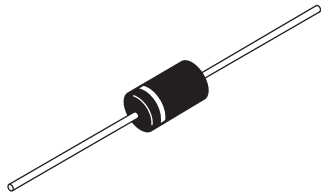




## Schottky Rectifier, 1.0 A



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, $T_J = 25 \text{ }^\circ\text{C}$	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 $T_L = 90 \text{ }^\circ\text{C}$ , rectangular waveform		1.0	A
Maximum peak one cycle non-repetitive surge current See fig. 6	$I_{FSM}$	5 $\mu s$ sine or 3 $\mu s$ rect. pulse	Following any rated load condition and with rated $V_{RRM}$ applied	225	
		10 ms sine or 6 ms rect. pulse		35	



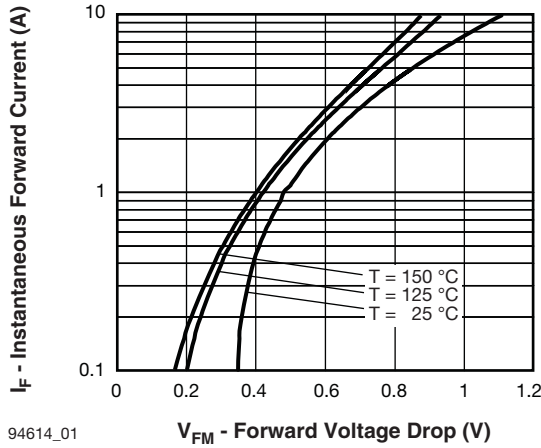
ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop See fig. 1	$V_{FM}^{(1)}$	1 A	$T_J = 25\text{ }^\circ\text{C}$	0.6	V
		2 A		0.73	
		3 A		0.9	
		1 A	$T_J = 125\text{ }^\circ\text{C}$	0.55	
		2 A		0.63	
		3 A		0.79	
Maximum reverse leakage current 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/ $\mu\text{s}$

**Note**(1) Pulse width < 300  $\mu\text{s}$ , duty cycle < 2 %

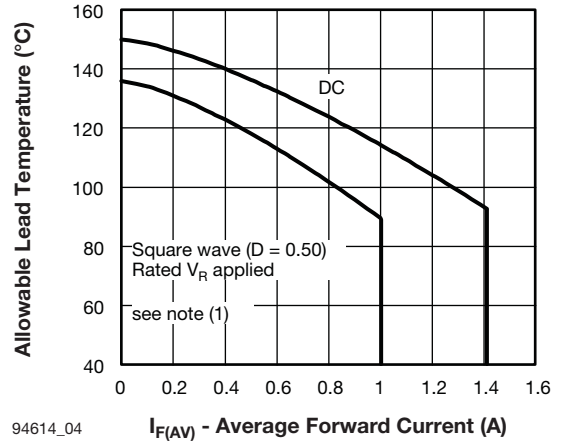
THERMAL - MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum junction and storage temperature range	$T_J, T_{Stg}$			- 40 to 150	$^\circ\text{C}$
Maximum thermal resistance, junction to lead	$R_{thJL}^{(1)}$	DC operation See fig. 4		80	$^\circ\text{C}/\text{W}$
Approximate weight				0.33	g
				0.012	oz.
Marking device		Case style DO-204AL (DO-41)		1N5819	

**Note**

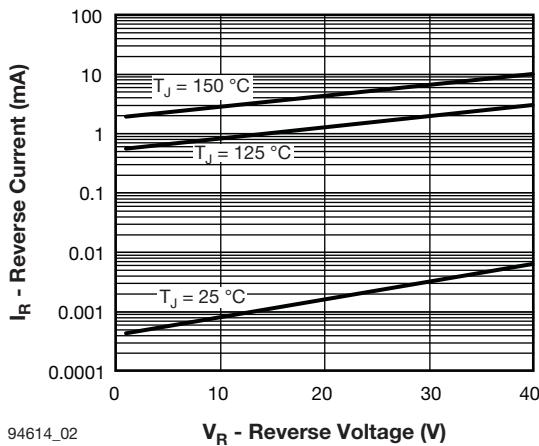
(1) Mounted 1" square PCB, thermal probe connected to lead 2 mm from package



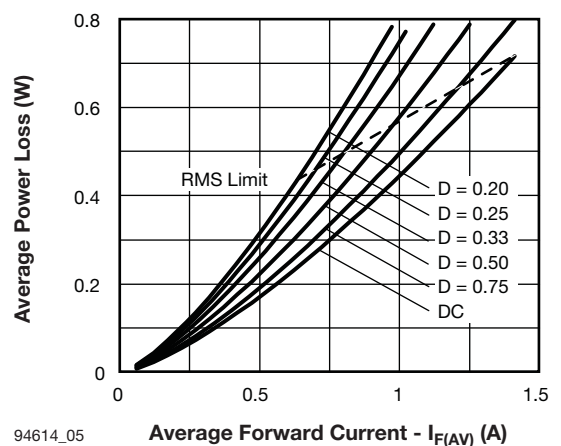
94614\_01 **V<sub>FM</sub> - Forward Voltage Drop (V)**  
Fig. 1 - Maximum Forward Voltage Drop Characteristics



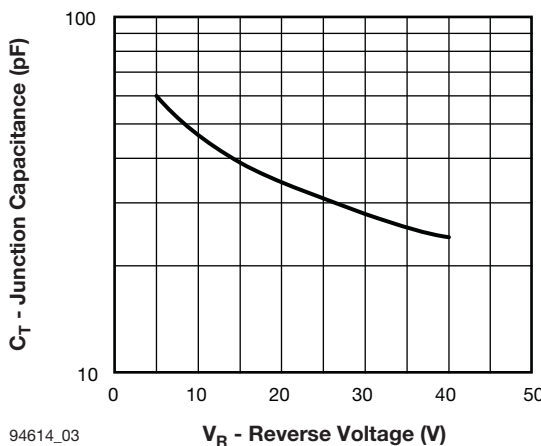
94614\_04 **I<sub>F(AV)</sub> - Average Forward Current (A)**  
Fig. 4 - Typical Allowable Lead Temperature vs. Average Forward Current



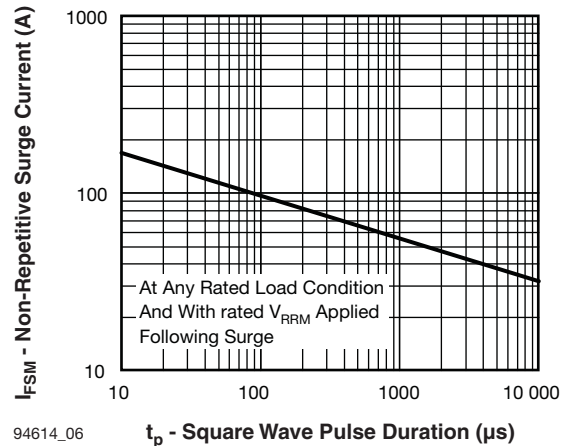
94614\_02 **V<sub>R</sub> - Reverse Voltage (V)**  
Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage



94614\_05 **Average Forward Current - I<sub>F(AV)</sub> (A)**  
Fig. 5 - Forward Power Loss Characteristics



94614\_03 **V<sub>R</sub> - Reverse Voltage (V)**  
Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage



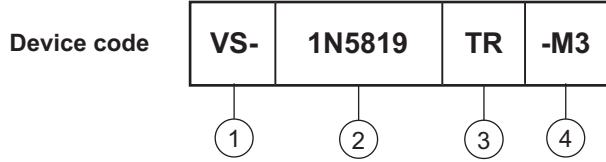
94614\_06 **t<sub>p</sub> - Square Wave Pulse Duration (μs)**  
Fig. 6 - Typical Non-Repetitive Surge Current

**Note**

(1) Formula used:  $T_C = T_J - (P_d + P_{dREV}) \times R_{thJC}$ ;  
 $P_d = \text{Forward power loss} = I_{F(AV)} \times V_{FM}$  at  $(I_{F(AV)}/D)$  (see fig. 6);  $P_{dREV} = \text{Inverse power loss} = V_{R1} \times I_R (1 - D)$ ;  $I_R$  at  $V_{R1} = 80\%$  rated  $V_R$



**ORDERING INFORMATION TABLE**



- 1** - Vishay Semiconductors product
- 2** - Part number: 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

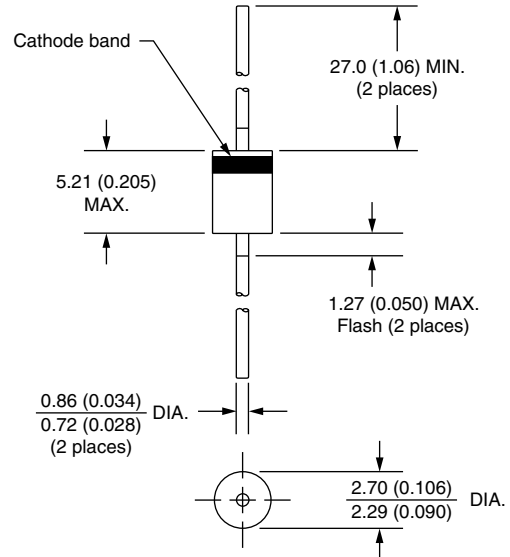
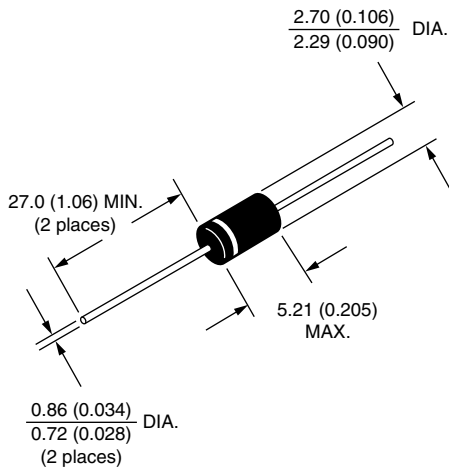
<b>ORDERING INFORMATION</b> (Example)			
PREFERRED P/N	QUANTITY PER T/R	MINIMUM ORDER QUANTITY	PACKAGING DESCRIPTION
VS-1N5819	1000	1000	Bulk
VS-1N5819TR	5000	5000	Tape and reel
VS-1N5819-M3	1000	1000	Bulk
VS-1N5819TR-M3	5000	5000	Tape and reel

<b>LINKS TO RELATED DOCUMENTS</b>	
Dimensions	<a href="http://www.vishay.com/doc?95241">www.vishay.com/doc?95241</a>
Part marking information	<a href="http://www.vishay.com/doc?95304">www.vishay.com/doc?95304</a>
Packaging information	<a href="http://www.vishay.com/doc?95338">www.vishay.com/doc?95338</a>



### Axial DO-204AL (DO-41)

**DIMENSIONS** in millimeters (inches)





## Disclaimer

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**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.**