

Bulletin PD-20586 rev. A 02/02

International IOR Rectifier

MBRS360TR

SCHOTTKY RECTIFIER

3 Amp



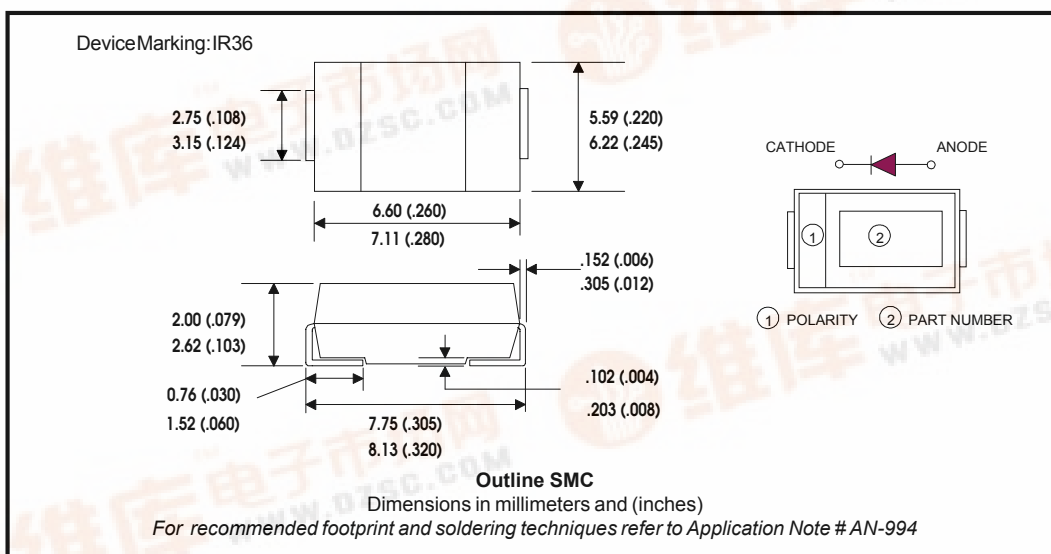
Major Ratings and Characteristics

Characteristics	MBRS360TR	Units
$I_{F(AV)}$ Rectangular waveform	3.0	A
V_{RRM}	60	V
I_{FSM} @ $t_p=5\mu s$ sine	790	A
V_F @ $3.0A_{pk}, T_J=125^\circ C$	0.61	V
T_J range	- 55 to 150	$^\circ C$

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



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 Surge Current	790	A	5µs Sine or 3µs Rect. pulse
	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 1µsec 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
	0.72	0.9	V	@ 6A
	0.51	0.61	V	@ 3A
	0.62	0.77	V	@ 6A
I _{RM} Max. Reverse Leakage Current (1)	-	0.5	mA	T _J = 25 °C
	-	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		

(*) $\frac{dP_{tot}}{dT_J} < \frac{1}{R_{th(j-a)}}$ thermal runaway condition for a diode on its own heatsink

(**) Mounted 1 inch square PCB

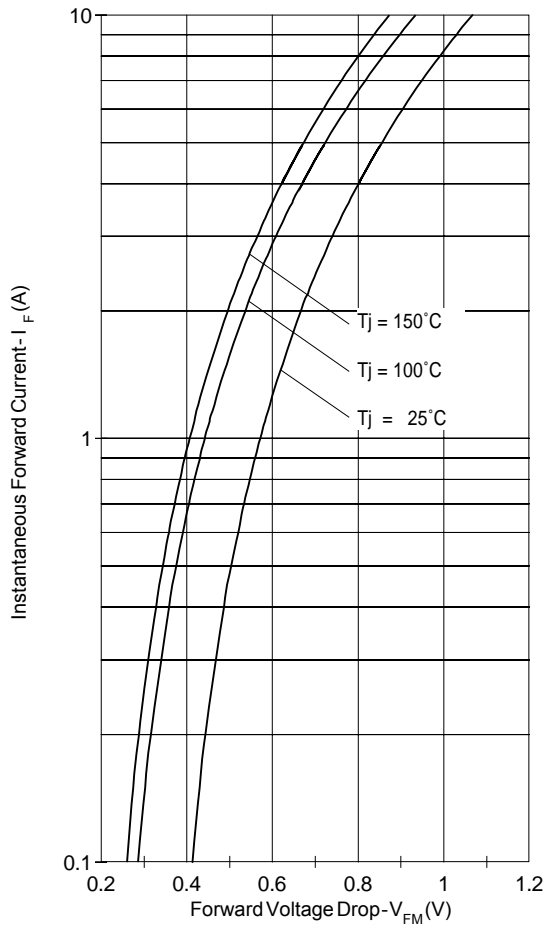


Fig. 1 - Max. Forward Voltage Drop Characteristics (PerLeg)

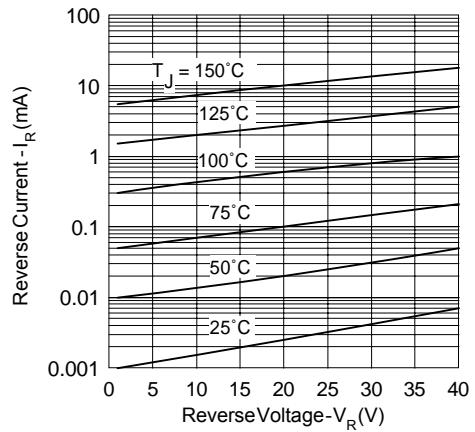


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (PerLeg)

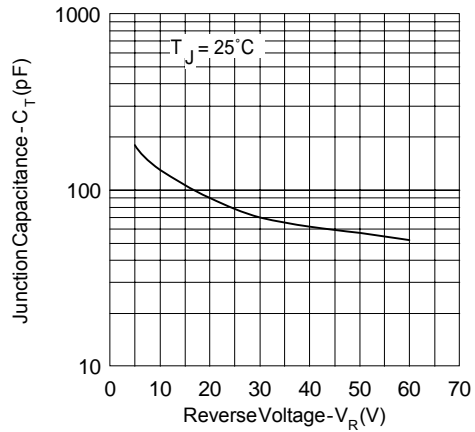


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (PerLeg)

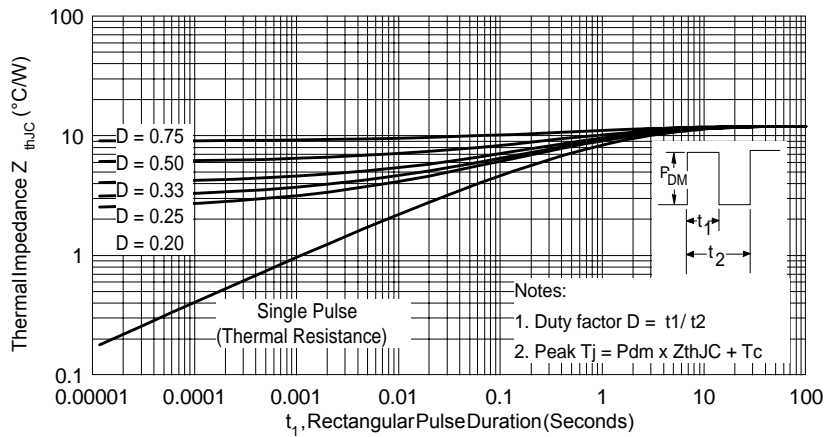


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (PerLeg)

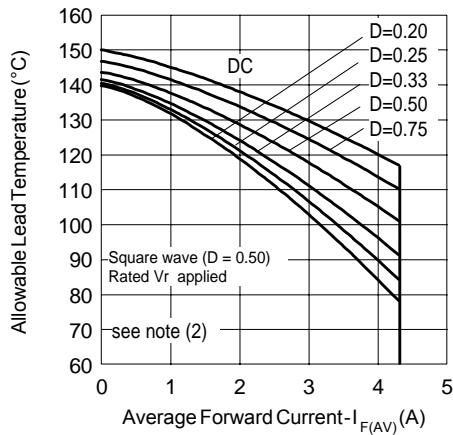


Fig.4- Maximum Average Forward Current Vs. Allowable Lead Temperature

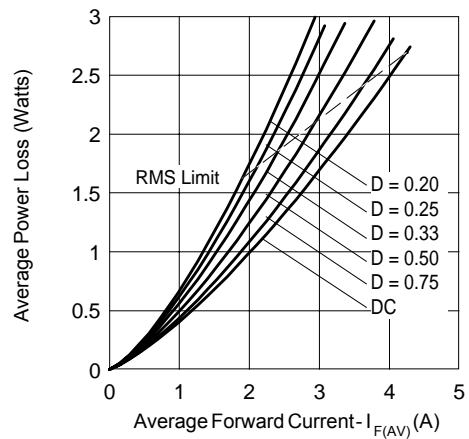


Fig.5- Maximum Average Forward Dissipation Vs. Average Forward Current

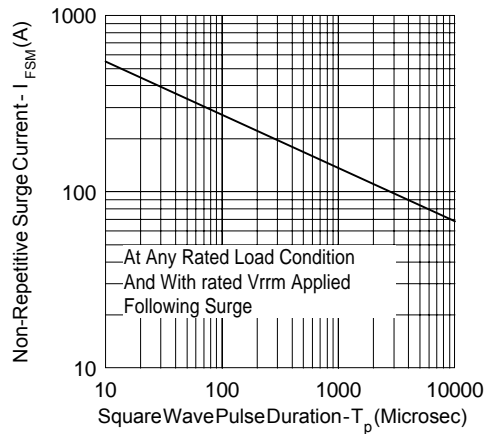
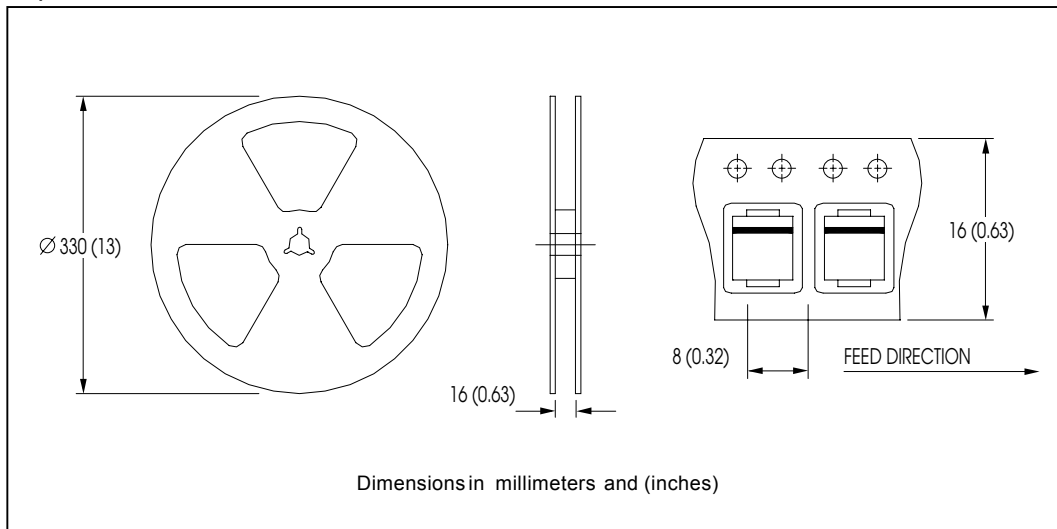


Fig. 6- Maximum Peak Surge Forward Current Vs. Pulse Duration

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

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 36

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

MBRS360TR

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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.

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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