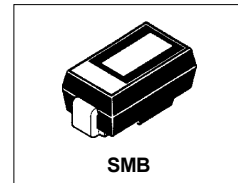


International
IR Rectifier

MBRS130TR

SCHOTTKY RECTIFIER

1 Amp



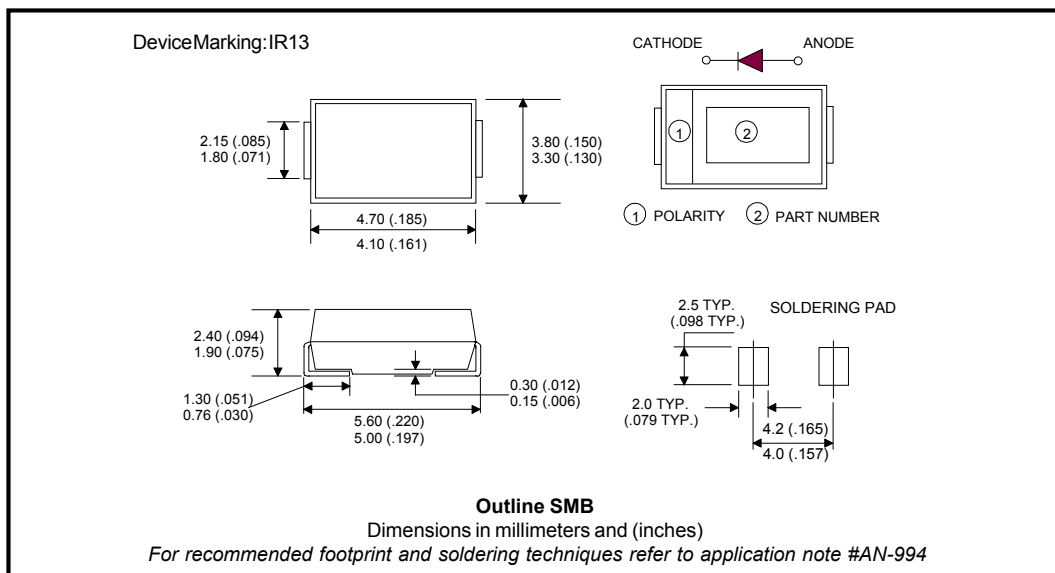
Major Ratings and Characteristics

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 @ $1.0 A_{pk}, T_J = 125^\circ C$	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



MBRS130TR

Bulletin PD-20584 rev. B 02/02

International
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Voltage Ratings

Part number	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	$^\circ\text{C/W}$	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

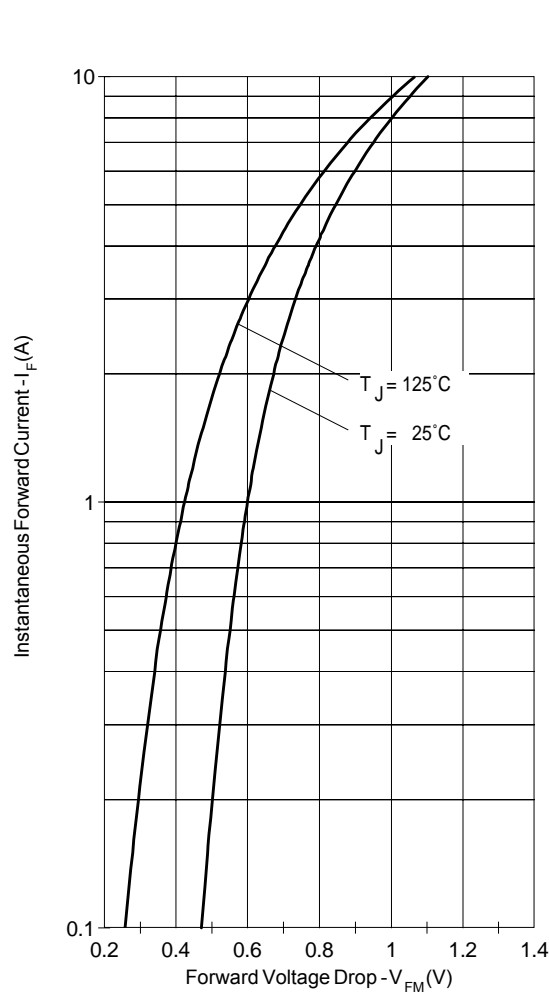


Fig. 1 - Maximum Forward Voltage Drop Characteristics

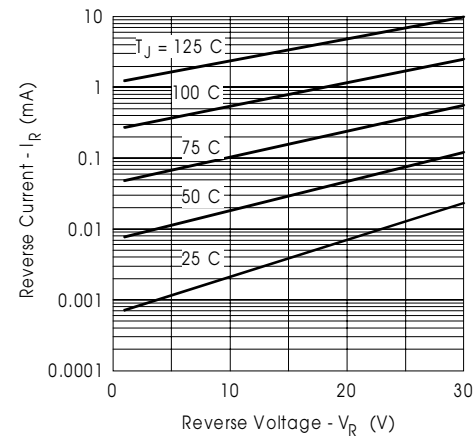


Fig. 2 - Typical Peak Reverse Current Vs. Reverse Voltage

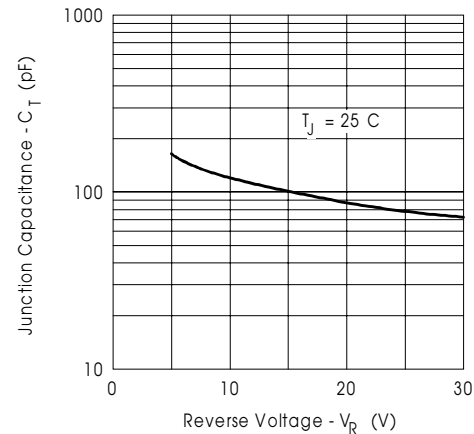


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

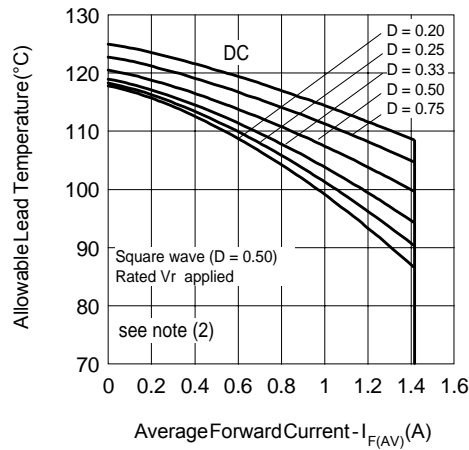


Fig. 4 - Maximum Average Forward Current
Vs. Allowable Lead Temperature

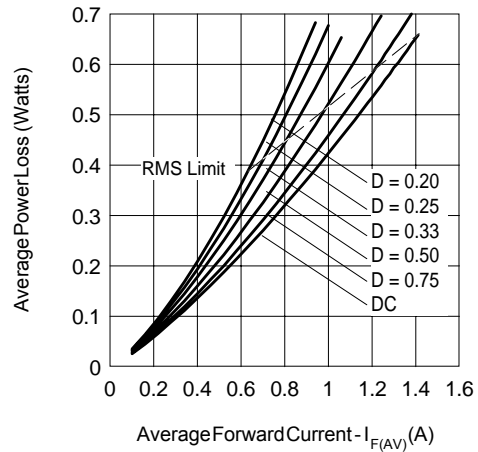


Fig. 5 - Maximum Average Forward Dissipation
Vs. Average Forward Current

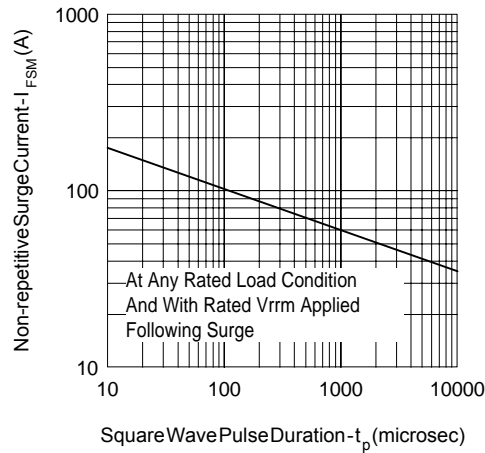


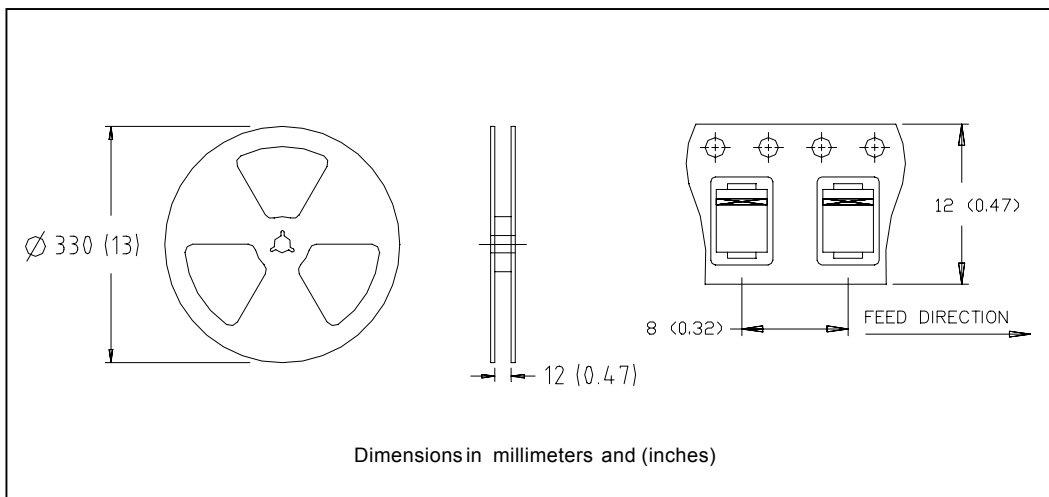
Fig. 6 - Maximum Peak Surge Forward Current Vs. Pulse Duration

(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 = $V_{R1} \times I_R (1 - D)$; $I_R @ V_{R1} = 80\%$ 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

Bulletin PD-20584 rev. B 02/02

International
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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
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IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
TAC Fax: (310) 252-7309
Visit us at www.irf.com for sales contact information. 02/02