PD-2.222 rev. B 12/97

International
IOR Rectifier

90SQ... SERIES

SCHOTTKY RECTIFIER 9 Amp

Major Ratings and Characteristics

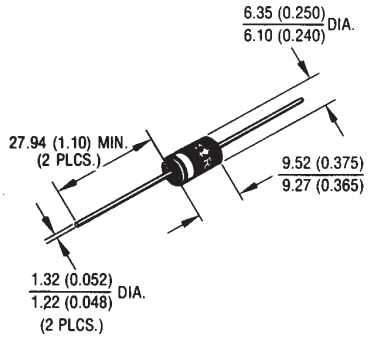
Characteristics		90SQ...	Units
$I_{F(AV)}$	Rectangular waveform	9	A
V_{RRM}	range	35 to 45	V
I_{FSM}	@ tp = 5 µs sine	2150	A
V_F	@ 9 Apk, T_J = 125°C	0.42	V
T_J	range	-55 to 150	°C

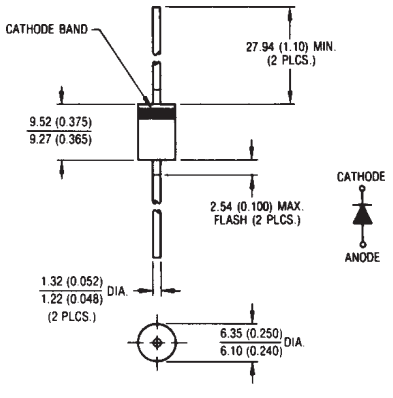
Description/Features

The 90SQ axial leaded Schottky rectifier series has been optimized for very low forward voltage drop, with moderate leakage. The proprietary barrier technology allows for reliable operation up to 150°C junction temperature. Typical applications are in switching power supplies, converters, freewheeling diodes, and reverse battery protection.

- 150° C T_J operation
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Very low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability

CASE STYLE AND DIMENSIONS





Conforms to JEDEC Outline DO - 204AR

Dimensions in millimeters and inches

Voltage Ratings

Part number		90SQ035	90SQ040	90SQ045
V_R	Max. DC Reverse Voltage (V)	35	40	45
V_{RWM}	Max. Working Peak Reverse Voltage (V)			

Absolute Maximum Ratings

Parameters		90SQ	Units	Conditions	
$I_{F(AV)}$	Max. Average Forward Current * See Fig. 5	9	A	50% duty cycle @ T_C = 69° C, rectangular wave form	
I_{FSM}	Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 7	2150	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
		340		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy	12	mJ	T_J = 25 °C, I_{AS} = 1.8 Amps, L = 7.4 mH	
I_{AR}	Repetitive Avalanche Current	1.8	A	Current decaying linearly to zero in 1 µsec Frequency limited by T_J max. V_A = 1.5 x V_R typical	

Electrical Specifications

Parameters		90SQ	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop (1) * See Fig. 1	0.48	V	@ 9A	T_J = 25 °C
		0.57	V	@ 18A	
		0.42	V	@ 9A	T_J = 125 °C
		0.52	V	@ 18A	
I_{RM}	Max. Reverse Leakage Current (1) * See Fig. 2	1.75	mA	T_J = 25 °C	V_R = rated V_R
		70	mA	T_J = 125 °C	
C_T	Max. Junction Capacitance	900	pF	V_R = 5V_{DC}, (test signal range 100Khz to 1Mhz) 25 °C	
L_S	Typical Series Inductance	10.0	nH	Measured lead to lead 5mm from body	
dv/dt	Max. Voltage Rate of Change (Rated V_R)	10,000	V/ µs		

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

Thermal-Mechanical Specifications

Parameters		90SQ	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	8.0	°C/W	DC operation * See Fig. 4 1/8 inch lead length
R_{thJA}	Typical Thermal Resistance, Junction to Air	44	°C/W	
wt	Approximate Weight	1.4(0.049)	g(oz.)	
	Case Style	DO-204AR		JEDEC

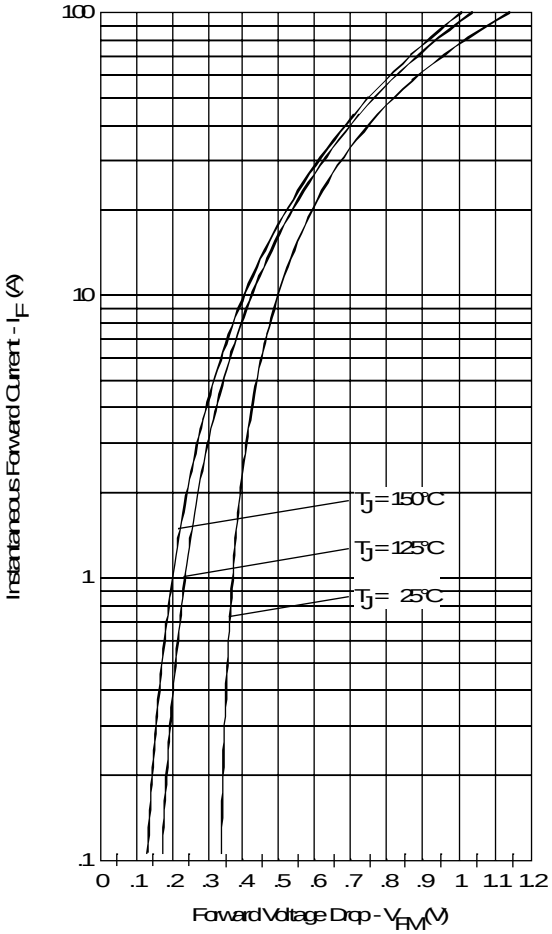


Fig. 1 - Maximum Forward Voltage Drop Characteristics

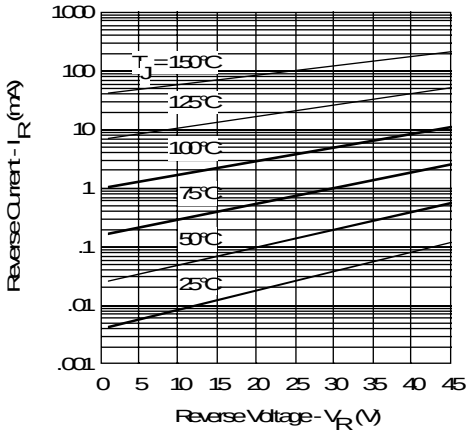


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

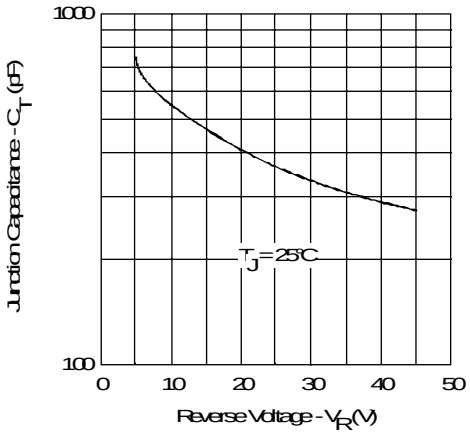


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

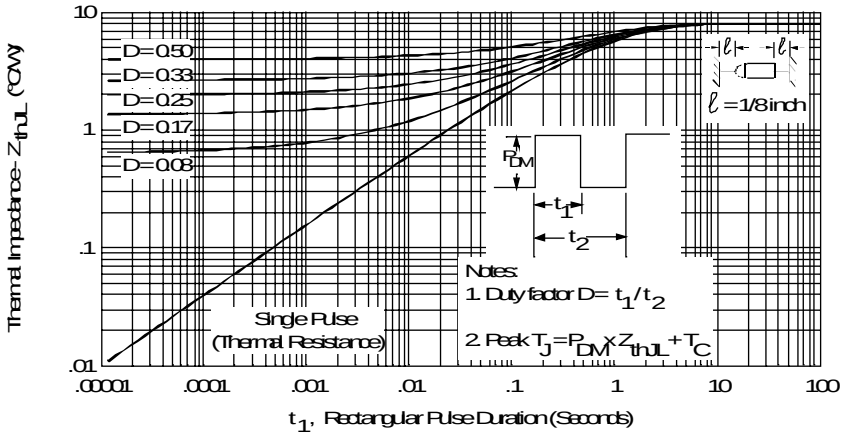


Fig. 4 - Maximum Thermal Impedance Z_{thJL} Characteristics

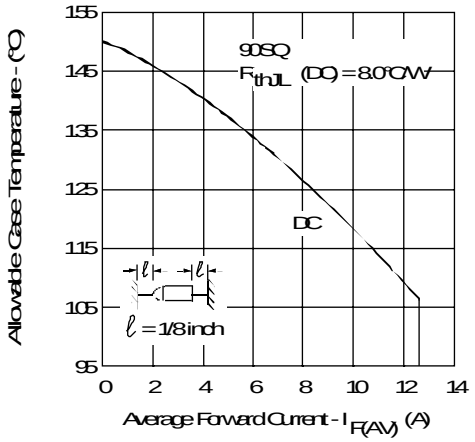


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

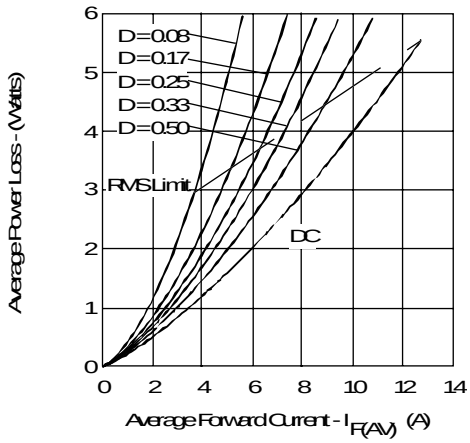


Fig. 6 - Forward Power Loss Characteristics

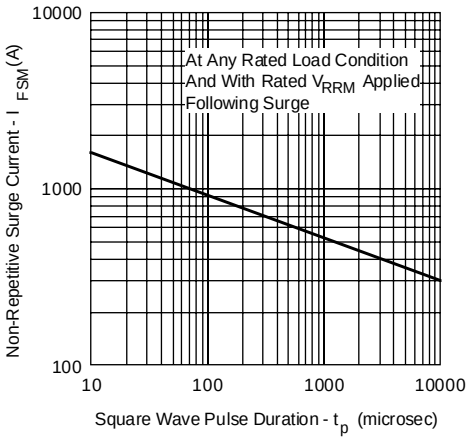


Fig. 7 - Maximum Non-Repetitive Surge Current

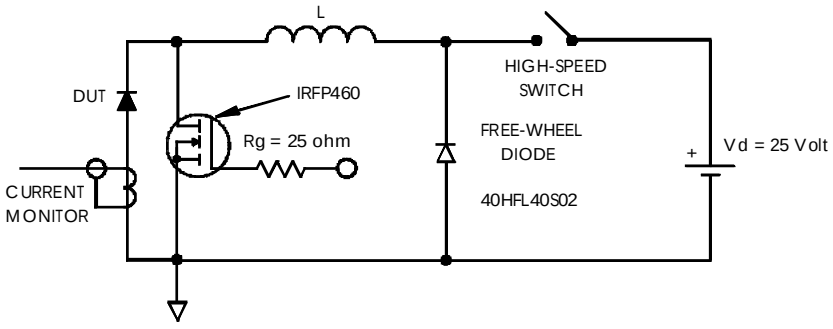


Fig. 8 - Unclamped Inductive Test Circuit