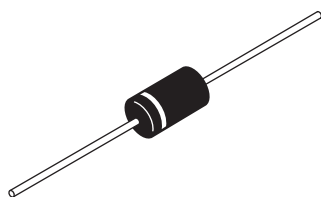


## Schottky Rectifier, 1.0 A



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 $\mu s$ sine or 3 $\mu s$ 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	$T_J = 25\text{ }^{\circ}\text{C}$	0.42	0.45	V
		3 A		0.50	0.75	
Maximum reverse leakage current	$I_{RM}^{(1)}$	$T_J = 25\text{ }^{\circ}\text{C}$	$V_R = \text{Rated } V_R$	0.012	1.0	mA
		$T_J = 100\text{ }^{\circ}\text{C}$		2.0	10	
Typical junction capacitance	$C_T$	$V_R = 5\text{ }V_{DC}$ (test signal range 100 kHz to 1 MHz), $25\text{ }^{\circ}\text{C}$		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/ $\mu\text{s}$

**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	$T_J^{(1)}, T_{Stg}$		- 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

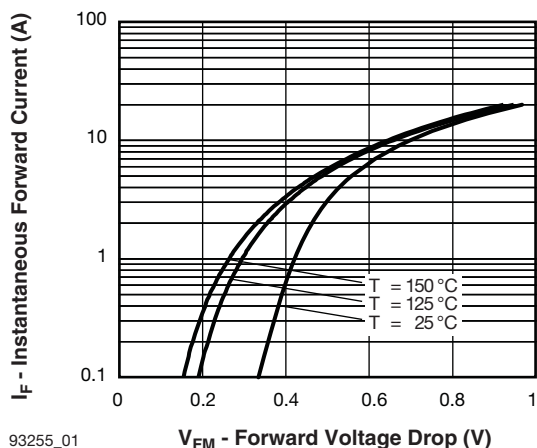


Fig. 1 - Maximum Forward Voltage Drop Characteristics

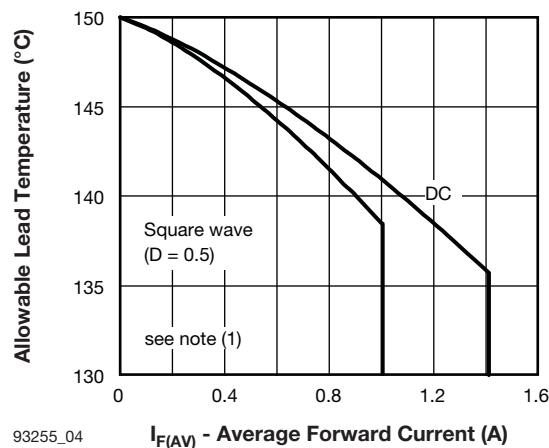


Fig. 4 - Maximum Average Forward Current vs. Allowable Lead Temperature

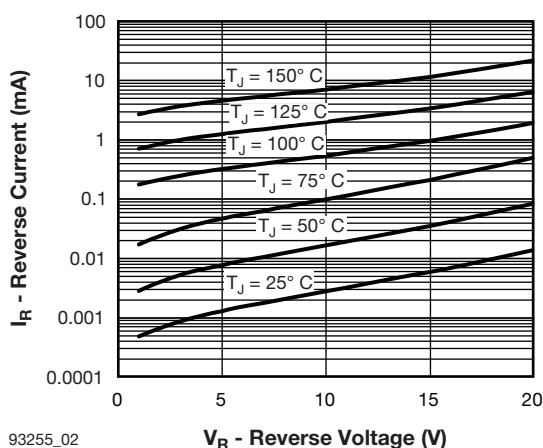


Fig. 2 - Typical Peak Reverse Current vs. Reverse Voltage

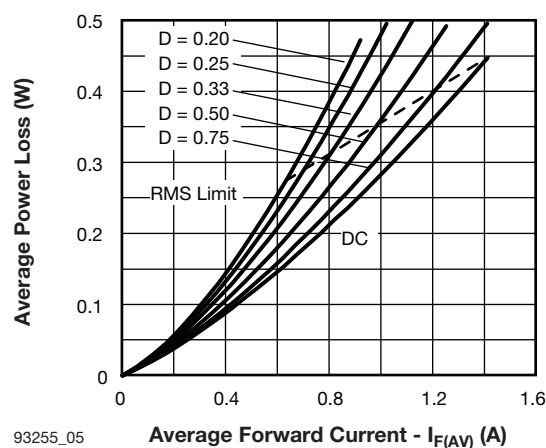


Fig. 5 - Maximum Average Forward Dissipation vs. Average Forward Current

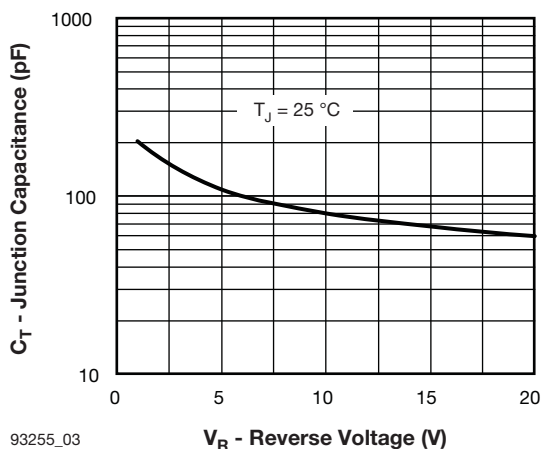


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

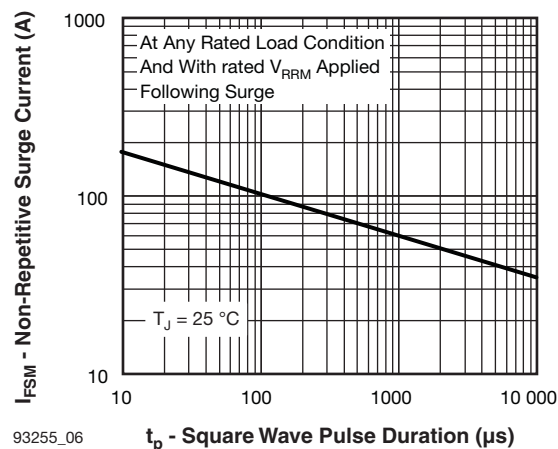


Fig. 6 - Maximum Peak Surge Forward Current vs. Pulse Duration

#### Note

- (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	<b>VS-</b>	<b>1N5817</b>	<b>TR</b>	<b>-M3</b>
	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

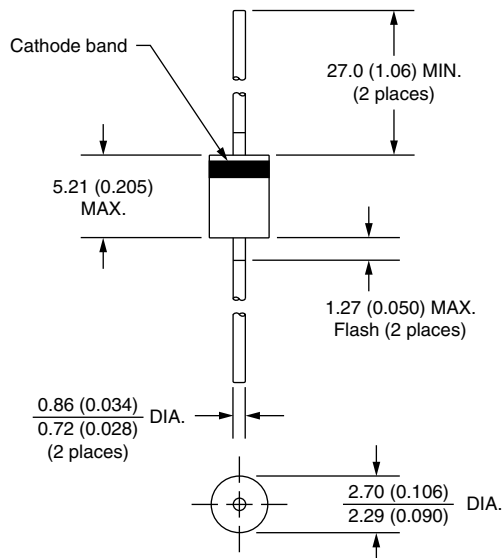
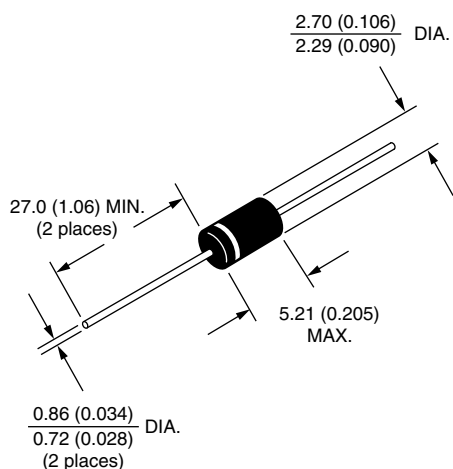
<b>ORDERING INFORMATION</b> (Example)			
PREFERRED P/N	QUANTITY PER T/R	MINIMUM ORDER QUANTITY	PACKAGING DESCRIPTION
VS-1N5817	1000	1000	Bulk
VS-1N5817TR	5000	5000	Tape and reel
VS-1N5817-M3	1000	1000	Bulk
VS-1N5817TR-M3	5000	5000	Tape and reel

<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)





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**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**