

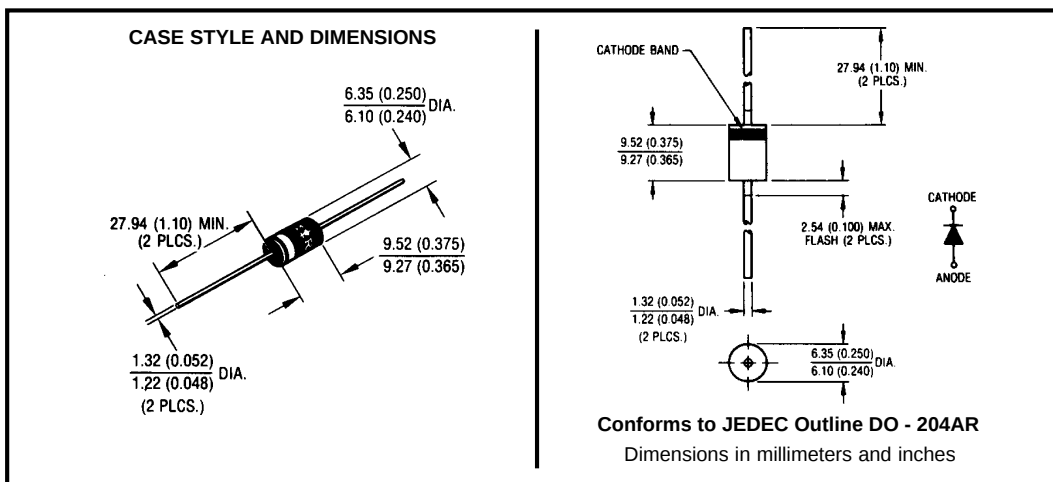
Major Ratings and Characteristics

Characteristics	50SQ...	Units
$I_{F(AV)}$ Rectangular waveform	5	A
V_{RRM} range	60 to 100	V
I_{FSM} @ $t_p = 5 \mu s$ sine	1900	A
V_F @ 5 Apk, $T_J = 125^\circ C$	0.52	V
T_J range	-55 to 175	$^\circ C$

Description/ Features

The 50SQ... 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 $175^\circ C$ junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- $175^\circ C$ 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



Voltage Ratings

Part number	50SQ060	50SQ080	50SQ100
V_R Max. DC Reverse Voltage (V)	60	80	100
V_{RWM} Max. Working Peak Reverse Voltage (V)			

Absolute Maximum Ratings

Parameters	50SQ	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current * See Fig. 5	5	A	50% duty cycle @ $T_C = 119^\circ\text{C}$, rectangular wave form
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 7	1900	A	5 μs Sine or 3 μs Rect. pulse
	290		10ms Sine or 6ms Rect. pulse
E_{AS} Non-Repetitive Avalanche Energy	7.5	mJ	$T_J = 25^\circ\text{C}$, $I_{AS} = 1.0\text{ Amps}$, $L = 15\text{ mH}$
I_{AR} Repetitive Avalanche Current	1.0	A	Current decaying linearly to zero in 1 μsec Frequency limited by T_J max. $V_A = 1.5 \times V_R$ typical

Electrical Specifications

Parameters	50SQ	Units	Conditions
V_{FM} Max. Forward Voltage Drop (1) * See Fig. 1	0.66	V	@ 5A
	0.77	V	@ 10A
	0.52	V	@ 5A
	0.62	V	@ 10A
I_{RM} Max. Reverse Leakage Current (1) * See Fig. 2	0.55	mA	$T_J = 25^\circ\text{C}$
	7	mA	$T_J = 125^\circ\text{C}$
C_T Max. Junction Capacitance	500	pF	$V_R = 5V_{DC}$, (test signal range 100Khz to 1Mhz) 25°C
L_S Typical Series Inductance	10	nH	Measured lead to lead 5mm from body
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	50SQ	Units	Conditions
T_J Max. Junction Temperature Range	-55 to 175	$^\circ\text{C}$	
T_{stg} Max. Storage Temperature Range	-55 to 175	$^\circ\text{C}$	
R_{thJL} Max. Thermal Resistance Junction to Lead	8.0	$^\circ\text{C/W}$	DC operation * See Fig. 4 1/8 inch lead length
R_{thJA} Typical Thermal Resistance, Junction to Air	44	$^\circ\text{C/W}$	
wt Approximate Weight	1.4(0.049)	g (oz.)	
Case Style	DO - 204AR	JEDEC	

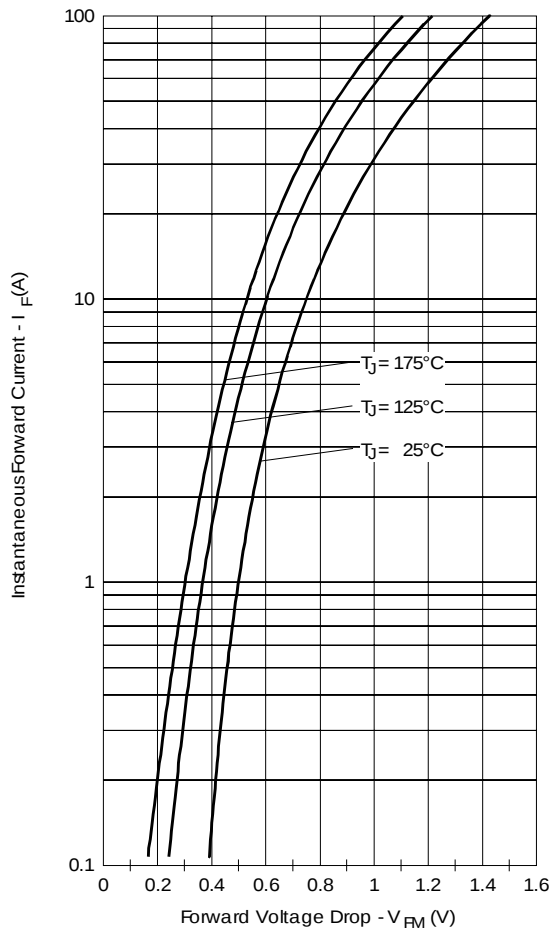


Fig. 1 - Maximum Forward Voltage Drop Characteristics

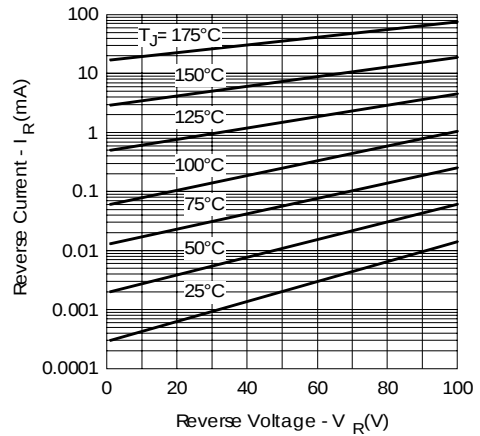


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

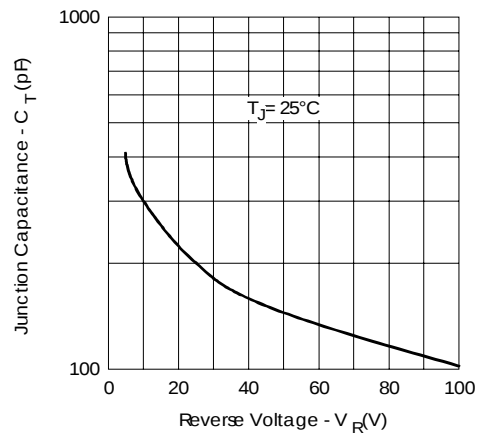


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

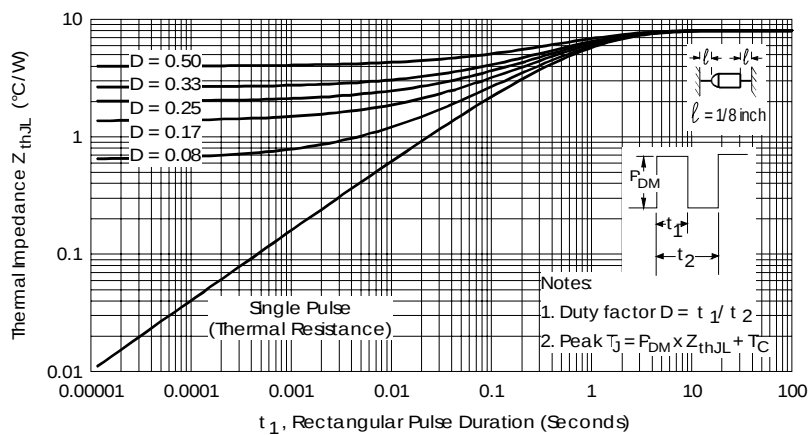


Fig. 4 - Maximum Thermal Impedance Z_{thJL} Characteristics

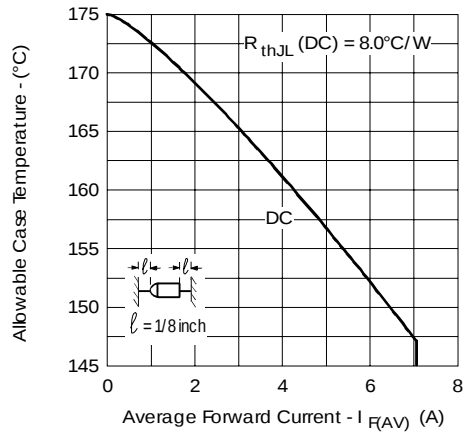


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

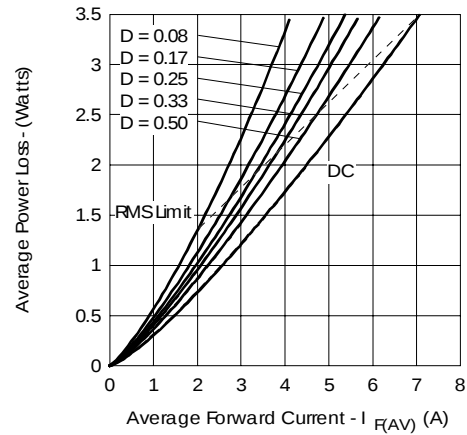


Fig. 6 - Forward Power Loss Characteristics

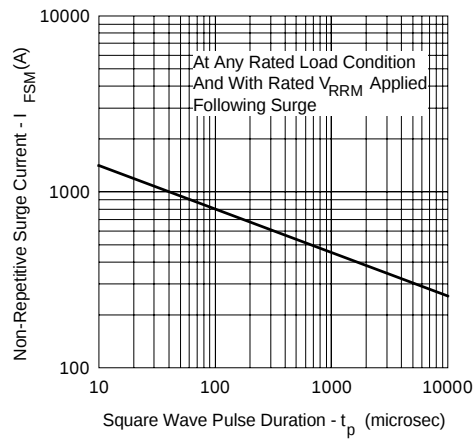


Fig. 7 - Maximum Non-Repetitive Surge Current

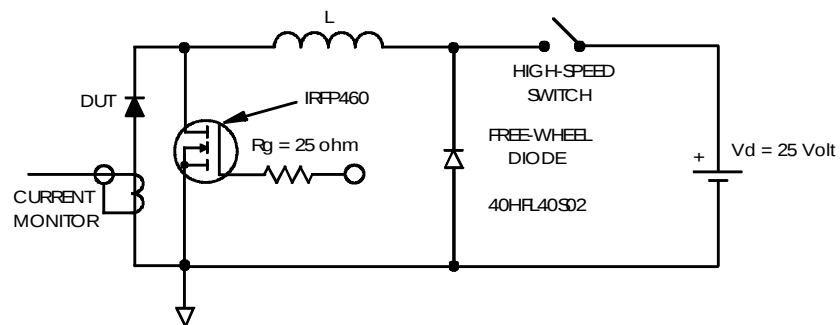


Fig. 8 - Unclamped Inductive Test Circuit

Ordering Information Table

Device Code		50	S	Q	100	TR
		①	②	③	④	⑤
1	-	50 = current x 10				
2	-	S = DO-204AR				
3	-	Q = Schottky Q Series				
4	-	Voltage Rating				
5	-	TR = Tape & Reel package (1500 pcs)				
	-	= Box package (200 pcs)				

060 = 60V
080 = 80V
100 = 100V

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
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. 03/03