

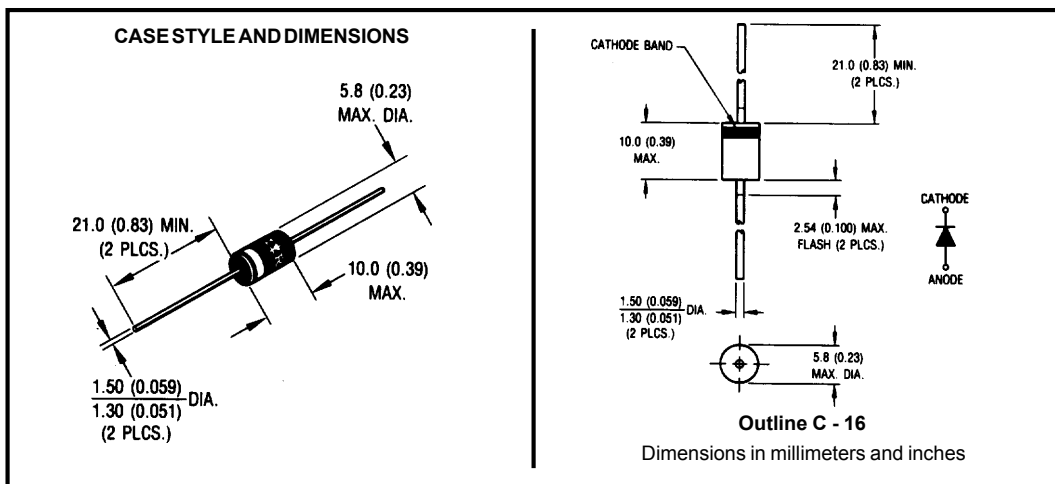
Major Ratings and Characteristics

Characteristics	1N5820	Units
$I_{F(AV)}$ Rectangular waveform	3.0	A
V_{RRM}	20	V
I_{FSM} @ $t_p = 5 \mu s$ sine	450	A
V_F @3Apk, $T_J = 25^\circ C$	0.475	V
T_J	- 65 to 150	$^\circ C$

Description/ Features

The 1N5820 axial leaded Schottky rectifier has been optimized for very low forward voltage drop, with moderate leakage. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- Low profile, axial leaded outline
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Very low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability



Voltage Ratings

Part number	1N5820
V_R Max. DC Reverse Voltage (V)	20
V_{RWM} Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

Parameters	1N5820	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current	3.0	A	50% duty cycle @ $T_L = 114^\circ\text{C}$, rectangular waveform With cooling fins
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current, @ $T_J = 25^\circ\text{C}$	450	A	5 μs Sine or 3 μs Rect. pulse
	90		10ms Sine or 6ms Rect. pulse

Following any rated load condition and with rated V_{RRM} applied

Electrical Specifications

Parameters	Typ.	Max.	Units	Conditions
V_{FM} Max. Forward Voltage Drop (1)	0.41	0.475	V	@ 3A
	0.49	0.85	V	@ 9.4A
I_{RM} Max. Reverse Leakage Current (1)	0.05	2.0	mA	$T_J = 25^\circ\text{C}$
	8.1	20	mA	$T_J = 100^\circ\text{C}$
C_T Typical Junction Capacitance	350	-	pF	$V_R = 5V_{DC}$ (test signal range 100kHz to 1Mhz), @ 25°C
L_S Typical Series Inductance	9.0	-	nH	Measured lead to lead 5mm from package body
dv/dt Max. Voltage Rate of Change	-	10000	V/ μs	(Rated V_R)

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

Thermal-Mechanical Specifications

Parameters	1N5820	Units	Conditions
T_J Max. Junction Temperature Range (2)	-65 to 150	$^\circ\text{C}$	
T_{stg} Max. Storage Temperature Range	-65 to 150	$^\circ\text{C}$	
R_{thJL} Max. Thermal Resistance Junction to Lead	34	$^\circ\text{C}/\text{W}$	With fin 20x20 (0.79x0.79) 1.0 thick
R_{thJA} Max. Thermal Resistance Junction to Ambient	80	$^\circ\text{C}/\text{W}$	DC operation, without cooling fin
Wt Approximate Weight	1.2(0.042)	gr(oz)	
Case Style	C-16		

(2) $\frac{dP_{tot}}{dT_J} < \frac{1}{R_{th(j-a)}}$ thermal runaway condition for a diode on its own heatsink

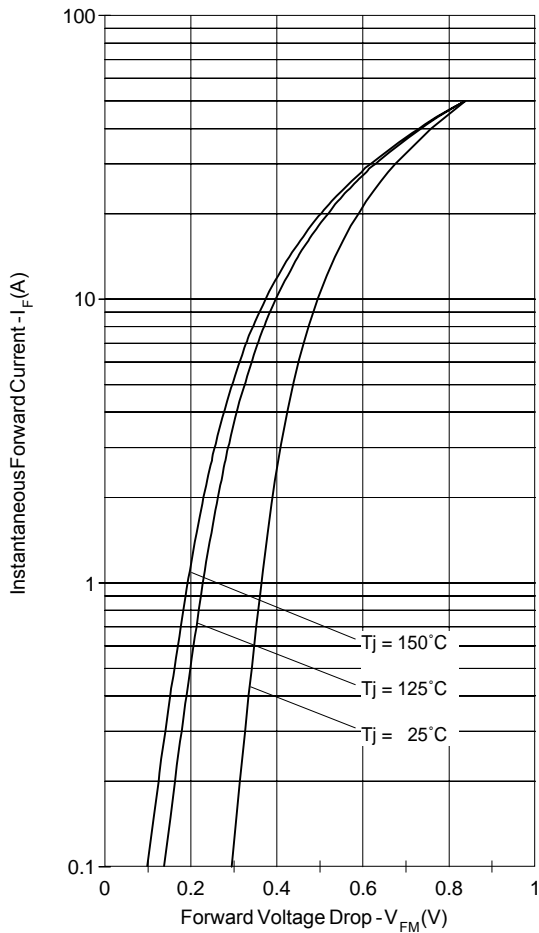


Fig. 1 - Typical Forward Voltage Drop Characteristics

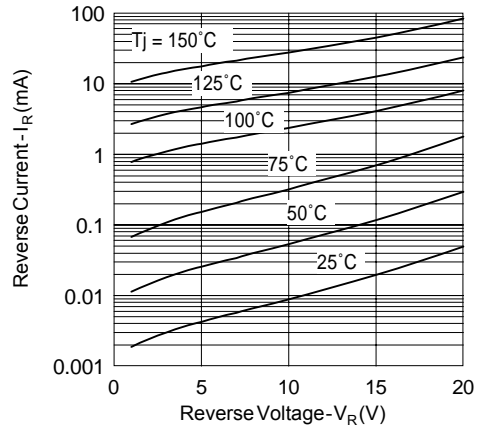


Fig. 2 - Typical Peak Reverse Current Vs. Reverse Voltage

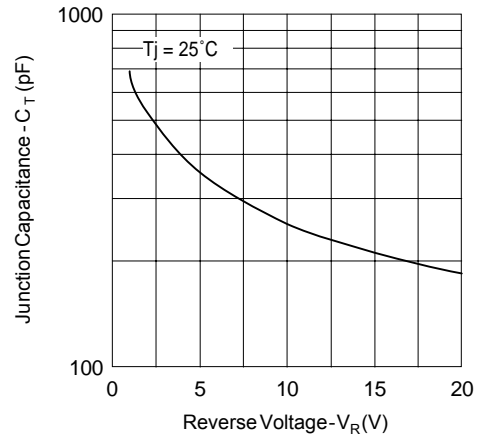


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

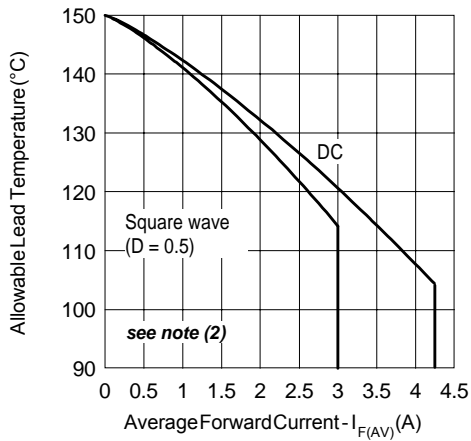


Fig. 4- Maximum Average Forward Current Vs. Allowable Lead Temperature

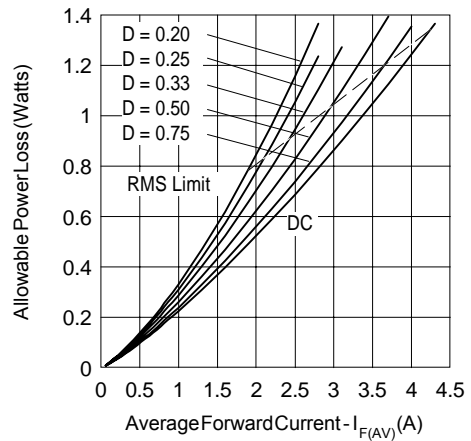


Fig. 5- Maximum Average Forward Dissipation Vs. Average Forward Current

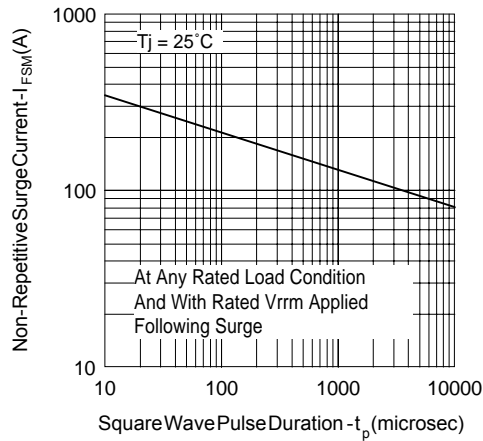


Fig. 6- Maximum Peak Surge Forward Current Vs. Pulse Duration

- (2) Formula used: $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$;
 $Pd = \text{Forward Power Loss} = I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);
 $Pd_{REV} = \text{Inverse Power Loss} = V_{R1} \times I_R (1 - D)$

Marking & Identification

Ordering Information

<p>Each device has marking and identification on two rows. - The first row designates the device as manufactured by International Rectifier as indicated by the letters "IR", then Part Number. - The second row shows the data code: Year and Week.</p> <p>See below marking diagram.</p> <p>FIRST ROW IR 1N5820</p> <p>SECOND ROW Date Code YY WW</p>	<p>IR 1N5820 TR - TAPE AND REEL</p> <p>WHEN ORDERING, INDICATE THE PART NUMBER AND THE QUANTITY (IN MULTIPLES OF 1200 PIECES).</p> <p>EXAMPLE: IR 1N5820 TR - 2400 PIECES</p> <p>IR 1N5820 SERIES - BULK QUANTITIES</p> <p>WHEN ORDERING, INDICATE THE PART NUMBER AND THE QUANTITY (IN MULTIPLE OF 500 PIECES)</p> <p>EXAMPLE: IR 1N5820 - 1000 PIECES</p>
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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.