Bulletin PD-2.060 rev. G 06/05

International
IOR Rectifier

50SQ... SERIES

SCHOTTKY RECTIFIER 5 Amp

Major Ratings and Characteristics

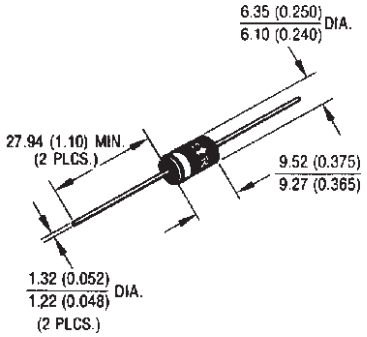
Characteristics	50SQ...	Units
$I_{F(AV)}$ Rectangular waveform	5	A
V_{RRM} range	60 / 100	V
I_{FSM} @tp = 5 µs sine	1900	A
V_F @5 Apk, T_J = 125°C	0.52	V
T_J range	- 55 to 175	°C

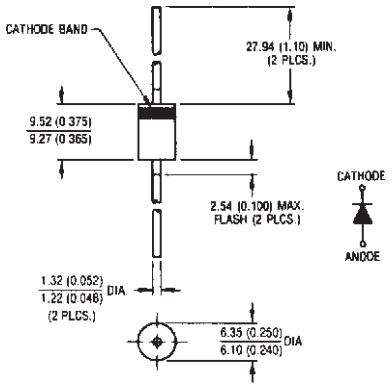
Description/ Features

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°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
- Lead-Free plating

CASE STYLE AND DIMENSIONS





Conforms to JEDEC Outline DO - 204AR

Dimensions in millimeters and inches

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° C, rectangular wave form	
I_{FSM}	Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 7	1900	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
		290		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy	7.5	mJ	T_J = 25 °C, I_{AS} = 1.0 Amps, L = 15 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 x V_R typical	

Electrical Specifications

Parameters		50SQ	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop (1) * See Fig. 1	0.66	V	@ 5A	T_J = 25 °C
		0.77	V	@ 10A	
		0.52	V	@ 5A	T_J = 125 °C
		0.62	V	@ 10A	
I_{RM}	Max. Reverse Leakage Current (1) * See Fig. 2	0.55	mA	T_J = 25 °C	V_R = rated V_R
		7	mA	T_J = 125 °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 < 300µs, Duty Cycle < 2%

Thermal-Mechanical Specifications

Parameters		50SQ	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 leangth
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

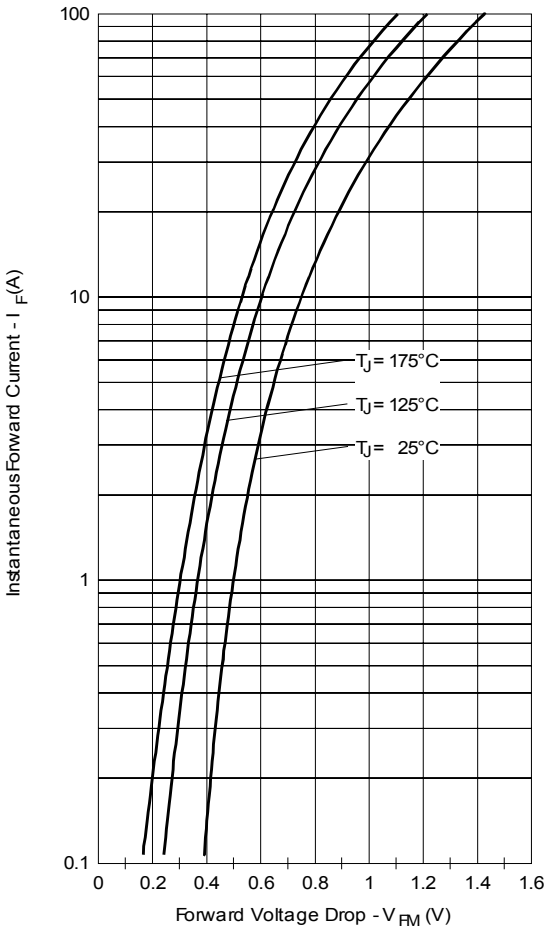


Fig. 1 - Maximum Forward Voltage Drop Characteristics

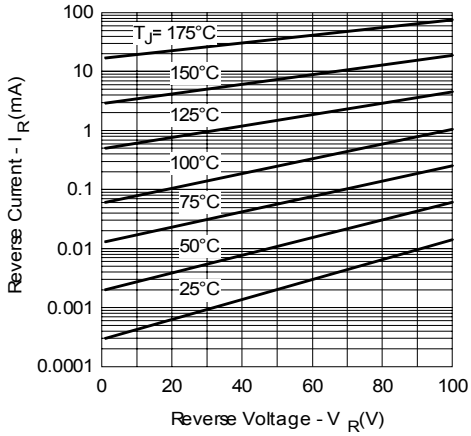


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

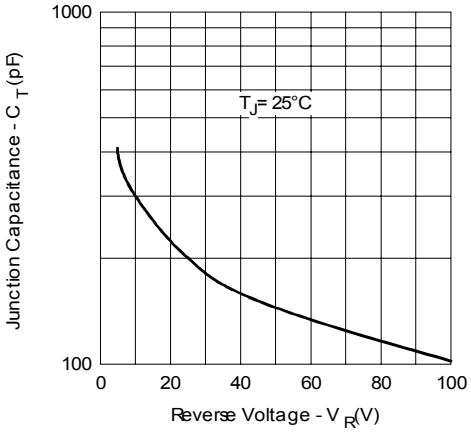


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

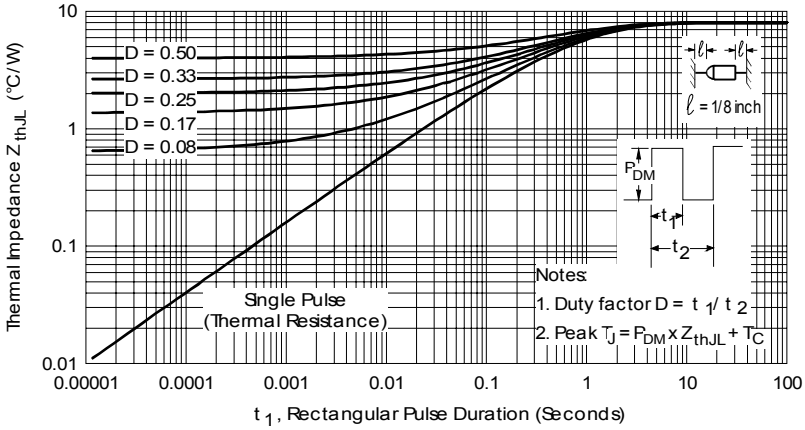


Fig. 4 - Maximum Thermal Impedance Z_{thJL} Characteristics

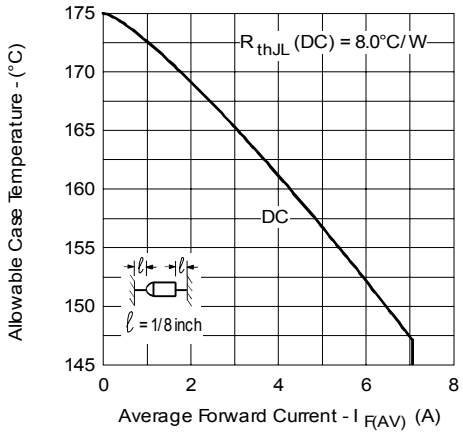


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

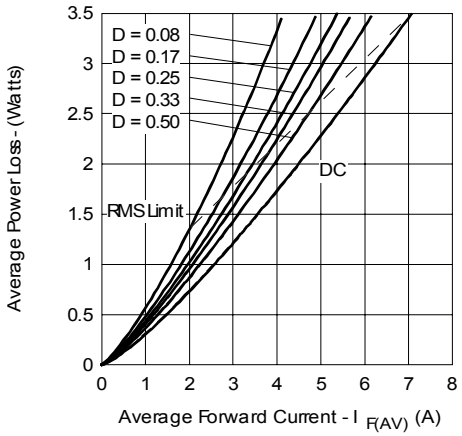


Fig. 6 - Forward Power Loss Characteristics

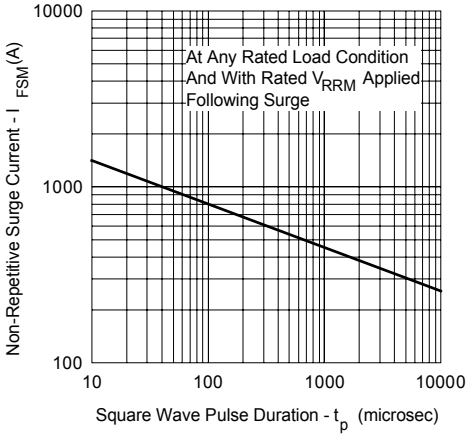


Fig. 7 - Maximum Non-Repetitive Surge Current

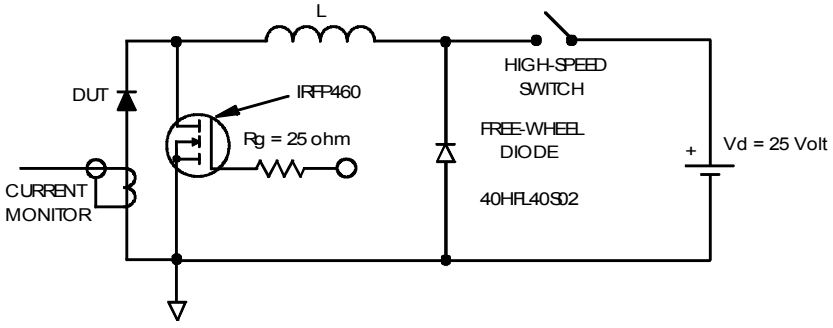
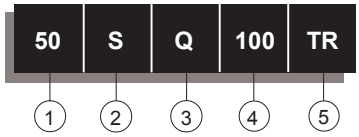


Fig. 8 - Unclamped Inductive Test Circuit

Ordering Information Table

Device Code



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 and Lead-Free.
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
06/05

Notice

The products described herein were acquired by Vishay Intertechnology, Inc., as part of its acquisition of International Rectifier's Power Control Systems (PCS) business, which closed in April 2007. Specifications of the products displayed herein are pending review by Vishay and are subject to the terms and conditions shown below.

Specifications of the products displayed herein are subject to change without notice. Vishay Intertechnology, Inc., or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as provided in Vishay's terms and conditions of sale for such products, Vishay assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of Vishay products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Vishay for any damages resulting from such improper use or sale.

International Rectifier®, IR®, the IR logo, HEXFET®, HEXSense®, HEXDIP®, DOL®, INTERO®, and POWIRTRAIN® are registered trademarks of International Rectifier Corporation in the U.S. and other countries. All other product names noted herein may be trademarks of their respective owners.