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Surface Mount Standard Recovery Power Rectifier

SMA Power Surface Mount Package

MRA4003T3G Series, NRVA4003T3G Series

Features construction with glass passivation. Ideally suited for surface mounted automotive applications.

Features

- Compact Package with J−Bend Leads Ideal for Automated Handling
- Stable, High Temperature, Glass Passivated Junction
- NRVA Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable
- These Devices are Pb−Free and are RoHS Compliant*

Mechanical Characteristics

- Case: Molded Epoxy
  Epoxy meets UL 94 V−0 @ 0.125 in
- Weight: 70 mg (Approximately)
- Finish: All External Surfaces are Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 seconds in Solder Bath
- Polarity: Band in Plastic Body Indicates Cathode Lead
- Marking: MRA4003T3G = R13
  MRA4004T3G = R14
  MRA4005T1G = R15
  MRA4005T3G = R15
  MRA4006T3G = R16
  MRA4007T3G = R17
  NRVA4003T3G = R13
  NRVA4004T3G = R14
  NRVA4005T3G = R15
  NRVA4006T3G = R16
  NRVA4007T3G = R17
- ESD Rating:
  - Human Body Model 3A
  - Machine Model C

*For additional information on our Pb−Free strategy and soldering details, please download the **onsemi** Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

STANDARD RECOVERY RECTIFIERS
1.0 AMPERES
300−1000 VOLTS



SMA
CASE 403D

MARKING DIAGRAM



R1x = Specific Device Code
F = Wafer Source
A = Assembly Location
Y = Year
WW = Work Week
▪ = Pb−Free Package
(Note: Microdot may be in either location)

ORDERING INFORMATION

See detailed ordering and shipping information in the ordering information section on page 4 of this data sheet.

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MAXIMUM RATINGS

Rating	Symbol	Value					Unit
		MRA4003	MRA4004/ NRVA4004	MRA4005/ NRVA4005	MRA4006/ NRVA4006	MRA4007/ NRVA4007	
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	300	400	600	800	1000	Volts
Avg. Rectified Forward Current (At Rated V_R, T_L = 150°C)	I_O	1					Amp
Peak Repetitive Forward Current (At Rated V_R, Square Wave, 20 kHz, T_L = 150°C)	I_{FRM}	2					Amps
Non−Repetitive Peak Surge Current (Surge applied at rated load conditions, halfwave, single phase, 60 Hz)	I_{FSM}	30					Amps
Junction Operating Temperature Range	T_J	−55 to 150					°C
Storage Temperature Range	T_{stg}	−55 to 175					°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction−to−Lead (Note 1) Thermal Resistance, Junction−to−Ambient (Note 2)	$R_{\theta JL}$ $R_{\theta JA}$	16.2 88.3	°C/W

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Value		Unit
		T_J = 25°C	T_J = 100°C	
Maximum Instantaneous Forward Voltage (Note 3) (I_F = 1 A) (I_F = 2 A)	V_F	 1.1 1.18	 1.04 1.12	Volts
Maximum Instantaneous Reverse Current (at rated DC voltage)	I_R	10	50	μA

1. Minimum Pad Size
2. 1 inch Pad Size
3. Pulse Test: Pulse Width ≤ 250 μs, Duty Cycle ≤ 2%.

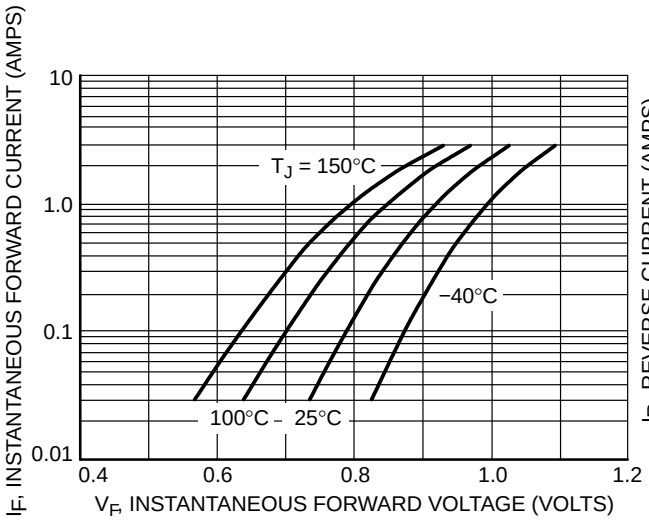


Figure 1. Typical Forward Voltage

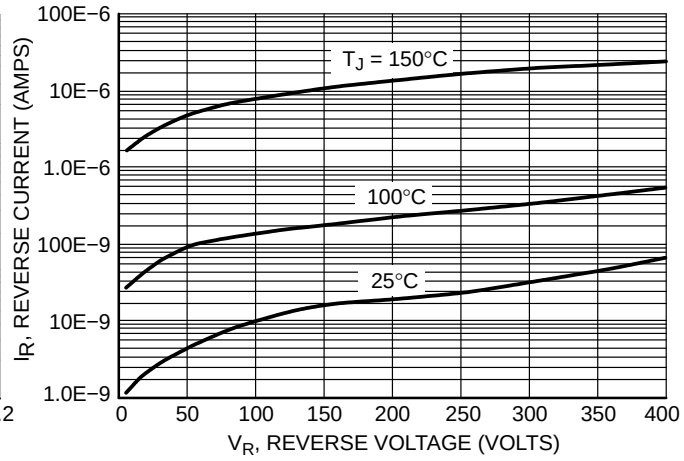


Figure 2. Typical Reverse Current

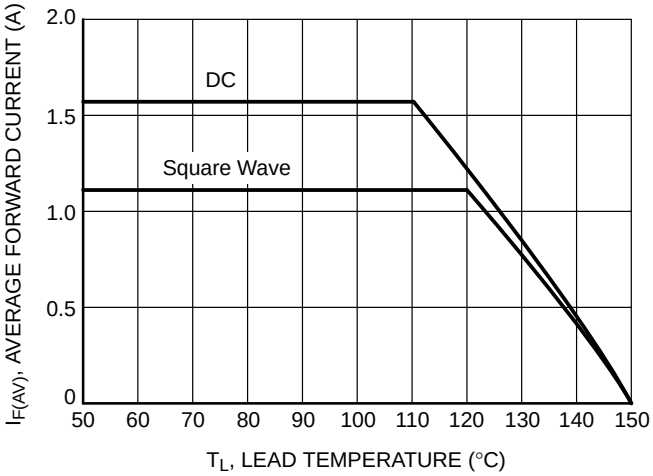


Figure 3. Current Derating

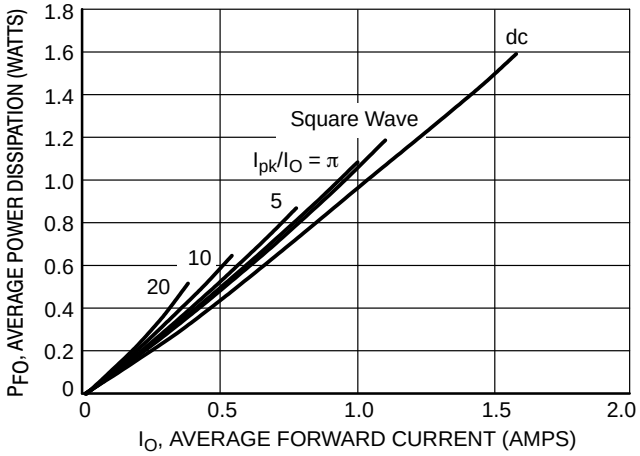


Figure 4. Forward Power Dissipation per Leg

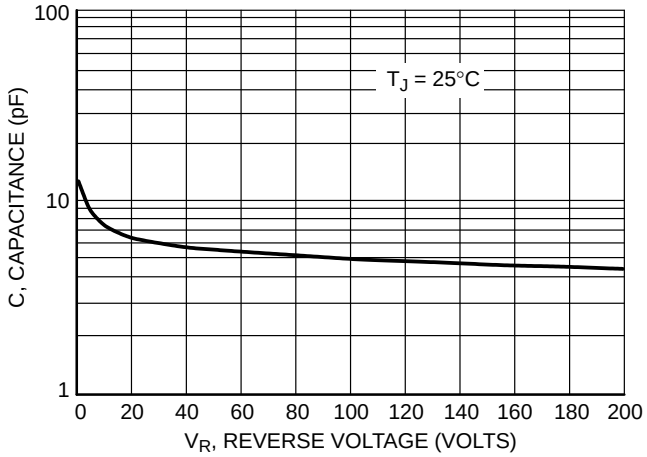


Figure 5. Capacitance

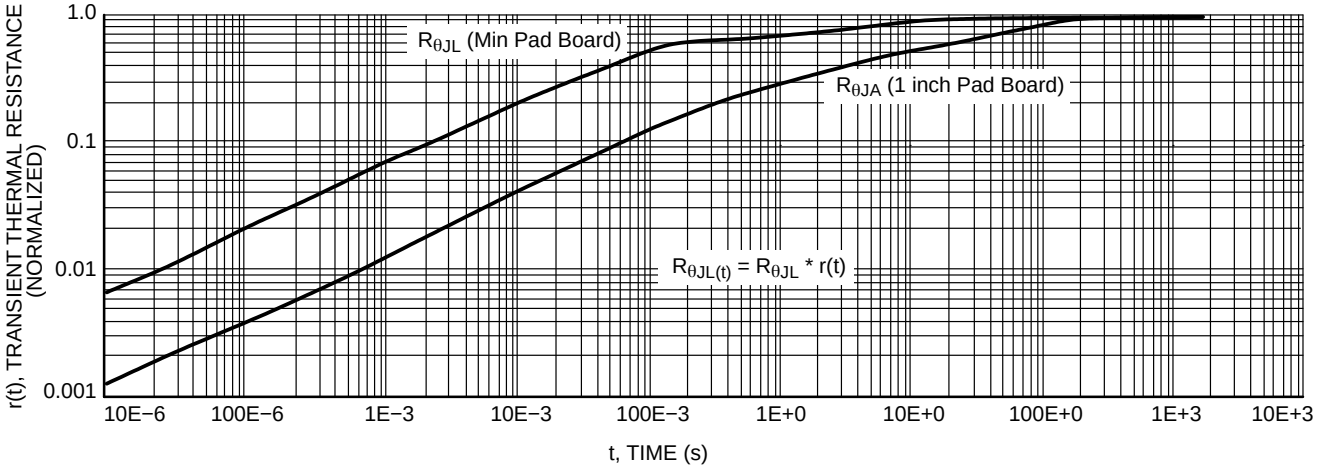


Figure 6. Thermal Response

ORDERING INFORMATION

Device	Package	Shipping†
MRA4003T3G	SMA (Pb−Free)	5,000 / Tape & Reel
MRA4004T3G		
MRA4005T1G		1,500 / Tape & Reel
MRA4005T3G		5,000 / Tape & Reel
MRA4006T3G		
MRA4007T3G		
NRVA4003T3G*		5,000 / Tape & Reel
NRVA4004T3G*		
NRVA4005T3G*		
NRVA4006T3G*		
NRVA4007T3G*		

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

*NRVA Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable.

MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

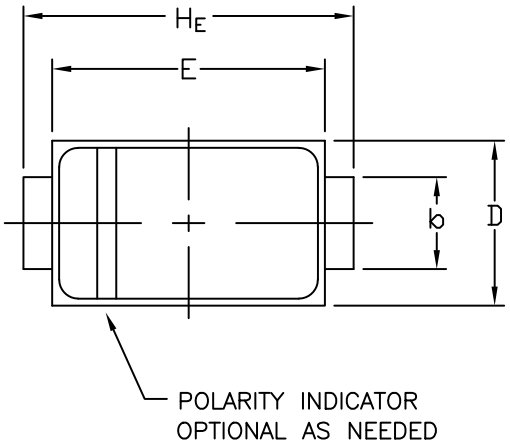
SMA
CASE 403D
ISSUE J

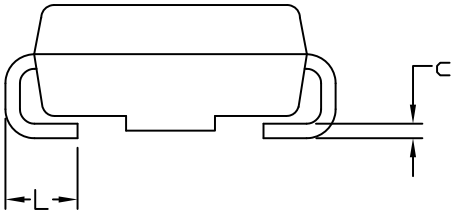
DATE 22 OCT 2021

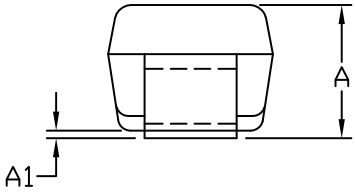


STYLE 1 STYLE 2

SCALE 1:1







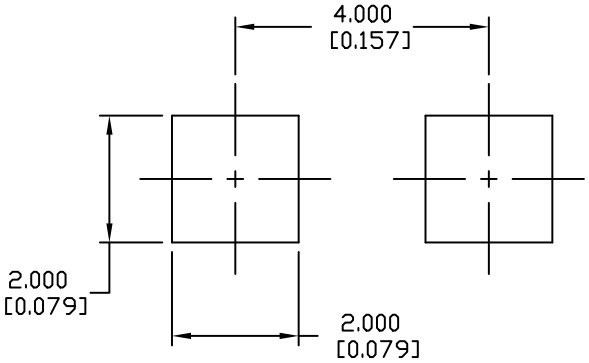
NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCHES
3. DIMENSION b SHALL BE MEASURED WITHIN DIMENSION L.

	MILLIMETERS			INCHES		
DIM	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	1.97	2.10	2.20	0.078	0.083	0.087
A1	0.05	0.10	0.20	0.002	0.004	0.008
b	1.27	1.45	1.63	0.050	0.057	0.064
c	0.15	0.28	0.41	0.006	0.011	0.016
D	2.29	2.60	2.92	0.090	0.103	0.115
E	4.06	4.32	4.57	0.160	0.170	0.180
H_E	4.83	5.21	5.59	0.190	0.205	0.220
L	0.76	1.14	1.52	0.030	0.045	0.060

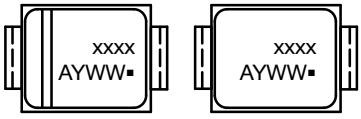
STYLE 1:
PIN 1. CATHODE (POLARITY BAND)
2. ANODE

STYLE 2:
NO POLARITY



RECOMMENDED
MOUNTING FOOTPRINT

GENERIC
MARKING DIAGRAM*



STYLE 1 STYLE 2

xxxx = Specific Device Code
A = Assembly Location
Y = Year
WW = Work Week
▪ = Pb−Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “▪”, may or may not be present. Some products may not follow the Generic Marking.

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