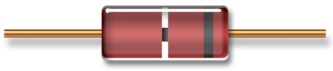
1N5817-1, 1N5817UR-1

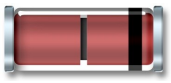
Silicon Schottky Barrier Diode

Rev. V1

Features

- Low Forward Voltage: 450 mV @ I_F = 1.0 A
- Available in JAN, JANTX, JANTXV and JANS per MIL-PRF-19500/586
- Reverse Breakdown Voltage: 20 V
- Hermetically Sealed Glass, DO-41 (DO-204AL) and MELF (DO-213AB)





Description

The 1N5817 silicon Schottky diode offers a large reverse breakdown voltage with low forward voltage. The die, which is passivated with an advanced high-reliability passivation for very fast settling time and low leakage current, is packaged in the industry standard DO-41 hermetically sealed axial leaded glass package as well as the surface mount DO-213AB.

This rugged device is capable of reliable operation in all space, military, commercial and industrial applications.

The 1N5817 is designed to be used in wide variety of applications, such as low voltage, high frequency inverters and reverse polarity protection.

Electrical Specifications: T_A = +25°C (unless otherwise specified)

Parameter	Test Conditions	Symbol	Units	Min.	Max.
Reverse Leakage Current	V_{RM} = 20 V (pk)	I_{R1}	µA	—	70
Reverse Leakage Current	T_A = +100°C V_{RM} = 20 V (pk) V_{RM} = 12 V (pk) V_{RM} = 6 V (pk)	I_{R2} I_{R3} I_{R4}	mA	—	5.0 3.0 2.0
Reverse Leakage Current	T_A = -55°C V_{RM} = 20 V (pk)	I_R	µA	—	100
Forward Voltage	I_F = 0.1 A (pk) I_F = 1.0 A (pk) I_{FM} = 3.1 A (pk)	V_{F1} V_{F2} V_{F3}	V dc	—	.32 .45 .65
Forward Voltage	T_A = +100°C I_F = 1.0 A (pk)	V_{F4}	V dc	—	.40
Forward Voltage	T_A = -55°C I_F = 1.0 A (pk)	V_{F5}	V dc	—	.60
Total Capacitance	V_R = 5 V dc, .01 ≤f≤ 1 MHz, V_{SIG} = 15 mV p-p	C_T	pF	—	110

Absolute Maximum Ratings (T_A = +25°C unless otherwise specified)

Parameter	Symbol	Absolute Maximum
Working Voltage (1)	V_{RWM}	20 V (pk)
Average Rectified Output Current (2) (T_A = +55°C)	I_O	1.0 A dc
Forward Surge Current	I_{FSM}	25 A dc
Junction Temperature (5)	T_J	-65°C to +125°C
Storage Temperature	T_{STG}	-65°C to +150°C

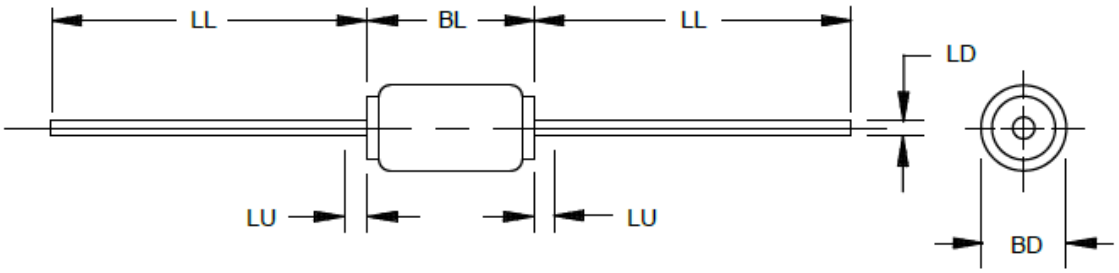
Thermal Characteristics (T_A = +25°C unless otherwise specified)

Parameter	Symbol	Absolute Maximum
Junction to Lead (3) (1N5817-1) L = .375 inch (9.53 mm)	$R_{\theta JL}$	70° C/W
Junction to End Cap (3) (1N5817UR-1)	$R_{\theta JEC}$	40° C/W
Junction to Ambient (4) (Both Types)	$R_{\theta JA}$	220° C/W

(1) See figures 4, 5, 6, 7, 8 and 9 of MIL-PRF-19500/586 for derating curves and for effects of V_R on T_J.
(2) For both axial leaded and MELF (UR) mounted to a printed circuit board (PCB). See 6.7 of MIL-PRF-19500/586 for PCB application details and notes.
(3) For thermal impedance see figures 10 and 11 of MIL-PRF-19500/586.
(4) $R_{\theta JA}$ is measured at I_O = 1 A.
(5) The maximum T_J depends on the voltage applied.

Exceeding any one or combination of these limits may cause permanent damage to this device.
VPT Components does not recommend sustained operation near these survivability limits.

Outline (DO-41)

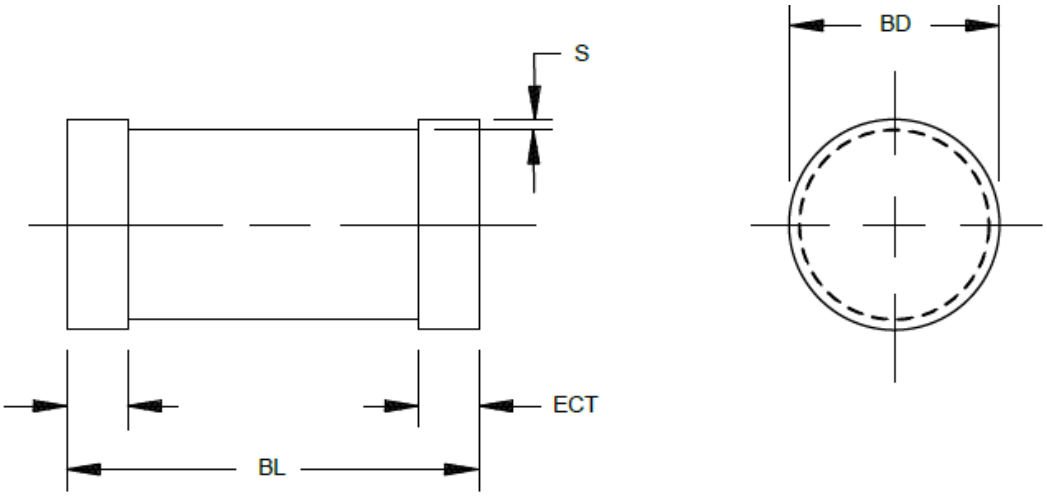


Symbol	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
BD	.080	.107	2.03	2.72	3
BL	.160	.205	4.06	5.21	3
LD	.028	.034	0.71	0.86	
LL	1.000		25.40		
LU		.050		1.27	4

NOTES:
1. Dimensions are in inches. Millimeters are given for general information only.
2. Dimensions are pre-solder dip.
3. Package contour optional within cylinder of diameter BD and length BL. Slugs, if any, shall not be included within this cylinder, but shall not be subject to the minimum limit of diameter BD.
4. Lead diameter not controlled in this zone to allow for flash, lead finish build-up, and minor irregularities other than slugs.
5. In accordance with ASME Y14.5M, diameters are equivalent to ϕx symbology.

FIGURE 1. Physical dimensions for axial lead devices (DO-204AL, formerly DO-41).

Outline (DO-213AB)



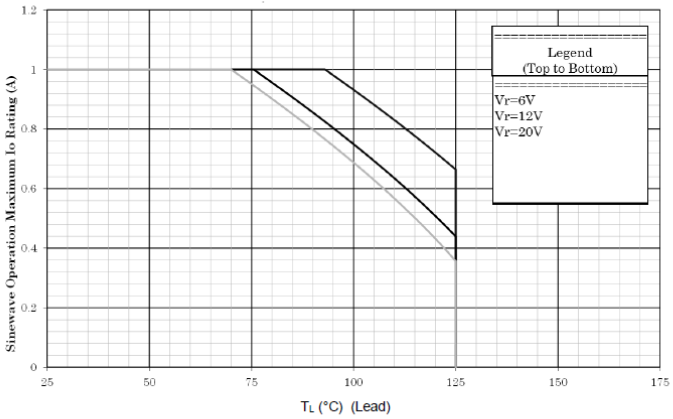
Symbol	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
BD	.094	.105	2.39	2.67
BL	.189	.205	4.80	5.21
ECT	.016	.022	0.41	0.56
S	.001		0.03	

NOTES:
1. Dimensions are in inches. Millimeters are given for general information only.
2. Dimensions are pre-solder dip.
3. In accordance with ASME Y14.5M, diameters are equivalent to ϕx symbology.

FIGURE 2. Physical dimensions for MELF devices (DO-213AB).

Graphs

Temperature - current derating curve family curves for 1N5817-1 at T_C = 25°C

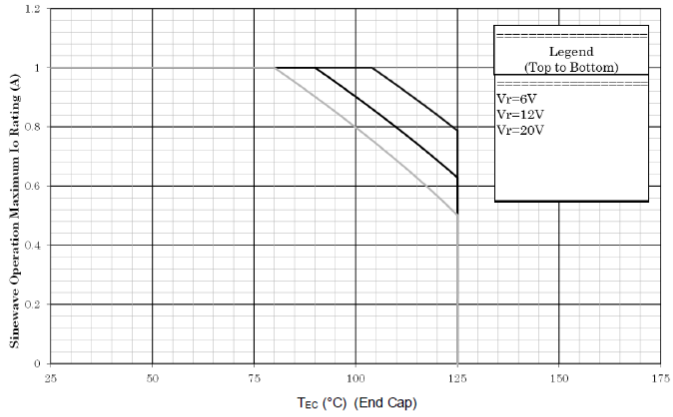


Sinewave operation 50 percent duty cycle
$R_{\theta JL}$ = 70°C/W

NOTES:
1. This is the true inverse of the worst case thermal resistance value. All devices are capable of operating at ≤ T_J specified on this curve. Any parallel line to this curve will intersect the appropriate current for the desired maximum T_J allowed.
2. This temperature-current derating curve varies with applied voltage.
3. Applies to 1N5817-1 up to 20V max.

FIGURE 4. Derating for 1N5817-1 (DO-204AL).

Temperature - current derating curve family curves for 1N5817UR-1 at T_C = 25°C



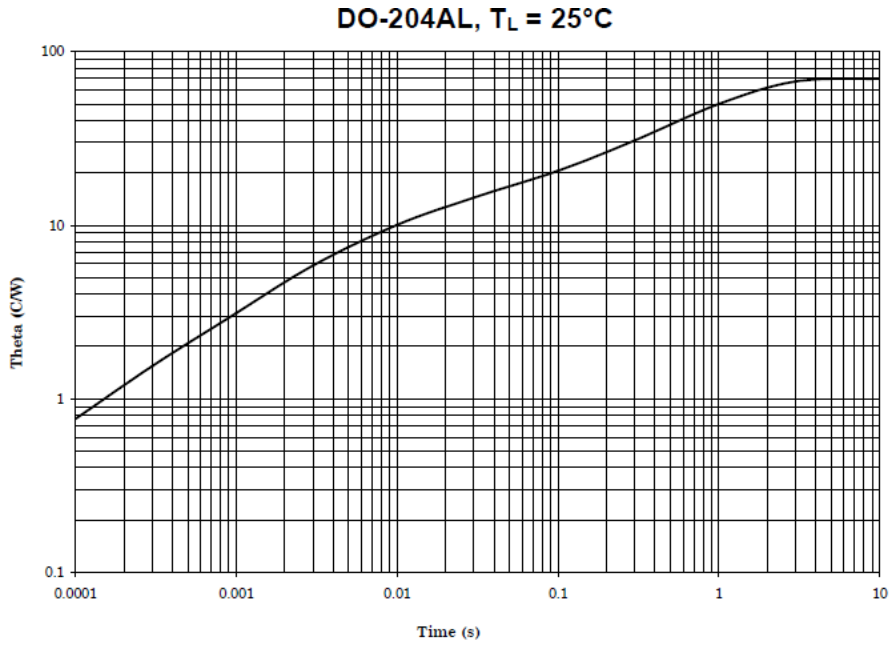
Sinewave operation 50 percent duty cycle
$R_{\theta JL}$ = 40°C/W

The curve for V_R = 6V coincides with the curve for V_R = 12V.

NOTES:
1. This is the true inverse of the worst case thermal resistance value. All devices are capable of operating at ≤ T_J specified on this curve. Any parallel line to this curve will intersect the appropriate current for the desired maximum T_J allowed.
2. This temperature-current derating curve varies with applied voltage.
3. Applies to 1N5817UR-1 only up to 20V max.

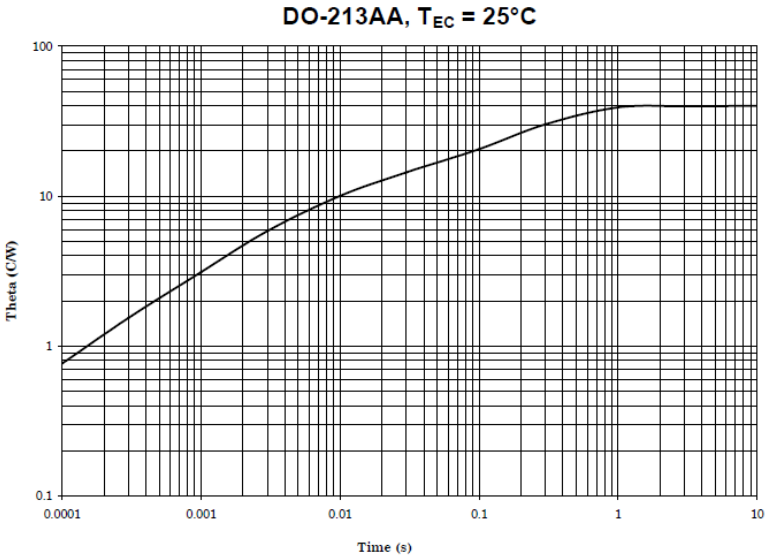
FIGURE 5. Derating for 1N5817UR-1 (DO-213AB).

Thermal Impedance 1N5817-1



L = .375 inch (9.53 mm).
$R_{\theta JL}$ = 70°C/W.
$Z_{\theta JX}$ = 10°C/W maximum at t_H = 10ms.

Thermal Impedance 1N5817UR-1



L = 0.
$R_{\theta JEC}$ = 40°C/W.
$Z_{\theta JX}$ = 10°C/W maximum at t_H = 10ms.