



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	$^\circ C$

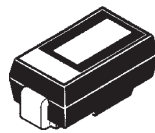
Description/ Features

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
- Lad-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
	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
	0.67	V	@ 2A
	0.42	V	@ 1A
	0.52	V	@ 2A
I _{RM} Max. Reverse Leakage Current (1)	0.5	mA	T _J = 25 °C
	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 < 300µs, Duty Cycle < 2%

Thermal-Mechanical Specifications

Parameters	Value	Units	Conditions
T _J Max. Junction Temperature Range (*)	-55 to 125	°C	
T _{stg} Max. Storage Temperature Range	-55 to 150	°C	
R _{thJL} Max. Thermal Resistance Junction to Lead (**)	25	°C/W	DC operation
R _{thJA} Max. Thermal Resistance Junction to Ambient	80	°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

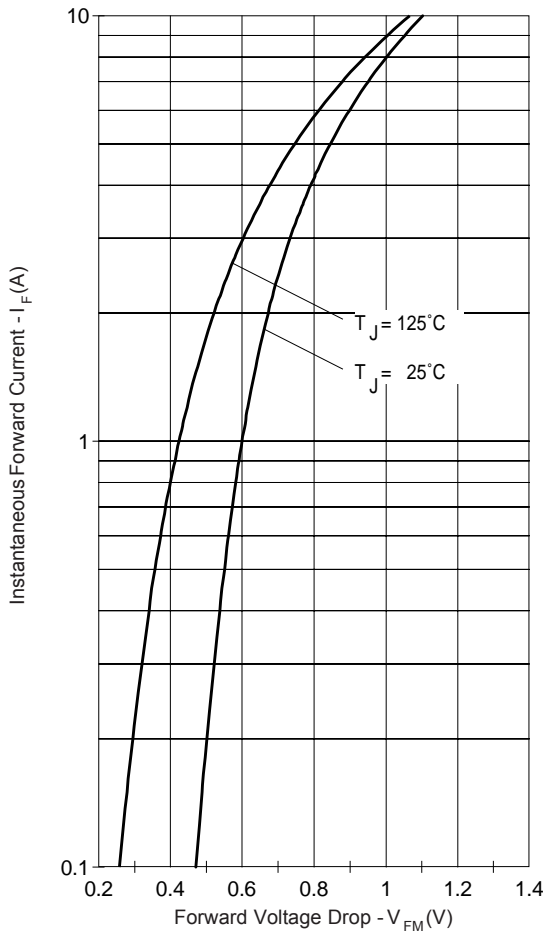


Fig. 1 - Maximum Forward Voltage Drop Characteristics

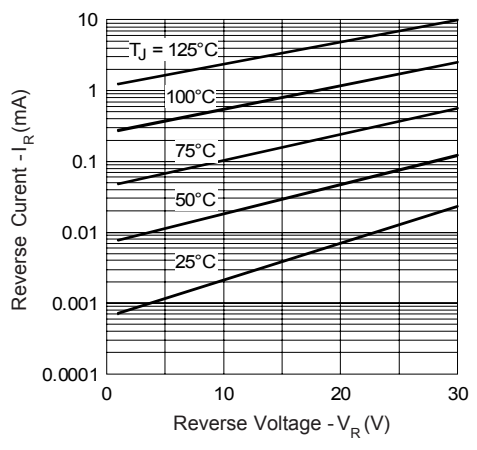


Fig. 2 - Typical Peak Reverse Current Vs. Reverse Voltage

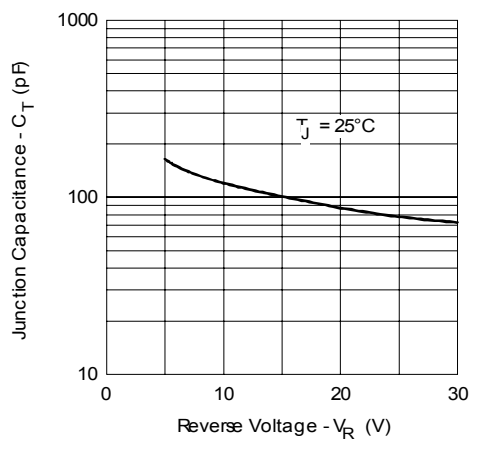


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

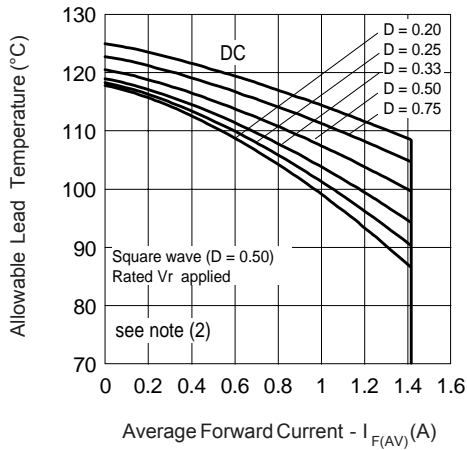


Fig. 4 - Maximum Average Forward Current Vs. Allowable Lead Temperature

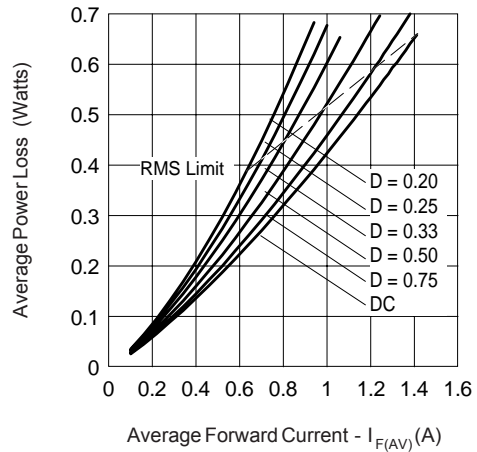


Fig. 5 - Maximum Average Forward Dissipation Vs. Average Forward Current

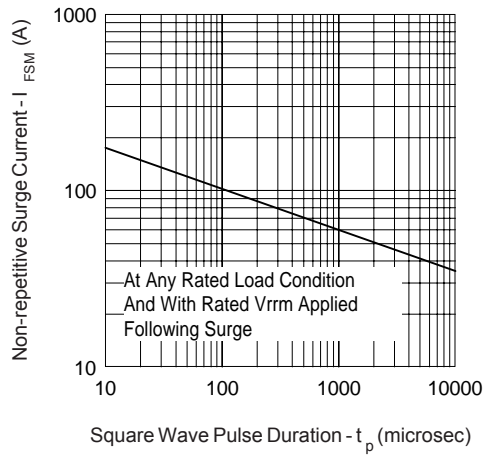
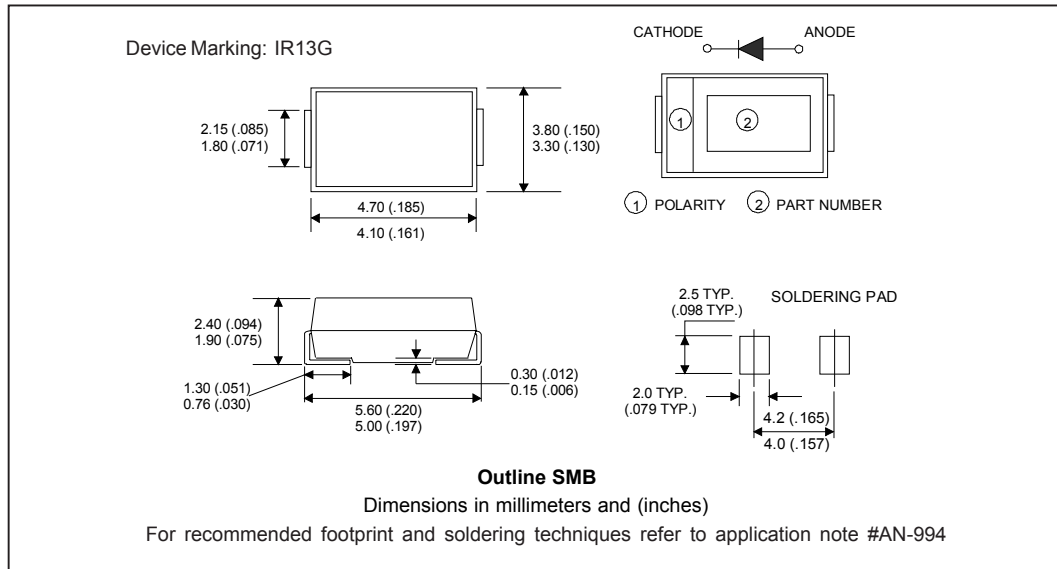


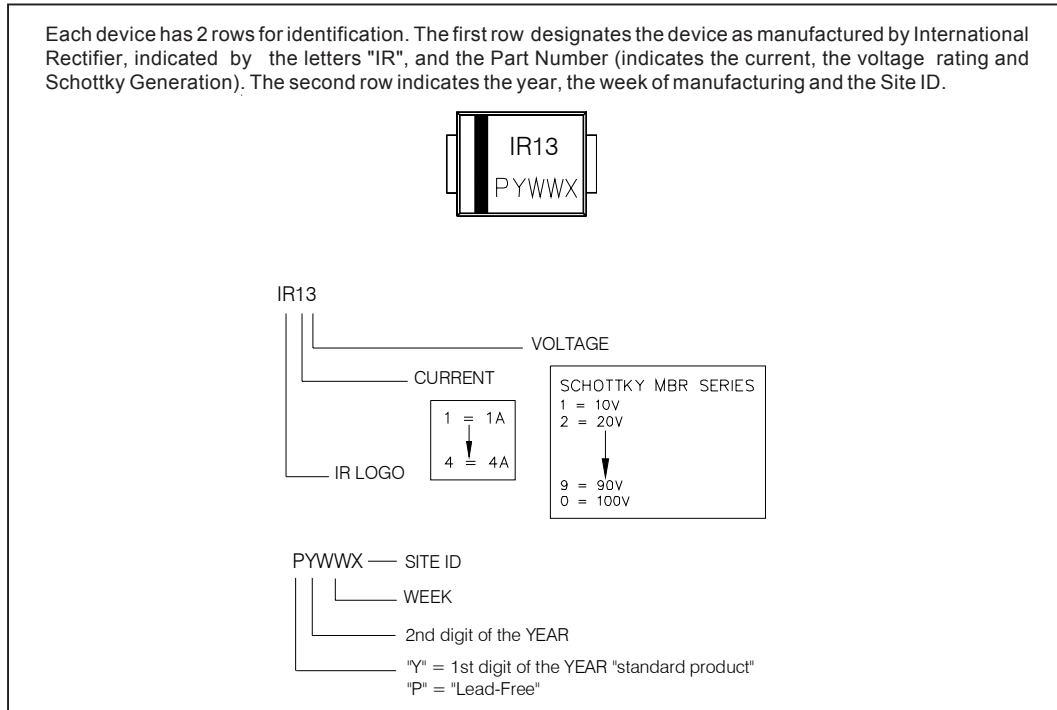
Fig. 6 - Maximum Peak Surge Forward Current Vs. Pulse Duration

- (2) Formula used: $T_c = T_j - (Pd + Pd_{REV}) \times R_{thJC}$;
 $Pd = \text{Forward Power Loss} = I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);
 $Pd_{REV} = \text{Inverse Power Loss} = V_{R1} \times I_R (1 - D)$; $I_R @ V_{R1} = 80\% \text{ rated } V_R$

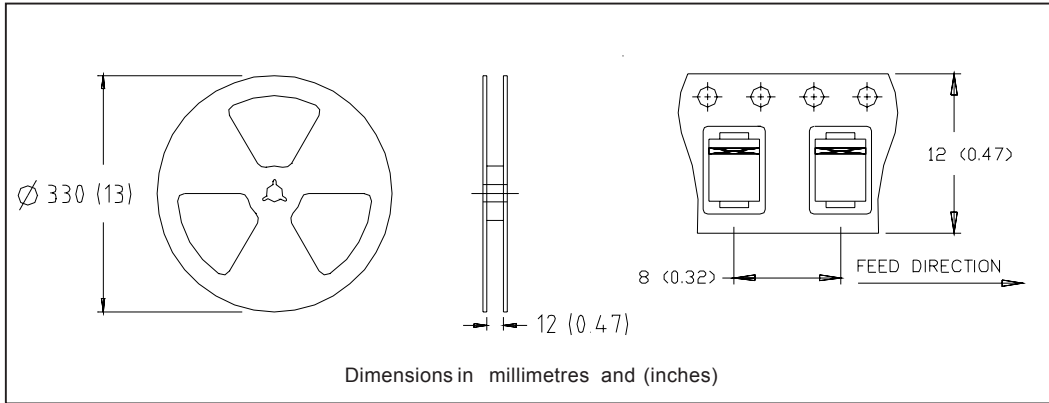
Outline Table



Marking & Identification



Tape & Reel Information



Ordering Information Table

Device Code					
1	2	3	4	5	6
MBR	S	1	30	TR	PbF
1	-	Schottky MBR Series			
2	-	S = SMB			
3	-	Current Rating (1 = 1 A)			
4	-	Voltage Rating (30 = 30V)			
5	-	TR = Tape & Reel (3000 pieces)			
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.

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