Bulletin PD-20586 rev. A 02/02

International
IOR Rectifier

MBRS360TR

SCHOTTKY RECTIFIER

3 Amp

SMC

Major Ratings and Characteristics

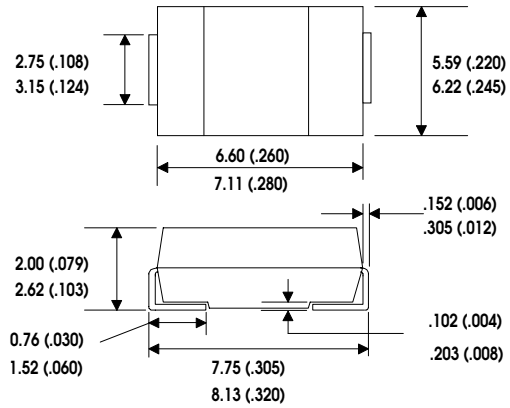
Characteristics	MBRS360TR	Units
$I_{F(AV)}$ Rectangular waveform	3.0	A
V_{RRM}	60	V
I_{FSM} @ t_p = 5 µs sine	790	A
V_F @3.0Apk, T_J=125°C	0.61	V
T_J range	- 55 to 150	°C

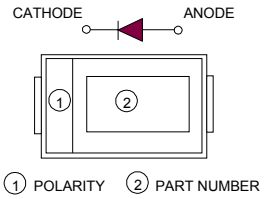
Description/Features

The MBRS360TR 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

Device Marking: IR36





Outline SMC

Dimensions in millimeters and (inches)

For recommended footprint and soldering techniques refer to Application Note # AN-994

Voltage Ratings

	Part number	MBRS360TR
V_R	Max. DC Reverse Voltage (V)	60
V_{RWM}	Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

	Parameters	Value	Units	Conditions	
$I_{F(AV)}$	Max. Average Forward Current	3.0	A	50% duty cycle @ T_L = 118 °C, rectangular waveform	
		4.0		50% duty cycle @ T_L = 105 °C, rectangular waveform	
I_{FSM}	Max. Peak One Cycle Non-Repetitive	790	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
	Surge Current	80		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non Repetitive Avalanche Energy	6	mJ	T_J = 25 °C, I_{AS} = 2.0A, L = 10mH	
I_{AR}	Repetitive Avalanche Current	0.6	A	Current decaying linearly to zero in 1 µsec Frequency limited by T_J max. Va = 1.5 x Vr typical	

Electrical Specifications

	Parameters	Typ	Max	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop (1)	0.57	0.74	V	@ 3A	T_J = 25 °C
		0.72	0.9	V	@ 6A	
		0.51	0.61	V	@ 3A	T_J = 125 °C
		0.62	0.77	V	@ 6A	
I_{RM}	Max. Reverse Leakage (1)	-	0.5	mA	T_J = 25 °C	V_R = rated V_R
	Current	-	20	mA	T_J = 100°C	
		-	30	mA	T_J = 125 °C	
C_T	Max. Junction Capacitance	-	180	pF	V_R = 5V_{DC} (test signal range 100KHz to 1Mhz) 25°C	
L_S	Typical Series Inductance	-	3.0	nH	Measured lead to lead 5mm from package body	
dv/dt	Max. Voltage Rate of Change	-	10000	V/µs	(Rated V_R)	

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

Thermal-Mechanical Specifications

	Parameters	Value	Units	Conditions
T_J	Max. Junction Temperature Range (*)	-55 to 150	°C	
T_{stg}	Max. Storage Temperature Range	-55 to 150	°C	
R_{thJL}	Max. Thermal Resistance Junction to Lead (**)	12	°C/W	DC operation
R_{thJA}	Max. Thermal Resistance Junction to Ambient	46	°C/W	DC operation
wt	Approximate Weight	0.24(0.008)	g (oz.)	
	Case Style	SMC		Similar to DO-214AB
	Device Marking	IR36		

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

(**) Mounted 1 inch square PCB

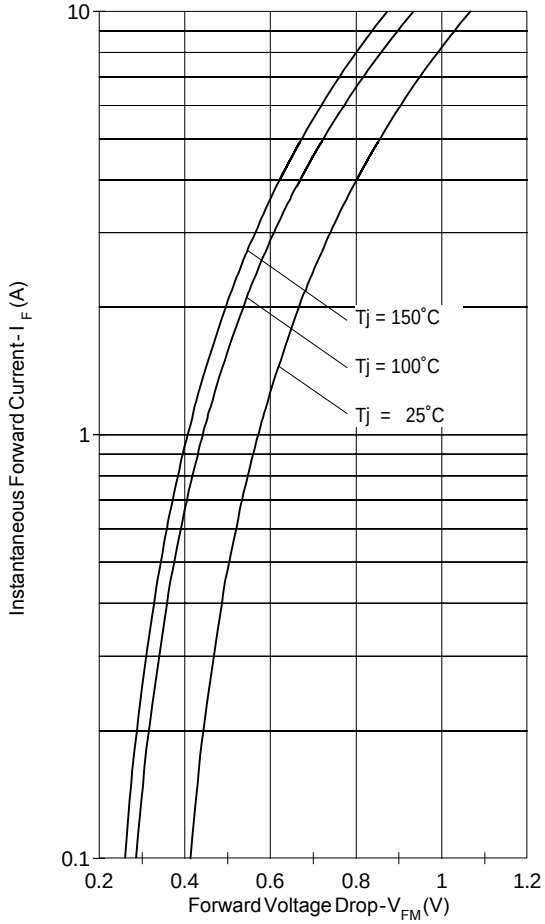


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

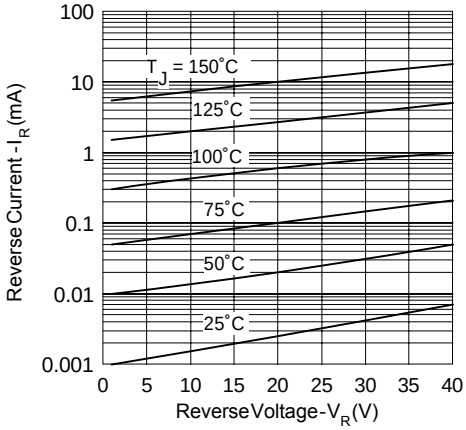


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

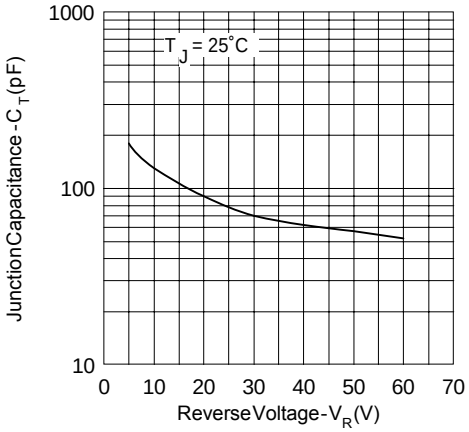


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

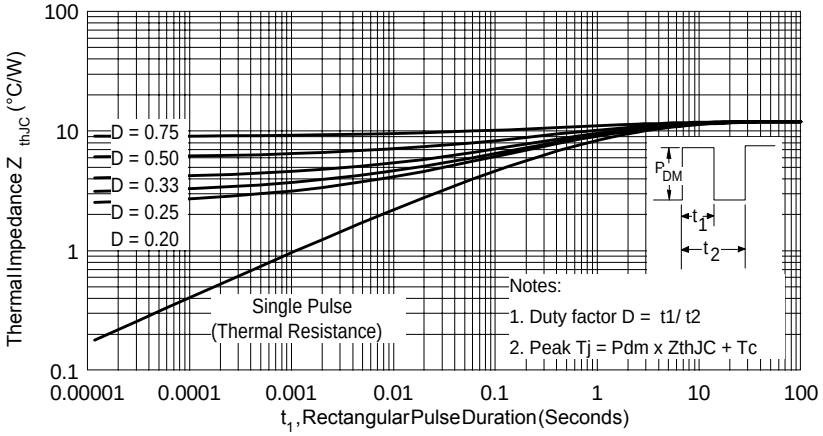


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

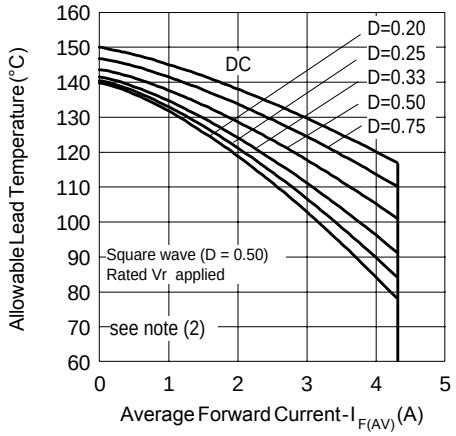


Fig. 4 - Maximum Average Forward Current Vs. Allowable Lead Temperature

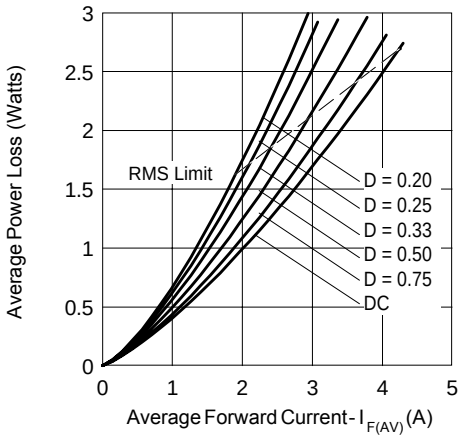


Fig. 5 - Maximum Average Forward Dissipation Vs. Average Forward Current

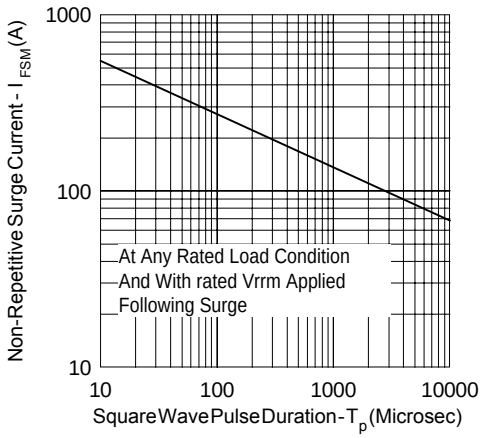
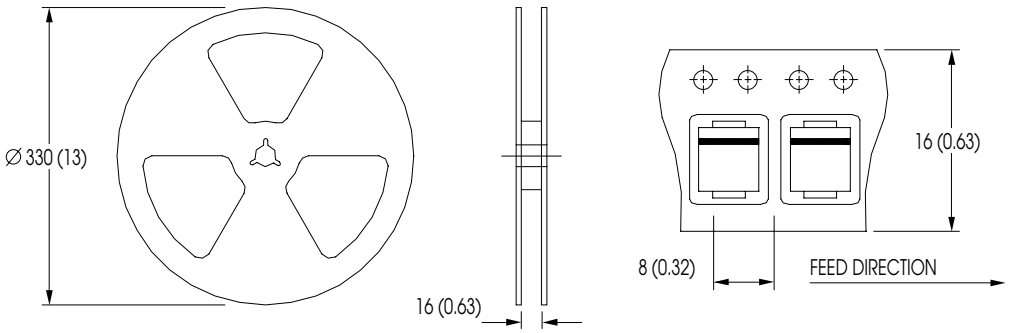


Fig. 6 - Maximum Peak Surge Forward Current Vs. Pulse Duration

(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 Current and Voltage.
- The second row shows the data code: Year and Week.

See below marking diagram.

FIRST ROW

IR 3 6

SECOND ROW

Date Code

YY WW

Ordering Information

MBRS360TR - TAPE AND REEL

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

EXAMPLE: MBRS360TR - 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
IOR Rectifier

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