

**SCHOTTKY RECTIFIER**

**50 Amp**

**Major Ratings and Characteristics**

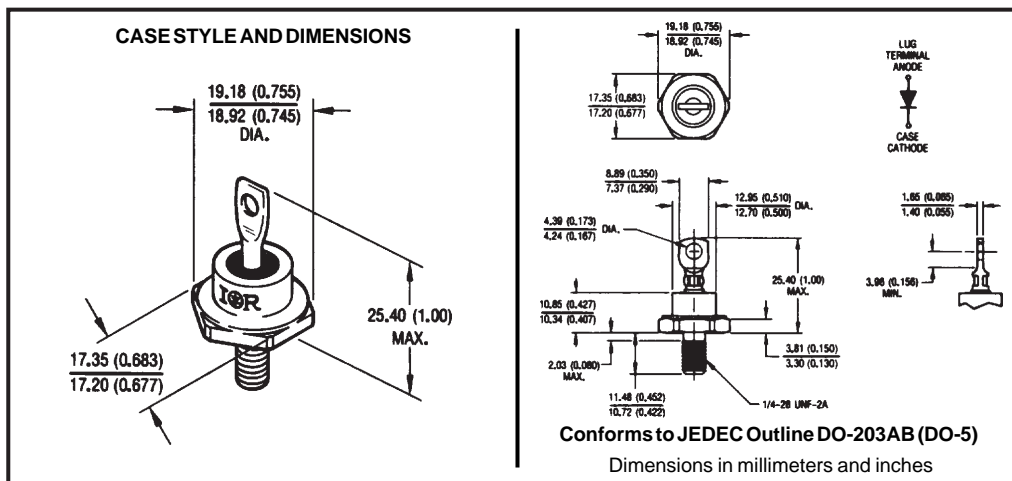
Characteristics	1N609.	Units
$I_{F(AV)}$ Rectangular waveform	50*	A
$V_{RRM}$	30/40*	V
$I_{FSM}$ @ 60Hz	800*	A
$V_F$ @ 160Apk, $T_J = 70^\circ\text{C}$	0.86*	V
$T_J$ range	-65 to 125*	$^\circ\text{C}$

\* 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 waveform
$I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current See Fig. 7	10,800	A	5 $\mu\text{s}$ Sine or 3 $\mu\text{s}$ 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 $\mu\text{sec}$ 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) $25^\circ\text{C}$
$L_S$ Typical Series Inductance	7.5	nH	Measured from top of terminal to mounting plane
dv/dt Max. Voltage Rate of Change (Rated $V_R$ )	10,000	V/ $\mu\text{s}$	

(1) Pulse Width < 300 $\mu\text{s}$ , 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*	$^\circ\text{C/W}$	DC operation See Fig. 4
$R_{thCS}$ Typical Thermal Resistance, Case to Heatsink	0.25	$^\circ\text{C/W}$	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

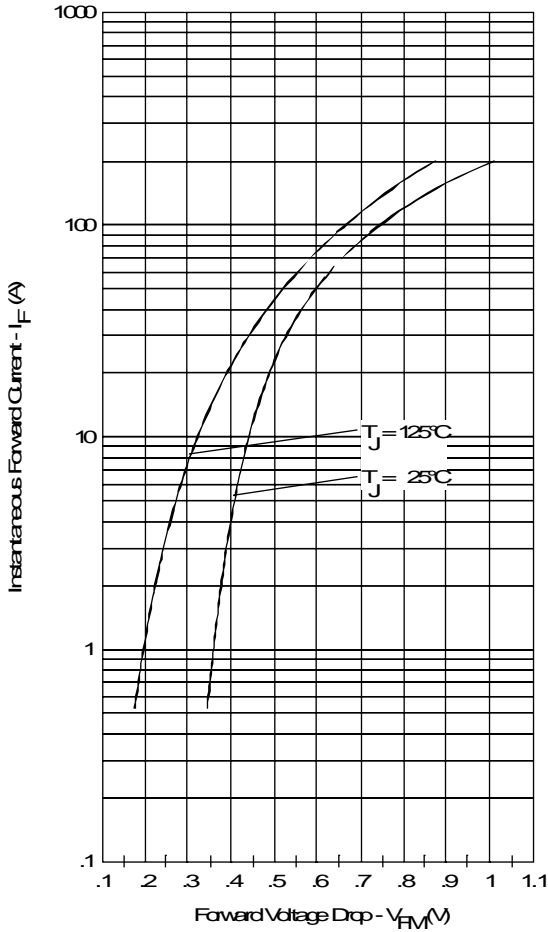


Fig. 1 - Maximum Forward Voltage Drop Characteristics

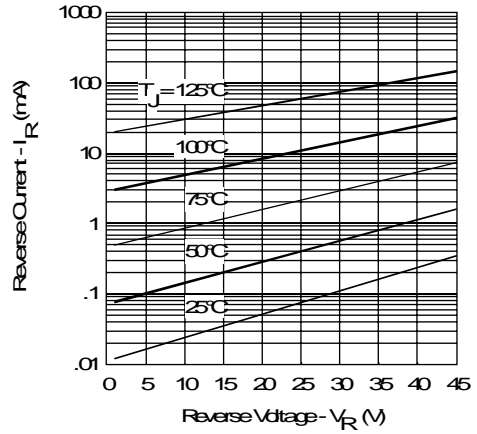


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

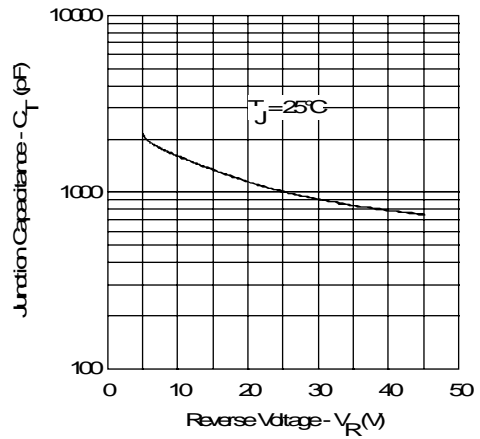


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

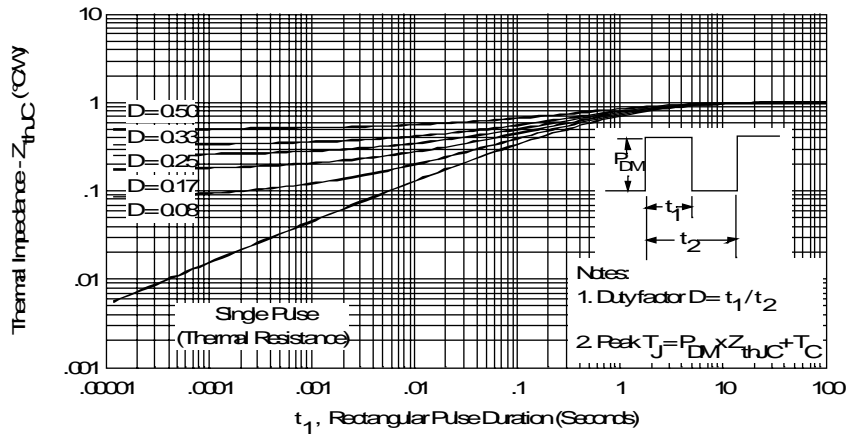


Fig. 4 - Maximum Thermal Impedance  $Z_{thJC}$  Characteristics

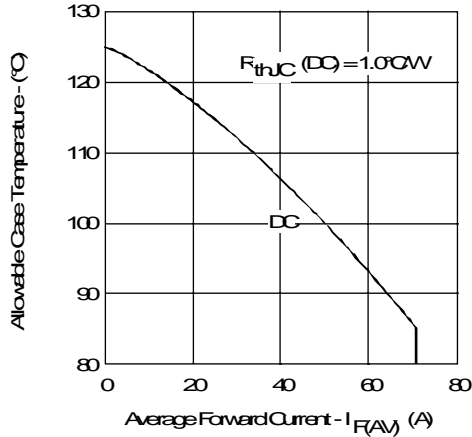


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

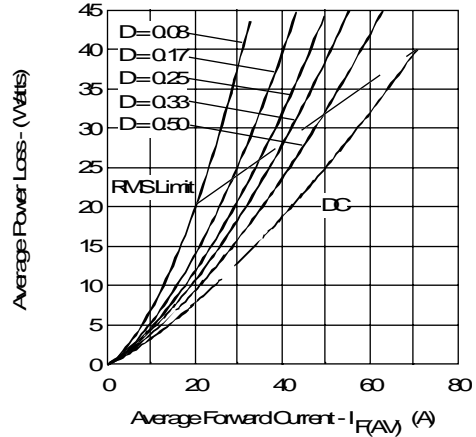


Fig. 6 - Forward Power Loss Characteristics

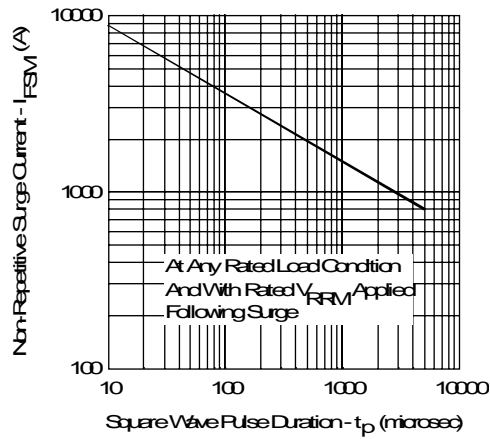


Fig. 7 - Maximum Non-Repetitive Surge Current

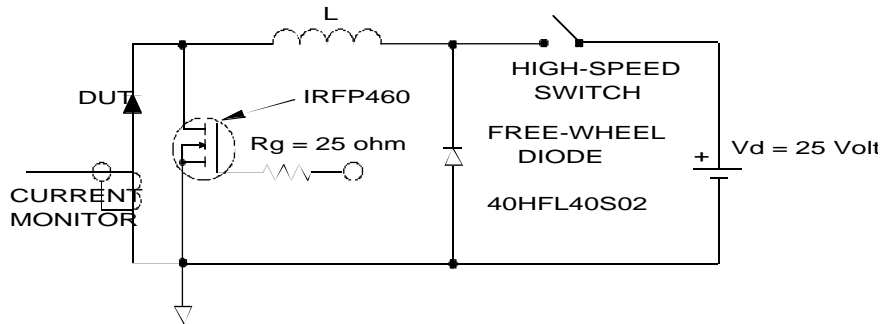


Fig. 8 - Unclamped Inductive Test Circuit