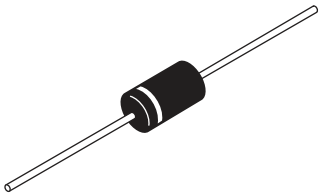
Schottky Rectifier, 1.0 A



DO-204AL

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-1N5818... 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-204AL (DO-41)
$I_{F(AV)}$	1 A
V_R	30 V
V_F at I_F	0.5 V
I_{RM} max.	12 mA at 125 °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	1.0	A
V_{RRM}		30	V
I_{FSM}	t_p = 5 µs sine	225	A
V_F	1 Apk, T_J = 25 °C	0.55	V
T_J	Range	- 40 to 150	°C

VOLTAGE RATINGS				
PARAMETER	SYMBOL	VS-1N5818	VS-1N5818-M3	UNITS
Maximum DC reverse voltage	V_R	30	30	V
Maximum working peak reverse voltage	V_{RWM}			

ABSOLUTE MAXIMUM RATINGS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average forward current See fig. 4	$I_{F(AV)}$	50 % duty cycle at T_L = 90 °C, rectangular waveform		1.0	A
Maximum peak one cycle non-repetitive surge current See fig. 6	I_{FSM}	5 µs sine or 3 µs rect. pulse	Following any rated load condition and with rated V_{RRM} applied	225	
		10 ms sine or 6 ms rect. pulse		35	

ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop See fig. 1	V_{FM} (1)	1 A	T_J = 25 °C	0.55	V
		2 A		0.71	
		3 A		0.875	
		1 A	T_J = 125 °C	0.5	
		2 A		0.61	
		3 A		0.77	
Maximum reverse leakage current See fig. 2	I_{RM} (1)	T_J = 25 °C	V_R = Rated V_R	1.0	mA
		T_J = 100 °C		6.0	
		T_J = 125 °C		12	
Maximum junction capacitance	C_T	V_R = 5 V_{DC} (test signal range 100 kHz to 1 MHz) 25 °C		60	pF
Typical series inductance	L_S	Measured lead to lead 5 mm from package body		8.0	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, T_{Stg}		- 40 to 150	°C
Maximum thermal resistance, junction to lead	R_{thJL} (1)	DC operation See fig. 4	80	°C/W
Approximate weight			0.33	g
			0.012	oz.
Marking device		Case style DO-204AL (DO-41)	1N5818	

Note

(1) Mounted 1" square PCB, thermal probe connected to lead 2 mm from package

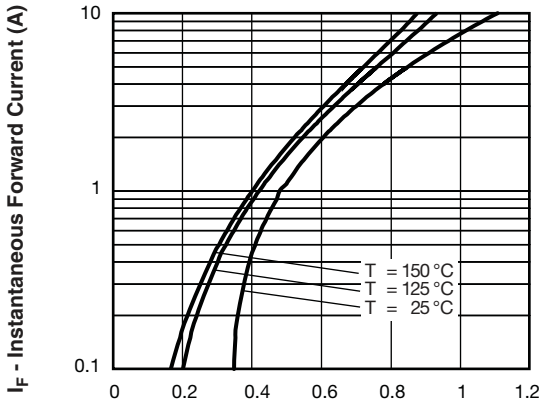


Fig. 1 - Maximum Forward Voltage Drop Characteristics

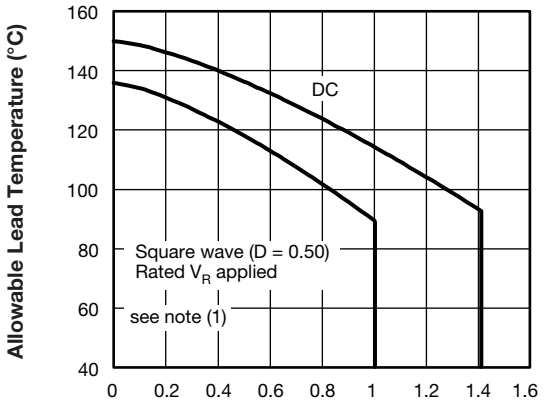


Fig. 4 - Typical Allowable Lead Temperature vs. Average Forward Current

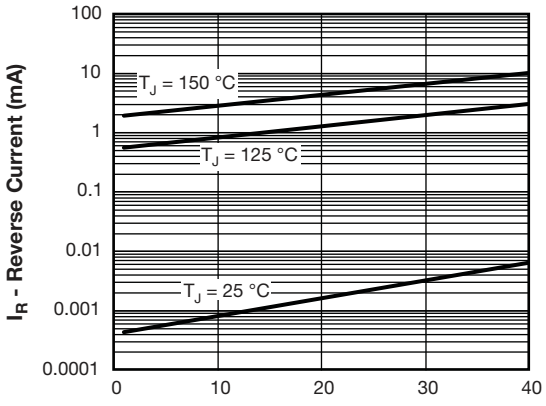


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

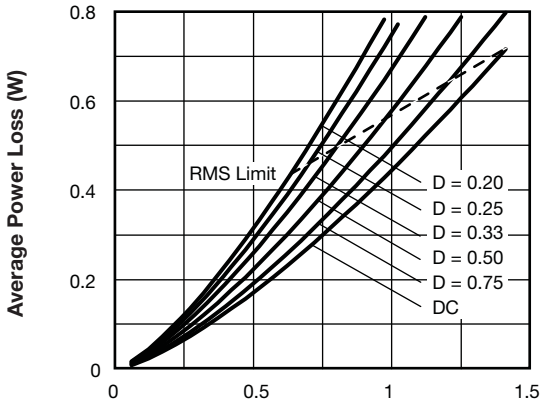


Fig. 5 - Forward Power Loss Characteristics

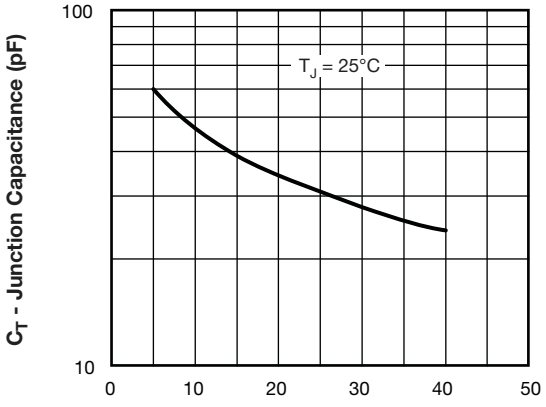


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

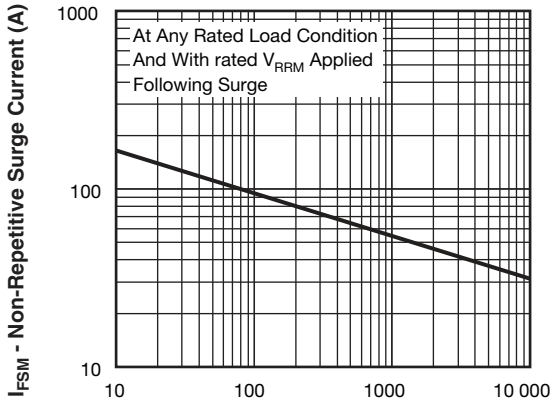
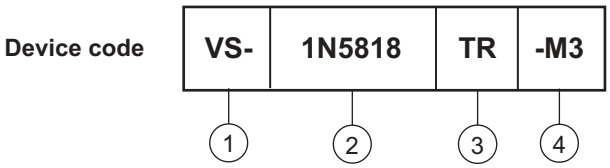


Fig. 6 - Typical Non-Repetitive Surge Current

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 = $V_{R1} \times I_R (1 - D)$; I_R at V_{R1} = 80 % rated V_R

ORDERING INFORMATION TABLE



1 - Vishay Semiconductors product

2 - Part number: 1N5818 = 1 A, 30 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-1N5818	1000	1000	Bulk
VS-1N5818TR	5000	5000	Tape and reel
VS-1N5818-M3	1000	1000	Bulk
VS-1N5818TR-M3	5000	5000	Tape and reel

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95241
Part marking information	www.vishay.com/doc?95304
Packaging information	www.vishay.com/doc?95338

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