

International
IR Rectifier

MBR0540

SCHOTTKY DIODE

0.5 Amp



SOD123

Major Ratings and Characteristics

Characteristics	Value	Units
$I_{F(AV)}$ (DC)	0.5	A
V_{RRM}	40	V
I_{FSM} @ $t_p = 10$ ms sine	6.0	A
V_F @ $0.5A_{pk}, T_J = 100^\circ C$	0.42	V
T_J range	- 65 to 150	$^\circ C$

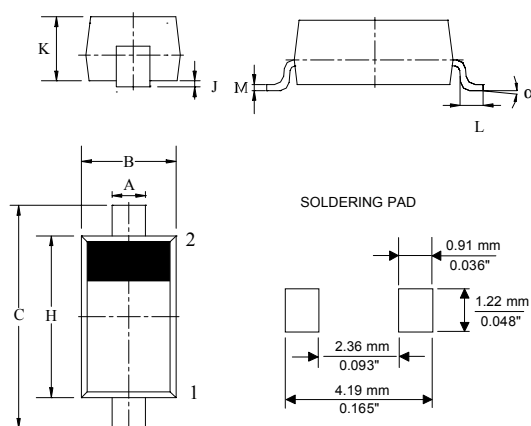
Description/ Features

This Schottky diode is ideally suited for low voltage, high frequency operation, as freewheeling and polarity protection. Small size of the package allows proper use in application where compact size is critical, fitting also the GSM and PCMCIA requirement.

- Surface mountable
- Very low forward voltage drop
- Extremely fast switching
- Negligible switching losses
- Guard ring for enhanced ruggedness and long term reliability

Case Styles

Device Marking: IR540



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	0.55	0.70	0.022	0.028
B	1.40	1.70	0.055	0.067
C	3.55	3.85	0.140	0.152
H	2.55	2.85	0.100	0.112
J	-	0.10	-	0.004
K	0.95	1.35	0.037	0.053
L	-	1.35	-	0.053
M	-	0.15	-	0.006
α	8°		8°	



Outline SOD123

Voltage Ratings

Part number	Value
V_R Max. DC Reverse Voltage (V)	40
V_{RWM} Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

Parameters	Value	Units	Conditions
I_F Forward Current	0.5	A	DC, $T_L = 122^\circ\text{C}$
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current, @ $T_J = 25^\circ\text{C}$	50	A	5 μs Sine or 3 μs Rect. pulse
	6.0	A	10ms Sine or 6ms Rect. pulse

Following any rated load condition and with rated V_{RRM} applied

Electrical Specifications

Parameters	Value	Units	Conditions
V_{FM} Max. Forward Voltage Drop (1)	0.480	V	@ 0.5A
	0.560	V	@ 1A
V_{FM} Max. Forward Voltage Drop (1)	0.420	V	@ 0.5A
	0.520	V	@ 1A
I_{RM} Max. Reverse Leakage Current	10	μA	$V_R = 20\text{V}$
	5	mA	$V_R = 20\text{V}$
	20	μA	$V_R = 40\text{V}$
	13	mA	$V_R = 40\text{V}$
C_T Max. Junction Capacitance	60	pF	$V_R = 5V_{DC}$ (test signal range 100KHz to 1Mhz), $T_J = 25^\circ\text{C}$
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(*)	-65 to 150	$^\circ\text{C}$	
T_{stg} Max. Storage Temperature Range	-65 to 150	$^\circ\text{C}$	
R_{thJL} Max. Thermal Resistance Junction to Lead	150	$^\circ\text{C/W}$	Mounted on PC board FR4 with minimum pad size
R_{thJA} Max. Thermal Resistance Junction to Ambient	200	$^\circ\text{C/W}$	1 inch square pad size (1 x 0.5 inch for each lead) on FR4 board
Wt Approximate Weight	0.012	g	
Case Style	SOD123		
Device Marking	IR540		

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

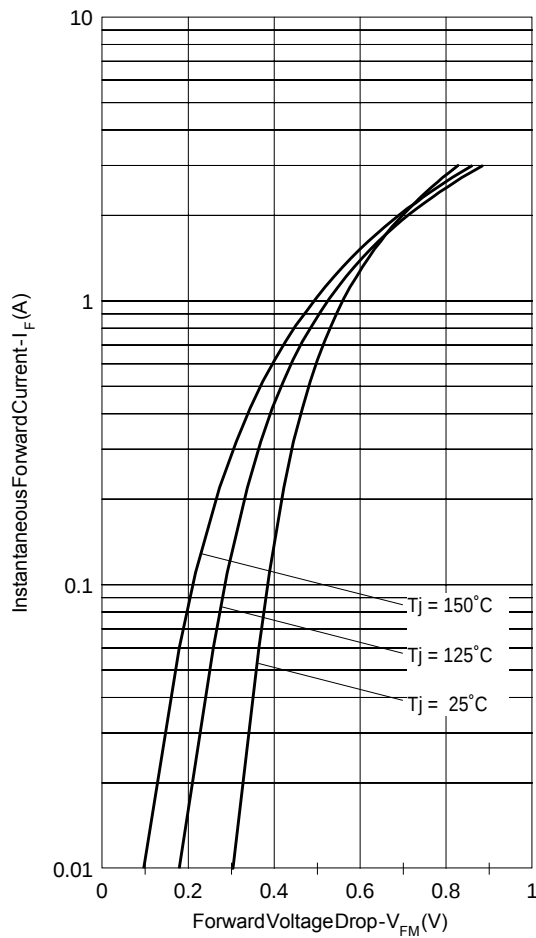


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

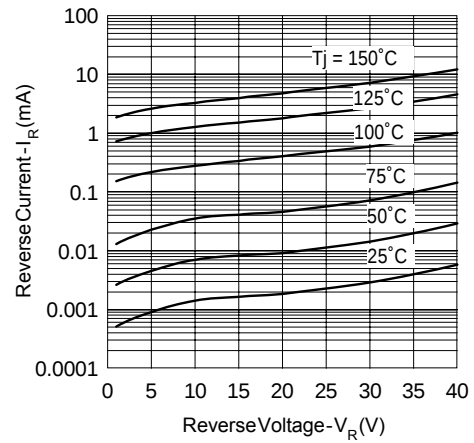


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

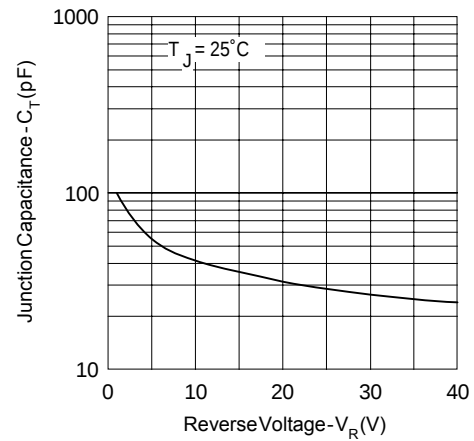


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

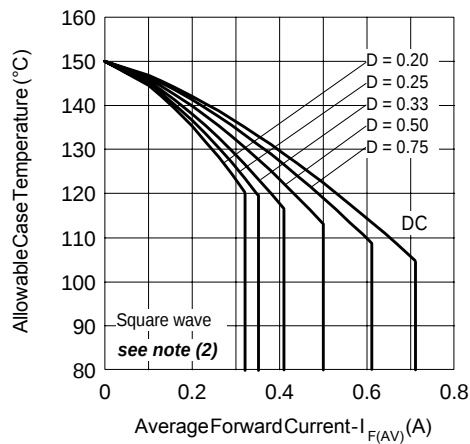


Fig. 4 - Max. Allowable Case Temperature Vs. Average Forward Current

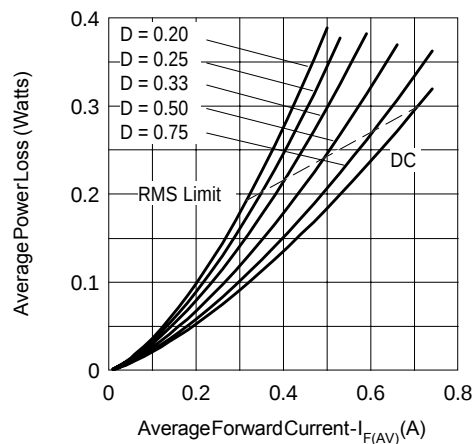


Fig. 5 - Forward Power Loss Characteristics

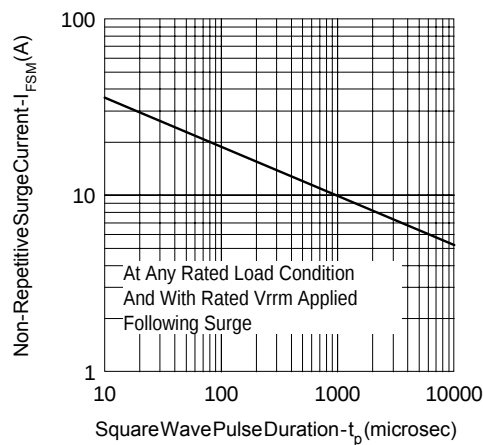
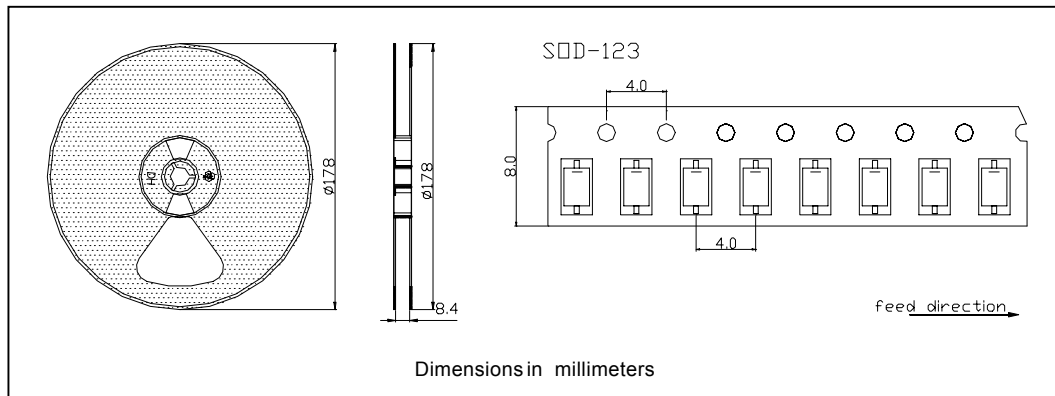


Fig. 6 - Max. Non-Repetitive Surge Current

(2) Formula used: $T_C = T_J - P_d \times R_{thJC}$

P_d = Forward Power Loss = $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 4)

Tape & Reel Information



Ordering Information Table

Device	Package	Marking	Base qty	Delivery mode
MBR0540	SOD-123	IR540	3000	Tape & Reel

Data and specifications subject to change without notice.
This product has been designed for Industrial Level.
Qualification Standards can be found on IR's Web site.

International
IR 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. 12/01