

# MBRA140T3

## Surface Mount Schottky Power Rectifier

### SMA Power Surface Mount Package

...employing the Schottky Barrier principle in a large area metal-to-silicon power diode. State of the art geometry features epitaxial construction with oxide passivation and metal overlay contact. Ideally suited for low voltage, high frequency rectification, or as free wheeling and polarity diodes in surface mount applications where compact size and weight are critical to the system.

- Small Compact Surface Mountable Package with J-Bent Leads
- Rectangular Package for Automated Handling
- Highly Stable Oxide Passivated Junction
- Very Low Forward Voltage Drop
- Guardring for Stress Protection

#### Mechanical Characteristics:

- Case: Epoxy, Molded
- Weight: 70 mg (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Shipped in 12 mm tape, 5000 units per 13 inch reel
- Polarity: Cathode Lead Indicated by Either Notch in Plastic Body or Polarity Band
- Marking: B14

#### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	40	V
Average Rectified Forward Current (At Rated $V_R$ , $T_C = 95^\circ\text{C}$ )	$I_O$	1.0	A
Peak Repetitive Forward Current (At Rated $V_R$ , Square Wave, 20 kHz, $T_C = 100^\circ\text{C}$ )	$I_{FRM}$	2.0	A
Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	$I_{FSM}$	30	A
Storage/Operating Case Temperature	$T_{stg}, T_C$	-55 to +150	$^\circ\text{C}$
Operating Junction Temperature	$T_J$	-55 to +125	$^\circ\text{C}$
Voltage Rate of Change (Rated $V_R$ , $T_J = 25^\circ\text{C}$ )	$dv/dt$	10,000	V/ $\mu\text{s}$



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**SCHOTTKY BARRIER  
RECTIFIER  
1.0 AMPERES  
40 VOLTS**



**SMA  
CASE 403D  
PLASTIC**

#### MARKING DIAGRAM



B14 = Device Code

#### ORDERING INFORMATION

Device	Package	Shipping
MBRA140T3	SMA	5000/Tape & Reel

# THERMAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Thermal Resistance — Junction-to-Lead (Note 1.)	$R_{\theta JL}$	35	$^{\circ}\text{C/W}$
Thermal Resistance — Junction-to-Ambient (Note 1.)	$R_{\theta JA}$	86	$^{\circ}\text{C/W}$

# ELECTRICAL CHARACTERISTICS

Maximum Instantaneous Forward Voltage (Note 2.)  ( $I_F = 1.0\text{ A}$ ) see Figure 2 for other Values ( $I_F = 2.0\text{ A}$ )	$V_F$	$T_J = 25^{\circ}\text{C}$	$T_J = 100^{\circ}\text{C}$	Volts
		0.55 0.71	0.505 0.74	
Maximum Instantaneous Reverse Current  ( $V_R = 40\text{ V}$ ) see Figure 4 for other Values ( $V_R = 20\text{ V}$ )	$I_R$	$T_J = 25^{\circ}\text{C}$	$T_J = 100^{\circ}\text{C}$	mA
		0.5 0.1	10 4.0	

1. Mounted on 2" Square PC Board with 1" Square Total Pad Size, PC Board FR4.
2. Pulse Test: Pulse Width  $\leq 250\text{ }\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

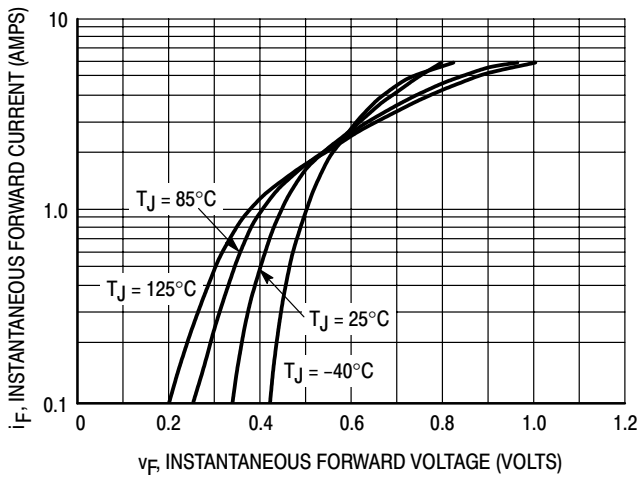


Figure 1. Typical Forward Voltage

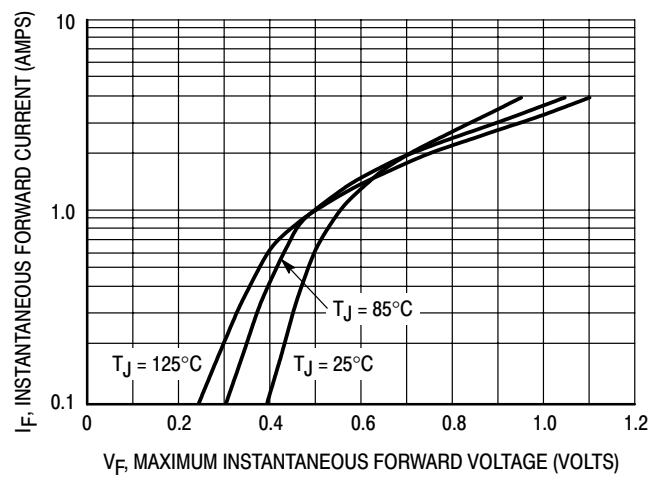


Figure 2. Maximum Forward Voltage

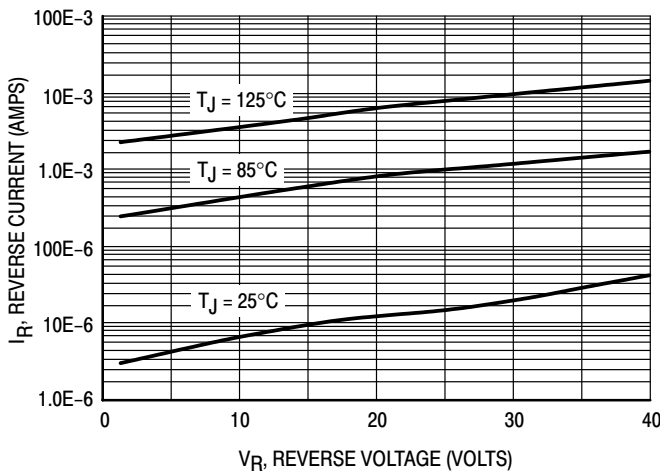


Figure 3. Typical Reverse Current

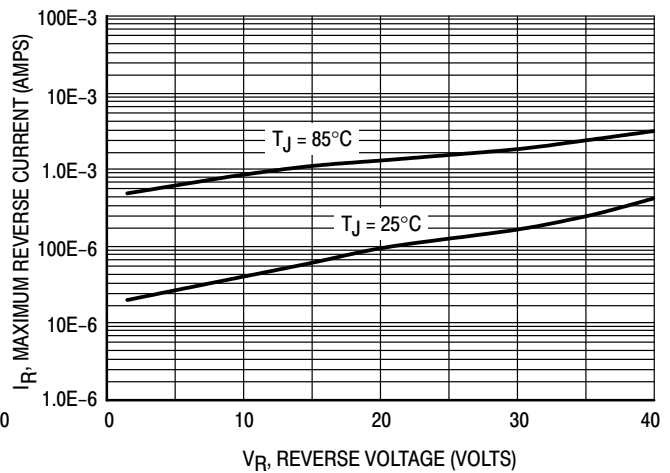


Figure 4. Maximum Reverse Current

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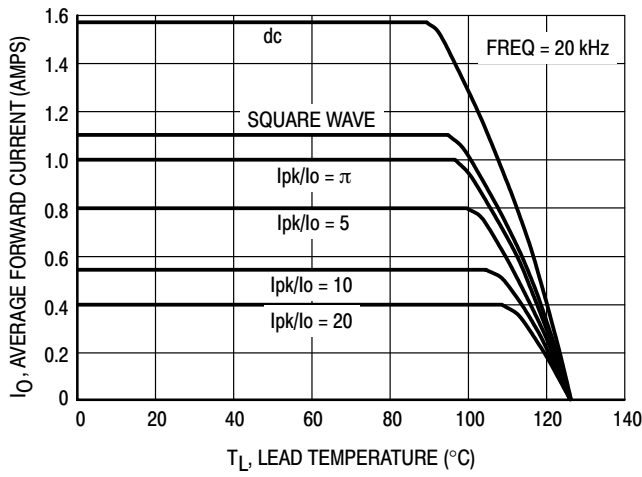


Figure 5. Current Derating

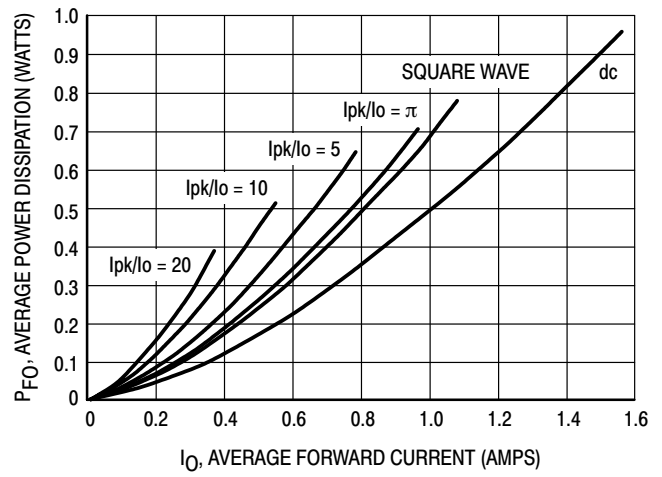


Figure 6. Forward Power Dissipation

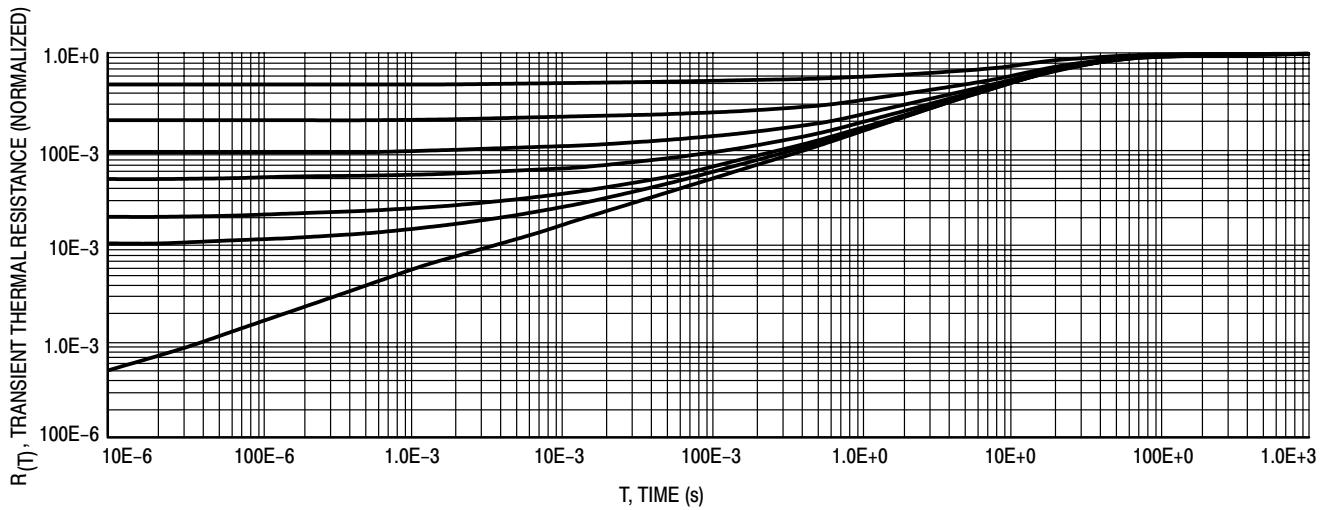


Figure 7. Thermal Response

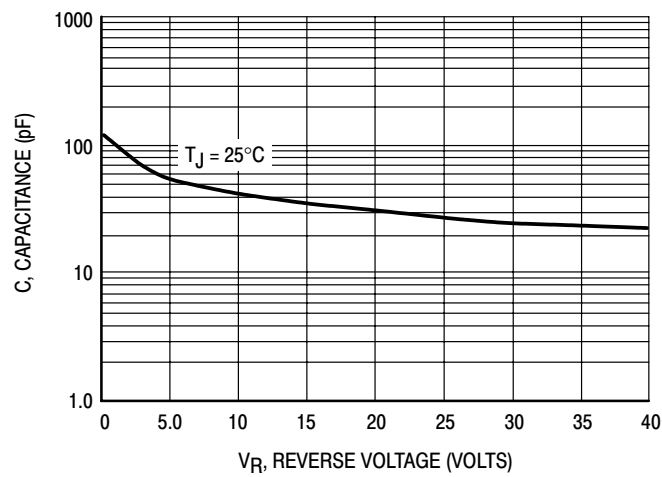
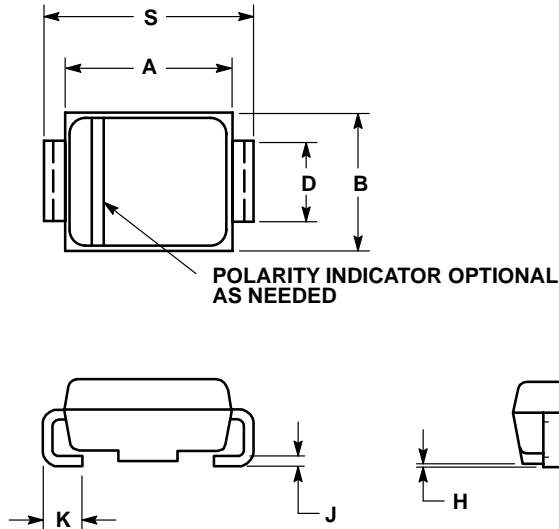


Figure 8. Capacitance

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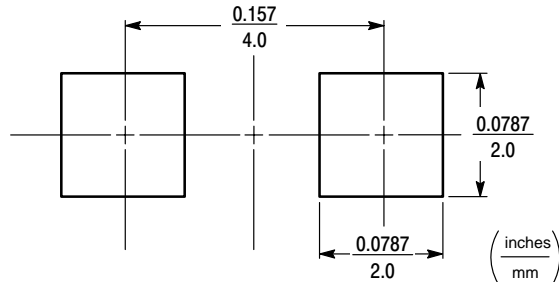
## PACKAGE DIMENSIONS

**SMA**  
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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