

**GPP TRANSIENT VOLTAGE SUPPRESSOR**  
**600 WATT PEAK POWER 5.0 WATTS STEADY STATE**

**FEATURES**

- \* Plastic package has underwriters laboratory
- \* Glass passivated chip construction
- \* 600 watt surge capability at 1ms
- \* Excellent clamping capability
- \* Low zener impedance
- \* Fast response time

Ratings at 25 °C ambient temperature unless otherwise specified.

**MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS**

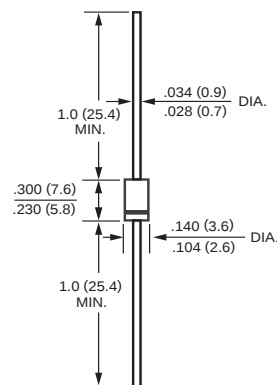
Ratings at 25 °C ambient temperature unless otherwise specified.

Single phase, half wave, 60 Hz, resistive or inductive load,

For capacitive load, derate current by 20%.



**DO-15**



**DEVICES FOR BIPOLAR APPLICATIONS**

For Bidirectional use C or CA suffix for types P6KE6.8 thru P6KE400

Electrical characteristics apply in both direction

**MAXIMUM RATINGS** (At  $T_A = 25^\circ\text{C}$  unless otherwise noted)

| RATINGS                                                                                                         | SYMBOL         | VALUE        | UNITS            |
|-----------------------------------------------------------------------------------------------------------------|----------------|--------------|------------------|
| Peak power dissipation with a 10/1000uS (NOTES 1, FIG.1)                                                        | PPPM           | Minimum 600  | Watts            |
| Steady state power dissipation at $T_L = 75^\circ\text{C}$ lead lengths, .375" ( 9.5 mm ) ( NOTES 2 )           | $P_{M(AV)}$    | 5.0          | Watts            |
| Peak forward surge current, 8.3ms single half sine wave- superimposed on rated load( JEDEC METHOD ) ( NOTES 3 ) | $I_{FSM}$      | 100          | Amps             |
| Maximum instantaneous forward voltage at 50A for unidirectional only ( NOTES 4 )                                | $V_F$          | 3.5/5.0      | Volts            |
| Operating and storage temperature range                                                                         | $T_J, T_{STG}$ | -55 to + 150 | $^\circ\text{C}$ |

NOTES : 1. Non-repetitive current pulse, per Fig.3 and derated above  $T_A = 25^\circ\text{C}$  per Fig.2.

2. Mounted on copper pad area of 1.6 X 1.6" ( 40X40 mm) per Fig. 5

3. Measured on 8.3ms single half sine-wave or equivalent square wave duty cycle = 4 pulses per minute maximum.

4.  $V_F = 3.0\text{V}$  max. for devices of  $V_{(BR)} \leq 200\text{V}$  and  $V_F = 5.0\text{ Volts}$  for devices of  $V_{(BR)} \geq 200\text{V}$ .

# RATING AND CHARACTERISTIC CURVES ( P6KE6.8 THRU P6KE400CA )

FIG. 1 - PEAK PULSE POWER RATING CURVE

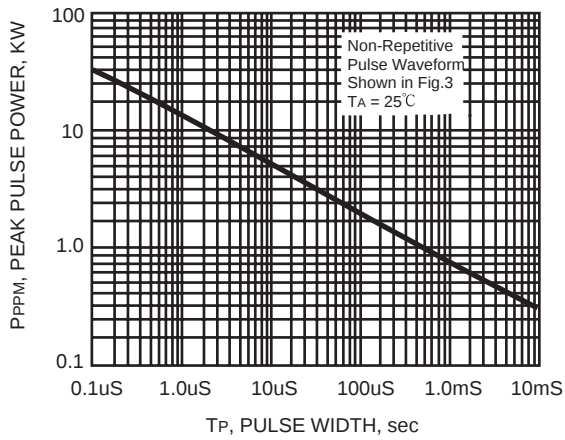


FIG. 2 - PULSE DERATING CURVE

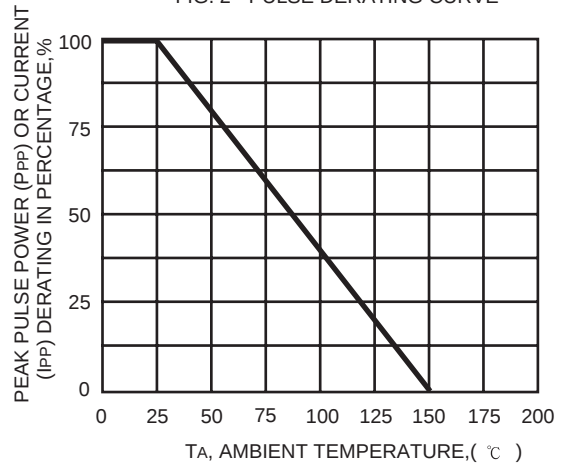


FIG. 3 - PULSE WAVEFORM

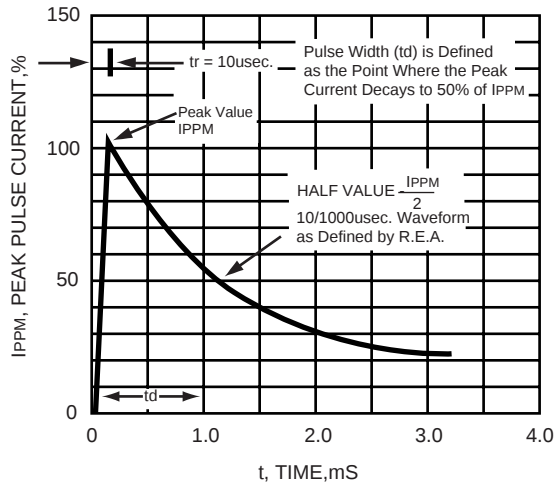
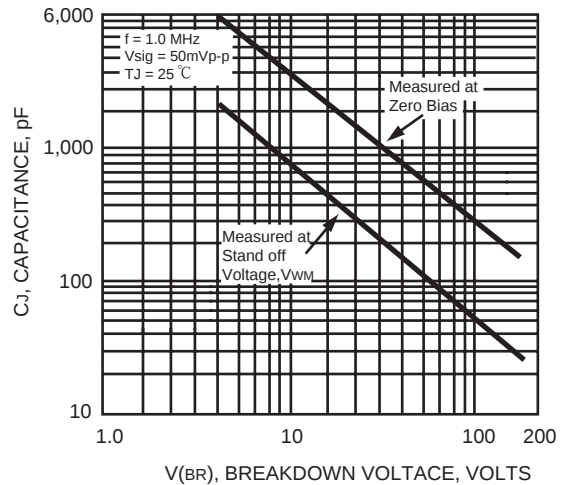


FIG. 4 - TYPICAL JUNCTION CAPACITANCE



## RATING AND CHARACTERISTIC CURVES ( P6KE6.8 THRU P6KE400CA )

FIG. 5 - STEADY STATE POWER DERATING CURVE

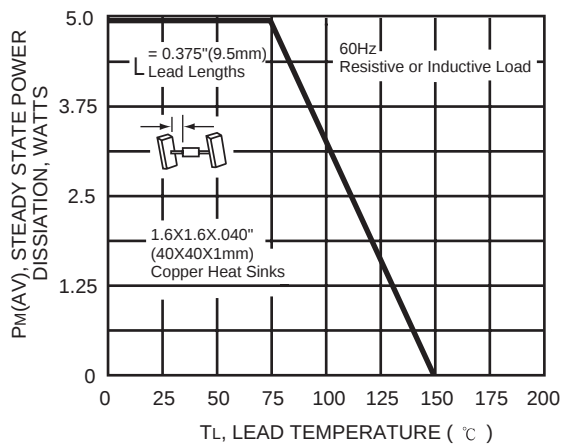


FIG. 6 - MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT UNIDIRECTIONAL

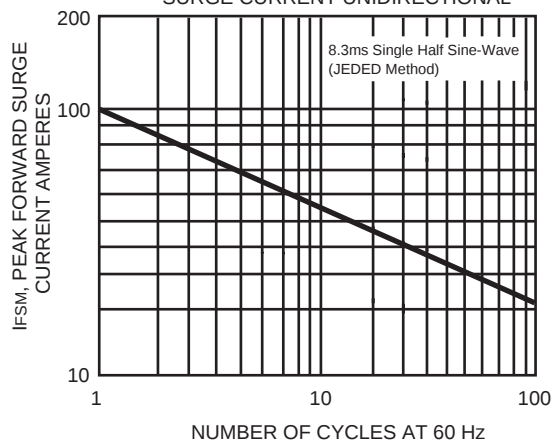
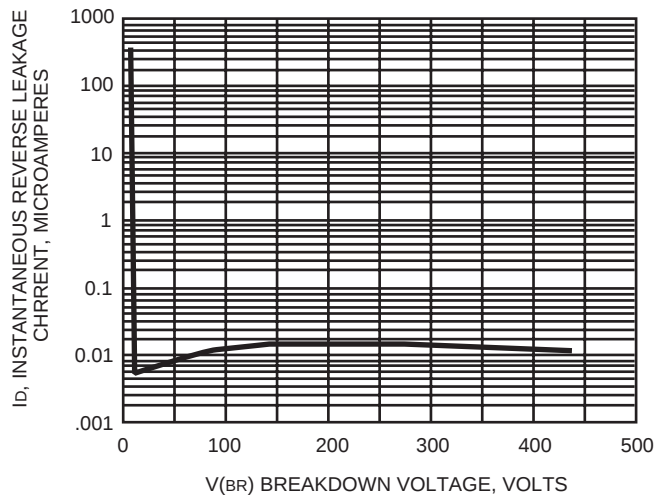


FIG. 7 - TYPICAL REVERSE LEAKAGE CHARACTERISTICS



# TRANSIENT VOLTAGE SUPPRESSORS

600W SERIES TVS DIODES / DO-15 ( CASE 8 ) 600W

| TYPE     | Breakdown Voltage       |      |                      | Reverse Stand off Voltage<br>V <sub>WM</sub> (Volts) | Maximum Reverse Leakage at V <sub>WM</sub><br>I <sub>D</sub> (uA) | Maximum Peak Pulse Current<br>I <sub>PPM</sub> (Amps) | Maximum Clamping Voltage at I <sub>PPM</sub><br>V <sub>C</sub> (Volts) |
|----------|-------------------------|------|----------------------|------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------------------------|------------------------------------------------------------------------|
|          | V <sub>BR</sub> (Volts) |      | @I <sub>T</sub> (mA) |                                                      |                                                                   |                                                       |                                                                        |
|          | MIN.                    | MAX. |                      |                                                      |                                                                   |                                                       |                                                                        |
| P6KE6.8  | 6.12                    | 7.48 | 10                   | 5.50                                                 | 1000                                                              | 55.6                                                  | 10.8                                                                   |
| P6KE6.8A | 6.45                    | 7.14 | 10                   | 5.80                                                 | 1000                                                              | 57.1                                                  | 10.5                                                                   |
| P6KE7.5  | 6.75                    | 8.25 | 10                   | 6.05                                                 | 500                                                               | 51.3                                                  | 11.7                                                                   |
| P6KE7.5A | 7.13                    | 7.88 | 10                   | 6.40                                                 | 500                                                               | 53.1                                                  | 11.3                                                                   |
| P6KE8.2  | 7.38                    | 9.02 | 10                   | 6.63                                                 | 200                                                               | 48                                                    | 12.5                                                                   |
| P6KE8.2A | 7.79                    | 8.61 | 10                   | 7.02                                                 | 200                                                               | 49.6                                                  | 12.1                                                                   |
| P6KE9.1  | 8.19                    | 10.0 | 1.0                  | 7.37                                                 | 50                                                                | 43.5                                                  | 13.8                                                                   |
| P6KE9.1A | 8.65                    | 9.55 | 1.0                  | 7.78                                                 | 50                                                                | 44.8                                                  | 13.4                                                                   |
| P6KE10   | 9.00                    | 11.0 | 1.0                  | 8.10                                                 | 10                                                                | 40                                                    | 15.0                                                                   |
| P6KE10A  | 9.50                    | 10.5 | 1.0                  | 8.55                                                 | 10                                                                | 41.4                                                  | 14.5                                                                   |
| P6KE11   | 9.90                    | 12.1 | 1.0                  | 8.92                                                 | 5.0                                                               | 37                                                    | 16.2                                                                   |
| P6KE11A  | 10.5                    | 11.6 | 1.0                  | 9.40                                                 | 5.0                                                               | 38.5                                                  | 15.6                                                                   |
| P6KE12   | 10.8                    | 13.2 | 1.0                  | 9.72                                                 | 5.0                                                               | 34.7                                                  | 17.3                                                                   |
| P6KE12A  | 11.4                    | 12.6 | 1.0                  | 10.2                                                 | 5.0                                                               | 35.9                                                  | 16.7                                                                   |
| P6KE13   | 11.7                    | 14.3 | 1.0                  | 10.5                                                 | 5.0                                                               | 31.6                                                  | 19.0                                                                   |
| P6KE13A  | 12.4                    | 13.7 | 1.0                  | 11.1                                                 | 5.0                                                               | 33                                                    | 18.2                                                                   |
| P6KE15   | 13.5                    | 16.5 | 1.0                  | 12.1                                                 | 5.0                                                               | 27.3                                                  | 22.0                                                                   |
| P6KE15A  | 14.3                    | 15.8 | 1.0                  | 12.8                                                 | 5.0                                                               | 28.3                                                  | 21.2                                                                   |
| P6KE16   | 14.4                    | 17.6 | 1.0                  | 12.9                                                 | 5.0                                                               | 25.5                                                  | 23.5                                                                   |
| P6KE16A  | 15.2                    | 16.8 | 1.0                  | 13.6                                                 | 5.0                                                               | 26.7                                                  | 22.5                                                                   |
| P6KE18   | 16.2                    | 19.8 | 1.0                  | 14.5                                                 | 5.0                                                               | 22.6                                                  | 26.5                                                                   |
| P6KE18A  | 17.1                    | 18.9 | 1.0                  | 15.3                                                 | 5.0                                                               | 23.8                                                  | 25.2                                                                   |
| P6KE20   | 18.0                    | 22.0 | 1.0                  | 16.2                                                 | 5.0                                                               | 20.6                                                  | 29.1                                                                   |
| P6KE20A  | 19.0                    | 21.0 | 1.0                  | 17.1                                                 | 5.0                                                               | 21.7                                                  | 27.7                                                                   |
| P6KE22   | 19.8                    | 24.2 | 1.0                  | 17.8                                                 | 5.0                                                               | 18.8                                                  | 31.9                                                                   |
| P6KE22A  | 20.9                    | 23.1 | 1.0                  | 18.8                                                 | 5.0                                                               | 19.6                                                  | 30.6                                                                   |
| P6KE24   | 21.6                    | 26.4 | 1.0                  | 19.4                                                 | 5.0                                                               | 17.3                                                  | 34.7                                                                   |
| P6KE24A  | 22.8                    | 25.2 | 1.0                  | 20.5                                                 | 5.0                                                               | 18.1                                                  | 33.2                                                                   |
| P6KE27   | 24.3                    | 29.7 | 1.0                  | 21.8                                                 | 5.0                                                               | 15.3                                                  | 39.1                                                                   |
| P6KE27A  | 25.7                    | 28.4 | 1.0                  | 23.1                                                 | 5.0                                                               | 16                                                    | 37.5                                                                   |
| P6KE30   | 27.0                    | 33.0 | 1.0                  | 24.3                                                 | 5.0                                                               | 13.8                                                  | 43.5                                                                   |
| P6KE30A  | 28.5                    | 31.5 | 1.0                  | 25.6                                                 | 5.0                                                               | 14.5                                                  | 41.4                                                                   |
| P6KE33   | 29.7                    | 36.3 | 1.0                  | 26.8                                                 | 5.0                                                               | 12.6                                                  | 47.7                                                                   |
| P6KE33A  | 31.4                    | 34.7 | 1.0                  | 28.2                                                 | 5.0                                                               | 13.1                                                  | 45.7                                                                   |
| P6KE36   | 32.4                    | 39.6 | 1.0                  | 29.1                                                 | 5.0                                                               | 11.5                                                  | 52.0                                                                   |
| P6KE36A  | 34.2                    | 37.8 | 1.0                  | 30.8                                                 | 5.0                                                               | 12                                                    | 49.9                                                                   |
| P6KE39   | 35.1                    | 42.9 | 1.0                  | 31.6                                                 | 5.0                                                               | 10.6                                                  | 56.4                                                                   |
| P6KE39A  | 37.1                    | 41.0 | 1.0                  | 33.3                                                 | 5.0                                                               | 11.1                                                  | 53.9                                                                   |
| P6KE43   | 38.7                    | 47.3 | 1.0                  | 34.8                                                 | 5.0                                                               | 9.7                                                   | 61.9                                                                   |
| P6KE43A  | 40.9                    | 45.2 | 1.0                  | 36.8                                                 | 5.0                                                               | 10.1                                                  | 59.3                                                                   |
| P6KE47   | 42.3                    | 51.7 | 1.0                  | 38.1                                                 | 5.0                                                               | 8.8                                                   | 67.8                                                                   |
| P6KE47A  | 44.7                    | 49.4 | 1.0                  | 40.2                                                 | 5.0                                                               | 9.3                                                   | 64.8                                                                   |
| P6KE51   | 45.9                    | 56.1 | 1.0                  | 41.3                                                 | 5.0                                                               | 8.2                                                   | 73.5                                                                   |
| P6KE51A  | 48.5                    | 53.6 | 1.0                  | 43.6                                                 | 5.0                                                               | 8.6                                                   | 70.1                                                                   |
| P6KE56   | 50.4                    | 61.6 | 1.0                  | 45.4                                                 | 5.0                                                               | 7.5                                                   | 80.5                                                                   |
| P6KE56A  | 53.2                    | 58.8 | 1.0                  | 47.8                                                 | 5.0                                                               | 7.8                                                   | 77.0                                                                   |

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|----------|----------------------------|------|-------------------------|---------------------------------------------------------|-------------------------------------------------------------------|----------------------------------------------------------|------------------------------------------------------------------------|
|          | V <sub>BR</sub><br>(Volts) |      | @I <sub>T</sub><br>(mA) |                                                         |                                                                   |                                                          |                                                                        |
|          | MIN.                       | MAX. |                         |                                                         |                                                                   |                                                          |                                                                        |
| P6KE62   | 55.8                       | 68.2 | 1.0                     | 50.2                                                    | 5.0                                                               | 6.7                                                      | 89.0                                                                   |
| P6KE62A  | 58.9                       | 65.1 | 1.0                     | 53.0                                                    | 5.0                                                               | 7.1                                                      | 85.0                                                                   |
| P6KE68   | 61.2                       | 74.8 | 1.0                     | 55.1                                                    | 5.0                                                               | 6.1                                                      | 98.0                                                                   |
| P6KE68A  | 64.6                       | 71.4 | 1.0                     | 58.1                                                    | 5.0                                                               | 6.5                                                      | 92.0                                                                   |
| P6KE75   | 67.5                       | 82.5 | 1.0                     | 60.7                                                    | 5.0                                                               | 5.6                                                      | 108                                                                    |
| P6KE75A  | 71.3                       | 78.8 | 1.0                     | 64.1                                                    | 5.0                                                               | 5.8                                                      | 103                                                                    |
| P6KE82   | 73.8                       | 90.2 | 1.0                     | 66.4                                                    | 5.0                                                               | 5.1                                                      | 118                                                                    |
| P6KE82A  | 77.9                       | 86.1 | 1.0                     | 70.1                                                    | 5.0                                                               | 5.3                                                      | 113                                                                    |
| P6KE91   | 81.9                       | 100  | 1.0                     | 73.7                                                    | 5.0                                                               | 4.6                                                      | 131                                                                    |
| P6KE91A  | 86.5                       | 95.5 | 1.0                     | 77.8                                                    | 5.0                                                               | 4.8                                                      | 125                                                                    |
| P6KE100  | 90.0                       | 110  | 1.0                     | 81.0                                                    | 5.0                                                               | 4.2                                                      | 144                                                                    |
| P6KE100A | 95.0                       | 105  | 1.0                     | 85.5                                                    | 5.0                                                               | 4.4                                                      | 137                                                                    |
| P6KE110  | 99.0                       | 121  | 1.0                     | 89.2                                                    | 5.0                                                               | 3.8                                                      | 158                                                                    |
| P6KE110A | 105                        | 116  | 1.0                     | 94.0                                                    | 5.0                                                               | 3.9                                                      | 152                                                                    |
| P6KE120  | 108                        | 132  | 1.0                     | 97.2                                                    | 5.0                                                               | 3.5                                                      | 173                                                                    |
| P6KE120A | 114                        | 126  | 1.0                     | 102                                                     | 5.0                                                               | 3.6                                                      | 165                                                                    |
| P6KE130  | 117                        | 143  | 1.0                     | 105                                                     | 5.0                                                               | 3.2                                                      | 187                                                                    |
| P6KE130A | 124                        | 137  | 1.0                     | 111                                                     | 5.0                                                               | 3.4                                                      | 179                                                                    |
| P6KE150  | 135                        | 165  | 1.0                     | 121                                                     | 5.0                                                               | 2.8                                                      | 215                                                                    |
| P6KE150A | 143                        | 158  | 1.0                     | 128                                                     | 5.0                                                               | 2.9                                                      | 207                                                                    |
| P6KE160  | 144                        | 176  | 1.0                     | 130                                                     | 5.0                                                               | 2.6                                                      | 230                                                                    |
| P6KE160A | 152                        | 168  | 1.0                     | 136                                                     | 5.0                                                               | 2.7                                                      | 219                                                                    |
| P6KE170  | 153                        | 187  | 1.0                     | 138                                                     | 5.0                                                               | 2.5                                                      | 244                                                                    |
| P6KE170A | 162                        | 179  | 1.0                     | 145                                                     | 5.0                                                               | 2.6                                                      | 234                                                                    |
| P6KE180  | 162                        | 198  | 1.0                     | 146                                                     | 5.0                                                               | 2.3                                                      | 258                                                                    |
| P6KE180A | 171                        | 189  | 1.0                     | 154                                                     | 5.0                                                               | 2.4                                                      | 246                                                                    |
| P6KE200  | 180                        | 220  | 1.0                     | 162                                                     | 5.0                                                               | 2.1                                                      | 287                                                                    |
| P6KE200A | 190                        | 210  | 1.0                     | 171                                                     | 5.0                                                               | 2.2                                                      | 274                                                                    |
| P6KE220  | 198                        | 242  | 1.0                     | 175                                                     | 5.0                                                               | 1.7                                                      | 344                                                                    |
| P6KE220A | 209                        | 231  | 1.0                     | 185                                                     | 5.0                                                               | 1.8                                                      | 328                                                                    |
| P6KE250  | 225                        | 275  | 1.0                     | 202                                                     | 5.0                                                               | 1.7                                                      | 360                                                                    |
| P6KE250A | 237                        | 263  | 1.0                     | 214                                                     | 5.0                                                               | 1.7                                                      | 344                                                                    |
| P6KE300  | 270                        | 330  | 1.0                     | 243                                                     | 5.0                                                               | 1.4                                                      | 430                                                                    |
| P6KE300A | 285                        | 315  | 1.0                     | 256                                                     | 5.0                                                               | 1.4                                                      | 414                                                                    |
| P6KE350  | 315                        | 385  | 1.0                     | 284                                                     | 5.0                                                               | 1.2                                                      | 504                                                                    |
| P6KE350A | 332                        | 368  | 1.0                     | 300                                                     | 5.0                                                               | 1.2                                                      | 482                                                                    |
| P6KE400  | 360                        | 440  | 1.0                     | 324                                                     | 5.0                                                               | 1.0                                                      | 574                                                                    |
| P6KE400A | 380                        | 420  | 1.0                     | 342                                                     | 5.0                                                               | 1.1                                                      | 548                                                                    |
| P6KE440  | 396                        | 484  | 1.0                     | 356                                                     | 5.0                                                               | 0.95                                                     | 631                                                                    |
| P6KE440A | 418                        | 462  | 1.0                     | 376                                                     | 5.0                                                               | 1.0                                                      | 602                                                                    |

- Notes :
1.  $V_{BR}$  measured after  $I_T$  applied for 300ms.  $I_T$  = square pulse or equivalent.
  2. For bidirectional use C or CA suffixs for all types (ex. P6KE6.8C,P6KE440CA) electrical characteristics apply in both directions.
  3. For bidirectional types having  $V_{WM}$  of 10 volts and less, the  $I_D$  limit is doubled.
  4. All devices UL listed file# E211196.