SEMTECH

**QPL**
**500 Watt Axial Leaded TVS**

**1N6102A**
**Thru**
**1N6137A**

TEL:805-498-2111 FAX:805-498-3804

## DESCRIPTION

The 1N61xx series of transient voltage suppressors are designed to protect military and commercial electronic equipment from overvoltages caused by lightning, ESD, EFT, inductive load switching, and EMP. These devices are constructed using two p-n junction TVS diodes in a back-to-back configuration, hermetically sealed in a voidless glass package. The hermetically sealed package provides high reliability in harsh environmental conditions. TVS diodes are further characterized by their high surge capability, low operating and clamping voltages, and a theoretically instantaneous response time. This makes them ideal for use as board level protection for sensitive semiconductor components.

## FEATURES:

- 500 Watts Peak Pulse Power (tp = 10/1000µs)
- Voidless hermetically sealed glass package
- Metallurgically bonded
- High surge capacity
- Military & Industrial applications
- Available in **JAN**, **JTX**, and **JTXV** versions per MIL-S-19500/516

## MECHANICAL CHARACTERISTICS:

- Hermetically sealed glass package
- Tinned copper leads
- Marking : P/N, date code, logo

## MAXIMUM RATINGS

| RATING | SYMBOL | VALUE | UNIT |
|---|---|---|---|
| Peak Pulse Power (tp = 10 x 1000µs) | Ppk | 500 | Watts |
| Operating Temperature | Tj | -65 to +175 | °C |
| Storage Temperature | Tstg | -65 to +175 | °C |
| Steady-State Power Dissipation @ TL = 75ºC (3/8") | PD | 3 | Watts |

## ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise specified)

| DEVICE TYPE | REVERSE STAND-OFF VOLTAGE $V_{RWM}$ | REVERSE LEAKAGE CURRENT $I_R$ | MINIMUM BREAKDOWN VOLTAGE $V_{BR}$ @ $I_T$ | TEST CURRENT $I_T$ | MAXIMUM CLAMPING VOLTAGE VC @ $I_{PP}$ | PEAK PULSE CURRENT Ipp tp = 1ms | TEMPERATURE COEFFICIENT OF $V_{BR}$ αVz | MAXIMUM REVERSE LEAKAGE CURRENT (Ir2) TA=+150°C |
|---|---|---|---|---|---|---|---|---|
| | (V) | (µA) | (V) | (mA) | (V) | (A) | % / °C | (A) |
| 1N6102A | 5.2 | 100 | 6.46 | 175 | 10.5 | 47.6 | 0.05 | 4000 |
| 1N6103A | 5.7 | 50 | 7.13 | 175 | 11.2 | 44.6 | 0.06 | 750 |
| 1N6104A | 6.2 | 20 | 7.79 | 150 | 12.1 | 41.3 | 0.06 | 500 |
| 1N6105A | 6.9 | 20 | 8.65 | 150 | 13.4 | 37.3 | 0.06 | 300 |
| 1N6106A | 7.6 | 20 | 9.50 | 125 | 14.5 | 34.5 | 0.07 | 200 |
| 1N6107A | 8.4 | 20 | 10.45 | 125 | 15.6 | 32.0 | 0.07 | 200 |
| 1N6108A | 9.1 | 20 | 11.40 | 100 | 16.9 | 29.6 | 0.07 | 150 |
| 1N6109A | 9.9 | 20 | 12.35 | 100 | 18.2 | 27.5 | 0.08 | 150 |
| 1N6110A | 11.4 | 20 | 14.25 | 75 | 21.0 | 23.8 | 0.08 | 100 |
| 1N6111A | 12.2 | 20 | 15.20 | 75 | 22.3 | 22.4 | 0.08 | 100 |
| 1N6112A | 13.7 | 1 | 17.10 | 65 | 25.1 | 19.9 | 0.085 | 100 |
| 1N6113A | 15.2 | 1 | 19.0 | 65 | 27.7 | 18.0 | 0.085 | 100 |
| 1N6114A | 16.7 | 1 | 20.9 | 50 | 30.5 | 16.4 | 0.085 | 100 |
| 1N6115A | 18.2 | 1 | 22.8 | 50 | 33.3 | 15.0 | 0.09 | 100 |
| 1N6116A | 20.6 | 1 | 25.7 | 50 | 37.4 | 13.4 | 0.09 | 100 |
| 1N6117A | 22.8 | 1 | 28.5 | 40 | 41.6 | 12.0 | 0.09 | 100 |
| 1N6118A | 25.1 | 1 | 31.4 | 40 | 45.7 | 10.9 | 0.095 | 100 |
| 1N6119A | 27.4 | 1 | 34.2 | 30 | 49.9 | 10.0 | 0.095 | 100 |
| 1N6120A | 29.7 | 1 | 37.1 | 30 | 53.6 | 9.3 | 0.095 | 100 |
| 1N6121A | 32.7 | 1 | 40.9 | 30 | 59.1 | 8.5 | 0.095 | 100 |
| 1N6122A | 35.8 | 1 | 44.7 | 25 | 64.6 | 7.7 | 0.095 | 100 |
| 1N6123A | 38.8 | 1 | 48.5 | 25 | 70.1 | 7.1 | 0.095 | 100 |
| 1N6124A | 42.6 | 1 | 53.2 | 20 | 77.0 | 6.5 | 0.095 | 100 |
| 1N6125A | 47.1 | 1 | 58.9 | 20 | 85.3 | 5.9 | 0.100 | 100 |
| 1N6126A | 51.7 | 1 | 64.6 | 20 | 97.1 | 5.1 | 0.100 | 100 |
| 1N6127A | 56.0 | 1 | 71.3 | 20 | 103.1 | 4.8 | 0.100 | 100 |
| 1N6128A | 62.2 | 1 | 77.9 | 15 | 112.8 | 4.4 | 0.100 | 100 |
| 1N6129A | 69.2 | 1 | 86.5 | 15 | 125.1 | 4.0 | 0.100 | 100 |
| 1N6130A | 76.0 | 1 | 95.0 | 12 | 137.6 | 3.6 | 0.100 | 100 |
| 1N6131A | 83.6 | 1 | 104.5 | 12 | 151.3 | 3.3 | 0.100 | 100 |
| 1N6132A | 91.2 | 1 | 114.0 | 10 | 165.1 | 3.0 | 0.100 | 100 |
| 1N6133A | 98.8 | 1 | 123.5 | 10 | 178.8 | 2.8 | 0.105 | 100 |
| 1N6134A | 114.0 | 1 | 142.5 | 8 | 206.3 | 2.4 | 0.105 | 100 |
| 1N6135A | 121.6 | 1 | 152.0 | 8 | 218.4 | 2.3 | 0.105 | 100 |
| 1N6136A | 136.8 | 1 | 171.0 | 5 | 245.7 | 2.0 | 0.110 | 100 |
| 1N6137A | 152.0 | 1 | 190.0 | 5 | 273.0 | 1.8 | 0.110 | 100 |

1. Non-A Part has 5% higher clamping voltage, 5% lower minimum breakdown voltage, and 5% lower peak pulse current.



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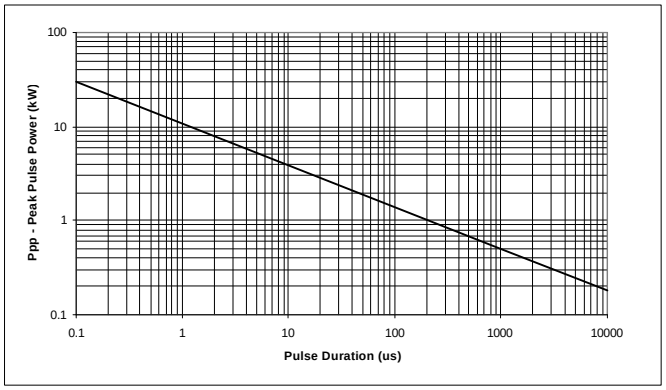
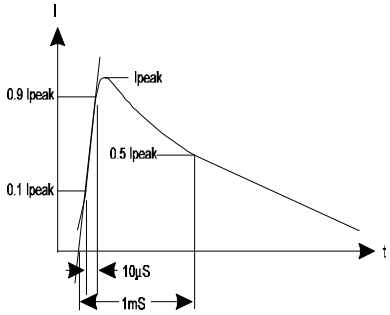
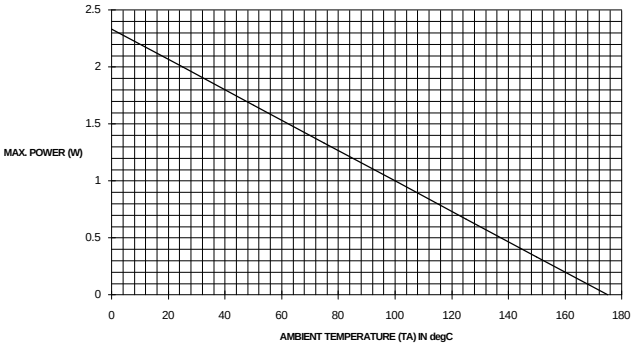
## PEAK PULSE POWER vs. PULSE TIME



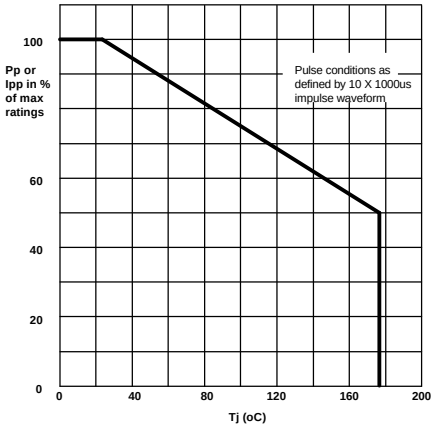

## 10x1000µs IMPULSE WAVEFORM



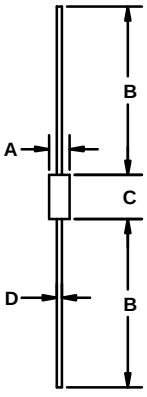

## STEADY STATE DERATING CHARACTERISTICS FOR FREE AIR MOUNTING




## PULSE DERATING CURVE



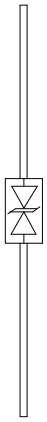

## MECHANICAL OUTLINE




| DIMENSIONS | | | | | |
|---|---|---|---|---|---|
| DIM | INCHES | | MM | | NOTE |
| | MIN | MAX | MIN | MAX | |
| A | 0.085 | 0.140 | 2.1 | 3.6 | |
| B | 1.00 | 1.300 | 25.4 | 33.0 | |
| C | 0.140 | 0.245 | 3.5 | 6.3 | 2 |
| D | 0.026 | 0.033 | 0.66 | 0.84 | |

NOTES :
1. Controlling dimension is inches.
2. Includes uncontrolled area of device leads.

## SCHEMATIC



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