

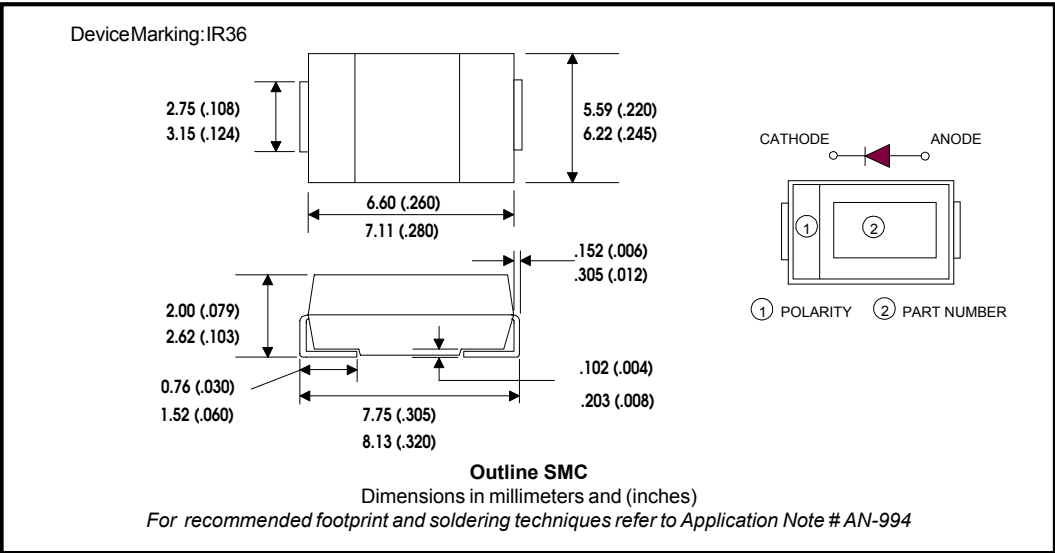
Major Ratings and Characteristics

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



# MBRS360TR

Bulletin PD-20586 rev. A 02/02

International  
**IR** Rectifier

## 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 @ $T_L = 118^\circ\text{C}$ , rectangular waveform
	4.0		50% duty cycle @ $T_L = 105^\circ\text{C}$ , rectangular waveform
$I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current	790	A	5 $\mu\text{s}$ Sine or 3 $\mu\text{s}$ Rect. pulse
	80		10ms Sine or 6ms Rect. pulse
$E_{AS}$ Non Repetitive Avalanche Energy	6	mJ	$T_J = 25^\circ\text{C}$ , $I_{AS} = 2.0\text{A}$ , $L = 10\text{mH}$
$I_{AR}$ Repetitive Avalanche Current	0.6	A	Current decaying linearly to zero in 1 $\mu\text{sec}$ Frequency limited by $T_J$ max. $V_a = 1.5 \times V_r$ 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	$T_J = 25^\circ\text{C}$
	-	20	mA	$T_J = 100^\circ\text{C}$
	-	30	mA	$T_J = 125^\circ\text{C}$
$C_T$ Max. Junction Capacitance	-	180	pF	$V_R = 5V_{DC}$ (test signal range 100KHz to 1Mhz) $25^\circ\text{C}$
$L_S$ Typical Series Inductance	-	3.0	nH	Measured lead to lead 5mm from package body
$dv/dt$ Max. Voltage Rate of Change	-	10000	V/ $\mu\text{s}$	(Rated $V_R$ )

(1) Pulse Width < 300 $\mu\text{s}$ , Duty Cycle < 2%

## Thermal-Mechanical Specifications

Parameters	Value	Units	Conditions
$T_J$ Max. Junction Temperature Range (*)	-55 to 150	$^\circ\text{C}$	
$T_{stg}$ Max. Storage Temperature Range	-55 to 150	$^\circ\text{C}$	
$R_{thJL}$ Max. Thermal Resistance Junction to Lead (**)	12	$^\circ\text{C/W}$	DC operation
$R_{thJA}$ Max. Thermal Resistance Junction to Ambient	46	$^\circ\text{C/W}$	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

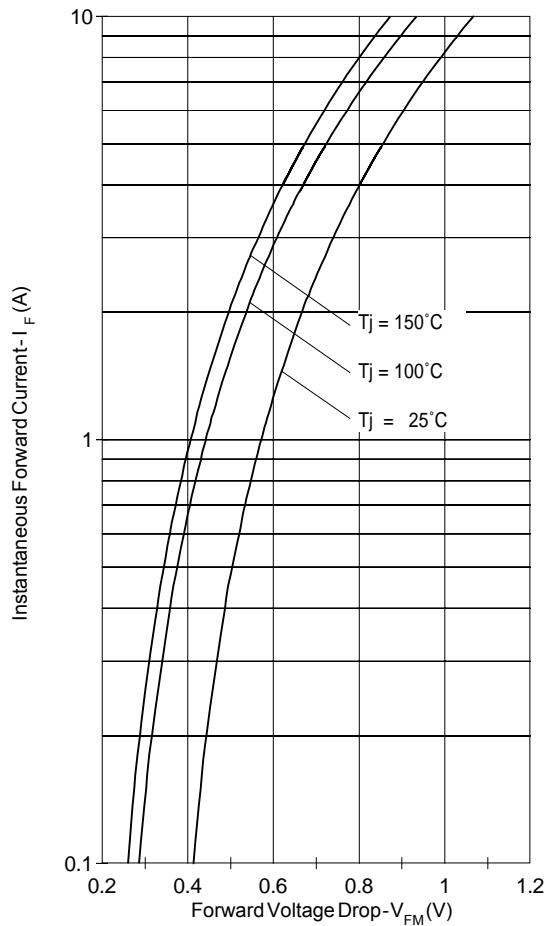


Fig. 1 - Max. Forward Voltage Drop Characteristics (PerLeg)

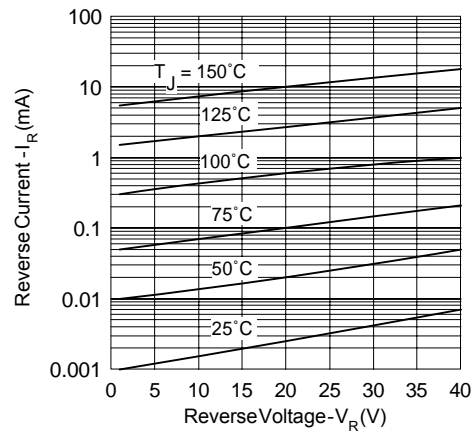


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (PerLeg)

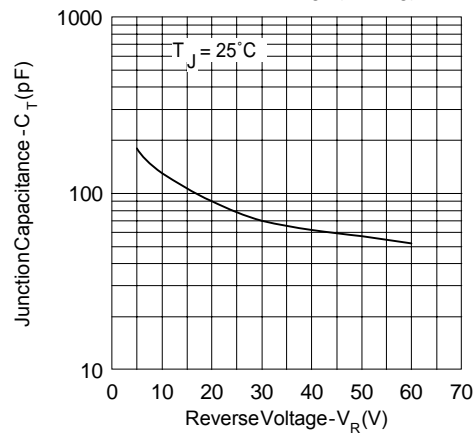


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (PerLeg)

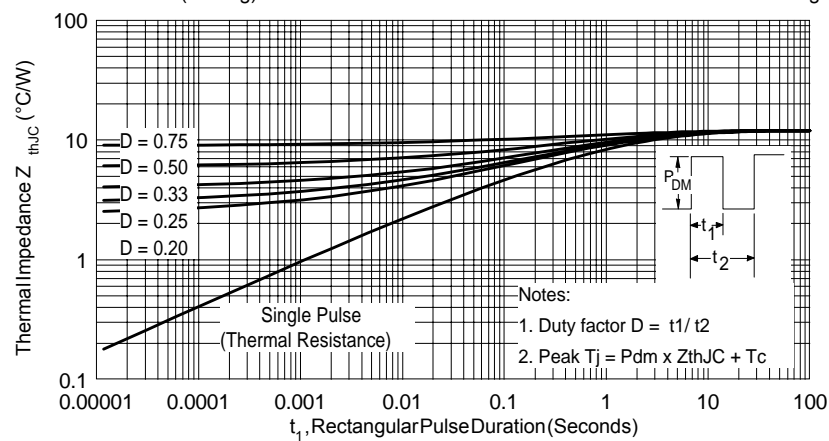


Fig. 4 - Max. Thermal Impedance  $Z_{thJC}$  Characteristics (PerLeg)

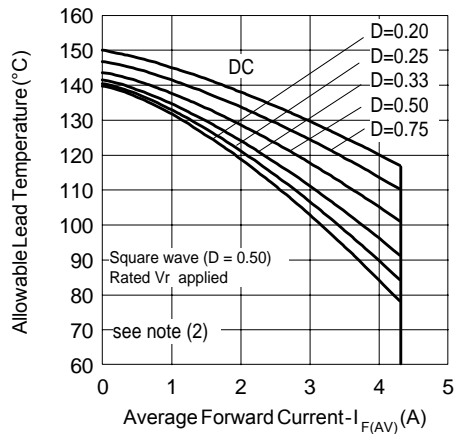


Fig. 4 - Maximum Average Forward Current Vs. Allowable Lead Temperature

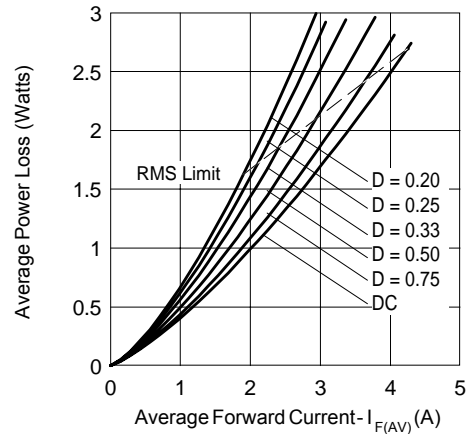


Fig. 5 - Maximum Average Forward Dissipation Vs. Average Forward Current

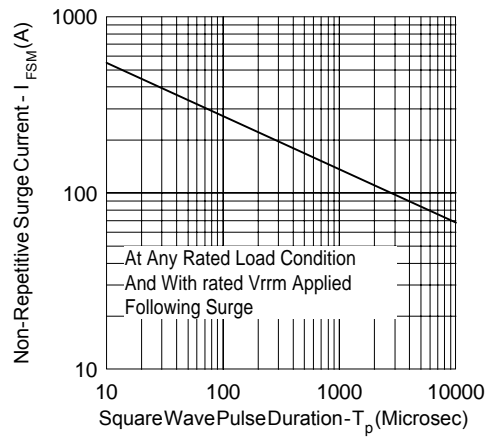


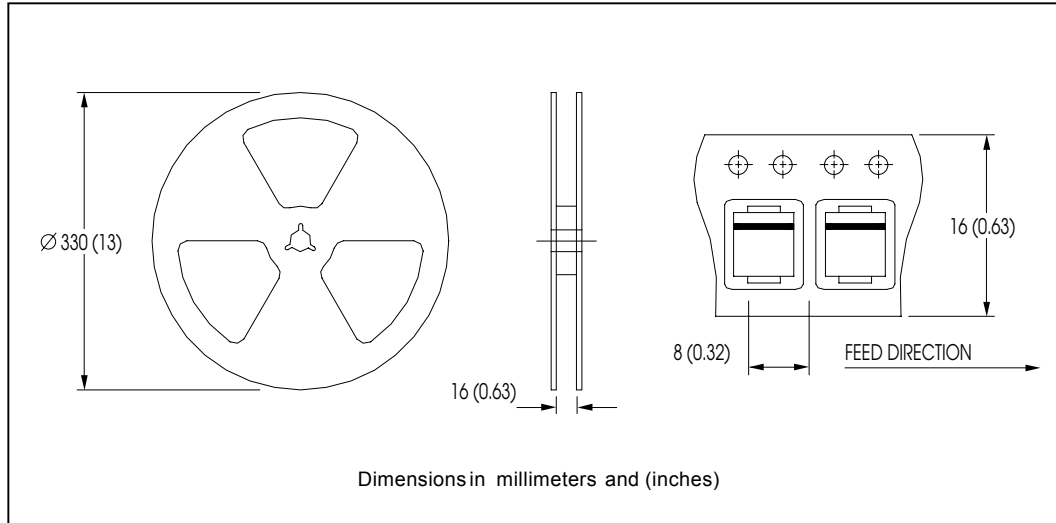
Fig. 6 - Maximum Peak Surge Forward Current Vs. Pulse Duration

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

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

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

## 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

Bulletin PD-20586 rev. A 02/02

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International  
**IOR** 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  
**IOR** Rectifier

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