1N66xx Series

Switching Diodes

Rev. V7

Features

- JAN, JANTX, JANTXV and JANS available per MIL-PRF-19500/578 &/609
- Non-Cavity Glass Package
- Category I Metallurgically Bonded
- Replacement for 1N4148-1, 1N4150-1, 1N914
- Very Low Capacitance
- Ultra Fast Recovery Time

MELF (US)

Axial

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

Part #	V_{BR} @ I_R		V_{RWM}	V_{FR} / t_{FR}		C_T1	C_T2	trr
				@ I_F = 200 mA		V_R = 0.0 V	V_R = 1.5 V	I_R= 10 mA, I_F = 10 mA
	V(pk)	µA	V(pk)	V(pk)	ns	pF	pF	ns
1N6638, U & US	150	100	125	5	20	2.5	2.0	4.5
1N6639, U & US	100	10	75	5	10	2.5	—	4
1N6640, U & US	75	10	50	5	10	2.5	—	4
1N6641, U & US	75	10	50	5	10	3.0	—	5
1N6642, U & US	100	100	75	5	20	5.0	2.8	5
1N6643, U & US	75	100	50	5	20	5.0	2.8	6

Part #	I_R				V_F @ I_F				I_F
	V_R = 20 V	V_R = V_{RWM}	V_R = 20 V T_A = +150°C	V_R = V_{RWM}, T_A = +150°C			T_A = +150°C	T_A = -55°C	
	nA	nA	µA	µA	V	V	V	V	mA
					Min.	Max.	Max.	Max.	(pulsed)
1N6638, U & US	35	500	50	100	—	1.1 0.8	— 0.65	1.2 —	200 10
1N6639, U & US	—	100	—	90	—	1.2	—	1.3	500
1N6640, U & US	—	100	—	90	0.54 0.76 0.82 0.87	0.62 0.86 0.92 1.0	— — — —	— — — 1.1	1 50 100 200
1N6641, U & US	—	100	—	90	0.87	1.1	—	1.2	200
1N6642, U & US	25	500	50	100	—	0.8 1.2	0.8 —	— 1.2	10 100
1N6643, U & US	50	500	75	100	—	0.8 1.2	0.8 —	— 1.4	10 100

Absolute Maximum Ratings[1,2]

Parameter	Absolute Maximum
Operating Temperature	-65°C to +175°C

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

Handling Procedures

Please observe the following precautions to avoid damage:

Static Sensitivity

These electronic devices are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.

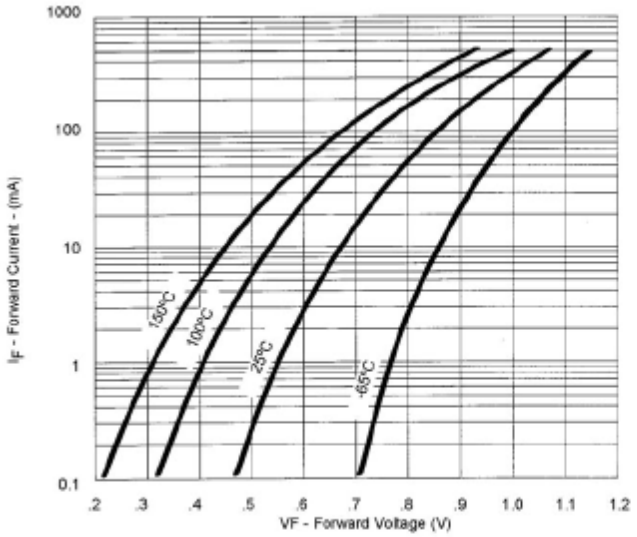


FIGURE 3
Typical Forward Current vs Forward Voltage

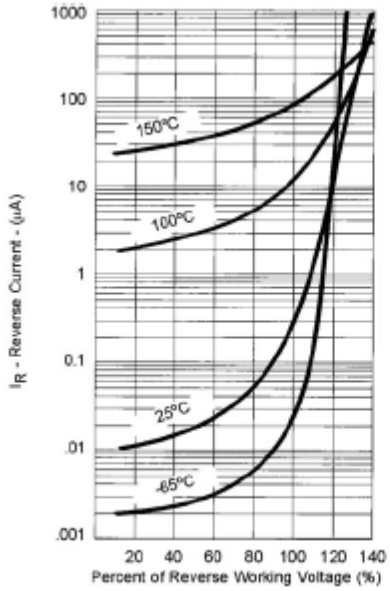
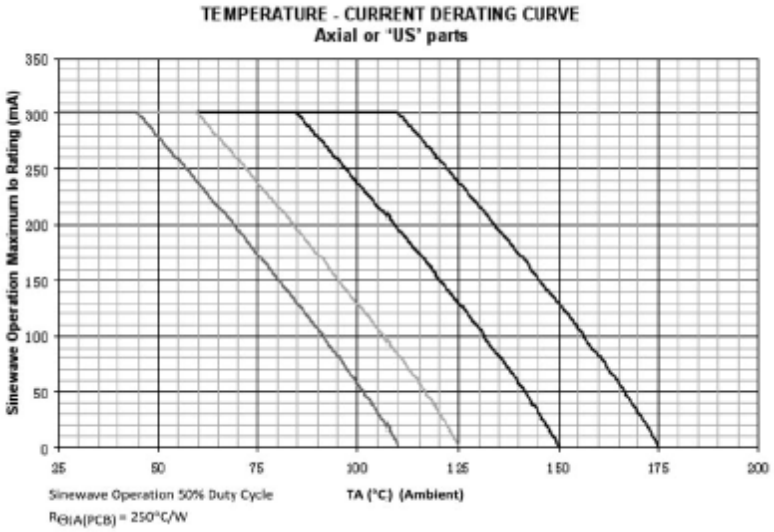


FIGURE 4
Typical Reverse Current vs Reverse Voltage

Note:
All temperatures shown on graphs are junction temperatures



NOTES:

1. All devices are capable of operating at ≤ TJ specified on this curve. Any parallel line to this curve will intersect the appropriate current for the desired maximum TJ allowed.
2. Derate design curve constrained by the maximum junction temperatures and current rating specified. (See 1.3.)
3. Derate design curve chosen at TJ ≤ 150°C, where the maximum temperature of electrical test is performed.
4. Derate design curves chosen at TJ ≤ 125°C, and 110°C to show current rating where most users want to limit TJ intheir application.

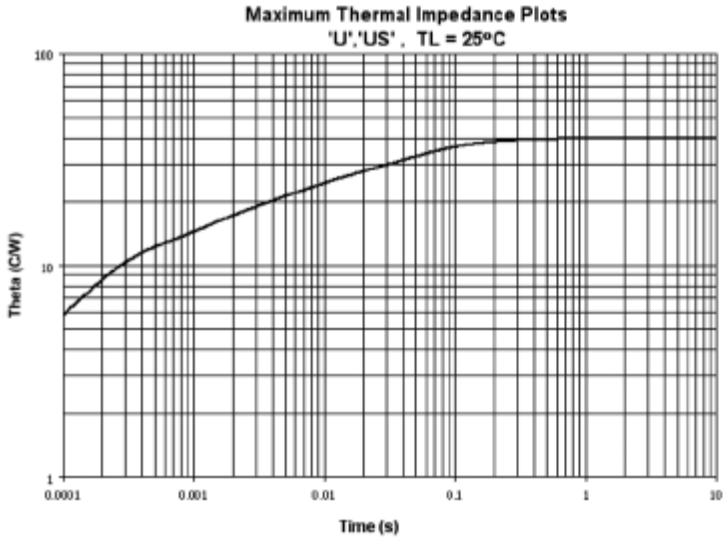


FIGURE 6. Thermal impedance – all U and US devices.

$R_{\Theta JL}$ = 40°C/W

$Z_{\Theta JX}$ = 25°C/W maximum at t_H = 10ms

Lead spacing = .375 inch mounted to an infinite heat dissipater

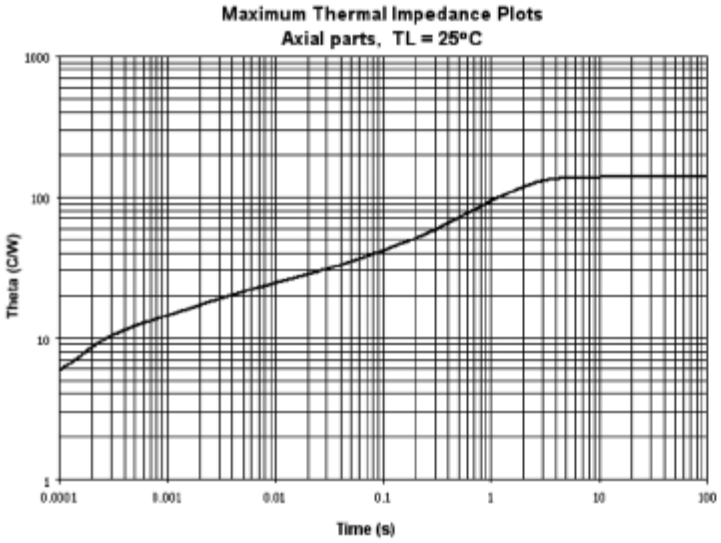


FIGURE 7. Thermal impedance (axial leads).

$R_{\Theta JL}$ = 150°C/W

$Z_{\Theta JX}$ = 25°C/W maximum at t_H = 10ms

Lead spacing = 0 inch mounted to an infinite heat dissipater

Outline Drawing

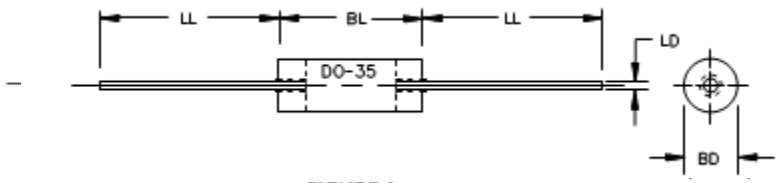


FIGURE 1

Symbol	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
BD	.056	.080	1.42	2.03	2
BL	.130	.180	3.30	4.57	
LD	.018	.022	.046	0.56	3
LL	1.00	1.50	25.40	38.10	

LEADED DESIGN DATA

CASE: D-5D, Hermetically sealed glass case, per MIL-PRF-19500/578 & /609

LEAD FINISH: Tin/Lead

LEAD MATERIAL: Copper clad steel

POLARITY: Cathode end is banded.

PACKAGE WEIGHT: 0.150g

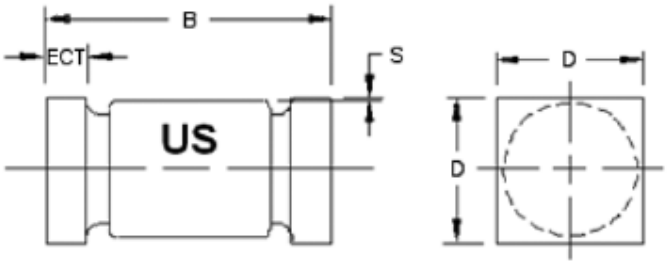


FIGURE 2

Symbol	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
D	.070	.085	1.78	2.16
B	.165	.195	4.19	4.95
ECT	.019	.028	.048	0.71
S	.003		0.08	

U & US DESIGN DATA

CASE: D-5D, Hermetically sealed glass case, per MIL-PRF-19500/578 & /609

LEAD FINISH: Tin/Lead

END CAP MATERIAL (U, US): Copper

POLARITY: Cathode end is banded.

PACKAGE WEIGHT: 0.095g

MOUNTING SURFACE SELECTION: The Axial Coefficient of Expansion (COE) of this device is approximately +4PPM/°C. The COE of the Mounting Surface System should be selected to provide a suitable match with this device.

NOTES:

1. Dimensions are in inches. Millimeters are given for general information only.
2. Dimension BD shall be measured at the largest diameter.
3. The specified lead diameter applies in the zone between .050 inch (1.27 mm) from the diode body to the end of the lead. Outside of this zone lead shall not exceed BD.
4. In accordance with ASME Y14.5M, diameters are equivalent to Φx symbology.
5. U-suffix parts are structurally identical to the US-suffix parts.

Suggested Minimum Footprints
D-5D (D-BODY) U, US DIODES

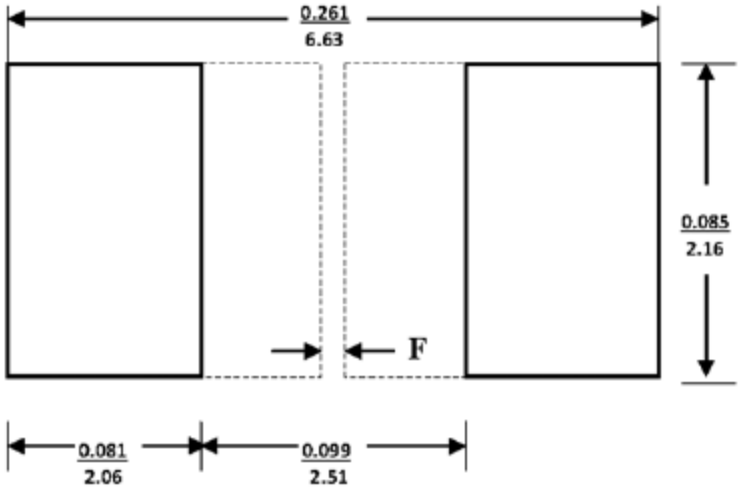


FIGURE 8

NOTES:

1. Dimensions are in inches / mm.
2. The dimensions listed will match the device terminals based on worst-case package outline drawings and assuming accuracy of device placements is within 0.005 inches. Footprints also provide for solder filets at the outer ends of the device at least as wide as the terminals.
3. F designates recommendation to fill unused area with an extended copper pad in order to reduce the CTE difference between the device and the PC board. The extended area may be3 coated with a solder mask. the width of F depends upon your PCB design rules.