

International
IOR Rectifier

MBRS130TRPbF

SCHOTTKY RECTIFIER

1 Amp

$$I_{F(AV)} = 1.0 \text{ Amp}$$

$$V_R = 30V$$

Major Ratings and Characteristics

Characteristics	Value	Units
$I_{F(AV)}$ Rectangular waveform	1.0	A
V_{RRM}	30	V
I_{FSM} @ $t_p=5\mu s$ sine	230	A
V_F @1.0Apk, $T_J=125^\circ C$	0.42	V
T_J range	- 55 to 125	$^\circ C$

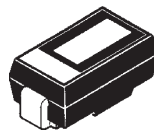
Description/ Features

The MBRS130TRPbF surface-mount Schottky rectifier has been designed for applications requiring low forward drop and small foot prints on PC boards. Typical applications are in disk drives, switching power supplies, converters, free-wheeling diodes, battery charging, and reverse battery protection.

- Small foot print, surface mountable
- Very low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Lead-Free (PbF" suffix)

Case Styles

MBRS130TRPbF



SMB

Cathode  Anode

Voltage Ratings

Part number	MBRS130TRPbF
V_R Max. DC Reverse Voltage (V)	30
V_{RWM} Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

Parameters	Value	Units	Conditions	
I _{F(AV)} Max. Average Forward Current	1.0	A	50% duty cycle @ T _L = 147 °C, rectangular wave form	
I _{FSM} Max. Peak One Cycle Non-Repetitive Surge Current, T _J = 25°C	870	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V _{RRM} applied
	50		10ms Sine or 6ms Rect. pulse	
E _{AS} Non- Repetitive Avalanche Energy	3.0	mJ	T _J = 25 °C, I _{AS} = 1A, L = 6mH	
I _{AR} Repetitive Avalanche Current	1.0	A	Current decaying linearly to zero in 1 µsec Frequency limited by T _J max. Va = 1.5 x Vr typical	

Electrical Specifications

Parameters			Value	Units	Conditions	
V _{FM}	Max. Forward Voltage Drop	(1)	0.6	V	@ 1A	T _J = 25 °C
			0.67	V	@ 2A	
			0.42	V	@ 1A	T _J = 125 °C
			0.52	V	@ 2A	
I _{RM}	Max. Reverse Leakage Current	(1)	0.5	mA	T _J = 25 °C	V _R = rated V _R
			5.0	mA	T _J = 100 °C	
			15	mA	T _J = 125 °C	
C _T	Max. Junction Capacitance		200	pF	V _R = 5V _{DC} (test signal range 100KHz to 1Mhz) 25°C	
L _S	Typical Series Inductance		2.0	nH	Measured lead to lead 5mm from package body	
dv/dt	Max. Voltage Rate of Change (Rated V _R)		10000	V/μs		

(1) Pulse Width < 300 μs , Duty Cycle < 2%

Thermal-Mechanical Specifications

Parameters	Value	Units	Conditions
T_J Max. Junction Temperature Range (*)	-55 to 125	$^\circ\text{C}$	
T_{stg} Max. Storage Temperature Range	-55 to 150	$^\circ\text{C}$	
R_{thJL} Max. Thermal Resistance Junction to Lead (**)	25	$^\circ\text{C/W}$	DC operation
R_{thJA} Max. Thermal Resistance Junction to Ambient	80	$^\circ\text{C/W}$	DC operation
wt Approximate Weight	0.10(0.003)	g (oz.)	
Case Style	SMB		Similar to DO-214AA
Device Marking	IR13		

(*) $\frac{dP_{tot}}{dT_J} < \frac{1}{R_{th(j-a)}}$ thermal runaway condition for a diode on its own heatsink

(**) Mounted 1 inch square PCB

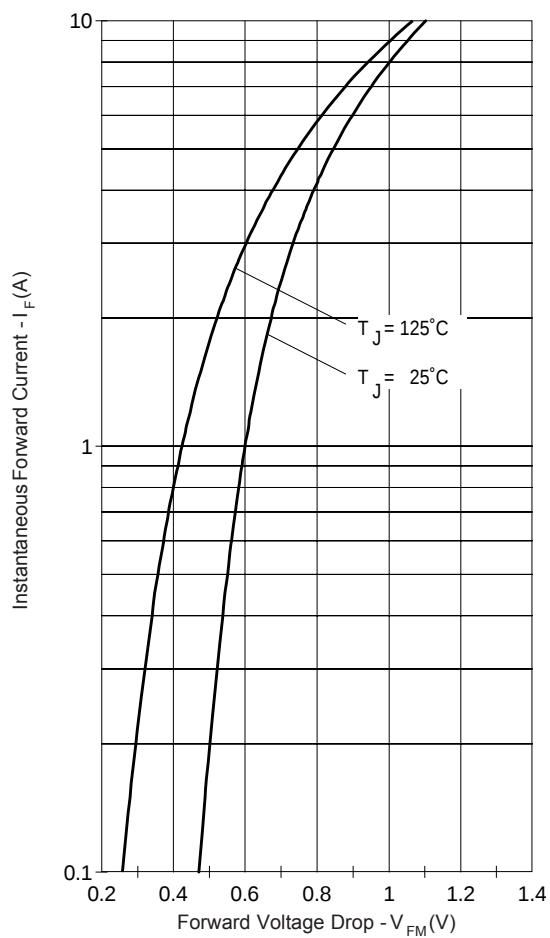


Fig. 1 - Maximum Forward Voltage Drop Characteristics

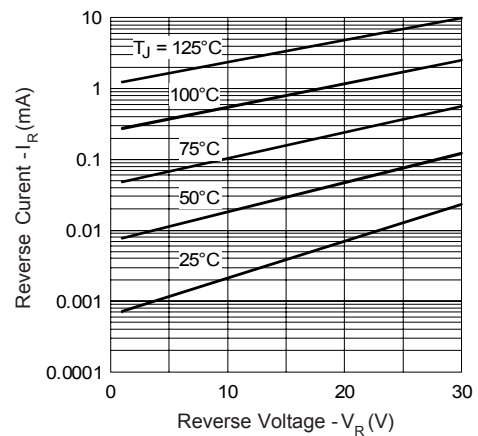


Fig. 2 - Typical Peak Reverse Current
Vs. Reverse Voltage

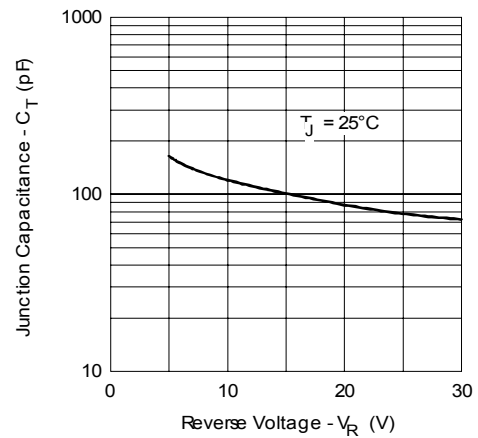


Fig. 3 - Typical Junction Capacitance
Vs. Reverse Voltage

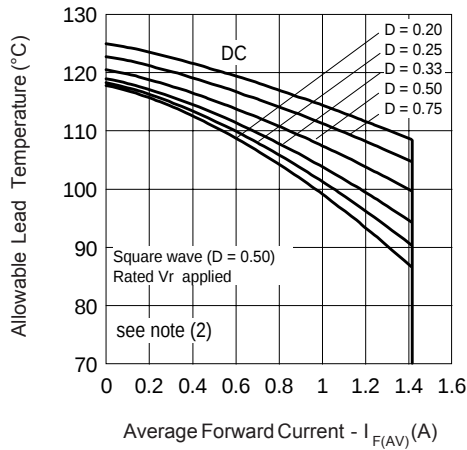


Fig. 4 - Maximum Average Forward Current
Vs. Allowable Lead Temperature

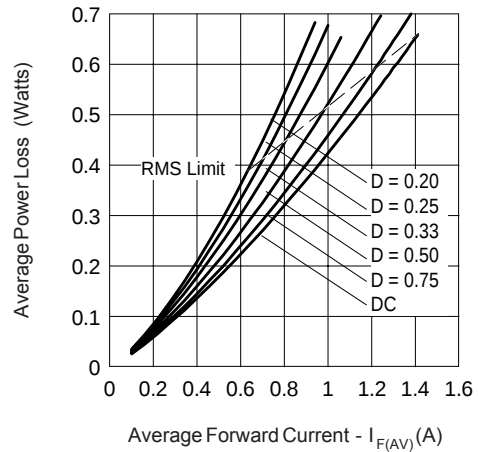


Fig. 5 - Maximum Average Forward Dissipation
Vs. Average Forward Current

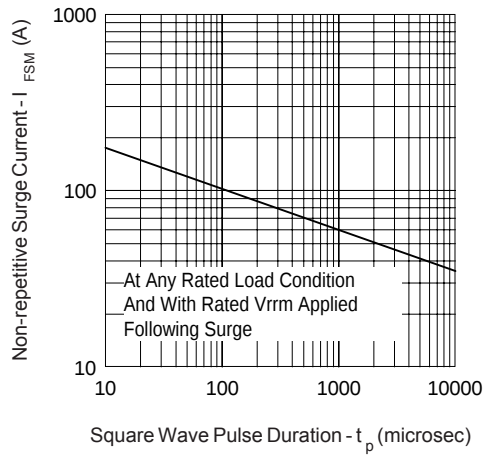


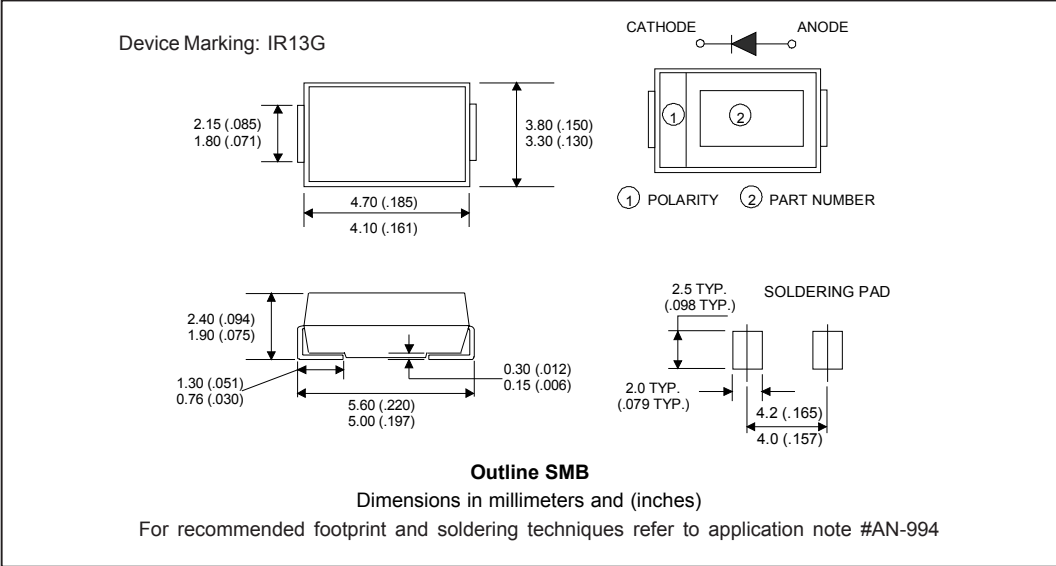
Fig. 6 - Maximum Peak Surge Forward Current Vs. Pulse Duration

(2) Formula used: $T_C = T_J - (P_d + P_{d_{REV}}) \times R_{thJC}$;

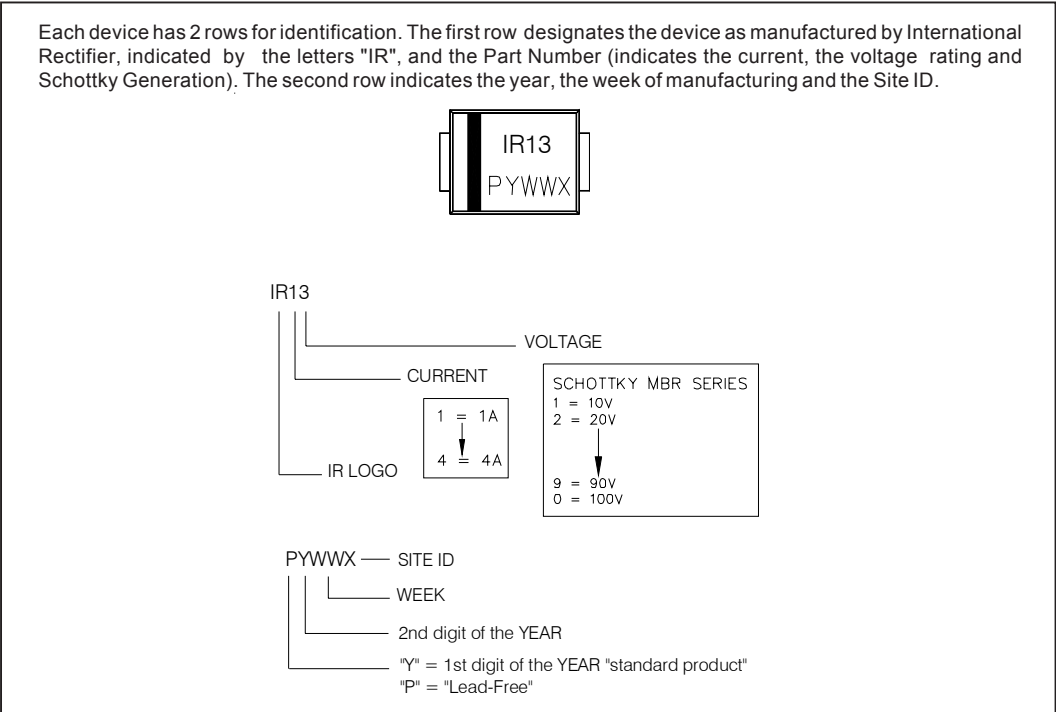
P_d = Forward Power Loss = $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);

$P_{d_{REV}}$ = Inverse Power Loss = $V_{R1} \times I_R (1 - D)$; $I_R @ V_{R1} = 80\% \text{ rated } V_R$

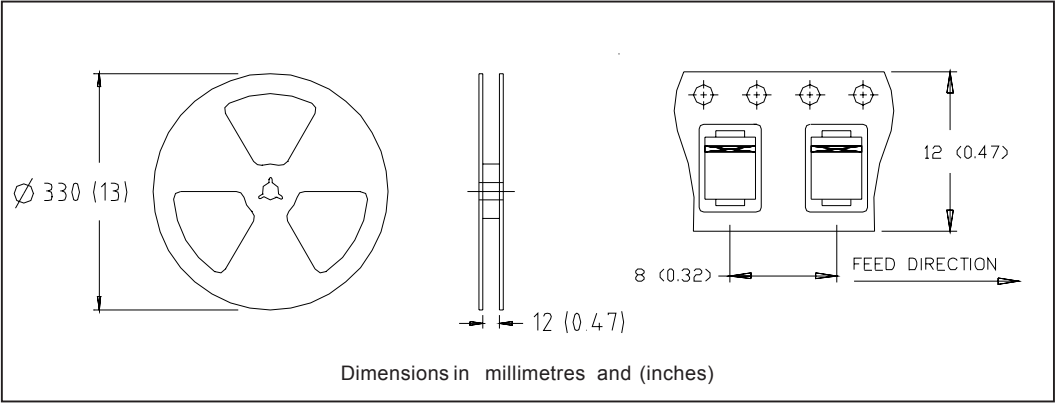
Outline Table



Marking & Identification



Tape & Reel Information



Ordering Information Table

Device Code					
MBR	S	1	30	TR	PbF
1	2	3	4	5	6
1	-	1	-	-	-
2	-	S	-	-	-
3	-	Current Rating	-	-	-
4	-	Voltage Rating	-	-	-
5	-	TR	-	-	-
6	-	• none = Standard Production	-	-	-
	-	• PbF = Lead-Free	-	-	-

Data and specifications subject to change without notice.
This product has been designed and qualified for Industrial Level and Lead-Free.
Qualification Standards can be found on IR's Web site.