## MECHANICAL and PACKAGING

- CASE: Voidless hermetically sealed hard glass.
- TERMINALS: Tin-Lead plate with >3% Lead. Solder dip is available upon request.
- MARKING: Body painted and alpha numeric.
- POLARITY: Cathode indicated by band.
- Tape & Reel option: Standard per EIA-481-1-A with 12 mm tape. Consult factory for quantities.
- See Package Dimensions on last page.

## PART NOMENCLATURE

**JAN 1N6638 US (e3)**

**Reliability Level**
JAN = JAN Level
JANTX = JANTX Level
JANTXV = JANTXV Level
JANS = JANS Level
Blank = commercial

**JEDEC type number**
See Electrical Characteristics table

**RoHS Compliance**
e3 = RoHS compliant (available on commercial grade only)
Blank = non-RoHS compliant

**Surface Mount Package**

## SYMBOLS & DEFINITIONS

| Symbol | Definition |
|---|---|
| $V_{BR}$ | Minimum Breakdown Voltage: The minimum voltage the device will exhibit at a specified current. |
| $V_{RWM}$ | Working Peak Reverse Voltage: The maximum peak voltage that can be applied over the operating temperature range. |
| $V_F$ | Maximum Forward Voltage: The maximum forward voltage the device will exhibit at a specified current. |
| $I_R$ | Maximum Reverse Current: The maximum reverse (leakage) current that will flow at the specified voltage and temperature. |
| C | Capacitance: The capacitance in pF at a frequency of 1 MHz and specified voltage. |
| $t_{rr}$ | Reverse Recovery Time: The time interval between the instant the current passes through zero when changing from the forward direction to the reverse direction and a specified recovery decay point after a peak reverse current is reached. |

## ELECTRICAL CHARACTERISTICS @ 25°C unless otherwise noted.

| TYPE NUMBER | MAXIMUM FORWARD VOLTAGE $V_F$ @ $I_F$ | | MAXIMUM DC REVERSE CURRENT | | | | REVERSE RECOVERY TIME $t_{rr}$ (Note 1) | MAXIMUM FORWARD RECOVERY VOLTAGE AND TIME $I_F$=200mA, $t_r$=1ns | | MAXIMUM JUNCTION CAPACITANCE f = 1 MHz Vsig = 50 mV (p-p) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | $I_{R1}$ | $I_{R2}$ | $I_{R3}$ | $I_{R4}$ | | | | | |
| | | | $V_R$= 20 V | $V_R$=$V_{RWM}$ | $V_R$=20 V $T_A$= +150 °C | $V_R$=$V_{RWM}$ $T_A$= +150 °C | | $V_{FRM}$ | $t_{fr}$ | $V_R$=0 V | $V_R$=1.5 V |
| | V @ mA | V @ mA | nA | nA | µA | µA | ns | V | ns | pf | pf |
| 1N6638US | 0.8 V @ 10 mA | 1.1 V @ 200 mA | 35 | 500 | 50 | 100 | 4.5 | 5.0 | 20 | 2.5 | 2.0 |
| 1N6642US | 0.8 V @ 10 mA | 1.2 V @ 100 mA | 25 | 500 | 50 | 100 | 5.0 | 5.0 | 20 | 5.0 | 2.8 |
| 1N6643US | 0.8 V @ 10 mA | 1.2 V @ 100 mA | 50 | 500 | 75 | 100 | 6.0 | 5.0 | 20 | 5.0 | 2.8 |

**NOTE:** 1. Reverse Recovery Time Test Conditions – $I_F$=$I_R$=10 mA, $I_{R(REC)}$ = 1.0 mA, C=3 pF, $R_L$ = 100 ohms.

## GRAPHS

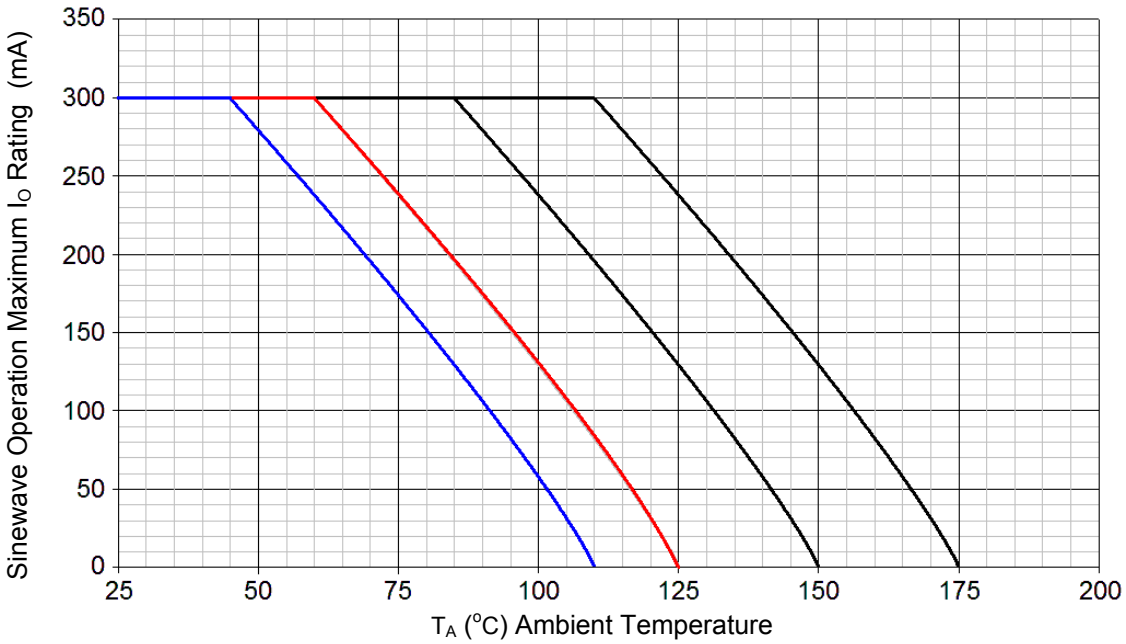



**FIGURE 1**
Temperature – Current Derating

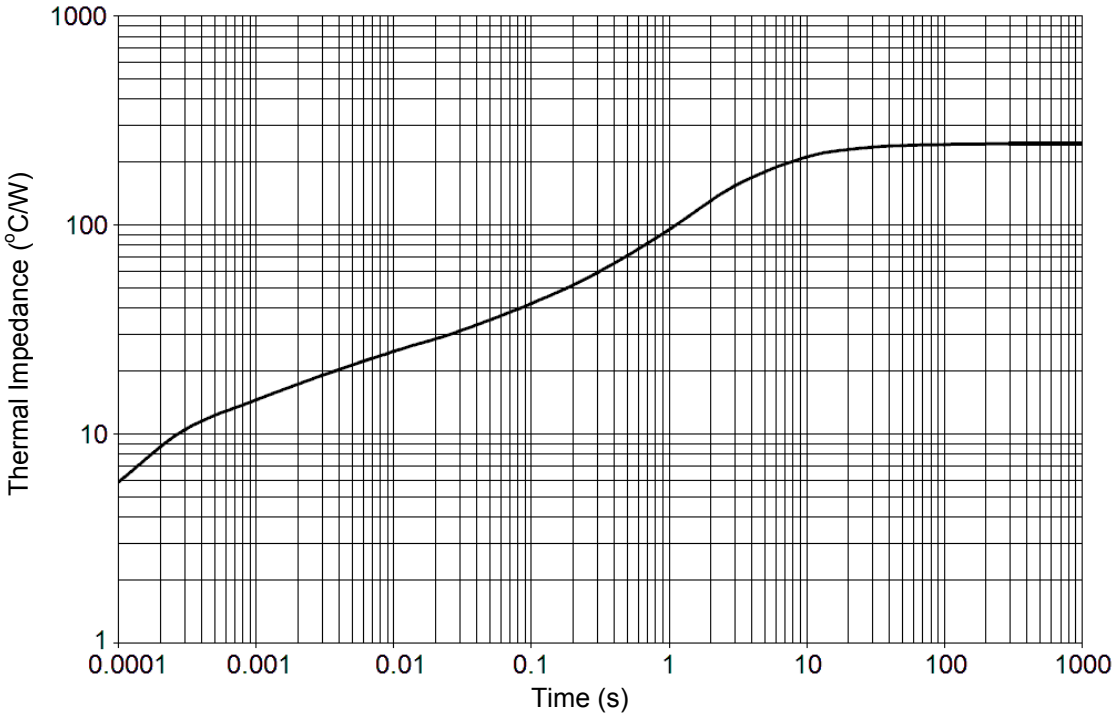



**FIGURE 2**
Maximum Thermal Impedance at $T_A$ = 55 °C

## GRAPHS (continued)

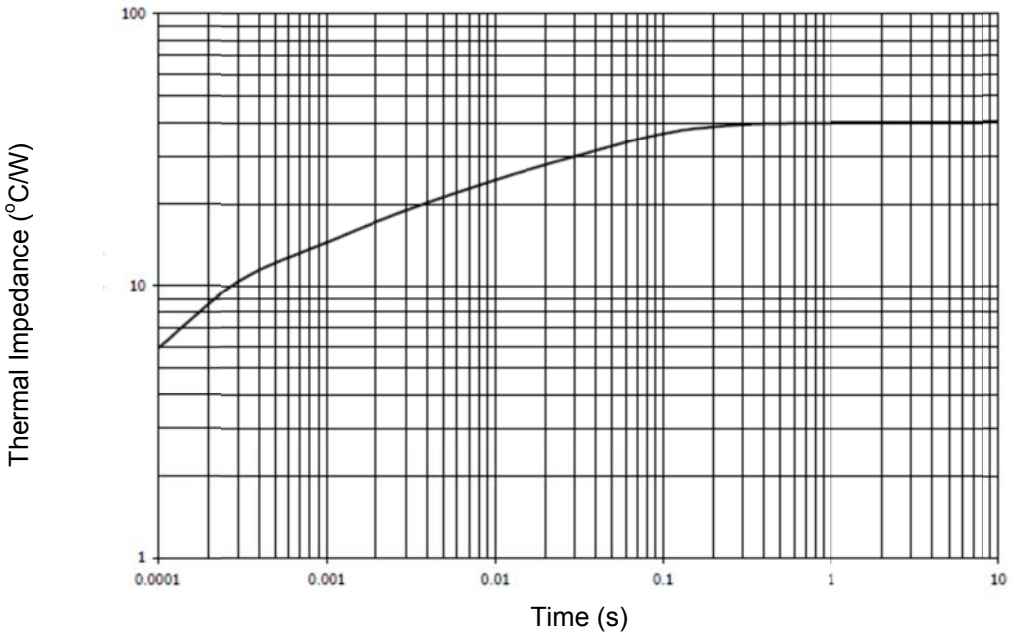
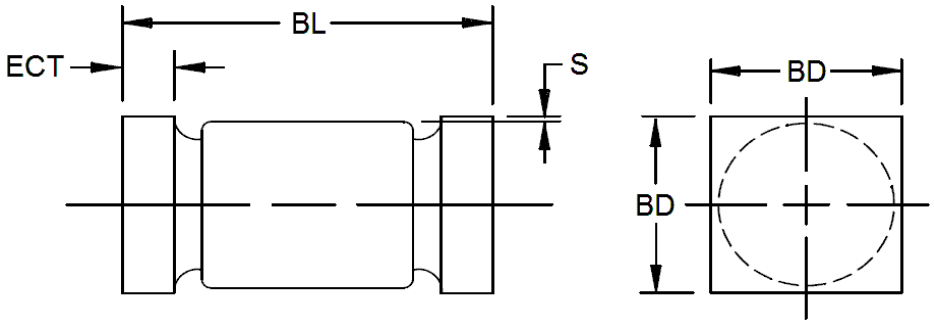



**FIGURE 3**
Maximum Thermal Impedance at $T_{EC}$ = 25 °C

## PACKAGE DIMENSIONS

**D-5D**




| DIM | INCH | | MILLIMETERS | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| BD | 0.070 | 0.085 | 1.78 | 2.16 |
| ECT | 0.019 | 0.028 | 0.48 | 0.71 |
| BL | 0.165 | 0.195 | 4.19 | 4.95 |
| S | 0.003 MIN. | | 0.08 MIN. | |

**NOTES:**

1. Dimensions are in inches. Millimeters are given for general information only.
2. Dimensions are pre-solder dip.
3. U-suffix parts are structurally identical to the US-suffix parts.
4. In accordance with ASME Y14.5M, diameters are equivalent to Φx symbology.