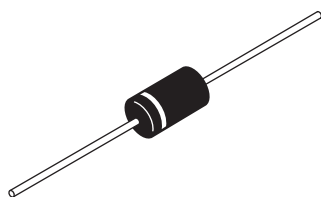


Schottky Rectifier, 1.0 A



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	20 V
V_F at I_F	See Electrical table
I_{RM} max.	10 mA at 125 °C
T_J max.	150 °C
Diode variation	Single die
E_{AS}	See Electrical table

DESCRIPTION

The VS-1N5817... 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}		20	V
I_{FSM}	$t_p = 5 \mu s$ sine	240	A
V_F	1 Apk, $T_J = 25^\circ C$	0.45	V
T_J	Range	- 65 to 150	°C

VOLTAGE RATINGS

PARAMETER	SYMBOL	VS-1N5817	VS-1N5817-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 $T_L = 138^\circ C$, rectangular waveform	1.0	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	240	
		10 ms sine or 6 ms rect. pulse	40	

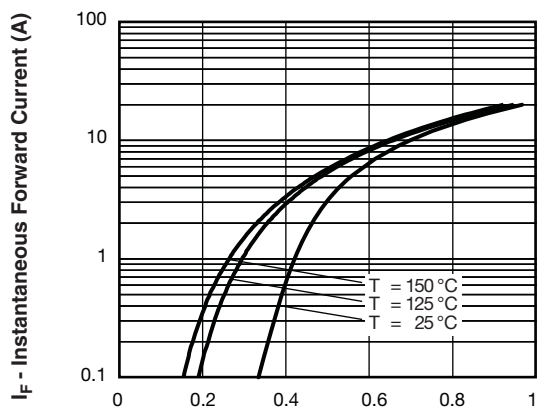


ELECTRICAL SPECIFICATIONS						
PARAMETER	SYMBOL	TEST CONDITIONS		TYP.	MAX.	UNITS
Maximum forward voltage drop	V _{FM} ⁽¹⁾	1 A	T _J = 25 °C	0.42	0.45	V
		3 A		0.50	0.75	
Maximum reverse leakage current	I _{RM} ⁽¹⁾	T _J = 25 °C	V _R = Rated V _R	0.012	1.0	mA
		T _J = 100 °C		2.0	10	
Typical junction capacitance	C _T	V _R = 5 V _{DC} (test signal range 100 kHz to 1 MHz), 25 °C		110	-	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	$T_J^{(1)}, T_{Stg}$		- 65 to 150	$^{\circ}\text{C}$
Maximum thermal resistance, junction to lead	R_{thJL}	DC operation Lead length = 1/8"	32	$^{\circ}\text{C/W}$
Maximum thermal resistance, junction to ambient	R_{thJA}	DC operation Without cooling fin	100	
Approximate weight			0.33	g
			0.012	oz.
Marking device		Case style DO-204AL (DO-41)	1N5817	

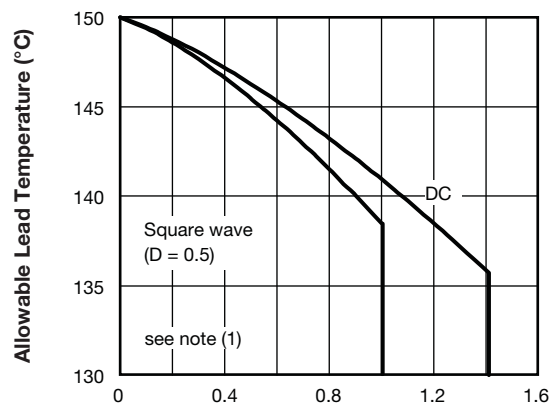
Note(1) $\frac{dP_{tot}}{dT_J} < \frac{1}{R_{thJA}}$ thermal runaway condition for a diode on its own heatsink



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V_{FM} - Forward Voltage Drop (V)

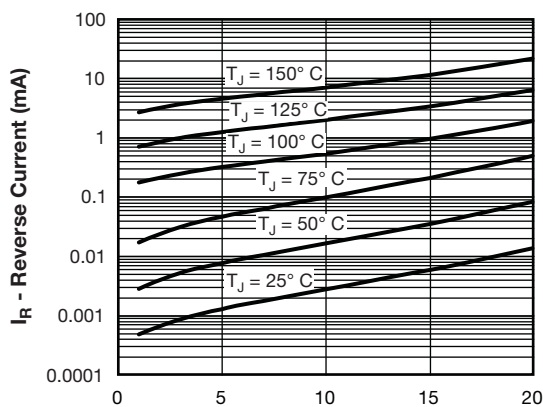
Fig. 1 - Maximum Forward Voltage Drop Characteristics



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

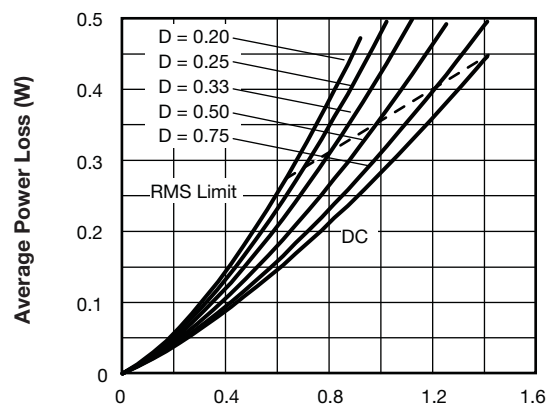
Fig. 4 - Maximum Average Forward Current vs. Allowable Lead Temperature



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V_R - Reverse Voltage (V)

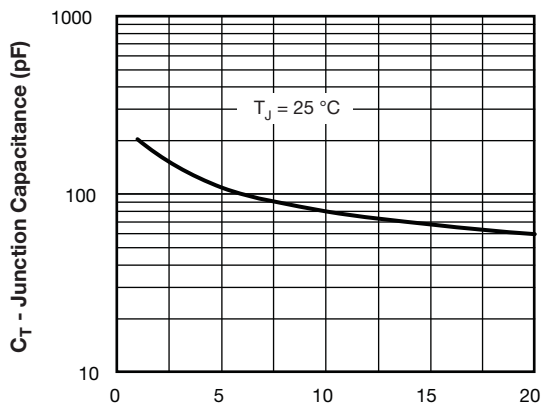
Fig. 2 - Typical Peak Reverse Current vs. Reverse Voltage



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

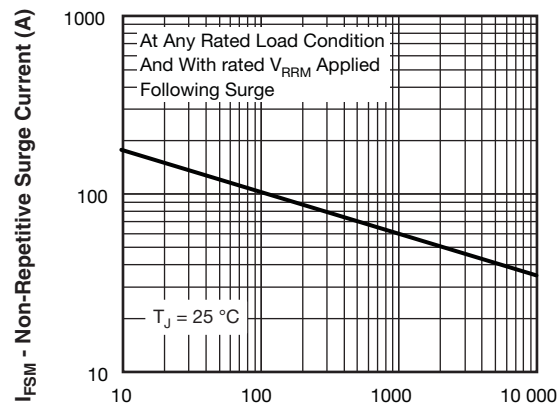
Fig. 5 - Maximum Average Forward Dissipation vs. Average Forward Current



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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 (μ s)

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

Note

(2) 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 = $V_{R1} \times I_R (1 - D)$

**ORDERING INFORMATION TABLE**

Device code	VS-	1N5817	TR	-M3
	1	2	3	4

- 1** - Vishay Semiconductors product
- 2** - Part number: 1 A, 20 V
- 3** - TR = Tape and reel package
None = Box package
- 4** - Environmental digit
- None = Lead (Pb)-free and RoHS compliant
 - -M3 = Halogen-free, RoHS compliant, and terminations lead (Pb)-free

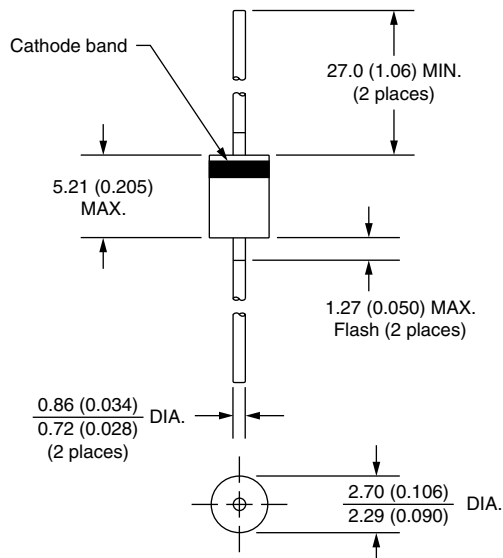
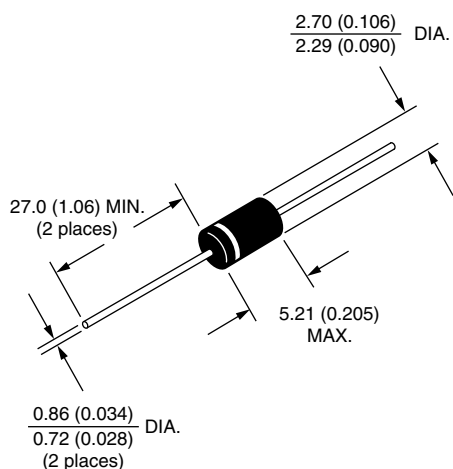
ORDERING INFORMATION (Example)			
PREFERRED P/N	QUANTITY PER T/R	MINIMUM ORDER QUANTITY	PACKAGING DESCRIPTION
VS-1N5817	1000	1000	Bulk
VS-1N5817TR	5000	5000	Tape and reel
VS-1N5817-M3	1000	1000	Bulk
VS-1N5817TR-M3	5000	5000	Tape and reel

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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