

SCHOTTKY RECTIFIER

25 Amp

Major Ratings and Characteristics

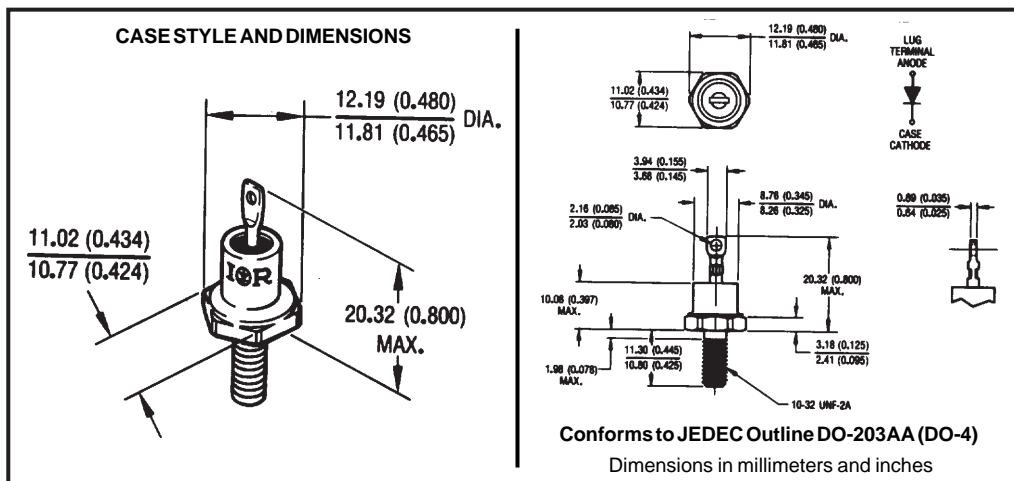
Characteristics	1N6391	Units
$I_{F(AV)}$ Rectangular waveform	25*	A
V_{RRM}	45	V
I_{FSM} @ 60Hz	600*	A
V_F @ 25 Apk, $T_J=25^\circ\text{C}$	0.64	V
T_J range	-55 to 175*	$^\circ\text{C}$

* JEDEC Registered Value

Description/Features

The 1N6391 Schottky rectifier 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
- Low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Hermetic packaging
- Military qualified versions also available



Voltage Ratings

Part number	1N6391
V_R Max. DC Reverse Voltage (V)	45
V_{RWM} Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

Parameters	1N6391	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current See Fig. 5	25*	A	50% duty cycle @ $T_C = 115^\circ\text{C}$, rectangular wave form
	22.5*		50% duty cycle @ $T_C = 115^\circ\text{C}$, sinusoidal wave form
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current See Fig. 7	9600	A	5 μs Sine or 3 μs Rect. pulse. Following any rated load condition and with rated V_{RRM} applied
	600*		60Hz half cycle sine wave or 5ms rectangular pulse
E_{AS} Non-Repetitive Avalanche Energy	40	mJ	$T_J = 25^\circ\text{C}$, $I_{AS} = 6.0$ Amps, $L = 2.20$ mH
I_{AR} Repetitive Avalanche Current	6.0	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	1N6391	Units	Conditions
V_{FM} Max. Forward Voltage Drop (1) See Fig. 1	0.44*	V	@ 5A $T_J = 25^\circ\text{C}$
	0.78*	V	@ 50A
	0.55*	V	@ 5A $T_J = -55^\circ\text{C}$
I_{RM} Max. Reverse Leakage Current (1) See Fig. 2	15*	mA	$T_J = 25^\circ\text{C}$
	40*	mA	$T_J = 125^\circ\text{C}$
	400*	mA	$T_J = 175^\circ\text{C}$
	400*	mA	$T_J = -55^\circ\text{C}$
C_T Max. Junction Capacitance	2000*	pF	$V_R = 5V_{DC}$, (test signal range 100Khz to 1Mhz) 25°C
L_S Typical Series Inductance	6.5	nH	Measured from top of terminal to mounting plane
dv/dt Max. Voltage Rate of Change	10,000	V/ μs	

(1) Pulse Width < 300 μs , Duty Cycle < 2%

Thermal-Mechanical Specifications

Parameters	1N6391	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_{thJC} Max. Thermal Resistance Junction to Case	2.0*	$^\circ\text{C}/\text{W}$	DC operation See Fig. 4
R_{thCS} Typical Thermal Resistance, Case to Heatsink	0.50*	$^\circ\text{C}/\text{W}$	Mounting surface, smooth and greased
wt Approximate Weight	5.7(0.2)	g(oz.)	
T Mounting Torque	Min.	1.35(12)	Non-lubricated threads
	Max.	1.70(15*)	
Case Style	DO-203AA(DO-4)	JEDEC	

* JEDEC Registered Values

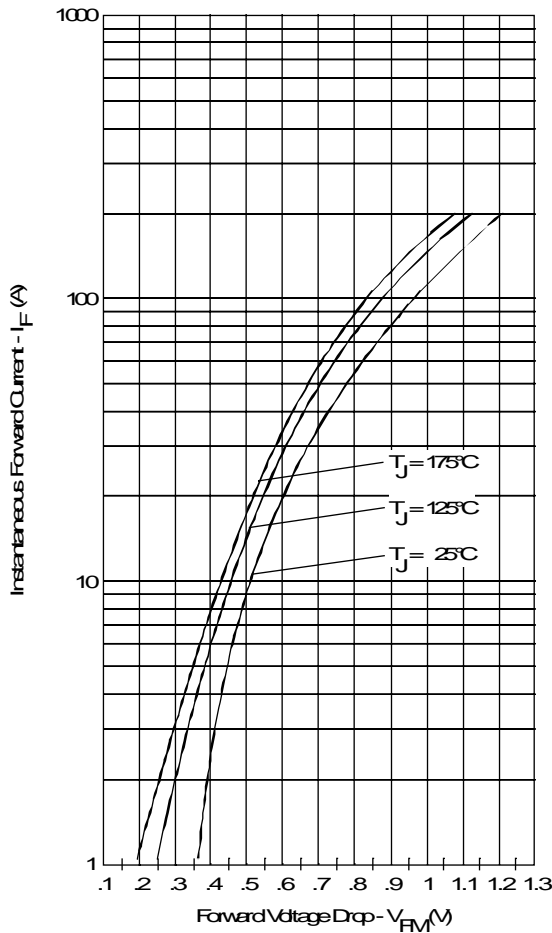


Fig. 1 - Maximum Forward Voltage Drop Characteristics

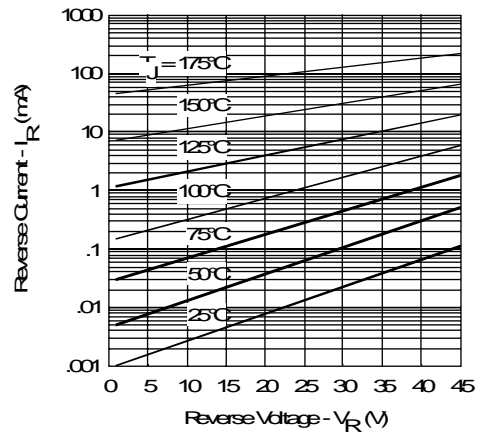


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

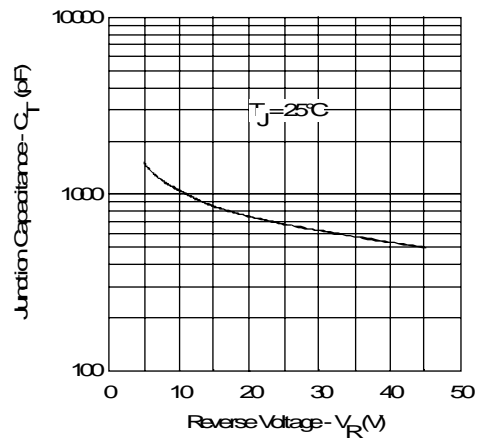


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

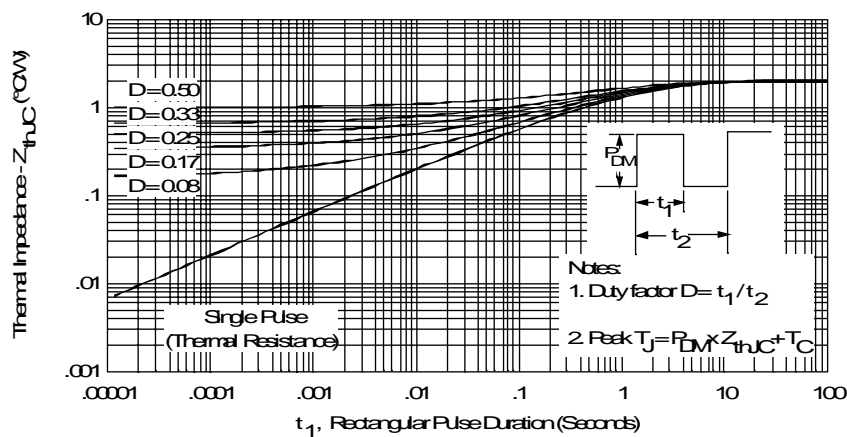


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

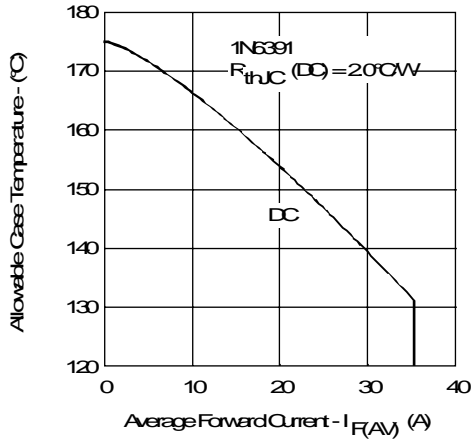


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

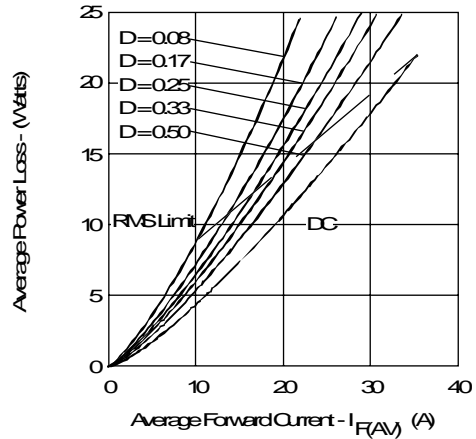


Fig. 6 - Forward Power Loss Characteristics

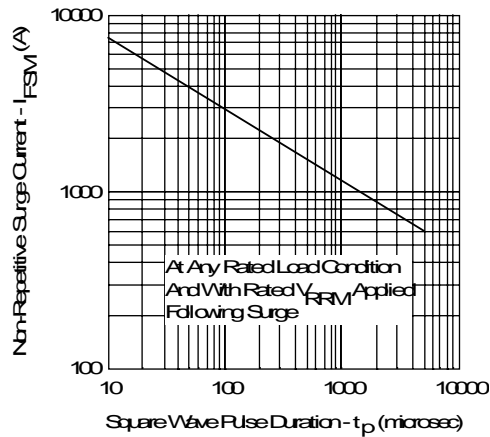


Fig. 7 - Maximum Non-Repetitive Surge Current

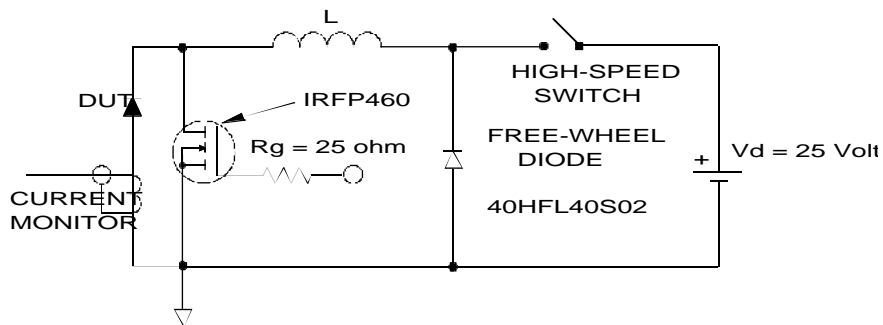


Fig. 8 - Unclamped Inductive Test Circuit