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## TGL41-6.8 THRU TGL41-200CA

### Features

- Economical Series For 500 Watt Surface Mount Transient Voltage Suppressor
- Available In Both Unidirectional And Bidirectional Construction
- 6.8 To 200 Volts Available
- 500 Watts Peak Power Dissipation
- Fast Response Time: Subnanosecond Response (Unipolar) or 5.0 ns (bipolar)
- Available on Tape and Reel.
- Plastic Package Has Flame Retardant Epoxy Meeting UL94V-0

### Mechanical Data

- Package JEDEC DO-213AB
- End-Cap Terminals solderable per MIL-STD-750, Method 2026
- Polarity is indicated by cathode band. Bidirectional devices have no polarity band.
- Maximum temperature for soldering: 250°C for 10 seconds.

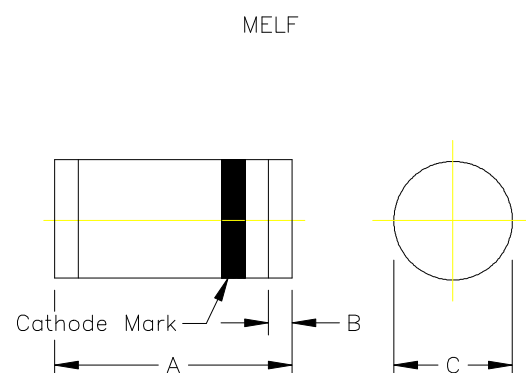
#### Maximum Ratings @ 25 °C Unless Otherwise Specified

|                                                |                         |                    |               |
|------------------------------------------------|-------------------------|--------------------|---------------|
| Peak Pulse Power Dissipation                   | $P_{PP}$                | 500 W              | (Note: 1, 5)  |
| Peak Forward Surge Current                     | $I_{FSM}$               | 40 A               | (Note: 3)     |
| Peak Pulse Current On 10/1000 $\mu$ s Waveform | $I_{PP}$                | See Table 1        | (Note: 1)     |
| Steady State Power Dissipation                 | $P_{(AV)}$              | 3.0 W              | (Note: 2, 4)  |
| Operating And Storage Temperatures             | $T_{OP}$ ,<br>$T_{STG}$ | -55°C to<br>+150°C |               |
| Thermal Resistance                             | $R_{\theta JEC}$        | 15°C/W             | EC is End Cap |

#### NOTES:

1. Non-repetitive current pulse, per Figure 2 and derated above  $T_A = 25^\circ\text{C}$  per Figure 1.
2. Mounted on 4.0mm<sup>2</sup> copper pads to each terminal. (See Figure 2)
3. 8.3 ms single half sine wave duty cycle = 4 pulses per minute maximum. Peak forward voltage at 40 A is 3.5 volts (unipolar only).
4. End Cap temperature at 100°C. Derated linearly above 100°C to zero at 150°C for dc steady state power. Also see figure 1 for transient derating.
5. Peak pulse current waveform is 10/1000 $\mu$ s. with maximum duty cycle of 0.01%. (See Figure 3)

## 500 WATT TRANSIENT ABSORPTION ZENER



| DIM | MILLIMETERS |      | INCHES |      |
|-----|-------------|------|--------|------|
|     | MIN         | MAX  | MIN    | MAX  |
| A   | 4.80        | 5.20 | .189   | .205 |
| C   | 2.39        | 2.66 | .094   | .105 |
| B   | 0.41        | 0.55 | .016   | .022 |

#### DO-213AB

### Mechanical Characteristics

**Case:** Molded encapsulation with solder contact tabs at each end.

**Finish:** All external surfaces are corrosion resistant, readily solderable.

**Polarity:** Banded end is cathode.  
(Unidirectional Only)

**Thermal Resistance:** 15°C/W maximum junction to end caps.

**Mounting Position:** Any

## TGL41-6.8 thru TGL41-200CA

### Electrical Characteristics $T_A = 25^\circ\text{C}$

| MICROSEMI<br>PART<br>NUMBER | BREAKDOWN<br>VOLTAGE<br>$V_{(BR)}$ |          |          | TEST<br>CURRENT<br>$I_T$ | RATED<br>STAND-OFF<br>VOLTAGE<br>$(V_{WM})$ | MAX<br>REVERSE<br>LEAKAGE<br>CURRENT<br>$I_D @$<br>$(V_{WM})$ | MAX.<br>CLAMPING<br>VOLTAGE<br>$V_C$<br>@ $I_{PP}$ | MAX.<br>PEAK<br>PULSE<br>CURRENT<br>$(I_{PP})$ | MAX.<br>TEMP<br>COEFFICIENT<br>$\alpha V_{BR}$ |
|-----------------------------|------------------------------------|----------|----------|--------------------------|---------------------------------------------|---------------------------------------------------------------|----------------------------------------------------|------------------------------------------------|------------------------------------------------|
|                             | MIN.                               | NOM.     | MAX.     |                          |                                             |                                                               |                                                    |                                                |                                                |
|                             | $V_{DC}$                           | $V_{DC}$ | $V_{DC}$ | mADC                     | V                                           | $\mu\text{ADC}$                                               | V                                                  | A                                              | %/°C                                           |
| TGL41-6.8                   | 6.12                               | 6.8      | 7.48     | 10                       | 5.5                                         | 1000                                                          | 10.8                                               | 46.3                                           | .057                                           |
| TGL41-6.8A                  | 6.45                               | 6.8      | 7.14     | 10                       | 5.8                                         | 1000                                                          | 10.5                                               | 47.6                                           | .057                                           |
| TGL41-7.5                   | 6.75                               | 7.5      | 8.25     | 10                       | 6.05                                        | 500                                                           | 11.7                                               | 42.7                                           | .061                                           |
| TGL41-7.5A                  | 7.13                               | 7.5      | 7.88     | 10                       | 6.4                                         | 500                                                           | 11.3                                               | 44.2                                           | .061                                           |
| TGL41-8.2                   | 7.38                               | 8.2      | 9.02     | 10                       | 6.63                                        | 200                                                           | 12.5                                               | 40.0                                           | .065                                           |
| TGL41-8.2A                  | 7.79                               | 8.2      | 8.61     | 10                       | 7.02                                        | 200                                                           | 12.1                                               | 41.3                                           | .065                                           |
| TGL41-9.1                   | 8.19                               | 9.1      | 10       | 1                        | 7.37                                        | 50                                                            | 13.8                                               | 36.2                                           | .068                                           |
| TGL41-9.1A                  | 8.65                               | 9.1      | 9.55     | 1                        | 7.78                                        | 50                                                            | 13.4                                               | 37.3                                           | .068                                           |
| TGL41-10                    | 9.0                                | 10       | 11       | 1                        | 8.1                                         | 10                                                            | 15                                                 | 33.3                                           | .073                                           |
| TGL41-10A                   | 9.5                                | 10       | 10.5     | 1                        | 8.55                                        | 10                                                            | 14.5                                               | 34.5                                           | .073                                           |
| TGL41-11                    | 9.9                                | 11       | 12.1     | 1                        | 8.92                                        | 5                                                             | 16.2                                               | 30.9                                           | .075                                           |
| TGL41-11A                   | 10.5                               | 11       | 11.6     | 1                        | 9.4                                         | 5                                                             | 15.6                                               | 32.1                                           | .075                                           |
| TGL41-12                    | 10.8                               | 12       | 13.2     | 1                        | 9.72                                        | 5                                                             | 17.3                                               | 28.9                                           | .078                                           |
| TGL41-12A                   | 11.4                               | 12       | 12.6     | 1                        | 10.2                                        | 5                                                             | 16.7                                               | 29.9                                           | .078                                           |
| TGL41-13                    | 11.7                               | 13       | 14.3     | 1                        | 10.5                                        | 5                                                             | 19                                                 | 26.3                                           | .081                                           |
| TGL41-13A                   | 12.4                               | 13       | 13.7     | 1                        | 11.1                                        | 5                                                             | 18.2                                               | 27.5                                           | .081                                           |
| TGL41-15                    | 13.5                               | 15       | 16.5     | 1                        | 12.1                                        | 5                                                             | 22                                                 | 22.7                                           | .084                                           |
| TGL41-15A                   | 14.3                               | 15       | 15.8     | 1                        | 12.8                                        | 5                                                             | 21.2                                               | 23.6                                           | .084                                           |
| TGL41-16                    | 14.4                               | 16       | 17.6     | 1                        | 12.9                                        | 5                                                             | 23.5                                               | 21.3                                           | .086                                           |
| TGL41-16A                   | 15.2                               | 16       | 16.8     | 1                        | 13.6                                        | 5                                                             | 22.5                                               | 22.2                                           | .086                                           |
| TGL41-18                    | 16.2                               | 18       | 19.8     | 1                        | 14.5                                        | 5                                                             | 26.5                                               | 18.5                                           | .088                                           |
| TGL41-18A                   | 17.1                               | 18       | 18.9     | 1                        | 15.3                                        | 5                                                             | 25.2                                               | 19.8                                           | .088                                           |
| TGL41-20                    | 18                                 | 20       | 22       | 1                        | 16.2                                        | 5                                                             | 29.1                                               | 17.2                                           | .090                                           |
| TGL41-20A                   | 19                                 | 20       | 21       | 1                        | 17.1                                        | 5                                                             | 27.7                                               | 18.1                                           | .090                                           |
| TGL41-22                    | 19.8                               | 22       | 24.2     | 1                        | 17.8                                        | 5                                                             | 31.9                                               | 15.7                                           | .092                                           |
| TGL41-22A                   | 20.9                               | 22       | 23.1     | 1                        | 18.8                                        | 5                                                             | 30.6                                               | 16.3                                           | .092                                           |
| TGL41-24                    | 21.6                               | 24       | 26.4     | 1                        | 19.4                                        | 5                                                             | 34.7                                               | 14.4                                           | .094                                           |
| TGL41-24A                   | 22.8                               | 24       | 25.2     | 1                        | 20.5                                        | 5                                                             | 33.2                                               | 15.1                                           | .094                                           |
| TGL41-27                    | 24.3                               | 27       | 29.7     | 1                        | 21.8                                        | 5                                                             | 39.1                                               | 12.8                                           | .096                                           |
| TGL41-27A                   | 25.7                               | 27       | 28.4     | 1                        | 23.1                                        | 5                                                             | 37.5                                               | 13.3                                           | .096                                           |
| TGL41-30                    | 27                                 | 30       | 33       | 1                        | 24.3                                        | 5                                                             | 43.5                                               | 11.5                                           | .097                                           |
| TGL41-30A                   | 28.5                               | 30       | 31.5     | 1                        | 25.6                                        | 5                                                             | 41.4                                               | 12.1                                           | .097                                           |
| TGL41-33                    | 29.7                               | 33       | 36.3     | 1                        | 26.8                                        | 5                                                             | 47.7                                               | 10.5                                           | .098                                           |
| TGL41-33A                   | 31.4                               | 33       | 34.7     | 1                        | 28.2                                        | 5                                                             | 45.7                                               | 10.9                                           | .098                                           |
| TGL41-36                    | 32.4                               | 36       | 39.6     | 1                        | 29.1                                        | 5                                                             | 52                                                 | 9.6                                            | .099                                           |
| TGL41-36A                   | 34.2                               | 36       | 37.8     | 1                        | 30.8                                        | 5                                                             | 49.9                                               | 10.0                                           | .099                                           |
| TGL41-39                    | 35.1                               | 39       | 42.9     | 1                        | 31.6                                        | 5                                                             | 56.4                                               | 8.9                                            | .100                                           |
| TGL41-39A                   | 37.1                               | 39       | 41       | 1                        | 33.3                                        | 5                                                             | 53.9                                               | 9.3                                            | .100                                           |
| TGL41-43                    | 38.7                               | 43       | 47.3     | 1                        | 34.8                                        | 5                                                             | 61.9                                               | 8.1                                            | .101                                           |
| TGL41-43A                   | 40.9                               | 43       | 45.2     | 1                        | 36.8                                        | 5                                                             | 59.3                                               | 8.4                                            | .101                                           |
| TGL41-47                    | 42.3                               | 47       | 51.7     | 1                        | 38.1                                        | 5                                                             | 67.8                                               | 7.4                                            | .101                                           |
| TGL41-47A                   | 44.7                               | 47       | 49.4     | 1                        | 40.2                                        | 5                                                             | 64.8                                               | 7.7                                            | .101                                           |
| TGL41-51                    | 45.9                               | 51       | 56.1     | 1                        | 41.3                                        | 5                                                             | 73.5                                               | 6.8                                            | .102                                           |
| TGL41-51A                   | 48.5                               | 51       | 53.6     | 1                        | 43.6                                        | 5                                                             | 70.1                                               | 7.1                                            | .102                                           |
| TGL41-56                    | 50.4                               | 56       | 61.6     | 1                        | 45.4                                        | 5                                                             | 80.5                                               | 6.2                                            | .103                                           |
| TGL41-56A                   | 53.2                               | 56       | 58.8     | 1                        | 47.8                                        | 5                                                             | 77                                                 | 6.5                                            | .103                                           |
| TGL41-62                    | 55.8                               | 62       | 68.2     | 1                        | 50.2                                        | 5                                                             | 89                                                 | 5.6                                            | .104                                           |
| TGL41-62A                   | 58.9                               | 62       | 65.1     | 1                        | 53                                          | 5                                                             | 85                                                 | 5.9                                            | .104                                           |
| TGL41-68                    | 61.2                               | 68       | 74.8     | 1                        | 55.1                                        | 5                                                             | 98                                                 | 5.1                                            | .104                                           |
| TGL41-68A                   | 64.6                               | 68       | 71.4     | 1                        | 58.1                                        | 5                                                             | 92                                                 | 5.4                                            | .104                                           |
| TGL41-75                    | 67.5                               | 75       | 82.5     | 1                        | 60.7                                        | 5                                                             | 108                                                | 4.6                                            | .105                                           |
| TGL41-75A                   | 71.3                               | 75       | 78.8     | 1                        | 64.1                                        | 5                                                             | 103                                                | 4.9                                            | .105                                           |
| TGL41-82                    | 73.8                               | 82       | 90.2     | 1                        | 66.4                                        | 5                                                             | 118                                                | 4.2                                            | .105                                           |
| TGL41-82A                   | 77.9                               | 82       | 86.1     | 1                        | 70.1                                        | 5                                                             | 113                                                | 4.4                                            | .105                                           |
| TGL41-91                    | 81.9                               | 91       | 100      | 1                        | 73.7                                        | 5                                                             | 131                                                | 3.8                                            | .106                                           |
| TGL41-91A                   | 86.5                               | 91       | 95.5     | 1                        | 77.8                                        | 5                                                             | 125                                                | 4.0                                            | .106                                           |
| TGL41-100                   | 90                                 | 100      | 110      | 1                        | 81                                          | 5                                                             | 144                                                | 3.5                                            | .106                                           |
| TGL41-100A                  | 95                                 | 100      | 105      | 1                        | 85.5                                        | 5                                                             | 137                                                | 3.6                                            | .106                                           |
| TGL41-110                   | 99                                 | 110      | 121      | 1                        | 89.2                                        | 5                                                             | 158                                                | 3.2                                            | .107                                           |
| TGL41-110A                  | 105                                | 110      | 116      | 1                        | 94                                          | 5                                                             | 152                                                | 3.3                                            | .107                                           |
| TGL41-120                   | 108                                | 120      | 132      | 1                        | 97.2                                        | 5                                                             | 173                                                | 2.9                                            | .107                                           |
| TGL41-120A                  | 114                                | 120      | 126      | 1                        | 102                                         | 5                                                             | 165                                                | 3.0                                            | .107                                           |
| TGL41-130                   | 117                                | 130      | 143      | 1                        | 105                                         | 5                                                             | 187                                                | 2.7                                            | .107                                           |
| TGL41-130A                  | 124                                | 130      | 137      | 1                        | 111                                         | 5                                                             | 179                                                | 2.8                                            | .107                                           |
| TGL41-150                   | 135                                | 150      | 165      | 1                        | 121                                         | 5                                                             | 215                                                | 2.3                                            | .108                                           |
| TGL41-150A                  | 143                                | 150      | 158      | 1                        | 128                                         | 5                                                             | 207                                                | 2.4                                            | .108                                           |
| TGL41-160                   | 144                                | 160      | 176      | 1                        | 130                                         | 5                                                             | 230                                                | 2.2                                            | .108                                           |
| TGL41-160A                  | 152                                | 160      | 168      | 1                        | 136                                         | 5                                                             | 219                                                | 2.3                                            | .108                                           |
| TGL41-170                   | 153                                | 170      | 187      | 1                        | 138                                         | 5                                                             | 244                                                | 2.0                                            | .108                                           |
| TGL41-170A                  | 161                                | 170      | 179      | 1                        | 145                                         | 5                                                             | 234                                                | 2.1                                            | .108                                           |
| TGL41-180                   | 162                                | 180      | 198      | 1                        | 146                                         | 5                                                             | 258                                                | 1.9                                            | .108                                           |
| TGL41-180A                  | 171                                | 180      | 189      | 1                        | 154                                         | 5                                                             | 246                                                | 2.0                                            | .108                                           |
| TGL41-200                   | 180                                | 200      | 220      | 1                        | 162                                         | 5                                                             | 287                                                | 1.7                                            | .108                                           |
| TGL41-200A                  | 190                                | 200      | 210      | 1                        | 171                                         | 5                                                             | 274                                                | 1.8                                            | .108                                           |

For Bidirectional Construction,  
Indicate a C or CA Suffix after  
part number TGL41-6.8 thru  
TGL41-200A. Capacitance will  
be ½ that shown in Figure 3.

Forward Voltage ( $V_F$ ) @ 50 amps  
Peak 8.3 msec sine wave equal  
To 3.5 volts mix.  
(For Unidirectional only)  
 $V_C$

#### SYMBOLS AND ABBREVIATIONS

$V_{WM}$  = Rated Stand-Off voltage  
 $I_{PP}$  = Peak Pulse Current  
 $P_{PP}$  = Peak Pulse Power  
= Clamping Voltage

$V_{(BR)}$  = Breakdown Voltage  
 $I_T$  = Test Current  
 $I_D$  = Reverse Leakage

## TGL41-6.8 thru TGL41-200CA

Figure 1  
Derating Curve

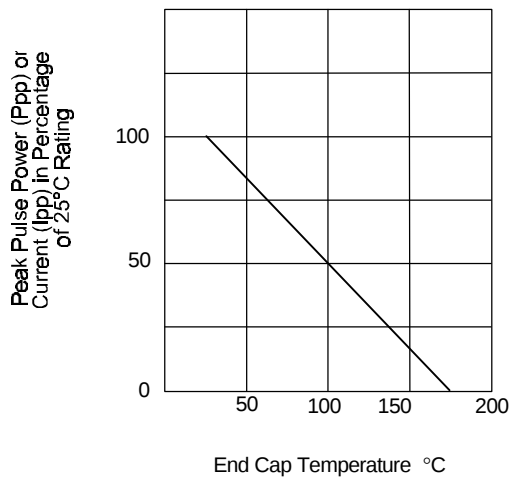


Figure 2

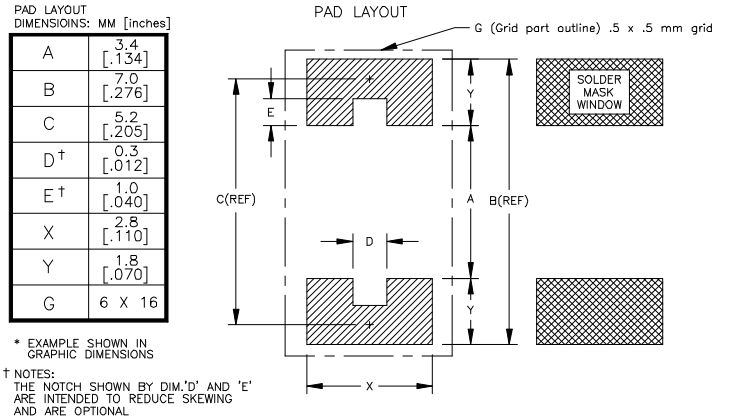


Figure 3  
Pulse Waveform For Exponential Surge

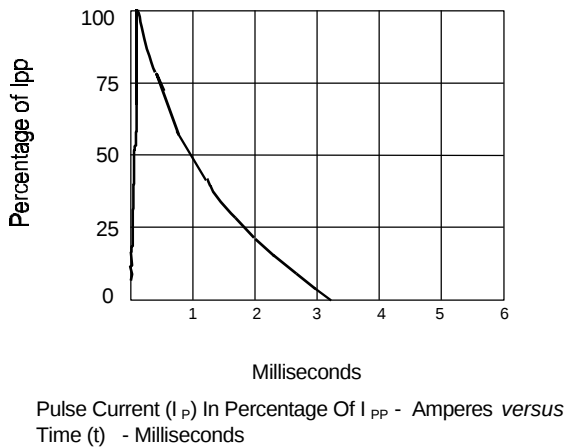
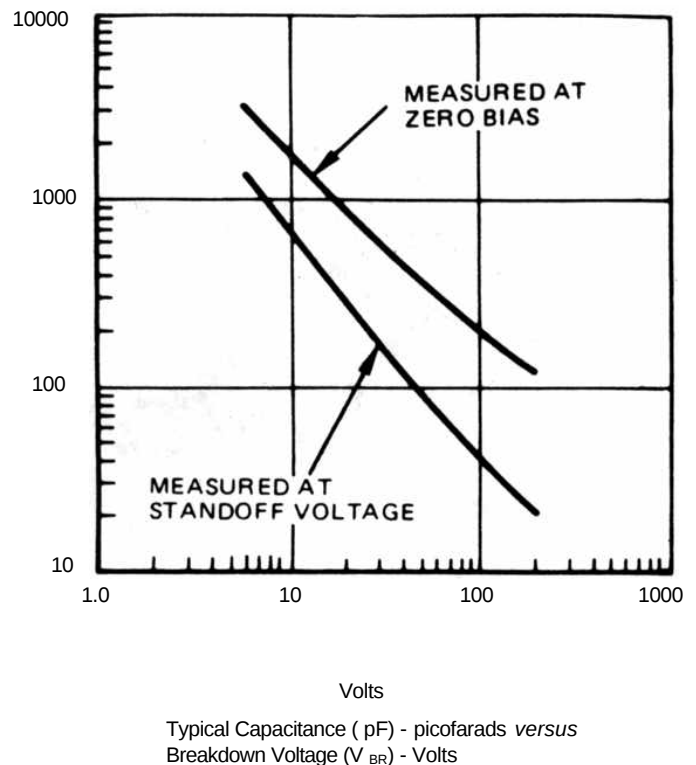
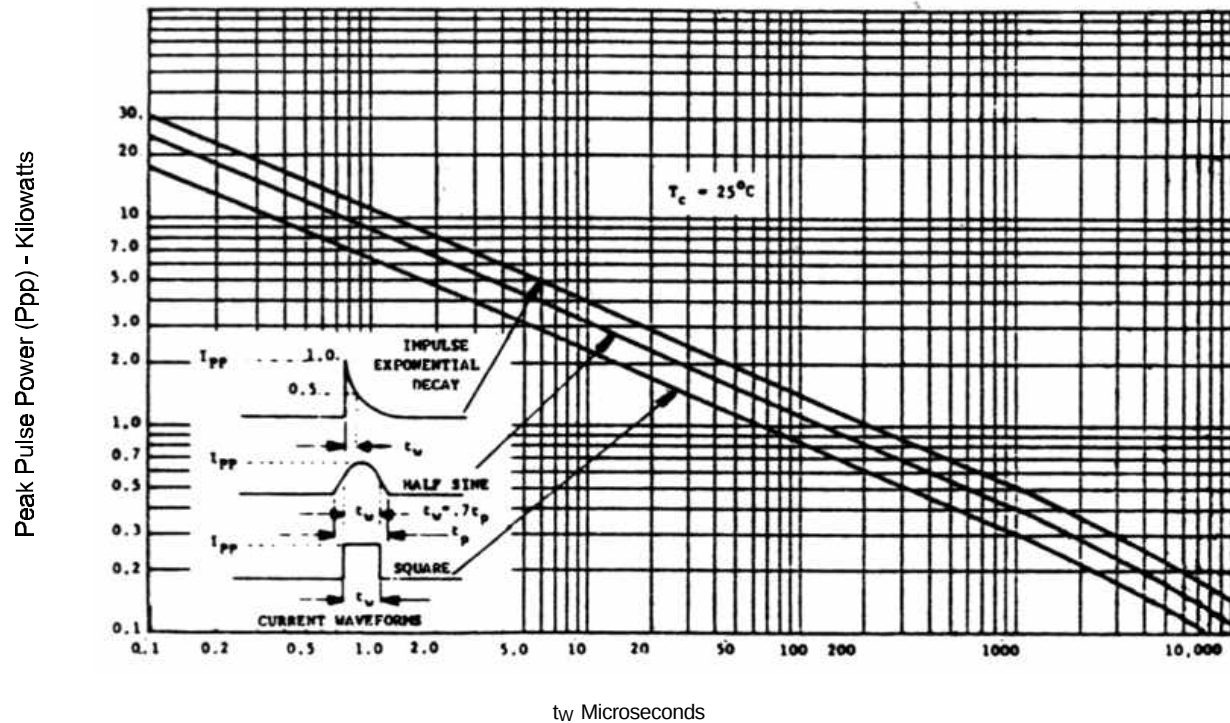


Figure 4  
Typical Capacitance versus Breakdown Voltage (Unidirectional Only)  
Bidirectional Suffix C Devices are ½ That Shown



# TGL41-6.8 thru TGL41-200CA

Figure 4  
Peak Pulse Power versus Pulse Width



Peak Pulse Power ( $P_{pp}$ ) - Kilowatts versus  
Pulse Width ( $t_w$ ) - Microseconds