# 1N6138A - 1N6173A

# BIDIRECTIONAL TRANSIENT SUPPRESSOR

**$V_{WM}$ : 5.2 - 152 Volts**

**$P_{PP}$ : 1500 Watts**

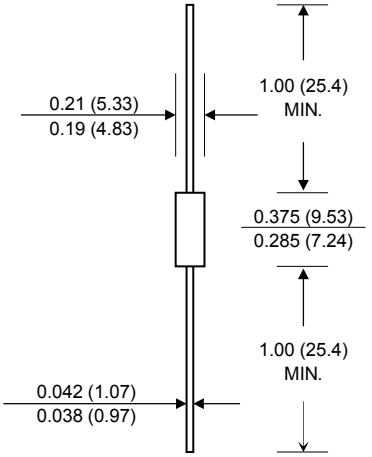
## FEATURES :

* Glass passivated junction chip
* Bidirectional transient voltage suppressor
* Peak pulse power: 1500W at 10/1000 μs
* Extensive range in Working Peak "Standoff" Voltage ($V_{WM}$) from 5.2 to 152 V
* High surge current
* Excellent robust construction
* Pb / RoHS Free

## MECHANICAL DATA

* Case : DO-201 Molded plastic
* Epoxy : UL94V-0 rate flame retardant
* Lead : Axial lead solderable per MIL-STD-202, Method 208
* Mounting position : Any
* Weight : 0.93 grams

## DO-201




**Dimensions in inches and (millimeters)**

## MAXIMUM RATINGS

Rating at 25 °C ambient temperature unless otherwise specified.

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| Peak Pulse Power at Ta = 25 °C, 10/1000 μs | $P_{PP}$ | 1500 | W |
| Steady State Power at $T_L$ = 75 °C, 3/8" lead length from body | $P_D$ | 5.0 | W |
| Steady State Power at Ta = 25 °C, | $P_D$ | 2.0 | W |
| Thermal Resistance at 3/8" lead length | $R_{\Theta JL}$ | 20 | °C/W |
| Operating and Storage Temperature Range | $T_J$, $T_{STG}$ | - 55 to + 175 | °C |

# ELECTRICAL CHARACTERISTICS

Rating at 25 °C ambient temperature unless otherwise specified

| Type No.[1] | Minimum Breakdown Voltage at $I_{(BR)}$ | | Rated Standoff Voltage | Maximum Standby Current @ $V_{WM}$ | Maximum Clamping Voltage @ $I_{PP}$ | Maximum Peak Pulse Current | Maximum Temperature Co-efficient of $V_{(BR)}$ |
|---|---|---|---|---|---|---|---|
| | $V_{(BR)}$ | $I_{(BR)}$ | $V_{WM}$ | $I_D$ | $V_C$ | $I_{PP}$ | |
| | Min. | (mA) | (V) | (μA) | (V) | (A) | (% / °C) |
| **1N6138A** | 6.12 | 175 | 5.2 | 500 | 10.5 | 142.8 | 0.050 |
| **1N6139A** | 7.13 | 175 | 5.7 | 300 | 11.2 | 133.9 | 0.060 |
| **1N6140A** | 7.79 | 150 | 6.2 | 100 | 12.1 | 124.0 | 0.060 |
| **1N6141A** | 8.65 | 150 | 6.9 | 100 | 13.4 | 111.9 | 0.060 |
| **1N6142A** | 9.50 | 125 | 7.6 | 100 | 14.5 | 103.4 | 0.070 |
| **1N6143A** | 10.45 | 125 | 8.4 | 20 | 15.6 | 96.2 | 0.070 |
| **1N6144A** | 11.40 | 100 | 9.1 | 20 | 16.9 | 88.8 | 0.070 |
| **1N6145A** | 12.35 | 100 | 9.9 | 20 | 18.2 | 82.4 | 0.080 |
| **1N6146A** | 14.25 | 75 | 11.4 | 20 | 21 | 71.4 | 0.080 |
| **1N6147A** | 15.2 | 75 | 12.2 | 20 | 22.3 | 67.3 | 0.080 |
| **1N6148A** | 17.1 | 65 | 13.7 | 10 | 25.1 | 59.8 | 0.085 |
| **1N6149A** | 19.0 | 65 | 15.2 | 5 | 27.7 | 54.2 | 0.085 |
| **1N6150A** | 20.9 | 50 | 16.7 | 5 | 30.5 | 49.2 | 0.085 |
| **1N6151A** | 22.8 | 50 | 18.2 | 5 | 33.3 | 45.0 | 0.090 |
| **1N6152A** | 25.7 | 50 | 20.6 | 5 | 37.4 | 40.1 | 0.090 |
| **1N6153A** | 28.5 | 40 | 22.8 | 5 | 41.6 | 36.0 | 0.095 |
| **1N6154A** | 31.4 | 40 | 25.1 | 5 | 45.7 | 32.8 | 0.095 |
| **1N6155A** | 34.2 | 30 | 27.4 | 5 | 49.9 | 30.1 | 0.095 |
| **1N6156A** | 37.1 | 30 | 29.7 | 5 | 53.6 | 28.0 | 0.095 |
| **1N6157A** | 40.9 | 30 | 32.7 | 5 | 59.1 | 25.4 | 0.095 |
| **1N6158A** | 44.7 | 25 | 35.8 | 5 | 64.6 | 23.2 | 0.095 |
| **1N6159A** | 48.5 | 25 | 38.8 | 5 | 70.1 | 21.4 | 0.095 |
| **1N6160A** | 53.2 | 20 | 42.6 | 5 | 77.0 | 19.5 | 0.095 |
| **1N6161A** | 58.9 | 20 | 47.1 | 5 | 85.3 | 17.6 | 0.100 |
| **1N6162A** | 64.6 | 20 | 51.7 | 5 | 97.1 | 15.4 | 0.100 |
| **1N6163A** | 71.3 | 20 | 56.0 | 5 | 103.1 | 14.5 | 0.100 |
| **1N6164A** | 77.9 | 15 | 62.2 | 5 | 112.8 | 13.3 | 0.100 |
| **1N6165A** | 86.5 | 15 | 69.2 | 5 | 125.1 | 12.0 | 0.100 |
| **1N6166A** | 95.0 | 12 | 76.0 | 5 | 137.6 | 10.9 | 0.100 |
| **1N6167A** | 104.5 | 12 | 86.6 | 5 | 151.3 | 9.9 | 0.100 |
| **1N6168A** | 114.0 | 10 | 91.2 | 5 | 165.1 | 9.1 | 0.100 |
| **1N6169A** | 123.5 | 10 | 98.8 | 5 | 178.8 | 8.4 | 0.105 |
| **1N6170A** | 142.5 | 8 | 114.0 | 5 | 206.3 | 7.3 | 0.105 |
| **1N6171A** | 152.0 | 8 | 121.6 | 5 | 218.4 | 6.9 | 0.105 |
| **1N6172A** | 171.0 | 5 | 136.8 | 5 | 245.7 | 6.1 | 0.110 |
| **1N6173A** | 190.0 | 5 | 152.0 | 5 | 273.0 | 5.5 | 0.110 |

**Note:**

(1) Part number without the A suffix has 5 % higher $V_C$, 5% lower minimum $V_{(BR)}$, and 5% lower $I_{PP}$.

## RATING AND CHARACTERISTIC CURVES ( 1N6138A - 1N6173A )

**FIG.1 - PEAK PULSE POWER VS. $T_J$**

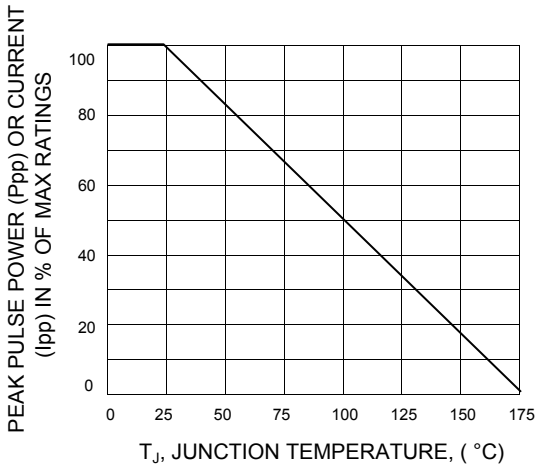



**FIG.2 - PEAK PULSE POWER VS. PULSE TIME**

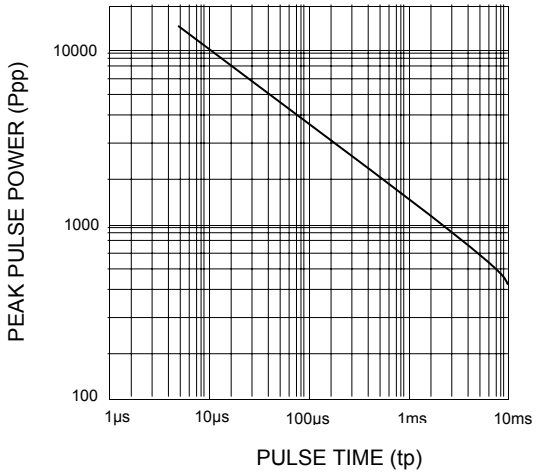



**FIG.3 - MAXIMUM POWER VS. LEAD TEMPERATURE**

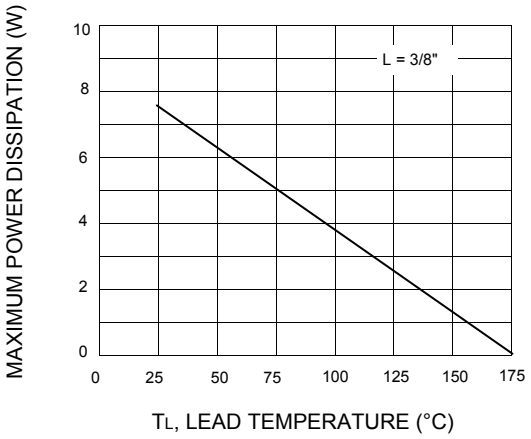



**FIG.4 - STEADY-STATE DERATING CURVE FOR FREE-AIR MOUNTING**

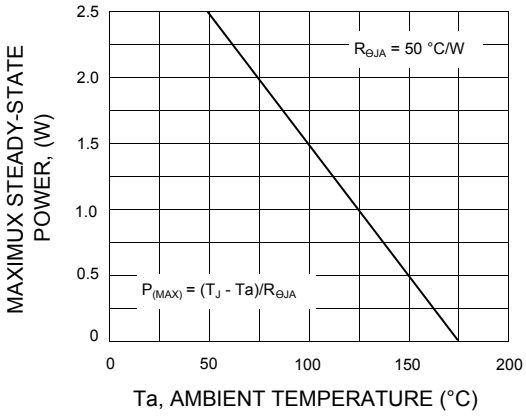



**FIG.5 - PULSE WAVEFORM**