PD-2.047 rev. D 12/97

International
IOR Rectifier

80SQ... SERIES

SCHOTTKY RECTIFIER 8 Amp

Major Ratings and Characteristics

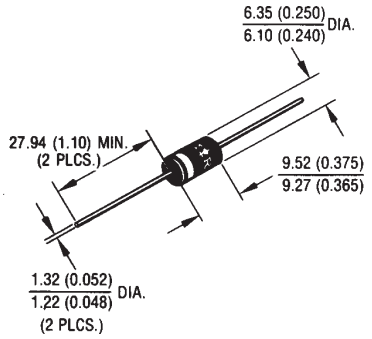
Characteristics	80SQ...	Units
$I_{F(AV)}$ Rectangular waveform	8	A
V_{RRM} range	35 to 45	V
I_{FSM} @ tp = 5 µs sine	2400	A
V_F @ 8 Apk, T_J = 125°C	0.44	V
T_J range	-55 to 175	°C

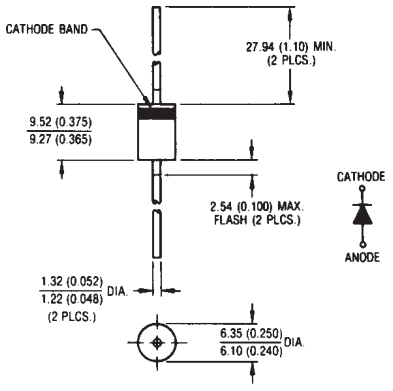
Description/Features

The 80SQ axial leaded Schottky rectifier series has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 175°C junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 175° C T_J operation
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- 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	80SQ035	80SQ040	80SQ045
V_R	Max. DC Reverse Voltage (V)	35	40	45
V_{RWM}	Max. Working Peak Reverse Voltage (V)			

Absolute Maximum Ratings

	Parameters	80SQ	Units	Conditions	
$I_{F(AV)}$	Max. Average Forward Current *See Fig. 5	8	A	50% duty cycle @ T_C = 119° C, rectangular wave form	
I_{FSM}	Max. Peak One Cycle Non-Repetitive Surge Current *See Fig. 7	2400	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
		380		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy	10	mJ	T_J = 25 °C, I_{AS} = 1.6 Amps, L = 7.8 mH	
I_{AR}	Repetitive Avalanche Current	1.6	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	80SQ	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop (1) * See Fig. 1	0.53	V	@ 8A	T_J = 25 °C
		0.60	V	@ 16A	
		0.44	V	@ 8A	T_J = 125 °C
		0.55	V	@ 16A	
I_{RM}	Max. Reverse Leakage Current (1) * See Fig. 2	2	mA	T_J = 25 °C	V_R = rated V_R
		15	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	80SQ	Units	Conditions
T_J	Max. Junction Temperature Range	-55 to 175	°C	
T_{stg}	Max. Storage Temperature Range	-55 to 175	°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

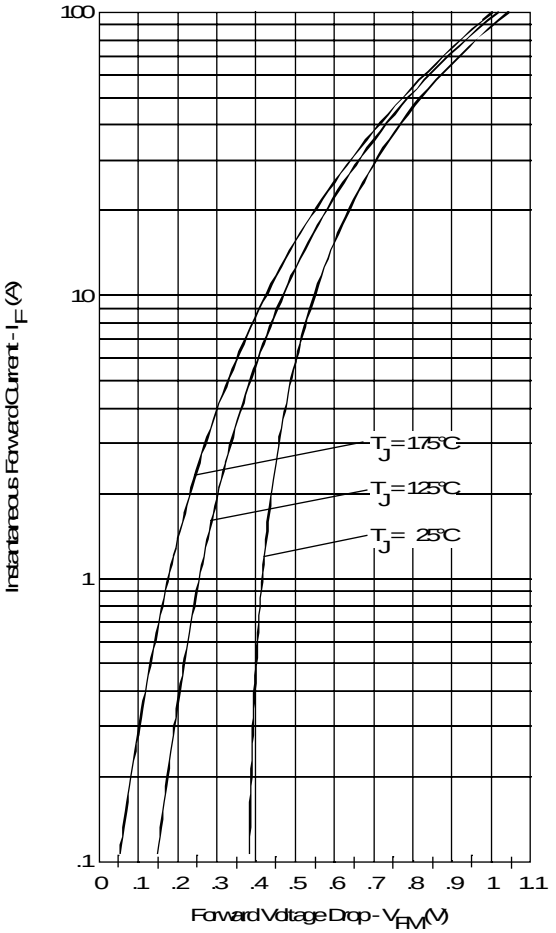


Fig. 1 - Maximum Forward Voltage Drop Characteristics

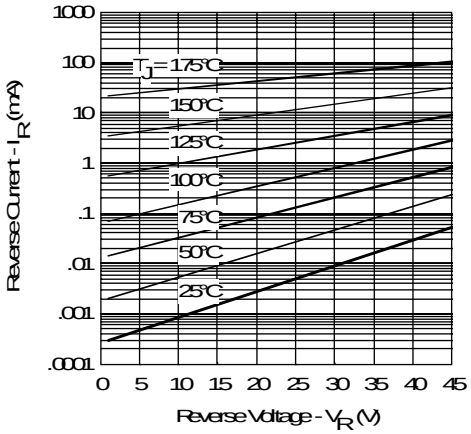


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

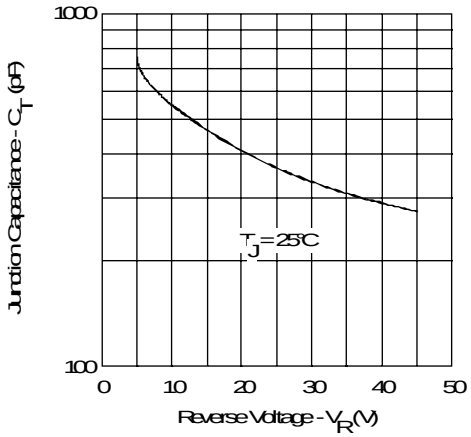


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

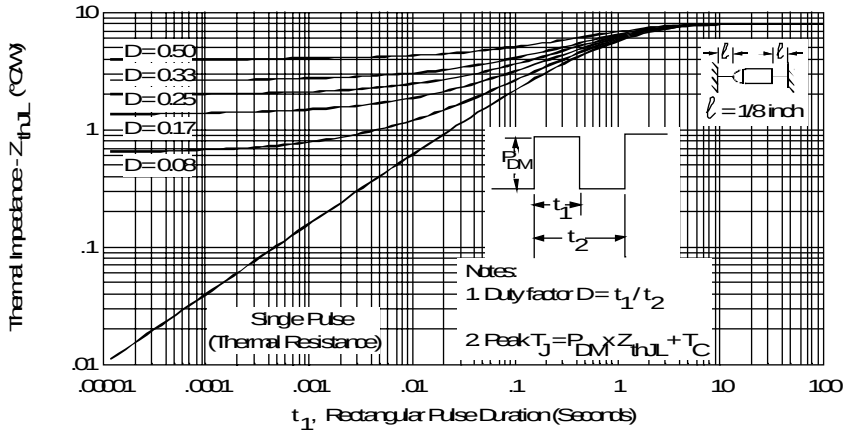


Fig. 4 - Maximum Thermal Impedance Z_{thJL} Characteristics

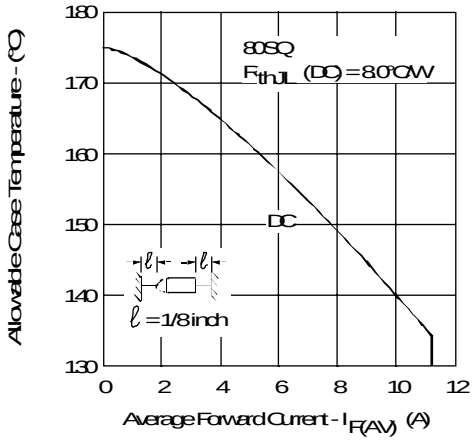


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

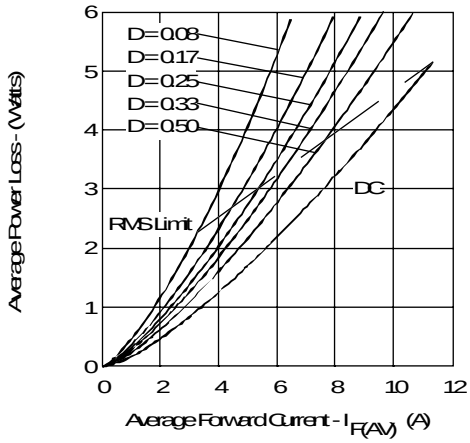


Fig. 6 - Forward Power Loss Characteristics

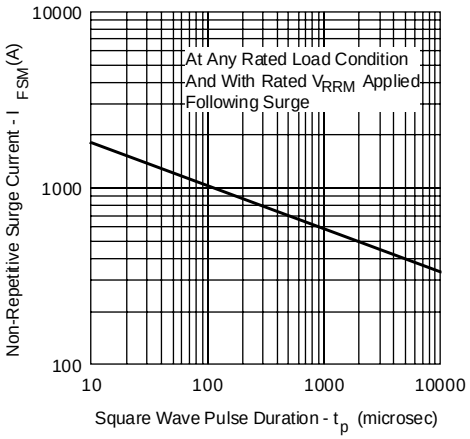


Fig. 7 - Maximum Non-Repetitive Surge Current

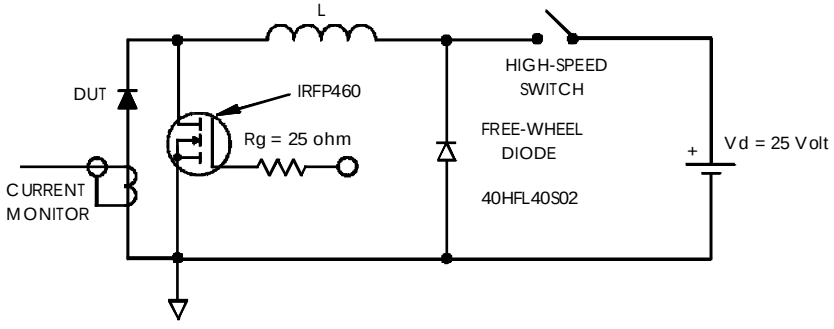


Fig. 8 - Unclamped Inductive Test Circuit