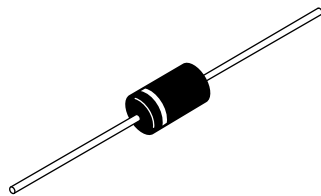


Schottky Rectifier, 3.0 A


C-16


FEATURES

- Low profile, axial leaded outline
- High frequency operation
- Very low forward voltage drop
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Guard ring for enhanced ruggedness and long term reliability
- Lead (Pb)-free plating
- Designed and qualified for industrial level


RoHS
COMPLIANT

PRODUCT SUMMARY

$I_{F(AV)}$	3.0 A
V_R	20 V
I_{RM}	20 mA at 100 °C

DESCRIPTION

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, freewheeling diodes, and reverse battery protection.

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	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	3 Apk, $T_J = 25^\circ C$	0.475	V
T_J	Range	- 65 to 150	°C

VOLTAGE RATINGS

PARAMETER	SYMBOL	1N5820	UNITS
Maximum DC reverse voltage	V_R	20	V
Maximum working peak reverse voltage	V_{RWM}		

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current	$I_{F(AV)}$	50 % duty cycle at $T_L = 114^\circ C$, rectangular waveform With cooling fins	3.0	A
Maximum peak one cycle non-repetitive surge current at $T_J = 25^\circ C$	I_{FSM}	5 μs sine or 3 μs rect. pulse	450	
		10 ms sine or 6 ms rect. pulse	90	

ELECTRICAL SPECIFICATIONS						
PARAMETER	SYMBOL	TEST CONDITIONS		TYP.	MAX.	UNITS
Maximum forward voltage drop	V _{FM} ⁽¹⁾	3 A	T _J = 25 °C	0.41	0.475	V
		9.4 A		0.49	0.85	
Maximum reverse leakage current	I _{RM} ⁽¹⁾	T _J = 25 °C	V _R = Rated V _R	0.05	2.0	mA
		T _J = 100 °C		8.1	20	
Typical junction capacitance	C _T	V _R = 5 V _{DC} (test signal range 100 kHz to 1 MHz), 25 °C		350	-	pF
Typical series inductance	L _S	Measured lead to lead 5 mm from package body		9.0	-	nH
Maximum voltage rate of change	dV/dt	Rated V _R		-	10 000	V/μs

Note

⁽¹⁾ Pulse width < 300 μs , duty cycle < 2 %

THERMAL - MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction and storage temperature range	$T_J^{(1)}, T_{Stg}$		- 65 to 150	$^{\circ}\text{C}$
Maximum thermal resistance, junction to lead	R_{thJL}	With fin 20 x 20 (0.79 x 0.79) 1.0 thick	34	$^{\circ}\text{C/W}$
Maximum thermal resistance, junction to ambient	R_{thJA}	DC operation Without cooling fin	80	
Approximate weight			1.2	g
			0.042	oz.
Marking device		Case style C-16	1N5820	

Note

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

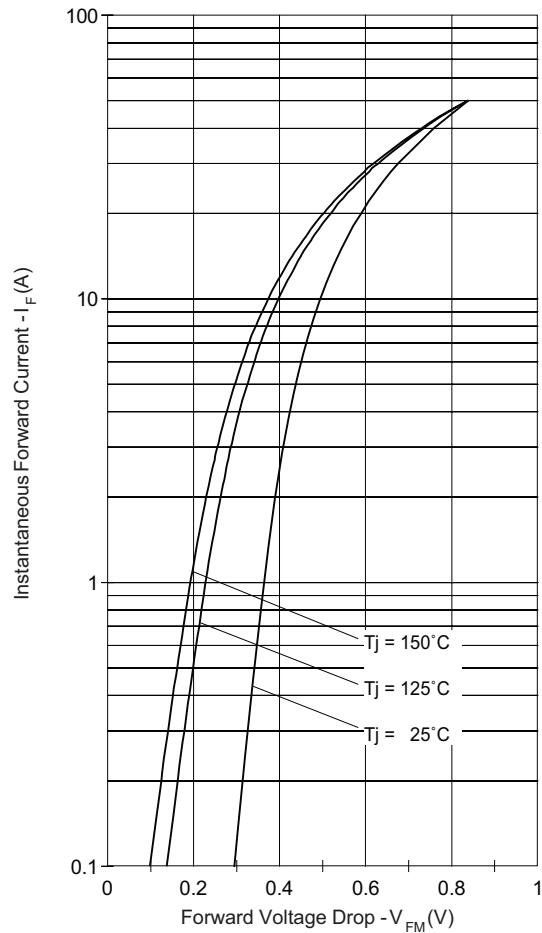


Fig. 1 - Maximum Forward Voltage Drop Characteristics

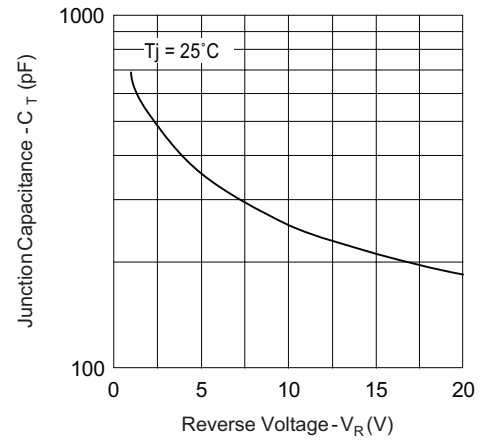


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

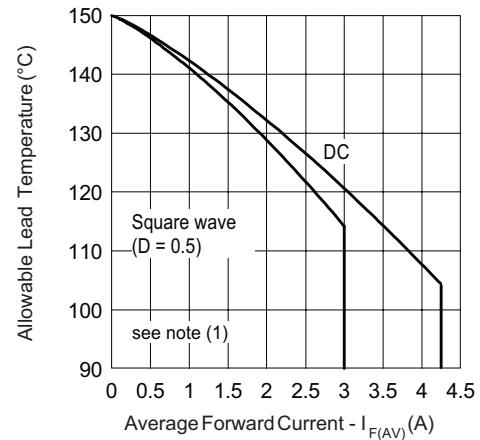


Fig. 4 - Typical Average Forward Current vs. Allowable Lead Temperature

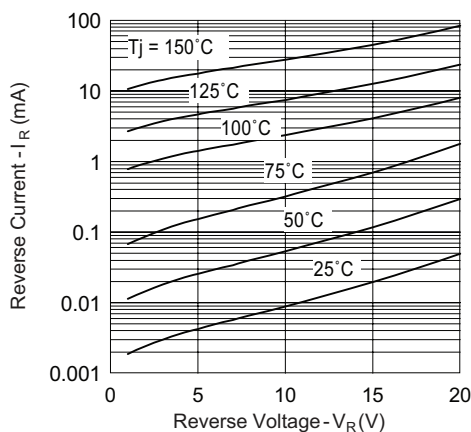


Fig. 2 - Typical Peak Reverse Current vs. Reverse Voltage

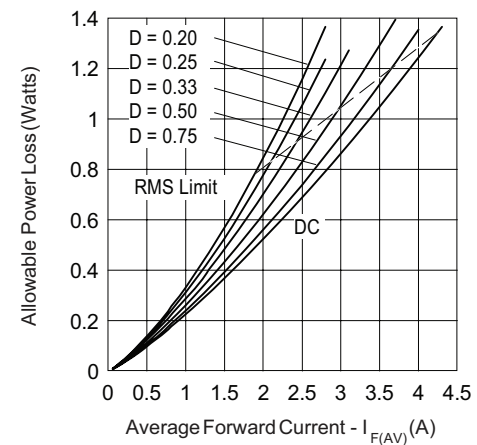


Fig. 5 - Maximum Average Forward Dissipation vs. Average Forward Current

Note

(1) Formula used: $T_C = T_J - (P_d + P_{dREV}) \times R_{thJC}$

P_d = Forward power loss = $I_{F(AV)} \times V_{FM}$ at $(I_{F(AV)}/D)$ (see fig. 6); P_{dREV} = Inverse power loss = $V_{R1} \times I_R (1 - D)$

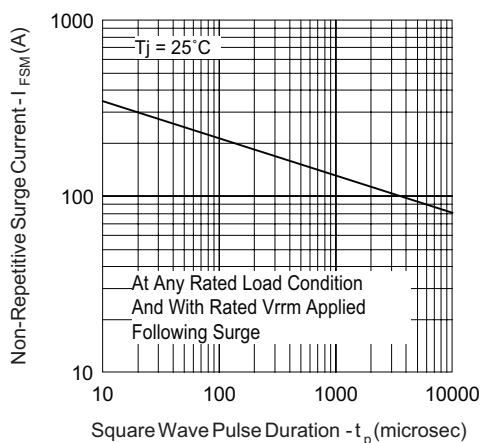
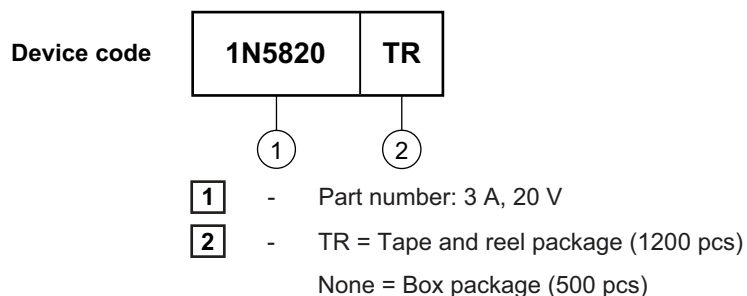


Fig. 6 - Maximum Peak Surge Forward Current vs. Pulse Duration

ORDERING INFORMATION TABLE



LINKS TO RELATED DOCUMENTS	
Dimensions	http://www.vishay.com/doc?95242
Part marking information	http://www.vishay.com/doc?95304
Packaging information	http://www.vishay.com/doc?95309



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