

MBRS1100T3, MBRS190T3

Preferred Devices

Schottky Power Rectifier

Surface Mount Power Package

Schottky Power Rectifiers employ the use of 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 protection diodes, in surface mount applications where compact size and weight are critical to the system. These state-of-the-art devices have the following features:

Features

- Pb-Free Packages are Available
- Small Compact Surface Mountable Package with J-Bend Leads
- Rectangular Package for Automated Handling
- Highly Stable Oxide Passivated Junction
- High Blocking Voltage – 100 Volts
- 175°C Operating Junction Temperature
- Guardring for Stress Protection

Mechanical Characteristics

- Case: Epoxy, Molded
- Weight: 95 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 and Reel, 2500 units per reel
- Cathode Polarity Band

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	V_{RRM}		V
Working Peak Reverse Voltage	V_{RWM}		
DC Blocking Voltage MBRS190T3	V_R	90	
MBRS1100T3		100	
Average Rectified Forward Current	$I_{F(AV)}$		A
$T_L = 163^\circ\text{C}$		1.0	
$T_L = 148^\circ\text{C}$		2.0	
Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	I_{FSM}	50	A
Operating Junction Temperature (Note 1)	T_J	-65 to +175	°C
Voltage Rate of Change	dv/dt	10	V/ns

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.

1. The heat generated must be less than the thermal conductivity from Junction-to-Ambient: $dP_D/dT_J < 1/R_{\theta JA}$.



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SCHOTTKY BARRIER RECTIFIER 1.0 AMPERE 90, 100 VOLTS



SMB
CASE 403A
PLASTIC

MARKING DIAGRAM



- B1 = Device Code
- x = C for MBRS1100T3
9 for MBRS190T3
- A = Assembly Location
- Y = Year
- W = Work Week
- = Pb-Free Package

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

Preferred devices are recommended choices for future use and best overall value.

MBRS1100T3, MBRS190T3

THERMAL CHARACTERISTICS

Rating	Symbol	Value	Unit
Thermal Resistance – Junction-to-Lead ($T_L = 25^\circ\text{C}$)	$R_{\theta JL}$	22	$^\circ\text{C/W}$

ELECTRICAL CHARACTERISTICS

Maximum Instantaneous Forward Voltage (Note 1) ($i_F = 1.0\text{ A}$, $T_J = 25^\circ\text{C}$)	V_F	0.75	V
Maximum Instantaneous Reverse Current (Note 1) (Rated dc Voltage, $T_J = 25^\circ\text{C}$) (Rated dc Voltage, $T_J = 100^\circ\text{C}$)	I_R	0.5 5.0	mA

1. Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$.

ORDERING INFORMATION

Device	Marking	Package	Shipping†
MBRS1100T3	B1C	SMB	2500 Tape & Reel
MBRS1100T3G	B1C	SMB (Pb-Free)	2500 Tape & Reel
MBRS190T3	B19	SMB	2500 Tape & Reel
MBRS190T3G	B19	SMB (Pb-Free)	2500 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.

MBRS1100T3, MBR5190T3

TYPICAL ELECTRICAL CHARACTERISTICS

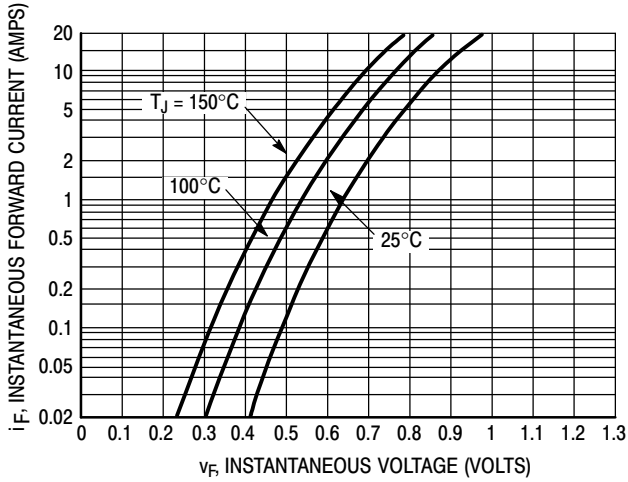


Figure 1. Typical Forward Voltage

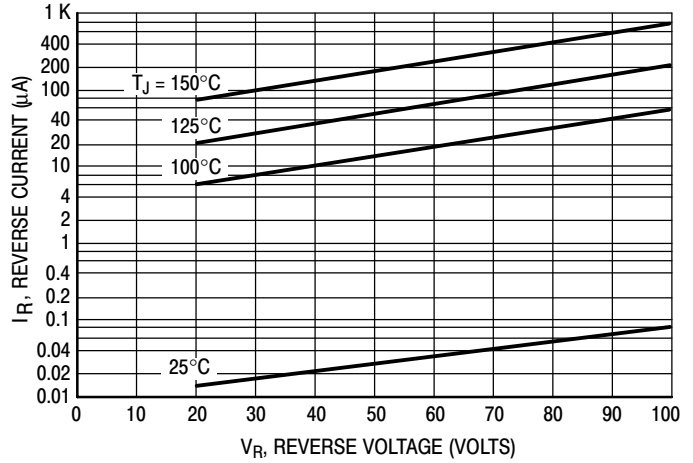


Figure 2. Typical Reverse Current*

*The curves shown are typical for the highest voltage device in the voltage grouping. Typical reverse current for lower voltage selections can be estimated from these curves if V_R is sufficient below rated V_R .

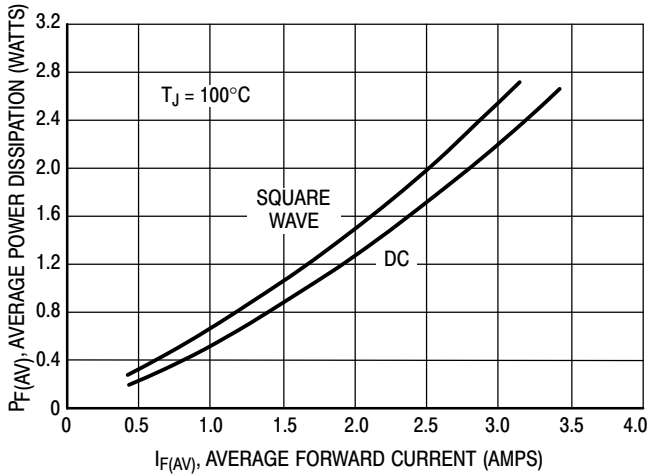


Figure 3. Power Dissipation

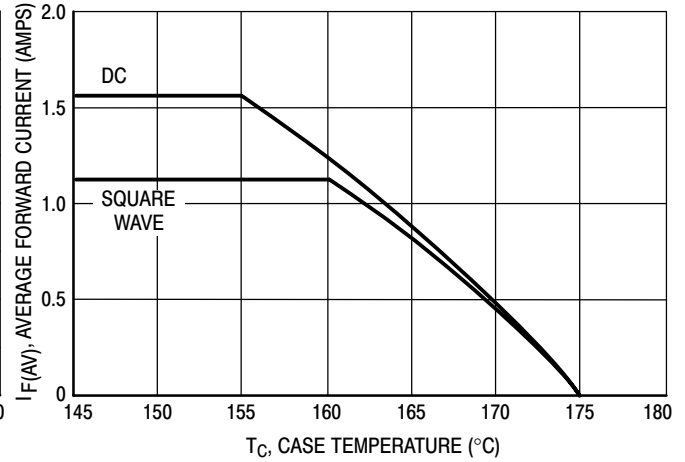


Figure 4. Current Derating, Case, Per Leg

TYPICAL ELECTRICAL CHARACTERISTICS

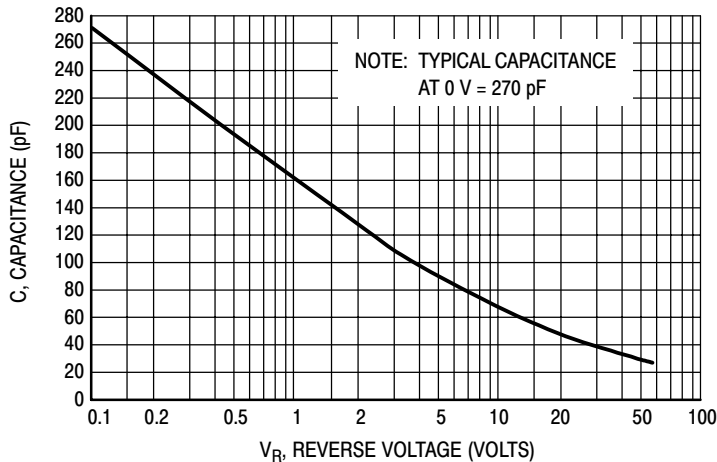
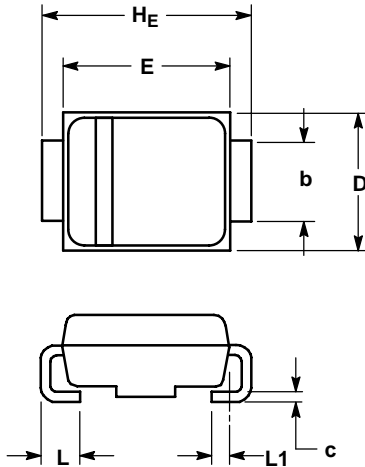


Figure 5. Typical Capacitance

MBRS1100T3, MBR5190T3

PACKAGE DIMENSIONS

SMB PLASTIC PACKAGE CASE 403A-03 ISSUE F

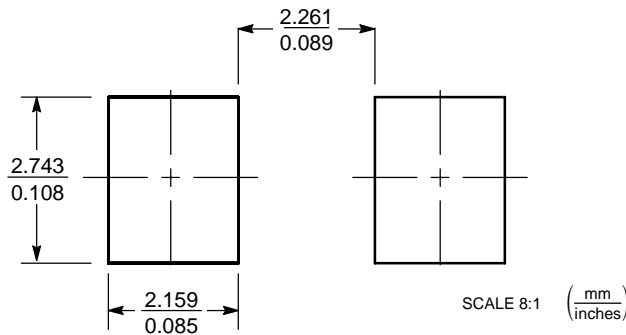


NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. D DIMENSION SHALL BE MEASURED WITHIN DIMENSION P.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.90	2.13	2.45	0.075	0.084	0.096
A1	0.05	0.10	0.20	0.002	0.004	0.008
b	1.96	2.03	2.20	0.077	0.080	0.087
c	0.15	0.23	0.31	0.006	0.009	0.012
D	3.30	3.56	3.95	0.130	0.140	0.156
E	4.06	4.32	4.60	0.160	0.170	0.181
H_E	5.21	5.44	5.60	0.205	0.214	0.220
L	0.76	1.02	1.60	0.030	0.040	0.063
L1	0.51 REF			0.020 REF		

SOLDERING FOOTPRINT*



*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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