

**TRANSZorb® Transient Voltage Suppressors****GL41 (DO-213AB)****FEATURES**

- Plastic MELF package
- Ideal for automated placement
- Glass passivated pallet chip junction
- Available in unidirectional polarity only
- 400 W peak pulse power capability with a 10/1000  $\mu$ s waveform, repetitive rate (duty cycle): 0.01 %
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 250 °C
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

**RoHS**  
COMPLIANT**TYPICAL APPLICATIONS**

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, and telecommunication.

**MECHANICAL DATA****Case:** GL41 (DO-213AB)

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-E3 - RoHS compliant, commercial grade

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 suffix meets JESD 201 class 1A whisker test

**Polarity:** blue band denotes the cathode which is positive with respect to the anode under normal TVS operation

| <b>PRIMARY CHARACTERISTICS</b> |                 |
|--------------------------------|-----------------|
| $V_{BR}$ unidirectional        | 6.45 V to 210 V |
| $V_{WM}$                       | 5.8 V to 171 V  |
| $P_{PPM}$                      | 400 W, 200 W    |
| $P_D$                          | 1.0 W           |
| $I_{FSM}$                      | 40 A            |
| $T_J$ max.                     | 150 °C          |
| Polarity                       | Unidirectional  |
| Package                        | GL41 (DO-213AB) |

| <b>MAXIMUM RATINGS</b> ( $T_A = 25$ °C unless otherwise noted)                       |                |                |      |
|--------------------------------------------------------------------------------------|----------------|----------------|------|
| PARAMETER                                                                            | SYMBOL         | VALUE          | UNIT |
| Peak pulse power dissipation with a 10/1000 $\mu$ s waveform <sup>(1)</sup> (fig. 1) | $P_{PPM}$      | 400            | W    |
| Power dissipation on infinite heatsink at $T_L = 75$ °C                              | $P_D$          | 1.0            | W    |
| Peak pulse current with a 10/1000 $\mu$ s waveform <sup>(1)</sup> (fig. 3)           | $I_{PPM}$      | See next table | A    |
| Peak forward surge current, 8.3 ms half sine-wave unidirectional only <sup>(2)</sup> | $I_{FSM}$      | 40             | A    |
| Maximum instantaneous forward voltage at 25 A for unidirectional only                | $V_F$          | 3.5            | V    |
| Operating junction and storage temperature range                                     | $T_J, T_{STG}$ | -55 to +150    | °C   |

**Notes**

<sup>(1)</sup> Non-repetitive current pulse, per fig. 3 and derated above  $T_A = 25$  °C per fig. 2. Rating is 200 W above 91 V

<sup>(2)</sup> Measured at 8.3 ms single half sine-wave or equivalent square wave duty cycle = 4 pulses per minute maximum

**ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

| DEVICE TYPE | BREAKDOWN VOLTAGE $V_{BR}^{(1)}$ (V) |      | TEST CURRENT $I_T$ (mA) | STAND-OFF VOLTAGE $V_{WM}$ (V) | MAXIMUM REVERSE LEAKAGE AT $V_{WM}$ $I_D$ ( $\mu\text{A}$ ) | MAXIMUM PEAK PULSE CURRENT $I_{PPM}^{(2)}$ (A) | MAXIMUM CLAMPING VOLTAGE AT $I_{PPM}$ $V_C$ (V) | MAXIMUM TEMPERATURE COEFFICIENT OF $V_{BR}$ ( $\%/^\circ\text{C}$ ) |
|-------------|--------------------------------------|------|-------------------------|--------------------------------|-------------------------------------------------------------|------------------------------------------------|-------------------------------------------------|---------------------------------------------------------------------|
|             | MIN.                                 | MAX. |                         |                                |                                                             |                                                |                                                 |                                                                     |
| TGL41-6.8A  | 6.45                                 | 7.14 | 10                      | 5.80                           | 1000                                                        | 38.1                                           | 10.5                                            | 0.060                                                               |
| TGL41-7.5A  | 7.13                                 | 7.88 | 10                      | 6.40                           | 500                                                         | 35.4                                           | 11.3                                            | 0.064                                                               |
| TGL41-8.2A  | 7.79                                 | 8.61 | 10                      | 7.02                           | 200                                                         | 33.1                                           | 12.1                                            | 0.068                                                               |
| TGL41-9.1A  | 8.65                                 | 9.55 | 1.0                     | 7.78                           | 50.0                                                        | 29.9                                           | 13.4                                            | 0.071                                                               |
| TGL41-10A   | 9.5                                  | 10.5 | 1.0                     | 8.55                           | 10.0                                                        | 27.6                                           | 14.5                                            | 0.076                                                               |
| TGL41-11A   | 10.5                                 | 11.6 | 1.0                     | 9.40                           | 5.0                                                         | 25.6                                           | 15.6                                            | 0.078                                                               |
| TGL41-12A   | 11.4                                 | 12.6 | 1.0                     | 10.2                           | 5.0                                                         | 24.0                                           | 16.7                                            | 0.081                                                               |
| TGL41-13A   | 12.4                                 | 13.7 | 1.0                     | 11.1                           | 5.0                                                         | 22.0                                           | 18.2                                            | 0.084                                                               |
| TGL41-15A   | 14.3                                 | 15.8 | 1.0                     | 12.8                           | 5.0                                                         | 18.9                                           | 21.2                                            | 0.087                                                               |
| TGL41-16A   | 15.2                                 | 16.8 | 1.0                     | 13.6                           | 5.0                                                         | 17.8                                           | 22.5                                            | 0.089                                                               |
| TGL41-18A   | 17.1                                 | 18.9 | 1.0                     | 15.3                           | 5.0                                                         | 15.9                                           | 25.2                                            | 0.091                                                               |
| TGL41-20A   | 19.0                                 | 21.0 | 1.0                     | 17.1                           | 5.0                                                         | 14.4                                           | 27.7                                            | 0.093                                                               |
| TGL41-22A   | 20.9                                 | 23.1 | 1.0                     | 18.8                           | 5.0                                                         | 13.1                                           | 30.6                                            | 0.095                                                               |
| TGL41-24A   | 22.8                                 | 25.2 | 1.0                     | 20.5                           | 5.0                                                         | 12.0                                           | 33.2                                            | 0.097                                                               |
| TGL41-27A   | 25.7                                 | 28.4 | 1.0                     | 23.1                           | 5.0                                                         | 10.7                                           | 37.5                                            | 0.099                                                               |
| TGL41-30A   | 28.5                                 | 31.5 | 1.0                     | 25.6                           | 5.0                                                         | 9.7                                            | 41.4                                            | 0.100                                                               |
| TGL41-33A   | 31.4                                 | 34.7 | 1.0                     | 28.2                           | 5.0                                                         | 8.8                                            | 45.7                                            | 0.101                                                               |
| TGL41-36A   | 34.2                                 | 37.8 | 1.0                     | 30.8                           | 5.0                                                         | 8.0                                            | 49.9                                            | 0.102                                                               |
| TGL41-39A   | 37.1                                 | 41.0 | 1.0                     | 33.3                           | 5.0                                                         | 7.4                                            | 53.9                                            | 0.103                                                               |
| TGL41-43A   | 40.9                                 | 45.2 | 1.0                     | 36.8                           | 5.0                                                         | 6.7                                            | 59.3                                            | 0.104                                                               |
| TGL41-47A   | 44.7                                 | 49.4 | 1.0                     | 40.2                           | 5.0                                                         | 6.2                                            | 64.8                                            | 0.104                                                               |
| TGL41-51A   | 48.5                                 | 53.6 | 1.0                     | 43.6                           | 5.0                                                         | 5.7                                            | 70.1                                            | 0.105                                                               |
| TGL41-56A   | 53.2                                 | 58.8 | 1.0                     | 47.8                           | 5.0                                                         | 5.2                                            | 77.0                                            | 0.106                                                               |
| TGL41-62A   | 58.9                                 | 65.1 | 1.0                     | 53.0                           | 5.0                                                         | 4.7                                            | 85.0                                            | 0.107                                                               |
| TGL41-68A   | 64.6                                 | 71.4 | 1.0                     | 58.1                           | 5.0                                                         | 4.3                                            | 92.0                                            | 0.107                                                               |
| TGL41-75A   | 71.3                                 | 78.8 | 1.0                     | 64.1                           | 5.0                                                         | 3.9                                            | 103                                             | 0.108                                                               |
| TGL41-82A   | 77.9                                 | 86.1 | 1.0                     | 70.1                           | 5.0                                                         | 3.5                                            | 113                                             | 0.108                                                               |
| TGL41-91A   | 86.5                                 | 95.5 | 1.0                     | 77.8                           | 5.0                                                         | 3.2                                            | 125                                             | 0.109                                                               |
| TGL41-100A  | 95.0                                 | 105  | 1.0                     | 85.5                           | 5.0                                                         | 1.46                                           | 137                                             | 0.109                                                               |
| TGL41-110A  | 105                                  | 116  | 1.0                     | 94.0                           | 5.0                                                         | 1.32                                           | 152                                             | 0.110                                                               |
| TGL41-120A  | 114                                  | 126  | 1.0                     | 102                            | 5.0                                                         | 1.21                                           | 165                                             | 0.110                                                               |
| TGL41-130A  | 124                                  | 137  | 1.0                     | 111                            | 5.0                                                         | 1.12                                           | 179                                             | 0.110                                                               |
| TGL41-150A  | 143                                  | 158  | 1.0                     | 128                            | 5.0                                                         | 0.97                                           | 207                                             | 0.111                                                               |
| TGL41-160A  | 152                                  | 168  | 1.0                     | 136                            | 5.0                                                         | 0.91                                           | 219                                             | 0.111                                                               |
| TGL41-170A  | 162                                  | 179  | 1.0                     | 145                            | 5.0                                                         | 0.85                                           | 234                                             | 0.111                                                               |
| TGL41-180A  | 171                                  | 189  | 1.0                     | 154                            | 5.0                                                         | 0.81                                           | 246                                             | 0.111                                                               |
| TGL41-200A  | 190                                  | 210  | 1.0                     | 171                            | 5.0                                                         | 0.73                                           | 274                                             | 0.111                                                               |

**Notes**

- (1) Pulse test:  $t_p \leq 50$  ms  
 (2) Surge current waveform per fig. 3 and derate per fig. 2  
 (2) All terms and symbols are consistent with ANSI/IEEE C62.35

**ORDERING INFORMATION** (Example)

| PREFERRED PIN    | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
|------------------|-----------------|------------------------|---------------|------------------------------------|
| TGL41-6.8A-E3/96 | 0.134           | 96                     | 1500          | 7" diameter plastic tape and reel  |
| TGL41-6.8A-E3/97 | 0.134           | 97                     | 5000          | 13" diameter plastic tape and reel |



**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

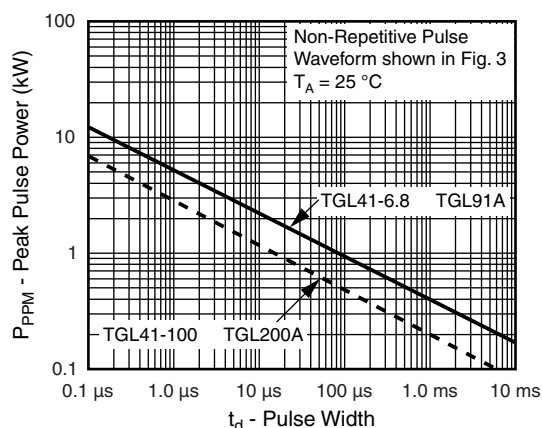


Fig. 1 - Peak Pulse Power Rating Curve

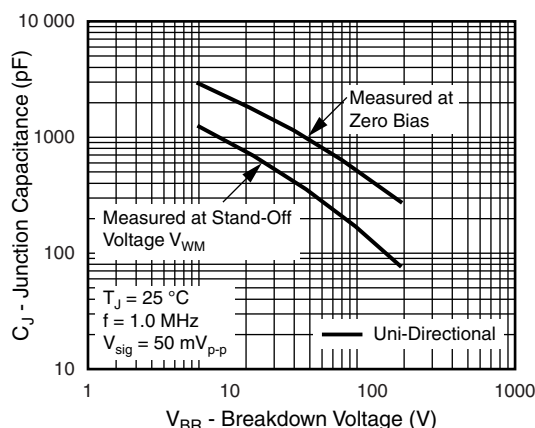


Fig. 4 - Typical Junction Capacitance

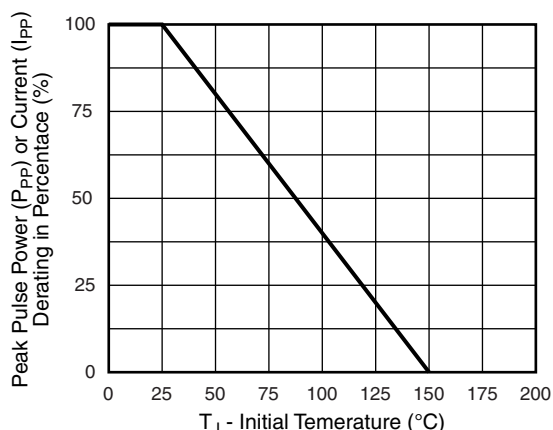


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

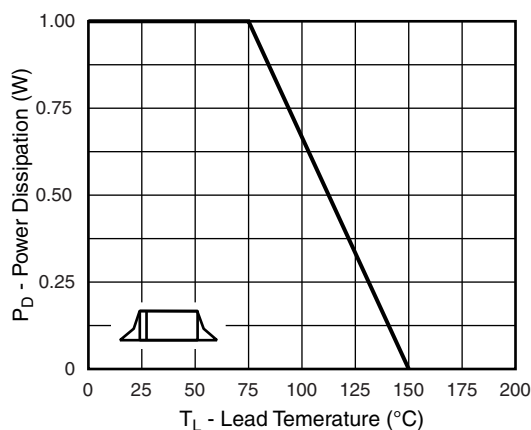


Fig. 5 - Power Derating Curve

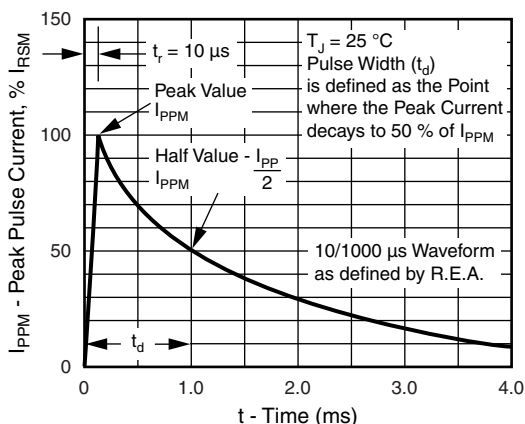


Fig. 3 - Pulse Waveform

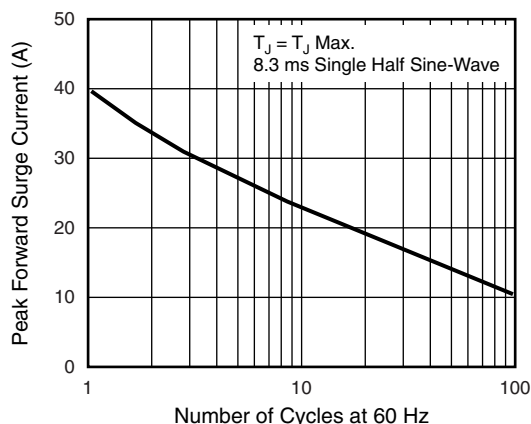
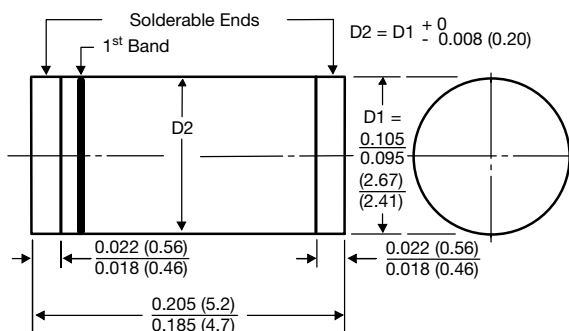


Fig. 6 - Maximum Non-Repetitive Peak Forward Surge Current Unidirectional Only



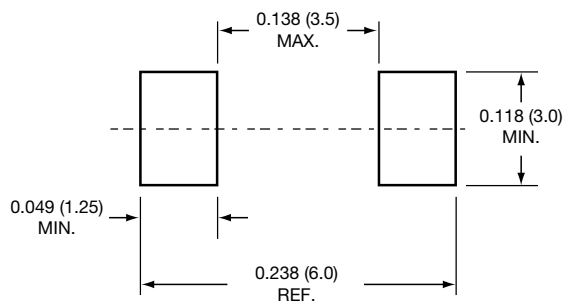
**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

**GL41 (DO-213AB)**



1<sup>st</sup> band denotes type and positive end (cathode)

**Mounting Pad Layout**





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