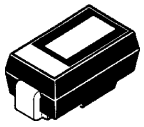
Bulletin PD-20588 rev. B 02/02

International
IOR Rectifier

MBRS130LTR

SCHOTTKY RECTIFIER

1 Amp



SMB

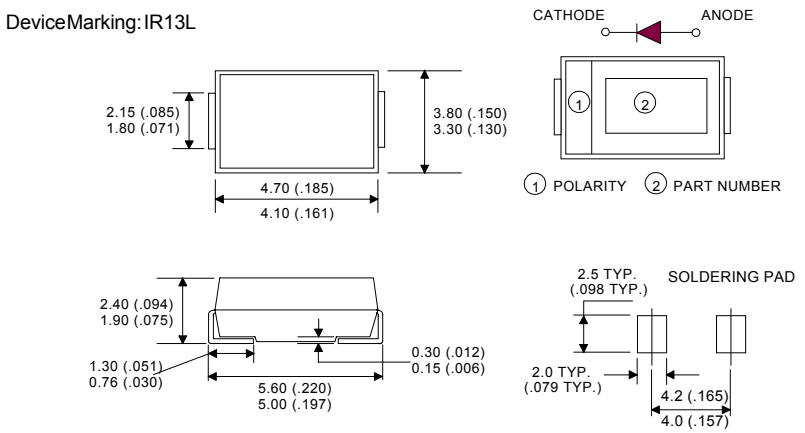
Major Ratings and Characteristics

Characteristics		MBRS130LTR	Units
$I_{F(AV)}$	Rectangular waveform	1.0	A
V_{RRM}		30	V
I_{FSM}	@ t_p = 5 µs sine	230	A
V_F	@1.0Apk, T_J=125°C	0.30	V
T_J	range	- 55 to 125	°C

Description/Features

The MBRS130LTR 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



Outline SMB

Dimensions in millimeters and (inches)

For recommended footprint and soldering techniques refer to application note #AN-994

Voltage Ratings

	Part number	MBRS130LTR
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 = 106 °C, rectangular waveform	
I_{FSM}	Max. Peak One Cycle Non-Repetitive Surge Current	230	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
		40		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy	9.0	mJ	T_J = 25 °C, I_{AS} = 0.2A, L = 10mH	
I_{AR}	Repetitive Avalanche Current	1.0	A		

Electrical Specifications

	Parameters	Value	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop (1)	0.420	V	@ 1A	T_J = 25 °C
		0.470	V	@ 2A	
		0.300	V	@ 1A	T_J = 125 °C
		0.370	V	@ 2A	
I_{RM}	Max. Reverse Leakage Current (1)	1	mA	T_J = 25 °C	V_R = rated V_R
		10	mA	T_J = 100 °C	
		20	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 (See Fig. 4)
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	IR13L		

(*) $\frac{dPtot}{dTj} < \frac{1}{Rth(j\text{-}a)}$ thermal runaway condition for a diode on its own heatsink

(**) Mounted 1 inch square PCB

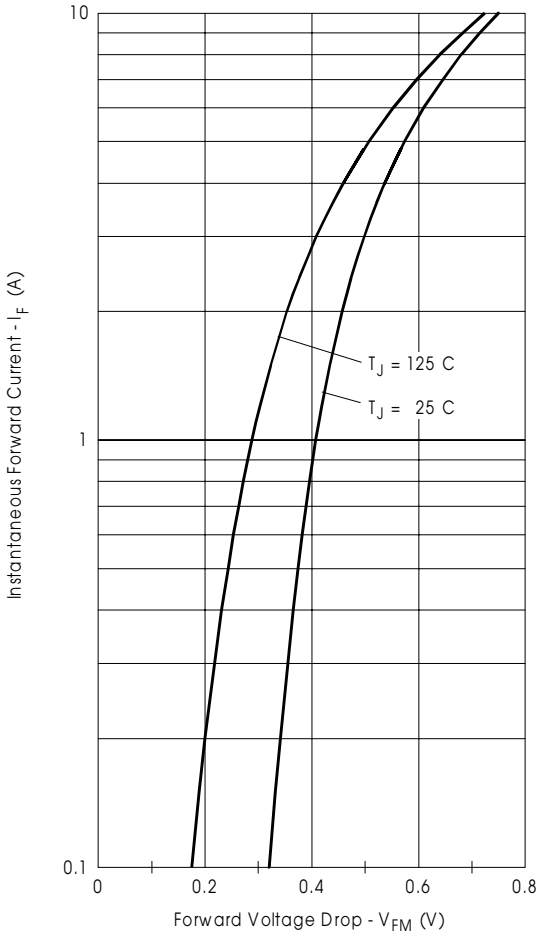


Fig. 1 - Maximum Forward Voltage Drop Characteristics

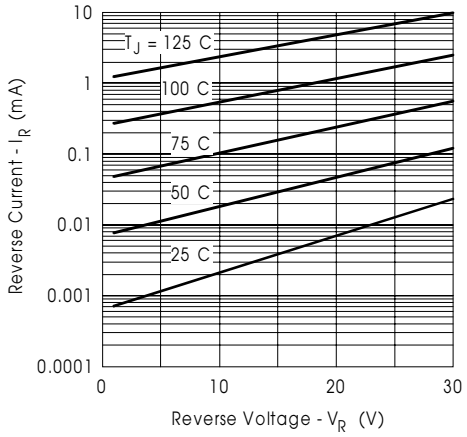


Fig. 2 - Typical Peak Reverse Current
Vs. Reverse Voltage

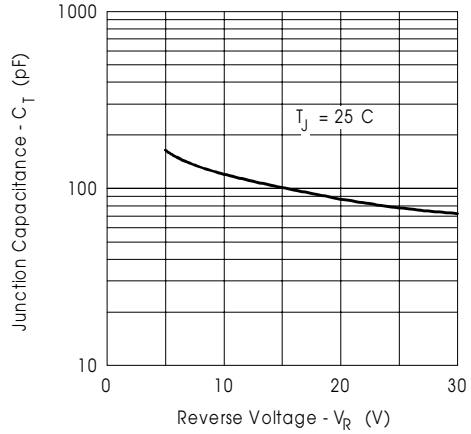


Fig. 3 - Typical Junction Capacitance
Vs. Reverse Voltage

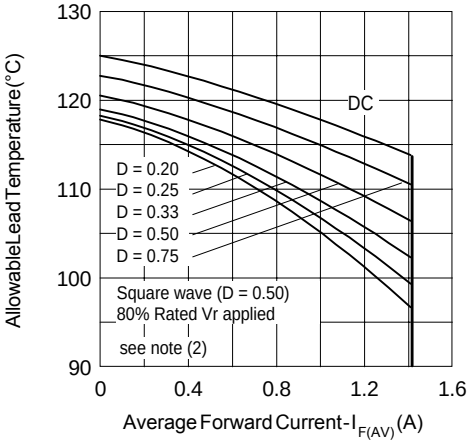


Fig. 4 - Maximum Average Forward Current Vs. Allowable Lead Temperature

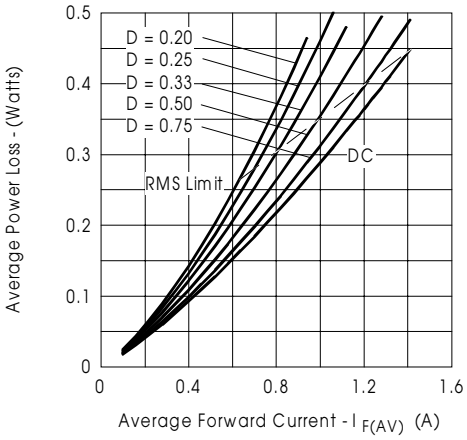


Fig. 5 - Maximum Average Forward Dissipation Vs. Average Forward Current

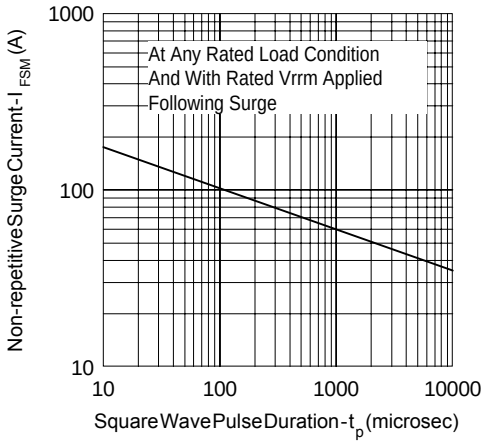
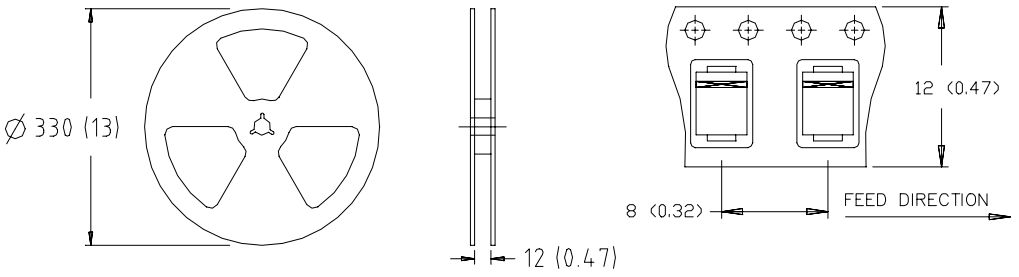


Fig. 6 - Maximum Peak Surge Forward Current Vs. Pulse Duration

(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



Dimensions in millimeters and (inches)

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 the package label i.e. "B", Current and Voltage.
- The second row shows the data code: Year and Week.

See below marking diagram.

FIRST ROW

IR 1 3 L

SECOND ROW

Date Code

YY WW

Ordering Information

MBRS130LTR - TAPE AND REEL

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

EXAMPLE: MBRS130LTR - 6000 PIECES

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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