

MRA4003T3 Series

Surface Mount Standard Recovery Power Rectifier

SMA Power Surface Mount Package

Features construction with glass passivation. Ideally suited for surface mounted Automotive application.

- Compact Package with J-Bend Leads Ideal for Automated Handling
- Stable, High Temperature, Glass Passivated Junction
- These devices are available in Pb-free package(s). Specifications herein apply to both standard and Pb-free devices. Please see our website at www.onsemi.com for specific Pb-free orderable part numbers, or contact your local ON Semiconductor sales office or representative.

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: MRA4003T3 = R13
MRA4004T3 = R14
MRA4005T1 = R15
MRA4005T3 = R15
MRA4006T3 = R16
MRA4007T3 = R17

ORDERING INFORMATION

Device	Package	Shipping†
MRA4003T3	SMA	5000/Tape & Reel
MRA4003T3G	SMA (Pb-Free)	5000/Tape & Reel
MRA4004T3	SMA	5000/Tape & Reel
MRA4004T3G	SMA (Pb-Free)	5000/Tape & Reel
MRA4005T1	SMA	1500/Tape & Reel
MRA4005T3	SMA	5000/Tape & Reel
MRA4006T3	SMA	5000/Tape & Reel
MRA4007T3	SMA	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.

MAXIMUM RATINGS

Please See the Table on the Following Page



ON Semiconductor®

<http://onsemi.com>

STANDARD RECOVERY
RECTIFIERS
1.0 AMPERES
300-1000 VOLTS



CASE 403D
SMA
PLASTIC

MARKING DIAGRAM



R1x = Specific Device Code
A = Assembly Location
L = Wafer Lot
Y = Year
W = Work Week
▪ = Pb-Free Package

MRA4003T3 Series

MAXIMUM RATINGS

Rating	Symbol	Value					Unit
		MRA4003T3	MRA4004T3	MRA4005T1, MRA4005T3	MRA4006T3	MRA4007T3	
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	μA

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

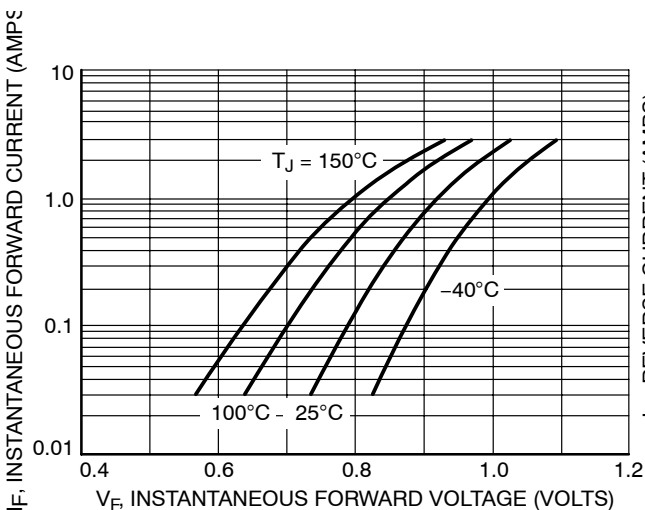


Figure 1. Typical Forward Voltage

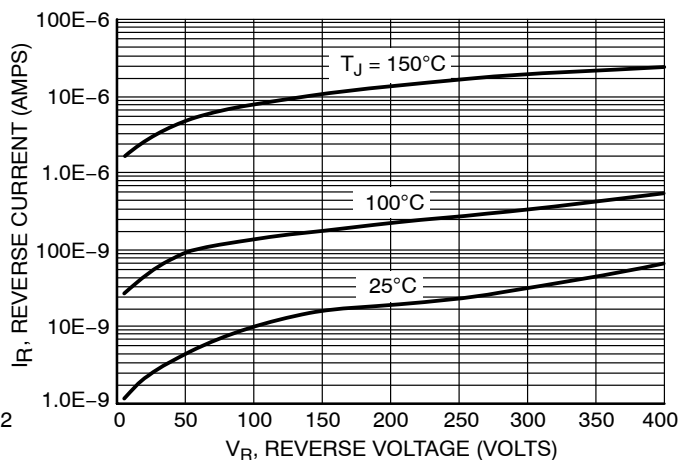


Figure 2. Typical Reverse Current

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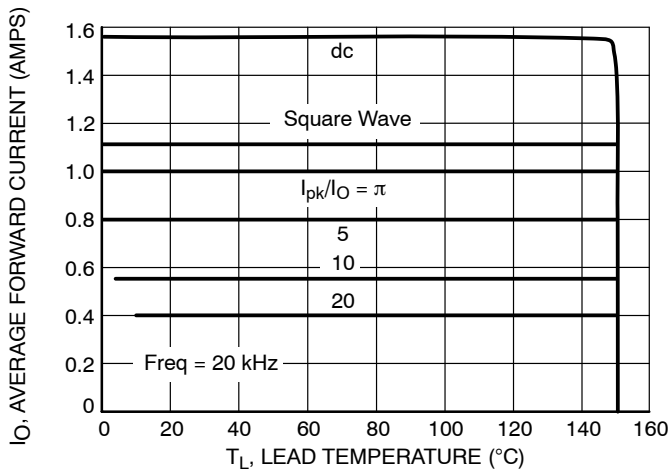


Figure 3. Current Derating per Leg

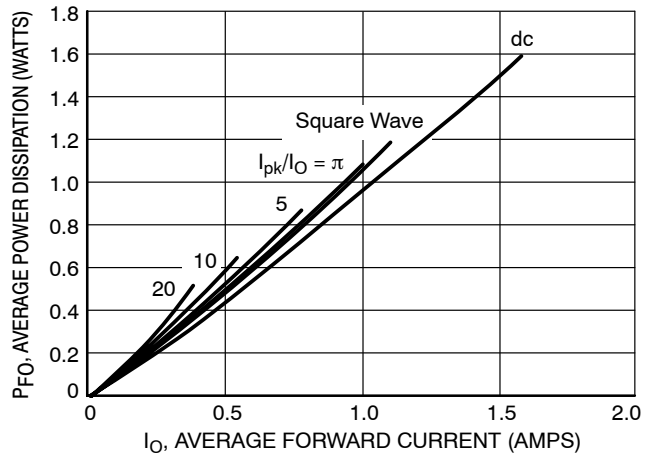


Figure 4. Forward Power Dissipation per Leg

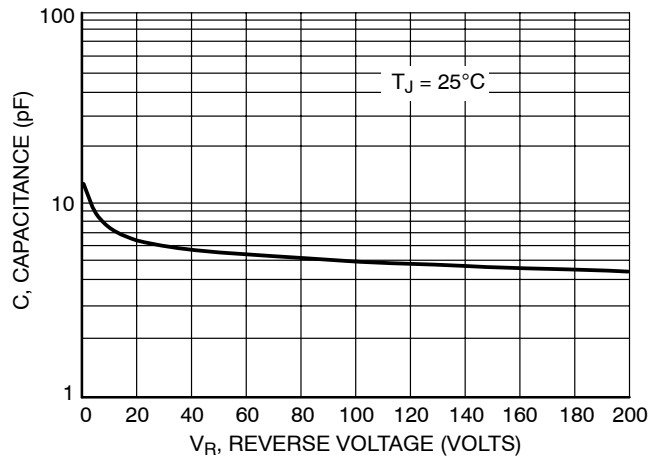


Figure 5. Capacitance

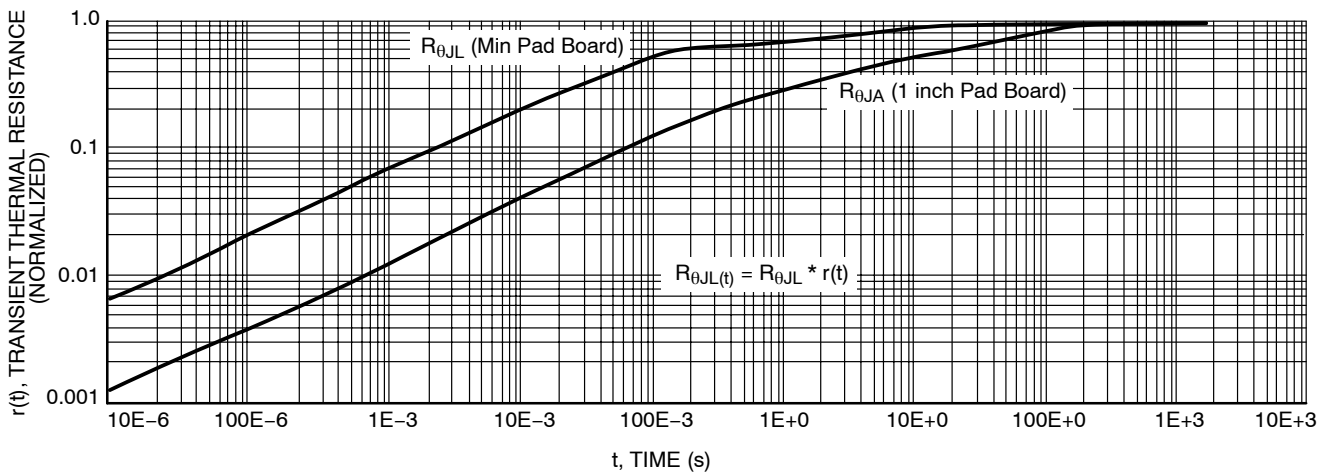
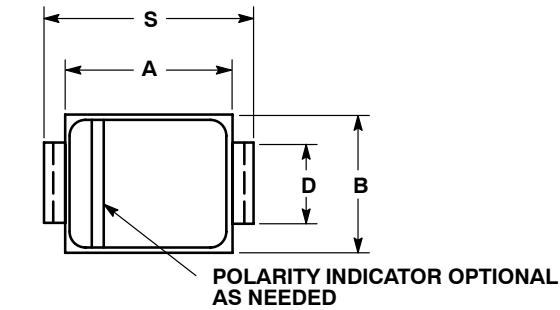


Figure 6. Thermal Response

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PACKAGE DIMENSIONS

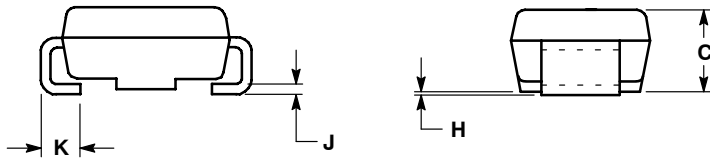
SMA PLASTIC PACKAGE CASE 403D-02 ISSUE A




NOTES:

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

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.160	0.180	4.06	4.57
B	0.090	0.115	2.29	2.92
C	0.075	0.095	1.91	2.41
D	0.050	0.064	1.27	1.63
H	0.002	0.006	0.05	0.15
J	0.006	0.016	0.15	0.41
K	0.030	0.060	0.76	1.52
S	0.190	0.220	4.83	5.59



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