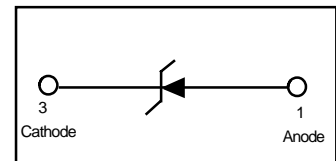
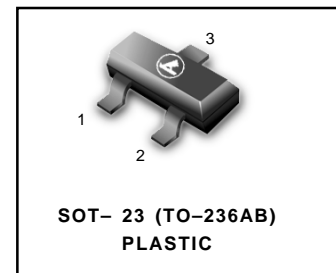


Zener Voltage Regulator Diodes

- We declare that the material of product compliance with RoHS requirements.

LBZX84XXXLT1G SERIES



MAXIMUM CASE TEMPERATURE FOR SOLDERING

PURPOSES: 260°C for 10 seconds

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|--|----------------|-----|--------------------|
| Total Device Dissipation FR-5 Board* $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 225 | mW |
| Thermal Resistance Junction to Ambient | R_{QJA} | 556 | $^\circ\text{C/W}$ |
| Total Device Dissipation Alumina Substrate,** $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 300 | mW |
| Thermal Resistance Junction to Ambient | R_{QJA} | 417 | $^\circ\text{C/W}$ |
| Junction and Storage Temperature | T_J, T_{stg} | 150 | $^\circ\text{C}$ |

**FR-5 = 1.0 x 0.75 x 0.62 in.

**Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.

Ordering Information

| Device | Package | Shipping |
|---------------|---------|-----------------|
| LBZX84XXXLT1G | SOT-23 | 3000/Tape&Reel |
| LBZX84XXXLT3G | SOT-23 | 10000/Tape&Reel |

GENERAL DATA — 225mW SOT-23

ELECTRICAL CHARACTERISTICS – BZX84CxxxLT1 SERIES (STANDARD TOLERANCE)

(Pinout: 1-Anode, 2-No Connection, 3-Cathode) ($T_A = 25^\circ\text{C}$ unless otherwise noted, $V_F = 0.90\text{ V Max.}$ @ $I_F = 10\text{ mA}$)
 (Devices listed in **bold, italic** are ON Semiconductor Preferred devices.)

| Device* | Device Marking | V _{Z1} (Volts) @ I _{ZT1} = 5 mA (Note 3) | | | Z _{ZT1} (Ω) @ I _{ZT1} = 5 mA | V _{Z2} (V) @ I _{ZT2} = 1 mA (Note 3) | | Z _{ZT2} (Ω) @ I _{ZT2} = 10 mA | V _{Z3} (V) @ I _{ZT3} = 20 mA (Note 3) | | Z _{ZT3} (Ω) @ I _{ZT3} = 20 mA | Max Reverse Leakage Current | | θ _{VZ} (mV/k) @ I _{ZT1} = 5 mA | | C (pF) @ V _R = 0 f = 1 MHz |
|-----------------------|----------------|--|------------|-------------|--|--|-------------|--|---|-------------|---|-----------------------------|-------------------------|---|-------------|---|
| | | Min | Nom | Max | | Min | Max | | Min | Max | | I _R μA | V _R Volts | Min | Max | |
| LBZX84C2V4LT1G | Z11 | 2.2 | 2.4 | 2.6 | 100 | 1.7 | 2.1 | 600 | 2.6 | 3.2 | 50 | 50 | 1 | -3.5 | 0 | 450 |
| LBZX84C2V7LT1G | Z12 | 2.5 | 2.7 | 2.9 | 100 | 1.9 | 2.4 | 600 | 3 | 3.6 | 50 | 20 | 1 | -3.5 | 0 | 450 |
| LBZX84C3V0LT1G | Z13 | 2.8 | 3 | 3.2 | 95 | 2.1 | 2.7 | 600 | 3.3 | 3.9 | 50 | 10 | 1 | -3.5 | 0 | 450 |
| LBZX84C3V3LT1G | Z14 | 3.1 | 3.3 | 3.5 | 95 | 2.3 | 2.9 | 600 | 3.6 | 4.2 | 40 | 5 | 1 | -3.5 | 0 | 450 |
| LBZX84C3V6LT1G | Z15 | 3.4 | 3.6 | 3.8 | 90 | 2.7 | 3.3 | 600 | 3.9 | 4.5 | 40 | 5 | 1 | -3.5 | 0 | 450 |
| LBZX84C3V9LT1G | Z16 | 3.7 | 3.9 | 4.1 | 90 | 2.9 | 3.5 | 600 | 4.1 | 4.7 | 30 | 3 | 1 | -3.5 | -2.5 | 450 |
| LBZX84C4V3LT1G | W9 | 4 | 4.3 | 4.6 | 90 | 3.3 | 4 | 600 | 4.4 | 5.1 | 30 | 3 | 1 | -3.5 | 0 | 450 |
| LBZX84C4V7LT1G | Z1 | 4.4 | 4.7 | 5 | 80 | 3.7 | 4.7 | 500 | 4.5 | 5.4 | 15 | 3 | 2 | -3.5 | 0.2 | 260 |
| LBZX84C5V1LT1G | Z2 | 4.8 | 5.1 | 5.4 | 60 | 4.2 | 5.3 | 480 | 5 | 5.9 | 15 | 2 | 2 | -2.7 | 1.2 | 225 |
| LBZX84C5V6LT1G | Z3 | 5.2 | 5.6 | 6 | 40 | 4.8 | 6 | 400 | 5.2 | 6.3 | 10 | 1 | 2 | -2.0 | 2.5 | 200 |
| LBZX84C6V2LT1G | Z4 | 5.8 | 6.2 | 6.6 | 10 | 5.6 | 6.6 | 150 | 5.8 | 6.8 | 6 | 3 | 4 | 0.4 | 3.7 | 185 |
| LBZX84C6V8LT1G | Z5 | 6.4 | 6.8 | 7.2 | 15 | 6.3 | 7.2 | 80 | 6.4 | 7.4 | 6 | 2 | 4 | 1.2 | 4.5 | 155 |
| LBZX84C7V5LT1G | Z6 | 7 | 7.5 | 7.9 | 15 | 6.9 | 7.9 | 80 | 7 | 8 | 6 | 1 | 5 | 2.5 | 5.3 | 140 |
| LBZX84C8V2LT1G | Z7 | 7.7 | 8.2 | 8.7 | 15 | 7.6 | 8.7 | 80 | 7.7 | 8.8 | 6 | 0.7 | 5 | 3.2 | 6.2 | 135 |
| LBZX84C9V1LT1G | Z8 | 8.5 | 9.1 | 9.6 | 15 | 8.4 | 9.6 | 100 | 8.5 | 9.7 | 8 | 0.5 | 6 | 3.8 | 7.0 | 130 |
| LBZX84C10LT1G | Z9 | 9.4 | 10 | 10.6 | 20 | 9.3 | 10.6 | 150 | 9.4 | 10.7 | 10 | 0.2 | 7 | 4.5 | 8.0 | 130 |
| LBZX84C11LT1G | Y1 | 10.4 | 11 | 11.6 | 20 | 10.2 | 11.6 | 150 | 10.4 | 11.8 | 10 | 0.1 | 8 | 5.4 | 9.0 | 130 |
| LBZX84C12LT1G | Y2 | 11.4 | 12 | 12.7 | 25 | 11.2 | 12.7 | 150 | 11.4 | 12.9 | 10 | 0.1 | 8 | 6.0 | 10.0 | 130 |
| LBZX84C13LT1G | Y3 | 12.4 | 13 | 14.1 | 30 | 12.3 | 14 | 170 | 12.5 | 14.2 | 15 | 0.1 | 8 | 7.0 | 11.0 | 120 |
| LBZX84C15LT1G | Y4 | 13.8 | 15 | 15.6 | 30 | 13.7 | 15.5 | 200 | 13.9 | 15.7 | 20 | 0.05 | 10.5 | 9.2 | 13.0 | 110 |
| LBZX84C16LT1G | Y5 | 15.3 | 16 | 17.1 | 40 | 15.2 | 17 | 200 | 15.4 | 17.2 | 20 | 0.05 | 11.2 | 10.4 | 14.0 | 105 |
| LBZX84C18LT1G | Y6 | 16.8 | 18 | 19.1 | 45 | 16.7 | 19 | 225 | 16.9 | 19.2 | 20 | 0.05 | 12.6 | 12.4 | 16.0 | 100 |
| LBZX84C20LT1G | Y7 | 18.8 | 20 | 21.2 | 55 | 18.7 | 21.1 | 225 | 18.9 | 21.4 | 20 | 0.05 | 14 | 14.4 | 18.0 | 85 |
| LBZX84C22LT1G | Y8 | 20.8 | 22 | 23.3 | 55 | 20.7 | 23.2 | 250 | 20.9 | 23.4 | 25 | 0.05 | 15.4 | 16.4 | 20.0 | 85 |
| LBZX84C24LT1G | Y9 | 22.8 | 24 | 25.6 | 70 | 22.7 | 25.5 | 250 | 22.9 | 25.7 | 25 | 0.05 | 16.8 | 18.4 | 22.0 | 80 |
| Device | Device Marking | V _{Z1} Below @ I _{ZT1} = 2 mA | | | Z _{ZT1} Below @ I _{ZT1} = 2 mA | V _{Z2} Below @ I _{ZT2} = 0.1 mA | | Z _{ZT2} Below @ I _{ZT2} = 0.5 mA | V _{Z3} Below @ I _{ZT3} = 10 mA | | Z _{ZT3} Below @ I _{ZT3} = 10 mA | Max Reverse Leakage Current | | θ _{VZ} (mV/k) Below @ I _{ZT1} = 2 mA | | C (pF) @ V _R = 0 f = 1 MHz |
| | | Min | Nom | Max | | Min | Max | | Min | Max | | I _R μA | V _R (V) | Min | Max | |
| LBZX84C27LT1G | Y10 | 25.1 | 27 | 28.9 | 80 | 25 | 28.9 | 300 | 25.2 | 29.3 | 45 | 0.05 | 18.9 | 21.4 | 25.3 | 70 |
| LBZX84C30LT1G | Y11 | 28 | 30 | 32 | 80 | 27.8 | 32 | 300 | 28.1 | 32.4 | 50 | 0.05 | 21 | 24.4 | 29.4 | 70 |
| LBZX84C33LT1G | Y12 | 31 | 33 | 35 | 80 | 30.8 | 35 | 325 | 31.1 | 35.4 | 55 | 0.05 | 23.1 | 27.4 | 33.4 | 70 |
| LBZX84C36LT1G | Y13 | 34 | 36 | 38 | 90 | 33.8 | 38 | 350 | 34.1 | 38.4 | 60 | 0.05 | 25.2 | 30.4 | 37.4 | 70 |
| LBZX84C39LT1G | Y14 | 37 | 39 | 41 | 130 | 36.7 | 41 | 350 | 37.1 | 41.5 | 70 | 0.05 | 27.3 | 33.4 | 41.2 | 45 |
| LBZX84C43LT1G | Y15 | 40 | 43 | 46 | 150 | 39.7 | 46 | 375 | 40.1 | 46.5 | 80 | 0.05 | 30.1 | 37.6 | 46.6 | 40 |
| LBZX84C47LT1G | Y16 | 44 | 47 | 50 | 170 | 43.7 | 50 | 375 | 44.1 | 50.5 | 90 | 0.05 | 32.9 | 42.0 | 51.8 | 40 |
| LBZX84C51LT1G | Y17 | 48 | 51 | 54 | 180 | 47.6 | 54 | 400 | 48.1 | 54.6 | 100 | 0.05 | 35.7 | 46.6 | 57.2 | 40 |
| LBZX84C56LT1G | Y18 | 52 | 56 | 60 | 200 | 51.5 | 60 | 425 | 52.1 | 60.8 | 110 | 0.05 | 39.2 | 52.2 | 63.8 | 40 |
| LBZX84C62LT1G | Y19 | 58 | 62 | 66 | 215 | 57.4 | 66 | 450 | 58.2 | 67 | 120 | 0.05 | 43.4 | 58.8 | 71.6 | 35 |
| LBZX84C68LT1G | Y20 | 64 | 68 | 72 | 240 | 63.4 | 72 | 475 | 64.2 | 73.2 | 130 | 0.05 | 47.6 | 65.6 | 79.8 | 35 |
| LBZX84C75LT1G | Y21 | 70 | 75 | 79 | 255 | 69.4 | 79 | 500 | 70.3 | 80.2 | 140 | 0.05 | 52.5 | 73.4 | 88.6 | 35 |

Zener voltage is measured with a pulse test current I_Z at an ambient temperature of 25°C.

GENERAL DATA — 225mW SOT-23

TYPICAL CHARACTERISTICS

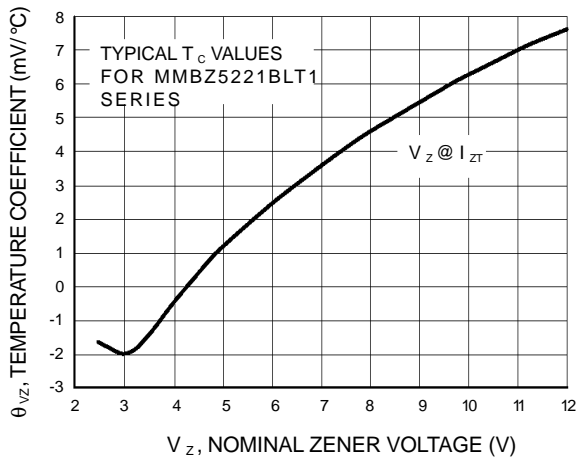


Figure 1. Temperature Coefficients
(Temperature Range -55°C to $+150^{\circ}\text{C}$)

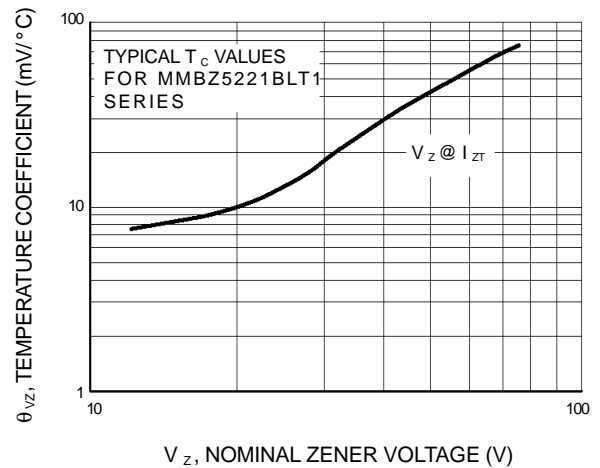


Figure 2. Temperature Coefficients
(Temperature Range -55°C to $+150^{\circ}\text{C}$)

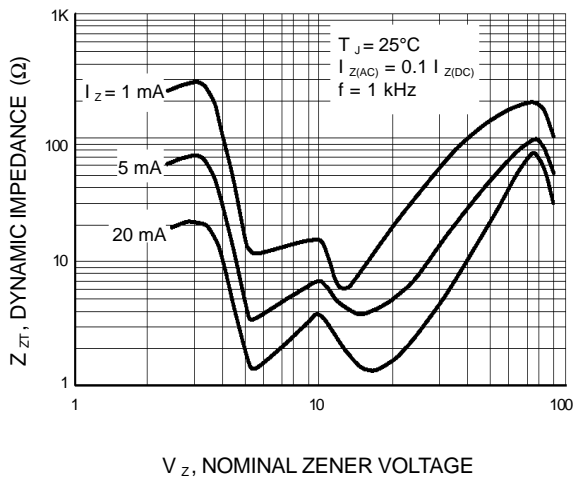


Figure 3. Effect of Zener Voltage on Zener Impedance

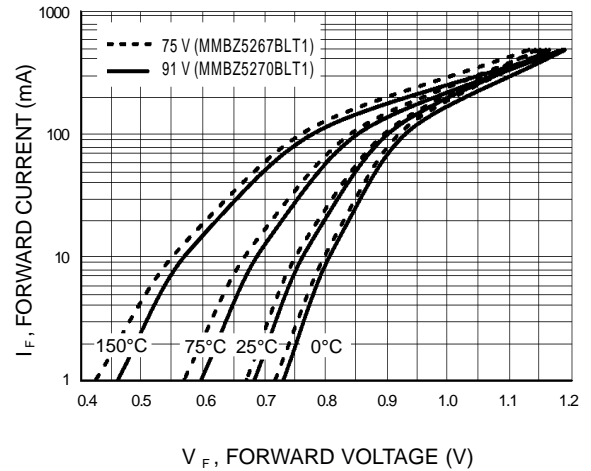
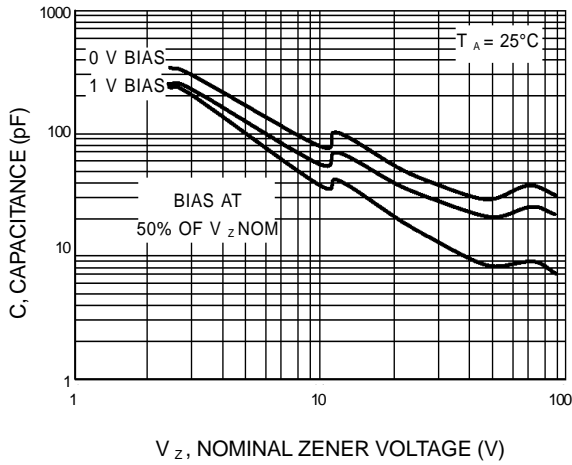
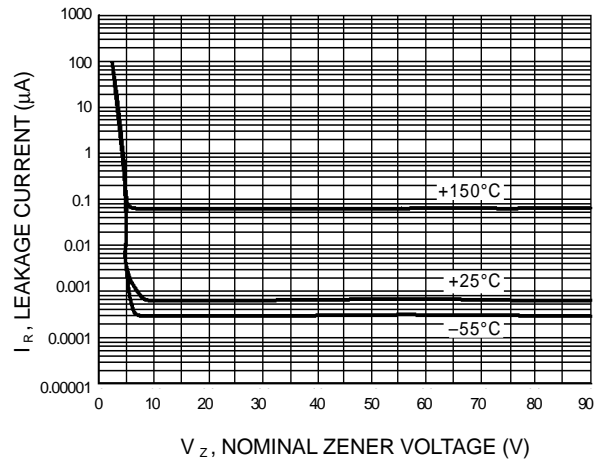
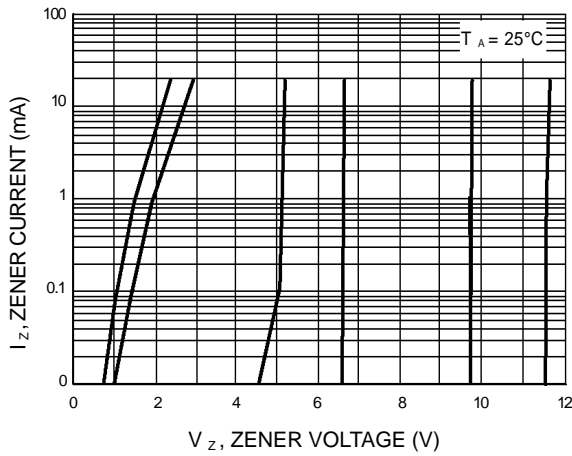
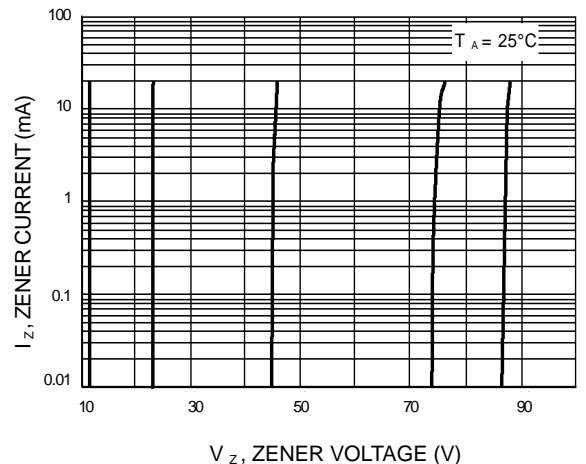


Figure 4. Typical Forward Voltage

GENERAL DATA — 225mW SOT-23
TYPICAL CHARACTERISTICS

Figure 5. Typical Capacitance

Figure 6. Typical Leakage Current

**Figure 7. Zener Voltage versus Zener Current
(V_z Up to 12 V)**

**Figure 8. Zener Voltage versus Zener Current
(12 V to 91 V)**

GENERAL DATA — 225 mW SOT-23

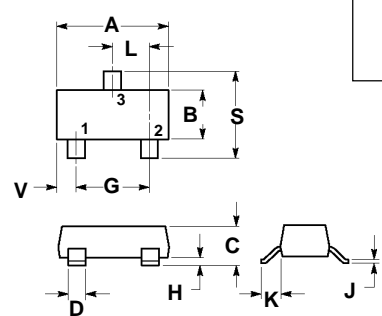
Zener Voltage Regulator Diodes — Surface Mounted

225 mW SOT-23

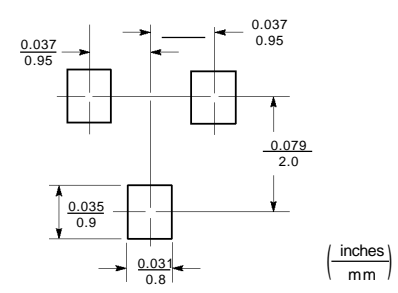
NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

| DIM | INCHES | | MILLIMETERS | |
|-----|--------|--------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.1102 | 0.1197 | 2.80 | 3.04 |
| B | 0.0472 | 0.0551 | 1.20 | 1.40 |
| C | 0.0350 | 0.0440 | 0.89 | 1.11 |
| D | 0.0150 | 0.0200 | 0.37 | 0.50 |
| G | 0.0701 | 0.0807 | 1.78 | 2.04 |
| H | 0.0005 | 0.0040 | 0.013 | 0.100 |
| J | 0.0034 | 0.0070 | 0.085 | 0.177 |
| K | 0.0180 | 0.0236 | 0.45 | 0.60 |
| L | 0.0350 | 0.0401 | 0.89 | 1.02 |
| S | 0.0830 | 0.0984 | 2.10 | 2.50 |
| V | 0.0177 | 0.0236 | 0.45 | 0.60 |



STYLE 8:
 PIN 1. ANODE
 2. NO CONNECTION
 3. CATHODE



SOT-23 Footprint

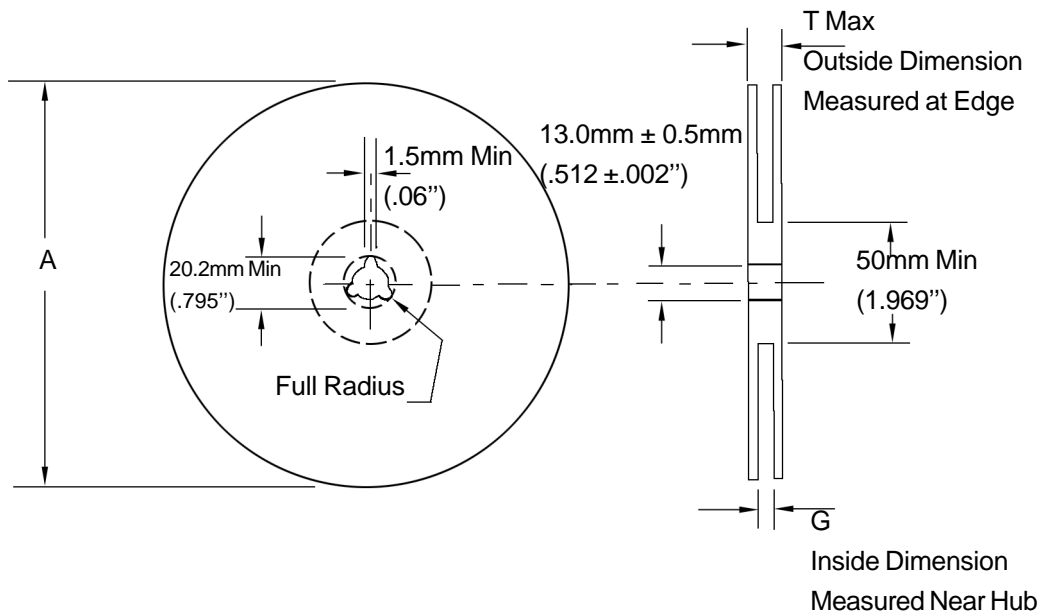
(Refer to Section 10 for Surface Mount, Thermal Data and Footprint Information.)

MULTIPLE PACKAGE QUANTITY (MPQ) REQUIREMENTS

| Package Option | Type No. Suffix | MPQ (Units) |
|----------------|-----------------|-------------|
| Tape and Reel | T1 | 3K |
| Tape and Ammo | T3 | 10K |

(Refer to Section 10 for more information on Packaging Specifications.)

EMBOSSED TAPE AND REEL DATA FOR DISCRETES



| Size | A Max | G | T Max |
|------|--------------------|--|------------------|
| 8 mm | 330mm (12.992") | 8.4mm+1.5mm, -0.0 (.33"+.059", -0.00) | 14.4mm (.56") |

Reel Dimensions

Metric Dimensions Govern — English are in parentheses for reference only

Storage Conditions

Temperature: 5 to 40 Deg.C (20 to 30 Deg. C is preferred)

Humidity: 30 to 80 RH (40 to 60 is preferred)

Recommended Period: One year after manufacturing

(This recommended period is for the soldering condition only. The characteristics and reliabilities of the products are not restricted to this limitation)

Shipment Specification

