

# MRA4003T3G Series

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## Surface Mount Standard Recovery Power Rectifier

### SMA Power Surface Mount Package

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
- 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



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### STANDARD RECOVERY RECTIFIERS 1.0 AMPERES 300–1000 VOLTS

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CASE 403D  
SMA

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#### MARKING DIAGRAM



R1x = Specific Device Code  
A = Assembly Location  
Y = Year  
WW = Work Week  
▪ = Pb-Free Package

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#### ORDERING INFORMATION

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

# MRA4003T3G Series

## MAXIMUM RATINGS

Rating	Symbol	Value					Unit
		MRA4003	MRA4004	MRA4005	MRA4006	MRA4007	
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 $V_R$ , $T_L = 150^\circ\text{C}$ )	$I_O$	1					Amp
Peak Repetitive Forward Current (At Rated $V_R$ , Square Wave, 20 kHz, $T_L = 150^\circ\text{C}$ )	$I_{FRM}$	2					Amps
Non-Repetitive Peak Surge Current (Surge applied at rated load conditions, halfwave, single phase, 60 Hz)	$I_{FSM}$	30					Amps
Storage/Operating Case Temperature	$T_{stg}$ , $T_C$	-55 to 150					$^\circ\text{C}$
Operating Junction Temperature	$T_J$	-55 to 175					$^\circ\text{C}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

## THERMAL CHARACTERISTICS

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

## ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Value		Unit
		$T_J = 25^\circ\text{C}$	$T_J = 100^\circ\text{C}$	
Maximum Instantaneous Forward Voltage (Note 3) ( $I_F = 1\text{ A}$ ) ( $I_F = 2\text{ A}$ )	$V_F$	1.1 1.18	1.04 1.12	Volts
Maximum Instantaneous Reverse Current (at rated DC voltage)	$I_R$	10	50	$\mu\text{A}$

1. Minimum Pad Size
2. 1 inch Pad Size
3. Pulse Test: Pulse Width  $\leq 250\ \mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

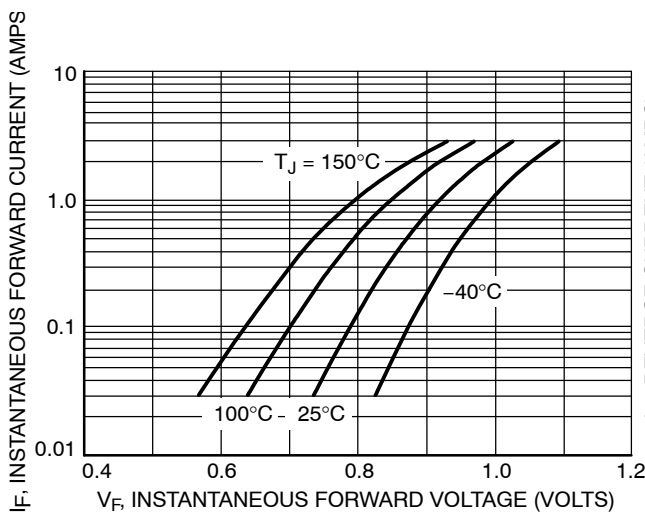


Figure 1. Typical Forward Voltage

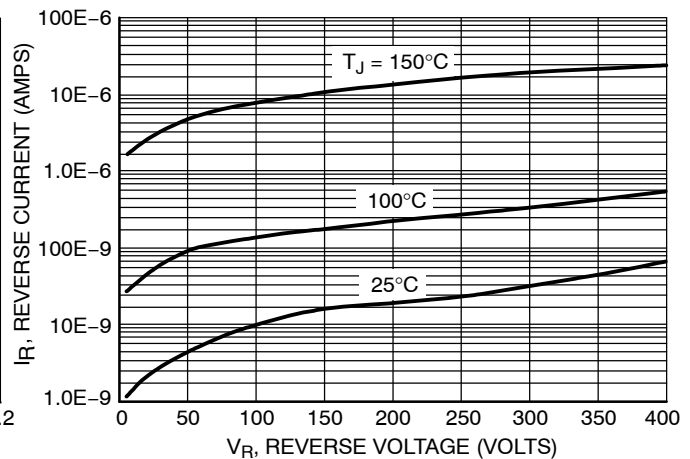


Figure 2. Typical Reverse Current

# MRA4003T3G Series

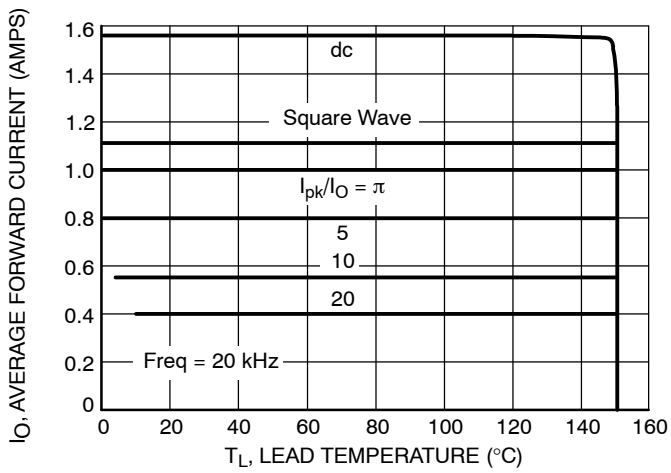


Figure 3. Current Derating per Leg

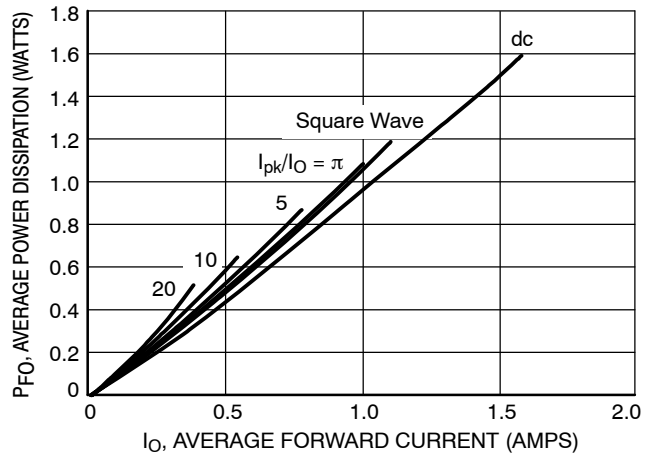


Figure 4. Forward Power Dissipation per Leg

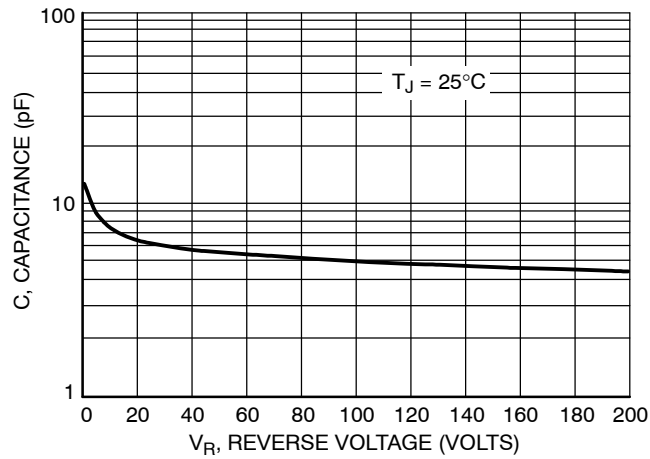


Figure 5. Capacitance

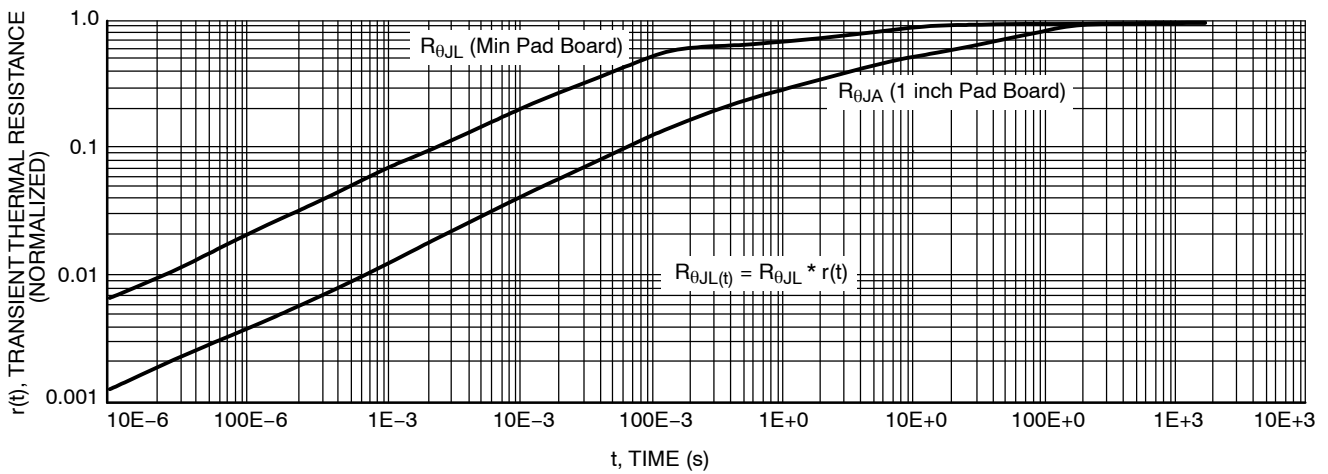


Figure 6. Thermal Response

## MRA4003T3G Series

### ORDERING INFORMATION

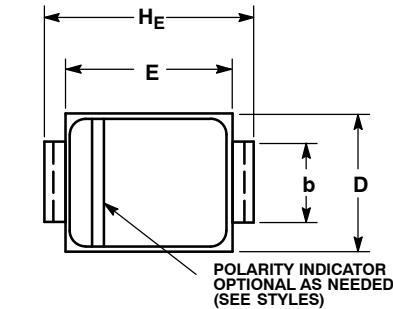
Device	Package	Shipping†
MRA4003T3G	SMA (Pb-Free)	5000/Tape & Reel
MRA4004T3G	SMA (Pb-Free)	5000/Tape & Reel
MRA4005T1G	SMA (Pb-Free)	1500/Tape & Reel
MRA4005T3G	SMA (Pb-Free)	5000/Tape & Reel
MRA4006T3G	SMA (Pb-Free)	5000/Tape & Reel
MRA4007T3G	SMA (Pb-Free)	5000/Tape & Reel

†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.

# MRA4003T3G Series

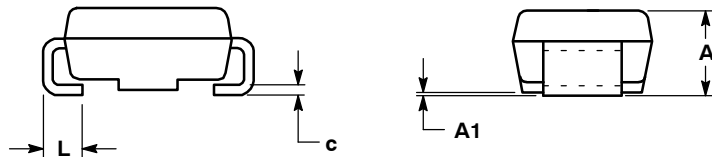
## PACKAGE DIMENSIONS

SMA  
CASE 403D-02  
ISSUE F

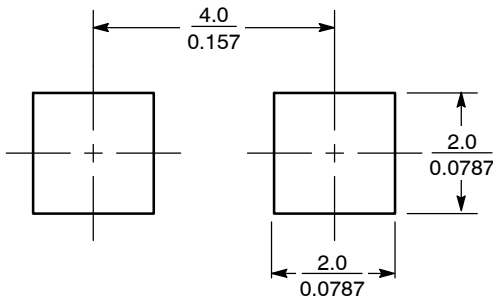


- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH.
  3. 403D-01 OBSOLETE, NEW STANDARD IS 403D-02.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.97	2.10	2.20	0.078	0.083	0.087
A1	0.05	0.10	0.15	0.002	0.004	0.006
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
HE	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



### SOLDERING FOOTPRINT\*



SCALE 8:1  $\left(\frac{\text{mm}}{\text{inches}}\right)$

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

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MRA4003T3/D