

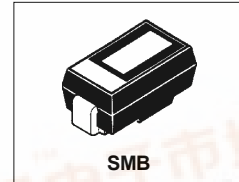
Bulletin PD-20584 rev. B 02/02

International IOR Rectifier

MBRS130TR

SCHOTTKY RECTIFIER

1 Amp



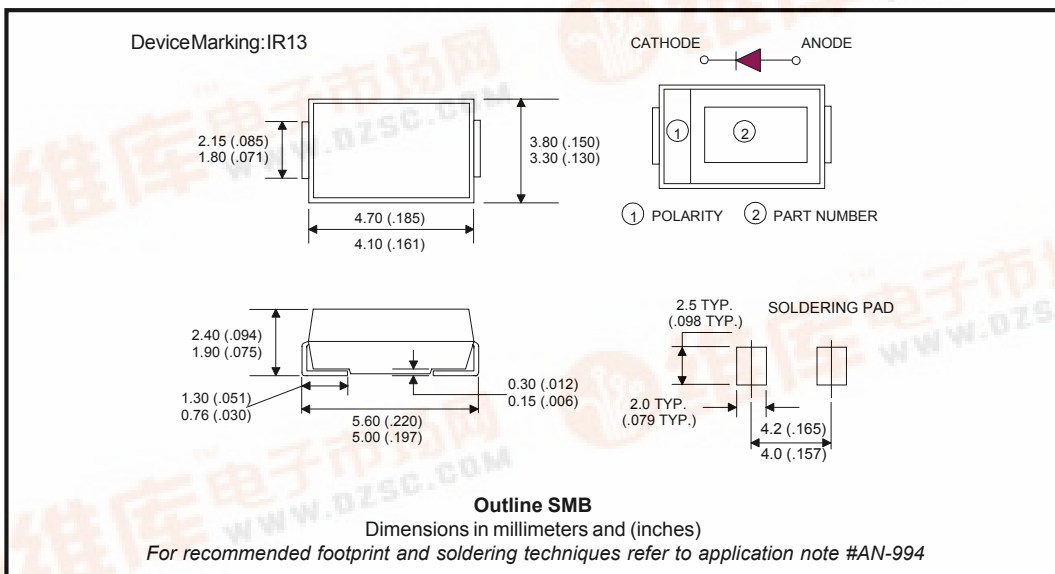
Major Ratings and Characteristics

Characteristics	MBRS130TR	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 MBRS130TR 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



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Voltage Ratings

Partnumber	MBRS130TR
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 @ $T_L = 147^\circ\text{C}$, rectangular wave form
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current	870	A	5 μs Sine or 3 μs Rect. pulse
	50		10ms Sine or 6ms Rect. pulse
E_{AS} Non-Repetitive Avalanche Energy	5.0	mJ	$T_J = 25^\circ\text{C}$, $I_{AS} = 0.5\text{A}$, $L = 10\text{mH}$
I_{AR} Repetitive Avalanche Current	0.2	A	

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	$T_J = 25^\circ\text{C}$
	5.0	mA	$T_J = 100^\circ\text{C}$
	15	mA	$T_J = 125^\circ\text{C}$
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	$^\circ\text{C}/\text{W}$	DC operation
R_{thJA} Max. Thermal Resistance Junction to Ambient	80	$^\circ\text{C}/\text{W}$	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

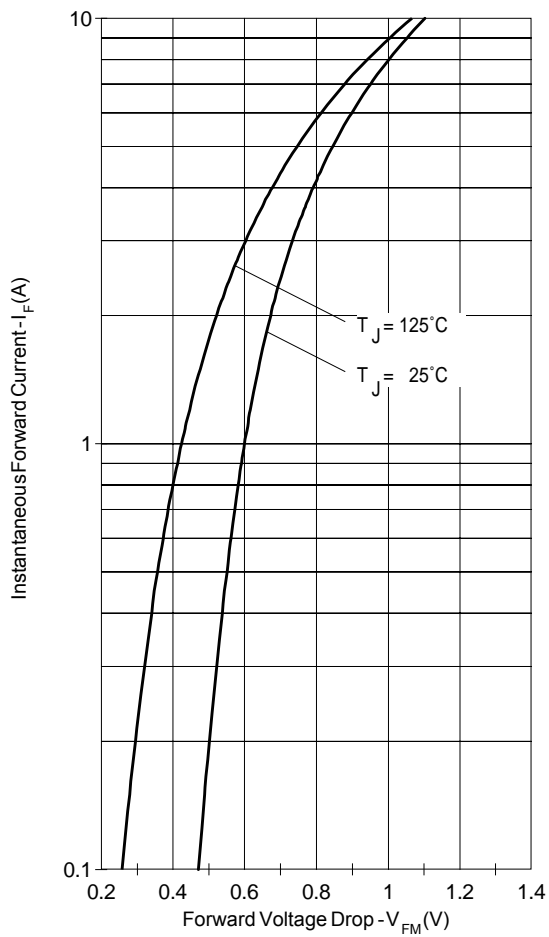


Fig. 1 - Maximum Forward Voltage Drop Characteristics

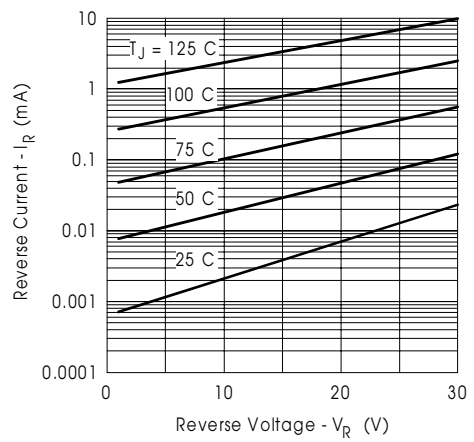


Fig. 2 - Typical Peak Reverse Current Vs. Reverse Voltage

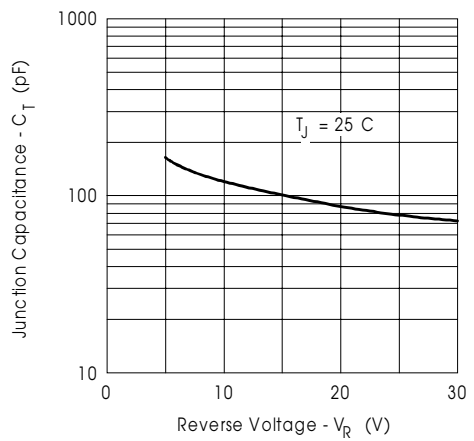


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

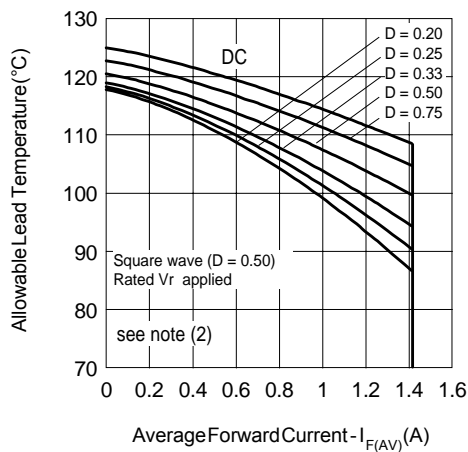


Fig. 4- Maximum Average Forward Current Vs. Allowable Lead Temperature

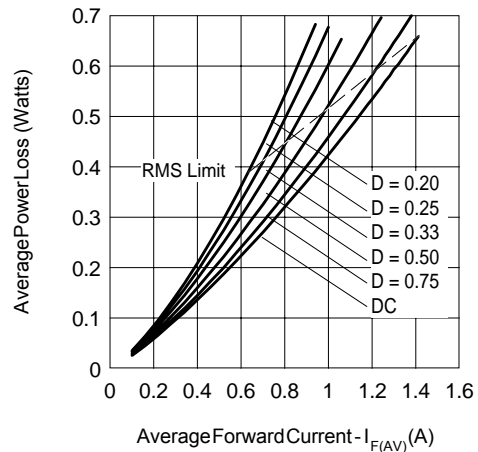


Fig. 5- Maximum Average Forward Dissipation Vs. Average Forward Current

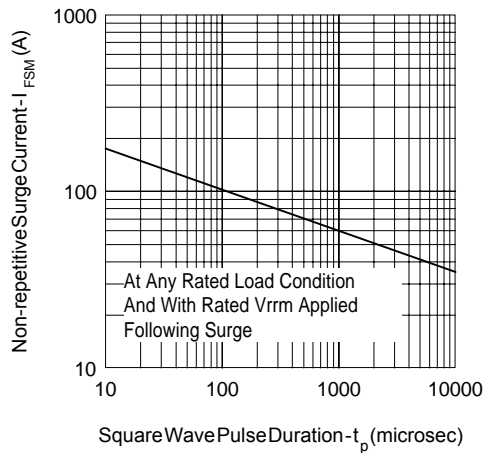


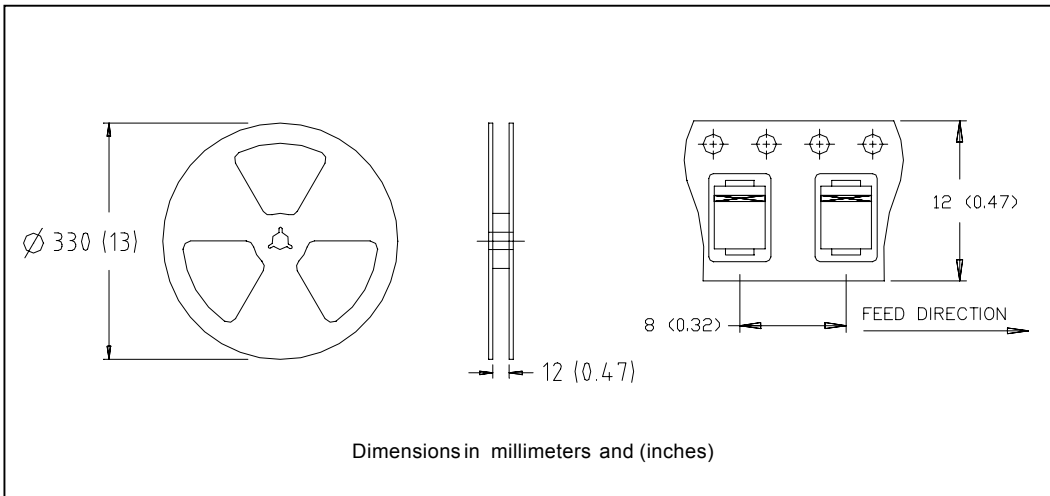
Fig. 6- Maximum Peak Surge Forward Current Vs. Pulse Duration

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

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

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

Tape & Reel Information



Marking & Identification

Each device has marking and identification on two rows.
 - The first row designates the device as manufactured by International Rectifier as indicated by the letters "IR", then Current and Voltage.
 - The second row shows the data code: Year and Week.

See below marking diagram

FIRST ROW

IR 13

SECOND ROW

Date Code

YY WW

Ordering Information

MBRS130TR - TAPE AND REEL

WHEN ORDERING, INDICATE THE PART NUMBER AND THE QUANTITY (IN MULTIPLES OF 3000 PIECES).

EXAMPLE: MBRS130TR - 6000 PIECES

MBRS130TR

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International
IR Rectifier

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

International
IR Rectifier

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