

Zener Voltage Regulators

200 mW SOD-323 Surface Mount

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

ORDERING INFORMATION

| Device* | Package | Shipping |
|------------|---------|-----------------|
| LM3ZxxxT1G | SOD-323 | 3000/Tape&Reel |
| LM3ZxxxT3G | SOD-323 | 10000/Tape&Reel |

This series of Zener diodes is packaged in a SOD-323 surface mount package that has a power dissipation of 200 mW. They are designed to provide voltage regulation protection and are especially attractive in situations where space is at a premium. They are well suited for applications such as cellular phones, hand held portables, and high density PC boards.

Specification Features:

- Standard Zener Breakdown Voltage Range – 2.4 V to 75 V
- Steady State Power Rating of 200 mW
- Small Body Outline Dimensions: 0.067" x 0.049" (1.7 mm x 1.25 mm)
- Low Body Height: 0.035" (0.9 mm)
- Package Weight: 4.507 mg/unit
- ESD Rating of Class 3 (>16 kV) per Human Body Model
- Pb-Free package is available.

Mechanical Characteristics:

CASE: Void-free, transfer-molded plastic

FINISH: All external surfaces are corrosion resistant

MAXIMUM CASE TEMPERATURE FOR SOLDERING PURPOSES:

260°C for 10 Seconds

POLARITY: Cathode indicated by polarity band

FLAMMABILITY RATING: UL94 V-0

MOUNTING POSITION: Any

MAXIMUM RATINGS

| Rating | Symbol | Max | Unit |
|--|-----------------------------------|------------|------|
| Total Device Dissipation FR-5 Board, (Note 1.) @ TA = 25°C Derate above 25°C | P _D | 200 | mW |
| Thermal Resistance from Junction to Ambient | R _{θJA} | 635 | °C/W |
| Junction and Storage Temperature Range | T _J , T _{stg} | -65 to+150 | °C |

1. FR-4 Minimum Pad

LM3Z2V4T1G SERIES



LM3Z2V4T1G SERIES

ELECTRICAL CHARACTERISTICS

($T_A = 25^\circ\text{C}$ unless otherwise noted,
 $V_F = 0.9\text{ V Max. @ } I_F = 10\text{ mA}$ for all types)

| Symbol | Parameter |
|--------------|---|
| V_Z | Reverse Zener Voltage @ I_{ZT} |
| I_{ZT} | Reverse Current |
| Z_{ZT} | Maximum Zener Impedance @ I_{ZT} |
| I_{ZK} | Reverse Current |
| Z_{ZK} | Maximum Zener Impedance @ I_{ZK} |
| I_R | Reverse Leakage Current @ V_R |
| V_R | Reverse Voltage |
| I_F | Forward Current |
| V_F | Forward Voltage @ I_F |
| ΘV_Z | Maximum Temperature Coefficient of V_Z |
| C | Max. Capacitance @ $V_R = 0$ and $f = 1\text{ MHz}$ |



LM3Z2V4T1G SERIES

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted, $V_F = 0.9\text{ V Max.}$ @ $I_F = 10\text{ mA}$ for all types)

| Device | Device Marking | Zener Voltage (Note 2.) | | | Zener Impedance | | | Leakage Current | | θ_{V_Z} (mV/k) @ I_{ZT} | | C @ $V_R = 0$ f = 1 MHz | |
|------------|----------------|-------------------------|-------|------|------------------------|---------------------|----------|-----------------|---------------|--|------|-------------------------------|-----|
| | | V_Z (Volts) | | | Z_{ZT} @ I_{ZT} | Z_{ZK} @ I_{ZK} | | I_R @ V_R | | Min | Max | | |
| | | Min | Nom | Max | mA | Ω | Ω | mA | μA | Volts | | | pF |
| LM3Z2V4T1G | 00 | 2.2 | 2.4 | 2.6 | 5 | 100 | 1000 | 0.5 | 50 | 1.0 | -3.5 | 0 | 450 |
| LM3Z2V7T1G | 01 | 2.5 | 2.7 | 2.9 | 5 | 100 | 1000 | 0.5 | 20 | 1.0 | -3.5 | 0 | 450 |
| LM3Z3V0T1G | 02 | 2.8 | 3.0 | 3.2 | 5 | 100 | 1000 | 0.5 | 10 | 1.0 | -3.5 | 0 | 450 |
| LM3Z3V3T1G | 05 | 3.1 | 3.3 | 3.5 | 5 | 95 | 1000 | 0.5 | 5 | 1.0 | -3.5 | 0 | 450 |
| LM3Z3V6T1G | 06 | 3.4 | 3.6 | 3.8 | 5 | 90 | 1000 | 0.5 | 5 | 1.0 | -3.5 | 0 | 450 |
| LM3Z3V9T1G | 07 | 3.7 | 3.9 | 4.1 | 5 | 90 | 1000 | 0.5 | 3 | 1.0 | -3.5 | -2.5 | 450 |
| LM3Z4V3T1G | 08 | 4.0 | 4.3 | 4.6 | 5 | 90 | 1000 | 0.5 | 3 | 1.0 | -3.5 | 0 | 450 |
| LM3Z4V7T1G | 09 | 4.4 | 4.7 | 5.0 | 5 | 80 | 800 | 0.5 | 3 | 2.0 | -3.5 | 0.2 | 260 |
| LM3Z5V1T1G | 0A | 4.8 | 5.1 | 5.4 | 5 | 60 | 800 | 0.5 | 2 | 2.0 | -2.7 | 1.2 | 225 |
| LM3Z5V6T1G | 0C | 5.2 | 5.6 | 6.0 | 5 | 40 | 700 | 0.5 | 1 | 2.0 | -2.0 | 2.5 | 200 |
| LM3Z6V2T1G | 0E | 5.8 | 6.2 | 6.6 | 5 | 10 | 100 | 0.5 | 3 | 4.0 | 0.4 | 3.7 | 185 |
| LM3Z6V8T1G | 0F | 6.4 | 6.8 | 7.2 | 5 | 15 | 160 | 0.5 | 2 | 4.0 | 1.2 | 4.5 | 155 |
| LM3Z7V5T1G | 0G | 7.0 | 7.5 | 7.9 | 5 | 15 | 160 | 0.5 | 1 | 5.0 | 2.5 | 5.3 | 140 |
| LM3Z8V2T1G | 0H | 7.7 | 8.2 | 8.7 | 5 | 15 | 160 | 0.5 | 0.7 | 5.0 | 3.2 | 6.2 | 135 |
| LM3Z9V1T1G | 0K | 8.5 | 9.1 | 9.6 | 5 | 15 | 160 | 0.5 | 0.2 | 7.0 | 3.8 | 7.0 | 130 |
| LM3Z10VT1G | 0L | 9.4 | 10 | 10.6 | 5 | 20 | 160 | 0.5 | 0.1 | 8.0 | 4.5 | 8.0 | 130 |
| LM3Z11VT1G | 0M | 10.4 | 11 | 11.6 | 5 | 20 | 160 | 0.5 | 0.1 | 8.0 | 5.4 | 9.0 | 130 |
| LM3Z12VT1G | 0N | 11.4 | 12 | 12.7 | 5 | 25 | 80 | 0.5 | 0.1 | 8.0 | 6.0 | 10 | 130 |
| LM3Z13VT1G | 0P | 12.4 | 13.25 | 14.1 | 5 | 30 | 80 | 0.5 | 0.1 | 8.0 | 7.0 | 11 | 120 |
| LM3Z15VT1G | 0T | 14.3 | 15 | 15.8 | 5 | 30 | 400 | 0.5 | 0.05 | 10.5 | 9.2 | 13 | 110 |
| LM3Z16VT1G | 0U | 15.3 | 16.2 | 17.1 | 5 | 40 | 400 | 0.5 | 0.05 | 11.2 | 10.4 | 14 | 105 |
| LM3Z18VT1G | 0W | 16.8 | 18 | 19.1 | 5 | 45 | 400 | 0.5 | 0.05 | 12.6 | 12.4 | 16 | 100 |
| LM3Z20VT1G | 0Z | 18.8 | 20 | 21.2 | 5 | 55 | 500 | 0.5 | 0.05 | 14.0 | 14.4 | 18 | 85 |
| LM3Z22VT1G | 10 | 20.8 | 22 | 23.3 | 5 | 55 | 500 | 0.5 | 0.05 | 15.4 | 16.4 | 20 | 85 |
| LM3Z24VT1G | 11 | 22.8 | 24.2 | 25.6 | 5 | 70 | 120 | 0.5 | 0.05 | 16.8 | 18.4 | 22 | 80 |
| LM3Z27VT1G | 12 | 25.1 | 27 | 28.9 | 2 | 80 | 300 | 0.5 | 0.05 | 18.9 | 21.4 | 25.3 | 70 |
| LM3Z30VT1G | 14 | 28 | 30 | 32 | 2 | 80 | 300 | 0.5 | 0.05 | 21.0 | 24.4 | 29.4 | 70 |
| LM3Z33VT1G | 18 | 31 | 33 | 35 | 2 | 80 | 300 | 0.5 | 0.05 | 23.2 | 27.4 | 33.4 | 70 |
| LM3Z36VT1G | 19 | 34 | 36 | 38 | 2 | 90 | 500 | 0.5 | 0.05 | 25.2 | 30.4 | 37.4 | 70 |
| LM3Z39VT1G | 20 | 37 | 39 | 41 | 2 | 130 | 500 | 0.5 | 0.05 | 27.3 | 33.4 | 41.2 | 45 |
| LM3Z43VT1G | 21 | 40 | 43 | 46 | 2 | 150 | 500 | 0.5 | 0.05 | 30.1 | 37.6 | 46.6 | 40 |
| LM3Z47VT1G | 1A | 44 | 47 | 50 | 2 | 170 | 500 | 0.5 | 0.05 | 32.9 | 42.0 | 51.8 | 40 |
| LM3Z51VT1G | 1C | 48 | 51 | 54 | 2 | 180 | 500 | 0.5 | 0.05 | 35.7 | 46.6 | 57.2 | 40 |
| LM3Z56VT1G | 1D | 52 | 56 | 60 | 2 | 200 | 500 | 0.5 | 0.05 | 39.2 | 52.2 | 63.8 | 40 |
| LM3Z62VT1G | 1E | 58 | 62 | 66 | 2 | 215 | 500 | 0.5 | 0.05 | 43.4 | 58.8 | 71.6 | 35 |
| LM3Z68VT1G | 1F | 64 | 68 | 72 | 2 | 240 | 500 | 0.5 | 0.05 | 47.6 | 65.6 | 79.8 | 35 |
| LM3Z75VT1G | 1G | 70 | 75 | 79 | 2 | 255 | 500 | 0.5 | 0.05 | 52.5 | 73.4 | 88.6 | 35 |

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

LM3Z2V4T1G SERIES

Typical Characteristics



Figure 1. Effect of Zener Voltage on Zener Impedance



Figure 2. Typical Forward Voltage



Figure 3. Typical Capacitance



Figure 4. Typical Leakage Current

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Typical Characteristics



Figure 5. Zener Voltage versus Zener Current (V_Z Up to 12 V)

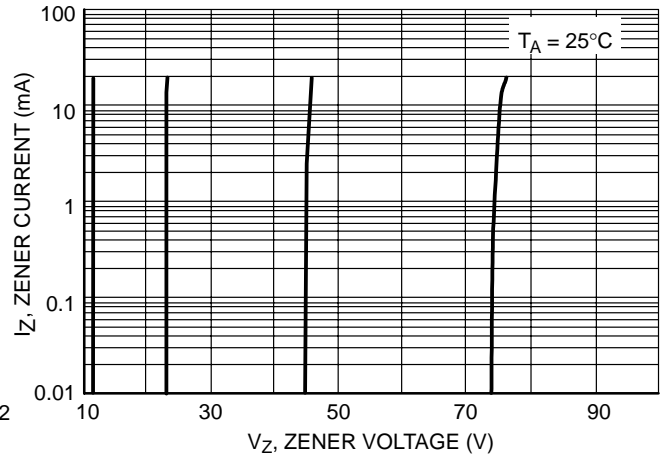


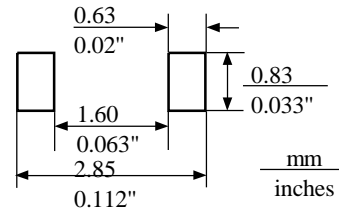
Figure 6. Zener Voltage versus Zener Current (12 V to 75 V)



Figure 7. Steady State Power Derating

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**PACKAGE DIMENSIONS
SOD-323**



- NOTES:
 1. CONTROLLING DIMENSION: MILLIMETERS
 2. LEAD THICKNESS SPECIFIED PER L/F DRAWING WITH SOLDER PLATING.

| DIN | MILLIMETERS | | INCHES | |
|-----|-------------|-------|-----------|--------|
| | MIN | MAX | MIN | MAX |
| A | 1.60 | 1.80 | 0.063 | 0.071 |
| B | 1.15 | 1.35 | 0.045 | 0.053 |
| C | 0.80 | 1.00 | 0.031 | 0.039 |
| D | 0.25 | 0.40 | 0.010 | 0.016 |
| E | 0.15 REF | | 0.006 REF | |
| H | 0.00 | 0.10 | 0.0000 | 0.004 |
| J | 0.089 | 0.177 | 0.0035 | 0.0070 |
| K | 2.30 | 2.70 | 0.091 | 0.106 |

STYLE 1:
 PIN 1: CATHODE
 2: ANODE