

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

PRODUCT SUMMARY

Package	DO-204AL (DO-41)
$I_{F(AV)}$	1 A
V_R	40 V
V_F at I_F	0.55 V
I_{RM} max.	12 mA at 125 °C
T_J max.	150 °C
Diode variation	Single die
E_{AS}	See Electrical table

DESCRIPTION

The VS-1N5819... 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	1.0	A
V_{RRM}		40	V
I_{FSM}	$t_p = 5 \mu s$ sine	225	A
V_F	1 Apk, $T_J = 25^\circ C$	0.55	V
T_J	Range	- 40 to 150	°C

VOLTAGE RATINGS

PARAMETER	SYMBOL	VS-1N5819	VSS-1N5819-M3	UNITS
Maximum DC reverse voltage	V_R	40	40	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 $T_L = 90^\circ C$, 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**

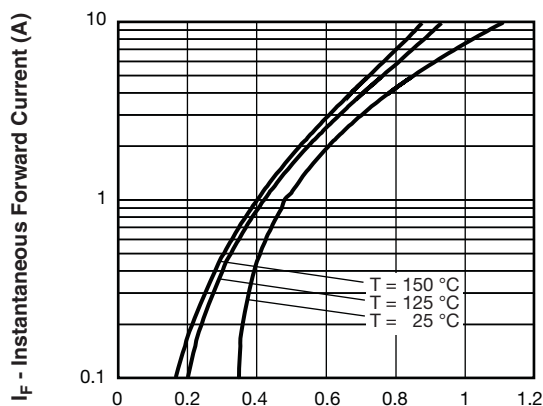
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop See fig. 1	$V_{FM}^{(1)}$	1 A	$T_J = 25\text{ }^{\circ}\text{C}$	0.6	V
		2 A		0.73	
		3 A		0.9	
		1 A	$T_J = 125\text{ }^{\circ}\text{C}$	0.55	
		2 A		0.63	
		3 A		0.79	
Maximum reverse leakage current See fig. 2	$I_{RM}^{(1)}$	$T_J = 25\text{ }^{\circ}\text{C}$	$V_R = \text{Rated } V_R$	1.0	mA
		$T_J = 100\text{ }^{\circ}\text{C}$		6.0	
		$T_J = 125\text{ }^{\circ}\text{C}$		12	
Maximum junction capacitance	C_T	$V_R = 5\text{ V}_{DC}$ (test signal range 100 kHz to 1 MHz) $25\text{ }^{\circ}\text{C}$		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/ μ s

Note(1) Pulse width < 300 μ s, 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	$^{\circ}\text{C}$
Maximum thermal resistance, junction to lead	$R_{thJL}^{(1)}$	DC operation See fig. 4	80	$^{\circ}\text{C/W}$
Approximate weight			0.33	g
			0.012	oz.
Marking device		Case style DO-204AL (DO-41)	1N5819	

Note

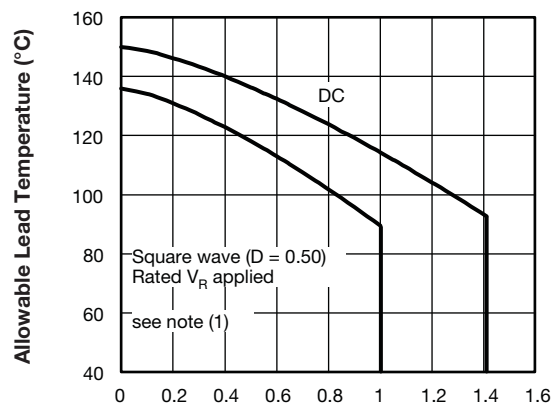
(1) Mounted 1" square PCB, thermal probe connected to lead 2 mm from package



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V_{FM} - Forward Voltage Drop (V)

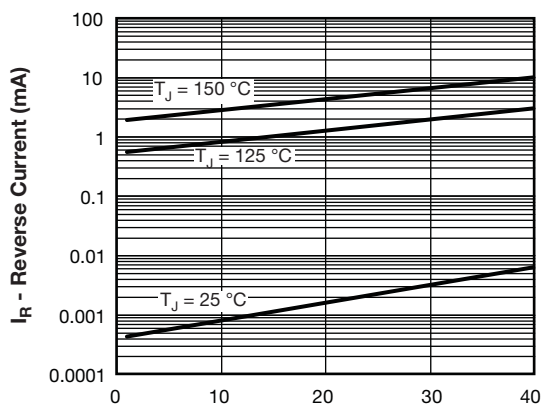
Fig. 1 - Maximum Forward Voltage Drop Characteristics



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I_{F(AV)} - Average Forward Current (A)

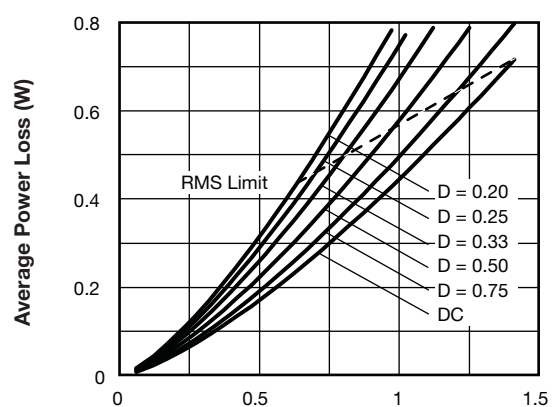
Fig. 4 - Typical Allowable Lead Temperature vs. Average Forward Current



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V_R - Reverse Voltage (V)

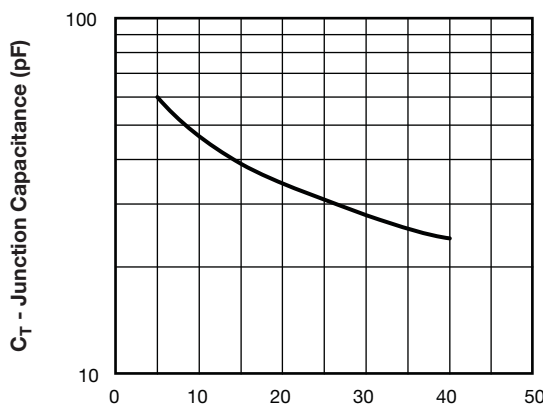
Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage



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Average Forward Current - I_{F(AV)} (A)

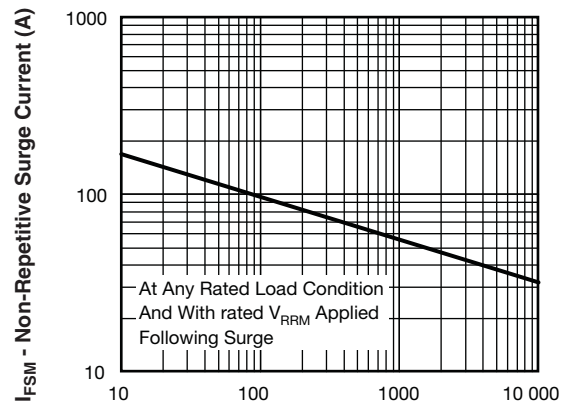
Fig. 5 - Forward Power Loss Characteristics



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V_R - Reverse Voltage (V)

Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage



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t_p - Square Wave Pulse Duration (μs)

Fig. 6 - Typical Non-Repetitive Surge 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 = $V_{R1} \times I_R (1 - D)$; I_R at $V_{R1} = 80\%$ rated V_R

**ORDERING INFORMATION TABLE**

Device code	VS-	1N5819	TR	-M3
	①	②	③	④

- 1** - Vishay Semiconductors product
- 2** - Part number: 1N5819 = 1 A, 40 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-1N5819	1000	1000	Bulk
VS-1N5819TR	5000	5000	Tape and reel
VS-1N5819-M3	1000	1000	Bulk
VS-1N5819TR-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



Axial DO-204AL (DO-41)

DIMENSIONS in millimeters (inches)





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