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Jameco Part Number 177973

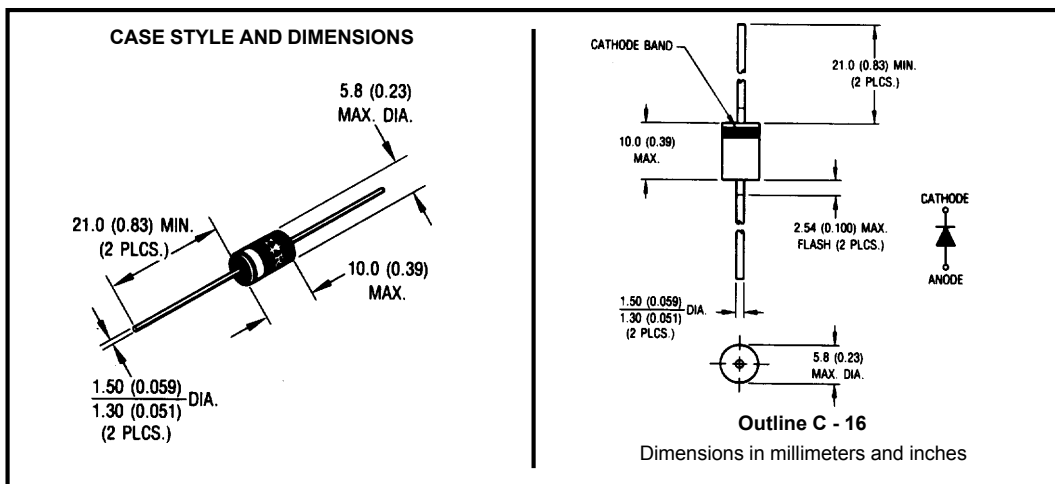
Major Ratings and Characteristics

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

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 wave form 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_{RWM} 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

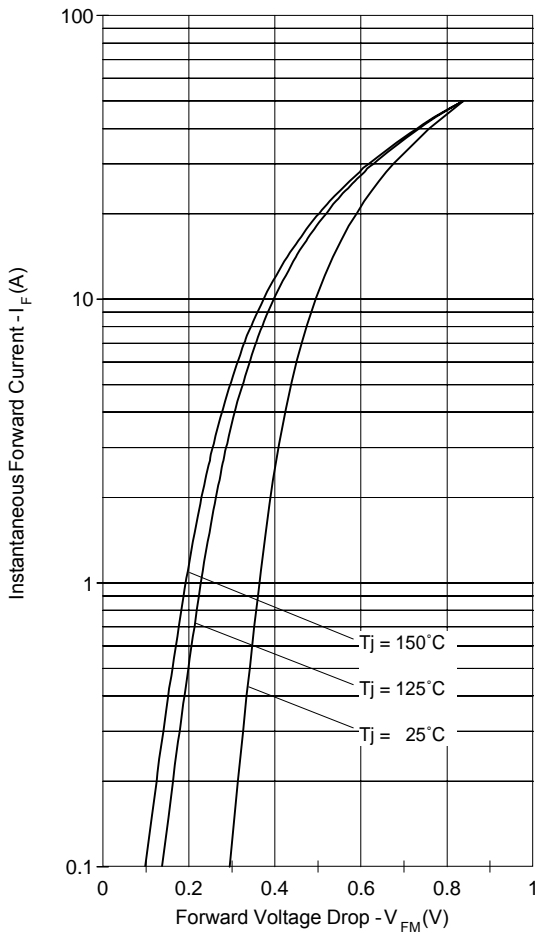


Fig. 1 - Typical Forward Voltage Drop Characteristics

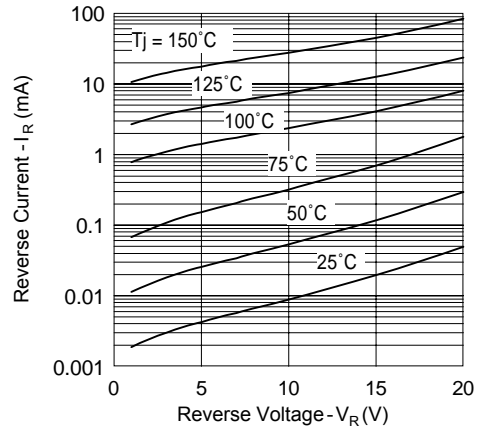


Fig. 2 - Typical Peak Reverse Current Vs. Reverse Voltage

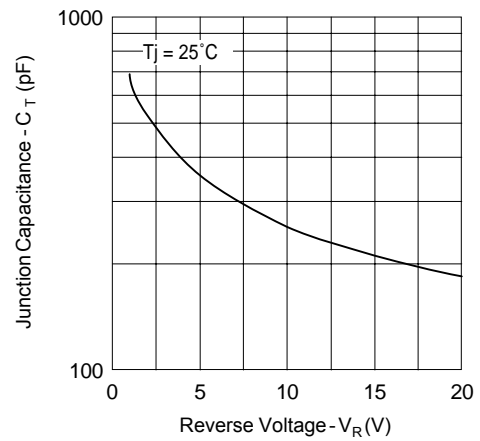


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

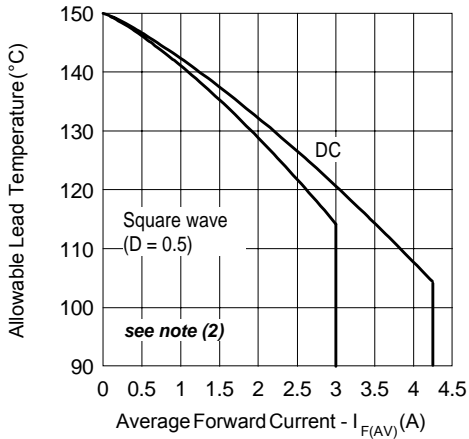


Fig. 4 - Maximum Average Forward Current Vs. Allowable Lead Temperature

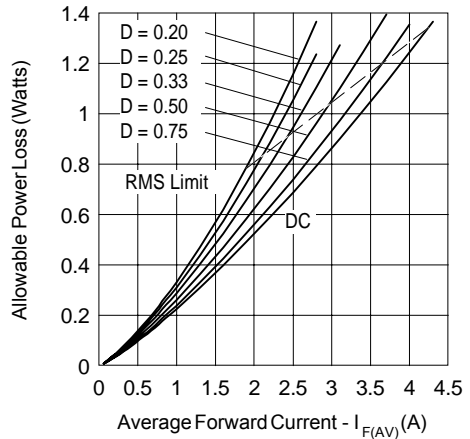


Fig. 5 - Maximum Average Forward Dissipation Vs. Average Forward Current

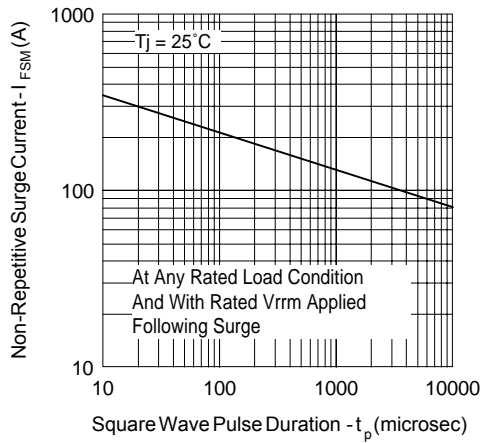


Fig. 6 - Maximum Peak Surge Forward Current Vs. Pulse Duration

- (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);
 $Pd_{REV} = \text{Inverse Power Loss} = V_{R1} \times I_R (1 - D)$

Ordering Information Table

Device Code	<table border="1"><tr><td>1N5820</td><td>TR</td></tr></table>	1N5820	TR
1N5820	TR		
	<table><tr><td>①</td><td>②</td></tr></table>	①	②
①	②		
1	- Part Number: 3A, 20V		
2	- TR= Tape & Reel package (1200 pcs) - = Box package (500 pcs)		

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
IR Rectifier

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