

Major Ratings and Characteristics

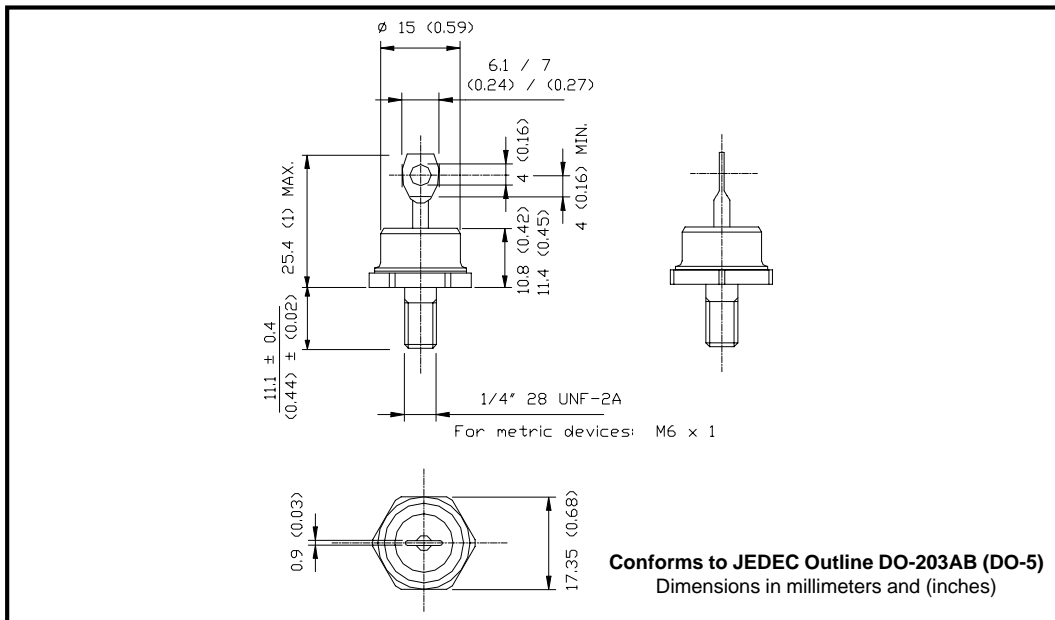
Characteristics	1N609.	Units
$I_{F(AV)}$ Rectangular waveform	50*	A
V_{RRM}	30/40*	V
I_{FSM} @ 60Hz	800*	A
V_F @ 160 Apk, $T_J = 70^\circ\text{C}$	0.86*	V
T_J range	-65 to 125*	$^\circ\text{C}$

* JEDEC Registered Values

Description/ Features

The 1N609. Schottky rectifier has been optimized for very low forward voltage drop, with moderate leakage. The proprietary barrier technology allows for reliable operation up to 125° C junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 125° C T_J operation
- Very low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Hermetic packaging



Voltage Ratings

Part number	1N6097	1N6098
V_R Max. DC Reverse Voltage (V)	30*	40*
V_{RWM} Max. Working Peak Reverse Voltage (V)		

Absolute Maximum Ratings

Parameters	1N609.	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current See Fig. 5	50*	A	50% duty cycle @ $T_C = 70^\circ\text{C}$, rectangular wave form
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current See Fig. 7	10,800 800*	A	5 μs Sine or 3 μs Rect. pulse 60Hz halfwave, single phase Following any rated load condition and with rated V_{RWM} applied
E_{AS} Non-Repetitive Avalanche Energy	81	mJ	$T_J = 25^\circ\text{C}$, $I_{AS} = 12$ Amps, $L = 1.12$ mH
I_{AR} Repetitive Avalanche Current	12	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	1N609.	Units	Conditions
V_{FM} Max. Forward Voltage Drop (1) See Fig. 1	0.60* 0.86*	V	@ 10A $T_J = 25^\circ\text{C}$ @ 160A $T_J = 70^\circ\text{C}$
I_{RM} Max. Reverse Leakage Current (1) See Fig. 2	75 250*	mA	$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$ $V_R = \text{rated } V_R$
C_T Max. Junction Capacitance	7000*	pF	$V_R = 1V_{DC}$, (test signal range 100Khz to 1Mhz) 25°C
L_S Typical Series Inductance	7.5	nH	Measured from top of terminal to mounting plane
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	1N609.	Units	Conditions
T_J Max. Junction Temperature Range	-65 to 125*	$^\circ\text{C}$	
T_{stg} Max. Storage Temperature Range	-65 to 125*	$^\circ\text{C}$	
R_{thJC} Max. Thermal Resistance Junction to Case	1.0*	$^\circ\text{C}/\text{W}$	DC operation See Fig. 4
R_{thCS} Typical Thermal Resistance, Case to Heatsink	0.25	$^\circ\text{C}/\text{W}$	Mounting surface, smooth and greased
wt Approximate Weight	15(0.53)	g(oz.)	
T Mounting Torque	Min. 23(20) Max. 46(40)	Kg-cm (lbf-in)	Non-lubricated threads
Case Style	DO-203AB(DO-5)	JEDEC	

* JEDEC Registered Values

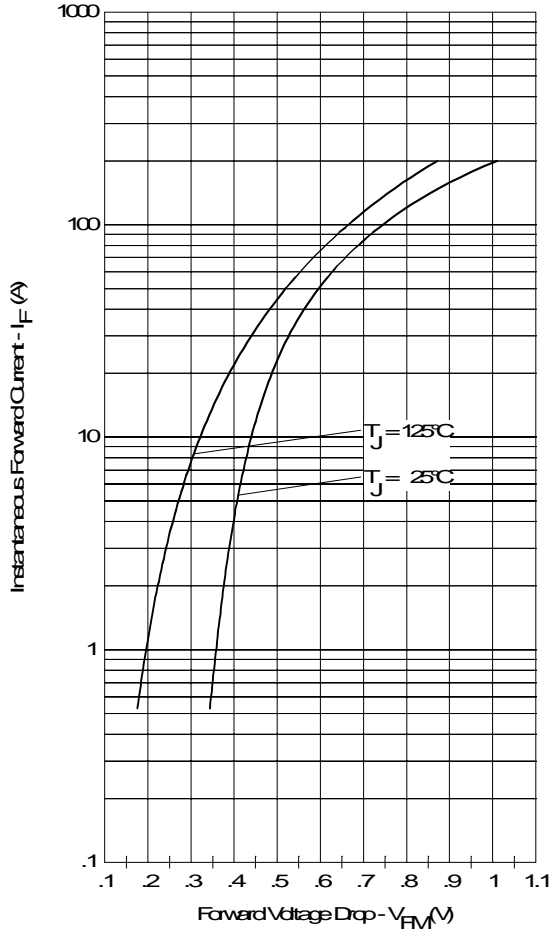


Fig. 1 - Maximum Forward Voltage Drop Characteristics

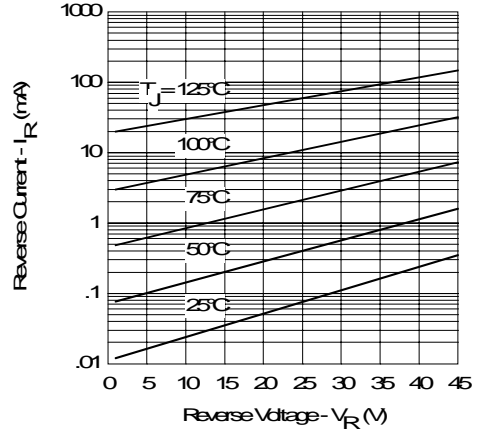


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

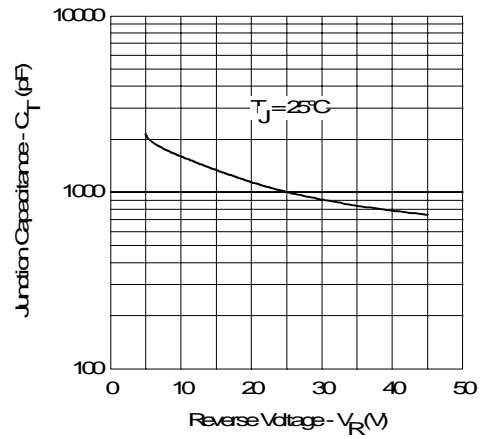


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

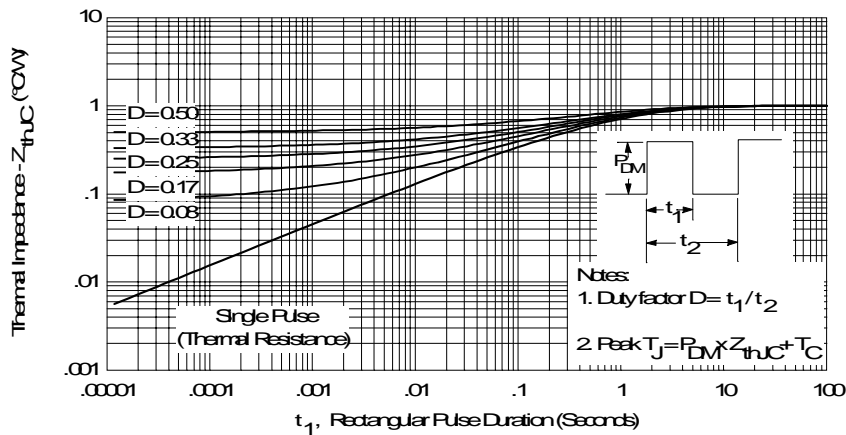


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

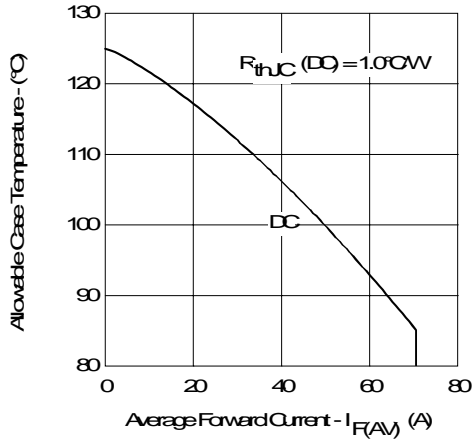


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

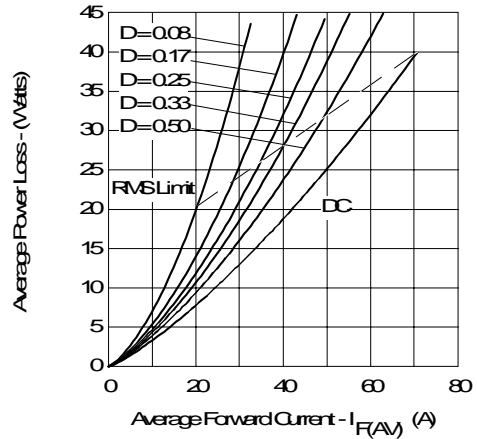


Fig. 6 - Forward Power Loss Characteristics

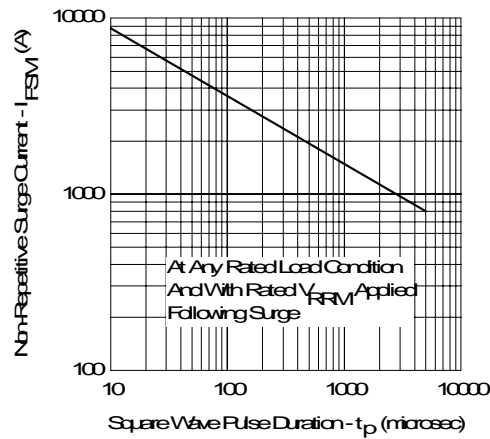


Fig. 7 - Maximum Non-Repetitive Surge Current

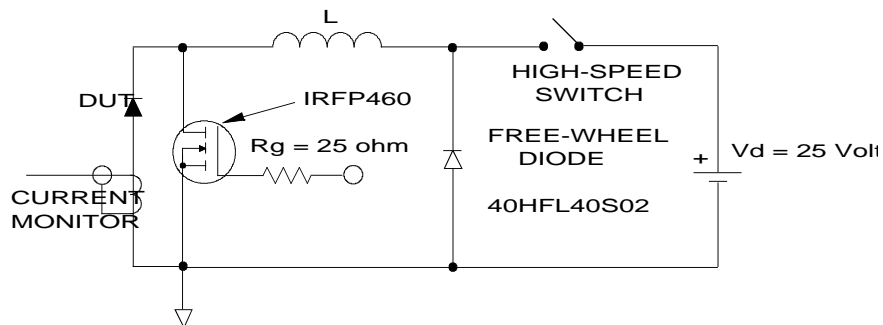


Fig. 8 - Unclamped Inductive Test Circuit

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. 11/02