Preliminary Data Sheet PD-20226 01/02

International
IOR Rectifier

MBR0520

SCHOTTKY DIODE 0.5 Amp

SOD123

Major Ratings and Characteristics

Characteristics	Value	Units
$I_{F(AV)}$ DC	0.5	A
V_{RRM}	20	V
I_{FSM} @t_p = 10 ms sine	6.5	A
V_F @0.5Apk, T_J=100°C	0.36	V
T_J range	- 65 to 150	°C

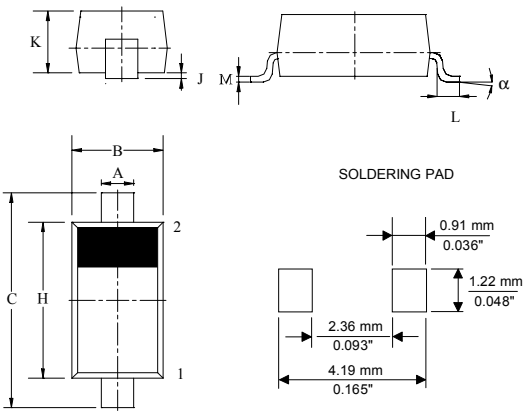
Description/ Features

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: IR520



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)	20
V_{RWM}	Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

	Parameters	Value	Units	Conditions	
I_F	Max. Average Forward Current	0.5	A	DC, T_L = 129°C	
I_{FSM}	Max. Peak One Cycle Non-Repetitive Surge Current, @25°C	55	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
		6.5	A	10ms Sine or 6ms Rect. pulse	

Electrical Specifications

	Parameters		Value	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop	(1)	0.375	V	@ 0.1A	T_J = 25°C
			0.440	V	@ 0.5A	
V_{FM}	Max. Forward Voltage Drop	(1)	0.260	V	@ 0.1A	T_J = 100°C
			0.360	V	@ 0.5A	
I_{RM}	Max. Reverse Leakage Current	(1)	40	µA	T_J = 25°C	V_R = 10V
			3	mA	T_J = 100°C	
			150	µA	T_J = 25°C	V_R = 20V
			7	mA	T_J = 100°C	
C_T	Max. Junction Capacitance		110	pF	$V_R = 5V_{DC}$ (test signal range 100KHz to 1Mhz), T_J = 25°C	
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 (*)	-65 to 150	°C	
T_{stg}	Max. Storage Temperature Range	-65 to 150	°C	
R_{thJL}	Max. Thermal Resistance Junction to Lead	150	°C/W	Mounted on PC board FR4 with minimum pad size
R_{thJA}	Max. Thermal Resistance Junction to Ambient	200	°C/W	1 inch square pad size (1 x 0.5 inch for each lead) on FR4 board
Wt	Approximate Weight	0.012	gr	
	Case Style	SOD123		
	Device Marking	IR520		

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

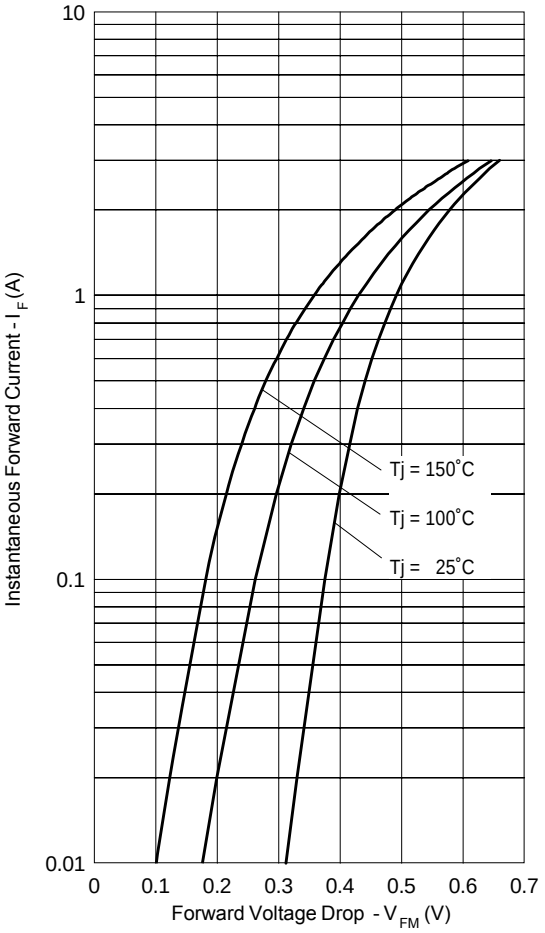


Fig. 1 - Maximum Forward Voltage Drop Characteristics

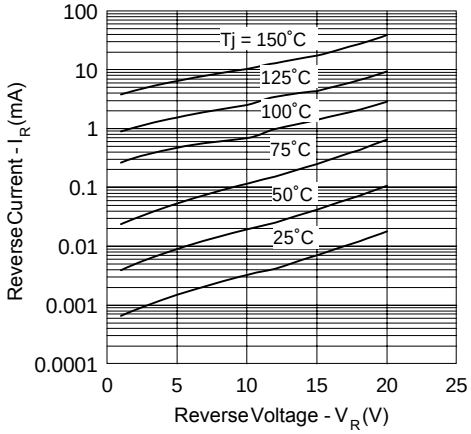


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

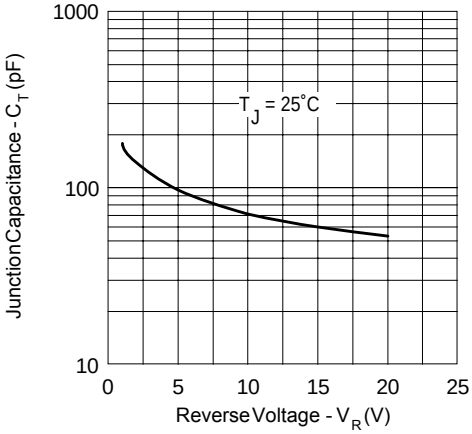


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

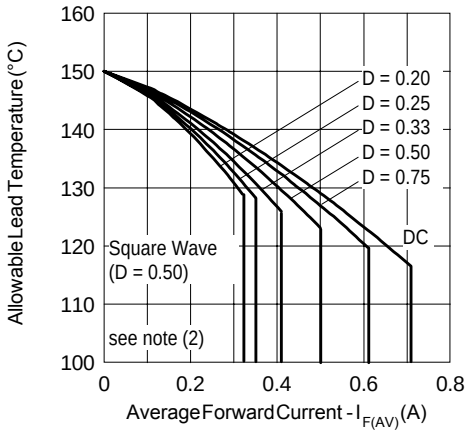


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

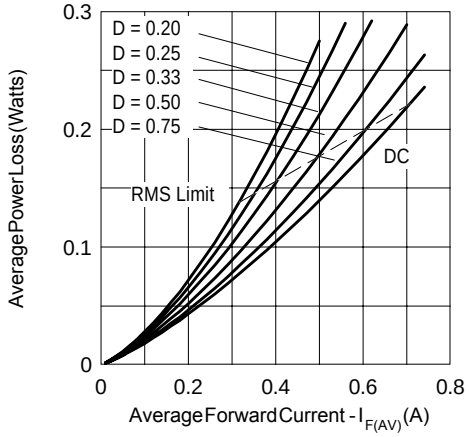


Fig. 6 - Forward Power Loss Characteristics

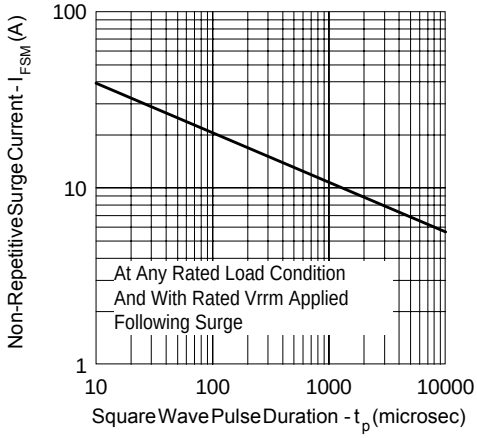
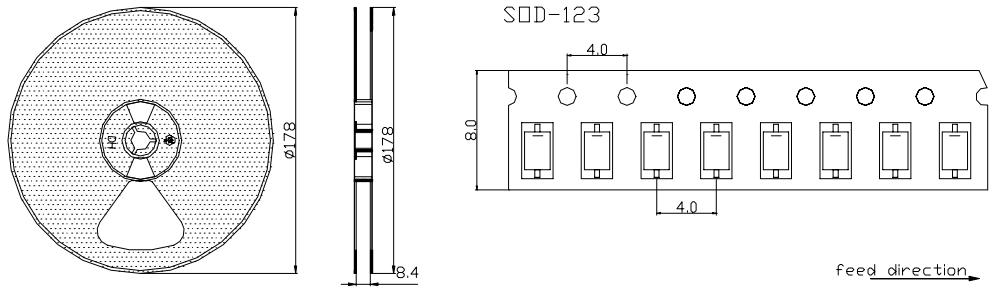


Fig. 7 - Maximum Non-Repetitive Surge Current

(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)

Tape & Reel Information



Dimensions in millimeters and (inches)

Ordering Information Table

Device	Package	Marking	Base qty	Delivery mode
MBR0520	SOD-123	IR520	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
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. 01/02