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[Vishay Semiconductor/Diodes Division](#)
[1N6097](#)

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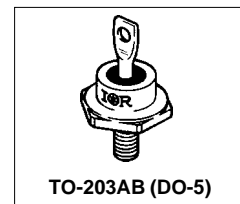
Bulletin PD-2.329 rev. B 11/02

International IOR Rectifier

1N6097
 1N6098

SCHOTTKY RECTIFIER

50 Amp



Major Ratings and Characteristics

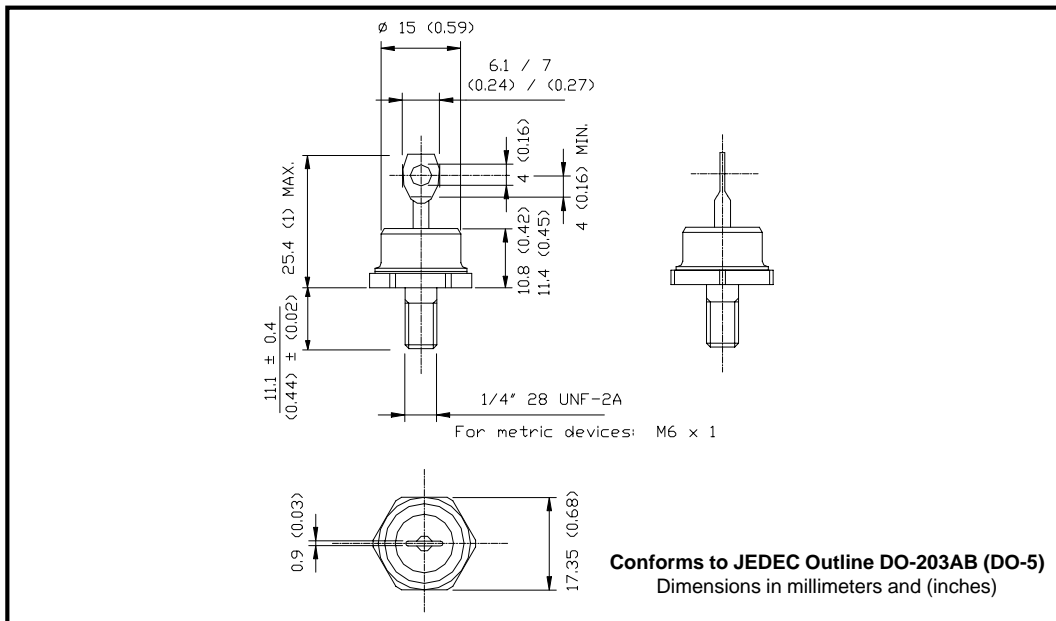
Characteristics	1N609.	Units
$I_{F(AV)}$ Rectangular waveform	50*	A
V_{RRM}	30/40*	V
I_{FSM} @ 60Hz	800*	A
V_F @ 160 Apk, $T_J = 70^\circ\text{C}$	0.86*	V
T_J range	-65 to 125*	$^\circ\text{C}$

* 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



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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	A	5 μs Sine or 3 μs Rect. pulse 60Hz halfwave, single phase
	800*		
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*	V	@ 10A $T_J = 25^\circ\text{C}$
	0.86*	V	@ 160A $T_J = 70^\circ\text{C}$
I_{RM} Max. Reverse Leakage Current (1) See Fig. 2	75	mA	$T_J = 25^\circ\text{C}$
	250*	mA	$T_J = 125^\circ\text{C}$
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)	Non-lubricated threads
	Max.	46 (40)	
Case Style	DO-203AB(DO-5)	JEDEC	

* JEDEC Registered Values

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IRF Rectifier

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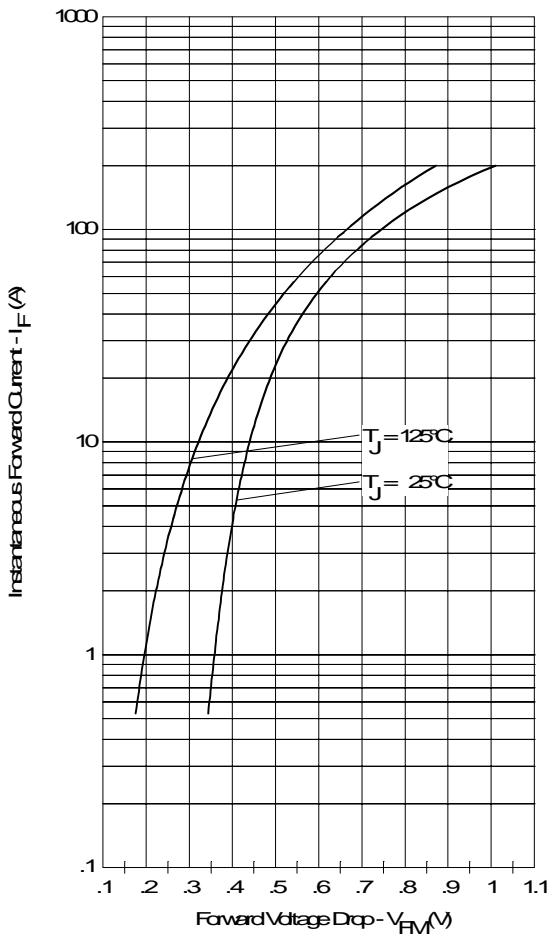


Fig. 1 - Maximum Forward Voltage Drop Characteristics

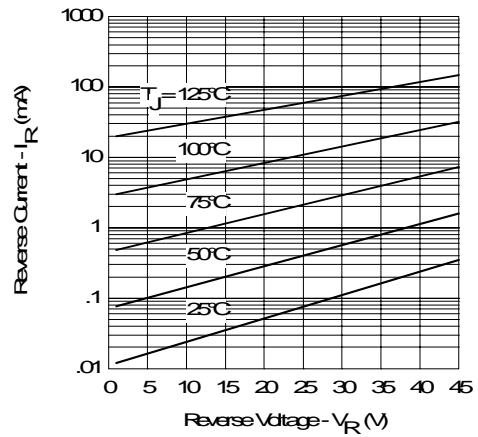


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

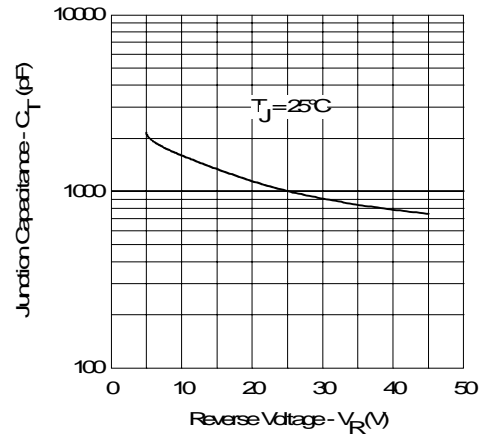


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

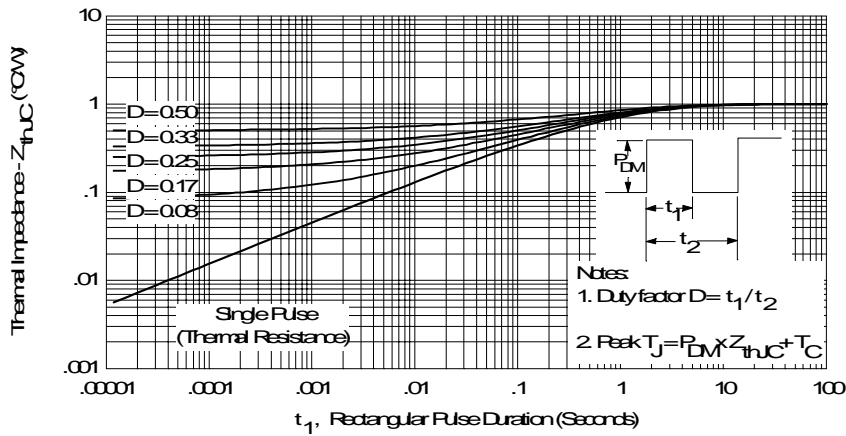


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

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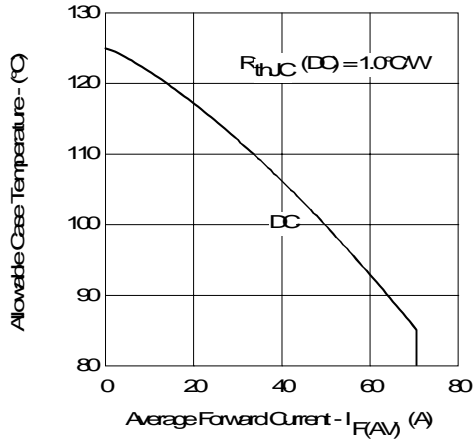


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

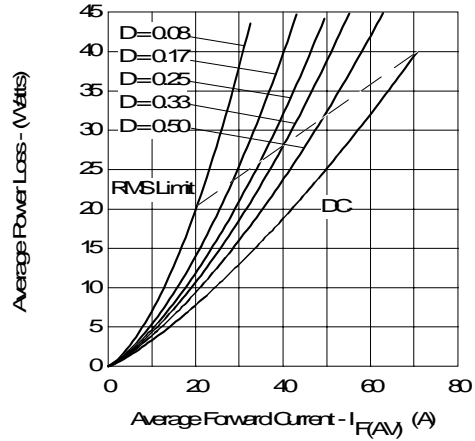


Fig. 6 - Forward Power Loss Characteristics

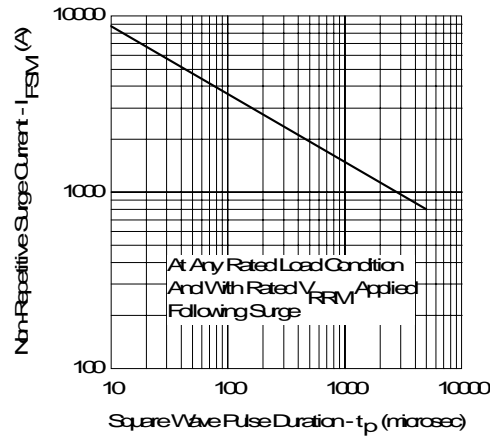


Fig. 7 - Maximum Non-Repetitive Surge Current

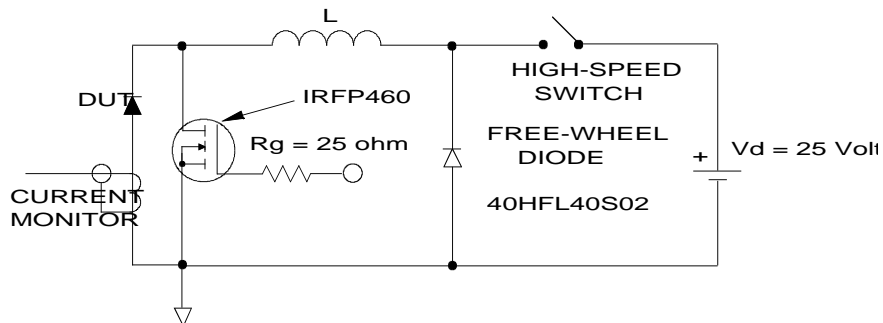


Fig. 8 - Unclamped Inductive Test Circuit

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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.

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Visit us at www.irf.com for sales contact information. 11/02