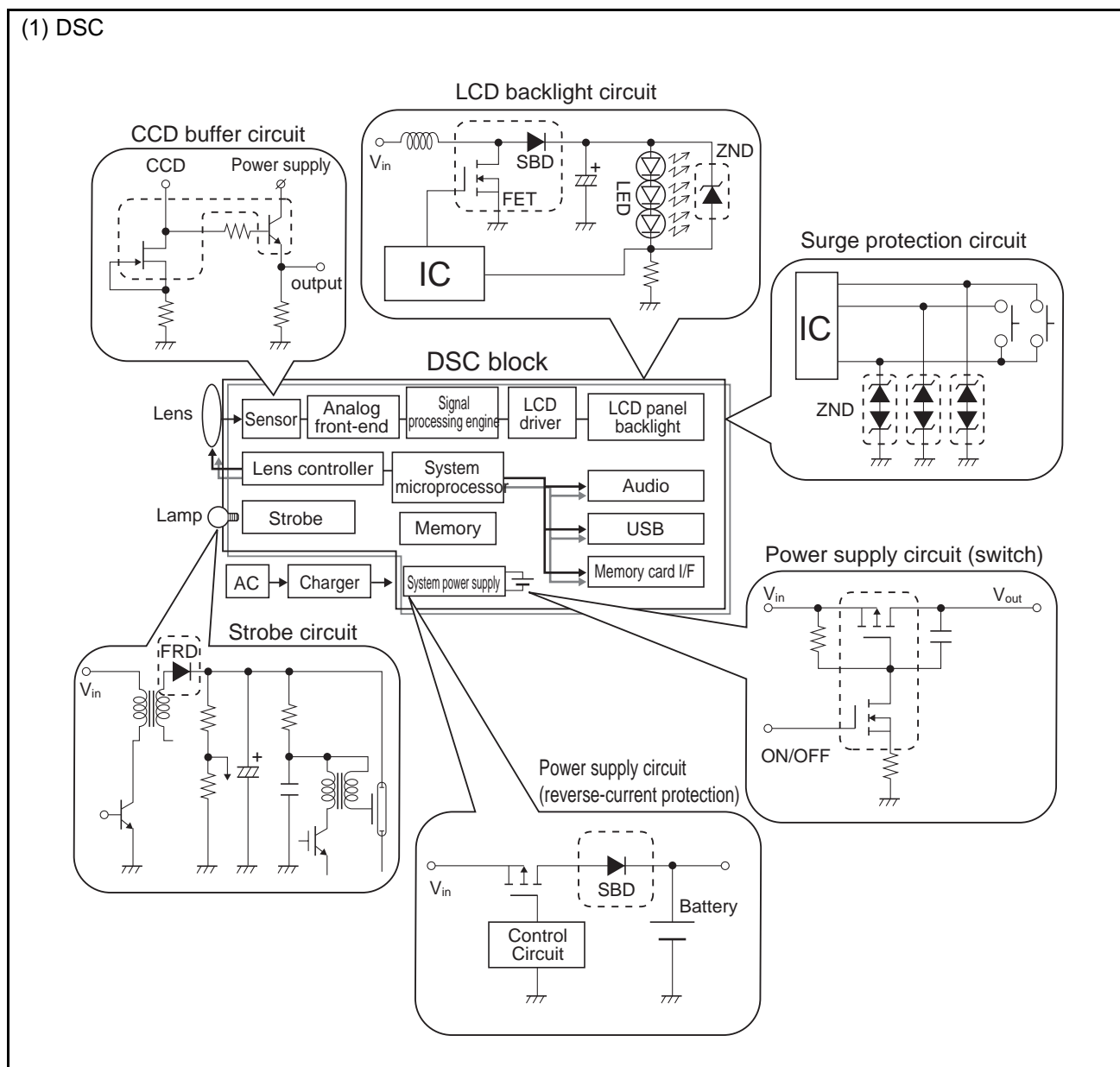
Application Block Diagrams

| | |
|--|----|
| Application example | B2 |
| (1) DSC | B2 |
| (2) PDP (excluding power supply) | B3 |
| (3) Thin TV power supply | B4 |
| (4) DC/DC | B5 |
| (5) Lithium-ion secondary battery protection circuit | B6 |
| (6) Cellular phone | B7 |

Application Block Diagrams

Application example

(1) DSC

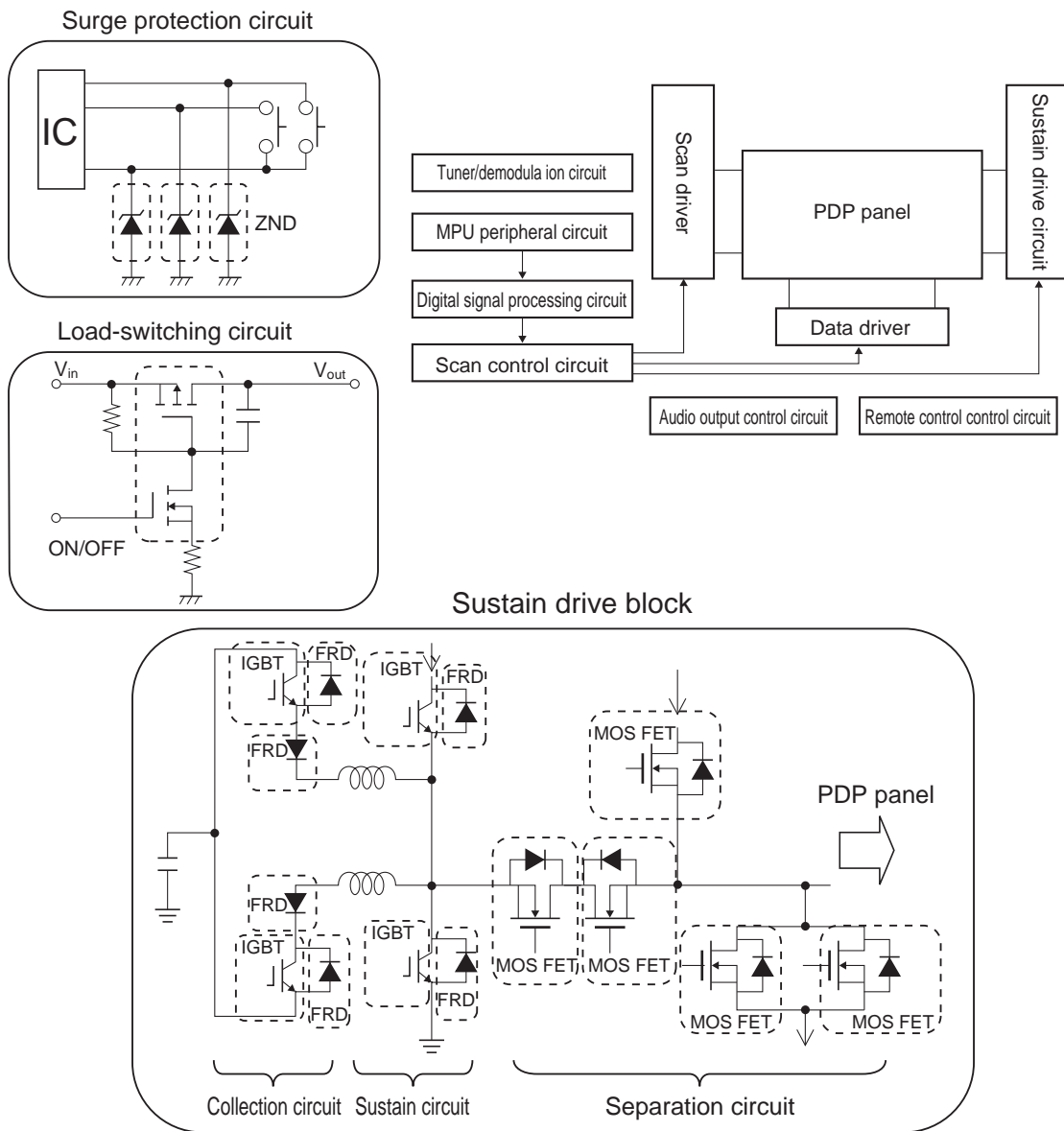


| Block | Function; Product classification | Discrete item example |
|--|--|----------------------------------|
| CCD output circuit | Buffer amp/compound discrete device | UP05C8GF, UP05C8PG |
| LED backlight driver/booster circuit for LCD | High-speed switching MOS FETs | MTM86727 |
| Power supply/switching circuit | Battery reverse-current protection schottky barrier diodes | MA24D50, MA2YJ50 |
| Strobe | Strobe circuit/high-withstand-voltage rectifier fast recovery diodes | MA2YF800G |
| Surge protection | ESD/surge protection diode | MALS068XG, MALS180XG MAZD068G |

Application Block Diagrams

Application example

(2) PDP (excluding power supply)

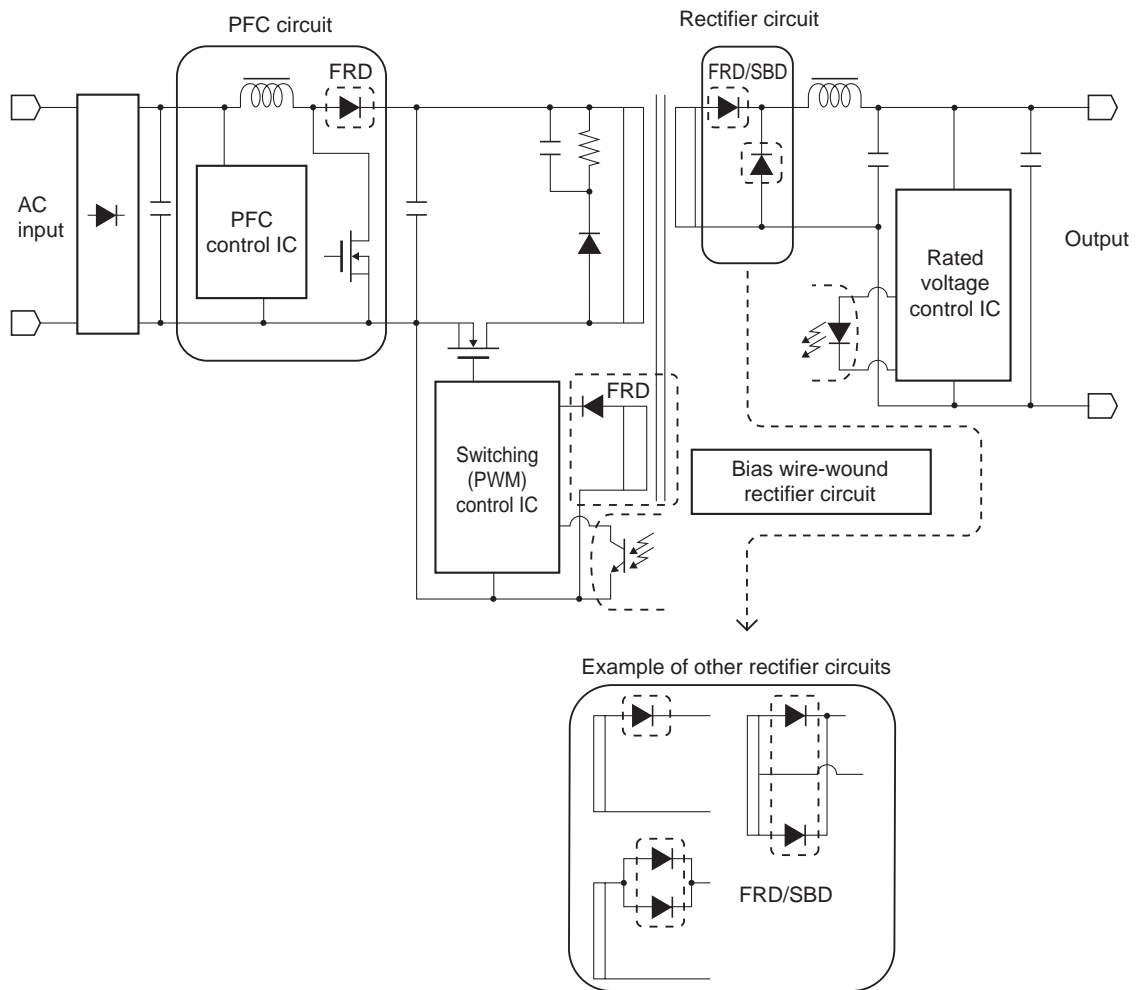


| Block | Function; Product classification | Discrete item example |
|-----------------|----------------------------------|--|
| Sustain | Power MOS FETs | 2SK3995, 2SK4174, 2SK4208 |
| | IGBT | 2PG006, 2PG009 |
| | Fast recovery diodes | MA3DF30, MA3DF40, MA3DF46, MA3DF47 |
| General circuit | Small signal transistors | 2SA1309A, 2SC3311A, UNR4000 series, etc. |
| | Small signal diodes | MA2J1110G, MA2J7**0G, MA3X15* series, etc. |
| | Surge protection diodes | MAZ3000, MAZ8000G series, MAZYS0750Z, etc. |

Application Block Diagrams

Application example

(3) Thin TV power supply



| Block | Function; Product classification | Discrete item example |
|-----------------------------------|----------------------------------|-----------------------|
| PFC circuit | Fast recovery diodes (600 V) | MA2DF60, MA2DF62 |
| Rectifier circuit | Fast recovery diodes (300 V) | MA2DF31, MA3DF30 |
| | Fast recovery diodes (200 V) | MA22F200G, MA2DF22 |
| Rectifier circuit | Schottky barrier diodes (60 V) | MA3DD82 |
| Bias wire-wound rectifier circuit | Fast recovery diodes (200 V) | MA2JF210G |

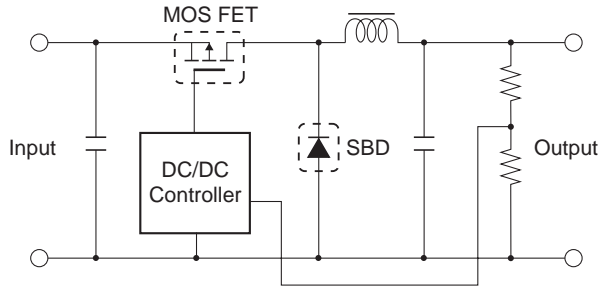
Application Block Diagrams

Application example

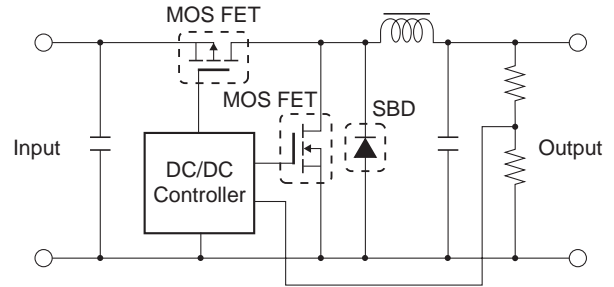
B

(4) DC/DC

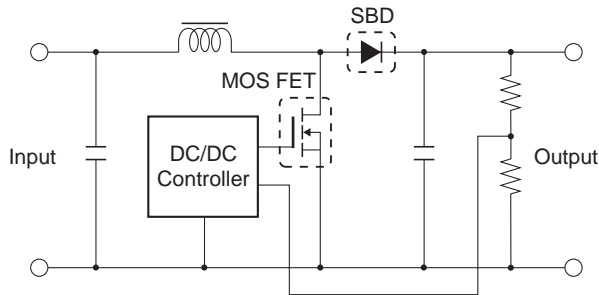
2 Step down circuit example



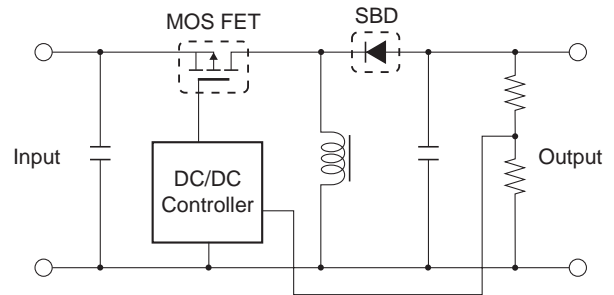
3 Step down circuit/synchronized rectifier circuit example



4 Step up circuit example



5 Polarity inversion circuit example

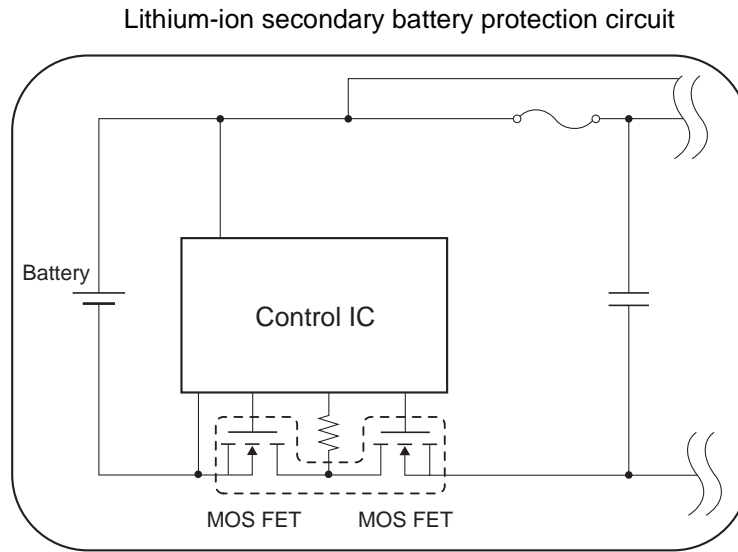


| Block | Function; Product classification | Discrete item example |
|---|--------------------------------------|---|
| MOS FET switch circuit | MOS FET (20V) | Nch MTM86227 Pch MTM86128, MTM86127 |
| | MOS FET (40V) | Nch MTM98240 Pch MTM98140 |
| Flywheel diode circuit | SBD (30V) | MA22D410G, MA21D340G, MA21D350G |
| | SBD (40V) | MA2YJ50, MA24D50, MA24D60, MA24D62 |
| | SBD (60V) | MA24D58, MA22D400G |
| MOS FET switch circuit+ Flywheel diode | Miniature composite MOS FET (20V) | Nch MTM86727 Pch MTM86627, MTM86627A, MTM86628 |

Application Block Diagrams

Application example

(5) Lithium-ion secondary battery protection circuit



| Set | Function; Product classification | Discrete item example |
|--|----------------------------------|-----------------------|
| Battery for portable products (cellular phones, DSC) | Dual N-ch MOS FET (20 V) | MTMC8E2A, MTMC8E28 |
| Battery for laptop PC | Single N-ch MOS FET (30 V) | MTMF8231, ▲ MTMF8233 |

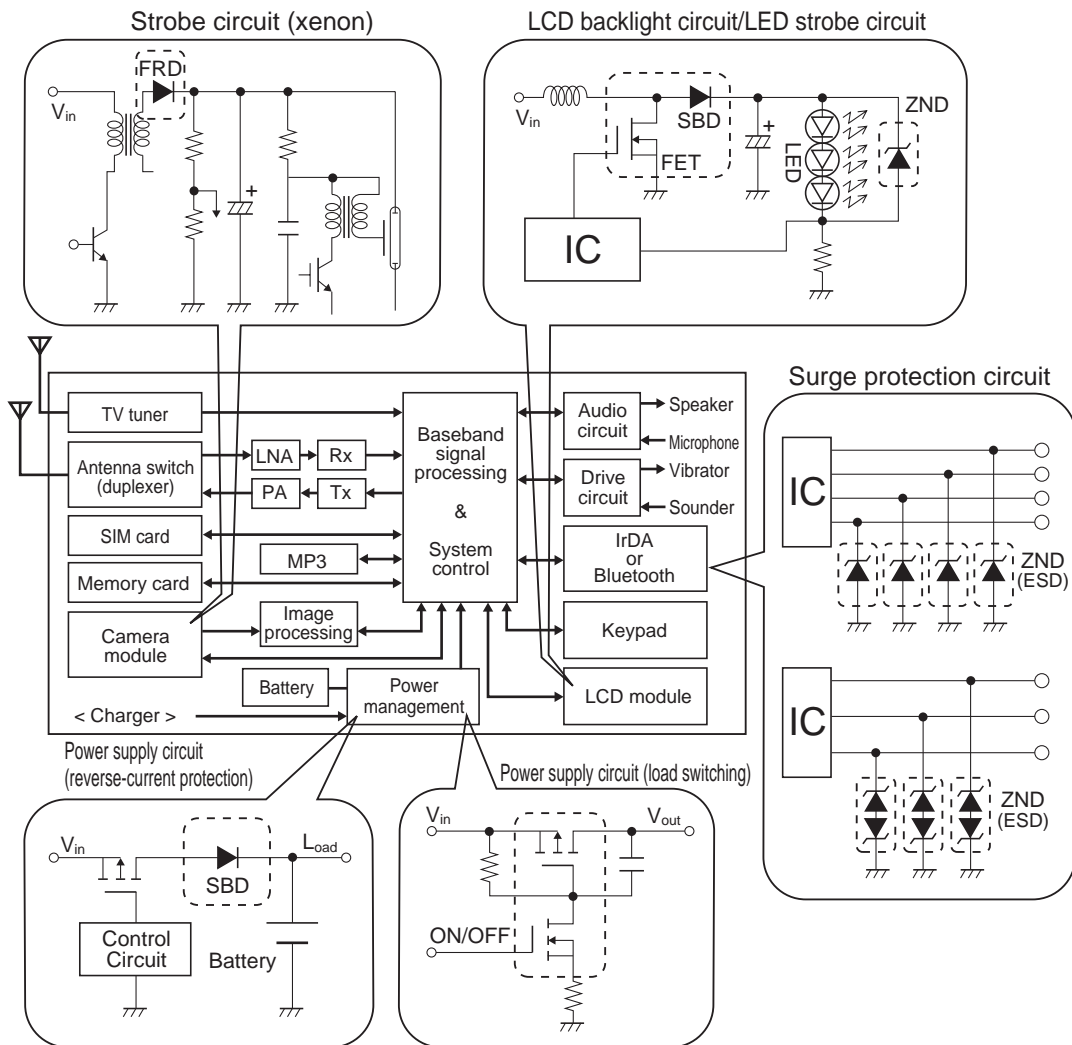
▲: Under development

Application Block Diagrams

Application example

(6) Cellular phone

B



| Block | Function; Product classification | Discrete item example |
|--|---|---|
| LED backlight driver for LCD (booster circuit) LED strobe circuit | High-speed switching MOS FETs | MTM86727 |
| Power supply circuit | Battery reverse-current protection schottky barrier diodes Load switch | MA24D50, MA2YJ50, MTM76320 |
| Xenon strobe circuit | Strobe circuit/high-withstand-voltage rectifier Fast recovery diodes | MA2YF800G |
| Surge protection circuit | ESD/surge protection diode | MAZQ***, MAZD***, MALS068XG, MALS180XG, MAZD068G |

Transistors

| | |
|--|-----|
| Small Signal FETs..... | H2 |
| MOS FETs (For Small Signa)..... | H2 |
| MOS FETs (For Power Management)..... | H2 |
| Junction FETs..... | H4 |
| Composite MOS FETs (For Small Signal)..... | H4 |
| Composite MOS FETs (For Power Management)..... | H6 |
| MOS FET + SBD (For Power Management)..... | H6 |
| Small Signal Bipolar Transistors..... | H8 |
| Small Signal Transistors (Low-Frequency Amplifiers)..... | H8 |
| Small Signal Transistors (High-frequency Amplifiers)..... | H10 |
| SiGe HBT..... | H11 |
| SiGe HBT (Combined Products)..... | H11 |
| SiGe HBT LNA (with built-in bias circuit)..... | H11 |
| Composite Transistors (NPN x 2 Series)..... | H12 |
| Composite Transistors (PNP x 2 Series)..... | H13 |
| Composite Transistors (PNP + NPN Series)..... | H13 |
| Transistor with Built-in Resistors..... | H14 |
| Transistor with Built-in Resistors ($I_C = 80$ mA Series)..... | H14 |
| Transistor with Built-in Resistors ($I_C = 100$ mA Series)..... | H16 |
| Composite Transistor with Built-in Resistors (NPN x 2 Series)..... | H18 |
| Composite Transistor with Built-in Resistors (PNP x 2 Series)..... | H19 |
| Composite Transistor with Built-in Resistors (PNP + NPN Series)..... | H20 |
| Bipolar Power Transistors..... | H22 |
| Low-Frequency Amplifiers..... | H22 |
| For Power Amplification..... | H23 |
| For Switching..... | H23 |
| For TV and CRT Monitor..... | H23 |
| Power MOS FETs..... | H24 |
| Power MOS FETs..... | H24 |
| IGBT Discrete..... | H24 |
| IGBT..... | H24 |



Small Signal FETs

MOS FETs (For Small Signa)

| Application | Polarity | Absolute Maximum Ratings | | Electrical Characteristics | | | | | | | Package | | |
|---------------------------------|----------|---|-----------------------|------------------------------|-------------------------|-------------------------|---------------------------|---------------------------|---------------------------------|----------------------------------|------------------------|-----|--|
| | | V _{DSS} V _{DS} *1 (V) | I _D (A) | R _{DS(on)} max. (Ω) | | | | | t _{on} typ. (ns) | t _{off} typ. (ns) | ML3-N2 | | |
| | | | | V _{GS} = 10V | V _{GS} = 5V | V _{GS} = 4V | V _{GS} = 2.5V | V _{GS} = 1.8V | | | P _D (mW) | | |
| Digital/ analog switching | Pch | -30 | -0.1 | — | — | — | 18 | 30 | — | 300 | 400 | | |
| | | | | | 75 | — | — | 100 μs | | 25 μs | | | |
| | Nch | 20 | 0.1 | — | — | — | 4 | 6 | 13 | 250 | 480 | | |
| | | | | | | 50 | — | — | max. 1.0 μs | max. 1.0 μs | | | |
| | | | | | | 30 | — | — | 150 | 35 | | | |
| | | | | | | 50 | 8 | 12 | 350 | 350 | 2SK3939 | 100 | |
| | | | | | | 50 | — | — | 10 | 20 | | | |
| | | | | | | 50*1 | — | 50 | 200 | 200 | | | |
| | 50*1 | 0.05 | — | 12 | 15 | | | | | | | | |
| | | 0.1 | — | — | — | | | | | | | | |
| 80 | 0.5 | 4 | — | — | 15 | 20 | | | | | | | |

MOS FETs (For Power Management)

| Application | Polarity | Absolute Maximum Ratings | | | Electrical Characteristics | | | | | | | | Package | | |
|---|----------|--------------------------|-------------------------|-----------------------|-------------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|--------------------------|---------------------------------|----------------------------------|-----------------------|------|
| | | V _{DSS} (V) | V _{GSS} (V) | I _D (A) | R _{DS(on)} max. (mΩ) | | | | | | C _{iss} (pF) | t _{on} typ. (ns) | t _{off} typ. (ns) | WSSMini6-F1 | |
| | | | | | V _{GS} = 10V | V _{GS} = 5.0V | V _{GS} = 4.5V | V _{GS} = 4.0V | V _{GS} = 2.5V | V _{GS} = 1.8V | | | | P _D (W) | |
| Load S/W | Pch | -12 | ±8 | -4.0 | — | — | — | 42 | 55 | 75 | 1200 | 30 | 300 | | |
| | | | | | | | 34 | — | 41 | 54 | 1400 | 20 | 430 | | |
| | | -20 | ±10 | -3.0 | — | — | — | 55 | 70 | — | 1000 | 30 | 250 | | |
| DC-DC Converter | Pch | -20 | ±10 | -2.0 | — | — | — | 130 | 200 | — | 400 | 15 | 100 | MTM86124 | 0.54 |
| | | | | | | | | 120 | 170 | 230 | 300 | 14 | 112 | MTM86127 | 0.54 |
| | | | | | | | | 420 | 560 | — | 80 | 18 | 27 | △ MTM86128 | 0.54 |
| | Nch | 20 | ±10 | 2.2 | — | — | — | 105 | 150 | 300 | 280 | 12 | 50 | MTM86227 | 0.54 |
| Lithium battery protection circuit | Nch | 30 | ±20 | 18 | 4.2 | — | 9.8 | — | — | — | 6000 | 50 | 820 | | |
| | | | | 20 | 2.8 | — | 8.0 | — | — | — | 7000 | 70 | 1030 | | |
| Backlight inverter | Pch | -40 | ±20 | -7.0 | 25 | — | 45 | — | — | — | 2700 | 33 | 300 | | |
| | Nch | 40 | | 7.0 | 23 | 40 | — | — | — | 1750 | 26 | 127 | | | |

△: Tentative

Small Signal FETs

| Package | | | | | | | | | |
|-------------|------------------------|------------|------------------------|-----------|------------------------|----------|------------------------|-----------|------------------------|
| SSSMini3-F2 | | SSMini3-F3 | | SMini3-F2 | | Mini3-G1 | | MiniP3-F2 | |
| | P _D (mW) | | P _D (mW) | | P _D (mW) | | P _D (mW) | | P _D (mW) |
| 2SJ0674G | 100 | | | | | | | | |
| | | | | 2SJ0536G | 150 | | | | |
| 2SK3973G | 100 | | | | | | | | |
| | | | | 2SK0665G | 150 | | | | |
| | | | | 2SK3064G | 150 | | | | |
| 2SK3938G | 100 | | | | | | | | |
| | | | | 2SK0664G | 150 | | | | |
| | | | | 2SK1374G | 150 | 2SK1228 | 150 | | |
| 2SK3547G | 100 | 2SK3546G | 125 | 2SK3539G | 150 | | | | |
| | | | | | | | | 2SK0601G | 1 W |



| Package | | | |
|------------|-----------------------|-----------|-----------------------|
| WSMini6-F1 | | SO8-F1 | |
| | P _D (W) | | P _D (W) |
| MTM76110 | 0.7 | | |
| △ MTM76111 | 0.7 | | |
| MTM76123 | 0.7 | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | MTMF8231 | 1.0 |
| | | △ MTF8233 | 1.0 |
| | | MTM98140 | 2.0 |
| | | MTM98240 | 2.0 |

Small Signal FETs

Junction FETs

| Application | Polarity | Absolute Maximum Ratings | | Electrical Characteristics | | | Package | | | | | |
|---------------------------------------|----------|------------------------------------|---------------------------------|----------------------------|--|--------------------------|---------------|----------------------|---------------|---------------|------------|-----|
| | | V_{DSS} V_{GDS}^{*1} (V) | I_D I_{DSS}^{*2} (mA) | I_{DSS} max. (mA) | GV NF ^{*3} typ. (dB) | NV max. (μ A) | TSSMini3-F2 | | SSMini3-F2 | | SSMini3-F3 | |
| | | | | | | | P_D (mW) | P_D (mW) | P_D (mW) | P_D (mW) | | |
| Analog switch | Pch | 65 ^{*1} | -20 | -6 | — | — | | | | | | |
| Low-frequency, low-noise amplifier | Nch | 30 | 20 | 12 | — | typ 60 mV | | | | | | |
| Low-frequency amplifier | Nch | 55 | 30 | 12 | 2.5 ^{*3} | — | | | | | | |
| | | | | 6.5 | | | | | | | 2SK2593G | 150 |
| | | -40 ^{*1} | 10 | 4.7 | — | | | | | | | |
| Capacitor microphone | Nch | 20 | 2 ^{*2} | 0.46 | -1.5 | 4 | | | 2SK3372G | 100 | | |
| | | | | 0.47 | | 10 | | 2SK3426G 2SK3585G | 100 100 | | | |
| | | | | 0.46 | 3 | 4 | 2SK3862G | 100 | | | | |
| | | | | 0.31 | -3 | 8 | 2SK3866G | 100 | | | | |
| | | | | 0.45 | 3 | 10 | 2SK4206G | 100 | | | | |
| | | | | | | 8 | 2SK3948G | 100 | | | | |
| | | | | | | 4 | 2SK4083G | 100 | | | | |

Composite MOS FETs (For Small Signal)

| Application | Absolute Maximum Rating | | Electrical Characteristics | | | | | Package | | | |
|----------------------|-------------------------|---------------|----------------------------|------------------|------------------|--------------------|--------------------|----------------|---------------|---------------------|---------------|
| | V_{DSS} (V) | I_D (mA) | $R_{DS(on)}$ (Ω) | | | t_{on} (ns) | t_{off} (ns) | XN | | XP•UP | |
| | | | $V_{GS} = 4.0$ V | $V_{GS} = 2.5$ V | $V_{GS} = 1.8$ V | | | $Nch \times 2$ | P_T (mW) | $Nch \times 2$ | P_T (mW) |
| Switching circuit | 20 | 100 | 3.0 | 4.0 | 6.0 | 250 | 480 | | | | |
| | 30 | | 8 | 12 | — | 350 | 350 | | | UP0187BG | 125 |
| | -30/30 | -100/ 100 | 18/8 | 30/12 | — | 300/350 | 400/350 | | | | |
| | 50 | 100 | 12 | 15 | — | 200 | 200 | | | XP01878 UP01878G | 150 125 |
| | -30/50 | -100/ 100 | 15/12 | 25/15 | — | 850/200 | 850/200 | | | | |
| | 50 | 100 | 50 | — | — | max 1.0 μ s | max 1.0 μ s | XN01872G | 300 | | |

Small Signal FETs

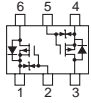
| Package | | | | | |
|-----------|---------------|---------------|----------------|---------------|---------------|
| SMini3-F2 | Mini3-G1 | | NS-A1 NS-B1 | | |
| | P_D (mW) | P_D (mW) | P_D (mW) | P_D (mW) | P_D (mW) |
| 2SJ0364G | 150 | 2SJ0163 | 150 | 2SJ0164 | 300 |
| 2SK0662G | 150 | 2SK0198 | 150 | | |
| 2SK0663G | 150 | | | | |
| | | 2SK2751 | 200 | | |
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H

| Package | | | | Basic Type | |
|---------------------------------|---------------|---------------------|---------------|------------|---------|
| XP: SMini6-G1 UP: SSMini6-F2 | | | | | |
| XP•UP | | XP•UP | | | |
| | | | | | |
| $Nch \times 2$ | P_T (mW) | Pch + Nch | P_T (mW) | Pch | Nch |
| UP0487CG | 125 | | | — | 2SK3973 |
| UP0487BG | 125 | | | — | 2SK3938 |
| | | XP0497A UP0497AG | 150 125 | 2SJ0674 | 2SK3938 |
| XP04878 UP04878G | 150 125 | | | — | 2SK3539 |
| | | UP04979G | 125 | 2SJ0672 | 2SK3539 |
| | | | | — | 2SK0665 |

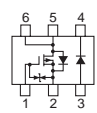
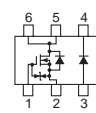
Small Signal FETs

Composite MOS FETs (For Power Management)

| Application | Absolute Maximum Rating | | | Electrical Characteristics | | | | | | | | Package | |
|------------------------------------|-------------------------|-------------------------|-----------------------|-------------------------------|---------------------------|---------------------------|---------------------------|---------------------------|--------------------------|---------------------------------|----------------------------------|---|-----|
| | V _{DSS} (V) | V _{GSS} (V) | I _D (A) | R _{DS(on)} max. (mΩ) | | | | | C _{iss} (pF) | t _{on} typ. (ns) | t _{off} typ. (ns) | WSMini6-F1 | |
| | | | | V _{GS} = 5.0V | V _{GS} = 4.5V | V _{GS} = 4.0V | V _{GS} = 2.5V | V _{GS} = 1.8V | | | |  | |
| Load S/W | -12 | ±8 | -4.8 | — | — | 42 | 55 | 75 | 1 200 | 19 | 320 | | |
| | | | | 32 | | — | 40 | 60 | 1 400 | 20 | 430 | | |
| | -20 | ±10 | -4.2 | — | | 55 | 70 | — | 1 000 | 50 | 190 | | |
| DC-DC Converter | -20 | ±10 | -1.2 | — | — | 130 | 200 | 280 | 440 | 35 | 100 | MTM76420 | 0.7 |
| | -20/ 20 | ±10/ ±10 | -1.2/ 1.9 | | | 130/ 105 | 200/ 150 | — | 440/ 280 | 35/ 12 | 100/ 50 | | |
| | 20 | ±10 | 2.0 | | | 105 | 150 | 300 | 280 | 13 | 38 | | |
| Lithium battery protection circuit | 20 | ±12 | 7.0 | — | 21 | — | 33 | — | 1 450 | 1 030 | 6 000 | | |

△: Tentative

MOS FET + SBD (For Power Management)

| Application | FET Polarity | MOS FET | | | | | | | SBD | | | | Package | | | | |
|-----------------|--------------|-------------------------|-------------------------|-----------------------|----------------------------------|--------------------------|------------------------------|-------------------------------|-------------------------|-----------------------|----------------------------|-----------------------------|---|-----------|-----------------------|---|------|
| | | Absolute Maximum Rating | | | Electrical Characteristics | | | | Absolute Maximum Rating | | Electrical Characteristics | | WSSMini6-F1 | | WSSMini6-F1 | | |
| | | V _{DSS} (V) | V _{GSS} (V) | I _D (A) | R _{DS(on)} typ. (mΩ) | C _{iss} (pF) | t _{on} typ. (ns) | t _{off} typ. (ns) | V _R (V) | I _F (A) | V _F max. (V) | I _R max. (μA) |  | | P _D (W) |  | |
| DC-DC Converter | Pch | -20 | ±10 | -2.0 | 80 | -4.0 | 300 | 14 | 112 | 15 | 0.7 | 0.45 | 250 | MTM86627 | 0.54 | | |
| | | | | | 100 | -2.5 | | | | 20 | 0.8 | 0.47 | 80 | MTM86627A | 0.54 | | |
| | | | | | 140 | -1.8 | | | | 15 | 0.7 | 0.45 | 250 | MTM86628 | 0.54 | | |
| | Nch | 20 | ±10 | 2.2 | 80 | 4.0 | 25 | 280 | 13 | 38 | 20 | 0.8 | 0.47 | 80 | | MTM86727 | 0.54 |

Small Signal FETs

| Package | | | | | | | |
|------------|--------------------|----------|--------------------|------------|--------------------|----------|--------------------|
| WSMini6-F1 | | | | WMini8-F1 | | | |
| | | | | | | | |
| Pch + Nch | P _D (W) | Nch × 2 | P _D (W) | Pch × 2 | P _D (W) | Nch × 2 | P _D (W) |
| | | | | MTM68410 | 10 | | |
| | | | | MTM68411 | 10 | | |
| | | | | △ MTM68423 | 10 | | |
| MTM76320 | 0.7 | | | | | | |
| | | MTM76520 | 0.7 | | | | |
| | | | | | | MTMC8E2A | 10 |



Small Signal Bipolar Transistors

Small Signal Transistors (Low-Frequency Amplifiers)

| Application | Absolute Maximum Ratings | | Electrical Characteristics | | | | Package | | | | | | | |
|--|--------------------------|---------------------|---|---------------------|-------------------------|---------------------|---------|---------------------|---|---------------------|--------------------------------------|---------------------|-------------------------|---------------------|
| | V _{CEO} (V) | I _C (mA) | V _{CE(sat)} max. (V) NV*1 (mV) | I _C (mA) | h _{FE} | I _C (mA) | ML3-N2 | P _C (mW) | SSMini3-F2 | P _C (mW) | SSMini3-F3 | P _C (mW) | SMini3-F2 | P _C (mW) |
| General-purpose | 50 | 100 | 0.5 0.3 | 100 | 160 to 460 | 2 | | | (2SA2021G 2SC5609G h _{FE} : 180 to 390) | 100 100 | (2SB1462G 2SD2216G) | 125 125 | (2SB1218G 2SD1819G) | 150 150 |
| | | | | | 180 to 390 | | | | (2SA2079 2SC5848) | 100 100 | (2SA2078G 2SC5846G) | 100 100 | (2SA2174G 2SC6054G) | 125 125 |
| | 500 | 0.6 | 300 | 85 to 340 | 150 | | | | | | | | (2SB1219G 2SD1820G) | 150 150 |
| High-h _{FE} (High V _{EBO}) | 40 | 50 | 0.2 | 10 | 600 to 2 000 | 2 | | | | | 2SD2345G | 125 | 2SD1823G | 150 |
| | 100 | 20 | | | 400 to 1 200 | | | | | | 2SD2621G | 100 | 2SD2620G | 125 |
| Low freq low noise amplifier | 120 | 20 | 130*1 | 1 | 180 to 700 | 2 | | | | | 2SB1722G (V _{CEO} 100 V) | 125 | 2SA2009G | 150 |
| | 150 | 50 | 150*1 | | 130 to 330 | 10 | | | | | (2SB1463G 2SD2240G) | 125 125 | 2SB1220G | 150 |
| | 185 | | | | | | | | | | | 2SD1821G | 150 | |
| Low V _{CE(sat)} | 10 | 500 | 0.3 | 400 | 130 to 350 | 500 | | | | | | | 2SB1679G | 150 |
| | 12 | | (2SA2162G 2SC6036G) | 100 100 | (2SA2161G 2SC6037G) | 125 125 | | | | | | | | |
| | | | 0.4 | 500 | 200 to 800 | 500 | | | | | 2SD2623G | 150 | | |
| | 20 | 300 | 0.1 | 30 | 550 to 2 500 | 4 | | | | | | | 2SD1979G | 150 |
| | | 1 A | | 200 | 160 to 560 | 100 | | | | | (2SA2028G 2SC5654G) | 150 150 | | |

(: Complementary pair

Small Signal Bipolar Transistors

Small Signal Transistors (Low-Frequency Amplifiers) (continued)

| Application | Absolute Maximum Ratings | | Electrical Characteristics | | | | Package | | | |
|------------------------------------|--------------------------|---------------------|--|---------------------------------------|-----------------|---------------------|------------------------|---------------------|------------------------|---------------------|
| | V _{CEO} (V) | I _C (mA) | V _{CE(sat)} max. (V) NV (mV)*1 f _T (MHz)*2 | I _C I _E *3 (mA) | h _{FE} | I _C (mA) | Mini3-G1 | P _C (mW) | NS-A1 NS-B1 | P _C (mW) |
| General-purpose | 50 | 100 | 0.3 | 100 | 160 to 460 | 2 | (2SB0709A 2SD0601A | 200 200 | (2SA1309A 2SC3311A | 300 300 |
| | | | | | 180 to 390 | | (2SA2077 2SC5845 | 200 200 | | |
| | 200 | 500 | 0.6 | 300 | 85 to 340 | 150 | (2SB0710A 2SD0602A | 200 200 | (2SB1030A 2SD1423A | 300 300 |
| | | 200 | 0.3 | 100 | 85 to 500 | 2 | △2SB1734 | 200 | | |
| High-h _{FE} | 40 | 50 | 0.2 | 10 | 400 to 2 000 | 2 | 2SD1030 | 200 | | |
| | 100 | 20 | | | 400 to 1 200 | | 2SD1149 | 200 | | |
| Darlington | 50 | 500 | 2.5 | 500 | 4 000 to 20 000 | 500 | 2SD1478A | 200 | | |
| Low freq low noise amplifier | 185 | 50 | 150*1 | 1 | 130 to 330 | 10 | (2SB0792A 2SD0814A | 200 200 | | |
| | 55 | 100 | | | 180 to 700 | 2 | | | 2SC3312 | 300 |
| Low V _{CE(sat)} | 10 | 500 | 0.3 | 400 | 130 to 350 | 500 | 2SB0970 | 200 | | |
| | | | 0.4 | 500 | 200 to 800 | | 2SD1328 | 200 | 2SD1450 | 300 |
| | 20 | 300 | 0.1 | 30 | 500 to 2 500 | 4 | 2SD1938F | 600 ¹⁾ | | |
| TV Chroma output | 300 | 70 | 50*2 | 10*3 | 30 to 150 | 5 | 2SA2084 | 200 | | |
| | | | 30*2 | | 60 to 220 | | 2SC5863 | 200 | | |

(: Complementary pair

Mini3-G1 1): Measured on a ceramic substrate (15 × 15 × 0.6 mm)

△: Tentative



Small Signal Bipolar Transistors

Small Signal Transistors (High-frequency Amplifiers)

| Application | Absolute Maximum Ratings | | Electrical Characteristics | | Package | | | | | | | | | |
|-----------------------------|------------------------------------|---------------|-------------------------------|-------------------------|---------------|---------------|---------------|---------------|------------------------|---------------|------------------------|------------|----------------------|------------|
| | V_{CE0} V_{CES}^{*1} (V) | I_C (mA) | f_T (Hz) t_s (ns)*2 | I_E, I_C^{*3} (mA) | ML3-N2 | | SSSMini3-F2 | | SSMini3-F3 | | SMini3-F2 | | Mini3-G1 | |
| | | | | | P_C (mW) | P_C (mW) | P_C (mW) | P_C (mW) | P_C (mW) | P_C (mW) | | | | |
| AM•FM Amp | 20 | 30 | 230 M | 1 | | | | | 2SC4655G | 125 | 2SC3936G | 150 | | |
| | | | 300 M | | 2SA2163 | 100 | 2SA2164G | 100 | (2SA1790G 2SC4626G | 125 125 | (2SA1532G 2SC3930G | 150 150 | (2SA1022 2SC2295 | 200 200 |
| RF Amp | 50 | 50 | 250 M | 2 | | | | | (2SA1791G 2SC4656G | 125 125 | (2SA1748G 2SC4562G | 150 150 | | |
| Video IF FM RF Amp | 20 | 15 | 650 M | 1 | | | | | 2SC4627G | 125 | 2SC3931G | 150 | 2SC2404 | 150 |
| | 8 | 50 | 1.1 G | 15 | | | | | | | 2SC5632G | 150 | | |
| VHF OSC Amp | 20 | 50 | 1.3 G | 15 | | | 2SC5946G | 100 | | | 2SC3932G | 150 | 2SC2480 | 150 |
| UHF OSC | 10 | | 1.9 G | 5 | 2SC6050 | 100 | 2SC5939G | 100 | 2SC4809G | 125 | 2SC3935G | 150 | 2SC3130 | 150 |
| 1V RF Amp | 7 | 10 | 4.0 G | 1*3 | 2SC5829 | 50 | | | | | 2SC4410G | 50 | | |
| Wide Band Amp SHF IF Amp | 12 | 30 | 4.5 G | 10*3 | | | | | | | 2SC3934G | 150 | | |
| | 10 | 80 | 6.0 G | 20*3 | | | | | | | 2SC3937G | 150 | | |
| | | | 15*3 | 8.5 G | | | 2SC6045G | 100 | 2SC4808G | 125 | 2SC4835G | 150 | | |
| | | | | | | | | | 2SC5295G | 125 | 2SC4805G | 150 | | |
| High speed switch | 15 | 50 | 1.5 G/ 19*2 | 10 | 2SA2082 | 100 | | | 2SA1806G | 125 | 2SA1739G | 150 | 2SA1738 | 200 |
| | 40*1 | 100 | 450 M/ 10*2 | | | | | | 2SC4691G | 125 | 2SC3938G | 150 | 2SC3757 | 200 |

(: Complementary pair

Small Signal Bipolar Transistors

SiGe HBT

| Application | Absolute Maximum Ratings | | Electrical Characteristics | | | | | Package |
|---------------------------|--------------------------|---------------------|----------------------------|----------------------|----------|--------------------------------------|----------|-----------------------------------|
| | V _{CEO} (V) | I _C (mA) | h _{FE} | f _T (GHz) | Cob (pF) | S _{21e} ² (dB) | NF (dB) | ML3-N2 P _C = 100 mW |
| High-frequency Amplifiers | 6 | 30 | 100 to 220 | 19 | 0.3 | 11.0 | 1.4 | MSG43001 |
| | | 60 | | | 0.4 | 10.5 | | MSG43002 |
| | | 100 | | | 0.5 | 10.0 | | MSG43003 |
| | | | | 17 | 0.6 | 9.0 | MSG43004 | |
| | | | | 16 | 0.8 | 8.0 | MSG430C4 | |
| | | 14 | | 1.0 | 6.0 | MSG430D4 | | |

SiGe HBT (Combined Products)

| Application | Absolute Maximum Ratings | | Electrical Characteristics | | | | | Package | Basic Type | | Equivalent Circuit |
|---------------------------|--------------------------|---------------------|----------------------------|----------------------|----------|--------------------------------------|----------|--|------------|--------------|--------------------|
| | V _{CEO} (V) | I _C (mA) | h _{FE} | f _T (GHz) | Cob (pF) | S _{21e} ² (dB) | NF (dB) | SSSMINI6-F1 P _T = 125 mW | Tr1 (OSC) | Tr2 (Buffer) | |
| High-frequency Amplifiers | 6 | 30 | 100 to 220 | 19 | 0.3 | 11.0 | 1.4 | MSG36E11 | MSG33001 | | |
| | | 100 | | | 0.5 | 10.0 | | MSG36E33 | MSG33003 | | |
| | | 100/30 | | | 0.5/0.3 | 10.0/11.0 | | MSG36E31 | MSG33003 | MSG33001 | |
| | | | | 17/19 | 0.6/0.3 | 9.0/11.0 | MSG36E41 | MSG33004 | MSG33001 | | |
| | | 100/60 | | 16/19 | 0.8/0.4 | 8.0/10.5 | 1.6/1.4 | MSG36C42 | MSG330C4 | MSG33002 | |
| | | | | 14/19 | 1.0/0.4 | 6.0/10.5 | | MSG36D42 | MSG330D4 | MSG33002 | |

SiGe HBT LNA (with built-in bias circuit)

| Application | Absolute Maximum Ratings | | Electrical Characteristics | | | | | Package | Equivalent Circuit |
|--|--------------------------|----------------------|----------------------------|----------------------|---------------|-----------------------|----------------------|----------------------------------|--------------------|
| | V _{CC} (V) | I _{CC} (mA) | V _{CC} (V) | I _{CC} (mA) | f (opr) (GHz) | Gp (dB) | NF (dB) | ML6-N6 P _T = 60 mW | |
| Low-noise high-frequency amplifier (LNA) | 3.8 | 18 | 2.2 to 3.6*1 | < 18*2 | 0.1 to 6*3 | 10.5 (f = 5.2 GHz) | 1.5 (f = 5.2 GHz) | MSG56BBA | |
| | | 9 | | < 9*2 | | 11.5 (f = 5.2 GHz) | 1.6 (f = 5.2 GHz) | MSG56BBB | |

*1: Recommended voltage range

*2: Maximum value (adjustable using external resistance)

*3: Adjustable using input/output adjustment circuit

Small Signal Bipolar Transistors

Composite Transistors (NPN × 2 Series)

| Application | Absolute Maximum Ratings | | Electrical Characteristics | XN: Mini5-G2 XP: SMini5-G1 | | XN: Mini6-G3 XP: SMini6-G1 UP: SSMini6-F2 NP: SSSMini6-F1 | | | | Basic Type | Remarks | | |
|-----------------------------------|--------------------------|-------------|----------------------------|-------------------------------|---------------------|--|---------------------|----|----|----------------------------------|----------|---------------------|--|
| | V_{CE0} (V) | I_C (mA) | | h_{FE} | XN | XN | XN | XN | | | | XN | XN |
| | | | | | | | | | | | | | |
| | | | | XP | XP | XP•UP•NP | XP | XP | XP | | NPN | | |
| General-use | 50 | 100 | 160 to 460 | XN01501G XP01501 | XN02501G XP02501 | XN04501G XP04501 UP04501G NP04501 | XN05501G XP05501 | | | XN06501G XP06501 △UP06501G | | 2SD0601A | |
| | | 500 | 85 to 340 | | | XN04502G | | | | | | 2SD0602A | |
| Low $V_{CE(sat)}$ | 20 | 12 | 500 | | | UP04532G | | | | | | 2SC6037J | $V_{CE(sat)} = 0.25 \text{ V max}$ |
| | | 20 | 300 | 500 to 2 500 | | | XN04506G XP04506 | | | | | 2SD1938(F) | $V_{CE(sat)} = 0.1 \text{ V max}$ |
| | | | 500 | 200 to 800 | | | XN04504G | | | | | | 2SD1328 |
| | | | | XN01558G | | | | | | | | 2SD2623 | |
| Low $V_{CE(sat)}$ +General-use | 50/20 | 100/ 500 | 160 to 460/ 200 to 800 | | | XN04505G | | | | | | 2SD2216J 2SD1328 | $V_{CE(sat)} = 0.5/0.4 \text{ V max}$ |
| High frequency | 10 | 50 | 75 to 400 | XN01531G XP01531 | | | XN05531G XP05531 | | | | | 2SC3130 | $f_T = 1.9 \text{ GHz}$ |
| | | 65 | 50 to 300 | | | | | | | XN06543G XP06543 | | 2SC3904 | $f_T = 8.5 \text{ GHz}$ |
| | 12 | 30 | $40 \leq$ | | | | | | | XN06537G | | 2SC3934 | $f_T = 4.5 \text{ GHz}$ |
| | 20 | 15 | 40 to 260 | | | UP04534G | XP05534 | | | XN06534G XP06534 | | 2SC2404 | $f_T = 650 \text{ MHz}$ |
| High frequency +General-use | 20/50 | 15/ 100 | 65 to 260/ 160 to 460 | | | UP04598G | | | | | | 2SC2404 2SD2216J | $f_T = 650/150 \text{ MHz}$ |
| | | 50/ 100 | 25 to 250/ 160 to 460 | | | UP04599G | | | | | | 2SC3932 2SD2216J | $f_T = 1.300/150 \text{ MHz}$ |
| High- h_{FE} | 100 | 20 | 400 to 2 000 | | | XN04556G | XN05553G XP05553 | | | | | 2SD1149 | $h_{FE} = 400 \text{ to } 2\,000$ |
| High-speed switching | 40 | 100 | 60 to 320 | XP01554 | | | | | | | XN0A554G | 2SC3757 | $t_{on} = 17 \text{ ns},$ $t_{off} = 17 \text{ ns}$ |

Mini5P/6P: $P_T = 300 \text{ mW}$, SMini5P/6P: $P_T = 150 \text{ mW}$, SSMini6P: $P_T = 125 \text{ mW}$, SSSMini6P: $P_T = 125 \text{ mW}$

△: Tentative

Small Signal Bipolar Transistors

Composite Transistors (PNP × 2 Series)

| Function | Absolute Maximum Ratings | | Electrical Characteristics | XN: Mini5-G2 XP: SMini5-G1 | | XN: Mini6-G3 XP: SMini6-G1 UP: SSMini6-F2 NP: SSSMini6-F1 | | | Basic Type | | Remarks |
|-------------------|--------------------------|------------|----------------------------|-------------------------------|----|--|----|--|------------|-----|------------------------------------|
| | V_{CEO} (V) | I_C (mA) | | h_{FE} | XN | XN | XN | | XN | PNP | |
| General-use | -50 | -100 | 160 to 460 | | | | | | | | |
| | | -500 | 85 to 340 | | | | | | | | |
| Low $V_{CE(sat)}$ | -10 | -500 | 100 to 350 | | | | | | | | $V_{CE(sat)} = -0.3 \text{ V max}$ |
| High frequency | -20 | -30 | 50 to 220 | | | | | | | | $f_T = 150 \text{ MHz (Min)}$ |
| | -15 | -50 | 50 to 150 | | | | | | | | $f_T = 1.5 \text{ GHz}$ |

Mini5P/6P: $P_T = 300 \text{ mW}$, SMini5P/6P: $P_T = 150 \text{ mW}$, SSMini6P: $P_T = 125 \text{ mW}$, SSSMini6P: $P_T = 125 \text{ mW}$

Composite Transistors (PNP + NPN Series)

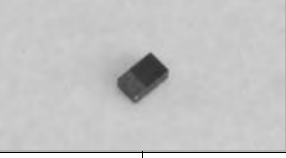

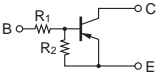
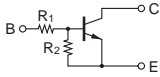
| Function | Absolute Maximum Ratings | | Electrical Characteristics | XN: Mini5-G2 XP: SMini5-G1 | | XN: Mini6-G3 XP: SMini6-G1 UP: SSMini6-F2 NP: SSSMini6-F1 | | | Basic Type | | Remarks |
|-----------------------------------|--------------------------|--------------|----------------------------|-------------------------------|----|--|----|----|------------|-----|---|
| | V_{CEO} (V) | I_C (mA) | | h_{FE} | XN | XN | XN | XN | XN | PNP | |
| General-use | -50/ 50 | -100/ 100 | 160 to 460 | | | | | | | | |
| | | -500/ 500 | 85 to 340 | | | | | | | | |
| Low $V_{CE(sat)}$ | -10/20 | -500/ 500 | 100 to 350/ 200 to 800 | | | | | | | | $V_{CE(sat)} = -0.3/0.4 \text{ V max}$ |
| Low $V_{CE(sat)}$ +General-use | -10/50 | -500/ 100 | 100 to 350/ 160 to 400 | | | | | | | | $V_{CE(sat)} = -0.3/0.4 \text{ V max}$ |
| | -50/20 | -100/ 500 | 160 to 460/ 200 to 800 | | | | | | | | |
| High-speed switching | -15/ 40 | -50/100 | 50 to 150/ 60 to 320 | | | | | | | | $t_{on} = 12/17 \text{ ns}$, $t_{off} = 20/17 \text{ ns}$ |

Mini5P/6P: $P_T = 300 \text{ mW}$, SMini5P/6P: $P_T = 150 \text{ mW}$, SSMini6P: $P_T = 125 \text{ mW}$, SSSMini6P: $P_T = 125 \text{ mW}$



Transistor with Built-in Resistors

Transistor with Built-in Resistors ($I_C = 80$ mA Series)

| Resistor value (k Ω) | | Absolute Maximum Ratings | | Electrical Characteristics | Package | | | | |
|------------------------------|----------------|--------------------------|---------------------|----------------------------|--|---|---|---|--|
| | | | | | ML3-N2 | | SSSMini3-F2 | | |
| | | | | |  | |  | | |
| R ₁ | R ₂ | V _{CE0} (V) | I _C (mA) | h _{FE} | PNP | NPN | PNP | NPN | |
| 0.51 | 5.1 | -50 50 | -80 80 | 20 ≤ | — | UNRF2A8 | UNR31A8G | UNR32A8G | |
| 1 | 10 | | | 30 ≤ | UNRF1A9 | UNRF2A9 | UNR31A9G | UNR32A9G | |
| 2.2 | 2.2 | | | 6 to 20 | — | UNRF2AV | UNR31AVG | UNR32AVG | |
| | 10 | | | 30 ≤ | UNRF1AH | — | UNR31AHG | — | |
| | 47 | | | 80 ≤ | UNRF1AM | UNRF2AM | UNR31AMG | UNR32AMG | |
| 4.7 | 4.7 | | | 20 ≤ | UNRF1AL | UNRF2AL | UNR31ALG | UNR32ALG | |
| | 10 | | | 30 ≤ | UNRF1AF | UNRF2AF | UNR31AFG | UNR32AFG | |
| | 47 | | | 80 to 400 | UNRF1AN | UNRF2AN | UNR31ANG | UNR32ANG | |
| | — | | | 160 to 460 | UNRF1A6 | UNRF2A6 | UNR31A6G | UNR32A6G | |
| 10 | 4.7 | | | 20 ≤ | — | UNRF2AK | — | — | |
| | 10 | | | 35 ≤ | UNRF1A1 | UNRF2A1 | UNR31A1G | UNR32A1G | |
| | 47 | | | 80 ≤ | UNRF1A4 | UNRF2A4 | UNR31A4G | UNR32A4G | |
| | — | | | 160 to 460 | UNRF1A5 | UNRF2A5 | UNR31A5G | UNR32A5G | |
| 22 | 22 | | | 60 ≤ | UNRF1A2 | UNRF2A2 | UNR31A2G | UNR32A2G | |
| | 47 | | | 80 to 400 | UNRF1AT | UNRF2AT | UNR31ATG | UNR32ATG | |
| | — | | | 160 to 460 | UNRF1A7 | UNRF2A7 | UNR31A7G | UNR32A7G | |
| 47 | 22 | | | 60 ≤ | — | — | UNR31AEG | UNR32AEG | |
| | 47 | | | 80 ≤ | UNRF1A3 | UNRF2A3 | UNR31A3G | UNR32A3G | |
| | — | | | 160 to 460 | UNRF1A0 | UNRF2A0 | UNR31A0G | UNR32A0G | |
| 100 | 100 | | | 80 ≤ | UNRF1AA | — | UNR31AAG | UNR32AAG | |
| Equivalent circuit | | | | | | (PNP Type) | | (NPN Type) | |
| | | | | | |  | |  | |

Transistor with Built-in Resistors

Transistor with Built-in Resistors ($I_C = 80$ mA Series) (continued)

| Resistor value (k Ω) | | Absolute Maximum Ratings | | Electrical Characteristics | Package | | | | | |
|------------------------------|-------|--------------------------|------------|--|------------|----------|-----------|----------|--|--|
| | | | | | SSMini3-F3 | | SMini3-F2 | | | |
| R_1 | R_2 | V_{CE0} (V) | I_C (mA) | h_{FE} | PNP | NPN | PNP | NPN | | |
| 0.51 | 5.1 | -50 50 | -80 80 | $20 \leq$ | — | UNR92A8G | UNR51A8G | UNR52A8G | | |
| 1 | 10 | | | $30 \leq$ | UNR91A9G | UNR92A9G | UNR51A9G | UNR52A9G | | |
| 2.2 | 2.2 | | | 6 to 20 | UNR91AVG | UNR92AVG | UNR51AVG | UNR52AVG | | |
| | 10 | | | $30 \leq$ | UNR91AHG | — | UNR51AHG | — | | |
| 4.7 | 4.7 | | | $80 \leq$ | UNR91AMG | UNR92AMG | UNR51AMG | UNR52AMG | | |
| | 10 | | | $20 \leq$ | UNR91ALG | UNR92ALG | UNR51ALG | UNR52ALG | | |
| | 4.7 | | | $30 \leq$ | UNR91AFG | UNR92AFG | UNR51AFG | UNR52AFG | | |
| 10 | 4.7 | | | 80 to 400 | UNR91ANG | UNR92ANG | UNR51ANG | UNR52ANG | | |
| | 10 | | | 160 to 460 | UNR91A6G | UNR92A6G | UNR51A6G | UNR52A6G | | |
| | 4.7 | | | $20 \leq$ | — | — | — | — | | |
| | 10 | | | $35 \leq$ | UNR91A1G | UNR92A1G | UNR51A1G | UNR52A1G | | |
| 22 | 4.7 | | | $80 \leq$ | UNR91A4G | UNR92A4G | UNR51A4G | UNR52A4G | | |
| | 22 | | | 160 to 460 | UNR91A5G | UNR92A5G | UNR51A5G | UNR52A5G | | |
| | 4.7 | | | $60 \leq$ | UNR91A2G | UNR92A2G | UNR51A2G | UNR52A2G | | |
| 47 | 4.7 | | | 80 to 400 | UNR91ATG | UNR92ATG | UNR51ATG | UNR52ATG | | |
| | 22 | | | 160 to 460 | UNR91A7G | UNR92A7G | UNR51A7G | UNR52A7G | | |
| | 4.7 | | | $60 \leq$ | UNR91AEG | UNR92AEG | UNR51AEG | UNR52AEG | | |
| 100 | 4.7 | | | $80 \leq$ | UNR91A3G | UNR92A3G | UNR51A3G | UNR52A3G | | |
| | 100 | | | 160 to 460 | UNR91A0G | UNR92A0G | UNR51A0G | UNR52A0G | | |
| Equivalent circuit | | | | <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>(PNP Type)</p> </div> <div style="text-align: center;"> <p>(NPN Type)</p> </div> </div> | | | | | | |



Transistor with Built-in Resistors



Transistor with Built-in Resistors ($I_C = 100 \text{ mA}$ Series)

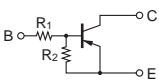
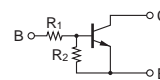
| Resistor value (k Ω) | | Absolute Maximum Ratings | | Electrical Characteristics | Package | | | | |
|------------------------------|-------|--------------------------|-------------|----------------------------|------------|------------|-----------|----------|----------|
| | | | | | SSMini3-F3 | | SMini3-F2 | | |
| R_1 | R_2 | V_{CE0} (V) | I_C (mA) | h_{FE} | PNP | NPN | PNP | NPN | |
| 0.51 | 5.1 | -50 50 | -100 100 | 20 \leq | UNR9118G | UNR9218G | UNR5118G | UNR5218G | |
| 1 | 10 | | | 30 \leq | UNR9119G | UNR9219G | UNR5119G | UNR5219G | |
| 2.2 | 2.2 | | | 6 to 20 | UNR911VG | UNR921VG | UNR511VG | UNR521VG | |
| | 10 | | | 30 \leq | UNR911HG | — | UNR511HG | — | |
| 4.7 | 4.7 | | | 80 \leq | UNR911MG | UNR921MG | UNR511MG | UNR521MG | |
| | 10 | | | 20 \leq | UNR911LG | UNR921LG | UNR511LG | UNR521LG | |
| | 22 | | | 30 \leq | UNR911FG | UNR921FG | UNR511FG | UNR521FG | |
| | 47 | | | 60 to 200 | — | — | UNR511ZG | UNR521ZG | |
| 10 | 4.7 | | | 80 to 400 | UNR911NG | UNR921NG | UNR511NG | UNR521NG | |
| | 10 | | | 160 to 460 | UNR9116G | UNR9216G | UNR5116G | UNR5216G | |
| | 47 | | | 20 \leq | — | UNR921KG | — | UNR521KG | |
| | — | | | 35 \leq | UNR9111G | UNR9211G | UNR5111G | UNR5211G | |
| 22 | 22 | | | 80 \leq | UNR9114G | UNR9214G | UNR5114G | UNR5214G | |
| | 47 | | | 160 to 460 | UNR9115G | UNR9215G | UNR5115G | UNR5215G | |
| | — | | | 60 \leq | UNR9112G | UNR9212G | UNR5112G | UNR5212G | |
| | — | | | 80 to 400 | UNR911TG | UNR921TG | UNR511TG | UNR521TG | |
| 4.7 | 10 | | | 160 to 460 | UNR9117G | UNR9217G | UNR5117G | UNR5217G | |
| | 22 | | | 30 \leq | UNR911DG | UNR921DG | UNR511DG | UNR521DG | |
| | 47 | | | 60 \leq | UNR911EG | UNR921EG | UNR511EG | UNR521EG | |
| | — | | | 80 \leq | UNR9113G | UNR9213G | UNR5113G | UNR5213G | |
| 100 | 100 | 160 to 460 | UNR9110G | UNR9210G | UNR5110G | UNR5210G | | | |
| | — | 80 \leq | UNR911AG | UNR921AG | — | — | | | |
| — | 47 | 160 to 460 | UNR911BG | UNR921BG | — | — | | | |
| | 100 | 80 \leq | UNR911CG | UNR921CG | — | — | | | |
| 0.27 | 5 | -30 -50 | -100 | 80 \leq | — | — | UNR5154G | — | |
| 2.2 | 2.2 | | | 80 \leq | — | — | UNR5174G | — | |
| | 10 | | | 100 to 600 | — | — | — | UNR5226G | |
| 3.1 | 4.6 | | | 20 | 600 | 6 to 20 | — | — | — |
| 4.7 | 4.7 | | | | | 100 to 600 | — | — | UNR5225G |
| 10 | 10 | | | | | | | | |
| | 47 | | | | | | | | |
| 6.8 | 6.8 | | | | | | | | |
| 10 | — | | | | | | | | |

| Equivalent circuit | (PNP Type) | (NPN Type) |
|--------------------|------------|------------|
| | | |

Transistor with Built-in Resistors

Transistor with Built-in Resistors ($I_C = 100$ mA Series) (continued)

| Resistor value (k Ω) | | Absolute Maximum Ratings | | Electrical Characteristics | Package | | | |
|------------------------------|-------|--------------------------|---------------|----------------------------|---|---------|---|---------|
| | | | | | Mini3-G1 | | NS-A1 NS-B1 | |
| R_1 | R_2 | V_{CE0} (V) | I_C (mA) | h_{FE} |  | |  | |
| | | | | | PNP | NPN | PNP | NPN |
| 0.51 | 5.1 | -50 50 | -100 100 | $20 \leq$ | UNR2118 | UNR2218 | UNR4118 | UNR4218 |
| 1 | 10 | | | $30 \leq$ | UNR2119 | UNR2219 | UNR4119 | UNR4219 |
| 2.2 | 2.2 | | | $6 \text{ to } 20$ | UNR211V | UNR221V | — | — |
| | 10 | | | $30 \leq$ | UNR211H | — | UNR411H | — |
| 4.7 | 4.7 | | | $80 \leq$ | UNR211M | UNR221M | UNR411M | — |
| | 10 | | | $20 \leq$ | UNR211L | UNR221L | UNR411L | UNR421L |
| | 2.2 | | | $30 \leq$ | UNR211F | UNR221F | UNR411F | UNR421F |
| | 4.7 | | | $60 \text{ to } 200$ | UNR211Z | UNR221Z | — | — |
| 10 | 4.7 | | | $80 \text{ to } 400$ | UNR211N | UNR221N | UNR411N | — |
| | 10 | | | $160 \text{ to } 460$ | UNR2116 | UNR2216 | UNR4116 | UNR4216 |
| | 4.7 | | | $20 \leq$ | — | UNR221K | — | UNR421K |
| | — | | | $35 \leq$ | UNR2111 | UNR2211 | UNR4111 | UNR4211 |
| 22 | 2.2 | | | $80 \leq$ | UNR2114 | UNR2214 | UNR4114 | UNR4214 |
| | 4.7 | | | $160 \text{ to } 460$ | UNR2115 | UNR2215 | UNR4115 | UNR4215 |
| | — | | | $60 \leq$ | UNR2112 | UNR2212 | UNR4112 | UNR4212 |
| | — | | | $80 \text{ to } 400$ | UNR211T | UNR221T | — | — |
| 4.7 | 10 | | | $160 \text{ to } 460$ | UNR2117 | UNR2217 | UNR4117 | UNR4217 |
| | 2.2 | | | $30 \leq$ | UNR211D | UNR221D | UNR411D | UNR421D |
| | 4.7 | | | $60 \leq$ | UNR211E | UNR221E | UNR411E | UNR421E |
| | — | | | $80 \leq$ | UNR2113 | UNR2213 | UNR4113 | UNR4213 |
| 100 | 100 | $160 \text{ to } 460$ | UNR2110 | UNR2210 | UNR4110 | UNR4210 | | |
| | — | $80 \leq$ | — | — | — | — | | |
| — | 4.7 | $80 \leq$ | — | — | — | — | | |
| | 100 | $80 \leq$ | UNR211W | UNR221W | — | — | | |
| 0.27 | 5 | -30 -50 | -100 | $20 \leq$ | UNR212X | — | — | — |
| 2.2 | 2.2 | | | $40 \leq$ | UNR2121 | UNR2221 | UNR4121 | UNR4221 |
| | 10 | | | $60 \leq$ | UNR2124 | UNR2224 | UNR4124 | UNR4224 |
| 3.1 | 4.6 | | | $50 \leq$ | UNR212Y | — | — | — |
| 4.7 | 4.7 | | | $50 \leq$ | UNR2122 | UNR2222 | UNR4122 | UNR4222 |
| 10 | 10 | | | $60 \leq$ | UNR2123 | UNR2223 | UNR4123 | UNR4223 |
| | 4.7 | | | $80 \leq$ | UNR2154 | — | — | — |
| 4.7 | — | $80 \leq$ | — | — | — | — | | |
| 6.8 | 6.8 | 20 | 600 | $100 \text{ to } 600$ | — | UNR2226 | — | — |
| 10 | — | | | $6 \text{ to } 20$ | — | UNR2227 | — | — |
| | | | | $100 \text{ to } 600$ | — | UNR2225 | — | — |

| | | |
|--------------------|---|--|
| Equivalent circuit | (PNP Type) | (NPN Type) |
| |  |  |



Transistor with Built-in Resistors









Composite Transistor with Built-in Resistors (NPN x 2 Series)

| Resistance (kΩ) | | Absolute Maximum Ratings | | Electrical Characteristics | XN: Mini5-G2 XP: SMini5-G1 UP: SSMini5-F3 | | XN: Mini6-G3 XP: SMini6-G1 UP: SSMini6-F2 NP: SSSMini6-F1 | | Basic Type | | | |
|-----------------|----------------|--------------------------|-------------------------|----------------------------|---|---------------------------------|--|---------------------------------|-----------------------|---------------------------------|---------------------------------|---------------------|
| R ₁ | R ₂ | V _{CE0} (V) | I _C (mA) | h _{FE} | XN | XP•UP | XP | XP•UP•NP | | XP•NP | | |
| | | | | | | | | | | | | |
| 2.2 | 47 | 50 | 100 80 ^{*1} | 80 ≤ | XP0121M UP0121MG | | | XP0421M | | UNR221M | | |
| | | | | | | | | | | NP062AM ^{*1} | UNR32AM | |
| 4.7 | 4.7 | | | | 20 | XP0121L | | | | XN0421LG | | UNR221L |
| | 10 | | | | 30 ≤ | | | | | XN0421FG | | UNR221F |
| | 47 | | | | 80 ≤ | XP0121N | | | | UP0421NG | | UNR221N |
| | | | | | 80 to 400 | | | | | | NP062AN ^{*1} | UNR32AN |
| | | | | — | 160 to 460 | | XN01216G XP01216 | | | | XN04216G XP04216 UP04216G | XN06216G XP06216 |
| | | | | | | | | | | NP042A6 ^{*1} | | UNR32A6 |
| 10 | 10 | | | | 35 ≤ | XN01211G XP01211 UP01211G | | XP02211 | | XN04211G XP04211 UP04211G | XN06211G XP06211 | UNR2211 |
| | | | | | | | | | | NP042A1 ^{*1} | NP062A1 ^{*1} | UNR32A1 |
| | 47 | | | | 80 ≤ | XN01214G XP01214 UP01214G | | | | XN04214G XP04214 UP04214G | XN06214G XP06214 | UNR2214 |
| | | | | | | | | | | | NP042A4 ^{*1} | |
| | | | | | 160 to 460 | XN01215G XP01215 | | XP02215 | | XN04215G XP04215 UP04215G | XN06215G XP06215 | UNR2215 |
| | | | | | | | | | | NP042A5 ^{*1} | | UNR32A5 |
| 22 | 22 | | | | 60 ≤ | XN01212G XP01212 UP01212G | | | | XN04212G XP04212 UP04212G | XP06212 | UNR2212 |
| | | | | | | | | | | | NP042A2 ^{*1} | UNR32A2 |
| | | | | | 160 to 460 | XP01217 | | | | XP04217 UP04217G | | UNR2217 |
| | | | | | | | | | | NP042A7 ^{*1} | | UNR32A7 |
| 47 | 22 | | | | 60 ≤ | XN0121EG XP0121E UP0121EG | | | | | | UNR221E |
| | 47 | | | | 80 ≤ | XN01213G XP01213 UP01213G | | | | XN04213G XP04213 UP04213G | XN06213G XP06213 | UNR2213 |
| | | | | | | | | | NP042A3 ^{*1} | NP062A3 ^{*1} | UNR32A3 | |
| | | | 160 to 460 | XN01210G XP01210 | | XP02210 | | XN04210G XP04210 UP04210G | XP06210 | UNR2210 | | |
| | | | | | | | | NP042A0 ^{*1} | NP062A0 ^{*1} | UNR32A0 | | |

Mini5P/6P: P_T = 300 mW, SMini 5P/6P: P_T = 150 mW, SSMini5P/6P: P_T = 125 mW, SSSMini6P: P_T = 125 mW

Transistor with Built-in Resistors

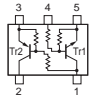
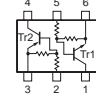
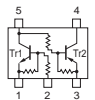
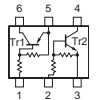
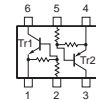
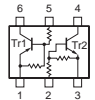
Composite Transistor with Built-in Resistors (PNP × 2 Series)

| Resistance (kΩ) | | Absolute Maximum Ratings | | Electrical Characteristics | XN: Mini5-G2 XP: SMini5-G1 UP: SSMini5-F3 | XN: Mini6-G3 XP: SMini6-G1 UP: SSMini6-F2 NP: SSSMini6-F1 | | | Basic Type | | | |
|-----------------|----------------|--------------------------|---------------------|----------------------------|--|---|---|--|---------------------|---|---------|-------------------------------|
| R ₁ | R ₂ | V _{CEO} (V) | I _C (mA) | h _{FE} | XN  | XN  | XN  | | | | | |
| | | | | | XP•UP  | XP•UP•NP  | NP  | XP•NP  | | NP  | | |
| 0.51 | 5.1 | -50 | -100 -80*1 | 20 ≤ | XP01118 | | | | | UNR2118 | | |
| 1 | 10 | | | 30 ≤ | XN01119G XP01119 | | | | | | UNR2119 | |
| 2.2 | 10 | | | 30 ≤ | XN0111HG XP0111H | | | | | | | UNR2111 |
| | 47 | | | 80 ≤ | XN0111MG XP0111M | XP0411M UP0411MG | | | NP061AM*1 | | | UNR31AM UNR211M |
| 4.7 | 10 | | | 30 ≤ | XN0111FG XP0111F UP0111FG | | | | | | | UNR211F |
| | 47 | | | 80 to 400 | | | | | NP061AN*1 | | | UNR31AN |
| | — | | | 160 to 460 | XN01116G XP01116 | XN04116G XP04116 UP04116G | | | XP06116 | | | UNR2116 UNR31A6 |
| 10 | 10 | | | 35 ≤ | XN01111G XP01111 | XN04111G XP04111 UP04111G | | | XP06111 | | | UNR2111 |
| | 47 | | | 80 ≤ | XN01114G XP01114 | XN04114G XP04114 | | | XP06114 | | | UNR31A1 UNR2114 |
| | — | | | 160 to 460 | XN01115G XP01115 | XN04115G XP04115 | | | XP06115 | NP061A5*1 | | UNR31A4 UNR2115 UNR31A5 |
| | 22 | | | 60 ≤ | XN01112G XP01112 | XN04112G XP04112 UP04112G | | | XP06112 | | | UNR2111 UNR31A2 |
| 22 | 47 | | | 80 to 400 | | UP0411TG | | | | | | UNR31A2*1 UNR211T |
| | — | | | 160 to 460 | XP01117 | XP04117 UP04117G | | | | | | UNR2117 UNR31A7 |
| | 22 | | | 60 ≤ | | | | | NP0G1AE*1 | | | UNR31A7*1 UNR31AE |
| 47 | 47 | | | 80 ≤ | XN01113G XP01113 UP01113G | XN04113G XP04113 UP04113G | | | XN06113G XP06113 | | | UNR2113 |
| | — | | | 160 to 460 | XN01110G XP01110 | | | | NP061A3*1 | NP0J1A3*1 | | UNR31A3 UNR2110 |
| | 10 | | | 80 to 280 | | | NP041A0*1 | | | | | UNR31A0 |
| — | 10 | | | -15 | -500 | 80 to 280 | XN04130G | | | | | — |

Mini5P/6P: P_T = 300 mW, SMini 5P/6P: P_T = 150 mW, SSMini5P/6P: P_T = 125 mW, SSSMini6P: P_T = 125 mW

Transistor with Built-in Resistors

Composite Transistor with Built-in Resistors (PNP + NPN Series)

| Resistance (kΩ) | | Absolute Maximum Ratings | | Electrical Characteristics | XN: Mini5-G2 XP: SMini5-G1 UP: SSMini5-F3 | XN: Mini6-G3 XP: SMini6-G1 UP: SSMini6-F2 NP: SSSMini6-F1 | | Basic Type | | | | | | |
|-----------------|----------------|--------------------------|--|----------------------------|--|--|--|---|---------------------------------|---------------------------------|-----------|-----------|---------|---------|
| R ₁ | R ₂ | V _{CEO} (V) | I _C (mA) | h _{FE} | XN  | XN  | XP•UP•NP | NP | XP•UP•NP | NP | PNP | NPN | | |
| | | | | | XP•UP  | NP  | XP•UP•NP  | NP  | | | | | | |
| 2.2 | 47 | 50/ -50 | 500/ -500*2 100/ -100 80/ -80*1 | 80 ≤ | | | XP0431M UP0431MG | | | | UNR211M | UNR221M | | |
| 4.7 | 4.7 | | | 50 ≤ | | | | | XN04322G*2 | | | | UNR2122 | UNR2222 |
| | 47 | | | 80 to 400 | | | | | NP043AN | | | | UNR31AN | UNR32AN |
| | | | | 80 ≤ | | | | | | XP0431N UP0431NG | | | | UNR211N |
| | 10 | | | — | 160 to 460 | | XP03316 | | | XN04316G XP04316 UP04316G | | | | UNR2116 |
| | | | | | | | | | NP043A6*1 | | | | UNR31A6 | UNR32A6 |
| 10 | | | | 35 ≤ | | XN0A311 XP03311 UP03311G | | | XN04311G XP04311 UP04311G | | | | UNR2111 | UNR2211 |
| | | | | | | | | | | NP043A1*1 | | | | UNR31A1 |
| 47 | 47 | | | 80 ≤ | | | | | XN04314G XP04314 UP04314G | | | | UNR2114 | UNR2214 |
| | | | | | | | | | | | | | UNR31A4 | UNR32A4 |
| | — | | | 160 to 460 | | | | | XN04315G XP04315 UP04315G | | | | UNR2115 | UNR2215 |
| | | | | | | | | | | NP0G3A5*1 | | | | UNR31A5 |
| 22 | 22 | | | 60 ≤ | | XN0A312G XP03312 UP03312G | | | XN04312G XP04312 UP04312G | | | | UNR2112 | UNR2212 |
| | | | | | | | | | | | | | UNR31A2 | UNR32A2 |
| | 47 | | | 80 to 400 | | | | | UP0431TG | | | | UNR211T | UNR221T |
| 47 | 47 | | | 80 ≤ | | | | | XP04313 UP04313G | | | | UNR2113 | UNR2213 |
| | | | | | | | | | | | NP0G3A3*1 | NP0H3A3*1 | UNR31A3 | UNR32A3 |
| | — | 160 to 460 | | | | | | | | | NP0G3A0*1 | | UNR31A0 | UNR32A0 |

Mini5P/6P: P_T = 300 mW, SMini 5P/6P: P_T = 150 mW, SSMini5P/6P: P_T = 125 mW, SSSMini6P: P_T = 125 mW

Transistor with Built-in Resistors

Composite Transistor with Built-in Resistors (PNP + NPN Series) (continued)

| Resistance (kΩ) | | | | Absolute Maximum (Tr1/Tr2) | | Electrical Characteristics (Tr1/Tr2) | | XP: SMini5-G1 UP: SSMini5-F3 XP: SMini6-G1 UP: SSMini6-F2 NP: SSSMini6-F1 XN: Mini6-G3 | | | | Basic Type | |
|-----------------|----------------|----------------|----------------|----------------------------|---------------------|--------------------------------------|----------|---|---------------------|----------|----------|------------|---------|
| Tr1 | | Tr2 | | V _{CEO} (V) | I _C (mA) | h _{FE} | XN | | PNP | NPN | | | |
| R ₁ | R ₂ | R ₁ | R ₂ | | | | XP•UP | NP | | | XP•UP•NP | NP | |
| 4.7 | 4.7 | 1 | 10 | 50/-50 | 100/-100 | 80 to 400/ 30 ≤ | | | XP04286 | | UNR2119 | UNR221N | |
| | 4.7 | 4.7 | — | | | 80 to 400/ 160 to 460 | XP03391 | | | | UNR211N | UNR2216 | |
| 10 | 10 | 0.51 | 5.1 | 50/-30 | 80/-80 | 35 ≤/ 20 ≤ | | | | | UNR2118 | UNR2211 | |
| | | 10 | 4.7 | | | 35 ≤/ 80 ≤ | UP03397G | | | UNR2154 | UNR2211 | | |
| | | 22 | — | | | | UP03396G | | | UNR211T | UNR2211 | | |
| | — | 4.7 | — | 50/-50 | 80/-80 | 160 to 460 | | | | NP063D3 | UNR31A0 | UNR32A5 | |
| 22 | — | 4.7 | 4.7 | -50/50 | -80/80 | 80 to 400/ 20 ≤ | | NP0G3D2 | | | UNR31AT | UNR32AL | |
| 4.7 | 0.51 | 5.1 | 10 | 50/-50 | 100/-100 | 80 ≤/ 20 ≤ | | UP03394G | | | UNR2118 | UNR2213 | |
| | | | | | | 80 ≤/ 30 ≤ | | XP04387 UP04387G | | | UNR2119 | UNR2213 | |
| | 4.7 | 4.7 | 4.7 | -50/50 | 80/-80 | 80 ≤/ 20 ≤ | | NP0G3D1 | | | UNR31A3 | UNR32AL | |
| | | | | | | | | | XN04381G | | | UNR2122 | UNR2213 |
| | | | | | | | | | XP03383 UP03383G | | | UNR211F | UNR2213 |
| | 10 | 10 | 4.7 | 50/-50 | 100/-100 | 80 ≤/ 80 ≤ | | XP03390 UP03390G | | UP04390G | | UNR2114 | UNR2213 |
| | | | | | | | | | NP04390 | | | UNR31A4 | UNR32A3 |
| — | — | 4.7 | — | -50/50 | -80/80 | 270 to 680/ 80 to 400 | | | | NP0G3D3 | | UNR31A3 | UNR32AT |
| | | | | | | | | | UP04A8MG | | | 2SA2161 | UNR221N |
| | | | | 50/-50 | 100/-100 | 150 to 460/ 20 ≤ | | | XN04A88G | | UNR211S | 2SD0601A | |

Mini5P/6P: P_T = 300 mW, SMini 5P/6P: P_T = 150 mW, SSMini5P/6P: P_T = 125 mW, SSSMini6P: P_T = 125 mW

Bipolar Power Transistors

Low-Frequency Amplifiers

| Application | Absolute Maximum Ratings | | Electrical Characteristics | | | | | Package | | | | | | |
|------------------------------|--------------------------|-----------------------|---|--|------------------------|--------------------|-----------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-----------------------|---|
| | V _{CEO} (V) | I _C (A) | V _{CE(sat)} (V) f _T *1 (MHz) | I _C I _E *2 (A) | I _B (mA) | h _{FE} | I _C (A) | U-G2 | P _C (W) | MiniP3-F2 | P _C (W) | MT-2-A1 | P _C (W) | |
| General-purpose | 40 | 1.5 | 1.0 | 1.5 | 150 | 80 to 220 | 1.0 | 2SB0968 | 10 | | | | | |
| | | | | | | | | | | (2SB1599G 2SD2457G | 1 | | | |
| | 50 | 1.0 | 0.4 | 0.5 | 50 | 85 to 340 | 0.5 | | | (2SB0766G 2SD0874G | 1 | (2SB1322A 2SD1994A | 1 | |
| | | | | | | | | 2SB1574 | 10 | | | | | |
| | | 2.0 | 0.3 | 1.0 | 2.0 | 100 | 120 to 340 | 0.2 | | | (2SB1440G 2SD2185G | 1 | (2SB1434 2SD2177 | 1 |
| | | | | | | | | | | | | | 2SD2179 | 1 |
| | 5.0 | | | | | | 0.5 | | | | 2SD2179 | 1 | | |
| | 60 | 2.0 | | | 50 | | 0.2 | | | | | 2SD2177A | 1 | |
| | 80 | 0.5 | 0.4 | 0.3 | 30 | 90 to 220 | 0.15 | | | (2SB0767G 2SD0875G | 1 | | | |
| | | | | | | 130 to 330 | | | | | | | | |
| 1.0 | | 0.3 | 0.5 | 50 | 120 to 340 | 0.1 | | | (2SA1890G 2SC5026G | 1 | (2SA1674 2SC4391 | 1 | | |
| 150 | | | | 25 | | | | | 2SD2459G | 1 | | | | |
| High-h _{FE} | 20 | 0.7 | 0.4 | 0.5 | 50 | 1 000 to 2 500 | 0.15 | | | | | 2SD2259 | 1 | |
| | 60 | 2.0 | 1.0 | 2.0 | | 500 to 2 500 | 0.5 | 2SD2453 | 10 | | | | | |
| Low V _{CE(sat)} | 10 | 1.0 | 0.15 | 0.5 | 20 | 200 to 800 | 0.1 | | | | | 2SD2358 | 1 | |
| | 20 | 0.5 | 0.4 | | | | | | | 2SD2210G | 1 | | | |
| | | 1.0 | 0.5 | 1.0 | 50 | 130 to 280 | 0.5 | (2SB0956G 2SD1280G | 1 | | | | | |
| | | 4.0 | 1.0 | 3.0 | 100 | 120 to 315 | 2.0 | 2SB1073G | 1 | | | | | |
| | 25 | 3.0 | | | | 230 to 600 | 0.5 | 2SD1119G | 1 | | | | | |
| Darlington | 50 | 0.5 | 2.5 | 0.5 | 0.5 | 4 000 to 20 000 | 0.5 | | | | | 2SD2598 | 1 | |
| | | 1.0 | 1.8 | 1.0 | 1 | 4 000 to 40 000 | 1.0 | | | 2SD1511G | 1 | | 2SD2258 | 1 |
| | 80 | 2.0 | 1.5 | | | | | | | | | | 2SD2067 | 1 |
| | 100 | | | | | | | | | | | | | |
| High breakdown voltage | 120 | 0.5 | 0.6 | 0.5 | 50 | 90 to 220 | 0.15 | | | (2SB0789G 2SD0968G | 1 | | | |
| | | | 1.0 | 0.3 | 30 | 90 to 330 | | | | 2SD2225 | 1 | | | |
| | 400 | 0.1 | 1.5 | 0.05 | 5 | 30 ≤ | 0.03 | | | 2SD2413G | 1 | | | |
| | | 0.5 | | 0.25 | 50 | | | | | 2SD2565 | 1 | | | |
| TV Chroma output | 300 | 0.07 | 50*1 | 0.01*2 | — | 30 to 220 | 0 005 | | | | | 2SC5419 | 1 | |

(: Complementary pair

P_C: T_C = 25°C

Bipolar Power Transistors

For Power Amplification

| Application | Absolute Maximum Ratings | | Electrical Characteristics | | | Package | | | |
|----------------------|--------------------------|--------------|------------------------------|--------------|---------------|------------|--------------|----------|--------------|
| | V_{CE0} (V) | I_C (A) | $V_{CE(sat)}$ max. (V) | I_C (A) | I_B (mA) | TO-220D-A1 | | | |
| | | | | | | PNP | P_C (W) | NPN | P_C (W) |
| General-use | 80 | 3 | 1.2 | 3 | 375 | 2SB1548A | 25 | 2SD2374A | 25 |
| | 60 | | 0.8 | | | 2SB1724 | 30 | 2SD2693 | 25 |
| | 80 | 2SB1724A | | 30 | 2SD2693A | 25 | | | |
| | 180 | 2 | 1 | 0.5 | 50 | 2SA2118 | 25 | 2SC5935 | 25 |
| Low $V_{CE(sat)}$ | 50 | 10 | 0.5 | 5 | 250 | 2SA2064 | 25 | 2SC5779 | 25 |
| | 60 | 3 | | 3 | 375 | 2SA2057 | 20 | 2SC5739 | 20 |
| | 180 | 1.5 | | 1 | 100 | 2SA2140 | 20 | 2SC5993 | 20 |
| High- h_{FE} | 60 | 3 | 1 | 2 | 50 | | | 2SD2375 | 25 |
| | | 5 | 0.3 | 4 | 100 | | | 2SD2528 | 40 |
| Darlington | 60 | 4 | 2 | 3 | 12 | 2SB1623 | 30 | 2SD2420 | 30 |
| | 80 | | | | | 2SB1623A | 30 | 2SD2420A | 30 |

P_C : $T_C = 25^\circ\text{C}$

For Switching

| Application | Absolute Maximum Ratings | | | Electrical Characteristics | | | | Package | |
|----------------------|--------------------------|------------------|--------------|------------------------------|--------------|---------------|----------------------------|------------|--------------|
| | V_{CBO} (V) | V_{CE0} (V) | I_C (A) | $V_{CE(sat)}$ max. (V) | I_C (A) | I_B (mA) | t_f (μs) | TO-220D-A1 | P_C (W) |
| High-speed switching | 500 | 400 | 3 | 1 | 1.5 | 300 | 0.3 | 2SC4953 | 30 |

P_C : $T_C = 25^\circ\text{C}$

For TV and CRT Monitor

| Application | Absolute Maximum Ratings | | Electrical Characteristics | | Package | |
|-------------|--------------------------|--------------|------------------------------|--------------------------------|------------|--------------|
| | V_{CBO} (V) | I_C (A) | $V_{CE(sat)}$ max. (V) | t_f typ (μs) | TO-220D-A1 | P_C (W) |
| VM circuit | -180 | -1.5 | -0.5 | 0.1 | 2SA2140 | 20 |
| | 180 | 1.5 | 0.5 | | 2SC5993 | 20 |

P_C : $T_C = 25^\circ\text{C}$



Power MOS FETs

Power MOS FETs

| Absolute Maximum Ratings | | | P _D (W) | Electrical Characteristics | | | | | Package | |
|--------------------------|-------------------------|-----------------------|-----------------------|------------------------------------|----------------------------------|------------------------------------|--------------------------------|-------------------------------------|------------|------------|
| V _{DSS} (V) | V _{GSS} (V) | I _D (A) | | R _{DS(on)} max. (Ω) | Y _{fs} typ. (S) | t _{d(on)} typ. (ns) | t _f typ. (ns) | t _{d(off)} typ. (ns) | TO-220C-G1 | TO-220D-A1 |
| 100 | ±20 | 25 | 50 | 0.052 | 11 | 15 | 35 | 65 | 2SK3269 | |
| 110 | ±25 | 28 | 40 | | 21 | 30 | 90 | 150 | | 2SK4174 |
| 200 | ±30 | 30 | 50 | | 22 | 32 | 88 | 170 | 2SK3995 | |
| | | | 40 | | | | | | | 2SK4208 |

IGBT Discrete

IGBT

| Absolute Maximum Ratings | | | | Electrical Characteristics | | Package |
|---------------------------|-----------------------|------------------------|-----------------------|----------------------------------|-----------------------------|------------|
| V _{CE(s)} (V) | I _C (A) | I _{CP} (A) | P _C (W) | V _{CE(sat)} max. (V) | t _f typ. (ns) | TO-220D-A1 |
| 430 | 40 | 230 | 40 | 2.4 | 175 | 2PG006 |
| 510 | | | | 2.5 | 185 | 2PG009 |
| 540 | | | | | | 2PG011 |

Multi Chip Discrete Devices

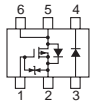
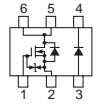
| | |
|---|----|
| Composite Transistors..... | J2 |
| MOS FET + SBD (For Power Management) | J2 |
| TR + load device..... | J2 |
| Transistor with built-in resistors + SBD..... | J2 |



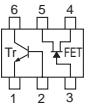
Composite Transistors

Composite Transistors

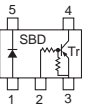
MOS FET + SBD (For Power Management)

| Application | FET Polarity | MOS FET | | | | | | | | SBD | | | | Package | | | |
|-----------------|--------------|-------------------------|---------------|-----------|---------------------------------|----------------------|----------------|--------------------|---------------------|-------------------------|-----------|----------------------------|-----------------------|---|-----------|---|-----------|
| | | Absolute Maximum Rating | | | Electrical Characteristics | | | | | Absolute Maximum Rating | | Electrical Characteristics | | WSSMini6-F1 | | WSSMini6-F1 | |
| | | V_{DSS} (V) | V_{GSS} (V) | I_D (A) | $R_{DS(on)}$ typ. (m Ω) | V_{GS} (V) | C_{iss} (pF) | t_{on} typ. (ns) | t_{off} typ. (ns) | V_R (V) | I_F (A) | V_F max. (V) | I_R max. (μ A) |  | P_D (W) |  | P_D (W) |
| DC-DC Converter | Pch | -20 | ± 10 | -2.0 | 80 100 140 | -4.0 -2.5 -1.8 | 300 | 14 | 112 | 15 | 0.7 | 0.45 | 250 | MTM86627 | 0.54 | | |
| | | | ± 12 | -1.0 | 300 420 | 4.0 2.5 | 80 | 18 | 27 | 15 | 0.7 | 0.45 | 250 | MTM86628 | 0.54 | | |
| | Nch | 20 | ± 10 | 2.2 | 80 100 | | 280 | 13 | 38 | 20 | 0.8 | 0.47 | 80 | | | MTM86727 | 0.54 |
| | | | | | | | | | | | | | | | | | |

TR + load device

| Application | Absolute Maximum | | | | | Electrical Characteristics | | | Package | |
|--------------------|------------------|------------|-----------------|----------------|------------|----------------------------|-----------|-----------------|---|--|
| | TR | | CCD load device | | P_T (mW) | TR | | CCD load device |  | |
| | V_{CEO} (V) | I_C (mA) | V_{max} (V) | I_{max} (mA) | | f_T typ. (MHz) | h_{FE} | I_P (mA) | | |
| CCD output circuit | 20 | 15 | 40 | 10 | 125 | 640 | 65 to 160 | 3.5 to 5.5 | UP05C8BG | |
| | | 50 | | | | 1 000 | 25 to 250 | | UP05C8GG | |
| | 50 | 1 300 | 100 to 250 | 3.8 to 5.2 | | UP05C8GF | | | | |
| | | | | 5.0 to 7.0 | | UP05C8PG | | | | |

Transistor with built-in resistors + SBD

| Application | Absolute Maximum | | | | Electrical Characteristics | | | | Package | |
|-----------------|------------------|-----------|-----------|-----------|----------------------------|-----------------------|----------------|-----------------------|------------|---|
| | TR | | SBD | | TR | | SBD | | P_T (mW) |  |
| | V_{CEO} (V) | I_C (A) | V_R (V) | I_F (A) | $V_{CE(sat)}$ max. (V) | $R1/R2$ (k Ω) | V_F typ. (V) | I_R typ. (μ A) | | |
| Digital circuit | -50 | -0.08 | 20 | 0.2 | -0.25 | 47/47 | 0.5 | 0.1 | 125 | UP0KG8DG |














Diodes

- Switching Diodes K2
 - Switching Diodes K2
 - Band Switch Diodes K5
 - PIN Diodes K5
- Schottky Barrier Diodes K6
 - For Small Signal ($I_F = \text{Less than } 1\,000\text{ mA}$) K6
 - For Power K12
- Rectifier Diodes K13
 - Fast Recovery Diodes K13
 - For Small Signal K13
 - For Power K13
- Zener Diodes K14
 - Zener Diodes Series K14
 - Low C_t Series K16
 - Surge Protective Diode K16
 - Bidirectional Zener Diode K16
 - High ESD (30 kV) Protection Device K16
 - High Surge Absorption Diode K16


































Switching Diodes

Switching Diodes

















| Electrical Characteristics | | | | Surface mounting package | | | | | | | | |
|----------------------------|---------------|------------------------------|--------------------------|--------------------------|---|---|--|---|---|--|--|--|
| V_R (V) | I_F (mA) | I_R max. (μA) | t_{rr} max. (ns) | ML2-N1 | ML3-N2 | USSMini2-F1 | SSSMini2-F3 | SSSMini3-F2 | SSMini2-F4 | SSMini3-F3 | SSMini4-F1 | |
| 200 | 100 | 1.0 | 60 | | | | | | MA2S1010G  ($V_R = 250 V$) | | | |
| | | | — | | | | | | | | | |
| 150 | 200 | 0.2 | — | | | | | | | | | |
| 80 | 100 | 0.1 | 10/3 | | | | | | | | | |
| | | | 10 | | | | | MAS3132DG  | MA3S132DG  | | | |
| | | | | | MA36132E  | MAS3132EG  | MA3S132EG  | | | | | |
| | | | 3 | | MA26111  | MAU2111  | MA271110G  | | MA2S1110G  | MA3S132AG  | MA4S111  | |
| | | | | | | | | | | MA3S132KG  | | |
| | | | | | | | | | | | | |

Switching Diodes

| Surface mounting package | | | | | | | |
|--|--|--|---|--|---|--|--|
| SMini2-F3 | SMini3-F2 | SMini4-F2 | SMini5-F1 | SMini6-F1 | Mini3-G1 | Mini4-G3 | Mini6-G3 |
| MA2Z0010G  | MA3X1000G  | | | | MA3X199  | | |
| | | | | | MA3X158  | MA4X1740G  | |
| MA2J1150G  | | | | | | | MA6X1290G  |
| MA2J1140G  | | | | | | | |
| | | | | | | MA4X1930G  | MA6X1260G  |
| | MA3J142DG  | | MA5J002D  | | MA3X152D  | | MA6X1220G  |
| | MA3J142AG  | | | | | | MA6X1270G  |
| | MA3J142EG  | | MA5J002E  | | MA3X152E  | | MA6X1230G  |
| | | | | | | | MA6X1240G  |
| | | | | | | | MA6X1280G  |
| MA2J1110G  | | MA4Z1590G  | | MA6Z121  | MA3X152A  | MA4X159AG  | MA6X1210G  |
| | MA3J142KG  | | | | MA3X152K  | MA4X160AG  | |

Switching Diodes

Switching Diodes (continued)

| Electrical Characteristics | | | | Surface mounting package | | | | | | |
|----------------------------|---------------|-----------------------------|--------------------------|--|--|--|--|--|--|--|
| V_R (V) | I_F (mA) | I_R max. (μ A) | t_{rr} max. (ns) | SSMini3-F3 | SMini2-F3 | SMini3-F2 | SMini4-F2 | Mini3-G1 | Mini4-G3 | Mini6-G3 |
| 80 | 100 | 0.1 | 3 | MA3S1370G  | | MA3J1470G  | | MA3X157A  | | |
| | | | — | MA3S1330G  | | MA3J143AG  | | MA3X153A  | | |
| | 200 | 0.05 | 10 | | MA2J1130G  | | MA4J1130G  | | | |
| 40 | 100 | 0.1 | 3 | | | | | | MA4X1600G  | |
| | | | — | | | MA3J1430G  | | MA3X153  | | MA6X1250G  |
| | 200 | 0.05 | 10 | | MA2J1120G  | | | | | |
| | 100 | 0.01 | 100 | | MA2J1160G  | | | MA3X198  | MA4X1940G  | |

Switching Diodes

Band Switch Diodes

| Part No. | V_R (V) | I_F max. (mA) | C_D typ. (pF) | V_R (V) | r_f typ. (Ω) | Package |
|----------|--------------|-----------------------|-----------------------|--------------|-------------------------------|-------------|
| MA2S077G | 35 | 100 | 0.9 | 6 | 0.65 | SSMini2-F4 |
| MA27077G | | | | | | SSSMini2-F3 |
| MA26077 | | | | | | ML3-N2 |






















PIN Diodes

| Part No. | V_R (V) | I_F (mA) | C_t max. (pF) | V_R | r_f | I_F | Package |
|-----------|--------------|---------------|-----------------------|-------|----------------------|----------|-----------|
| | | | | (V) | max. (Ω) | (mA) | |
| MA2JP020G | 60 | 100 | 0.5 | 1 | 2.0 | 10 | SMini2-F3 |
| MA3JP02FG | | 100 (65) | | | | | 0.8 |
| MA2SP010G | | 100 | 0.5 | | 2.0 | | |
| MA2SP020G | | | | | | | 50 |
| MA2SP050G | | 100 | 0.55 | 1.0 | | | |
| MA2SP060G | | | | | 100 | 0.8 | 2.0 |
| MA27P010G | | 100 | 0.6 | 1.2 | | | |
| MA27P020G | | | | | 100 | 0.35 | 1.5 |
| MA27P060G | | 50 | 0.8 | 0 | | | |
| MA27P070G | | | | | 100 | typ 0.27 | typ 0.8 |
| MA27P110G | | 100 | 0.8 | 1.0 | | | |
| MA27P120G | | | | | 100 | 0.5 | 2.0 |
| MA26P01 | | 100 | 0.35 | 1.5 | | | |
| MA26P02 | | | | | 100 | 0.8 | 1.0 |
| MA26P07 | | 100 | 0.5 | 2.0 | | | |
| | | | | | 100 | 0.35 | 1.5 |

K

Schottky Barrier Diodes

For Small Signal ($I_F =$ Less than 1 000 mA)

| Application | Electrical Characteristics | | | | | Package | | | | | | | | | | | |
|-----------------------------------|----------------------------|---------------|----------------------|---------------|-----------------------------|--|--|--|-------------|--|---|------------|--|--|--|--|--|
| | V_R (V) | I_F (mA) | V_F max. (V) | I_F (mA) | I_R max. (μ A) | ML2-N1 | USSMini2-F1 | SSSMini2-F3 | SSSMini3-F2 | SSMini2-F4 | SSMini3-F3 | SSMini4-F1 | SMini2-F3 | SMini3-F2 | SMini4-F2 | | |
| For high frequency wave detection | 20 | 35 | 0.41 | 1 | 0.2 | | | | | MA2SE010G  | MA3SE010G  | | | | | | |
| | | | 0.40 | | | MA27E020G  | MA3SE020G  | | | | | | | | | | |
| For switching mode wave detection | 20 | 100 | 0.40 | 100 | 20 | | | | | | | | MA2ZD140G  | | MA4ZD140G  | | |
| | | | 0.58 | | 0.3 | MA27D270G  | | | | | | | | | | | |
| | 30 | 30 | 0.30 | 30 | | | | | | | MA3S7950G  | | MA2J7320G  | | | | |
| | | | | | | | | | | | MA3S795DG  | | | | | | |
| | | | | | | | | | | | | | | | MA3J745EG  | | |
| | | | | | | | | | | MA3S795EG  | MA3S795EG  | | | | | | |
| | 30 | 30 | 0.35 | 1 | 0.5 | | | | | | | | MA4SD01  | | | | |
| | | | | | 0.3 | MA26728  | MAU27280G  | MA277280G  | | MA2S7280G  | MA3S7810G  | | MA2J7280G  | MA3J7410G  | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | 30 | 30 | 0.40 | 1 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |

Schottky Barrier Diodes












For Small Signal ($I_F = \text{Less than } 1\,000\text{ mA}$) (continued)

| Application | Electrical Characteristics | | | | | Package | | | | | | | | | | | | | | | |
|-----------------------------------|----------------------------|---------------|----------------------|------------------------------------|----|---------|-------------|-------------|-------------|------------|------------|------------|------------|-----------|-----------|-----------|--|--|--|--|--|
| | V_R (V) | I_F (mA) | V_F max. (V) | I_R max. (μA) | | ML2-N1 | USSMini2-F1 | SSSMini2-F3 | SSSMini3-F2 | SSMini2-F4 | SSMini3-F3 | SSMini4-F1 | SSMini5-F3 | SMini2-F3 | SMini3-F2 | SMini4-F2 | | | | | |
| For switching mode wave detection | 30 | 100 | 0.42 | 120 | | MAU2D29 | MA27D290G | | | MA2SD290G | MA3SD29FG | | MA5SD29XG | | | | | | | | |
| | | | | | | | | | | | | | | | MA2Z7840G | MA3Z7920G | | | | | |
| | | | | | | | | | | | | | | | | MA3Z792DG | | | | | |
| | | | | | | | | | | | | | | | | MA3Z792EG | | | | | |
| | | | | | | | | | | | | | | | | MA3Z7930G | | | | | |
| | | | | 0.55 | 15 | | | | | | | | | | | | | | | | |
| | 45 | 100 | 100 | 0.58 | 2 | | MAU2D30 | MA27D300G | | MA2SD300G | | | | MA5SD30XG | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | 0.60 | 5 | | | | | | MA3SD05FG | MA4SD05X | MA5SD05XG | | | | MA4ZD030G | | | | | |
| 50 | | | 0.55 | 30 | | | | | | | | | MA2Z7850G | | | | | | | | |
| For rectification | 15 | 200 | 0.39 | 50 | | | | | MA2SD250G | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | 20 | 200 | 200 | 0.47 | 15 | | | | | MA2SD190G | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | 30 | 200 | 200 | 0.47 | 20 | | | | | MA2SD100G | | MA4SD10 | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | 0.55 | 2 | | | | | | | | | MA2J7040G | | | | | | | | |
| | | | 0.58 | 1 | | | | | MA2SD240G | | | | | | | | | | | | |
| | | | 0.47 | 200 | | | | | MA2SD310G | | | | | | | | | | | | |























Schottky Barrier Diodes

For Small Signal ($I_F = \text{Less than } 1\,000\text{ mA}$) (continued)

| Application | Electrical Characteristics | | | | | Package | | | | | | | | | |
|----------------------|----------------------------|---------------|----------------------|---------------|------------------------------------|---------|-------------|-------------|-------------|------------|------------|------------|--|--|--|
| | V_R (V) | I_F (mA) | V_F max. (V) | I_F (mA) | I_R max. (μA) | ML2-N1 | USSMini2-F1 | SSSMini2-F3 | SSSMini3-F2 | SSMini2-F4 | SSMini3-F3 | SSMini4-F1 | SMini2-F3 | SMini3-F2 | |
| For rectification | 20 | 300 | 0.40 | 300 | 30 | | | | | | | | MA2Z7480G  | | |
| | | | | 0.42 | 200 | | | | | | | | MA2ZD180G  | | |
| | | 500 | 0.55 | 500 | 10 | | | | | | | | | MA2ZD020G  | MA3J7020G  |
| | | | | 700 | 200 | | | | | | | | | MA3ZD120G  | |
| | 30 | 200 | 0.55 | 200 | 50 | | | | | | | | MA2J7290G  | MA3J7440G  | |
| | | | | | 0.56 | 5 | | | | | | | MA2SD320G  | | |
| | 40 | 500 | 0.55 | 500 | 100 | | | | | | | | MA2Z7200G  | MA3J7000G  | |
| | | | | | 200 | 200 | | | | | | | | MA2J7270G  | |

Schottky Barrier Diodes



















For Small Signal ($I_F =$ Less than 1 000 mA) (continued)

| Application | Electrical Characteristics | | | | | Package | | | | |
|-----------------------------------|----------------------------|---------------|----------------------|---------------|---|--|---|--|--|--|
| | V_R (V) | I_F (mA) | V_F max. (V) | I_F (mA) | I_R max. (μ A) | SMini6-F1 | Mini2-F2 | Mini3-G1 | Mini4-G3 | Mini6-G3 |
| For switching mode wave detection | 15 | 30 | 0.40 | 1 | 0.2 | | | MA3X704  | | |
| | | | | | | | | MA3X704A  | | |
| | | | | | | MA6Z718  | | MA3X704D  | MA4X7130G  | MA6X7180G  |
| | | | | | | | | MA3X704E  | MA4X7140G  | |
| | | | | | | | | MA3X716  | | |
| | 30 | 0.30 | 30 | 30 | | | | MA3X715  | | |
| | | | | | | | MA3X717  | | | |
| | | | | | | | MA3X717E  | | | |
| | | | | | MA6J786X  | | MA3X786  | | | |
| | | | | | MA6J786Y  | | MA3X786D  | | | |
| | 100 | 0.55 | 100 | 15 | | | | MA3X786E  | | |
| | | | | | | | MA3X791  | | | |
| | | | | | | | MA3X787  | MA4X7960G  | | |
| | | | | | | | | | | |
| | 50 | | | | 30 | | | | | |


















Schottky Barrier Diodes

For Small Signal ($I_F = \text{Less than } 1\,000\text{ mA}$) (continued)

| Application | Electrical Characteristics | | | | | Package | | | | |
|----------------------|----------------------------|---------------|----------------------|---------------|------------------------------------|-----------|--|--|--|----------|
| | V_R (V) | I_F (mA) | V_F max. (V) | I_F (mA) | I_R max. (μA) | SMini6-F1 | Mini2-F2 | Mini3-G1 | Mini4-G3 | Mini6-G3 |
| For rectification | 20 | 500 | 0.50 | 500 | 30 | | | MA3X748  | | |
| | | | | | 10 | | MA3X703  | | | |
| | 30 | 200 | 0.55 | 200 | 50 | | | MA3X721  | MA4X7240G  | |
| | | | | | | | | MA3X721D  | MA4X7260G  | |
| | | | | | | | | MA3X721E  | | |
| | | | | | | | | MA3X740  | | |
| | | 500 | | 500 | | | MA2YD330G  | | | |
| | | 700 | | 700 | 80 | | | MA3X701  | | |
| | 40 | 500 | | 500 | 100 | | | MA3X720  | | |
| | 50 | 200 | 0.65 | 200 | 50 | | | MA3X727  | MA4X7460G  | |
| | | | | | | | | MA3X788  | | |
| | 60 | 500 | 0.58 | 500 | 100 | | | MA3X789  | | |
| | | | | | | | | MA2YD260G  | | |
| | 100 | 300 | 0.57 | 300 | 200 | | | MA22D170G  | | |
| | | | 0.58 | | | | | MA2YD170G  | | |

Schottky Barrier Diodes









For Small Signal ($I_F = 1\ 000\ \text{mA}$ or more)

| Application | Electrical Characteristics | | | | Package | | | | | | | | |
|----------------------|----------------------------|---------------|----------------------|---------------|------------------------------------|-----------|---|--|--|----------|----------|--|--|
| | V_R (V) | I_F (mA) | V_F max. (V) | I_F (mA) | I_R max. (μA) | SMini6-F1 | SMini2-F2* | Mini2-F1* Mini2-F2 | Mini3-G1 | Mini4-G3 | Mini6-G3 | TMiniP2-F1 | |
| For rectification | 15 | | 0.40 | | 1 500 | | | MA2YD210G  | MA3XD21  | | | | |
| | | | 0.45 | | 200 | | | | MA3XD11  | | | | |
| | 20 | | 0.43 | | 100 | | | MA22D150G  | | | | | |
| | | | 0.45 | | | | | MA2YD150G  | MA3XD15  | | | | |
| | 25 | 1 000 | | 1 000 | 40 | | | MA22D230G  | | | | | |
| | | | | | | 0.53 | | | MA2YD230G  | | | | |
| | 30 | 1 500 | 0.46 | 1 500 | 100 | | MA21D380G*  | | | | | | |
| | | | | | | | MA21D340G*  | | | | | | |
| | | | | | | | MA21D350G*  | | | | | | |
| | 30 | 2 000 | 0.45 | 2 000 | 500 | | MA21D382G*  | | | | | | |
| | | | | | | | | | MA22D280G  | | | | |
| | 35 | 5 000 | 0.55 | 5 000 | 300 | | | | | | | MA22D410G  | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | MA24D70  |




Schottky Barrier Diodes

For Small Signal ($I_F = 1\ 000\ \text{mA}$ or more) (continued)


| Application | Electrical Characteristics | | | | Package | | | | | | | | |
|----------------------|----------------------------|---------------|----------------------|------------------------------------|-----------|------------|-----------------------|--|--|----------|--|--|--|
| | V_R (V) | I_F (mA) | V_F max. (V) | I_R max. (μA) | SMini6-F1 | SMini2-F2* | Mini2-F1* Mini2-F2 | Mini3-G1 | Mini4-G3 | Mini6-G3 | TMiniP2-F1 | | |
| For rectification | 40 | 1 570 | 0.57 | 1 500 | 100 | | | MA22D390G  | | | | | |
| | | 2 000 | 0.48 | 2 000 | 200 | | | | | | | MA24D60  | |
| | | | 0.51 | | 50 | | | | | | MA24D62  | | |
| | | 3 000 | 0.55 | 3 000 | 200 | | | MA2YJ50*  | | | | | |
| | | | | | 0.42 | 2 000 | | | | | | MA24D51  | |
| | | | | | 0.53 | 50 | | | | | | MA24D52  | |
| | | 60 | 1 000 | 0.58 | 1 000 | 30 | | | MA22D400G  | | | | |
| | | | 3 000 | | 3 000 | 200 | | | | | | | MA24D58  |

For Power




| Category | Part No. | Electrical Characteristics | | | | Equivalent Circuit | Package |
|------------------------|----------|----------------------------|--------------------|----------------------|---------------|---|------------|
| | | V_R (V) | $I_{F(AV)}$ (A) | V_F max. (V) | I_R (mA) | | |
| Cathode-common type | MA3DD82 | 60 | 20 | 0.72 | 0.2 |  | TO-220D-A1 |

Rectifier Diodes

Fast Recovery Diodes For Small Signal

| Part No. | Electrical Characteristics | | | | Equivalent Circuit | Package |
|-----------|----------------------------|-----------------|----------------|--------------------|---|------------|
| | V_{RRM} (V) | $I_{F(AV)}$ (A) | V_F max. (V) | t_{rr} max. (ns) | | |
| MA2JF210G | 200 | 0.3 | 1.25 | 400 (typ.) |  | SMini2-F3 |
| MA22F200G | | | 0.98 | 35 | | Mini2-F2 |
| MA24F41 | 400 | 1 | 1.3 | 45 | | TMiniP2-F1 |
| MA24F70 | 700 | | 1.7 | | | |
| MA2YF800G | 800 | | 0.2 | | | 2.5 |

For Power



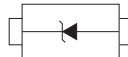




| Category | Part No. | Electrical Characteristics | | | | Equivalent Circuit | Package |
|---------------------|----------|----------------------------|-----------------|----------------|--------------------|---|-------------|
| | | V_{RRM} (V) | $I_{F(AV)}$ (A) | V_F max. (V) | t_{rr} max. (ns) | | |
| Single type | MA2DF22 | 200 | 5 | 1.0 | 30 |  | TO-220D-B1* |
| | MA2DF31 | 300 | | 1.3 | | | |
| | MA2DF60 | 600 | | 1.7 | 25 | | |
| | MA2DF62 | | 10 | 2.5 | | | |
| | MA3DF30 | 300 | 20 | 1.4 | 25 |  | TO-220D-A1 |
| | MA3DF40 | 370 | | 1.65 | 35 | | |
| | MA3DF46 | | | 1.85 | 23 | | |
| | MA3DF47 | | | 20 | 20 | | |
| Cathode-common type | MA3U649 | 200 | 5 | 0.98 | 30 |  | U-G2 |
| | MA3D649 | | | | | | |
| | MA3D650 | | 10 | | 50 | | TO-220D-A1 |
| | MA3D652 | | 20 | | | | |

*: 2-pin Type

K

Zener Diodes

Zener Diodes Series

| | General-Purpose | Low Noise | | | Surge Absorption | | |
|-------------------------------|---|---|---|---|--|---|---|
| Zener Voltage V_Z (V) | MAZ3000* | MAZ8000G* | MAZS000G* | MALH000YG | MAZD000G | MAZQ000 | MAZA000 |
| | Mini3-G1 | SMini2-F3 | SSMini2-F4 | SMini4-F2 | SSSMini2-F3 | USSMini2-F1 | ML2-N1 |
| | $P_T = 200$ mW | $P_T = 150$ mW | $P_T = 150$ mW | $P_T = 150$ mW | $P_T = 120$ mW | $P_T = 120$ mW | $P_T = 100$ mW |
| |  |  |  |  |  |  |  |
| 2.28 to 2.60 | MAZ3024 | MAZ8024G | MAZS024G | MALH024YG | | | |
| 2.50 to 2.90 | MAZ3027 | MAZ8027G | MAZS027G | MALH027YG | | | |
| 2.80 to 3.20 | MAZ3030 | MAZ8030G | MAZS030G | MALH030YG | | | |
| 3.10 to 3.50 | MAZ3033 | MAZ8033G | MAZS033G | MALH033YG | | | |
| 3.40 to 3.80 | MAZ3036 | MAZ8036G | MAZS036G | MALH036YG | | | |
| 3.70 to 4.10 | MAZ3039 | MAZ8039G | MAZS039G | MALH039YG | | | |
| 4.00 to 4.60 | MAZ3043 | MAZ8043G | MAZS043G | MALH043YG | | | |
| 4.40 to 5.00 | MAZ3047 | MAZ8047G | MAZS047G | MALH047YG | | | |
| 4.80 to 5.40 | MAZ3051 | MAZ8051G | MAZS051G | MALH051YG | MAZD051G | | MAZA051 |
| 5.30 to 6.00 | MAZ3056 | MAZ8056G | MAZS056G | MALH056YG | MAZD056G | | MAZA056 |
| 5.80 to 6.60 | MAZ3062 | MAZ8062G | MAZS062G | MALH062YG | MAZD062G | MAZQ062 | |
| 6.40 to 7.20 | MAZ3068 | MAZ8068G | MAZS068G | MALH068YG | MAZD068G | MAZQ068 | MAZA068 |
| 7.00 to 7.90 | MAZ3075 | MAZ8075G | MAZS075G | MALH075YG | MAZD075G | | |
| 7.70 to 8.70 | MAZ3082 | MAZ8082G | MAZS082G | MALH082YG | MAZD082G | | MAZA082 |
| 8.50 to 9.60 | MAZ3091 | MAZ8091G | MAZS091G | MALH091YG | MAZD091G | | |
| 9.40 to 10.60 | MAZ3100 | MAZ8100G | MAZS100G | MALH100YG | MAZD100G | MAZQ100 | |
| 10.40 to 11.60 | MAZ3110 | MAZ8110G | MAZS110G | MALH110YG | MAZD110G | | |
| 11.40 to 12.70 | MAZ3120 | MAZ8120G | MAZS120G | MALH120YG | MAZD120G | | |
| 12.40 to 14.10 | MAZ3130 | MAZ8130G | MAZS130G | MALH130YG | | | |
| 13.65 to 14.35 | MAZ3140 | MAZ8140G | | | | | |
| 13.90 to 15.60 | MAZ3150 | MAZ8150G | MAZS150G | MALH150YG | | | |
| 15.30 to 17.10 | MAZ3160 | MAZ8160G | MAZS160G | MALH160YG | MAZD160G | | |
| 16.90 to 19.10 | MAZ3180 | MAZ8180G | MAZS180G | MALH180YG | MAZD180G | | |
| 18.80 to 21.20 | MAZ3200 | MAZ8200G | MAZS200G | MALH200YG | MAZD200G | MAZQ200 | |
| 20.80 to 23.30 | MAZ3220 | MAZ8220G | MAZS220G | MALH220YG | MAZD220G | | |
| 22.80 to 25.60 | MAZ3240 | MAZ8240G | MAZS240G | MALH240YG | MAZD240G | | |
| 25.10 to 28.90 | MAZ3270 | MAZ8270G | MAZS270G | MALH270YG | MAZD270G | | |
| 28.00 to 32.00 | MAZ3300 | MAZ8300G | MAZS300G | MALH300YG | MAZD300G | MAZQ300 | |
| 31.00 to 35.00 | MAZ3330 | MAZ8330G | MAZS330G | MALH330YG | | | |
| 34.00 to 38.00 | MAZ3360 | MAZ8360G | MAZS360G | MALH360YG | MAZD360G | | |
| 37.00 to 41.00 | | MAZ8390G | MAZS390G | MALH390YG | MAZD390G | | |

*: Rank compatible




Zener Diodes

Zener Diodes Series (continued)


| Zener Voltage V_Z (V) | Surge Absorption | | | | | | |
|-------------------------------|------------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | MAZ9000H | MAZL000HG | MAZZ000H | MAZT000HG | MAZM000HG | MAZW000HG | MAZP000H |
| | Mini3-G1 | Mini5-G2 | SMini5-F1 | SSMini3-F3 | SSMini5-F3 | SSSMini3-F2 | ML3-N2 |
| | $P_T = 200$ mW | $P_T = 200$ mW | $P_T = 200$ mW | $P_T = 150$ mW | $P_T = 150$ mW | $P_T = 150$ mW | $P_T = 200$ mW |
| | | | | | | | |
| 5.80 to 6.60 | MAZ9062H | | MAZZ062H | MAZT062HG | MAZM062HG | MAZW062HG | |
| 6.40 to 7.20 | MAZ9068H | MAZL068HG | MAZZ068H | MAZT068HG | MAZM068HG | MAZW068HG | MAZP068H |
| 7.00 to 7.90 | | | | | | | |
| 7.70 to 8.70 | | MAZL082HG | MAZZ082H | MAZT082HG | MAZM082HG | MAZW082HG | MAZP082H |
| 8.50 to 9.60 | | | | | | | |
| 9.40 to 10.60 | | | MAZZ100H | MAZT100HG | MAZM100HG | MAZW100HG | |
| 10.40 to 11.60 | | | | | | | |
| 11.40 to 12.70 | MAZ9120H | MAZL120HG | MAZZ120H | MAZT120HG | MAZM120HG | MAZW120HG | |

Zener Diodes


Low C_t Series

| Zener Voltage V_Z (V) | Part No. | C_t (pF) | Equivalent Circuit | Package |
|-------------------------------|-----------|---------------|---|-----------|
| 5.9 to 6.5 | MAZC062D | 8 |  | Mini3-G1 |
| | MAZE062DG | |  | SMini3-F2 |
| | MAYK062DG | |  | Mini5-G2 |



Surge Protective Diode

| Breakdown Voltage V_{BR} (V) | Part No. | C_t (pF) | ESD (kV) | Equivalent Circuit | Package |
|--------------------------------------|-----------|---------------|-------------|---|------------|
| 7.5 | MAYS075GZ | 1.5 | ± 12 |  | SSMini2-F4 |
| | MAYS075GY | 0.8 | ± 8 | | |


Bidirectional Zener Diode

| Zener Voltage V_Z (V) | Part No. | C_t (pF) | ESD (kV) | Equivalent Circuit | Package |
|-------------------------------|-----------|---------------|-------------|---|-------------|
| 6.5 to 7.5 | MALS068XG | 15 | ± 15 |  | SSMini2-F4 |
| | MALD068XG | 25 | | | SSSMini2-F3 |
| 14.5 to 17.5 | MALS160XG | 3.0 | | | SSMini2-F4 |
| 17.5 to 20.0 | MALS180XG | 4 | | | SSMini2-F4 |

High ESD (30 kV) Protection Device

| Breakdown Voltage V_{BR} (V) | Part No. | ESD (kV) | Equivalent Circuit | Package |
|--------------------------------------|-----------|-------------|---|------------|
| 5.8 to 6.6 | MALS062G | ± 30 |  | SSMini2-F4 |
| 6.4 to 7.2 | MALS068G | | | |
| 5.8 to 6.6 | MALT062HG | |  | SSMini3-F3 |
| | MALM062HG | | | |

High Surge Absorption Diode

| Breakdown Voltage V_{BR} (V) | Part No. | I_{PP} | ESD (KV) | Equivalent Circuit | Package |
|--------------------------------------|-----------|----------|----------|---|-----------|
| 20 to 30 | MANV250GE | 9 | 30 |  | SMini2-F3 |

Fuses (Circuit Protector Elements)

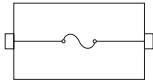
* Electrical fuses, etc. specified by laws are not applicable.

IC LinksL2
Circuit Protector Elements.....L2



IC Links

Circuit Protector Elements

| Part No. | Rated Current (A) | Shut-off Current (typ.) (A) ± 20% | Internal Resistance (typ.) (mΩ) | Rated Voltage (V) | Operating Ambient Temperature (°C) | Storage Temperature (°C) | Package | Equivalent Circuit |
|----------|----------------------|---|------------------------------------|----------------------|---------------------------------------|-----------------------------|-----------|---|
| UNHZ201 | 0.7 | 1.4 | 93 | 50 | -55 to +125 | -55 to +125 | SMini2-F1 |  |
| UNHZ202 | 1.0 | 2.0 | 59 | | | | | |
| UNHZ203 | 1.2 | 2.4 | 46 | | | | | |
| UNHZ204 | 1.5 | 3.0 | 35 | | | | | |

(Cautions)

- Applying continuously a current exceeding the rated current causes heating of the package and can be dangerous.
- Please use these elements to circuits in the secondary side only.
- Since these elements do not correspond to current fuses, etc., according to legal regulations, avoid using symbols for these elements in circuit diagrams, that may cause confusion with tubular fuses, etc.

Package Information

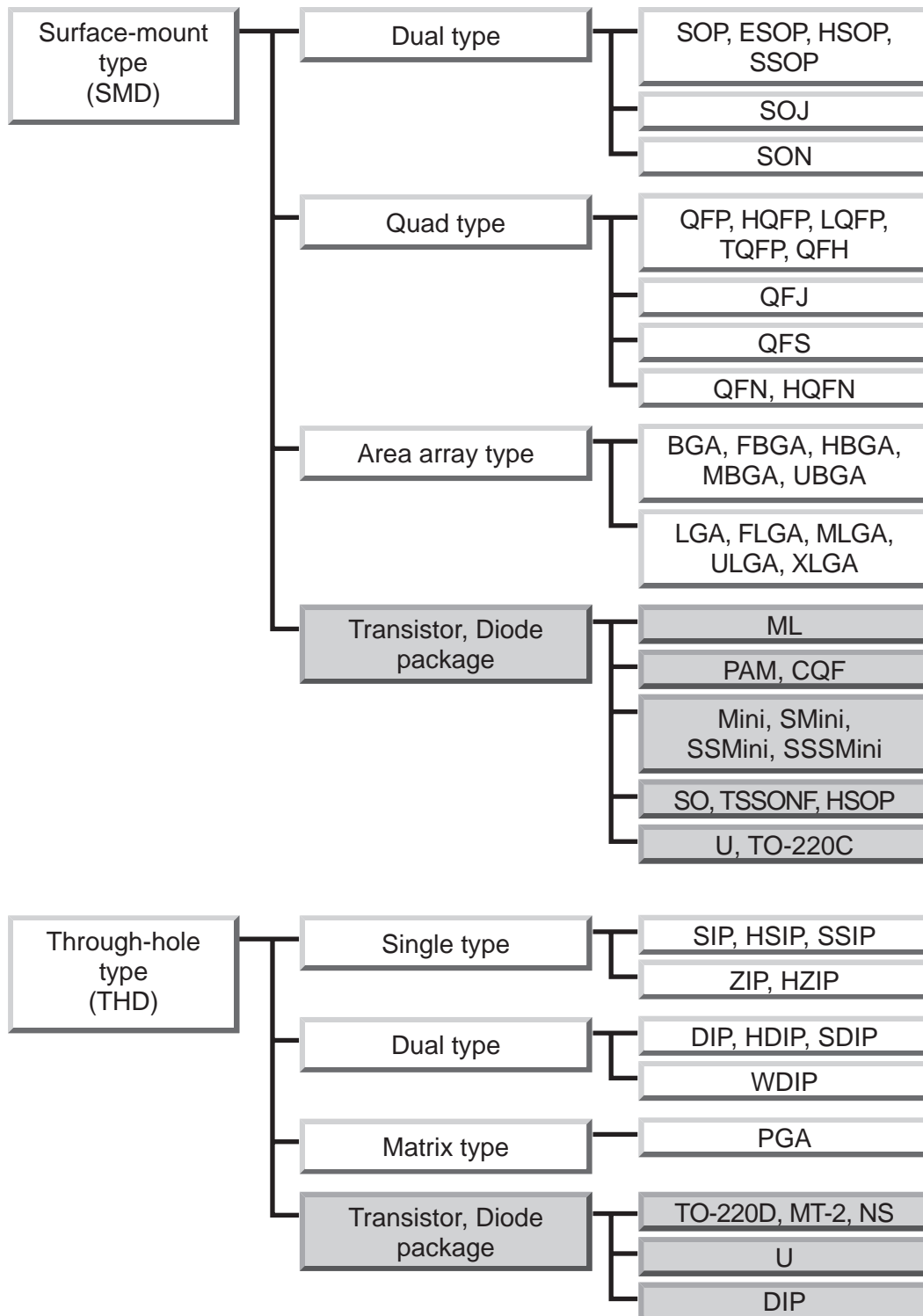
| | |
|--|----|
| Package Explanation..... | M2 |
| Package classification | M2 |
| Part Number Structure / Shipment and Packaging | M4 |
| Part Number Structure..... | M4 |
| Packaging forms | M5 |
| Discrete Devices..... | M6 |
| Embossed taping | M6 |
| Precautions when Using Semiconductor Products | M8 |



Package Explanation

Package classification

Packages are classified as shown below according to the package shape and the method for mounting the package on the printed-circuit board.



Part Number Structure / Shipment and Packaging



Part Number Structure / Shipment and Packaging

Part Number Structure

[Transistors]

Ex.) 2 S **B** **1** **2** **1** **8** **G** **R** **L**
 (1) (2) (3) (4) (5)

- (1) Type
- (2) JEITA registration number
- (3) Withstand voltage/Specification
- (4) Rank
- (5) Packaging style

Packaging style

[Stand-alone product]

A: Radial tape

[SO8 type product]

B: Embossed tape (Upper left of pin 1)

F: Embossed tape (Lower right of pin 1)

[Surface mounting product]

B: Embossed tape (Thermocompression product)*1

P: Embossed tape (Reset IC)

L: Embossed tape*2

*1: Only package partially

*2: Global package products undergo thermocompression.

[Diodes]

Ex.) M A **2** **J** **1** **1** **1** **0** **G** **L**
 (1) (2) (3) (4) (5) (6) (7)

- (1) Terminal count (when character is a number)
- (2) Package type
- (3) Type
 - X: Mini Type
 - F/2: Flat Mini Type
 - J/Z/1: S Mini Type
 - S: SS Mini Type
 - Q: NMP Type
- (4) Number
- (5) Specification
- (6) Rank/Specification
- (7) Packaging style
 - 4: TMP Type
 - 6: 1006 Type
 - 7: SSS Mini Type
 - D/E/F: TO-220

Specification

[Global package specification]

G indication on the 8th digit from the left
 However, switching diodes, schottky barrier diodes is indicated on the 9th digit. Existing package except for G.

[Composite Transistors(XN, XP, UP, NP)]

Ex.) U P **0** **4** **6** **0** **1** **G** **0** **L**
 (1) (2) (3) (4) (5)

- (1) Package type
 - (2) Type
 - (3) Polarity
 - (4) Specification
 - (5) Packaging style
- XN: Mini Type
 - XP: S Mini Type
 - UP: SS Mini Type
 - NP: SSS Mini Type

[Transistor with built-in resistors]

Ex.) U N **R** **5** **1** **1** **1** **G** **0** **L**
 (1) (2) (3) (4) (5) (6)

- (1) Package type
 - (2) Polarity
 - (3) Number
 - (4) Specification
 - (5) Rank
 - (6) Packaging style
- 2: Mini Type
 - 5: S Mini Type
 - 9: SS Mini Type
 - 3: SSS Mini Type

[MOS-FET]

Ex.) 2 S **K** **1** **3** **7** **4** **G** **0** **L**
 (1) (2) (3) (4) (5)

- (1) Polarity
- (2) JEITA registration number
- (3) Withstand voltage/Specification
- (4) Rank
- (5) Packaging style

Ex.) M T M **6** **8** **4** **1** **1** **0** **L**
 (1) (2) (3) (4) (5)

- (1) Package type
 - (2) Terminal count
 - (3) Number
 - (4) Rank
 - (5) Packaging style
- 0: Mini Power Type
 - 1: Mini Type
 - 2: S Mini Type
 - 4: SSS Mini Type
 - 6/C: W Mini Type
 - 7/D: WS Mini Type
 - 8/E: WSS Mini Type
 - 9/F: SO Type

[SiGe HBT]

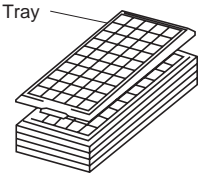
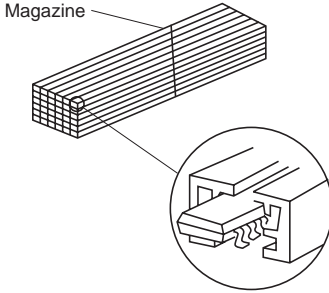
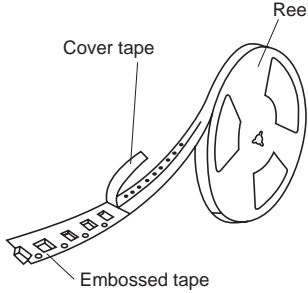
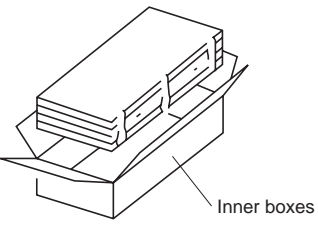
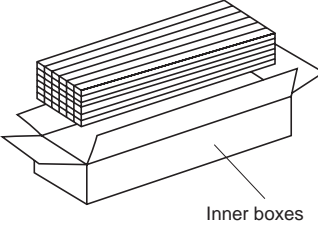
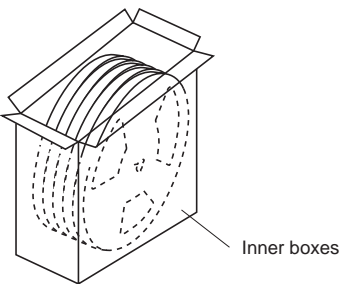
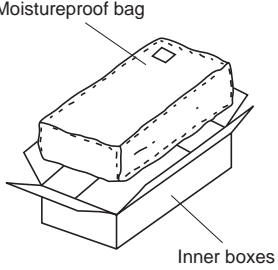
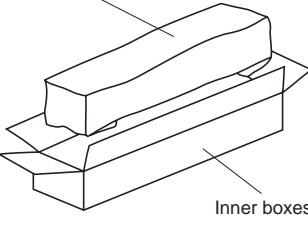
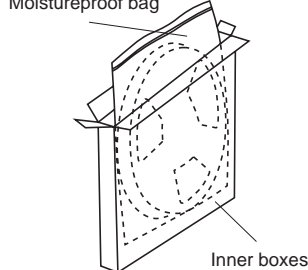
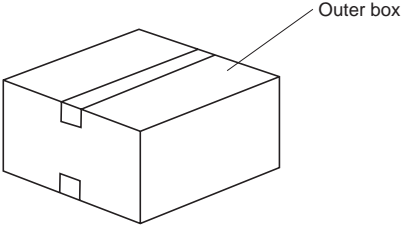
Ex.) M S G **3** **6** **C** **4** **2** **0** **L**
 (1) (2) (3) (4) (5)

- (1) Package type
 - (2) Terminal count
 - (3) Number
 - (4) Rank
 - (5) Packaging style
- 0: Mini Type
 - 1: S Mini Type
 - 2: SS Mini Type
 - 3: SSS Mini Type
 - 4: 1006 Type
 - 5: 1009 Type

Part Number Structure / Shipment and Packaging

Packaging forms

The storage cases and packaging used for our company's semiconductor devices use materials and structures which are able to withstand the worst environmental stress during storage and shipment to maintain the initial product quality and reliability. Because of this, sufficient consideration should be given when products are taken out of our company's specified packaging and transferred to other packaging for storage or shipment.

| | | Tray appearance | Magazine appearance | Embossed tape appearance |
|---------------|-------------------------|--|--|---|
| Storage cases | |  |  |  |
| Inner boxes | Normal packaging |  |  |  |
| | Moistureproof packaging |  |  |  |
| Outer box | |  | | |

As part of our company's efforts toward reducing waste, we are working on cartonless (no inner boxes) packaging.



Part Number Structure / Shipment and Packaging

Discrete Devices

Embossed taping

| Package code | Terminal count | Tape pitch (mm) | Tape width (mm) | Maximum quantity of storage/tray | | | | |
|--------------|----------------|-----------------|-----------------|----------------------------------|------|--------------|-------|-------|
| TO-220C-G1 | 3 | 12 | 24 | 1 000 | | | | |
| TMiniP2-F1 | 2 | 4 | 12 | 3 000 | | | | |
| Mini2-F2 | | | | | | | | |
| SMini2-F1 | | | | | | | | |
| SMini2-F2 | | | | | | | | |
| SMini2-F3 | | | | | | | | |
| SMini2-F4 | | | 2, 4 | | 8 | 8 000, 3 000 | | |
| SSSMini2-F3 | | | | | | | | |
| USSMini2-F1 | | | 2 | | | 10 000 | | |
| ML2-N1 | | | | | | | | |
| MiniP3-F2 | | | 3 | | 8 | 12 | 1 000 | |
| Mini3-G1 | 4 | 4 | | 3 000 | | | | |
| SMini3-F2 | | | | | | | | |
| SMini3-F3 | | | | | | | | |
| SSSMini3-F2 | | | | | 2 | 10 000 | | |
| TSSMini3-F2 | | | | | | | | |
| ML3-N2 | | | | | | | | |
| Mini4-G3 | | | 4 | | 4 | 8 | 3 000 | |
| SMini4-F2 | | | | | | | | |
| SMini4-F1 | | | | | | | | |
| Mini5-G2 | 5 | 4 | 8 | 8 000, 3 000 | | | | |
| SMini5-F1 | | | | | | | | |
| SMini5-G1 | | | | | | | | |
| SMini5-F3 | | | | | 2, 4 | | | |
| Mini6-G3 | | | | | 6 | 4 | 8 | 3 000 |
| WSMini6-F1 | | | | | | | | |
| SMini6-F1 | | | | | | | | |
| SMini6-G1 | | | | | | | | |
| WSMini6-F1 | 2 | 10 000 | | | | | | |
| SMini6-F2 | | 8 000 | | | | | | |
| SSSMini6-F1 | | 10 000 | | | | | | |
| ML6-N6 | | | | | | | | |
| SO8-F1 | 8 | 8 | 12 | 3 000 | | | | |
| WMini8-F1 | | 4 | 8 | | | | | |

Precautions when Using Semiconductor Products

Precautions when Using Semiconductor Products

Please avoid impacts such as drops to the floor when the product is handled

The radical material might crack and be lacked.

Further, be careful that strong mechanical stress is not applied to the package. For thin packages, since the mold is thin, if strong stress is applied the package or elements may be damaged.

In addition, since electrostatic discharge damage, deterioration of solderability, corrosion between electrode wiring, etc. may occur if products are touched with bare hands, be sure to be sufficiently careful when handling products.

Read the following items and handle the products with caution.

Static electricity may cause incidence of break down, dysfunction, or malfunction to the product.

Rough handling such as scratching, cracking, or breaking the product may lead to dysfunction and malfunction.

Handling the product with your bare hands or saliva or perspiration from human body may result malfunction of the outer electrodes and wires.

Environments containing high humidity, dust, or harmful gases (hydrogen chloride, sulfurous acid gas, or hydrogen sulfide) may cause deterioration of the soldering characteristics of the external electrodes.

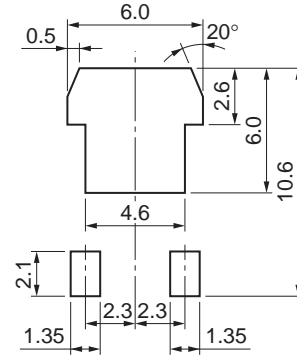
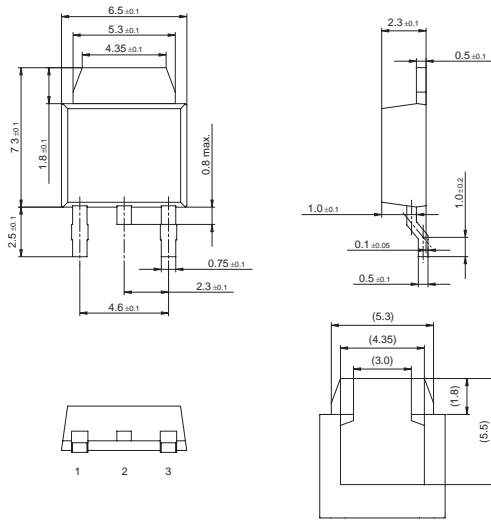
Package Outlines/Reference Dimension of Soldering pad

| <Package | Page> | <Package | Page> |
|---|-------|---------------------------------|-------|
| Surface mounting type (Power) | | Stand-alone type | |
| U-G2 (JEITA: SC-63, JEDEC: TO-252)..... | N3 | NS-A1 (JEITA: SC-72) | N15 |
| TO-220C-G1 (JEITA: SC-83) | N3 | NS-B1 | N15 |
| Surface mounting type (Small signal) | | MT-2-A1 | N15 |
| TMiniP2-F1 | N4 | TO-220D-A1 (JEITA: SC-91) | N15 |
| Mini2-F2..... | N4 | TO-220D-B1 | N15 |
| SMini2-F1 | N4 | | |
| SMini2-F2 | N5 | | |
| SMini2-F3 (JEITA: SC-90)..... | N5 | | |
| SSMini2-F4 (JEITA: SC-80) | N5 | | |
| SSSMini2-F3 (JEITA: SC-104A)..... | N6 | | |
| USSMini2-F1 | N6 | | |
| ML2-N1 | N6 | | |
| MiniP3-F2 (JEITA: SC-62, JEDEC: TO-243)..... | N7 | | |
| Mini3-G1 (JEITA: SC-59A, JEDEC: TO-236AA) | N7 | | |
| SMini3-F2 (JEITA: SC-85)..... | N7 | | |
| SSMini3-F3 (JEITA: SC-89) | N8 | | |
| SSSMini3-F2 (JEITA: SC-150AA) | N8 | | |
| TSSSMini3-F2 | N8 | | |
| ML3-N2..... | N9 | | |
| Mini4-G3 | N9 | | |
| SMini4-F2 | N9 | | |
| SSMini4-F1 (JEITA: SC-107A) | N10 | | |
| Mini5-G2 | N10 | | |
| SMini5-F1 | N10 | | |
| SMini5-G1 (JEITA: SC-88A)..... | N11 | | |
| SSMini5-F3 (JEITA: SC-107BB)..... | N11 | | |
| Mini6-G3 | N11 | | |
| WSMini6-F1 | N12 | | |
| SMini6-F1 | N12 | | |
| SMini6-G1 (JEITA: SC-88) | N12 | | |
| WSSMini6-F1 | N13 | | |
| SSMini6-F2 (JEITA: SC-107C)..... | N13 | | |
| SSSMini6-F1 | N13 | | |
| ML6-N6..... | N14 | | |
| SO8-F1 | N14 | | |
| WMini8-F1 | N14 | | |

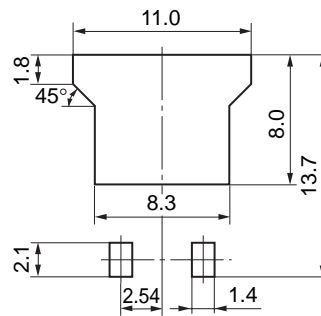
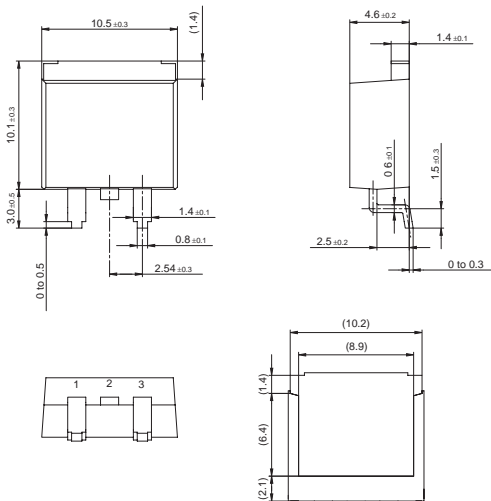
Surface mounting type (Power) Package Outlines/Reference Dimension of Soldering pad

() : Reference Value Unit: mm

U-G2 (JEITA: SC-63, JEDEC: TO-252)



TO-220C-G1 (JEITA: SC-83)



Surface mounting type (Small signal) Package Outlines/Reference Dimension of Soldering pad

() : Reference Value Unit: mm

| | |
|--------------------------|--|
| <p>TMiniP2-F1</p> | |
| <p>Mini2-F2</p> | |
| <p>SMini2-F1</p> | |

Surface mounting type (Small signal) Package Outlines/Reference Dimension of Soldering pad

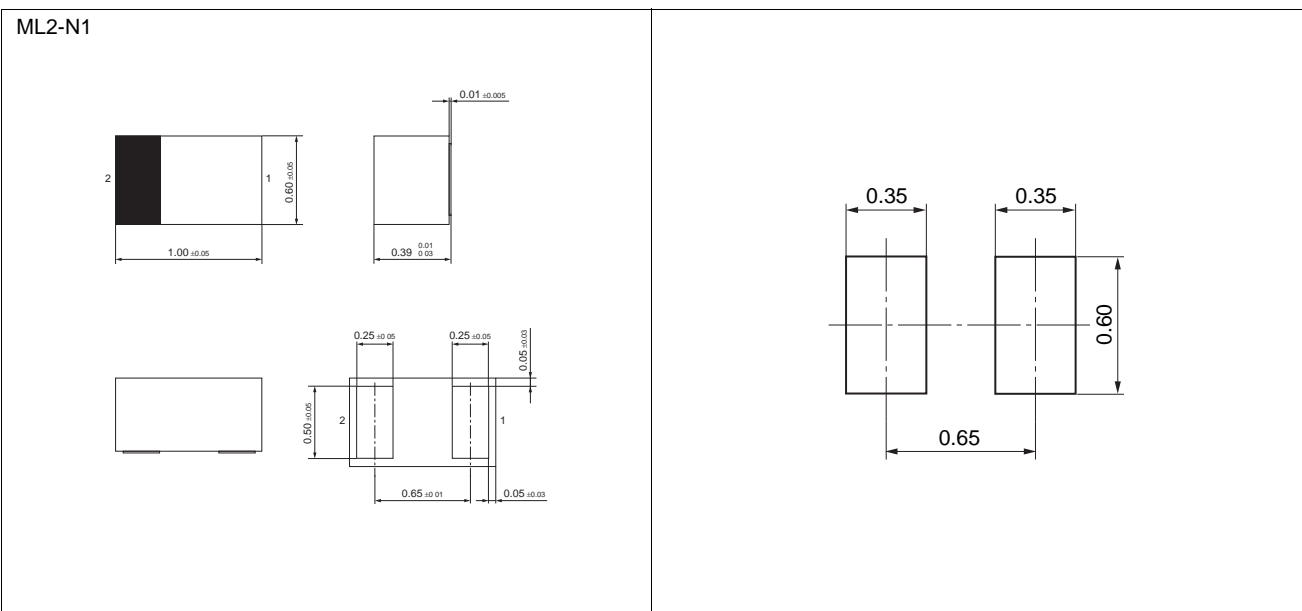
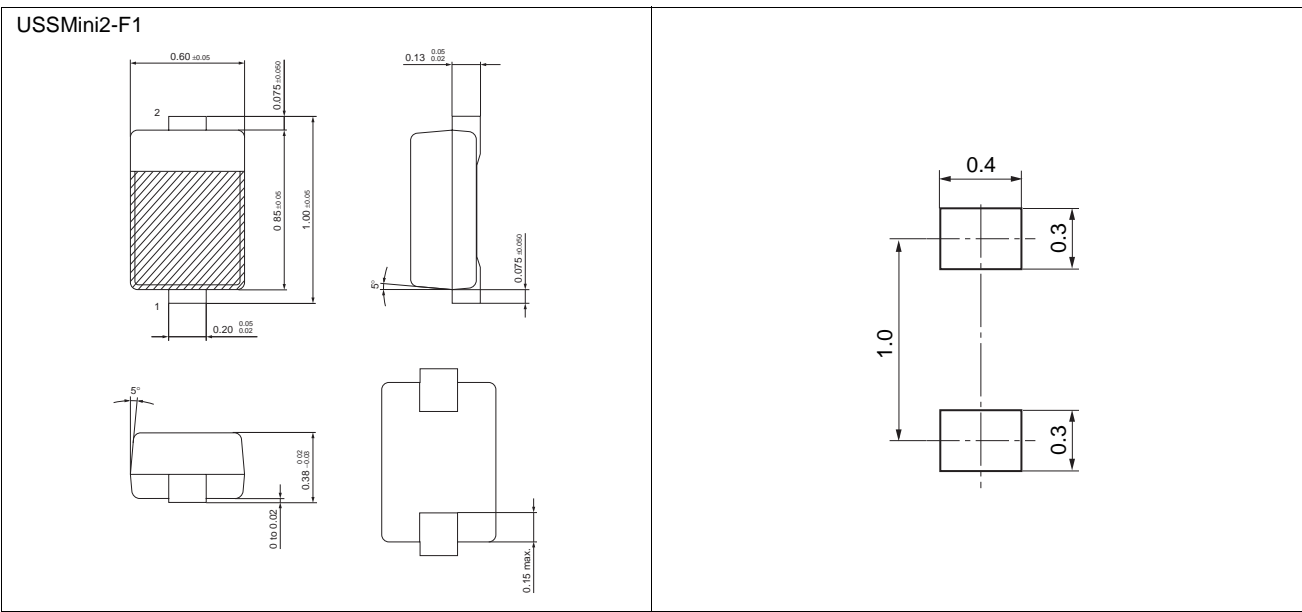
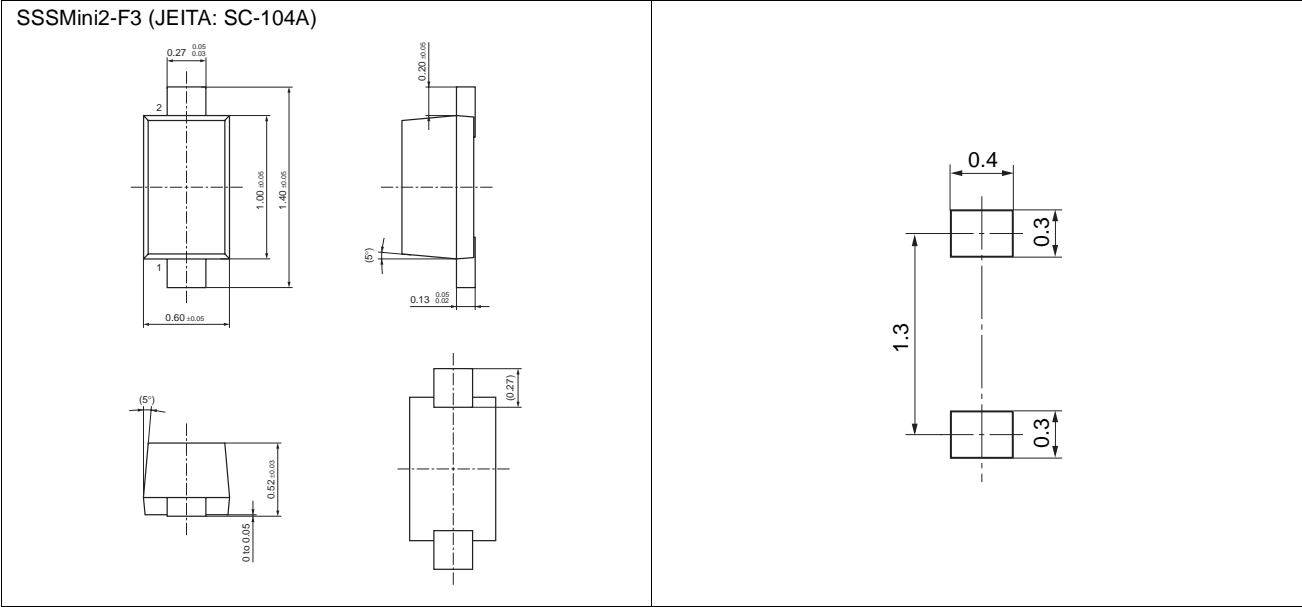
() : Reference Value Unit: mm

| | |
|---|--|
| <p>SMini2-F2</p> | |
| <p>SMini2-F3 (JEITA: SC-90)</p> | |
| <p>SSMini2-F4 (JEITA: SC-80)</p> | |



Surface mounting type (Small signal) Package Outlines/Reference Dimension of Soldering pad

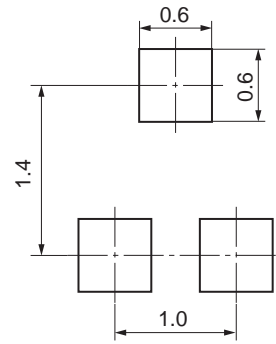
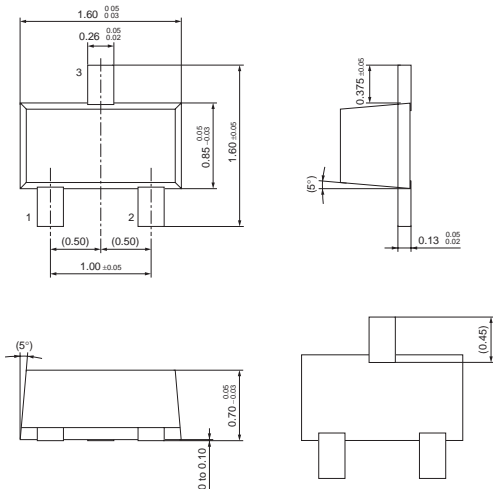
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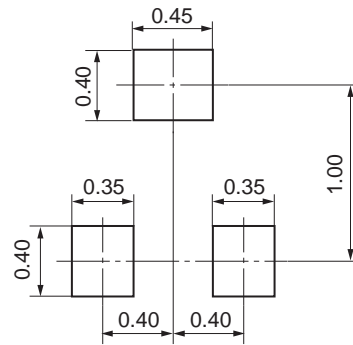
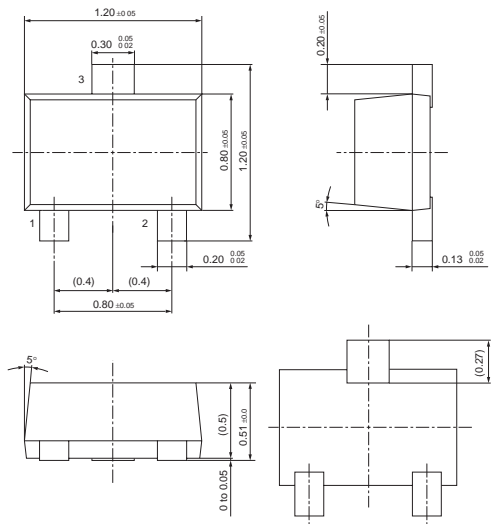
Surface mounting type (Small signal) Package Outlines/Reference Dimension of Soldering pad

() : Reference Value Unit: mm

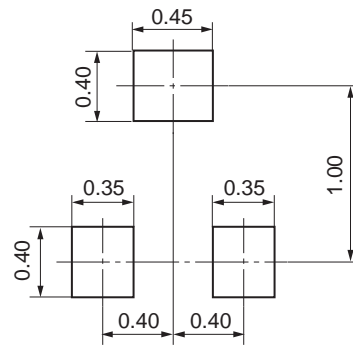
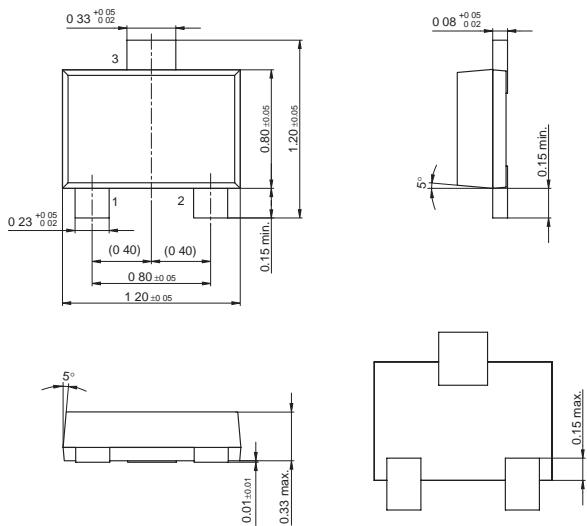
SSMini3-F3 (JEITA: SC-89)



SSSMini3-F2 (JEITA: SC-150AA)

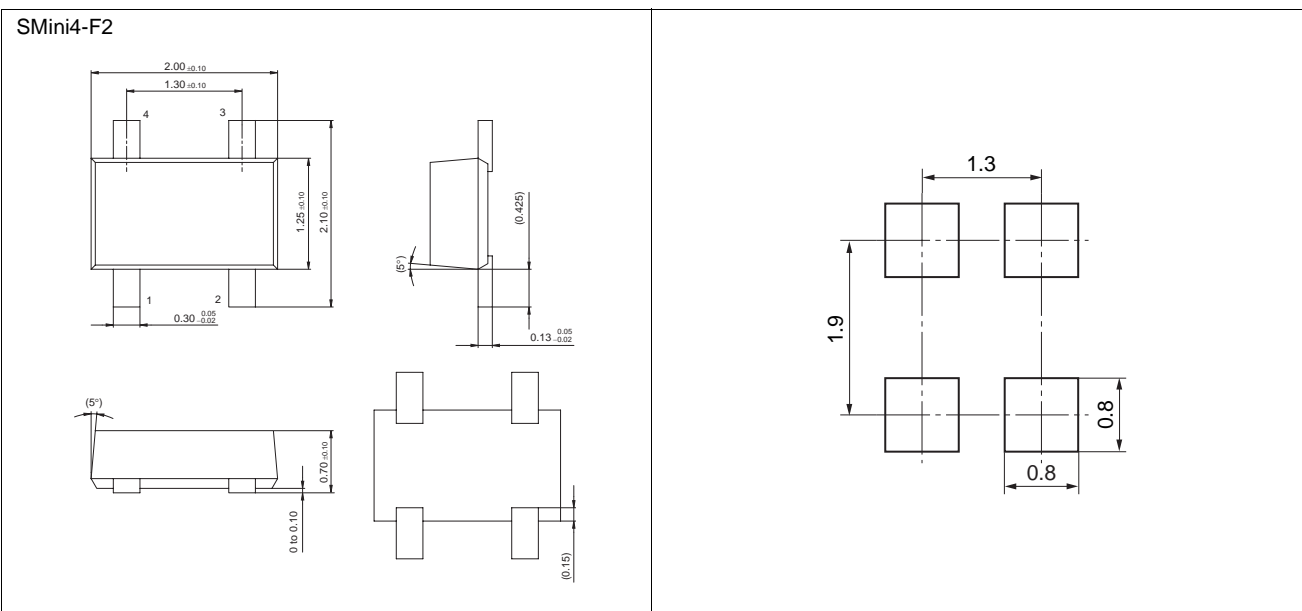
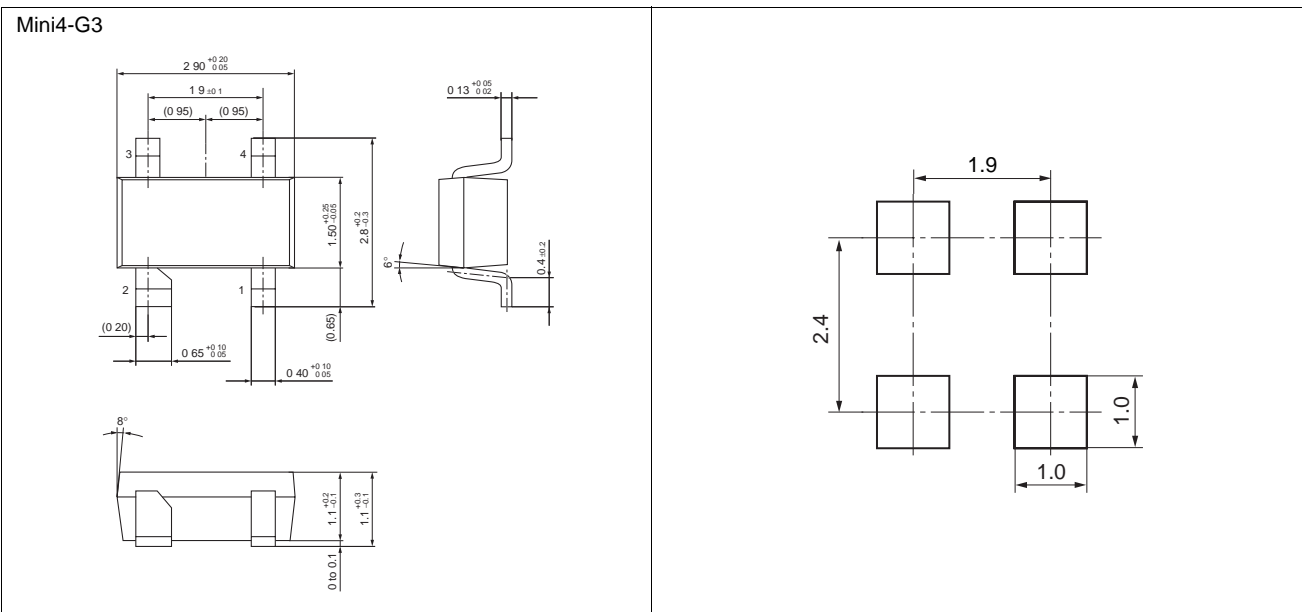
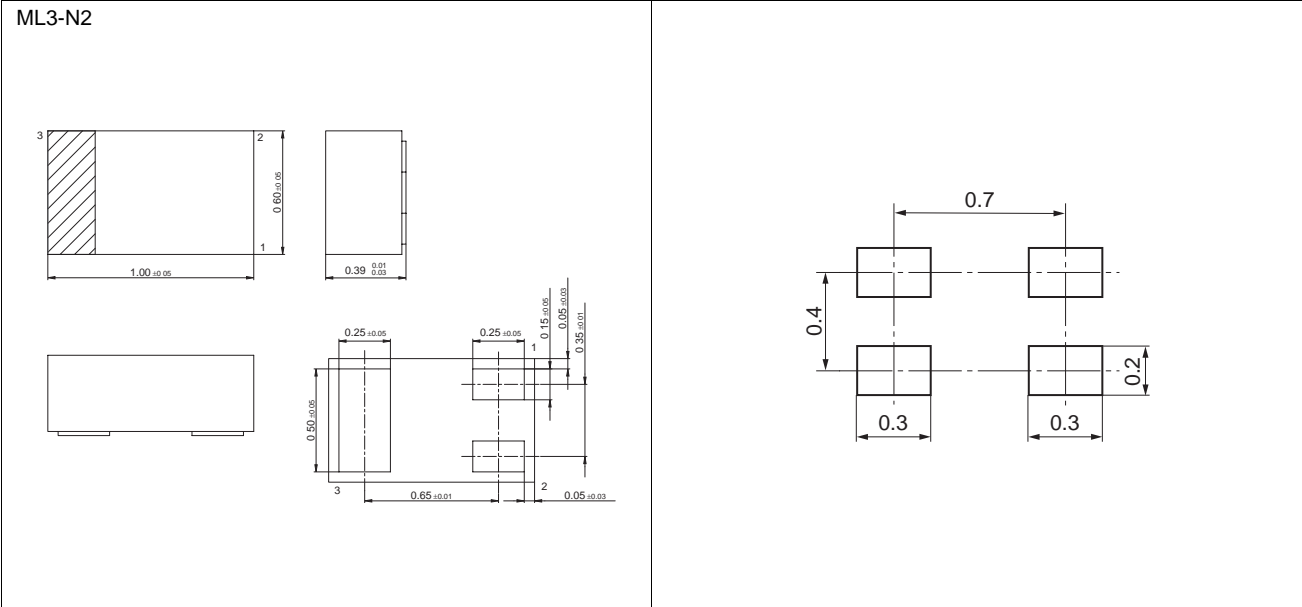


TSSSMini3-F2



Surface mounting type (Small signal) Package Outlines/Reference Dimension of Soldering pad

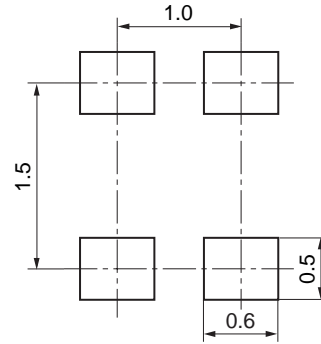
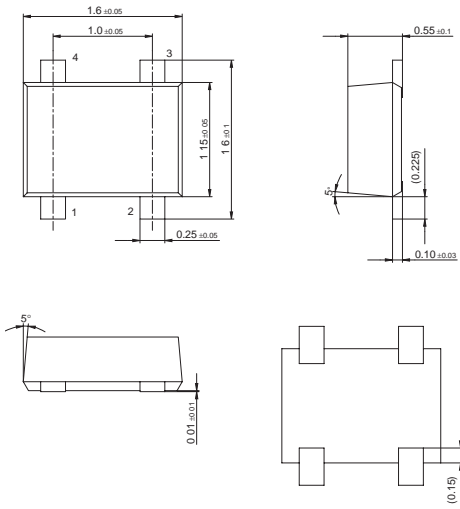
() : Reference Value Unit: mm



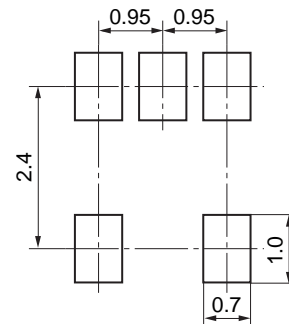
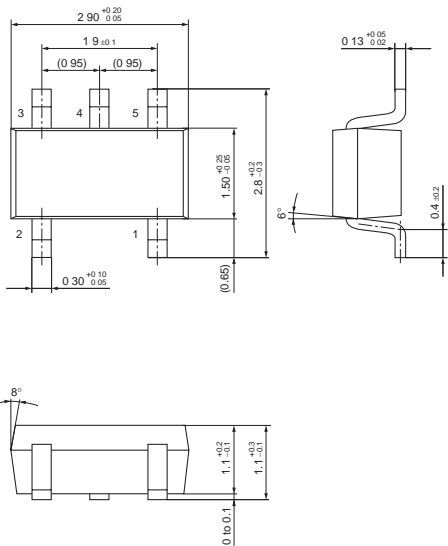
Surface mounting type (Small signal) Package Outlines/Reference Dimension of Soldering pad

() : Reference Value Unit: mm

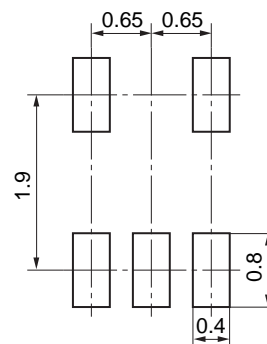
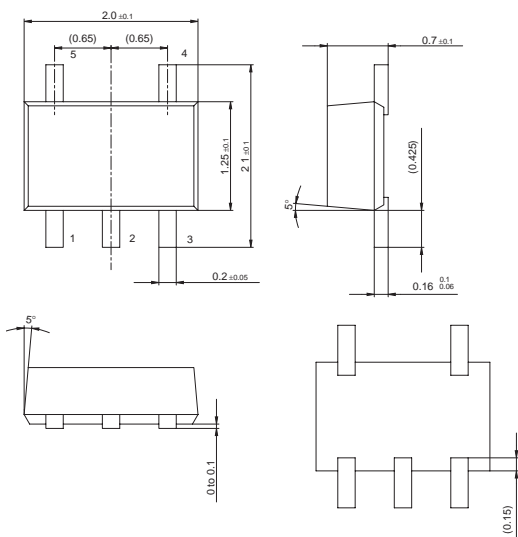
SSMini4-F1 (JEITA: SC-107A)



Mini5-G2

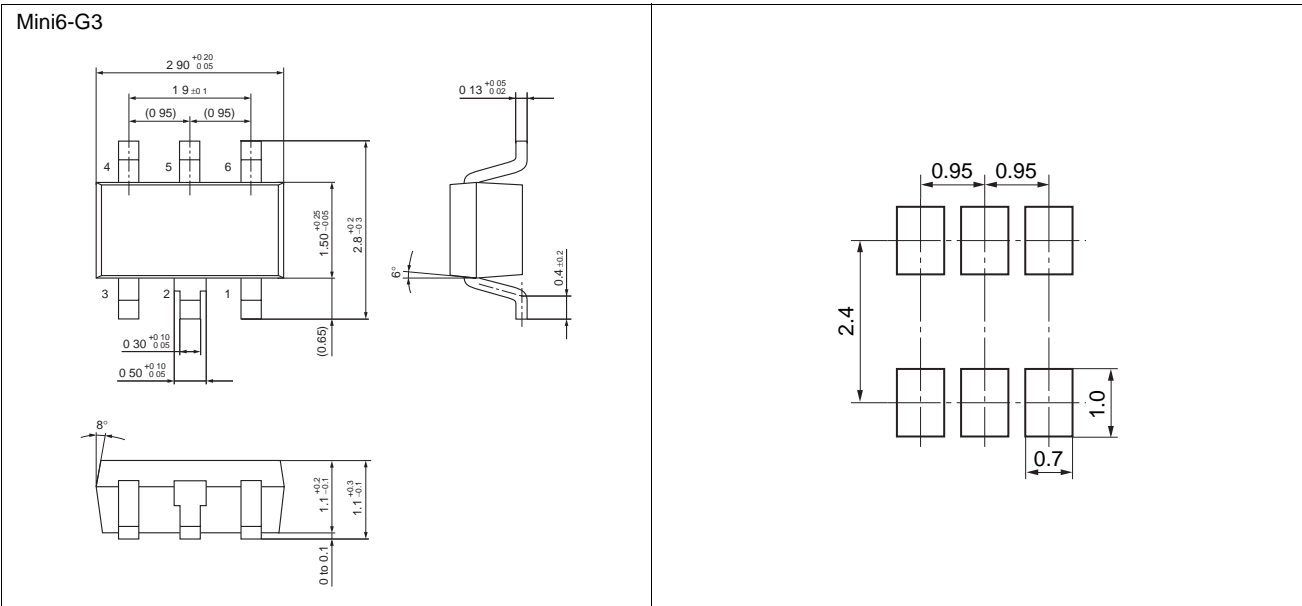
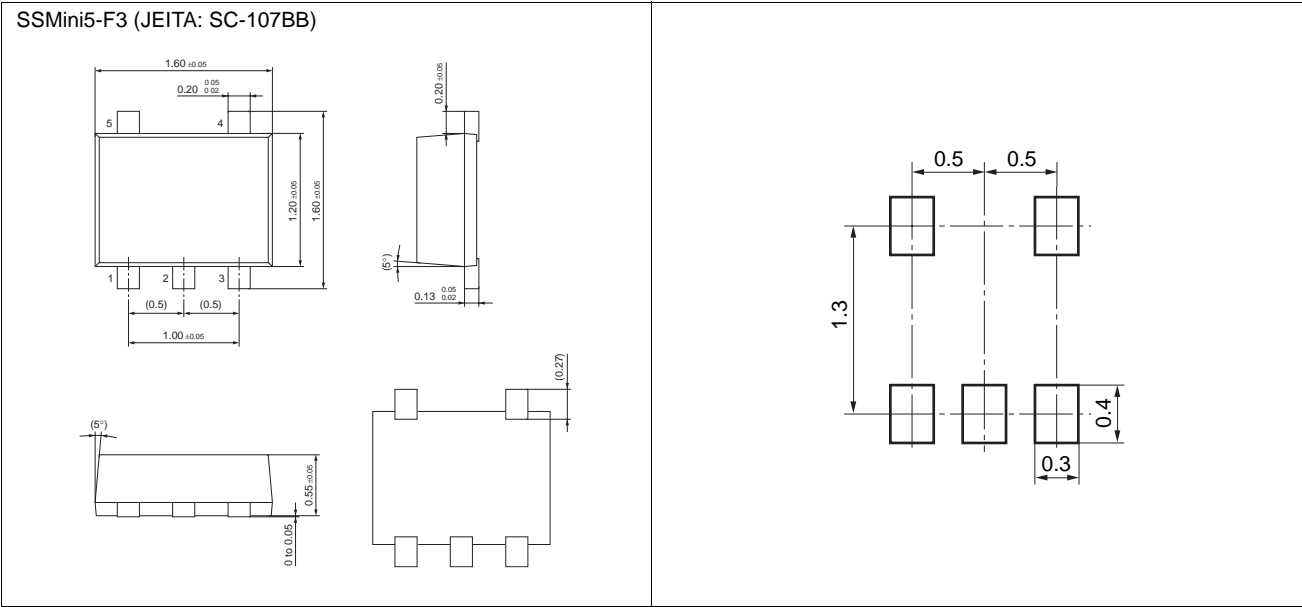
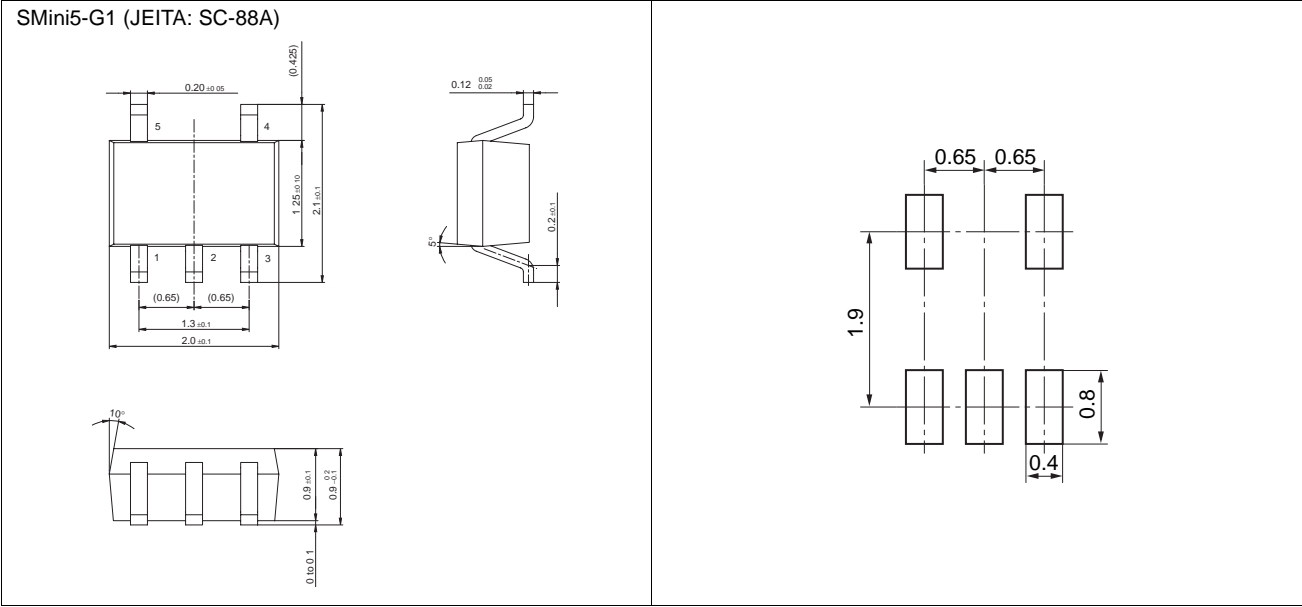


SMini5-F1



Surface mounting type (Small signal) Package Outlines/Reference Dimension of Soldering pad

() : Reference Value Unit: mm



Surface mounting type (Small signal) Package Outlines/Reference Dimension of Soldering pad

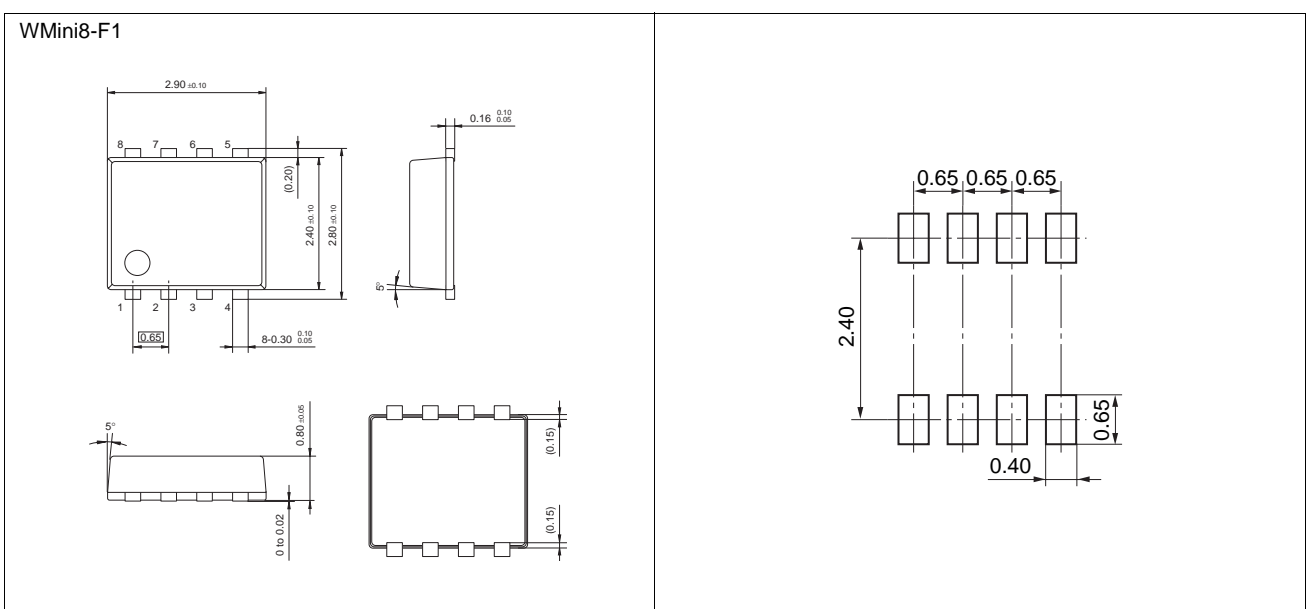
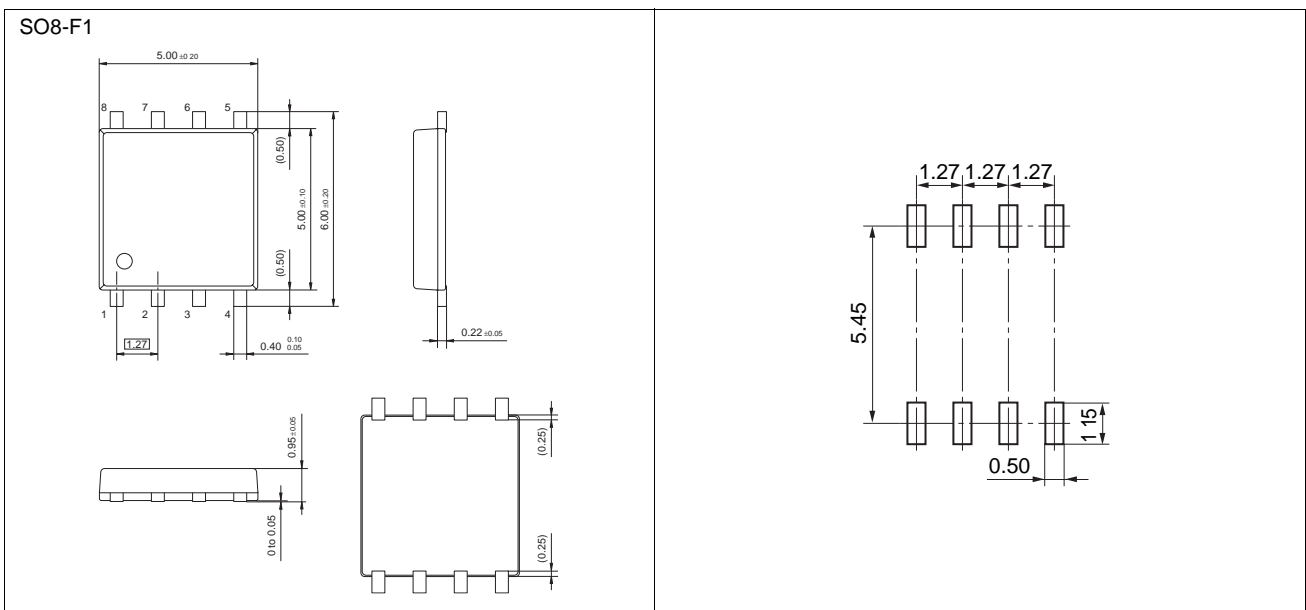
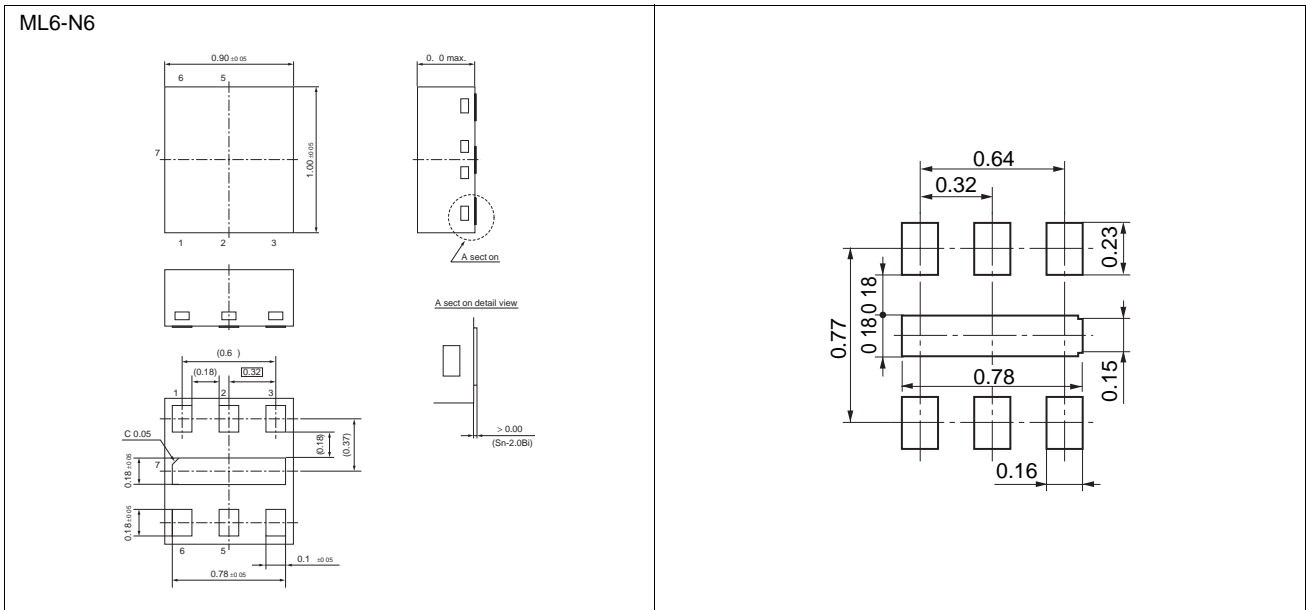
() : Reference Value Unit: mm

| | |
|---|---|
| <p>WSSMini6-F1</p> <p>Top view dimensions: 1.60 ±0.05 (total width), 0.20 ±0.05 / ±0.02 (lead width), 1.40 ±0.05 (body width), 1.60 ±0.05 (total height), 1.00 ±0.05 (lead pitch), 0.50 (lead width), 0.10 (lead thickness), 0.13 ±0.05 (lead height), 5° (lead angle).</p> <p>Side view dimensions: 0.50 ±0.05 (body height), 0 to 0.02 (lead thickness).</p> <p>Bottom view dimensions: 0.15 (lead thickness).</p> | <p>Reference dimensions: 0.50 (pad width), 0.50 (pad width), 1.33 (pad pitch), 0.37 (pad height), 0.35 (pad width).</p> |
| <p>SSMini6-F2 (JEITA: SC-107C)</p> <p>Top view dimensions: 1.60 ±0.05 (total width), 0.20 ±0.05 / ±0.02 (lead width), 1.20 ±0.05 (body width), 1.60 ±0.05 (total height), 1.00 ±0.05 (lead pitch), 0.50 (lead width), 0.13 ±0.05 (lead height), 5° (lead angle).</p> <p>Side view dimensions: 0.55 ±0.05 (body height), 0 to 0.05 (lead thickness).</p> <p>Bottom view dimensions: 0.27 (lead thickness).</p> | <p>Reference dimensions: 0.5 (pad width), 0.5 (pad width), 1.5 (pad pitch), 0.3 (pad height), 0.3 (pad width).</p> |
| <p>SSSMini6-F1</p> <p>Top view dimensions: 0.12 ±0.03 / ±0.02 (lead width), 0.80 ±0.05 (body width), 1.00 ±0.05 (total width), 0.10 (lead pitch), 0.10 (lead width), 0.10 (lead thickness), 0 to 0.02 (lead height), 5° (lead angle).</p> <p>Side view dimensions: 0.37 ±0.02 (body height), 0.10 (lead thickness).</p> <p>Bottom view dimensions: 0.10 (lead thickness).</p> <p>Note: Display at No.1 lead</p> | <p>Reference dimensions: 0.35 (pad width), 0.35 (pad width), 0.95 (pad pitch), 0.15 (pad height), 0.20 (pad width).</p> |

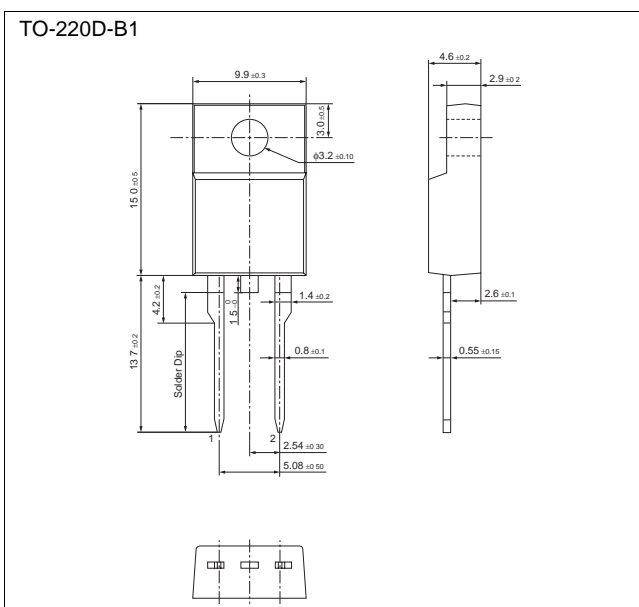
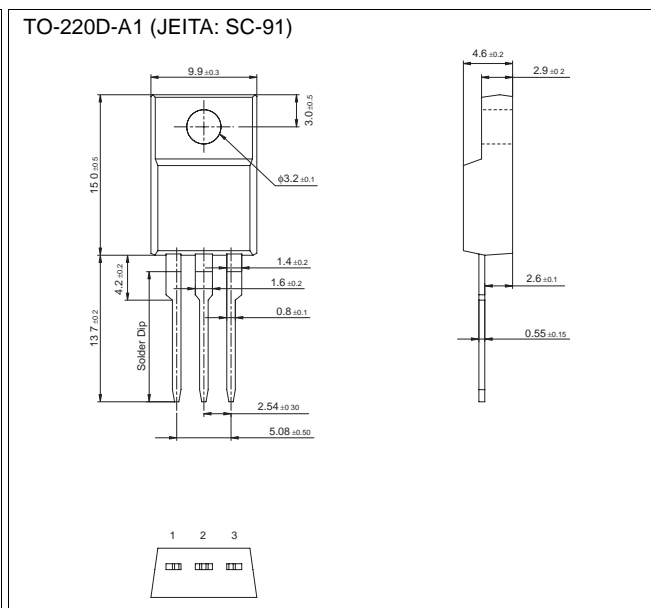
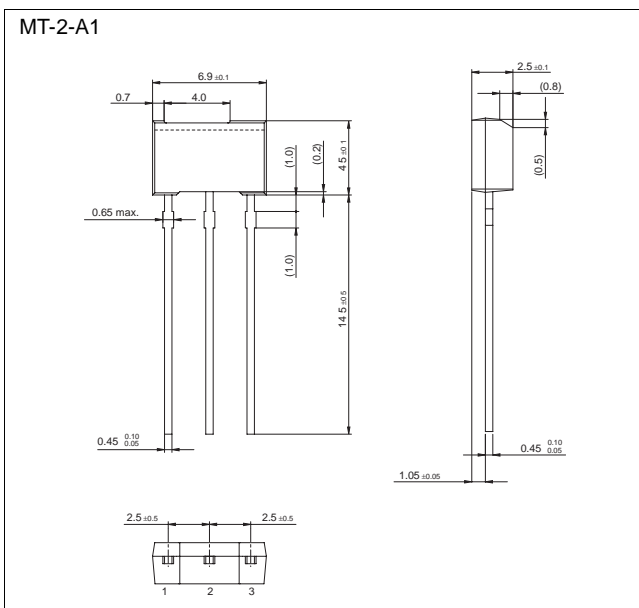
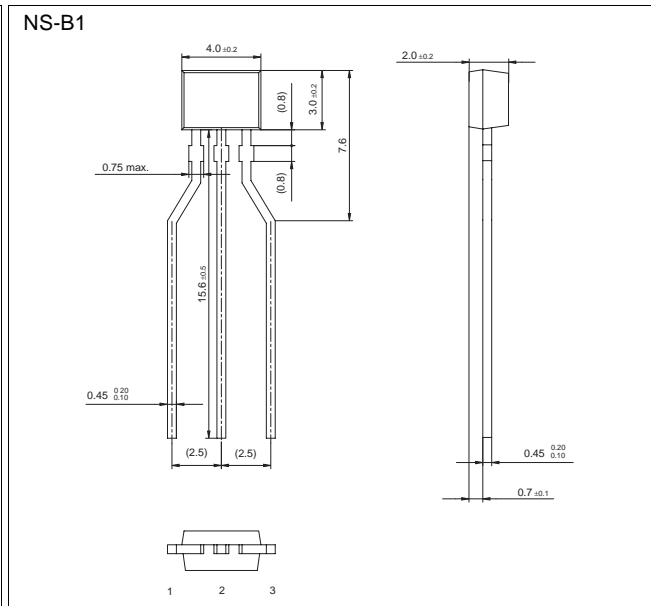
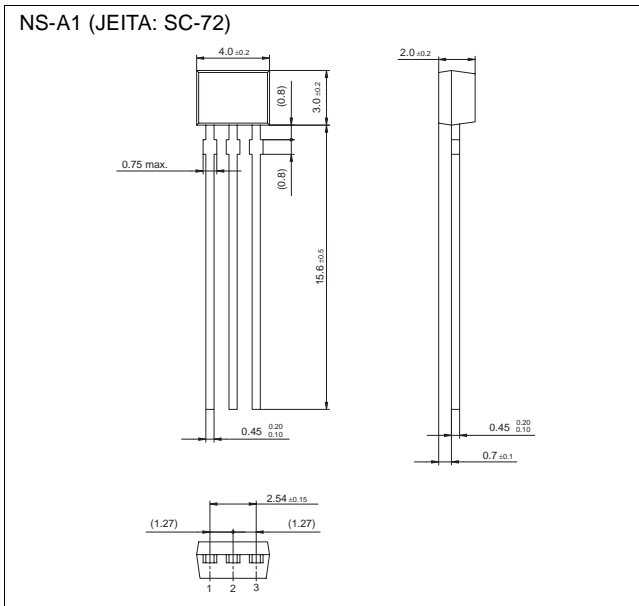


Surface mounting type (Small signal) Package Outlines/Reference Dimension of Soldering pad

() : Reference Value Unit: mm



() : Reference Value Unit: mm



Maintenance/Discontinued Product List

<Changes in the Product Naming System>

Some maintenance types using Global part number have been changed.
Please order using the Global part number.
If you have any questions, please contact our sales division for your area (listed on the back cover).

<Discontinued Types>

These types have been discontinued and no further handling can be performed.

<Planned Discontinued Types>

These types are scheduled to be discontinued.
Customers who have used these types in the past are hereby notified that sales of these types have ended.

<Maintenance Types>

Because sales of these types are planned to be discontinued, new sales of such types are not possible. Further, existing customers with new applications should switch to replacement types.

<Planned Maintenance Types>

These types are scheduled to become maintenance types.
For new applications, please refrain from using these types.

Maintenance/Discontinued Product List

| Part No. | | Alternative | Page | Part No. | | Alternative | Page | Part No. | | Alternative | Page |
|-----------|----|-------------|------|----------|----|-------------|------|----------|----|-------------|------|
| 1N4148 | SD | — | — | 2SA1535A | SD | — | — | 2SB0761A | M | — | — |
| 1N4148S | SD | — | — | 2SA1550 | M | — | — | 2SB0762 | M | — | — |
| 2PG001 | SM | — | — | 2SA1605 | D | — | — | 2SB0762A | M | — | — |
| 2PG002 | SM | — | — | 2SA1614 | D | — | — | 2SB0766 | SD | 2SB0766G | H22 |
| 2PG003 | SM | — | — | 2SA1619 | SM | — | — | 2SB0766A | SM | 2SB0766G | H22 |
| 2PG004 | SM | — | — | 2SA1619A | SM | — | — | 2SB0767 | SM | 2SB0767G | H22 |
| 2PG005 | SM | — | — | 2SA1698 | D | — | — | 2SB0774 | SD | — | — |
| 2SA0564 | D | 2SA1309A | H9 | 2SA1737 | D | — | — | 2SB0779 | SD | — | — |
| 2SA0564A | M | 2SA1309A | H9 | 2SA1739 | SM | 2SA1739G | H10 | 2SB0788 | SD | — | — |
| 2SA0683 | SM | — | — | 2SA1747 | M | 2SB0709A | H9 | 2SB0789 | SD | 2SB0789G | H22 |
| 2SA0684 | SM | — | — | 2SA1748 | SM | 2SA1748G | H10 | 2SB0789A | SM | 2SB0789G | H22 |
| 2SA0699 | M | — | — | 2SA1762 | SD | — | — | 2SB0790 | SD | — | — |
| 2SA0699A | M | — | — | 2SA1767 | SM | — | — | 2SB0792 | SD | 2SB0792A | H9 |
| 2SA0719 | SM | — | — | 2SA1790 | D | 2SA1790G | H10 | 2SB0793 | SD | — | — |
| 2SA0720 | SM | — | — | 2SA1790J | SM | 2SA1790G | H10 | 2SB0793A | SD | — | — |
| 2SA0720A | SM | — | — | 2SA1791 | D | 2SA1791G | H10 | 2SB0814 | D | — | — |
| 2SA0748 | D | — | — | 2SA1791J | SM | 2SA1791G | H10 | 2SB0819 | SD | — | — |
| 2SA0777 | SM | — | — | 2SA1806 | D | 2SA1806G | H10 | 2SB0835 | SD | 2SB0956G | H22 |
| 2SA0794 | SM | — | — | 2SA1806J | SM | 2SA1806G | H10 | 2SB0867 | M | — | — |
| 2SA0794A | SM | — | — | 2SA1817 | D | — | — | 2SB0868 | M | — | — |
| 2SA0838 | SM | — | — | 2SA1858 | SM | — | — | 2SB0869 | M | — | — |
| 2SA0879 | SM | — | — | 2SA1888 | SM | — | — | 2SB0869A | SM | — | — |
| 2SA0885 | SM | — | — | 2SA1890 | SM | 2SA1890G | H22 | 2SB0871 | M | — | — |
| 2SA0886 | SM | — | — | 2SA1949 | SM | — | — | 2SB0871A | M | — | — |
| 2SA0887 | M | — | — | 2SA1950 | D | — | — | 2SB0872 | M | — | — |
| 2SA0900 | SM | — | — | 2SA1961 | M | — | — | 2SB0872A | M | — | — |
| 2SA0913 | D | — | — | 2SA1966 | D | — | — | 2SB0872B | SM | — | — |
| 2SA0914 | M | — | — | 2SA2004 | D | — | — | 2SB0873 | SD | — | — |
| 2SA0921 | SM | — | — | 2SA2008 | D | — | — | 2SB0873A | SM | — | — |
| 2SA0921A | SM | — | — | 2SA2009 | SM | 2SA2009G | H8 | 2SB0894 | D | — | — |
| 2SA0963 | M | — | — | 2SA2010 | SD | — | — | 2SB0902 | M | — | — |
| 2SA1018 | SM | — | — | 2SA2021 | SM | 2SA2021G | H8 | 2SB0925 | M | — | — |
| 2SA1034 | SD | — | — | 2SA2028 | SM | 2SA2028G | H8 | 2SB0925A | D | — | — |
| 2SA1035 | SD | — | — | 2SA2046 | SD | — | — | 2SB0928 | SM | — | — |
| 2SA1060 | D | — | — | 2SA2067 | SM | — | — | 2SB0928A | SM | — | — |
| 2SA1061 | SM | — | — | 2SA2076 | SM | — | — | 2SB0929 | SM | — | — |
| 2SA1062 | SM | — | — | 2SA2078 | SM | 2SA2078G | H8 | 2SB0929A | SM | — | — |
| 2SA1063 | D | — | — | 2SA2122 | SM | 2SA2122G | H8 | 2SB0930 | SM | — | — |
| 2SA1065 | D | — | — | 2SA2161J | SM | 2SA2161G | H8 | 2SB0930A | SM | — | — |
| 2SA1096 | SD | — | — | 2SA2162 | SM | 2SA2162G | H8 | 2SB0931 | SM | — | — |
| 2SA1096A | SD | — | — | 2SA2164 | SM | 2SA2164G | H10 | 2SB0932 | SM | — | — |
| 2SA1110 | M | — | — | 2SA2174J | SM | 2SA2174G | H8 | 2SB0933 | SM | — | — |
| 2SA1111 | D | — | — | 2SA721 | D | — | — | 2SB0934 | SM | — | — |
| 2SA1112 | D | — | — | 2SA766 | D | — | — | 2SB0935 | D | — | — |
| 2SA1123 | SM | — | — | 2SA837 | D | — | — | 2SB0935A | SM | — | — |
| 2SA1123A | SM | — | — | 2SA882 | D | — | — | 2SB0936 | SM | — | — |
| 2SA1124 | SM | — | — | 2SB0512 | D | — | — | 2SB0936A | SM | — | — |
| 2SA1124A | SM | — | — | 2SB0512A | D | — | — | 2SB0937 | SM | — | — |
| 2SA1127 | SD | — | — | 2SB0513 | D | — | — | 2SB0937A | SM | — | — |
| 2SA1128 | SD | — | — | 2SB0513A | D | — | — | 2SB0938 | SM | — | — |
| 2SA1133 | M | — | — | 2SB0621 | SM | — | — | 2SB0938A | SM | — | — |
| 2SA1133A | M | — | — | 2SB0621A | SM | — | — | 2SB0939 | SM | — | — |
| 2SA1254 | SD | — | — | 2SB0641 | SD | — | — | 2SB0939A | SM | — | — |
| 2SA1309 | D | 2SA1309A | H9 | 2SB0642 | SD | — | — | 2SB0940 | SM | — | — |
| 2SA1309AI | D | 2SA1309A | H9 | 2SB0643 | SD | — | — | 2SB0940A | SM | — | — |
| 2SA1310 | SM | — | — | 2SB0644 | SD | — | — | 2SB0940B | SM | — | — |
| 2SA1323 | SM | — | — | 2SB0709 | D | 2SB0709A | H9 | 2SB0941 | SM | — | — |
| 2SA1487 | D | — | — | 2SB0710 | SD | — | — | 2SB0941A | SM | — | — |
| 2SA1495 | D | — | — | 2SB0726 | SM | — | — | 2SB0942 | SM | — | — |
| 2SA1499 | D | — | — | 2SB0745 | SD | — | — | 2SB0942A | SM | — | — |
| 2SA1500 | M | — | — | 2SB0745A | SD | — | — | 2SB0943 | SM | — | — |
| 2SA1501 | D | — | — | 2SB0747 | M | — | — | 2SB0944 | SM | — | — |
| 2SA1512 | SM | — | — | 2SB0750 | M | — | — | 2SB0945 | SM | — | — |
| 2SA1531 | SD | — | — | 2SB0750A | M | — | — | 2SB0946 | SM | — | — |
| 2SA1531A | SD | — | — | 2SB0751 | M | — | — | 2SB0947 | M | — | — |
| 2SA1532 | SM | 2SA1532G | H10 | 2SB0751A | M | — | — | 2SB0947A | M | — | — |
| 2SA1533 | SM | — | — | 2SB0760 | D | — | — | 2SB0948 | SM | — | — |
| 2SA1534 | SM | — | — | 2SB0760A | D | — | — | 2SB0948A | SM | — | — |
| 2SA1534A | SM | — | — | 2SB0760B | D | — | — | 2SB0949 | SM | — | — |
| 2SA1535 | SD | — | — | 2SB0761 | M | — | — | 2SB0949A | SM | — | — |

Discontinued Types: D Planned Discontinued: SD Maintenance Types: M Planned Maintenance Types: SM

Note) 1. Alternative product is, almost alike in characteristics and function, not same in all respects. Please examine the content when you use.

2. HW and TA products for MT-2, and TW taping products for surface-mounting products are set as Discontinued types.

3. Lead lead-plated products and separated surface-mounting products (including magazine products) are set as Maintenance types.

Maintenance/Discontinued Product List

| Part No. | | Alternative | Page | Part No. | | Alternative | Page | Part No. | | Alternative | Page |
|-------------|----|-------------|------|----------|----|-------------|------|------------|----|-------------|------|
| 2SB0950 | SM | — | — | 2SB1253 | SD | — | — | 2SB1651 | D | — | — |
| 2SB0950A | SM | — | — | 2SB1254 | D | — | — | 2SB1653 | D | — | — |
| 2SB0951 | SM | — | — | 2SB1255 | D | — | — | 2SB1663 | SM | — | — |
| 2SB0951A | SM | — | — | 2SB1264 | D | — | — | 2SB1666 | D | — | — |
| 2SB0952 | D | — | — | 2SB1288 | SM | — | — | 2SB1666A | D | — | — |
| 2SB0952A | SD | — | — | 2SB1297 | SM | — | — | 2SB1670 | SM | — | — |
| 2SB0953 | D | — | — | 2SB1299 | SM | — | — | 2SB1678 | D | — | — |
| 2SB0953A | D | — | — | 2SB1299A | SM | — | — | 2SB1679 | SM | 2SB1679G | H8 |
| 2SB0954 | SM | — | — | 2SB1317 | D | — | — | 2SB1693 | SD | — | — |
| 2SB0954A | SM | — | — | 2SB1317A | D | — | — | 2SB1699 | SD | — | — |
| 2SB0956 | SM | 2SB0956G | H22 | 2SB1319 | SD | — | — | 2SB1699G | SM | — | — |
| 2SB0967 | M | — | — | 2SB1320 | M | — | — | 2SB1722J | SM | 2SB1722G | H8 |
| 2SB0976 | SD | — | — | 2SB1320A | SM | — | — | 2SB1725 | SM | — | — |
| 2SB0976A | SM | — | — | 2SB1321 | SM | — | — | 2SB1725A | SM | — | — |
| 2SB0987 | D | — | — | 2SB1321A | SM | — | — | 2SB667 | D | — | — |
| 2SB1011 | SD | — | — | 2SB1322 | SM | 2SB1322A | H22 | 2SB668 | D | — | — |
| 2SB1030 | SM | — | — | 2SB1347 | D | — | — | 2SB668A | D | — | — |
| 2SB1036 | SM | — | — | 2SB1361 | M | — | — | 2SB669 | D | — | — |
| 2SB1050 | SD | — | — | 2SB1362 | D | — | — | 2SB669A | D | — | — |
| 2SB1052 | D | — | — | 2SB1371 | D | — | — | 2SB709AI | D | — | — |
| 2SB1054 | D | — | — | 2SB1373 | D | — | — | 2SB724 | D | — | — |
| 2SB1055 | M | — | — | 2SB1378 | SM | — | — | 2SB979CH P | D | — | — |
| 2SB1056 | M | — | — | 2SB1393 | M | — | — | 2SB981CH P | D | — | — |
| 2SB1057 | D | — | — | 2SB1393A | M | — | — | 2SB982CH P | D | — | — |
| 2SB1057A | SM | — | — | 2SB1398 | SM | — | — | 2SC0828 | M | — | — |
| 2SB1063 | D | — | — | 2SB1413 | M | — | — | 2SC0828A | M | — | — |
| 2SB1063A | SM | — | — | 2SB1414 | SD | — | — | 2SC0829 | SM | — | — |
| 2SB1070 | D | — | — | 2SB1416 | SM | — | — | 2SC0901 | D | — | — |
| 2SB1070A | D | — | — | 2SB1417 | SM | — | — | 2SC0901A | D | — | — |
| 2SB1071 | D | — | — | 2SB1417A | SM | — | — | 2SC1047 | SM | — | — |
| 2SB1071A | D | — | — | 2SB1418 | SM | — | — | 2SC1190 | D | — | — |
| 2SB1073 | SM | 2SB1073G | H22 | 2SB1418A | SM | — | — | 2SC1215 | M | — | — |
| 2SB1108 | D | — | — | 2SB1435 | SM | — | — | 2SC1226 | M | — | — |
| 2SB1148 | SM | — | — | 2SB1437 | D | — | — | 2SC1226A | M | — | — |
| 2SB1148A | SM | — | — | 2SB1438 | SD | — | — | 2SC1317 | SM | — | — |
| 2SB1152 | M | — | — | 2SB1439 | SD | — | — | 2SC1318 | SM | — | — |
| 2SB1154 | D | — | — | 2SB1440 | SM | 2SB1440G | H22 | 2SC1318A | SM | — | — |
| 2SB1155 | D | — | — | 2SB1446 | SD | — | — | 2SC1327 | D | — | — |
| 2SB1156 | D | — | — | 2SB1462 | D | 2SB1462G | H8 | 2SC1328 | D | — | — |
| 2SB1159 | SD | — | — | 2SB1462J | SM | 2SB1462G | H8 | 2SC1359 | SM | — | — |
| 2SB1162 | D | — | — | 2SB1462L | SD | — | — | 2SC1360 | SM | — | — |
| 2SB1163 | D | — | — | 2SB1463 | D | 2SB1463G | H8 | 2SC1360A | SM | — | — |
| 2SB1169 | SM | — | — | 2SB1463J | SM | 2SB1463G | H8 | 2SC1383 | SM | — | — |
| 2SB1169A | SM | — | — | 2SB1464 | D | — | — | 2SC1384 | SM | — | — |
| 2SB1171 | M | — | — | 2SB1470 | D | — | — | 2SC1398 | SD | — | — |
| 2SB1171A | M | — | — | 2SB1473 | D | — | — | 2SC1398A | SM | — | — |
| 2SB1172 | SM | — | — | 2SB1488 | D | — | — | 2SC1473 | SM | — | — |
| 2SB1172A | SM | — | — | 2SB1489 | D | — | — | 2SC1473A | SM | — | — |
| 2SB1174 | SM | — | — | 2SB1490 | D | — | — | 2SC1509 | SM | — | — |
| 2SB1175 | SM | — | — | 2SB1492 | D | — | — | 2SC1518 | SM | — | — |
| 2SB1176 | SM | — | — | 2SB1493 | D | — | — | 2SC1567 | SM | — | — |
| 2SB1179 | SM | — | — | 2SB1498 | M | — | — | 2SC1567A | SM | — | — |
| 2SB1179A | SM | — | — | 2SB1502 | D | — | — | 2SC1568 | SM | — | — |
| 2SB1180 | SM | — | — | 2SB1503 | D | — | — | 2SC1573 | SM | — | — |
| 2SB1180A | SM | — | — | 2SB1504 | SM | — | — | 2SC1573A | SM | — | — |
| 2SB1193 | SM | — | — | 2SB1531 | D | — | — | 2SC1573B | SM | — | — |
| 2SB1207 | SM | — | — | 2SB1537 | D | — | — | 2SC1684 | M | 2SC3311A | H9 |
| 2SB1208 | D | — | — | 2SB1585 | D | — | — | 2SC1685 | M | 2SC3311A | H9 |
| 2SB1209 | SD | — | — | 2SB1589 | SM | — | — | 2SC1687 | D | — | — |
| 2SB1218 | SD | 2SB1218G | H8 | 2SB1592 | SM | — | — | 2SC1688 | D | — | — |
| 2SB1218A | SM | 2SB1218G | H8 | 2SB1593 | SM | — | — | 2SC1819 | D | — | — |
| 2SB1218AI | D | 2SB1218G | H8 | 2SB1599 | SM | 2SB1599G | H22 | 2SC1846 | SM | — | — |
| 2SB1219 | SD | 2SB1219G | H8 | 2SB1604 | D | — | — | 2SC1847 | SM | — | — |
| 2SB1219A | SM | 2SB1219G | H8 | 2SB1604A | D | — | — | 2SC1848 | M | — | — |
| 2SB1220 | SM | 2SB1220G | H8 | 2SB1627 | D | 2SB0709A | H9 | 2SC1905 | D | — | — |
| 2SB1221 | SM | — | — | 2SB1629 | D | — | — | 2SC1913 | D | — | — |
| 2SB1250 | D | — | — | 2SB1631 | SM | — | — | 2SC1929 | D | — | — |
| 2SB1251CHIP | D | — | — | 2SB1638 | D | — | — | 2SC1953 | M | — | — |
| 2SB1252 | SD | — | — | 2SB1638A | SD | — | — | 2SC1973 | D | — | — |
| 2SB1252A | SM | — | — | 2SB1645 | SM | — | — | 2SC1974 | D | — | — |

Discontinued Types: D Planned Discontinued: SD Maintenance Types: M Planned Maintenance Types: SM

Note) 1. Alternative product is, almost alike in characteristics and function, not same in all respects. Please examine the content when you use.

2. HW and TA products for MT-2, and TW taping products for surface-mounting products are set as Discontinued types.

3. Lead lead-plated products and separated surface-mounting products (including magazine products) are set as Maintenance types.



Maintenance/Discontinued Product List

| Part No. | | Alternative | Page | Part No. | | Alternative | Page | Part No. | | Alternative | Page |
|-----------|----|-------------|------|------------|----|-------------|------|----------|----|-------------|------|
| 2SC1980 | SD | — | — | 2SC3354 | SM | — | — | 2SC3972A | SM | — | — |
| 2SC2085 | D | — | — | 2SC3369 | M | — | — | 2SC3973 | D | — | — |
| 2SC2188 | SD | — | — | 2SC3371 | M | — | — | 2SC3973A | D | — | — |
| 2SC2206 | SD | — | — | 2SC3371A | SM | — | — | 2SC3973B | D | — | — |
| 2SC2209 | SM | — | — | 2SC3403 | D | — | — | 2SC3974 | D | — | — |
| 2SC2258 | SM | — | — | 2SC3496 | SD | — | — | 2SC3975 | D | — | — |
| 2SC2360 | D | — | — | 2SC3496A | SD | — | — | 2SC3975A | D | — | — |
| 2SC2377 | SD | — | — | 2SC3506 | D | — | — | 2SC3979 | SM | — | — |
| 2SC2405 | SD | — | — | 2SC3507 | SM | — | — | 2SC3979A | SM | — | — |
| 2SC2406 | SD | — | — | 2SC3509 | M | — | — | 2SC3980 | SM | — | — |
| 2SC2484 | D | — | — | 2SC3526 | D | — | — | 2SC3980A | SM | — | — |
| 2SC2487 | D | — | — | 2SC3526H | SD | — | — | 2SC3982 | D | — | — |
| 2SC2488 | D | — | — | 2SC3527 | D | — | — | 2SC3982A | D | — | — |
| 2SC2489 | D | — | — | 2SC3528 | D | — | — | 2SC4004 | SD | — | — |
| 2SC2497 | SD | — | — | 2SC3610 | D | — | — | 2SC4026 | D | — | — |
| 2SC2497A | SD | — | — | 2SC3611 | SD | — | — | 2SC4068 | D | — | — |
| 2SC2590 | SD | — | — | 2SC3704 | SD | — | — | 2SC4096 | D | — | — |
| 2SC2591 | M | — | — | 2SC3707 | SD | — | — | 2SC4111 | D | — | — |
| 2SC2592 | D | — | — | 2SC3719 | D | — | — | 2SC4114 | SD | — | — |
| 2SC2594 | M | — | — | 2SC3720 | D | — | — | 2SC4152 | D | — | — |
| 2SC2631 | SM | — | — | 2SC3737 | D | — | — | 2SC4158 | D | — | — |
| 2SC2632 | SM | — | — | 2SC3738 | D | — | — | 2SC4190 | D | — | — |
| 2SC2632A | SM | — | — | 2SC3743 | SM | — | — | 2SC4208 | SM | — | — |
| 2SC2633 | M | — | — | 2SC3743A | SM | — | — | 2SC4208A | SM | — | — |
| 2SC2634 | SM | — | — | 2SC3795 | SD | — | — | 2SC4212 | SM | — | — |
| 2SC2636 | SD | — | — | 2SC3795A | SD | — | — | 2SC4238 | D | — | — |
| 2SC2637 | D | — | — | 2SC3795B | SD | — | — | 2SC4239 | D | — | — |
| 2SC2647 | SD | — | — | 2SC3811 | SM | — | — | 2SC4358 | M | — | — |
| 2SC2653 | D | — | — | 2SC3824 | SM | — | — | 2SC4359 | SM | — | — |
| 2SC2653H | SM | — | — | 2SC382400G | SM | — | — | 2SC4410 | SM | 2SC4410G | H10 |
| 2SC2660 | D | — | — | 2SC3824A | SM | — | — | 2SC4417 | SD | — | — |
| 2SC2660A | SM | — | — | 2SC3825 | D | — | — | 2SC4420 | SM | — | — |
| 2SC2671 | D | — | — | 2SC3829 | SD | — | — | 2SC4421 | D | — | — |
| 2SC2671F | SD | — | — | 2SC3861 | M | — | — | 2SC4444 | SD | — | — |
| 2SC2671H | SD | — | — | 2SC3868 | D | — | — | 2SC4502 | SM | — | — |
| 2SC2739 | D | — | — | 2SC3870 | M | — | — | 2SC4515 | D | — | — |
| 2SC2740 | M | — | — | 2SC3871 | D | — | — | 2SC4516 | M | — | — |
| 2SC2778 | SD | — | — | 2SC3872 | D | — | — | 2SC4533 | M | 2SC4953 | H23 |
| 2SC2831 | M | — | — | 2SC3874 | D | — | — | 2SC4535 | M | — | — |
| 2SC2831A | D | — | — | 2SC3904 | SD | — | — | 2SC4543 | D | — | — |
| 2SC2832 | M | — | — | 2SC3929 | SD | — | — | 2SC4545 | SM | — | — |
| 2SC2832A | D | — | — | 2SC3929A | SD | — | — | 2SC4559 | SM | — | — |
| 2SC2834 | M | — | — | 2SC3929G | SM | — | — | 2SC4562 | SM | — | — |
| 2SC2834A | M | — | — | 2SC3930 | SM | 2SC3930G | H10 | 2SC4576 | D | — | — |
| 2SC2841 | SD | — | — | 2SC3931 | SM | 2SC3931G | H10 | 2SC4606 | SD | — | — |
| 2SC2845 | D | — | — | 2SC3932 | SM | 2SC3932G | H10 | 2SC4621 | D | — | — |
| 2SC2851 | M | — | — | 2SC3933 | D | — | — | 2SC4626 | D | — | — |
| 2SC2923 | D | — | — | 2SC3934 | SM | 2SC3934G | H10 | 2SC4626J | SM | 2SC4626G | H10 |
| 2SC2925 | SD | — | — | 2SC3935 | SM | 2SC3935G | H10 | 2SC4627 | D | — | — |
| 2SC2988 | D | — | — | 2SC3936 | SM | 2SC3936G | H10 | 2SC4627J | SM | 2SC4627G | H10 |
| 2SC3063 | SM | — | — | 2SC3937 | SM | 2SC3937G | H10 | 2SC4638 | D | — | — |
| 2SC3077 | D | — | — | 2SC3938 | SM | 2SC3938G | H10 | 2SC4655 | D | — | — |
| 2SC3110 | D | — | — | 2SC3939 | SM | — | — | 2SC4655J | SM | — | — |
| 2SC3169 | D | — | — | 2SC3940 | SM | — | — | 2SC4656 | D | — | — |
| 2SC3170 | D | — | — | 2SC3940A | SM | — | — | 2SC4656J | SM | — | — |
| 2SC3187 | SM | — | — | 2SC3941 | SM | — | — | 2SC4665 | SM | — | — |
| 2SC3210 | D | — | — | 2SC3941A | SM | — | — | 2SC4670 | D | — | — |
| 2SC3211 | D | — | — | 2SC3941H | SM | — | — | 2SC4691 | D | 2SC4691G | H10 |
| 2SC3211A | D | — | — | 2SC3942 | SM | — | — | 2SC4691J | SM | 2SC4691G | H10 |
| 2SC3212 | D | — | — | 2SC3943 | SM | — | — | 2SC4714 | SM | — | — |
| 2SC3212A | D | — | — | 2SC3944 | SD | — | — | 2SC4717 | D | — | — |
| 2SC3311 | M | 2SC3311A | H9 | 2SC3944A | SD | — | — | 2SC4755 | D | — | — |
| 2SC3311AI | D | 2SC3311A | H9 | 2SC3946 | SM | — | — | 2SC4767 | D | — | — |
| 2SC3313 | SM | — | — | 2SC3965 | M | — | — | 2SC4780 | D | — | — |
| 2SC3314 | SM | — | — | 2SC3970 | D | — | — | 2SC4782 | D | — | — |
| 2SC3315 | SM | — | — | 2SC3970A | D | — | — | 2SC4787 | SM | — | — |
| 2SC3352 | M | — | — | 2SC3970B | D | — | — | 2SC4792 | D | — | — |
| 2SC3352A | M | — | — | 2SC3971 | SD | — | — | 2SC4805 | SM | 2SC4805G | H10 |
| 2SC3353 | D | — | — | 2SC3971A | SD | — | — | 2SC4808 | D | — | — |
| 2SC3353A | D | — | — | 2SC3972 | M | — | — | 2SC4808J | SM | — | — |

Discontinued Types: D Planned Discontinued: SD Maintenance Types: M Planned Maintenance Types: SM

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Maintenance/Discontinued Product List

| Part No. | | Alternative | Page | Part No. | | Alternative | Page | Part No. | | Alternative | Page |
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| 2SC4809 | D | 2SC4809G | H10 | 2SC5542 | D | — | — | 2SD0389A | M | — | — |
| 2SC4809J | SM | 2SC4809G | H10 | 2SC5546 | SM | — | — | 2SD0592 | SM | — | — |
| 2SC4835 | SM | 2SC4835G | H10 | 2SC5552 | SM | — | — | 2SD0592A | SM | — | — |
| 2SC4892 | SM | — | — | 2SC5553 | SM | — | — | 2SD0601 | SD | 2SD0601A | H9 |
| 2SC4898 | SM | — | — | 2SC5556 | SD | — | — | 2SD0602 | SD | 2SD0602A | H9 |
| 2SC4929 | D | — | — | 2SC5557 | D | — | — | 2SD0636 | SD | — | — |
| 2SC4960 | SD | — | — | 2SC5573 | D | — | — | 2SD0637 | SD | — | — |
| 2SC4968 | D | — | — | 2SC5580 | D | — | — | 2SD0638 | SD | — | — |
| 2SC4973 | D | — | — | 2SC5581 | D | — | — | 2SD0639 | SD | — | — |
| 2SC4985 | SM | — | — | 2SC5582 | D | — | — | 2SD0661 | SD | — | — |
| 2SC4986 | D | — | — | 2SC5583 | D | — | — | 2SD0661A | SD | — | — |
| 2SC5016 | D | — | — | 2SC5584 | D | — | — | 2SD0662 | SD | — | — |
| 2SC5018 | D | — | — | 2SC5591 | SM | — | — | 2SD0662A | SD | — | — |
| 2SC5019 | SD | — | — | 2SC5592 | SD | — | — | 2SD0662B | SD | — | — |
| 2SC5026 | SM | 2SC5026G | H22 | 2SC5597 | D | — | — | 2SD0750 | D | — | — |
| 2SC5034 | D | — | — | 2SC5609 | SM | — | — | 2SD0762 | D | — | — |
| 2SC5063 | SM | — | — | 2SC5622 | SM | — | — | 2SD0762A | M | — | — |
| 2SC5077 | D | — | — | 2SC5632 | SM | — | — | 2SD0772 | M | — | — |
| 2SC5104 | SM | — | — | 2SC5654 | SM | 2SC5654G | H8 | 2SD0772A | M | — | — |
| 2SC5121 | SM | — | — | 2SC5657 | SM | — | — | 2SD0772B | M | — | — |
| 2SC5127 | D | — | — | 2SC5671 | D | — | — | 2SD0772C | SM | — | — |
| 2SC5128 | D | — | — | 2SC5686 | SM | — | — | 2SD0792 | D | — | — |
| 2SC5190 | SM | — | — | 2SC5725 | SD | — | — | 2SD0804 | D | — | — |
| 2SC5216 | SM | — | — | 2SC5740 | SM | — | — | 2SD0813 | D | — | — |
| 2SC5221 | SM | — | — | 2SC5788 | SM | — | — | 2SD0814 | SD | 2SD0814A | H9 |
| 2SC5223 | SM | — | — | 2SC5805 | D | — | — | 2SD0836 | M | — | — |
| 2SC5243 | D | — | — | 2SC5806 | D | — | — | 2SD0836A | M | — | — |
| 2SC5244 | D | — | — | 2SC5809 | SD | — | — | 2SD0836B | SM | — | — |
| 2SC5244A | D | — | — | 2SC5813 | SD | — | — | 2SD0837 | M | — | — |
| 2SC5270 | M | — | — | 2SC5833 | SM | — | — | 2SD0837A | M | — | — |
| 2SC5270A | M | — | — | 2SC5835 | D | — | — | 2SD0837B | D | — | — |
| 2SC5278 | D | — | — | 2SC5836 | D | — | — | 2SD0850 | D | — | — |
| 2SC5285 | SM | — | — | 2SC5837 | SM | — | — | 2SD0856 | D | — | — |
| 2SC5294 | M | — | — | 2SC5842 | SM | — | — | 2SD0856A | M | — | — |
| 2SC5295 | D | 2SC5295G | H10 | 2SC5844 | SM | — | — | 2SD0857 | M | — | — |
| 2SC5295J | SM | 2SC5295G | H10 | 2SC5846 | SM | 2SC5846G | H8 | 2SD0857A | M | — | — |
| 2SC5363 | D | — | — | 2SC5869 | SM | — | — | 2SD0857B | M | — | — |
| 2SC5363J | SM | — | — | 2SC5870 | SM | — | — | 2SD0859 | M | — | — |
| 2SC5379 | D | — | — | 2SC5871 | SM | — | — | 2SD0859A | M | — | — |
| 2SC5379G | SM | — | — | 2SC5901 | SM | — | — | 2SD0860 | M | — | — |
| 2SC5380 | M | — | — | 2SC5902 | SM | — | — | 2SD0860A | M | — | — |
| 2SC5380A | SM | — | — | 2SC5903 | SM | — | — | 2SD0860B | M | — | — |
| 2SC5381 | D | — | — | 2SC5904 | SM | — | — | 2SD0866 | M | — | — |
| 2SC5381A | SM | — | — | 2SC5905 | SM | — | — | 2SD0866A | M | — | — |
| 2SC5392 | M | — | — | 2SC5909 | SM | — | — | 2SD0866B | SM | — | — |
| 2SC5393 | SD | — | — | 2SC5910 | SM | — | — | 2SD0874 | SD | 2SD0874G | H22 |
| 2SC5406 | M | — | — | 2SC5912 | SM | — | — | 2SD0874A | SM | 2SD0874G | H22 |
| 2SC5406A | SM | — | — | 2SC5913 | SM | — | — | 2SD0875 | SM | 2SD0875G | H22 |
| 2SC5407 | M | — | — | 2SC5914 | SM | — | — | 2SD0876 | M | — | — |
| 2SC5410 | D | — | — | 2SC5926 | SM | — | — | 2SD0884 | D | — | — |
| 2SC5410A | SM | — | — | 2SC5927 | SM | — | — | 2SD0885 | M | — | — |
| 2SC5413 | D | — | — | 2SC5928 | SM | — | — | 2SD0886 | M | — | — |
| 2SC5418 | M | — | — | 2SC5929 | SM | — | — | 2SD0886A | M | — | — |
| 2SC5423 | M | — | — | 2SC5931 | SM | — | — | 2SD0889 | SD | — | — |
| 2SC5440 | SM | — | — | 2SC5936 | SM | — | — | 2SD0892 | M | — | — |
| 2SC5457 | D | — | — | 2SC5939 | SM | 2SC5939G | H10 | 2SD0892A | M | — | — |
| 2SC5472 | D | — | — | 2SC5946 | SM | 2SC5946G | H10 | 2SD0893 | D | — | — |
| 2SC5474 | D | — | — | 2SC5950 | SM | 2SC5950G | H8 | 2SD0893A | D | — | — |
| 2SC5478 | SM | — | — | 2SC5954 | SD | — | — | 2SD0946 | SM | — | — |
| 2SC5479 | D | — | — | 2SC5992 | SM | — | — | 2SD0946A | SM | — | — |
| 2SC5505 | SD | — | — | 2SC6012 | SM | — | — | 2SD0946B | SM | — | — |
| 2SC5512 | D | — | — | 2SC6036 | SM | 2SC6036G | H8 | 2SD0958 | SD | — | — |
| 2SC5513 | SM | — | — | 2SC6037J | SM | 2SC6037G | H8 | 2SD0959 | SD | — | — |
| 2SC5514 | SM | — | — | 2SC6045 | SM | — | — | 2SD0961 | SD | — | — |
| 2SC5515 | SM | — | — | 2SC6054J | SM | 2SC6054G | H8 | 2SD0965 | SM | — | — |
| 2SC5516 | SM | — | — | 2SC6073 | SM | — | — | 2SD0966 | SM | — | — |
| 2SC5517 | SM | — | — | 2SC6074 | SM | — | — | 2SD0968 | SD | 2SD0968G | H22 |
| 2SC5518 | SM | — | — | 2SC647 | D | — | — | 2SD0968A | SM | 2SD0968G | H22 |
| 2SC5519 | SM | — | — | 2SC840 | D | — | — | 2SD0973 | SD | — | — |
| 2SC5535 | D | — | — | 2SD0389 | D | — | — | 2SD0973A | SD | — | — |

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Maintenance/Discontinued Product List

| Part No. | | Alternative | Page | Part No. | | Alternative | Page | Part No. | | Alternative | Page |
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| 2SD0973B | SD | — | — | 2SD1271 | SM | — | — | 2SD1486 | SD | — | — |
| 2SD1010 | SM | — | — | 2SD1271A | SM | — | — | 2SD1487 | D | — | — |
| 2SD1011 | M | — | — | 2SD1271B | SM | — | — | 2SD1488 | D | — | — |
| 2SD1044 | D | — | — | 2SD1272 | SM | — | — | 2SD1499 | SM | — | — |
| 2SD1051 | D | — | — | 2SD1273 | SM | — | — | 2SD1510 | D | — | — |
| 2SD1091 | M | — | — | 2SD1273A | SM | — | — | 2SD1511 | SM | 2SD1511G | H22 |
| 2SD1105 | D | — | — | 2SD1274 | M | — | — | 2SD1512 | M | 2SD1149 | H9 |
| 2SD1112 | D | — | — | 2SD1274A | M | — | — | 2SD1526 | D | — | — |
| 2SD1119 | SM | 2SD1119G | H22 | 2SD1274B | M | — | — | 2SD1534 | M | — | — |
| 2SD1151 | D | — | — | 2SD1274C | SM | — | — | 2SD1535 | SM | — | — |
| 2SD1168 | D | — | — | 2SD1275 | SM | — | — | 2SD1539 | D | — | — |
| 2SD1169 | SD | — | — | 2SD1275A | SM | — | — | 2SD1539A | SD | — | — |
| 2SD1171 | D | — | — | 2SD1275B | SM | — | — | 2SD1541 | D | — | — |
| 2SD1173 | D | — | — | 2SD1276 | SM | — | — | 2SD1575 | SD | — | — |
| 2SD1175 | SM | — | — | 2SD1276A | SM | — | — | 2SD1576 | SM | — | — |
| 2SD1176 | M | — | — | 2SD1276B | SM | — | — | 2SD1577 | D | — | — |
| 2SD1176A | M | — | — | 2SD1277 | SM | — | — | 2SD1608 | D | — | — |
| 2SD1198 | SD | — | — | 2SD1277A | SM | — | — | 2SD1611 | SM | — | — |
| 2SD1198A | SD | — | — | 2SD1277B | SM | — | — | 2SD1632 | D | — | — |
| 2SD1199 | SD | — | — | 2SD1277C | SM | — | — | 2SD1633 | SM | — | — |
| 2SD1205 | SD | — | — | 2SD1280 | SM | — | — | 2SD1640 | SM | — | — |
| 2SD1205A | SD | — | — | 2SD1280A | M | — | — | 2SD1641 | D | — | — |
| 2SD1206 | SD | — | — | 2SD1290 | M | — | — | 2SD1643 | SD | — | — |
| 2SD1211 | SM | — | — | 2SD1291 | M | — | — | 2SD1643A | M | — | — |
| 2SD1217 | M | — | — | 2SD1295 | SM | — | — | 2SD1645 | M | — | — |
| 2SD1218 | M | — | — | 2SD1301 | D | — | — | 2SD1663 | M | — | — |
| 2SD1244 | SD | — | — | 2SD1302 | SM | — | — | 2SD1679 | D | — | — |
| 2SD1245 | M | — | — | 2SD1315 | M | — | — | 2SD1680 | D | — | — |
| 2SD1249 | SM | — | — | 2SD1316 | SD | — | — | 2SD1703 | M | — | — |
| 2SD1249A | SM | — | — | 2SD1317 | SD | — | — | 2SD1705 | SM | — | — |
| 2SD1250 | SM | — | — | 2SD1319 | M | — | — | 2SD1706 | SD | — | — |
| 2SD1250A | SM | — | — | 2SD1320 | SD | — | — | 2SD1707 | D | — | — |
| 2SD1251 | M | — | — | 2SD1321 | D | — | — | 2SD1712 | M | — | — |
| 2SD1251A | SM | — | — | 2SD1323 | D | — | — | 2SD1716 | D | — | — |
| 2SD1252 | SM | — | — | 2SD1325 | SD | — | — | 2SD1717 | D | — | — |
| 2SD1252A | SM | — | — | 2SD1326 | D | — | — | 2SD1718 | D | — | — |
| 2SD1253 | SM | — | — | 2SD1327 | SD | — | — | 2SD1718A | D | — | — |
| 2SD1253A | SM | — | — | 2SD1327A | D | — | — | 2SD1719 | SM | — | — |
| 2SD1254 | D | — | — | 2SD1330 | SD | — | — | 2SD1729 | D | — | — |
| 2SD1255 | M | — | — | 2SD1332 | M | — | — | 2SD1730 | M | — | — |
| 2SD1256 | SM | — | — | 2SD1334 | D | — | — | 2SD1732 | D | — | — |
| 2SD1257 | SM | — | — | 2SD1335 | D | — | — | 2SD1734 | D | — | — |
| 2SD1257A | SM | — | — | 2SD1336 | SM | — | — | 2SD1739 | D | — | — |
| 2SD1257C | SM | — | — | 2SD1336A | SM | — | — | 2SD1741 | SM | — | — |
| 2SD1258 | SM | — | — | 2SD1346 | D | — | — | 2SD1741A | SM | — | — |
| 2SD1259 | SM | — | — | 2SD1350 | SD | — | — | 2SD1742 | SM | — | — |
| 2SD1259A | SM | — | — | 2SD1350A | SD | — | — | 2SD1742A | SM | — | — |
| 2SD1260 | SM | — | — | 2SD1385 | SD | — | — | 2SD1745 | SM | — | — |
| 2SD1260A | SM | — | — | 2SD1390 | M | — | — | 2SD1746 | D | — | — |
| 2SD1261 | SM | — | — | 2SD1391 | SM | — | — | 2SD1747 | SM | — | — |
| 2SD1261A | SM | — | — | 2SD1423 | SM | 2SD1423A | H9 | 2SD1747A | SM | — | — |
| 2SD1262 | SM | — | — | 2SD1424 | SM | — | — | 2SD1748 | SM | — | — |
| 2SD1262A | SM | — | — | 2SD1439 | D | — | — | 2SD1748A | SM | — | — |
| 2SD1262B | SM | — | — | 2SD1441 | D | — | — | 2SD1749 | SM | — | — |
| 2SD1263 | SM | — | — | 2SD1442 | SD | — | — | 2SD1749A | SM | — | — |
| 2SD1263A | SM | — | — | 2SD1442A | M | — | — | 2SD1750 | SM | — | — |
| 2SD1264 | SM | — | — | 2SD1444 | D | — | — | 2SD1750A | SM | — | — |
| 2SD1264A | SM | — | — | 2SD1444A | D | — | — | 2SD1752 | D | — | — |
| 2SD1264B | SM | — | — | 2SD1445 | SM | — | — | 2SD1752A | D | — | — |
| 2SD1265 | SM | — | — | 2SD1445A | SD | — | — | 2SD1754 | SM | — | — |
| 2SD1265A | SM | — | — | 2SD1446 | SM | — | — | 2SD1754A | SM | — | — |
| 2SD1266 | SM | — | — | 2SD1449 | M | — | — | 2SD1755 | SM | — | — |
| 2SD1266A | SM | — | — | 2SD1457 | D | — | — | 2SD1773 | D | — | — |
| 2SD1266CH P | M | — | — | 2SD1457A | D | — | — | 2SD1775 | SD | — | — |
| 2SD1267 | SM | — | — | 2SD1458 | D | — | — | 2SD1775A | SD | — | — |
| 2SD1267A | SM | — | — | 2SD1474 | SM | — | — | 2SD1776 | D | — | — |
| 2SD1267B | SM | — | — | 2SD1478 | SD | 2SD1478A | H9 | 2SD1776A | D | — | — |
| 2SD1268 | D | — | — | 2SD1480 | SM | — | — | 2SD1819 | SD | 2SD1819G | H8 |
| 2SD1269 | SM | — | — | 2SD1483 | SD | — | — | 2SD1819A | SM | 2SD1819G | H8 |
| 2SD1270 | D | — | — | 2SD1485 | SM | — | — | 2SD1819AI | D | 2SD1819G | H8 |

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Maintenance/Discontinued Product List

| Part No. | | Alternative | Page | Part No. | | Alternative | Page | Part No. | | Alternative | Page |
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| 2SD1820 | SD | 2SD1820G | H8 | 2SD2183 | SM | — | — | 2SD2605 | SM | — | — |
| 2SD1820A | SM | 2SD1820G | H8 | 2SD2184 | SM | — | — | 2SD2606 | SM | — | — |
| 2SD1821 | SD | 2SD1821G | H8 | 2SD2185 | SM | 2SD2185G | H22 | 2SD2620J | SM | 2SD2620G | H8 |
| 2SD1821A | SM | 2SD1821G | H8 | 2SD2209 | M | — | — | 2SD2621 | SM | 2SD2621G | H8 |
| 2SD1823 | SM | 2SD1823G | H8 | 2SD2210 | SM | 2SD2210G | H22 | 2SD2623 | SM | 2SD2623G | H8 |
| 2SD1824 | SM | 2SD1824G | H8 | 2SD2214 | D | — | — | 2SD2659 | SM | — | — |
| 2SD1839 | SM | — | — | 2SD2216 | D | 2SD2216G | H8 | 2SD2667 | SM | — | — |
| 2SD1844 | M | — | — | 2SD2216J | SM | 2SD2216G | H8 | 2SD2691 | SM | — | — |
| 2SD1845 | M | — | — | 2SD2216L | SD | — | — | 2SD2691A | SM | — | — |
| 2SD1846 | M | — | — | 2SD2220 | SM | — | — | 2SD2706 | SM | — | — |
| 2SD1847 | D | — | — | 2SD2222 | D | — | — | 2SD2714 | SM | — | — |
| 2SD1848 | M | — | — | 2SD2240 | D | 2SD2240G | H8 | 2SD2715 | SM | — | — |
| 2SD1849 | D | — | — | 2SD2240A | SM | — | — | 2SD2715G | SM | — | — |
| 2SD1850 | D | — | — | 2SD2240J | SM | 2SD2240G | H8 | 2SD300 | D | — | — |
| 2SD1890 | D | — | — | 2SD2242 | SM | — | — | 2SD312 | D | — | — |
| 2SD1892 | SD | — | — | 2SD2242A | SM | — | — | 2SD317 | D | — | — |
| 2SD1893 | SD | — | — | 2SD2242B | SM | — | — | 2SD318 | D | — | — |
| 2SD1894 | D | — | — | 2SD2249 | SM | — | — | 2SD319 | D | — | — |
| 2SD1895 | D | — | — | 2SD2250 | D | — | — | 2SD334 | D | — | — |
| 2SD1915 | M | — | — | 2SD2254 | D | — | — | 2SD350 | D | — | — |
| 2SD1915F | M | — | — | 2SD2255 | D | — | — | 2SD380 | D | — | — |
| 2SD1934 | SM | — | — | 2SD2265 | M | — | — | 2SD470 | D | — | — |
| 2SD1937 | M | — | — | 2SD2275 | D | — | — | 2SD517 | D | — | — |
| 2SD1938 | M | — | — | 2SD2276 | D | — | — | 2SD601AI | D | — | — |
| 2SD1964 | D | — | — | 2SD2310 | SD | — | — | 2SD632 | D | — | — |
| 2SD1973 | M | — | — | 2SD2321 | SD | — | — | 2SD649 | D | — | — |
| 2SD1975 | D | — | — | 2SD2329 | D | — | — | 2SD672 | D | — | — |
| 2SD1975A | D | — | — | 2SD2330 | M | — | — | 2SD692 | D | — | — |
| 2SD1979 | SM | 2SD1979G | H8 | 2SD2340 | D | — | — | 2SD751 | D | — | — |
| 2SD198 | D | — | — | 2SD2341 | SM | — | — | 2SD849 | D | — | — |
| 2SD1985 | D | — | — | 2SD2341A | SM | — | — | 2SD917 | D | — | — |
| 2SD1985A | M | — | — | 2SD2345 | D | 2SD2345G | H8 | 2SD950 | D | — | — |
| 2SD1985B | SM | — | — | 2SD2345J | SM | 2SD2345G | H8 | 2SD951 | D | — | — |
| 2SD1990 | D | — | — | 2SD2356 | D | — | — | 2SD953 | D | — | — |
| 2SD1991 | M | — | — | 2SD2374 | SM | — | — | 2SD969 | D | — | — |
| 2SD1991A | SM | — | — | 2SD2375A | SM | — | — | 2SJ0043 | D | — | — |
| 2SD1992 | SM | — | — | 2SD2407 | M | — | — | 2SJ0146 | D | — | — |
| 2SD1992A | SM | — | — | 2SD2408 | D | — | — | 2SJ0364 | SM | 2SJ0364G | H5 |
| 2SD1993 | SM | — | — | 2SD2410 | D | — | — | 2SJ0398 | M | — | — |
| 2SD1994 | SM | — | — | 2SD2413 | SM | 2SD2413G | H22 | 2SJ0441 | D | — | — |
| 2SD1994B | SM | — | — | 2SD2432 | D | — | — | 2SJ0442 | D | — | — |
| 2SD1995 | SM | — | — | 2SD2434 | D | — | — | 2SJ0536 | SM | 2SJ0536G | H3 |
| 2SD1996 | SM | — | — | 2SD2436 | D | — | — | 2SJ0573 | D | — | — |
| 2SD200 | D | — | — | 2SD2441 | SD | — | — | 2SJ0582 | SD | — | — |
| 2SD2000 | SM | — | — | 2SD2443 | SM | — | — | 2SJ0672 | SD | — | — |
| 2SD2001 | D | — | — | 2SD2457 | SM | — | — | 2SJ0674 | SM | 2SJ0674G | H3 |
| 2SD2018 | SM | — | — | 2SD2459 | SM | — | — | 2SJ0675 | SM | — | — |
| 2SD2029 | D | — | — | 2SD2460 | D | — | — | 2SJ0685 | SM | — | — |
| 2SD2051 | SD | — | — | 2SD2464 | D | — | — | 2SK0065 | SM | — | — |
| 2SD2052 | SM | — | — | 2SD2479 | SM | — | — | 2SK0123 | SD | — | — |
| 2SD2053 | D | — | — | 2SD2496 | D | 2SD0601A | H9 | 2SK0301 | SM | — | — |
| 2SD2057 | D | — | — | 2SD2501 | D | — | — | 2SK0374 | SD | — | — |
| 2SD2064 | D | — | — | 2SD2502 | D | — | — | 2SK0601 | SM | 2SK0601G | H3 |
| 2SD2065 | M | — | — | 2SD2503 | D | — | — | 2SK0608 | SD | — | — |
| 2SD2066 | D | — | — | 2SD2504 | SD | — | — | 2SK0614 | SM | — | — |
| 2SD2073 | M | — | — | 2SD2516 | SM | — | — | 2SK0615 | SD | — | — |
| 2SD2074 | SM | — | — | 2SD2521 | D | — | — | 2SK0620 | SD | — | — |
| 2SD2133 | SM | — | — | 2SD2523 | M | — | — | 2SK0621 | SD | — | — |
| 2SD2134 | SD | — | — | 2SD2524 | M | — | — | 2SK0655 | SM | — | — |
| 2SD2135 | M | — | — | 2SD2529 | M | — | — | 2SK0656 | SM | — | — |
| 2SD2136 | SM | — | — | 2SD2530 | SD | — | — | 2SK0657 | SD | — | — |
| 2SD2137 | SM | — | — | 2SD2544 | SD | — | — | 2SK0658 | SD | — | — |
| 2SD2137A | SM | — | — | 2SD2549 | SM | — | — | 2SK0662 | SM | 2SK0662G | H5 |
| 2SD2138 | SM | — | — | 2SD2554 | SM | — | — | 2SK0663 | SM | 2SK0663G | H5 |
| 2SD2138A | SM | — | — | 2SD2563 | D | — | — | 2SK0664 | SM | 2SK0664G | H3 |
| 2SD2139 | SM | — | — | 2SD2573 | SM | — | — | 2SK0665 | SM | 2SK0665G | H3 |
| 2SD2151 | SM | — | — | 2SD2575 | SM | — | — | 2SK0751 | D | — | — |
| 2SD2178 | SM | — | — | 2SD2593 | D | — | — | 2SK0751A | D | — | — |
| 2SD2181 | D | — | — | 2SD2595 | D | — | — | 2SK0752 | D | — | — |
| 2SD2182 | M | — | — | 2SD2603 | D | — | — | 2SK0754 | D | — | — |

Discontinued Types: D Planned Discontinued: SD Maintenance Types: M Planned Maintenance Types: SM

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Maintenance/Discontinued Product List

| Part No. | | Alternative | Page | Part No. | | Alternative | Page | Part No. | | Alternative | Page |
|-------------|----|-------------|------|----------|----|-------------|------|----------|----|-------------|------|
| 2SK0755 | M | — | — | 2SK1860 | SD | — | — | 2SK3047 | SD | — | — |
| 2SK0757 | M | — | — | 2SK1867 | D | — | — | 2SK3048 | SD | — | — |
| 2SK0758 | D | — | — | 2SK1967 | M | — | — | 2SK3049 | SM | — | — |
| 2SK0762 | D | — | — | 2SK1980 | D | — | — | 2SK3064 | SM | 2SK3064G | H3 |
| 2SK0762A | D | — | — | 2SK2015 | D | — | — | 2SK3073 | D | — | — |
| 2SK0763 | D | — | — | 2SK2032 | D | — | — | 2SK3073A | D | — | — |
| 2SK0763A | D | — | — | 2SK2123 | D | — | — | 2SK3091 | SD | — | — |
| 2SK0765 | D | — | — | 2SK2124 | D | — | — | 2SK3123 | M | — | — |
| 2SK0765A | D | — | — | 2SK2125 | D | — | — | 2SK3124 | SD | — | — |
| 2SK0769 | D | — | — | 2SK2126 | D | — | — | 2SK316 | D | — | — |
| 2SK0782 | M | — | — | 2SK2127 | D | — | — | 2SK3164 | SM | — | — |
| 2SK0795 | D | — | — | 2SK2128 | D | — | — | 2SK3168 | D | — | — |
| 2SK0796 | D | — | — | 2SK2129 | D | — | — | 2SK3169 | D | — | — |
| 2SK0796A | D | — | — | 2SK2130 | D | — | — | 2SK3178 | D | — | — |
| 2SK0806 | D | — | — | 2SK2210 | D | — | — | 2SK3180 | SM | — | — |
| 2SK0808 | D | — | — | 2SK2211 | SD | — | — | 2SK3185 | SM | — | — |
| 2SK0808A | D | — | — | 2SK2211G | SM | — | — | 2SK3186 | SM | — | — |
| 2SK0809 | D | — | — | 2SK2276 | M | — | — | 2SK3190 | D | — | — |
| 2SK0809A | D | — | — | 2SK2277 | SM | — | — | 2SK3191 | SM | — | — |
| 2SK0818 | D | — | — | 2SK2324 | D | — | — | 2SK3192 | SD | — | — |
| 2SK0818A | D | — | — | 2SK2325 | D | — | — | 2SK3193 | SM | — | — |
| 2SK0963 | D | — | — | 2SK2339 | SD | — | — | 2SK3194 | D | — | — |
| 2SK0963Y | SM | — | — | 2SK2340 | SM | — | — | 2SK3196 | D | — | — |
| 2SK0981 | M | — | — | 2SK2342 | D | — | — | 2SK3202 | SD | — | — |
| 2SK0981A | M | — | — | 2SK2374 | SM | — | — | 2SK321 | D | — | — |
| 2SK0995 | M | — | — | 2SK2375 | SM | — | — | 2SK3267 | SD | — | — |
| 2SK0996 | D | — | — | 2SK2377 | D | — | — | 2SK3268 | SM | — | — |
| 2SK1030 | D | — | — | 2SK2380 | D | — | — | 2SK3277 | SD | — | — |
| 2SK1030A | D | — | — | 2SK2380J | SD | — | — | 2SK3286 | D | — | — |
| 2SK1033 | D | — | — | 2SK2383 | SM | — | — | 2SK3318 | SD | — | — |
| 2SK1034 | D | — | — | 2SK2474 | M | — | — | 2SK3329 | SD | — | — |
| 2SK1035 | D | — | — | 2SK2495 | M | — | — | 2SK3330J | SM | — | — |
| 2SK1036 | D | — | — | 2SK2501 | D | — | — | 2SK3333 | D | — | — |
| 2SK1103 | SD | — | — | 2SK2502 | D | — | — | 2SK3336 | D | — | — |
| 2SK1104 | SM | — | — | 2SK2509 | D | — | — | 2SK3369 | SM | — | — |
| 2SK1214 | D | — | — | 2SK2538 | SD | — | — | 2SK3372 | SM | 2SK3372G | H4 |
| 2SK1216 | D | — | — | 2SK2588 | D | — | — | 2SK3383 | SD | — | — |
| 2SK1223 | D | — | — | 2SK2593 | D | 2SK2593G | H4 | 2SK3392 | D | — | — |
| 2SK1255 | D | — | — | 2SK2593J | SM | 2SK2593G | H4 | 2SK3425 | M | — | — |
| 2SK1256 | D | — | — | 2SK2659 | D | — | — | 2SK3426 | SM | 2SK3426G | H4 |
| 2SK1257 | D | — | — | 2SK2660 | M | — | — | 2SK3427 | SD | — | — |
| 2SK1258CHIP | M | — | — | 2SK2797 | M | — | — | 2SK3428 | SD | — | — |
| 2SK1259 | D | — | — | 2SK2868 | SM | — | — | 2SK3429 | SD | — | — |
| 2SK1261 | D | — | — | 2SK2923 | D | — | — | 2SK3452 | D | — | — |
| 2SK1262 | D | — | — | 2SK2924 | D | — | — | 2SK3494 | SD | — | — |
| 2SK1263 | M | — | — | 2SK2950 | M | — | — | 2SK3539 | SM | 2SK3539G | H3 |
| 2SK1265 | D | — | — | 2SK2960 | D | — | — | 2SK3546J | SM | 2SK3546G | H3 |
| 2SK1266 | D | — | — | 2SK2971 | M | — | — | 2SK3547 | SM | 2SK3547G | H3 |
| 2SK1266A | SM | — | — | 2SK2988 | SM | — | — | 2SK3559 | SD | — | — |
| 2SK1308 | M | — | — | 2SK2988J | SM | — | — | 2SK3560 | SD | — | — |
| 2SK1308A | M | — | — | 2SK3022 | SD | — | — | 2SK3578 | SM | — | — |
| 2SK1374 | SM | 2SK1374G | H3 | 2SK3023 | SM | — | — | 2SK3585 | SM | 2SK3585G | H4 |
| 2SK1478 | SD | — | — | 2SK3024 | SD | — | — | 2SK3628 | SD | — | — |
| 2SK1478A | SM | — | — | 2SK3025 | SD | — | — | 2SK3636 | SD | — | — |
| 2SK1605 | SD | — | — | 2SK3026 | D | — | — | 2SK3637 | SM | — | — |
| 2SK1606 | D | — | — | 2SK3028 | SM | — | — | 2SK3652 | SM | — | — |
| 2SK1607 | D | — | — | 2SK3029 | D | — | — | 2SK3665 | D | — | — |
| 2SK1608 | SD | — | — | 2SK3030 | SD | — | — | 2SK3671 | SM | — | — |
| 2SK1609 | D | — | — | 2SK3031 | SD | — | — | 2SK3672 | SD | — | — |
| 2SK1610 | D | — | — | 2SK3032 | D | — | — | 2SK3723 | SD | — | — |
| 2SK1611 | M | — | — | 2SK3033 | D | — | — | 2SK3731 | SD | — | — |
| 2SK1612 | D | — | — | 2SK3035 | D | — | — | 2SK3795 | SM | — | — |
| 2SK1613 | D | — | — | 2SK3036 | D | — | — | 2SK3862 | SM | 2SK3862G | H4 |
| 2SK1614 | D | — | — | 2SK3037 | D | — | — | 2SK3866 | SM | 2SK3866G | H4 |
| 2SK1635 | D | — | — | 2SK3038 | D | — | — | 2SK3892 | SD | — | — |
| 2SK1803 | M | — | — | 2SK3042 | M | — | — | 2SK3895 | SD | — | — |
| 2SK1833 | D | — | — | 2SK3043 | SD | — | — | 2SK3895A | SM | — | — |
| 2SK1834 | D | — | — | 2SK3044 | D | — | — | 2SK3896 | SD | — | — |
| 2SK1842 | SD | — | — | 2SK3045 | SD | — | — | 2SK3938 | SM | 2SK3938G | H3 |
| 2SK1846 | M | — | — | 2SK3046 | SD | — | — | 2SK3948 | SM | 2SK3948G | H4 |

Discontinued Types: D Planned Discontinued: SD Maintenance Types: M Planned Maintenance Types: SM

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Maintenance/Discontinued Product List

| Part No. | | Alternative | Page | Part No. | | Alternative | Page | Part No. | | Alternative | Page |
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| 2SK3973 | SM | 2SK3973G | H3 | DSMG05C | D | — | — | MA27D27 | SM | MA27D270G | K6 |
| 2SK3996 | SD | — | — | DSMG08C | D | — | — | MA27D29 | SM | MA27D290G | K7 |
| 2SK3997 | SM | — | — | DSMG10C | D | — | — | MA27D30 | SM | MA27D300G | K7 |
| 2SK3998 | SM | — | — | DSMG12C | D | — | — | MA27E02 | SM | MA27E020G | K6 |
| 2SK3999 | SM | — | — | DSMG16C | D | — | — | MA27P01 | SM | MA27P010G | K5 |
| 2SK4000 | SM | — | — | M119BA15D0NX | SD | — | — | MA27P02 | SM | MA27P020G | K5 |
| 2SK4001 | SM | — | — | M21C | D | — | — | MA27P06 | SM | MA27P060G | K5 |
| 2SK4029 | SD | — | — | M21CA | D | — | — | MA27P07 | SM | MA27P070G | K5 |
| 2SK4029G | SM | — | — | M271ML5000NX | SD | — | — | MA27P11 | SM | MA27P110G | K5 |
| 2SK4072 | SM | — | — | M59C | D | — | — | MA27P12 | SM | MA27P120G | K5 |
| 2SK4083 | SM | 2SK4083G | H4 | MA10152D | SM | — | — | MA27V01 | SD | — | — |
| 2SK4149 | SD | — | — | MA10152E | SM | — | — | MA27V02 | SD | — | — |
| 2SK4206 | SM | 2SK4206G | H4 | MA10152K | SM | — | — | MA27V03 | SD | — | — |
| 2SK606 | D | — | — | MA10301 | D | — | — | MA27V04 | SD | — | — |
| 2SK608 | D | — | — | MA10799F | D | — | — | MA27V05 | SD | — | — |
| 2SK742 | D | — | — | MA132HK | SM | — | — | MA27V07 | SD | — | — |
| 3SK0119 | D | — | — | MA142AI | M | — | — | MA27V09 | SD | — | — |
| 3SK0120 | D | — | — | MA142KI | SM | — | — | MA27V10 | SD | — | — |
| 3SK0139 | D | — | — | MA142WAI | SM | — | — | MA27V11 | SD | — | — |
| 3SK0143 | D | — | — | MA152AI | D | — | — | MA27V12 | SD | — | — |
| 3SK0144 | D | — | — | MA152KI | D | — | — | MA27V13 | SD | — | — |
| 3SK0169 | D | — | — | MA152WAI | D | — | — | MA27V14 | SD | — | — |
| 3SK0192 | D | — | — | MA152WKI | D | — | — | MA27V15 | SD | — | — |
| 3SK0219 | SM | — | — | MA1S121 | M | — | — | MA27V16 | SD | — | — |
| 3SK0220 | D | — | — | MA21D34 | SM | MA21D340G | K11 | MA27V17 | SD | — | — |
| 3SK0227 | D | — | — | MA21D35 | SM | MA21D350G | K11 | MA27V18 | SD | — | — |
| 3SK0268 | D | — | — | MA21D38 | SM | MA21D380G | K11 | MA27V19 | SD | — | — |
| 3SK0269 | D | — | — | MA22D15 | SM | MA22D150G | K11 | MA27V20 | SD | — | — |
| 3SK0270 | SM | — | — | MA22D17 | SM | MA22D170G | K10 | MA27V21 | SD | — | — |
| 3SK0271 | D | — | — | MA22D21 | SD | — | — | MA27V22 | SD | — | — |
| 3SK0285 | D | — | — | MA22D23 | SM | MA22D230G | K11 | MA27V23 | SD | — | — |
| 3SK0286 | D | — | — | MA22D26 | SM | — | — | MA27V25 | SD | — | — |
| 3SK0301 | D | — | — | MA22D28 | SM | MA22D280G | K11 | MA28V26 | SM | — | — |
| 3SK142 | D | — | — | MA22D36 | SM | — | — | MA2B001 | SD | — | — |
| 3SK200 | D | — | — | MA22D39 | SM | MA22D390G | K12 | MA2B027 | SD | — | — |
| 3SK202 | D | — | — | MA22D40 | SM | MA22D400G | K12 | MA2B027Q | SD | — | — |
| DSM142MM01X | SD | — | — | MA22D41 | SM | MA22D410G | K11 | MA2B027T | SD | — | — |
| DSM154MM015X | SD | — | — | MA22F20 | SM | MA22F200G | K13 | MA2B027W | SD | — | — |
| DSM164ML2X | SD | — | — | MA24D56 | SM | — | — | MA2B062 | D | — | — |
| DSM165ML2X | SD | — | — | MA24D61 | SM | — | — | MA2B064 | SD | — | — |
| DSM166ML1X | SD | — | — | MA24D64 | SM | — | — | MA2B150 | SD | — | — |
| DSM167MM05X | SD | — | — | MA24D74 | SM | — | — | MA2B161 | SD | — | — |
| DSM168MM01X | SD | — | — | MA26 | D | — | — | MA2B162 | SD | — | — |
| DSM177ML02X | SD | — | — | MA26304 | SM | — | — | MA2B162A | SD | — | — |
| DSM182ML02X | SD | — | — | MA26376 | SD | — | — | MA2B170 | SD | — | — |
| DSM184ML01X | SD | — | — | MA26V01 | SD | — | — | MA2B171 | SD | — | — |
| DSM194MM01X | SD | — | — | MA26V02 | SD | — | — | MA2B171A | SD | — | — |
| DSM195ML02X | SD | — | — | MA26V03 | SD | — | — | MA2B181 | SD | — | — |
| DSM196ML02X | SD | — | — | MA26V04 | SD | — | — | MA2B182 | SD | — | — |
| DSM197MM3X | SD | — | — | MA26V05 | SD | — | — | MA2B190 | SD | — | — |
| DSM198MM5X | SD | — | — | MA26V07 | SD | — | — | MA2B345 | SD | — | — |
| DSM199MM10X | SD | — | — | MA26V09 | SD | — | — | MA2B345E | SD | — | — |
| DSM200MM15X | SD | — | — | MA26V11 | SD | — | — | MA2C029 | SD | — | — |
| DSM203MM5X | SD | — | — | MA26V12 | SD | — | — | MA2C029Q | SD | — | — |
| DSM217ML03X | SD | — | — | MA26V13 | SD | — | — | MA2C029T | SD | — | — |
| DSM256ML02X | SD | — | — | MA26V14 | SD | — | — | MA2C029W | SD | — | — |
| DSM257MM03X | SD | — | — | MA26V15 | SD | — | — | MA2C165 | SD | — | — |
| DSM329MM01X | SD | — | — | MA26V16 | SD | — | — | MA2C166 | SD | — | — |
| DSM361ML50NX | SD | — | — | MA26V17 | SD | — | — | MA2C167 | SD | — | — |
| DSM42BA15D | SD | — | — | MA26V19 | SD | — | — | MA2C167A | SD | — | — |
| DSM42BA15DN | SD | — | — | MA26V20 | SD | — | — | MA2C170 | SD | — | — |
| DSM78BA4D | SM | — | — | MA26V22 | SD | — | — | MA2C171 | SD | — | — |
| DSM78BA4DN | SM | — | — | MA27077 | SM | MA27077G | K5 | MA2C178 | SD | — | — |
| DSM82BA6D | SM | — | — | MA27111 | SM | MA271110G | K2 | MA2C179 | SD | — | — |
| DSM82BA6DP | SM | — | — | MA27331 | SD | — | — | MA2C180 | SD | — | — |
| DSM83BA15D | SM | — | — | MA27331G | SD | — | — | MA2C185 | SD | — | — |
| DSM87BA6D | SM | — | — | MA27376 | SD | — | — | MA2C188 | SD | — | — |
| DSM90BA15D | SM | — | — | MA27376G | SD | — | — | MA2C195 | SD | — | — |
| DSM90BA15DN | SM | — | — | MA27728 | SM | MA277280G | K6 | MA2C196 | SD | — | — |
| DSMAM00802 | SD | — | — | MA27784 | SM | MA277840G | K7 | MA2C346 | SD | — | — |

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| Part No. | | Alternative | Page | Part No. | | Alternative | Page | Part No. | | Alternative | Page |
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| MA2C700 | SD | — | — | MA2S357E | SD | — | — | MA2XV334 | D | — | — |
| MA2C700A | SD | — | — | MA2S367 | SD | — | — | MA2YD15 | SM | MA2YD150G | K11 |
| MA2C719 | SD | — | — | MA2S372 | SD | — | — | MA2YD17 | SM | MA2YD170G | K10 |
| MA2C723 | SD | — | — | MA2S374 | SD | — | — | MA2YD21 | SM | MA2YD210G | K11 |
| MA2C774 | SD | — | — | MA2S376 | SD | — | — | MA2YD23 | SM | MA2YD230G | K11 |
| MA2C775 | SD | — | — | MA2S377 | SD | — | — | MA2YD26 | SM | MA2YD260G | K10 |
| MA2C776 | SD | — | — | MA2S707 | SD | — | — | MA2YD28 | SD | — | — |
| MA2C840 | SD | — | — | MA2S728 | SM | MA2S7280G | K6 | MA2YD33 | SM | MA2YD330G | K10 |
| MA2C856 | SD | — | — | MA2S784 | SM | MA2S7840G | K7 | MA2YF80 | SM | MA2YF800G | K13 |
| MA2C858 | SD | — | — | MA2SD10 | SM | MA2SD100G | K7 | MA2Z001 | SM | MA2Z0010G | K3 |
| MA2C859 | SD | — | — | MA2SD19 | SM | MA2SD190G | K7 | MA2Z030 | SD | — | — |
| MA2D601 | SM | — | — | MA2SD24 | SM | MA2SD240G | K7 | MA2Z030W | SD | — | — |
| MA2D749 | SM | — | — | MA2SD25 | SM | MA2SD250G | K7 | MA2Z077 | SD | — | — |
| MA2D749A | SM | — | — | MA2SD29 | SM | MA2SD290G | K7 | MA2Z081 | SD | — | — |
| MA2D750 | SM | — | — | MA2SD30 | SM | MA2SD300G | K7 | MA2Z110 | SD | — | — |
| MA2D750A | SM | — | — | MA2SD31 | SM | MA2SD310G | K7 | MA2Z111 | SD | — | — |
| MA2D755 | SM | — | — | MA2SD32 | SM | MA2SD320G | K8 | MA2Z112 | SD | — | — |
| MA2D760 | SM | — | — | MA2SE01 | SM | MA2SE010G | K6 | MA2Z113 | SD | — | — |
| MA2D760A | SM | — | — | MA2SP01 | SM | MA2SP010G | K5 | MA2Z115 | SM | — | — |
| MA2DF03 | SM | — | — | MA2SP02 | SM | MA2SP020G | K5 | MA2Z116 | SM | — | — |
| MA2F689 | M | — | — | MA2SP05 | SM | MA2SP050G | K5 | MA2Z304 | SD | — | — |
| MA2F690 | SD | — | — | MA2SP06 | SM | MA2SP060G | K5 | MA2Z304B | SD | — | — |
| MA2H735 | SD | — | — | MA2SV01 | SD | — | — | MA2Z331 | SD | — | — |
| MA2H736 | SD | — | — | MA2SV02 | SD | — | — | MA2Z357 | SD | — | — |
| MA2HD07 | SD | — | — | MA2SV03 | SD | — | — | MA2Z357E | SD | — | — |
| MA2HD08 | SD | — | — | MA2SV04 | SD | — | — | MA2Z357F | SD | — | — |
| MA2HD09 | SD | — | — | MA2SV05 | SD | — | — | MA2Z357J | SD | — | — |
| MA2J111 | SM | MA2J1110G | K3 | MA2SV07 | SD | — | — | MA2Z360 | SD | — | — |
| MA2J112 | SM | MA2J1120G | K4 | MA2SV08 | SD | — | — | MA2Z360E | SD | — | — |
| MA2J113 | SM | MA2J1130G | K4 | MA2SV09 | SD | — | — | MA2Z360J | SD | — | — |
| MA2J114 | SM | MA2J1140G | K3 | MA2SV10 | SD | — | — | MA2Z360J | SD | — | — |
| MA2J115 | SM | MA2J1150G | K3 | MA2SV15 | SD | — | — | MA2Z362 | D | — | — |
| MA2J116 | SM | MA2J1160G | K4 | MA2SV24 | SD | — | — | MA2Z363 | SD | — | — |
| MA2J372 | SM | — | — | MA2W077 | SM | — | — | MA2Z363B | D | — | — |
| MA2J704 | SM | MA2J7040G | K7 | MA2W304 | SM | — | — | MA2Z363E | SD | — | — |
| MA2J727 | SM | MA2J7270G | K8 | MA2W331 | SD | — | — | MA2Z363G | SD | — | — |
| MA2J728 | SM | MA2J7280G | K6 | MA2W376 | SD | — | — | MA2Z364 | D | — | — |
| MA2J7282 | SM | — | — | MA2WV01 | SD | — | — | MA2Z365 | SD | — | — |
| MA2J7282G | SM | — | — | MA2WV02 | SD | — | — | MA2Z365E | SD | — | — |
| MA2J729 | SM | MA2J7290G | K8 | MA2WV03 | SD | — | — | MA2Z366 | SD | — | — |
| MA2J732 | SM | MA2J7320G | K6 | MA2WV04 | SD | — | — | MA2Z366C | SD | — | — |
| MA2J733 | SM | — | — | MA2WV07 | SD | — | — | MA2Z366E | SD | — | — |
| MA2JD24 | SM | — | — | MA2WV09 | SD | — | — | MA2Z367 | SD | — | — |
| MA2JP02 | SM | MA2JP020G | K5 | MA2WV11 | SD | — | — | MA2Z368 | SD | — | — |
| MA2P291 | M | — | — | MA2WV12 | SD | — | — | MA2Z368E | SD | — | — |
| MA2P291A | SM | — | — | MA2WV13 | SD | — | — | MA2Z370 | SD | — | — |
| MA2P701 | SD | — | — | MA2X072 | M | — | — | MA2Z371 | SD | — | — |
| MA2P701A | SD | — | — | MA2X073 | SD | — | — | MA2Z372 | SD | — | — |
| MA2Q643 | M | — | — | MA2X321 | SD | — | — | MA2Z372E | SD | — | — |
| MA2Q705 | SM | — | — | MA2X3210B | SD | — | — | MA2Z374 | SD | — | — |
| MA2Q735 | SM | — | — | MA2X329 | SD | — | — | MA2Z376 | SD | — | — |
| MA2Q736 | SM | MA22D390G | K12 | MA2X329E | SD | — | — | MA2Z377 | SD | — | — |
| MA2Q737 | SM | — | — | MA2X333 | D | — | — | MA2Z379 | D | — | — |
| MA2Q738 | SM | MA24D62 | K12 | MA2X334 | SD | — | — | MA2Z391 | D | — | — |
| MA2Q739 | SM | — | — | MA2X3340G | SD | — | — | MA2Z393 | D | — | — |
| MA2QA01 | M | — | — | MA2X334B | SD | — | — | MA2Z720 | SM | MA2Z7200G | K8 |
| MA2QD01 | SD | — | — | MA2X334E | SD | — | — | MA2Z728 | SM | — | — |
| MA2R064 | D | — | — | MA2X335 | SD | — | — | MA2Z729 | SD | — | — |
| MA2R221 | SM | MA2J1110G | K3 | MA2X335E | SD | — | — | MA2Z732 | SD | — | — |
| MA2R222 | M | MA2J1110G | K3 | MA2X336 | M | — | — | MA2Z748 | SM | MA2Z7480G | K8 |
| MA2R223 | SM | MA2J1110G | K3 | MA2X336E | SD | — | — | MA2Z784 | SM | MA2Z7840G | K7 |
| MA2R782 | D | — | — | MA2X337 | D | — | — | MA2Z785 | SM | MA2Z7850G | K7 |
| MA2S075 | SM | — | — | MA2X338 | SD | — | — | MA2ZD02 | SM | MA2ZD020G | K8 |
| MA2S077 | SM | MA2S077G | K5 | MA2X338E | SD | — | — | MA2ZD14 | SM | MA2ZD140G | K6 |
| MA2S082 | SM | — | — | MA2X339 | SD | — | — | MA2ZD18 | SM | MA2ZD180G | K8 |
| MA2S101 | SM | MA2S1010G | K2 | MA2X339E | SD | — | — | MA2ZV01 | SD | — | — |
| MA2S111 | SM | MA2S1110G | K2 | MA2X341 | SD | — | — | MA2ZV02 | SD | — | — |
| MA2S304 | SD | — | — | MA2X353 | M | — | — | MA2ZV05 | SD | — | — |
| MA2S331 | SD | — | — | MA2X707 | D | — | — | MA2ZV06 | SD | — | — |
| MA2S357 | SD | — | — | MA2XD17 | SM | — | — | MA3000WA | SM | — | — |

Discontinued Types: D Planned Discontinued: SD Maintenance Types: M Planned Maintenance Types: SM

Note) 1. Alternative product is, almost alike in characteristics and function, not same in all respects. Please examine the content when you use.

2. HW and TA products for MT-2, and TW taping products for surface-mounting products are set as Discontinued types.

3. Lead lead-plated products and separated surface-mounting products (including magazine products) are set as Maintenance types.

Maintenance/Discontinued Product List

| Part No. | | Alternative | Page | Part No. | | Alternative | Page | Part No. | | Alternative | Page |
|------------|----|-------------|------|-----------|----|-------------|------|----------|----|-------------|------|
| MA301 | D | — | — | MA3J741 | SM | MA3J7410G | K6 | MA3X028 | SD | — | — |
| MA3240CH P | M | — | — | MA3J741D | SM | MA3J741DG | K6 | MA3X028T | SD | — | — |
| MA325 | D | — | — | MA3J741E | SM | MA3J741EG | K6 | MA3X028W | SD | — | — |
| MA326 | D | — | — | MA3J742 | SM | MA3J7420G | K6 | MA3X057 | SD | — | — |
| MA328 | D | — | — | MA3J744 | SM | MA3J7440G | K8 | MA3X075D | SM | — | — |
| MA342 | D | — | — | MA3J745 | SD | — | — | MA3X075E | SM | — | — |
| MA3A100 | SM | — | — | MA3J7450G | SM | — | — | MA3X100 | SM | MA3X1000G | K3 |
| MA3D644 | D | — | — | MA3J745D | SD | — | — | MA3X151A | SD | MA3X152A | K3 |
| MA3D653 | SD | — | — | MA3J745DG | SM | — | — | MA3X151D | SD | MA3X152D | K3 |
| MA3D654 | SD | — | — | MA3J745E | SM | MA3J745EG | K6 | MA3X151E | SD | MA3X152E | K3 |
| MA3D660 | SM | — | — | MA3J792 | SM | — | — | MA3X151K | SD | MA3X152K | K3 |
| MA3D689 | SM | — | — | MA3JP02F | SM | MA3JP02FG | K5 | MA3X157 | SD | MA3X157A | K4 |
| MA3D690 | SD | — | — | MA3JP05E | SM | — | — | MA3X159 | SM | — | — |
| MA3D691 | SD | — | — | MA3K649 | SM | — | — | MA3X164 | SD | — | — |
| MA3D693 | SM | — | — | MA3K749 | SM | — | — | MA3X200E | SM | — | — |
| MA3D694 | SM | — | — | MA3K755 | SM | — | — | MA3X200F | M | — | — |
| MA3D749 | SM | — | — | MA3K760 | SM | — | — | MA3X551 | SD | — | — |
| MA3D749A | SD | — | — | MA3L204D | SM | MA3X152D | K3 | MA3X555 | SD | — | — |
| MA3D750 | SD | — | — | MA3L204E | SM | MA3X152E | K3 | MA3X557 | SD | — | — |
| MA3D750A | SD | — | — | MA3L205D | SD | MA3X152D | K3 | MA3X558 | SD | — | — |
| MA3D752 | SM | — | — | MA3L205E | SD | MA3X152E | K3 | MA3X717D | SD | — | — |
| MA3D752A | SM | — | — | MA3L206 | SD | — | — | MA3X730 | D | — | — |
| MA3D755 | SM | — | — | MA3L207 | SM | — | — | MA3X781 | SM | — | — |
| MA3D756 | SD | — | — | MA3M154D | SD | — | — | MA3X997 | SD | — | — |
| MA3D760 | SD | — | — | MA3M154E | SD | — | — | MA3XD17 | SD | — | — |
| MA3D761 | SD | — | — | MA3M155D | SD | — | — | MA3Z070 | SM | — | — |
| MA3D768 | M | — | — | MA3M155E | SD | — | — | MA3Z080D | SD | — | — |
| MA3D769 | M | — | — | MA3M156 | SD | — | — | MA3Z080E | SD | — | — |
| MA3D798 | SM | — | — | MA3M553 | SD | — | — | MA3Z141A | SD | — | — |
| MA3D799 | SM | — | — | MA3N753 | M | — | — | MA3Z141D | SD | — | — |
| MA3DD81 | SM | — | — | MA3N753A | D | — | — | MA3Z141E | SD | — | — |
| MA3F649 | SM | — | — | MA3S132A | SM | MA3S132AG | K2 | MA3Z141K | SD | — | — |
| MA3F650 | SM | — | — | MA3S132D | SM | MA3S132DG | K2 | MA3Z142A | SD | — | — |
| MA3F653 | SD | — | — | MA3S132E | SM | MA3S132EG | K2 | MA3Z142D | SD | — | — |
| MA3F654 | SD | — | — | MA3S132K | SM | MA3S132KG | K2 | MA3Z142E | SD | — | — |
| MA3F670 | SM | — | — | MA3S133 | SM | MA3S1330G | K4 | MA3Z142K | SD | — | — |
| MA3F693 | D | — | — | MA3S137 | SM | MA3S1370G | K4 | MA3Z142P | M | — | — |
| MA3F694 | D | — | — | MA3S781 | SM | MA3S7810G | K6 | MA3Z142Q | M | — | — |
| MA3F749 | D | — | — | MA3S781D | SM | MA3S781DG | K6 | MA3Z142T | M | — | — |
| MA3F749A | SD | — | — | MA3S781E | SM | MA3S781EG | K6 | MA3Z143 | SD | — | — |
| MA3F750 | D | — | — | MA3S781F | SM | MA3S781FG | K6 | MA3Z143A | SD | — | — |
| MA3F750A | SD | — | — | MA3S795 | SM | MA3S7950G | K6 | MA3Z147 | SD | — | — |
| MA3F752 | D | — | — | MA3S795D | SM | MA3S795DG | K6 | MA3Z200 | D | — | — |
| MA3F752A | SD | — | — | MA3S795E | SM | MA3S795EG | K6 | MA3Z240 | D | — | — |
| MA3F755 | M | — | — | MA3SD05F | SM | MA3SD05FG | K7 | MA3Z378 | M | — | — |
| MA3F756 | M | — | — | MA3SD22F | SM | — | — | MA3Z551 | SD | — | — |
| MA3F760 | D | — | — | MA3SD22FG | SM | — | — | MA3Z741 | SD | — | — |
| MA3F761 | D | — | — | MA3SD29F | SM | MA3SD29FG | K7 | MA3Z741E | SD | — | — |
| MA3F769 | M | — | — | MA3SE01 | SM | MA3SE010G | K6 | MA3Z745 | SD | — | — |
| MA3G645 | SM | — | — | MA3SE02 | SM | MA3SE020G | K6 | MA3Z745D | SD | — | — |
| MA3G651 | SM | — | — | MA3T152 | SM | — | — | MA3Z792 | SM | MA3Z7920G | K7 |
| MA3G655 | SD | — | — | MA3T152A | SD | — | — | MA3Z792D | SM | MA3Z792DG | K7 |
| MA3G695 | SM | — | — | MA3T152D | SD | — | — | MA3Z792E | SM | MA3Z792EG | K7 |
| MA3G751 | SD | — | — | MA3T152E | SD | — | — | MA3Z793 | SM | MA3Z7930G | K7 |
| MA3G751A | SD | — | — | MA3T152K | SD | — | — | MA3ZD12 | SM | MA3ZD120G | K8 |
| MA3G762 | D | — | — | MA3T157A | SD | — | — | MA3ZT42D | SM | — | — |
| MA3J080D | SM | — | — | MA3T157J | SD | — | — | MA3ZT47 | SM | — | — |
| MA3J141A | SD | MA3J142AG | K3 | MA3TD01 | M | — | — | MA4L111 | SD | — | — |
| MA3J141D | SD | MA3J142DG | K3 | MA3U653 | SM | — | — | MA4L728 | SD | — | — |
| MA3J141E | SD | MA3J142EG | K3 | MA3U689 | SM | — | — | MA4L784 | SM | — | — |
| MA3J141K | SD | MA3J142KG | K3 | MA3U690 | SM | — | — | MA4X159 | SD | MA4X159AG | K3 |
| MA3J142A | SM | MA3J142AG | K3 | MA3U749 | SD | — | — | MA4X159A | SM | MA4X159AG | K3 |
| MA3J142D | SM | MA3J142DG | K3 | MA3U755 | SM | — | — | MA4X160 | SM | MA4X1600G | K4 |
| MA3J142E | SM | MA3J142EG | K3 | MA3U760 | SM | — | — | MA4X160A | SM | MA4X160AG | K3 |
| MA3J142K | SM | MA3J142KG | K3 | MA3UD06 | SM | — | — | MA4X174 | SM | MA4X1740G | K3 |
| MA3J143 | SM | MA3J1430G | K4 | MA3V175D | SM | — | — | MA4X193 | SM | MA4X1930G | K3 |
| MA3J143A | SM | MA3J143AG | K4 | MA3V175E | SM | — | — | MA4X194 | SM | MA4X1940G | K4 |
| MA3J147 | SM | MA3J1470G | K4 | MA3V176D | SM | — | — | MA4X348 | SM | — | — |
| MA3J700 | SM | MA3J7000G | K8 | MA3V176E | SM | — | — | MA4X713 | SM | MA4X7130G | K9 |
| MA3J702 | SM | MA3J7020G | K8 | MA3V177 | SM | — | — | MA4X714 | SM | MA4X7140G | K9 |

Discontinued Types: D Planned Discontinued: SD Maintenance Types: M Planned Maintenance Types: SM

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2. HW and TA products for MT-2, and TW taping products for surface-mounting products are set as Discontinued types.

3. Lead lead-plated products and separated surface-mounting products (including magazine products) are set as Maintenance types.



Maintenance/Discontinued Product List

| Part No. | | Alternative | Page | Part No. | | Alternative | Page | Part No. | | Alternative | Page |
|-------------|----|-------------------|------|----------|----|-------------|------|----------|----|-------------|------|
| MA4X724 | SM | MA4X7240G | K10 | MAZ1024 | SD | — | — | MAZ3075X | SM | — | — |
| MA4X726 | SM | MA4X7260G | — | MAZ1027 | SD | — | — | MAZ3082D | SD | — | — |
| MA4X743 | SD | — | — | MAZ1030 | SD | — | — | MAZ3091E | SD | — | — |
| MA4X746 | SM | MA4X7460G | K10 | MAZ1033 | SD | — | — | MAZ3100D | SD | — | — |
| MA4X796 | SM | MA4X7960G | K9 | MAZ1036 | SD | — | — | MAZ3100E | SD | — | — |
| MA4X862 | SD | — | — | MAZ1039 | SD | — | — | MAZ3100X | SD | — | — |
| MA4X998 | M | — | — | MAZ1043 | SD | — | — | MAZ3120D | SD | — | — |
| MA4X999 | SM | — | — | MAZ1047 | SD | — | — | MAZ3130D | SD | — | — |
| MA4Z159 | SM | MA4Z1590G | K3 | MAZ1051 | SD | — | — | MAZ3180D | SM | — | — |
| MA4Z713 | SM | MA4Z7130G | K6 | MAZ1056 | SD | — | — | MAZ3200D | SD | — | — |
| MA4ZD03 | SM | MA4ZD030G | K7 | MAZ1062 | SD | — | — | MAZ3200X | SD | — | — |
| MA4ZD14 | SM | MA4ZD140G | K6 | MAZ1068 | SD | — | — | MAZ3330D | SM | — | — |
| MA522 | D | — | — | MAZ1075 | SD | — | — | MAZ3390 | SD | — | — |
| MA56 | D | — | — | MAZ1082 | SD | — | — | MAZ3430 | SM | — | — |
| MA5Z002E | SM | — | — | MAZ1091 | SD | — | — | MAZ4020 | SD | — | — |
| MA629 | SM | — | — | MAZ1100 | SD | — | — | MAZ4022 | SD | — | — |
| MA661 | SM | — | — | MAZ1110 | SD | — | — | MAZ4024 | SD | — | — |
| MA671 | D | — | — | MAZ1120 | SD | — | — | MAZ4027 | SD | — | — |
| MA691 | SM | — | — | MAZ1130 | SD | — | — | MAZ4030 | SD | — | — |
| MA6J784 | SM | MA6J786X/MA6J786Y | K9 | MAZ1140 | SD | — | — | MAZ4033 | SD | — | — |
| MA6X078 | SD | — | — | MAZ1150 | SD | — | — | MAZ4036 | SD | — | — |
| MA6X121 | SM | MA6X1210G | K3 | MAZ1160 | SD | — | — | MAZ4039 | SD | — | — |
| MA6X122 | SM | MA6X1220G | K3 | MAZ1180 | SD | — | — | MAZ4043 | SD | — | — |
| MA6X123 | SM | MA6X1230G | K3 | MAZ1200 | SD | — | — | MAZ4047 | SD | — | — |
| MA6X124 | SM | MA6X1240G | K3 | MAZ1220 | SD | — | — | MAZ4047N | SD | — | — |
| MA6X125 | SM | MA6X1250G | K4 | MAZ1240 | SD | — | — | MAZ4051 | SD | — | — |
| MA6X126 | SM | MA6X1260G | K3 | MAZ1270 | SD | — | — | MAZ4051N | SD | — | — |
| MA6X127 | SM | MA6X1270G | K3 | MAZ1300 | SD | — | — | MAZ4056 | SD | — | — |
| MA6X128 | SM | MA6X1280G | K3 | MAZ1330 | SD | — | — | MAZ4056N | SD | — | — |
| MA6X129 | SM | MA6X1290G | K3 | MAZ1360 | SD | — | — | MAZ4062 | SD | — | — |
| MA6X139 | SM | — | — | MAZ1390 | SD | — | — | MAZ4062N | SD | — | — |
| MA6X344B | SM | — | — | MAZ1430 | SD | — | — | MAZ4068 | SD | — | — |
| MA6X556 | SD | — | — | MAZ1470 | SD | — | — | MAZ4068N | SD | — | — |
| MA6X718 | SM | MA6X7180G | K9 | MAZ1510 | SD | — | — | MAZ4075 | SD | — | — |
| MA6XD16 | SM | — | — | MAZ1560 | SD | — | — | MAZ4075N | SD | — | — |
| MA711 | D | — | — | MAZ2051 | SD | — | — | MAZ4082 | SD | — | — |
| MA711A | D | — | — | MAZ2056 | SD | — | — | MAZ4082N | SD | — | — |
| MA7U49 | M | — | — | MAZ2062 | SD | — | — | MAZ4091 | SD | — | — |
| MA7Z030 | SM | — | — | MAZ2068 | SD | — | — | MAZ4091N | SD | — | — |
| MA7Z033 | SM | — | — | MAZ2075 | SD | — | — | MAZ4091X | SD | — | — |
| MA7Z051 | SM | — | — | MAZ2082 | SD | — | — | MAZ4100 | SD | — | — |
| MA7Z062 | SM | — | — | MAZ2091 | SD | — | — | MAZ4100N | SD | — | — |
| MA7Z082 | SM | — | — | MAZ2100 | SD | — | — | MAZ4104J | SD | — | — |
| MA7Z091 | SM | — | — | MAZ2110 | SD | — | — | MAZ4108J | SD | — | — |
| MA7Z100 | SM | — | — | MAZ2120 | SD | — | — | MAZ4110 | SD | — | — |
| MA7Z120 | SM | — | — | MAZ2130 | SD | — | — | MAZ4110N | SD | — | — |
| MA7Z180 | SM | — | — | MAZ2150 | SD | — | — | MAZ4120 | SD | — | — |
| MA860 | D | — | — | MAZ2160 | SD | — | — | MAZ4120N | SD | — | — |
| MA999 | D | — | — | MAZ2180 | SD | — | — | MAZ4130 | SD | — | — |
| MALD068X | SM | MALD068XG | K16 | MAZ2200 | SD | — | — | MAZ4130N | SD | — | — |
| MALM062H | SM | MALM062HG | K16 | MAZ2220 | SD | — | — | MAZ4140 | SD | — | — |
| MALS062 | SM | MALS062G | K16 | MAZ2240 | SD | — | — | MAZ4150 | SD | — | — |
| MALS068 | SM | MALS068G | K16 | MAZ2270 | SD | — | — | MAZ4150N | SD | — | — |
| MALS068X | SM | MALS068XG | K16 | MAZ2300 | SD | — | — | MAZ4160 | SD | — | — |
| MALS160X | SM | MALS160XG | K16 | MAZ2330 | SD | — | — | MAZ4160N | SD | — | — |
| MALS180X | SM | MALS180XG | K16 | MAZ2360 | SD | — | — | MAZ4180 | SD | — | — |
| MALT062H | SM | MALT062HG | K16 | MAZ2390 | SD | — | — | MAZ4180N | SD | — | — |
| MAS3132D | SM | MAS3132DG | K2 | MAZ2430 | SD | — | — | MAZ4200 | SD | — | — |
| MAS3132E | SM | MAS3132EG | K2 | MAZ2470 | SD | — | — | MAZ4200N | SD | — | — |
| MAS3781 | SM | — | — | MAZ2510 | SD | — | — | MAZ4220 | SD | — | — |
| MAS3781E | SM | — | — | MAZ2560 | SD | — | — | MAZ4220N | SD | — | — |
| MAS3784 | SM | — | — | MAZ3047X | SD | — | — | MAZ4240 | SD | — | — |
| MAS3795E | SM | MAS3795EG | K6 | MAZ3056D | SD | — | — | MAZ4240N | SD | — | — |
| MAU2728 | SM | MAU27280G | K6 | MAZ3056X | SD | — | — | MAZ4270 | SD | — | — |
| MAYK062D | SM | MAYK062DG | K16 | MAZ3062D | SD | — | — | MAZ4270N | SD | — | — |
| MAYS0750Y | SM | MAYS075GY | K16 | MAZ3062X | SM | — | — | MAZ4300 | SD | — | — |
| MAYS0750Z | SM | MAYS075GZ | K16 | MAZ3068D | SD | — | — | MAZ4300N | SD | — | — |
| MAZ0062CH P | SD | — | — | MAZ3075D | SD | — | — | MAZ4330 | SD | — | — |
| MAZ1020 | SD | — | — | MAZ3075E | SD | — | — | MAZ4330N | SD | — | — |
| MAZ1022 | SD | — | — | MAZ3075T | SM | — | — | MAZ4360 | SD | — | — |

Discontinued Types: D Planned Discontinued: SD Maintenance Types: M Planned Maintenance Types: SM

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3. Lead lead-plated products and separated surface-mounting products (including magazine products) are set as Maintenance types.

Maintenance/Discontinued Product List

| Part No. | | Alternative | Page | Part No. | | Alternative | Page | Part No. | | Alternative | Page |
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| MAZ4360N | SD | — | — | MAZ7390 | SD | — | — | MAZD024 | SM | — | — |
| MAZ4390 | SD | — | — | MAZ7430 | SD | — | — | MAZD024G | SM | — | — |
| MAZ4390N | SD | — | — | MAZ7470 | SD | — | — | MAZD027 | SM | — | — |
| MAZ4470 | SD | — | — | MAZ7510 | SD | — | — | MAZD027G | SM | — | — |
| MAZ4510 | SD | — | — | MAZ7560 | SD | — | — | MAZD030 | SM | — | — |
| MAZ4560 | SD | — | — | MAZ8024 | SM | MAZ8024G | K14 | MAZD030G | SM | — | — |
| MAZ5047 | M | — | — | MAZ8027 | SM | MAZ8027G | K14 | MAZD033 | SM | — | — |
| MAZ5051 | M | — | — | MAZ8030 | SM | MAZ8030G | K14 | MAZD033G | SM | — | — |
| MAZ5056 | M | — | — | MAZ8033 | SM | MAZ8033G | K14 | MAZD036 | SM | — | — |
| MAZ5062 | M | — | — | MAZ8036 | SM | MAZ8036G | K14 | MAZD036G | SM | — | — |
| MAZ5068 | M | — | — | MAZ8039 | SM | MAZ8039G | K14 | MAZD039 | SM | — | — |
| MAZ5075 | M | — | — | MAZ8043 | SM | MAZ8043G | K14 | MAZD0390G | SM | — | — |
| MAZ5082 | M | — | — | MAZ8047 | SM | MAZ8047G | K14 | MAZD039G | SM | — | — |
| MAZ5091 | M | — | — | MAZ8051 | SM | MAZ8051G | K14 | MAZD043 | SM | — | — |
| MAZ5100 | M | — | — | MAZ8056 | SM | MAZ8056G | K14 | MAZD043G | SM | — | — |
| MAZ5110 | M | — | — | MAZ8062 | SM | MAZ8062G | K14 | MAZD047 | SM | — | — |
| MAZ5120 | M | — | — | MAZ8068 | SM | MAZ8068G | K14 | MAZD047G | SM | — | — |
| MAZ5130 | M | — | — | MAZ8075 | SM | MAZ8075G | K14 | MAZD051 | SM | MAZD051G | K14 |
| MAZ5150 | M | — | — | MAZ8082 | SM | MAZ8082G | K14 | MAZD056 | SM | MAZD056G | K14 |
| MAZ5160 | M | — | — | MAZ8091 | SM | MAZ8091G | K14 | MAZD062 | SM | MAZD062G | K14 |
| MAZ5180 | M | — | — | MAZ8100 | SM | MAZ8100G | K14 | MAZD068 | SM | MAZD068G | K14 |
| MAZ5200 | M | — | — | MAZ8110 | SM | MAZ8110G | K14 | MAZD075 | SM | MAZD075G | K14 |
| MAZ5220 | M | — | — | MAZ8120 | SM | MAZ8120G | K14 | MAZD082 | SM | MAZD082G | K14 |
| MAZ5240 | M | — | — | MAZ8130 | SM | MAZ8130G | K14 | MAZD091 | SM | MAZD091G | K14 |
| MAZ6033 | D | MAZ8033G | K14 | MAZ8140 | SM | MAZ8140G | K14 | MAZD100 | SM | MAZD100G | K14 |
| MAZ6039 | D | MAZ8039G | K14 | MAZ8150 | SM | MAZ8150G | K14 | MAZD110 | SM | MAZD110G | K14 |
| MAZ6043 | D | — | — | MAZ8160 | SM | MAZ8160G | K14 | MAZD120 | SM | MAZD120G | K14 |
| MAZ6051 | D | MAZ8051G | K14 | MAZ8180 | SM | MAZ8180G | K14 | MAZD130 | SM | — | — |
| MAZ6056 | D | MAZ8056G | K14 | MAZ8200 | SM | MAZ8200G | K14 | MAZD130G | SM | — | — |
| MAZ6062 | D | MAZ8062G | K14 | MAZ8220 | SM | MAZ8220G | K14 | MAZD150 | SM | — | — |
| MAZ6068 | D | MAZ8068G | K14 | MAZ8240 | SM | MAZ8240G | K14 | MAZD150G | SM | — | — |
| MAZ6082 | D | MAZ8082G | K14 | MAZ8270 | SM | MAZ8270G | K14 | MAZD160 | SM | MAZD160G | K14 |
| MAZ6091 | D | MAZ8091G | K14 | MAZ8300 | SM | MAZ8300G | K14 | MAZD180 | SM | MAZD180G | K14 |
| MAZ6100 | D | MAZ8100G | K14 | MAZ8330 | SM | MAZ8330G | K14 | MAZD200 | SM | MAZD200G | K14 |
| MAZ6110 | D | MAZ8110G | K14 | MAZ8360 | SM | MAZ8360G | K14 | MAZD220 | SM | MAZD220G | K14 |
| MAZ6120 | D | MAZ8120G | K14 | MAZ8390 | SM | MAZ8390G | K14 | MAZD240 | SM | MAZD240G | K14 |
| MAZ6130 | D | — | — | MAZ9039D | SD | — | — | MAZD270 | SM | MAZD270G | K14 |
| MAZ6150 | D | MAZ8150G | K14 | MAZ9062 | SD | — | — | MAZD300 | SM | MAZD300G | K14 |
| MAZ6180 | D | — | — | MAZ9062D | SD | — | — | MAZD330 | SM | — | — |
| MAZ6200 | D | MAZ8200G | K14 | MAZ9075 | SD | — | — | MAZD360 | SM | MAZD360G | K14 |
| MAZ6220 | D | — | — | MAZ9075D | SD | — | — | MAZD390 | SM | MAZD390G | K14 |
| MAZ6240 | D | MAZ8240G | K14 | MAZ9091 | SM | — | — | MAZE062D | SM | MAZE062DG | K16 |
| MAZ6270 | D | MAZ8270G | K14 | MAZ9120D | SD | — | — | MAZF033 | SM | — | — |
| MAZ6330 | D | MAZ8330G | K14 | MAZ9160D | SD | — | — | MAZF036 | SM | — | — |
| MAZ6360 | D | MAZ8360G | K14 | MAZ9180D | SM | — | — | MAZF039 | SD | — | — |
| MAZ6510 | D | — | — | MAZ9500 | D | — | — | MAZF043 | SM | — | — |
| MAZ7051 | SD | — | — | MAZA024 | SM | — | — | MAZF047 | SD | — | — |
| MAZ7056 | SD | — | — | MAZA027 | SM | — | — | MAZF051 | SM | — | — |
| MAZ7062 | SD | — | — | MAZA030 | SM | — | — | MAZF056 | SM | — | — |
| MAZ7068 | SD | — | — | MAZA033 | SM | — | — | MAZF062 | SM | — | — |
| MAZ7075 | SD | — | — | MAZA036 | SM | — | — | MAZF068 | SM | — | — |
| MAZ70750B | SD | — | — | MAZA039 | SM | — | — | MAZF075 | SM | — | — |
| MAZ7082 | SD | — | — | MAZA043 | SM | — | — | MAZF082 | SM | — | — |
| MAZ7091 | SD | — | — | MAZA062 | SM | — | — | MAZF091 | SM | — | — |
| MAZ7100 | SD | — | — | MAZA075 | SM | — | — | MAZF100 | SM | — | — |
| MAZ7110 | SD | — | — | MAZA091 | SM | — | — | MAZF110 | SM | — | — |
| MAZ7120 | SD | — | — | MAZA100 | SM | — | — | MAZF120 | SD | — | — |
| MAZ7130 | SD | — | — | MAZA110 | SM | — | — | MAZG033 | SD | — | — |
| MAZ7150 | SD | — | — | MAZA120 | SM | — | — | MAZG036 | SD | — | — |
| MAZ7160 | SD | — | — | MAZA130 | SM | — | — | MAZG039 | SD | — | — |
| MAZ7180 | SD | — | — | MAZA150 | SM | — | — | MAZG043 | SD | — | — |
| MAZ71800B | SD | — | — | MAZA160 | SM | — | — | MAZG047 | SD | — | — |
| MAZ7200 | SD | — | — | MAZA180 | SM | — | — | MAZG051 | SD | — | — |
| MAZ72000A | SD | — | — | MAZA200 | SM | — | — | MAZG056 | SD | — | — |
| MAZ7220 | SD | — | — | MAZA220 | SM | — | — | MAZG062 | SD | — | — |
| MAZ7240 | SD | — | — | MAZA240 | SM | — | — | MAZG068 | SD | — | — |
| MAZ7270 | SD | — | — | MAZA300 | SM | — | — | MAZG075 | SD | — | — |
| MAZ7300 | SD | — | — | MAZA330 | SM | — | — | MAZG082 | SD | — | — |
| MAZ7330 | SD | — | — | MAZA360 | SM | — | — | MAZG091 | SD | — | — |
| MAZ7360 | SD | — | — | MAZA390 | SM | — | — | MAZG100 | SD | — | — |

Discontinued Types: D Planned Discontinued: SD Maintenance Types: M Planned Maintenance Types: SM

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Maintenance/Discontinued Product List

| Part No. | | Alternative | Page | Part No. | | Alternative | Page | Part No. | | Alternative | Page |
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| MAZG110 | SD | — | — | MAZS062 | SM | MAZS062G | K14 | MAZY390 | SM | — | — |
| MAZG120 | SD | — | — | MAZS068 | SM | MAZS068G | K14 | MAZY430 | SM | — | — |
| MAZH062 | SD | — | — | MAZS075 | SM | MAZS075G | K14 | MAZY470 | SM | — | — |
| MAZH075 | SD | — | — | MAZS082 | SM | MAZS082G | K14 | MAZY510 | SM | — | — |
| MAZH100 | SD | — | — | MAZS091 | SM | MAZS091G | K14 | MN1280 | D | — | — |
| MAZH120 | SD | — | — | MAZS100 | SM | MAZS100G | K14 | MN1280 | D | — | — |
| MAZH160 | SD | — | — | MAZS110 | SM | MAZS110G | K14 | MN1280 | D | — | — |
| MAZJ068H | SD | — | — | MAZS120 | SM | MAZS120G | K14 | MN12801 | D | — | — |
| MAZJ068HG | SM | — | — | MAZS130 | SM | MAZS130G | K14 | MN12801 | D | — | — |
| MAZJ082D | SD | — | — | MAZS140 | SM | — | — | MN1380 | D | — | — |
| MAZJ082DG | SM | — | — | MAZS140G | SM | — | — | MN1380 | D | — | — |
| MAZJ082H | SM | — | — | MAZS150 | SM | MAZS150G | K14 | MN1380 | D | — | — |
| MAZJ082HG | SM | — | — | MAZS160 | SM | MAZS160G | K14 | MN1380 | D | — | — |
| MAZJ100D | SD | — | — | MAZS180 | SM | MAZS180G | K14 | MN1381 | SD | — | — |
| MAZJ100E | M | — | — | MAZS200 | SM | MAZS200G | K14 | MN13811 | SD | — | — |
| MAZJ120H | SM | — | — | MAZS220 | SM | MAZS220G | K14 | MN13811S | SD | — | — |
| MAZJ120HG | SM | — | — | MAZS240 | SM | MAZS240G | K14 | MN13812 | SD | — | — |
| MAZJ200D | SD | — | — | MAZS270 | SM | MAZS270G | K14 | MN13812S | SD | — | — |
| MAZJ200DG | SM | — | — | MAZS300 | SM | MAZS300G | K14 | MN1381S | SD | — | — |
| MAZK068D | SM | — | — | MAZS330 | SM | MAZS330G | K14 | MN1382 | SD | — | — |
| MAZK068H | SM | — | — | MAZS360 | SM | MAZS360G | K14 | MN13821 | SD | — | — |
| MAZK075D | SD | — | — | MAZS390 | SM | MAZS390G | K14 | MN13821S | SD | — | — |
| MAZK120D | SD | — | — | MAZT062H | SM | MAZT062HG | K15 | MN13822 | SD | — | — |
| MAZK270D | SD | — | — | MAZT068H | SM | MAZT068HG | K15 | MN13822S | SD | — | — |
| MAZL062D | SD | — | — | MAZT082D | SD | — | — | MN1382S | SD | — | — |
| MAZL062H | SM | — | — | MAZT082H | SM | MAZT082HG | K15 | MN1383 | D | — | — |
| MAZL068D | SD | — | — | MAZT100H | SM | MAZT100HG | K15 | MN13831 | D | — | — |
| MAZL068H | SM | MAZL068HG | K15 | MAZT120H | SM | MAZT120HG | K15 | MN13832 | D | — | — |
| MAZL075D | SD | — | — | MAZU190 | D | — | — | MN1383S | D | — | — |
| MAZL082H | SM | MAZL082HG | K15 | MAZU200 | SM | — | — | MSG33001 | SD | — | — |
| MAZL091D | SM | — | — | MAZU220 | M | — | — | MSG33002 | SD | — | — |
| MAZL120D | SD | — | — | MAZU240 | M | — | — | MSG33003 | SD | — | — |
| MAZL120H | SM | MAZL120HG | K15 | MAZU270 | SD | — | — | MSG33004 | SD | — | — |
| MAZL160D | SM | — | — | MAZU300 | SD | — | — | MSG330C4 | SD | — | — |
| MAZL270D | SM | — | — | MAZU330 | SD | — | — | MSG330D4 | SD | — | — |
| MAZM062H | SM | MAZM062HG | K15 | MAZV082D | SD | — | — | MTM13120 | SM | — | — |
| MAZM068H | SM | MAZM068HG | K15 | MAZV082DF | SM | — | — | MTM13124 | SM | — | — |
| MAZM082H | SM | MAZM082HG | K15 | MAZW062H | SM | — | — | MTM13221 | SD | — | — |
| MAZM100H | SM | MAZM100HG | K15 | MAZW068H | SM | MAZW068HG | K15 | MTM13227 | SM | — | — |
| MAZM120H | SM | MAZM120HG | K15 | MAZW082H | SM | MAZW082HG | K15 | MTM15624 | SM | — | — |
| MAZN033 | SM | — | — | MAZW100H | SM | MAZW100HG | K15 | MTM23110 | SM | — | — |
| MAZN036 | SM | — | — | MAZW120H | SM | MAZW120HG | K15 | MTM23123 | SM | — | — |
| MAZN039 | SM | — | — | MAZX200 | M | — | — | MTM23223 | SM | — | — |
| MAZN043 | SM | — | — | MAZX220 | M | — | — | MTM26110 | SM | — | — |
| MAZN047 | SM | — | — | MAZX240 | M | — | — | MTM26123 | SM | — | — |
| MAZN051 | SM | — | — | MAZX270 | M | — | — | MTM86625 | SM | — | — |
| MAZN056 | SM | — | — | MAZX300 | M | — | — | NP04664 | SD | — | — |
| MAZN062 | SM | — | — | MAZX330 | M | — | — | NP04695 | SD | — | — |
| MAZN068 | SM | — | — | MAZY047 | SM | — | — | NP0A547 | SD | — | — |
| MAZN075 | SM | — | — | MAZY051 | SM | — | — | OD503 | SM | — | — |
| MAZN082 | SM | — | — | MAZY056 | SM | — | — | OD503A | SM | — | — |
| MAZN091 | SM | — | — | MAZY062 | SM | — | — | OF4175 | SM | — | — |
| MAZN100 | SM | — | — | MAZY068 | SM | — | — | OF4325 | SM | — | — |
| MAZN110 | SM | — | — | MAZY075 | SM | — | — | PU42C26 | D | — | — |
| MAZN120 | SM | — | — | MAZY082 | SM | — | — | PU61C56 | D | — | — |
| MAZR033 | SM | — | — | MAZY091 | SM | — | — | PU8432 | D | — | — |
| MAZR056 | SM | — | — | MAZY100 | SM | — | — | PU8456 | D | — | — |
| MAZR082 | SM | — | — | MAZY110 | SM | — | — | PUA3110 | SM | — | — |
| MAZR082H | SM | — | — | MAZY120 | SM | — | — | PUA3111 | SM | — | — |
| MAZR120 | SM | — | — | MAZY130 | SM | — | — | PUA3112 | SM | — | — |
| MAZS024 | SM | MAZS024G | K14 | MAZY150 | SM | — | — | PUA3113 | SM | — | — |
| MAZS027 | SM | MAZS027G | K14 | MAZY160 | SM | — | — | PUA3114 | SM | — | — |
| MAZS030 | SM | MAZS030G | K14 | MAZY180 | SM | — | — | PUA3116 | SM | — | — |
| MAZS033 | SM | MAZS033G | K14 | MAZY200 | SM | — | — | PUA3117 | SM | — | — |
| MAZS036 | SM | MAZS036G | K14 | MAZY220 | SM | — | — | PUA3118 | SM | — | — |
| MAZS039 | SM | MAZS039G | K14 | MAZY240 | SM | — | — | PUA3119 | SD | — | — |
| MAZS043 | SM | MAZS043G | K14 | MAZY270 | SM | — | — | PUA3120 | SM | — | — |
| MAZS047 | SM | MAZS047G | K14 | MAZY300 | SM | — | — | PUA3121 | SM | — | — |
| MAZS051 | SM | MAZS051G | K14 | MAZY330 | SM | — | — | PUA3122 | SM | — | — |
| MAZS056 | SM | MAZS056G | K14 | MAZY360 | SM | — | — | PUA3123 | D | — | — |

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| Part No. | | Alternative | Page | Part No. | | Alternative | Page | Part No. | | Alternative | Page |
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| PUA3124 | SM | — | — | PUB4314 | D | — | — | UN2113AI | D | UNR2113 | H17 |
| PUA3127 | SM | — | — | PUB4320 | D | — | — | UN2113T | SM | — | — |
| PUA3131 | M | — | — | PUB4320A | D | — | — | UN2115T | SM | — | — |
| PUA3132 | M | — | — | PUB4325 | D | — | — | UN2124T | SM | — | — |
| PUA3133 | M | — | — | PUB4410 | D | — | — | UN2130 | SM | — | — |
| PUA3134 | M | — | — | PUB4410A | D | — | — | UN2154T | SM | — | — |
| PUA3135 | M | — | — | PUB4411 | D | — | — | UN2210T | SM | — | — |
| PUA3136 | SM | — | — | PUB4411A | D | — | — | UN2211A | SM | UNR2211 | H17 |
| PUA3137 | SM | — | — | PUB4412 | SM | — | — | UN2211AI | D | — | — |
| PUA3138 | M | — | — | PUB4413 | SM | — | — | UN2211T | SM | — | — |
| PUA3141 | M | — | — | PUB4414 | D | — | — | UN2212A | SM | — | — |
| PUA3142 | M | — | — | PUB4416 | SM | — | — | UN2212AI | D | — | — |
| PUA3143 | M | — | — | PUB4417 | D | — | — | UN2212T | SM | — | — |
| PUA3144 | M | — | — | PUB4417A | D | — | — | UN2213AI | D | — | — |
| PUA3145 | M | — | — | PUB4418 | SM | — | — | UN2213T | SM | — | — |
| PUA3146 | M | — | — | PUB4419 | D | — | — | UN2214AI | SM | — | — |
| PUA3147 | M | — | — | PUB4420 | D | — | — | UN2215T | SM | — | — |
| PUA3148 | M | — | — | PUB4420A | D | — | — | UN2216T | SM | — | — |
| PUA3171 | SM | — | — | PUB4421 | D | — | — | UN221ET | SM | — | — |
| PUA3173 | SM | — | — | PUB4422 | D | — | — | UN221KT | SM | — | — |
| PUA3210 | SM | — | — | PUB4423 | D | — | — | UN221MT | SM | — | — |
| PUA3211 | SM | — | — | PUB4424 | D | — | — | UN2225T | D | — | — |
| PUA3212 | SM | — | — | PUB4431 | M | — | — | UN2226T | SM | — | — |
| PUA3213 | D | — | — | PUB4432 | M | — | — | UN4111AI | D | — | — |
| PUA3214 | SM | — | — | PUB4433 | M | — | — | UN4112AI | SM | — | — |
| PUA3215 | D | — | — | PUB4434 | M | — | — | UN4113AI | D | — | — |
| PUA3216 | SM | — | — | PUB4435 | SM | — | — | UN4211AI | D | — | — |
| PUA3219 | D | — | — | PUB4436 | SM | — | — | UN4212AI | D | — | — |
| PUA3220 | SM | — | — | PUB4437 | SM | — | — | UN4213AI | D | — | — |
| PUA3226 | SM | — | — | PUB4438 | M | — | — | UN4214AI | D | — | — |
| PUA3228 | SM | — | — | PUB4439 | SM | — | — | UN5111AI | D | — | — |
| PUA3273 | SM | — | — | PUB4440 | SM | — | — | UN5211AI | D | — | — |
| PUB2301 | D | — | — | PUB4441 | SM | — | — | UNA0102 | D | — | — |
| PUB4110 | D | — | — | PUB4442 | M | — | — | UNA0205 | SD | — | — |
| PUB4110A | D | — | — | PUB4443 | M | — | — | UNA0206 | SD | — | — |
| PUB4111 | D | — | — | PUB4444 | M | — | — | UNA0215 | D | — | — |
| PUB4112 | D | — | — | PUB4445 | SM | — | — | UNA0216 | SD | — | — |
| PUB4113 | SM | — | — | PUB4446 | SM | — | — | UNA0217 | SD | — | — |
| PUB4114 | SM | — | — | PUB4447 | M | — | — | UNA0218 | M | — | — |
| PUB4116 | SM | — | — | PUB4448 | M | — | — | UNA0219 | M | — | — |
| PUB4117 | D | — | — | PUB4471 | SM | — | — | UNA0222 | SD | — | — |
| PUB4117A | D | — | — | PUB4473 | SM | — | — | UNA0224 | SD | — | — |
| PUB4118 | D | — | — | PUB4510 | D | — | — | UNA0225 | SD | — | — |
| PUB4119 | D | — | — | PUB4511 | SM | — | — | UNA0227 | SM | — | — |
| PUB4119A | D | — | — | PUB4512 | SM | — | — | UNA0228 | SM | — | — |
| PUB4120 | D | — | — | PUB4513 | SM | — | — | UNA0230 | SM | — | — |
| PUB4120A | SM | — | — | PUB4514 | SM | — | — | UNA0232 | SD | — | — |
| PUB4120B | SM | — | — | PUB4515 | SM | — | — | UNA0233 | SM | — | — |
| PUB4121 | SM | — | — | PUB4516 | D | — | — | UNA0234 | SM | — | — |
| PUB4122 | D | — | — | PUB4519 | SM | — | — | UNA0235 | SD | — | — |
| PUB4123 | SD | — | — | PUB4520 | D | — | — | UNA0401 | M | — | — |
| PUB4124 | D | — | — | PUB4573 | SM | — | — | UNA0451 | SD | — | — |
| PUB4126 | D | — | — | PUB4701 | D | — | — | UNA0501 | M | — | — |
| PUB4127 | SM | — | — | PUB4702 | D | — | — | UNA0502 | M | — | — |
| PUB4128 | D | — | — | PUB4756 | M | — | — | UNA0601 | D | — | — |
| PUB4135 | D | — | — | PUB4757 | D | — | — | UNA0602 | D | — | — |
| PUB4135A | SM | — | — | PUC4401 | D | — | — | UNA0604 | D | — | — |
| PUB4145 | D | — | — | PUC4701 | SM | — | — | UNA0801 | D | — | — |
| PUB4146 | D | — | — | PUC6301 | D | — | — | UNH0003 | SM | — | — |
| PUB4210 | D | — | — | PUC6302 | D | — | — | UNH0004 | SM | — | — |
| PUB4211 | D | — | — | PUC6303 | D | — | — | UNH0005 | SM | — | — |
| PUB4212 | D | — | — | PUC6304 | M | — | — | UNH0006 | SM | — | — |
| PUB4213 | D | — | — | SMM4R01 | SD | — | — | UNH0007 | D | — | — |
| PUB4214 | D | — | — | SMM4R02 | SD | — | — | UNH0008 | SM | — | — |
| PUB4219 | D | — | — | SP0A554 | SD | — | — | UNH0009 | SM | — | — |
| PUB4220 | D | — | — | UN2111A | SM | UNR2111 | H17 | UNH0011 | SM | — | — |
| PUB4220A | D | — | — | UN2111AI | D | UNR2111 | H17 | UNH0012 | D | — | — |
| PUB4301 | D | — | — | UN2111T | SM | — | — | UNH0013 | D | — | — |
| PUB4310 | D | — | — | UN2112AI | D | — | — | UNH0104 | D | — | — |
| PUB4311 | D | — | — | UN2112T | SM | — | — | UNH0106 | SD | — | — |

Discontinued Types: D Planned Discontinued: SD Maintenance Types: M Planned Maintenance Types: SM

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3. Lead lead-plated products and separated surface-mounting products (including magazine products) are set as Maintenance types.



Maintenance/Discontinued Product List

| Part No. | Alternative | Page | Part No. | Alternative | Page | Part No. | Alternative | Page | | |
|----------|-------------|------|----------|-------------|----------|----------|-------------|----------|----------|-----|
| UNH0108 | SD | — | UNR1223 | SD | — | UNR32AM | SM | UNR32AMG | H14 | |
| UNH0110 | SD | — | UNR1224 | SD | — | UNR32AN | SM | UNR32ANG | H14 | |
| UNH0115 | SD | — | UNR1231 | SD | — | UNR32AT | SM | UNR32ATG | H14 | |
| UNH0120 | SD | — | UNR1231A | SD | — | UNR32AV | SM | UNR32AVG | H14 | |
| UNH0127 | SD | — | UNR2130X | D | — | UNR33MR | SM | — | — | |
| UNH1001 | SM | — | UNR221C | SD | — | UNR412X | SM | — | — | |
| UNH1104 | D | — | UNR2319 | SM | — | UNR412Y | SM | — | — | |
| UNH1106 | SD | — | UNR3111 | SD | — | UNR4211A | SM | — | — | |
| UNH1110 | SD | — | UNR3112 | SD | — | UNR4212A | SM | — | — | |
| UNH1115 | SD | — | UNR3113 | SD | — | UNR4213A | SM | — | — | |
| UNHH200 | SD | — | UNR3114 | SD | — | UNR4214A | SM | — | — | |
| UNHH201 | SD | — | UNR3115 | SD | — | UNR421N | SM | — | — | |
| UNHH202 | SD | — | UNR311A | SM | — | UNR4319 | SM | — | — | |
| UNHH203 | SD | — | UNR311D | SM | — | UNR5110 | SM | UNR5110G | H16 | |
| UNHH204 | SD | — | UNR311F | SD | — | UNR5111 | SM | UNR5111G | H16 | |
| UNHH205 | SD | — | UNR311T | SD | — | UNR5112 | SM | UNR5112G | H16 | |
| UNHH206 | SD | — | UNR31A0 | SM | UNR31A0G | H14 | UNR5113 | SM | UNR5113G | H16 |
| UNHS200 | SD | — | UNR31A1 | SM | UNR31A1G | H14 | UNR5114 | SM | UNR5114G | H16 |
| UNHS201 | SD | — | UNR31A2 | SM | UNR31A2G | H14 | UNR5115 | SM | UNR5115G | H16 |
| UNHS202 | SD | — | UNR31A3 | SM | UNR31A3G | H14 | UNR5116 | SM | UNR5116G | H16 |
| UNHS203 | SD | — | UNR31A4 | SM | UNR31A4G | H14 | UNR5117 | SM | UNR5117G | H16 |
| UNHS204 | SD | — | UNR31A5 | SM | UNR31A5G | H14 | UNR5118 | SM | UNR5118G | H16 |
| UNHS205 | SD | — | UNR31A6 | SM | UNR31A6G | H14 | UNR5119 | SM | UNR5119G | H16 |
| UNHS206 | SD | — | UNR31A7 | SM | UNR31A7G | H14 | UNR511A | SD | — | — |
| UNHX301 | SM | — | UNR31A8 | SM | UNR31A8G | H14 | UNR511D | SM | UNR511DG | H16 |
| UNHX302 | SM | — | UNR31A9 | SM | UNR31A9G | H14 | UNR511E | SM | UNR511EG | H16 |
| UNHX303 | SM | — | UNR31AA | SM | UNR31AAG | H14 | UNR511F | SM | UNR511FG | H16 |
| UNHX304 | SM | — | UNR31AB | SM | — | UNR511H | SM | UNR511HG | H16 | |
| UNHX401 | M | — | UNR31AC | SM | — | UNR511L | SM | UNR511LG | H16 | |
| UNHX402 | M | — | UNR31AD | SM | — | UNR511M | SM | UNR511MG | H16 | |
| UNHX403 | M | — | UNR31AE | SM | UNR31AEG | H14 | UNR511N | SM | UNR511NG | H16 |
| UNHX404 | M | — | UNR31AF | SM | UNR31AFG | H14 | UNR511P | SM | — | — |
| UNR1110 | SD | — | UNR31AH | SM | UNR31AHG | H14 | UNR511S | SM | — | — |
| UNR1111 | SD | — | UNR31AL | SM | UNR31ALG | H14 | UNR511T | SM | UNR511TG | H16 |
| UNR1112 | SD | — | UNR31AM | SM | UNR31AMG | H14 | UNR511V | SM | UNR511VG | H16 |
| UNR1113 | SD | — | UNR31AN | SM | UNR31ANG | H14 | UNR511Z | SM | UNR511ZG | H16 |
| UNR1114 | SD | — | UNR31AT | SM | UNR31ATG | H14 | UNR5154 | SM | UNR5154G | H16 |
| UNR1115 | SD | — | UNR31AV | SM | UNR31AVG | H14 | UNR5174 | SM | UNR5174G | H16 |
| UNR1116 | SD | — | UNR3210 | SD | — | UNR51A1J | SM | UNR51A1G | H15 | |
| UNR1117 | SD | — | UNR3212 | SD | — | UNR51A3J | SM | UNR51A3G | H15 | |
| UNR1118 | SD | — | UNR3213 | SD | — | UNR51AHJ | SM | UNR51AHG | H15 | |
| UNR1119 | SD | — | UNR3214 | SD | — | UNR51ALJ | SM | UNR51ALG | H15 | |
| UNR111D | SD | — | UNR3215 | SD | — | UNR5210 | SM | UNR5210G | H16 | |
| UNR111E | SD | — | UNR3216 | SD | — | UNR5211 | SM | UNR5211G | H16 | |
| UNR111F | SD | — | UNR321C | SM | — | UNR5211A | SM | UNR5211G | H16 | |
| UNR111H | SD | — | UNR321D | SM | — | UNR5212 | SM | UNR5212G | H16 | |
| UNR111L | SD | — | UNR321E | SD | — | UNR5213 | SM | UNR5213G | H16 | |
| UNR1121 | SD | — | UNR321F | SD | — | UNR5214 | SM | UNR5214G | H16 | |
| UNR1122 | SD | — | UNR321L | SD | — | UNR5215 | SM | UNR5215G | H16 | |
| UNR1123 | SD | — | UNR321M | SM | — | UNR5216 | SM | UNR5216G | H16 | |
| UNR1124 | SD | — | UNR321N | SD | — | UNR5217 | SM | UNR5217G | H16 | |
| UNR112X | SD | — | UNR324H | SM | — | UNR5218 | SM | UNR5218G | H16 | |
| UNR112Y | SD | — | UNR324HG | SM | — | UNR5219 | SM | UNR5219G | H16 | |
| UNR1210 | SD | — | UNR32A0 | SM | UNR32A0G | H14 | UNR521D | SM | UNR521DG | H16 |
| UNR1211 | SD | — | UNR32A1 | SM | UNR32A1G | H14 | UNR521E | SM | UNR521EG | H16 |
| UNR1212 | SD | — | UNR32A2 | SM | UNR32A2G | H14 | UNR521F | SM | UNR521FG | H16 |
| UNR1213 | SD | — | UNR32A3 | SM | UNR32A3G | H14 | UNR521K | SM | UNR521KG | H16 |
| UNR1214 | SD | — | UNR32A4 | SM | UNR32A4G | H14 | UNR521L | SM | UNR521LG | H16 |
| UNR1215 | SD | — | UNR32A5 | SM | UNR32A5G | H14 | UNR521M | SM | UNR521MG | H16 |
| UNR1216 | SD | — | UNR32A6 | SM | UNR32A6G | H14 | UNR521N | SM | UNR521NG | H16 |
| UNR1217 | SD | — | UNR32A7 | SM | UNR32A7G | H14 | UNR521T | SM | UNR521TG | H16 |
| UNR1218 | SD | — | UNR32A8 | SM | UNR32A8G | H14 | UNR521V | SM | UNR521VG | H16 |
| UNR1219 | SD | — | UNR32A9 | SM | UNR32A9G | H14 | UNR521W | SM | UNR521WG | H16 |
| UNR121D | SD | — | UNR32AA | SM | UNR32AAG | H14 | UNR521Z | SM | UNR521ZG | H16 |
| UNR121E | SD | — | UNR32AB | SM | — | UNR5225 | SM | UNR5225G | H16 | |
| UNR121F | SD | — | UNR32AC | SM | — | UNR5226 | SM | UNR5226G | H16 | |
| UNR121K | SD | — | UNR32AD | SM | — | UNR5227 | SM | — | — | |
| UNR121L | SD | — | UNR32AE | SM | UNR32AEG | H14 | UNR5274 | SD | — | — |
| UNR1221 | SD | — | UNR32AF | SM | UNR32AFG | H14 | UNR5274G | SM | — | — |
| UNR1222 | SD | — | UNR32AL | SM | UNR32ALG | H14 | UNR52A0J | SM | UNR52A0G | H15 |

Discontinued Types: D Planned Discontinued: SD Maintenance Types: M Planned Maintenance Types: SM

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Maintenance/Discontinued Product List

| Part No. | | Alternative | Page | Part No. | | Alternative | Page | Part No. | | Alternative | Page |
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| UNR52A2J | SM | UNR52A2G | H15 | UNR9117 | D | UNR9117G | H16 | UNR921DJ | SM | UNR921DG | H16 |
| UNR52A3J | SM | UNR52A3G | H15 | UNR9117J | SM | UNR9117G | H16 | UNR921E | D | UNR921EG | H16 |
| UNR52A4J | SM | UNR52A4G | H15 | UNR9118 | D | UNR9118G | H16 | UNR921EJ | SM | UNR921EG | H16 |
| UNR52A5J | SM | UNR52A5G | H15 | UNR9118J | SM | UNR9118G | H16 | UNR921F | D | — | — |
| UNR52A6J | SM | UNR52A6G | H15 | UNR9119 | D | UNR9119G | H16 | UNR921FJ | SM | UNR921FG | H16 |
| UNR52A7J | SM | UNR52A7G | H15 | UNR9119J | SM | UNR9119G | H16 | UNR921K | D | UNR921KG | H16 |
| UNR52AAJ | SM | UNR52AAG | H15 | UNR911A | D | UNR911AG | H16 | UNR921KJ | SM | UNR921KG | H16 |
| UNR52AEJ | SM | UNR52AEG | H15 | UNR911AJ | SM | UNR911AG | H16 | UNR921L | D | UNR921LG | H16 |
| UNR52ALJ | SM | UNR52ALG | H15 | UNR911B | D | UNR911BG | H16 | UNR921LJ | SM | UNR921LG | H16 |
| UNR52AMJ | SM | UNR52AMG | H15 | UNR911BJ | SM | UNR911BG | H16 | UNR921M | D | UNR921MG | H16 |
| UNR52ANJ | SM | UNR52ANG | H15 | UNR911CJ | SM | UNR911CG | H16 | UNR921MJ | SM | UNR921MG | H16 |
| UNR52ATJ | SM | UNR52ATG | H15 | UNR911D | D | UNR911DG | H16 | UNR921N | D | UNR921NG | H16 |
| UNR52AVJ | SM | UNR52AVG | H15 | UNR911DJ | SM | UNR911DG | H16 | UNR921NJ | SM | UNR921NG | H16 |
| UNR6110 | SM | — | — | UNR911E | D | UNR911EG | H16 | UNR921T | D | UNR921TG | H16 |
| UNR6111 | SM | — | — | UNR911EJ | SM | UNR911EG | H16 | UNR921TJ | SM | UNR921TG | H16 |
| UNR6112 | SM | — | — | UNR911F | D | UNR911FG | H16 | UNR921VJ | SM | UNR921VG | H16 |
| UNR6113 | SM | — | — | UNR911FJ | SM | UNR911FG | H16 | UNR92A0J | SM | UNR92A0G | H15 |
| UNR6114 | SM | — | — | UNR911H | D | UNR911HG | H16 | UNR92A1J | SM | UNR92A1G | H15 |
| UNR6115 | SM | — | — | UNR911HJ | SM | UNR911HG | H16 | UNR92A2J | SM | UNR92A2G | H15 |
| UNR6116 | SM | — | — | UNR911L | D | UNR911LG | H16 | UNR92A3J | SM | UNR92A3G | H15 |
| UNR6117 | SM | — | — | UNR911LJ | SM | UNR911LG | H16 | UNR92A4J | SM | UNR92A4G | H15 |
| UNR6118 | SM | — | — | UNR911MJ | SM | UNR911MG | H16 | UNR92A5J | SM | UNR92A5G | H15 |
| UNR6119 | SM | — | — | UNR911NJ | SM | UNR911NG | H16 | UNR92A6J | SM | UNR92A6G | H15 |
| UNR611D | SM | — | — | UNR911TJ | SM | UNR911TG | H16 | UNR92A7J | SM | UNR92A7G | H15 |
| UNR611E | SM | — | — | UNR911V | D | UNR911VG | H16 | UNR92A8J | SM | UNR92A8G | H15 |
| UNR611F | SM | — | — | UNR911VJ | SM | UNR911VG | H16 | UNR92A9J | SM | UNR92A9G | H15 |
| UNR611H | SM | — | — | UNR91A0J | SM | UNR91A0G | H15 | UNR92AAJ | SM | UNR92AAG | H15 |
| UNR611L | SM | — | — | UNR91A1J | SM | UNR91A1G | H15 | UNR92AEJ | SM | UNR92AEG | H15 |
| UNR6121 | SM | — | — | UNR91A2J | SM | UNR91A2G | H15 | UNR92AFJ | SM | UNR92AFG | H15 |
| UNR6122 | SM | — | — | UNR91A3J | SM | UNR91A3G | H15 | UNR92ALJ | SM | UNR92ALG | H15 |
| UNR6123 | SM | — | — | UNR91A4J | SM | UNR91A4G | H15 | UNR92AMJ | SM | UNR92AMG | H15 |
| UNR6124 | SM | — | — | UNR91A5J | SM | UNR91A5G | H15 | UNR92ANJ | SM | UNR92ANG | H15 |
| UNR612X | SM | — | — | UNR91A6J | SM | UNR91A6G | H15 | UNR92ATJ | SM | UNR92ATG | H15 |
| UNR612Y | SM | — | — | UNR91A7J | SM | UNR91A7G | H15 | UNR92AVJ | SM | UNR92AVG | H15 |
| UNR6210 | SM | — | — | UNR91A9J | SM | UNR91A9G | H15 | UNRB110 | D | — | — |
| UNR6211 | SM | — | — | UNR91AAJ | SM | UNR91AAG | H15 | UNRB114 | SM | — | — |
| UNR6212 | SM | — | — | UNR91AEJ | SM | UNR91AEG | H15 | UNRB214 | D | — | — |
| UNR6213 | SM | — | — | UNR91AFJ | SM | UNR91AFG | H15 | UNRF1AB | SM | — | — |
| UNR6214 | SM | — | — | UNR91AHJ | SM | UNR91AHG | H15 | UNRF1AC | SM | — | — |
| UNR6215 | SM | — | — | UNR91ALJ | SM | UNR91ALG | H15 | UNRF1AD | SM | — | — |
| UNR6216 | SM | — | — | UNR91AMJ | SM | UNR91AMG | H15 | UNRF1AE | SM | — | — |
| UNR6217 | SM | — | — | UNR91ANJ | SM | UNR91ANG | H15 | UNRF2AA | SM | — | — |
| UNR6218 | SM | — | — | UNR91ATJ | SM | UNR91ATG | H15 | UNRF2AB | SM | — | — |
| UNR6219 | SM | — | — | UNR91AVJ | SM | UNR91AVG | H15 | UNRF2AC | SM | — | — |
| UNR621D | SM | — | — | UNR9210 | D | UNR9210G | H16 | UNRF2AD | SM | — | — |
| UNR621E | SM | — | — | UNR9210J | SM | UNR9210G | H16 | UNRF2AE | SM | — | — |
| UNR621F | SM | — | — | UNR9211 | D | UNR9211G | H16 | UNRL110 | SD | — | — |
| UNR621K | SM | — | — | UNR9211J | SM | UNR9211G | H16 | UNRL111 | SD | — | — |
| UNR621L | SM | — | — | UNR9212 | D | UNR9212G | H16 | UNRL113 | SD | — | — |
| UNR6221 | SM | — | — | UNR9212J | SM | UNR9212G | H16 | UNRL114 | SD | — | — |
| UNR6222 | SM | — | — | UNR9213 | D | UNR9213G | H16 | UNRL115 | SD | — | — |
| UNR6223 | SM | — | — | UNR9213J | SM | UNR9213G | H16 | UNRL210 | SD | — | — |
| UNR6224 | SM | — | — | UNR9214 | D | UNR9214G | H16 | UNRL211 | SD | — | — |
| UNR7231 | SD | — | — | UNR9214J | SM | UNR9214G | H16 | UNRL213 | SD | — | — |
| UNR8231 | SM | — | — | UNR9215 | D | UNR9215G | H16 | UNRL214 | SD | — | — |
| UNR8231A | SM | — | — | UNR9215J | SM | UNR9215G | H16 | UNRL215 | SD | — | — |
| UNR9110 | D | UNR9110G | H16 | UNR9216 | D | UNR9216G | H16 | UNRL216 | SD | — | — |
| UNR9110J | SM | UNR9110G | H16 | UNR9216J | SM | UNR9216G | H16 | UP01110 | SM | — | — |
| UNR9111 | D | UNR9111G | H16 | UNR9217 | D | UNR9217G | H16 | UP01113 | SM | UP01113G | H19 |
| UNR9111J | SM | UNR9111G | H16 | UNR9217J | SM | UNR9217G | H16 | UP0111F | SM | UP0111FG | H19 |
| UNR9112 | D | UNR9112G | H16 | UNR9218 | D | UNR9218G | H16 | UP0111N | SM | — | — |
| UNR9112J | SM | UNR9112G | H16 | UNR9218J | SM | UNR9218G | H16 | UP01210 | SM | — | — |
| UNR9113 | D | UNR9113G | H16 | UNR9219 | D | UNR9219G | H16 | UP01211 | SM | UP01211G | H18 |
| UNR9113J | SM | UNR9113G | H16 | UNR9219J | SM | UNR9219G | H16 | UP01212 | SM | UP01212G | H18 |
| UNR9114 | D | UNR9114G | H16 | UNR921A | D | — | — | UP01213 | SM | UP01213G | H18 |
| UNR9114J | SM | UNR9114G | H16 | UNR921AJ | SM | UNR921AG | H16 | UP01214 | SM | UP01214G | H18 |
| UNR9115 | D | UNR9115G | H16 | UNR921B | D | — | — | UP0121E | SM | UP0121EG | H18 |
| UNR9115J | SM | UNR9115G | H16 | UNR921BJ | SM | UNR921BG | H16 | UP0121M | SM | UP0121MG | H18 |
| UNR9116 | D | UNR9116G | H16 | UNR921CJ | SM | UNR921CG | H16 | UP01878 | SM | UP01878G | H4 |

Discontinued Types: D Planned Discontinued: SD Maintenance Types: M Planned Maintenance Types: SM

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| Part No. | | Alternative | Page | Part No. | | Alternative | Page | Part No. | | Alternative | Page |
|----------|----|-------------|------|----------|----|-------------|------|----------|----|-------------|------|
| UP0187B | SM | UP0187BG | H4 | XN0111HG | SM | XN0111HG | H19 | XN04407 | SD | — | — |
| UP03311 | SM | UP03311G | H20 | XN0111MG | SM | XN0111MG | H19 | XN04482 | SM | — | — |
| UP03312 | SM | UP03312G | H20 | XN01201 | D | — | — | XN04501 | SM | XN04501G | H12 |
| UP03313 | SD | — | — | XN01210G | SM | XN01210G | H18 | XN04502 | SM | XN04502G | H12 |
| UP03383 | SM | UP03383G | H21 | XN01211 | SM | XN01211G | H18 | XN04503 | SM | — | — |
| UP03390 | SM | UP03390G | H21 | XN01212 | SM | XN01212G | H18 | XN04504 | SM | XN04504G | H12 |
| UP03394 | SM | UP03394G | H21 | XN01213 | SM | XN01213G | H18 | XN04505 | SM | XN04505G | H12 |
| UP03396 | SM | UP03396G | H21 | XN01214 | SM | XN01214G | H18 | XN04506 | SM | XN04506G | H12 |
| UP03397 | SM | UP03397G | H21 | XN01215 | SM | XN01215G | H18 | XN04509 | SM | — | — |
| UP04110G | SM | — | — | XN01216 | SM | XN01216G | H18 | XN04556 | SM | XN04556G | H12 |
| UP04111 | SM | UP04111G | H19 | XN01217 | SD | — | — | XN04601 | SM | XN04601G | H13 |
| UP04112 | SM | UP04112G | H19 | XN0121E | SM | XN0121EG | H18 | XN04602 | SM | XN04602G | H13 |
| UP04113 | SM | UP04113G | H19 | XN0121F | SD | — | — | XN04604 | SM | XN04604G | H13 |
| UP04114G | SM | — | — | XN0121M | SM | — | — | XN04608 | SM | XN04608G | H13 |
| UP04115G | SM | — | — | XN0121N | SM | — | — | XN04609 | SM | XN04609G | H13 |
| UP04116 | SM | UP04116G | H19 | XN01401 | SM | XN01401G | H13 | XN04683 | SM | — | — |
| UP0411M | SM | UP0411MG | H19 | XN01457 | SM | — | — | XN04A88 | SM | XN04A88G | H21 |
| UP0411T | SM | UP0411TG | H19 | XN01501 | SM | XN01501G | H12 | XN05501 | SM | XN05501G | H12 |
| UP04210 | SM | UP04210G | H18 | XN01504 | SD | — | — | XN05531 | SM | XN05531G | H12 |
| UP04211 | SM | UP04211G | H18 | XN01507 | SM | — | — | XN05553 | SM | XN05553G | H12 |
| UP04212 | SM | UP04212G | H18 | XN01509 | SD | — | — | XN05601 | SM | XN05601G | H13 |
| UP04213 | SM | UP04213G | H18 | XN01531 | SM | XN01531G | H12 | XN05604 | SM | — | — |
| UP04214 | SM | UP04214G | H18 | XN01558 | SM | XN01558G | H12 | XN06111 | SM | — | — |
| UP04215 | SM | UP04215G | H18 | XN01601 | SM | XN01601G | H13 | XN06112 | SM | — | — |
| UP04216 | SM | UP04216G | H18 | XN01602 | SM | XN01602G | H13 | XN06113 | SM | XN06113G | H19 |
| UP04217 | SM | UP04217G | H18 | XN01871 | SD | — | — | XN06114 | SM | — | — |
| UP0421N | SM | UP0421NG | H18 | XN01872 | SM | XN01872G | H4 | XN06115 | SM | — | — |
| UP04311 | SM | UP04311G | H20 | XN02210 | SM | — | — | XN06116 | SD | — | — |
| UP04312 | SM | UP04312G | H20 | XN02211 | SD | — | — | XN0611F | SM | — | — |
| UP04313 | SM | UP04313G | H20 | XN02212 | SM | — | — | XN0611FH | SM | — | — |
| UP04314 | SM | UP04314G | H20 | XN02215 | SM | — | — | XN06211 | SM | XN06211G | H18 |
| UP04315 | SM | UP04315G | H20 | XN02216 | SM | — | — | XN06212 | SM | — | — |
| UP04316 | SM | UP04316G | H20 | XN02401 | SM | XN02401G | H13 | XN06213 | SM | XN06213G | H18 |
| UP0431N | SM | UP0431NG | H20 | XN02501 | SM | XN02501G | H12 | XN06214 | SM | XN06214G | H18 |
| UP0431T | SM | UP0431TG | H20 | XN02531 | SM | — | — | XN06215 | SM | XN06215G | H18 |
| UP04387 | SM | UP04387G | H21 | XN04110 | SM | — | — | XN06216 | SM | XN06216G | H18 |
| UP04390 | SM | UP04390G | H21 | XN04111 | SM | XN04111G | H19 | XN06401 | SM | XN06401G | H13 |
| UP04401 | SM | UP04401G | H13 | XN04112 | SM | XN04112G | H19 | XN06435 | SM | XN06435G | H13 |
| UP04501 | SM | UP04501G | H12 | XN04113 | SM | XN04113G | H19 | XN06501 | SM | XN06501G | H12 |
| UP04534 | SM | UP04534G | H12 | XN04114 | SM | XN04114G | H19 | XN06506 | SM | — | — |
| UP04598 | SM | UP04598G | H12 | XN04115 | SM | XN04115G | H19 | XN06534 | SM | XN06534G | H12 |
| UP04599 | SM | UP04599G | H12 | XN04116 | SM | XN04116G | H19 | XN06537 | SM | XN06537G | H12 |
| UP04601 | SM | UP04601G | H13 | XN04130 | SM | XN04130G | H19 | XN06542 | SM | — | — |
| UP04636 | SM | — | — | XN04130X | SM | — | — | XN06543 | SM | XN06543G | H12 |
| UP04878 | SM | UP04878G | H5 | XN04210 | SM | XN04210G | H18 | XN06776 | SM | — | — |
| UP0487B | SM | UP0487BG | H5 | XN04211 | SM | XN04211G | H18 | XN06777 | SM | — | — |
| UP0487C | SM | UP0487CG | H5 | XN04212 | SM | XN04212G | H18 | XN06877 | SD | — | — |
| UP04979 | SM | UP04979G | H5 | XN04213 | SM | XN04213G | H18 | XN07602 | M | — | — |
| UP0497A | SM | UP0497AG | H5 | XN04214 | SM | XN04214G | H18 | XN07651 | SD | — | — |
| UP0498B | SM | — | — | XN04215 | SM | XN04215G | H18 | XN08081 | SM | — | — |
| UP0499C | SM | — | — | XN04216 | SM | XN04216G | H18 | XN09D57 | SD | — | — |
| UP04A8E | SM | — | — | XN0421F | SM | XN0421FG | H18 | XN09D58 | SD | — | — |
| UP04A8L | SM | — | — | XN0421L | SM | XN0421LG | H18 | XN09D61 | SD | — | — |
| UP04A8M | SM | UP04A8MG | H21 | XN0421N | SM | — | — | XN0A311 | SM | XN0A311G | H20 |
| UP05C8B | SM | UP05C8BG | J2 | XN04311 | SM | XN04311G | H20 | XN0A312 | SM | XN0A312G | H20 |
| UP05C8G | SM | UP05C8GG | J2 | XN04312 | SM | XN04312G | H20 | XN0A554 | SM | XN0A554G | H12 |
| UP05C8P | SM | UP05C8PG | J2 | XN04313 | SM | — | — | XN0B301 | SM | XN0B301G | H13 |
| UP0KG8D | SM | UP0KG8DG | J2 | XN04314 | SM | XN04314G | H20 | XN0C301 | SM | XN0C301G | H13 |
| XN01110 | SM | XN01110G | H19 | XN04315 | SM | XN04315G | H20 | XN0D873 | SM | — | — |
| XN01111 | SM | XN01111G | H19 | XN04316 | SM | XN04316G | H20 | XN0D874 | SM | — | — |
| XN01112 | SM | XN01112G | H19 | XN0431L | SM | — | — | XN0E551 | SM | — | — |
| XN01113 | SM | XN01113G | H19 | XN04321 | SM | — | — | XN0F256 | SD | — | — |
| XN01114 | SM | XN01114G | H19 | XN04322 | SM | XN04322G | H20 | XN0F261 | SD | — | — |
| XN01115 | SM | XN01115G | H19 | XN04381 | SM | XN04381G | H21 | XN0F262 | SD | — | — |
| XN01116 | SM | XN01116G | H19 | XN04382 | SD | — | — | XN0F263 | SD | — | — |
| XN01117 | SM | — | — | XN04390 | SD | — | — | XN0NE92 | SD | — | — |
| XN01118 | SM | — | — | XN04391 | SD | — | — | XN0P226 | SM | — | — |
| XN01119 | SM | XN01119G | H19 | XN04401 | SM | XN04401G | H13 | XN0U201 | M | — | — |
| XN0111D | SM | — | — | XN04402 | SM | XN04402G | H13 | XN0U210 | D | XN01210G | H18 |
| XN0111F | SM | XN0111FG | H19 | XN04404 | SM | XN04404G | H13 | XN0U401 | D | XN01401G | H13 |

Discontinued Types: D Planned Discontinued: SD Maintenance Types: M Planned Maintenance Types: SM

Note) 1. Alternative product is, almost alike in characteristics and function, not same in all respects. Please examine the content when you use.

2. HW and TA products for MT-2, and TW taping products for surface-mounting products are set as Discontinued types.

3. Lead lead-plated products and separated surface-mounting products (including magazine products) are set as Maintenance types.

Maintenance/Discontinued Product List

| Part No. | | Alternative | Page | Part No. | | Alternative | Page | Part No. | | Alternative | Page |
|----------|----|-------------|------|----------|----|-------------|------|----------|----|-------------|------|
| XN0U604 | D | XN04604G | H13 | XP0411F | SM | — | — | XP06401T | SM | — | — |
| XN0U608 | D | XN04608G | H13 | XP04219 | SM | — | — | XP06501T | SM | — | — |
| XP0111L | SM | — | — | XP0421F | SM | — | — | XP06531 | SM | — | — |
| XP01201 | M | — | — | XP0438J | SM | — | — | XP06545 | SM | — | — |
| XP01504 | SD | — | — | XP04601T | SD | — | — | XP0A554 | SM | — | — |
| XP01507 | SM | — | — | XP04683 | SM | — | — | XP0D873 | SM | — | — |
| XP01871 | SM | — | — | XP05543 | SM | — | — | XP0D874 | SM | — | — |
| XP0187B | SM | — | — | XP05555 | SD | — | — | XP0D875 | SM | — | — |
| XP04119 | SM | — | — | XP0611FH | SM | — | — | XP0NG8A | SM | — | — |



Discontinued Types: D Planned Discontinued: SD Maintenance Types: M Planned Maintenance Types: SM

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