Excellent Integrated System Limited

Stocking Distributor

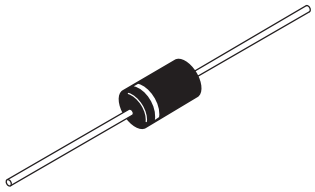
Click to view price, real time Inventory, Delivery & Lifecycle Information:

Vishay Semiconductor/Diodes Division
VS-1N5820

For any questions, you can email us directly:
sales@integrated-circuit.com

VS-1N5820, VS-1N5820-M3

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
- Compliant to RoHS Directive 2002/95/EC
- Designed and qualified for commercial level
- Halogen-free according to IEC 61249-2-21 definition (-M3 only)

RoHS COMPLIANT
HALOGEN FREE Available

DESCRIPTION

The VS-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.

PRODUCT SUMMARY	
Package	DO-201AD (C-16)
$I_{F(AV)}$	3 A
V_R	20 V
V_F at I_F	See Electrical table
I_{RM} max.	20 mA at 100 °C
T_J max.	150 °C
Diode variation	Single die
E_{AS}	See Electrical table

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 µs sine	450	A
V_F	3 Apk, T_J = 25 °C	0.475	V
T_J	Range	- 65 to 150	°C

VOLTAGE RATINGS				
PARAMETER	SYMBOL	VS-1N5820	VS-1N5820-M3	UNITS
Maximum DC reverse voltage	V_R	20	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 °C, rectangular waveform With cooling fins		3.0	A
Maximum peak one cycle non-repetitive surge current at T_J = 25 °C	I_{FSM}	5 µs sine or 3 µs rect. pulse	Following any rated load condition and with rated V_{RRM} applied	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	°C
Maximum thermal resistance, junction to lead	R_{thJL}	With fin 20 x 20 (0.79 x 0.79) 1.0 thick	34	°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

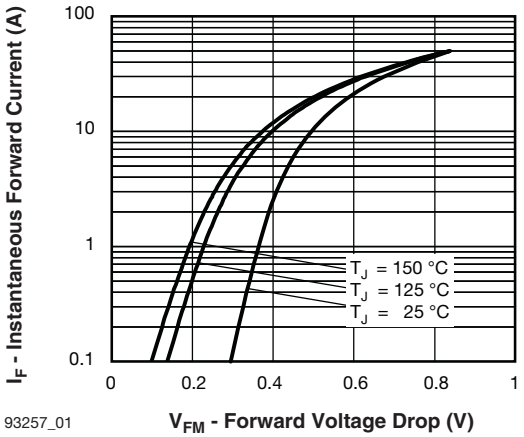


Fig. 1 - Maximum Forward Voltage Drop Characteristics

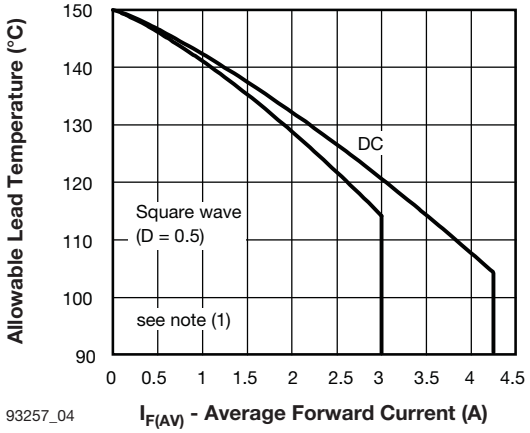


Fig. 4 - Typical Average Forward Current vs. Allowable Lead Temperature

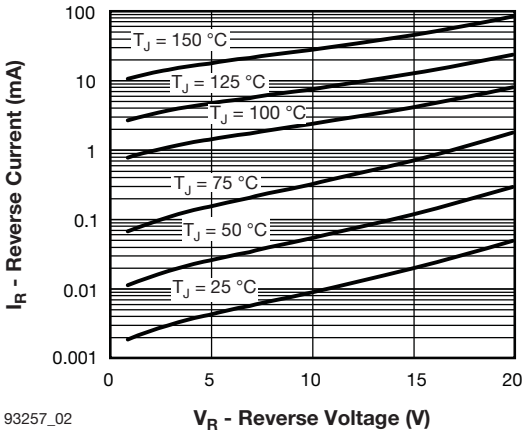


Fig. 2 - Typical Peak Reverse Current vs. Reverse Voltage

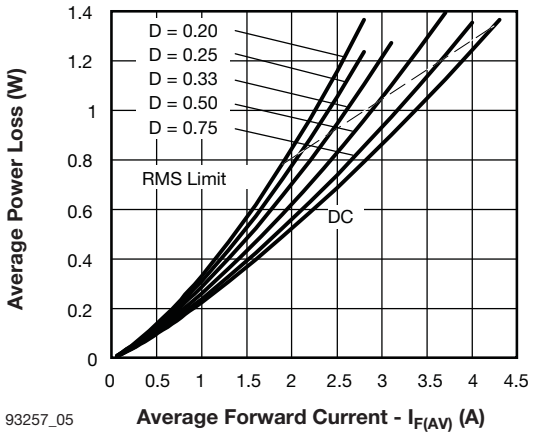


Fig. 5 - Maximum Average Forward Dissipation vs. Average Forward Current

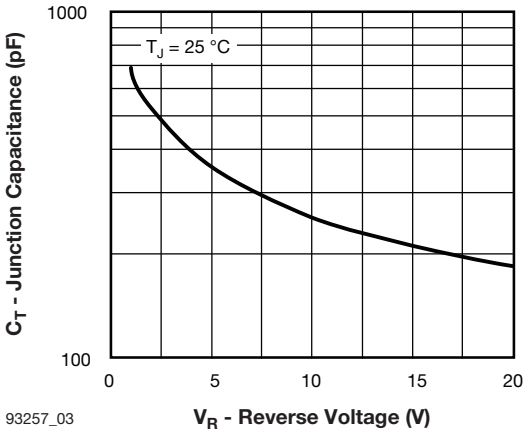


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

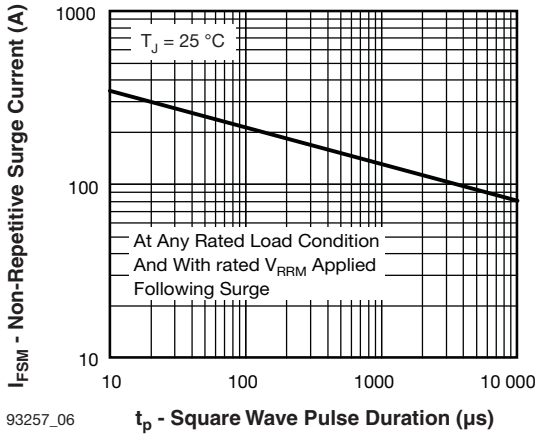


Fig. 6 - Maximum Peak Surge Forward Current vs. Pulse Duration

Note

(1) Formula used: $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$;
Pd = Forward power loss = $I_{F(AV)} \times V_{FM}$ at ($I_{F(AV)}$/D) (see fig. 6); Pd_{REV} = Inverse power loss = $V_{R1} \times I_R$ (1 - D)

ORDERING INFORMATION TABLE

Device code

VS-	1N5820	TR	-M3
1	2	3	4

1 - Vishay Semiconductors product

2 - Part number: 3 A, 20 V

3 - TR = Tape and reel package
None = Bulk package

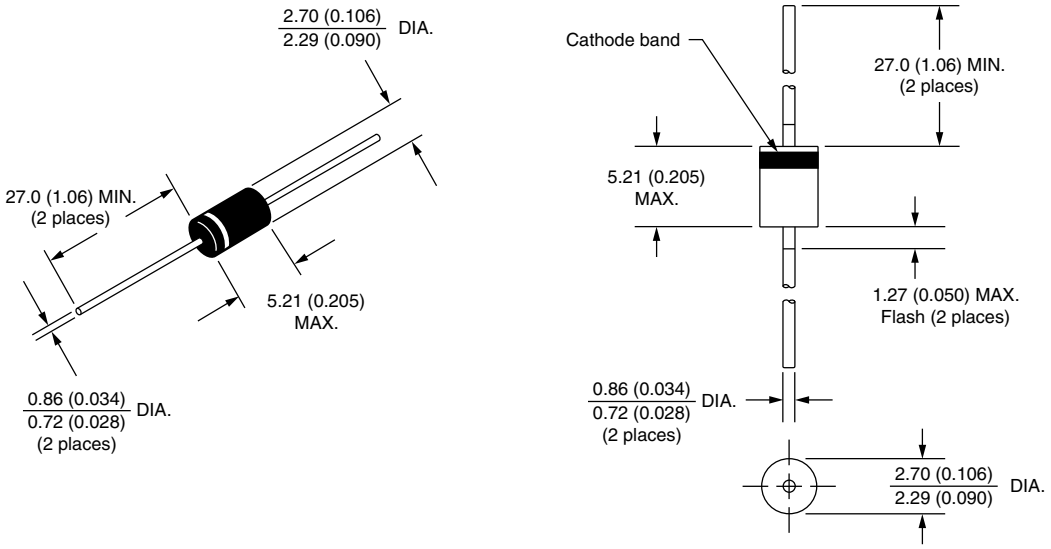
4 - Environmental digit
- None = Lead (Pb)-free and RoHS compliant
- -M3 = Halogen-free, RoHS compliant, and terminations lead (Pb)-free

ORDERING INFORMATION (Example)			
PREFERRED P/N	**QUANTITY PER T/R**	**MINIMUM ORDER QUANTITY**	**PACKAGING DESCRIPTION**
VS-1N5820	500	500	Bulk
VS-1N5820TR	1200	1200	Tape and reel
VS-1N5820-M3	500	500	Bulk
VS-1N5820TR-M3	1200	1200	Tape and reel

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95242
Part marking information	www.vishay.com/doc?95304
Packaging information	www.vishay.com/doc?95338

Axial DO-204AL (DO-41)

DIMENSIONS in millimeters (inches)



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