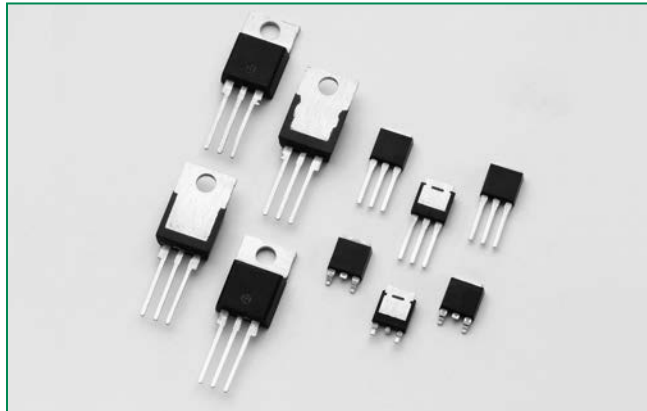


### Lxx04xx & Qxx04xx Series



#### Agency Approval

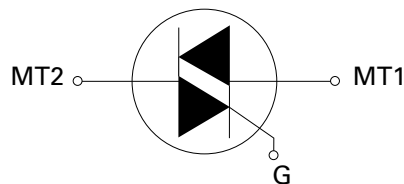
| Agency | Agency File Number |
|--------|--------------------|
|        | E71639*            |

\* - L Package Only

#### Main Features

| Symbol            | Value                 | Unit |
|-------------------|-----------------------|------|
| $I_{T(RMS)}$      | 4                     | A    |
| $V_{DRM}/V_{RRM}$ | 400, 600, 800 or 1000 | V    |
| $I_{GT(Q1)}$      | 3 to 25               | mA   |

#### Schematic Symbol



#### Description

This 4 Amp bidirectional solid state switch series is designed for AC switching and phase control applications such as motor speed and temperature modulation controls, lighting controls, and static switching relays.

**Sensitive** type devices guarantee gate control in Quadrants I & IV as needed for digital control circuitry.

**Standard** type devices normally operate in Quadrants I & III triggered from AC line.

#### Features & Benefits

- RoHS Compliant
- Glass – passivated junctions
- Voltage capability up to 1000 V
- Surge capability up to 55 A
- The L-package has an isolation rating of 2500V<sub>RMS</sub>
- Solid-state switching eliminates arcing or contact bounce that create voltage transients
- No contacts to wear out from reaction of switching events
- Restricted (or limited) RFI generation, depending on activation point of sine wave
- Requires only a short gate activation pulse in each half-cycle

#### Applications

Typical applications are AC solid-state switches, power tools, home/brown goods and white goods appliances.

Sensitive gate Triacs can be directly driven by microprocessor or popular opto-couplers/isolators.

Internally constructed isolated packages are offered for ease of heat sinking with highest isolation voltage.

#### Absolute Maximum Ratings — Sensitive Triacs (4 Quadrants)

| Symbol              | Parameter                                                                                   |                         |                        | Value      | Unit             |
|---------------------|---------------------------------------------------------------------------------------------|-------------------------|------------------------|------------|------------------|
| I <sub>T(RMS)</sub> | RMS on-state current<br>(full sine wave)                                                    | Lxx04Ly                 | T <sub>C</sub> = 90°C  | 4          | A                |
|                     |                                                                                             | Lxx04Ry/Lxx04Vy/Lxx04Dy | T <sub>C</sub> = 95°C  |            |                  |
| I <sub>TSM</sub>    | Non repetitive surge peak on-state current<br>(full cycle, T <sub>J</sub> initial = 25°C)   | f = 50 Hz               | t = 20 ms              | 33         | A                |
|                     |                                                                                             | f = 60 Hz               | t = 16.7 ms            | 40         |                  |
| I <sup>2</sup> t    | I <sup>2</sup> t Value for fusing                                                           | t <sub>p</sub> = 8.3 ms |                        | 6.6        | A <sup>2</sup> s |
| di/dt               | Critical rate of rise of on-state current<br>(I <sub>G</sub> = 50mA with ≤ 0.1μs rise time) | f = 120 Hz              | T <sub>J</sub> = 110°C | 50         | A/μs             |
| I <sub>GTM</sub>    | Peak gate trigger current                                                                   | t <sub>p</sub> =20μs    | T <sub>J</sub> = 110°C | 4          | A                |
| P <sub>G(AV)</sub>  | Average gate power dissipation                                                              |                         | T <sub>J</sub> = 110°C | 0.3        | W                |
| T <sub>stg</sub>    | Storage temperature range                                                                   |                         |                        | -40 to 150 | °C               |
| T <sub>J</sub>      | Operating junction temperature range                                                        |                         |                        | -40 to 110 | °C               |

Note: xx = voltage/10, y = sensitivity

### Absolute Maximum Ratings — Standard Triacs

| Symbol       | Parameter                                                                                                |                         |                           | Value      | Unit                   |
|--------------|----------------------------------------------------------------------------------------------------------|-------------------------|---------------------------|------------|------------------------|
| $I_{T(RMS)}$ | RMS on-state current<br>(full sine wave)                                                                 | Qxx04Ly                 | $T_C = 105^\circ\text{C}$ | 4          | A                      |
|              |                                                                                                          | Qxx04Ry/Qxx04Vy/Qxx04Dy | $T_C = 110^\circ\text{C}$ |            |                        |
| $I_{TSM}$    | Non repetitive surge peak on-state current<br>(full cycle, $T_J$ initial = $25^\circ\text{C}$ )          | f = 50 Hz               | t = 20 ms                 | 46         | A                      |
|              |                                                                                                          | f = 60 Hz               | t = 16.7 ms               | 55         |                        |
| $I^2t$       | $I^2t$ Value for fusing                                                                                  | $t_p = 8.3$ ms          |                           | 12.5       | $\text{A}^2\text{s}$   |
| di/dt        | Critical rate of rise of on-state current<br>( $I_G = 50\text{mA}$ with $\leq 0.1\mu\text{s}$ rise time) | f = 120 Hz              | $T_J = 125^\circ\text{C}$ | 50         | $\text{A}/\mu\text{s}$ |
| $I_{GTM}$    | Peak gate trigger current                                                                                | $t_p = 20\mu\text{s}$   | $T_J = 125^\circ\text{C}$ | 4          | A                      |
| $P_{G(AV)}$  | Average gate power dissipation                                                                           |                         | $T_J = 125^\circ\text{C}$ | 0.3        | W                      |
| $T_{stg}$    | Storage temperature range                                                                                |                         |                           | -40 to 150 | $^\circ\text{C}$       |
| $T_J$        | Operating junction temperature range                                                                     |                         |                           | -40 to 125 | $^\circ\text{C}$       |

Note: xx = voltage/10, y = sensitivity

### Electrical Characteristics ( $T_J = 25^\circ\text{C}$ , unless otherwise specified) — Sensitive Triac (4 Quadrants)

| Symbol   | Test Conditions                                                       | Quadrant     |      | Lxx04x3 | Lxx04x5 | Lxx04x6 | Lxx04x8 | Unit                   |
|----------|-----------------------------------------------------------------------|--------------|------|---------|---------|---------|---------|------------------------|
| $I_{GT}$ | $V_D = 12\text{V}$ $R_L = 60\Omega$                                   | I – II – III | MAX. | 3       | 5       | 5       | 10      | mA                     |
|          |                                                                       | IV           |      | 3       | 5       | 10      | 20      |                        |
| $V_{GT}$ | $V_D = 12\text{V}$ $R_L = 60\Omega$                                   | ALL          | MAX. | 1.3     |         |         |         | V                      |
| $V_{GD}$ | $V_D = V_{DRM}$ $R_L = 3.3\text{k}\Omega$ $T_J = 110^\circ\text{C}$   | ALL          | MIN. | 0.2     |         |         |         | V                      |
| $I_H$    | $I_T = 100\text{mA}$                                                  |              | MAX. | 5       | 10      | 10      | 15      | mA                     |
| dv/dt    | $V_D = V_{DRM}$ Gate Open $T_J = 100^\circ\text{C}$                   | 400V         | TYP. | 25      | 25      | 30      | 35      | $\text{V}/\mu\text{s}$ |
|          |                                                                       | 600V         |      | 15      | 15      | 20      | 25      |                        |
| (dv/dt)c | (di/dt)c = 2.16 A/ms $T_J = 110^\circ\text{C}$                        |              | TYP. | 0.5     | 1       | 1       | 1       | $\text{V}/\mu\text{s}$ |
| $t_{gt}$ | $I_G = 2 \times I_{GT}$ PW = 15 $\mu\text{s}$ $I_T = 5.6\text{A(pk)}$ |              | TYP. | 2.8     | 3.0     | 3.0     | 3.2     | $\mu\text{s}$          |

### Electrical Characteristics ( $T_J = 25^\circ\text{C}$ , unless otherwise specified) — Standard Triac

| Symbol   | Test Conditions                                                       | Quadrant     |      | Qxx04x3 | Qxx04x4 | Unit                   |
|----------|-----------------------------------------------------------------------|--------------|------|---------|---------|------------------------|
| $I_{GT}$ | $V_D = 12\text{V}$ $R_L = 60\Omega$                                   | I – II – III | MAX. | 10      | 25      | mA                     |
|          |                                                                       | IV           | TYP. | 25      | 50      |                        |
| $V_{GT}$ | $V_D = 12\text{V}$ $R_L = 60\Omega$                                   | I – II – III | MAX. | 1.3     | 1.3     | V                      |
| $V_{GD}$ | $V_D = V_{DRM}$ $R_L = 3.3\text{k}\Omega$ $T_J = 125^\circ\text{C}$   | ALL          | MIN. | 0.2     | 0.2     | V                      |
| $I_H$    | $I_T = 200\text{mA}$                                                  |              | MAX. | 20      | 30      | mA                     |
| dv/dt    | $V_D = V_{DRM}$ Gate Open $T_J = 125^\circ\text{C}$                   | 400V         | MIN. | 40      | 75      | $\text{V}/\mu\text{s}$ |
|          |                                                                       | 600V         |      | 30      | 50      |                        |
|          |                                                                       | 800V         |      |         | 40      |                        |
|          | $V_D = V_{DRM}$ Gate Open $T_J = 100^\circ\text{C}$                   | 1000V        |      |         | 50      |                        |
| (dv/dt)c | (di/dt)c = 2.16 A/ms $T_J = 125^\circ\text{C}$                        |              | TYP. | 2       | 2       | $\text{V}/\mu\text{s}$ |
| $t_{gt}$ | $I_G = 2 \times I_{GT}$ PW = 15 $\mu\text{s}$ $I_T = 5.6\text{A(pk)}$ |              | TYP. | 2.5     | 3.0     | $\mu\text{s}$          |

Note: xx = voltage/10, x = package

### Static Characteristics ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)

| Symbol                 | Test Conditions                                       |      |         |                                    | Value | Unit          |
|------------------------|-------------------------------------------------------|------|---------|------------------------------------|-------|---------------|
| $V_{TM}$               | $I_{TM} = 5.6\text{A}$ $t_p = 380\text{ }\mu\text{s}$ | MAX. |         |                                    | 1.60  | V             |
| $I_{DRM}$<br>$I_{RRM}$ | $V_{DRM} = V_{RRM}$                                   | MAX. | Lxx04xy | $T_J = 25^\circ\text{C}$ 400-600V  | 5     | $\mu\text{A}$ |
|                        |                                                       |      |         | $T_J = 110^\circ\text{C}$ 400-600V | 200   | $\mu\text{A}$ |
|                        |                                                       |      | Qxx04xy | $T_J = 25^\circ\text{C}$ 400-1000V | 10    | $\mu\text{A}$ |
|                        |                                                       |      |         | $T_J = 125^\circ\text{C}$ 400-800V | 2     | mA            |
|                        |                                                       |      |         | $T_J = 100^\circ\text{C}$ 1000V    | 3     |               |

### Thermal Resistances

| Symbol            | Parameter             |           | Value | Unit               |
|-------------------|-----------------------|-----------|-------|--------------------|
| $R_{\theta(J-C)}$ | Junction to case (AC) | L/Qxx04Dy | 1.5   | $^\circ\text{C/W}$ |
|                   |                       | L/Qxx04Ly | 3.5   |                    |
|                   |                       | L/Qxx04Ry | 2.2   |                    |
|                   |                       | L/Qxx04Vy | 1.5   |                    |
| $R_{\theta(J-A)}$ | Junction to ambient   | L/Qxx04Ly | 50    | $^\circ\text{C/W}$ |
|                   |                       | L/Qxx04Ry | 45    |                    |
|                   |                       | L/Qxx04Vy | 70    |                    |

Note: xx = voltage/10, x = package, y = sensitivity

Figure 1: Definition of Quadrants

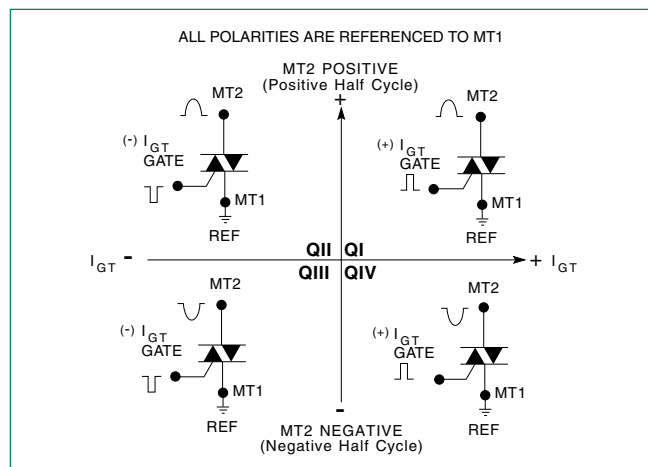
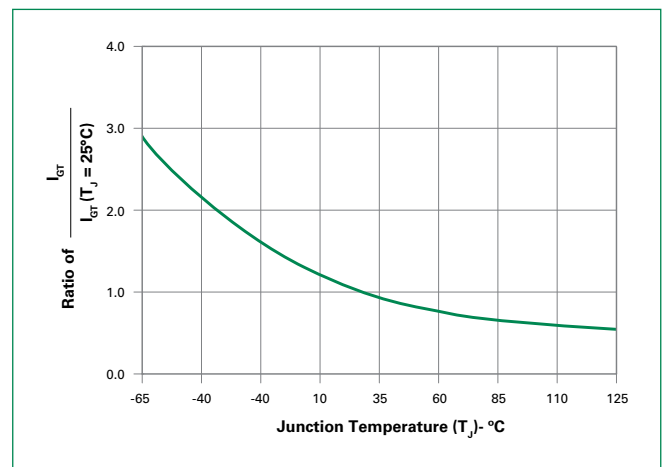


Figure 2: Normalized DC Gate Trigger Current for All Quadrants vs. Junction Temperature



### Additional Information



Datasheet

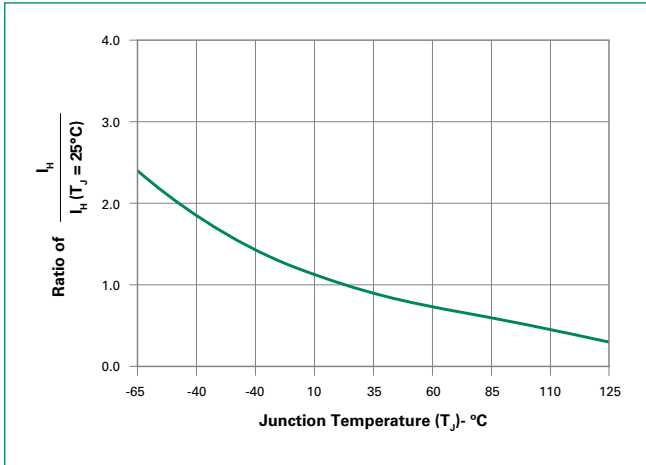


Resources

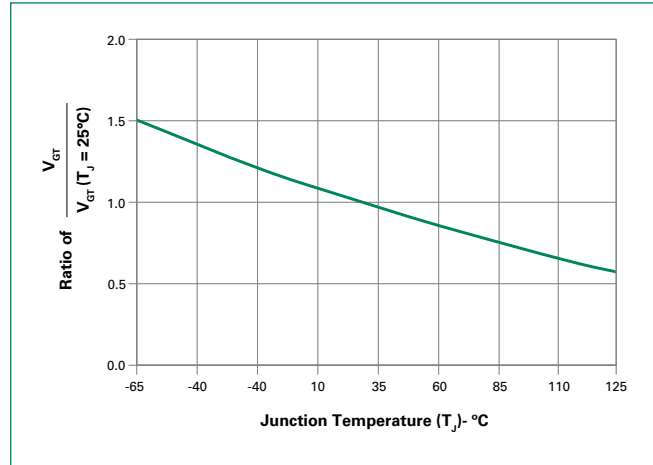


Samples

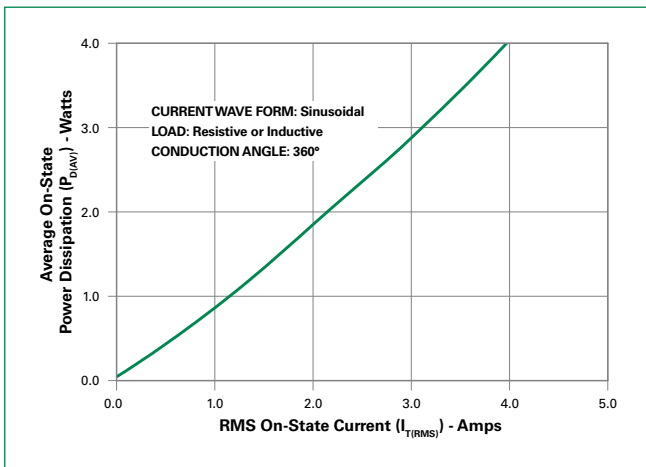
**Figure 3: Normalized DC Holding Current vs. Junction Temperature**



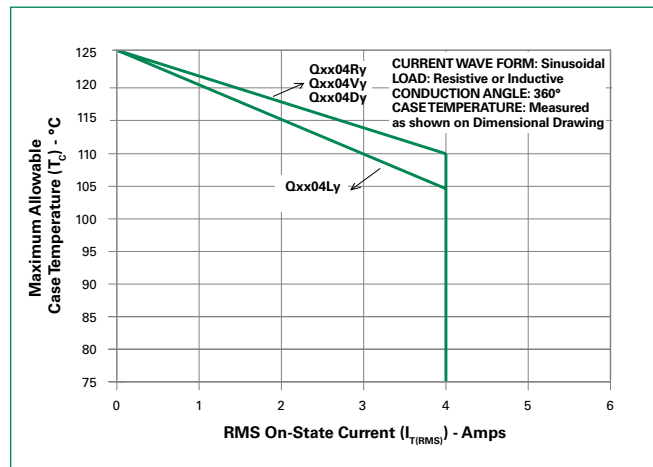
**Figure 4: Normalized DC Gate Trigger Voltage for All Quadrants vs. Junction Temperature**



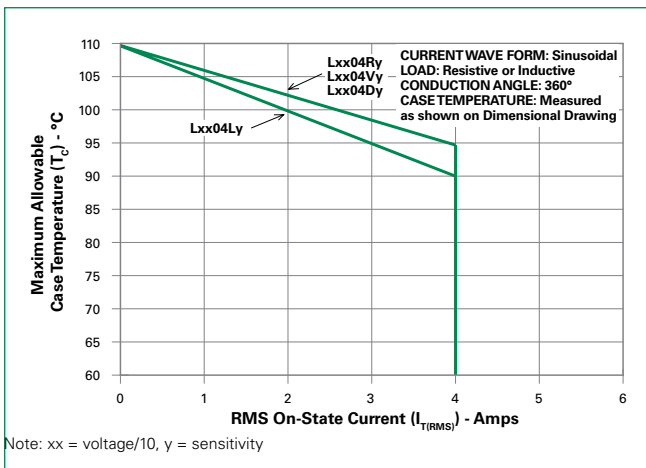
**Figure 5: Power Dissipation (Typical) vs. RMS On-State Current**



**Figure 6: Maximum Allowable Case Temperature vs. On-State Current**

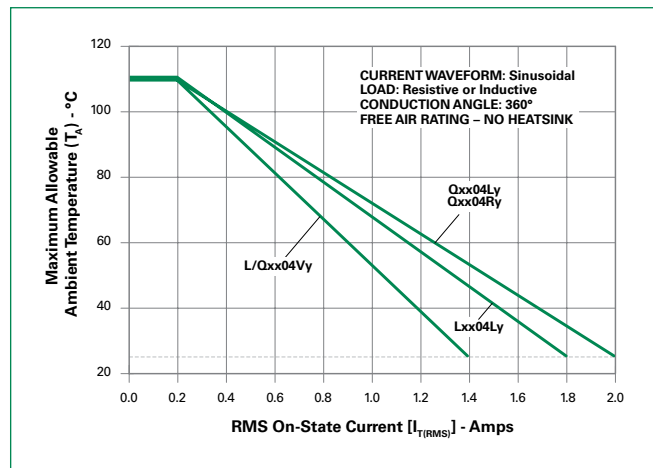


**Figure 7: Maximum Allowable Case Temperature vs. On-State Current**

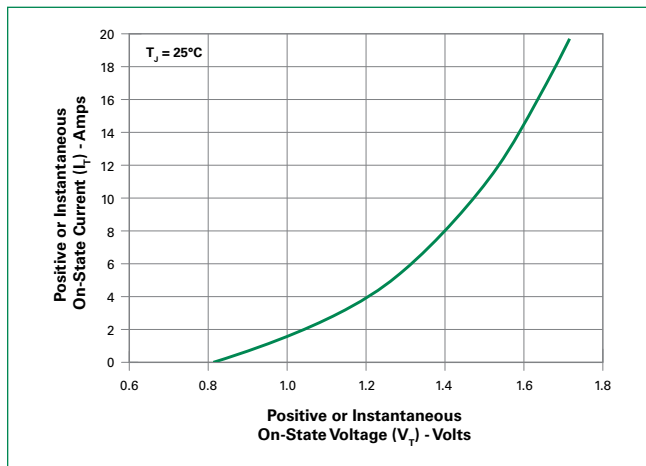


Note: xx = voltage/10, y = sensitivity

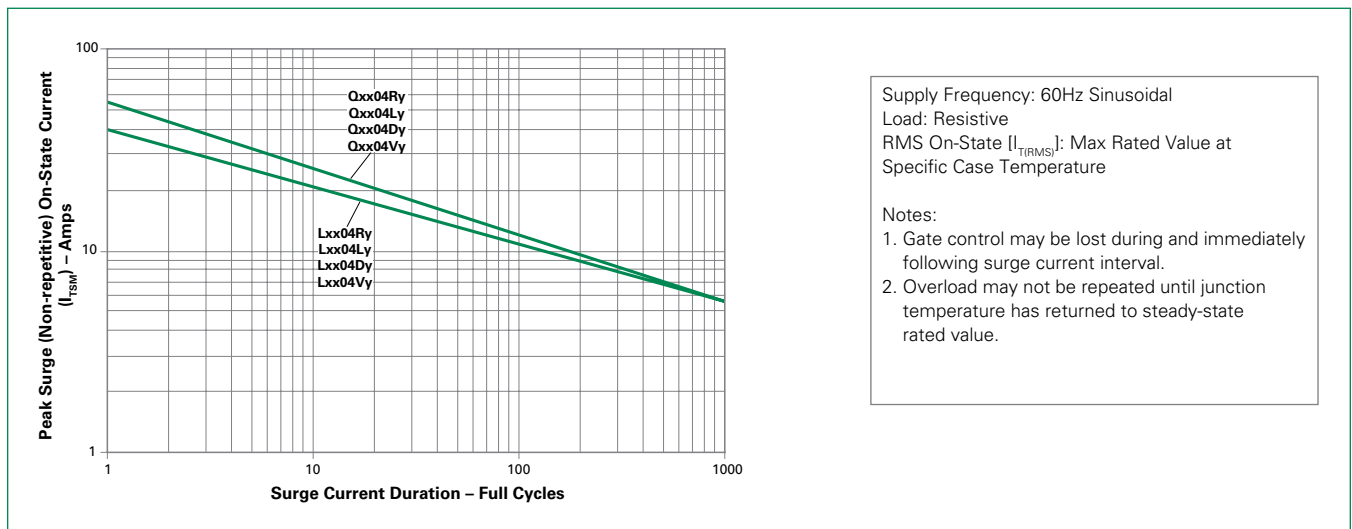
**Figure 8: Maximum Allowable Ambient Temperature vs. On-State Current**



**Figure 9: On-State Current vs. On-State Voltage (Typical)**



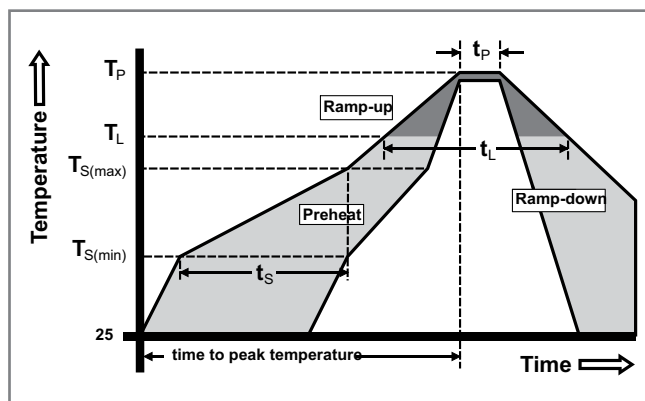
**Figure 10: Surge Peak On-State Current vs. Number of Cycles**



Note: xx = voltage/10, y = sensitivity

### Soldering Parameters

|                                                        |                                    |                    |
|--------------------------------------------------------|------------------------------------|--------------------|
| Reflow Condition                                       |                                    | Pb – Free assembly |
| Pre Heat                                               | - Temperature Min ( $T_{s(min)}$ ) | 150°C              |
|                                                        | - Temperature Max ( $T_{s(max)}$ ) | 200°C              |
|                                                        | - Time (min to max) ( $t_s$ )      | 60 – 180 secs      |
| Average ramp up rate (Liquidus Temp) ( $T_L$ ) to peak |                                    | 5°C/second max     |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate                   |                                    | 5°C/second max     |
| Reflow                                                 | - Temperature ( $T_L$ ) (Liquidus) | 217°C              |
|                                                        | - Temperature ( $t_L$ )            | 60 – 150 seconds   |
| Peak Temperature ( $T_p$ )                             |                                    | 260°C $\pm 0/-5$   |
| Time within 5°C of actual peak Temperature ( $t_p$ )   |                                    | 20 – 40 seconds    |
| Ramp-down Rate                                         |                                    | 5°C/second max     |
| Time 25°C to peak Temperature ( $T_p$ )                |                                    | 8 minutes Max.     |
| Do not exceed                                          |                                    | 280°C              |



### Physical Specifications

|                          |                                                        |
|--------------------------|--------------------------------------------------------|
| <b>Terminal Finish</b>   | 100% Matte Tin-plated                                  |
| <b>Body Material</b>     | UL Recognized compound meeting flammability rating V-0 |
| <b>Terminal Material</b> | Copper Alloy                                           |

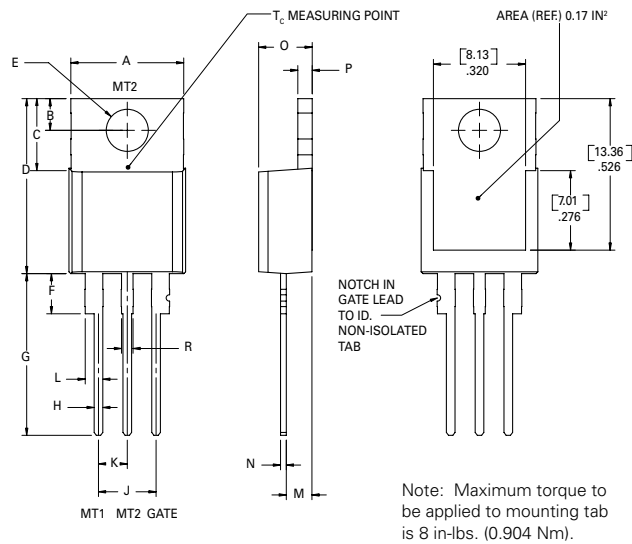
### Design Considerations

Careful selection of the correct component for the application's operating parameters and environment will go a long way toward extending the operating life of the Thyristor. Good design practice should limit the maximum continuous current through the main terminals to 75% of the component rating. Other ways to ensure long life for a power discrete semiconductor are proper heat sinking and selection of voltage ratings for worst case conditions. Overheating, overvoltage (including dv/dt), and surge currents are the main killers of semiconductors. Correct mounting, soldering, and forming of the leads also help protect against component damage.

### Environmental Specifications

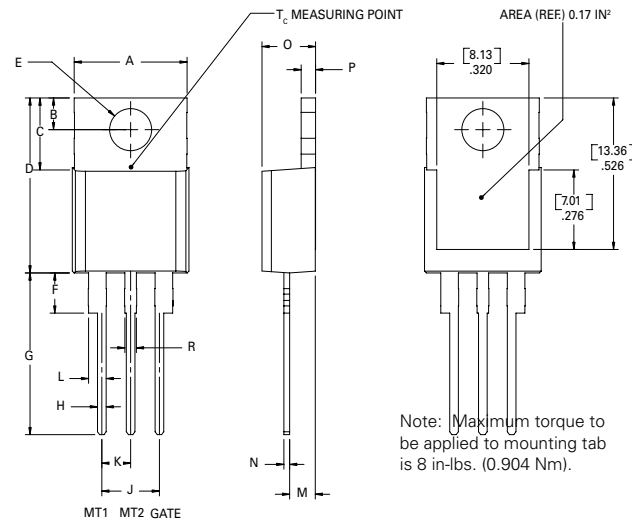
| Test                             | Specifications and Conditions                                              |
|----------------------------------|----------------------------------------------------------------------------|
| <b>AC Blocking</b>               | MIL-STD-750, M-1040, Cond A Applied Peak AC voltage @ 125°C for 1008 hours |
| <b>Temperature Cycling</b>       | MIL-STD-750, M-1051, 100 cycles; -40°C to +150°C; 15-min dwell time        |
| <b>Temperature/Humidity</b>      | EIA / JEDEC, JESD22-A101 1008 hours; 320V - DC: 85°C; 85% rel humidity     |
| <b>High Temp Storage</b>         | MIL-STD-750, M-1031, 1008 hours; 150°C                                     |
| <b>Low-Temp Storage</b>          | 1008 hours; -40°C                                                          |
| <b>Resistance to Solder Heat</b> | MIL-STD-750 Method 2031                                                    |
| <b>Solderability</b>             | ANSI/J-STD-002, category 3, Test A                                         |
| <b>Lead Bend</b>                 | MIL-STD-750, M-2036 Cond E                                                 |

### Dimensions — TO-220AB (R-Package) — Non-Isolated Mounting Tab Common with Center Lead



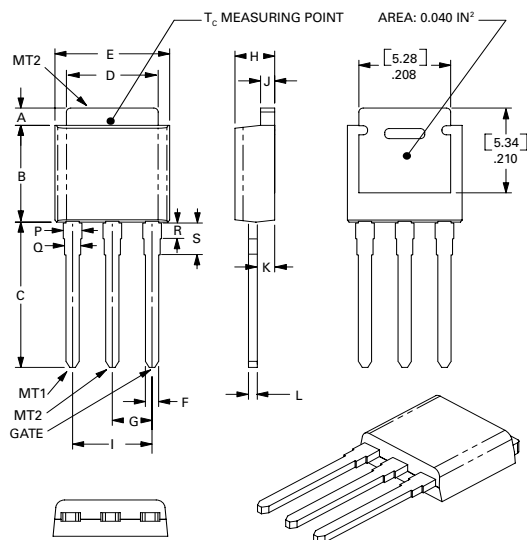
| Dimension | Inches |       | Millimeters |       |
|-----------|--------|-------|-------------|-------|
|           | Min    | Max   | Min         | Max   |
| A         | 0.380  | 0.420 | 9.65        | 10.67 |
| B         | 0.105  | 0.115 | 2.67        | 2.92  |
| C         | 0.230  | 0.250 | 5.84        | 6.35  |
| D         | 0.590  | 0.620 | 14.99       | 15.75 |
| E         | 0.142  | 0.147 | 3.61        | 3.73  |
| F         | 0.110  | 0.130 | 2.79        | 3.30  |
| G         | 0.540  | 0.575 | 13.72       | 14.61 |
| H         | 0.025  | 0.035 | 0.64        | 0.89  |
| J         | 0.195  | 0.205 | 4.95        | 5.21  |
| K         | 0.095  | 0.105 | 2.41        | 2.67  |
| L         | 0.060  | 0.075 | 1.52        | 1.91  |
| M         | 0.085  | 0.095 | 2.16        | 2.41  |
| N         | 0.018  | 0.024 | 0.46        | 0.61  |
| O         | 0.178  | 0.188 | 4.52        | 4.78  |
| P         | 0.045  | 0.060 | 1.14        | 1.52  |
| R         | 0.038  | 0.048 | 0.97        | 1.22  |

### Dimensions — TO-220AB (L-Package) — Isolated Mounting Tab



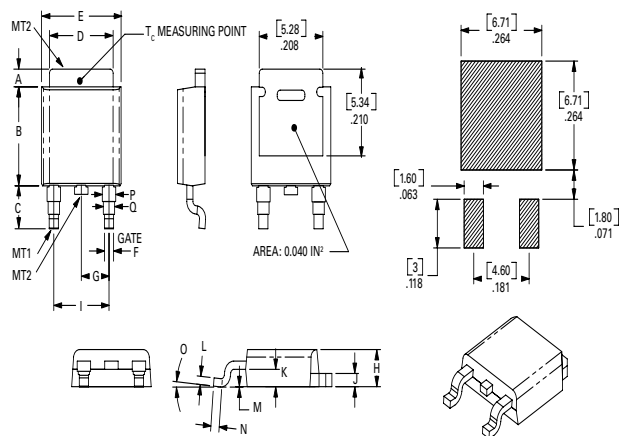
| Dimension | Inches |       | Millimeters |       |
|-----------|--------|-------|-------------|-------|
|           | Min    | Max   | Min         | Max   |
| A         | 0.380  | 0.420 | 9.65        | 10.67 |
| B         | 0.105  | 0.115 | 2.67        | 2.92  |
| C         | 0.230  | 0.250 | 5.84        | 6.35  |
| D         | 0.590  | 0.620 | 14.99       | 15.75 |
| E         | 0.142  | 0.147 | 3.61        | 3.73  |
| F         | 0.110  | 0.130 | 2.79        | 3.30  |
| G         | 0.540  | 0.575 | 13.72       | 14.61 |
| H         | 0.025  | 0.035 | 0.64        | 0.89  |
| J         | 0.195  | 0.205 | 4.95        | 5.21  |
| K         | 0.095  | 0.105 | 2.41        | 2.67  |
| L         | 0.060  | 0.075 | 1.52        | 1.91  |
| M         | 0.085  | 0.095 | 2.16        | 2.41  |
| N         | 0.018  | 0.024 | 0.46        | 0.61  |
| O         | 0.178  | 0.188 | 4.52        | 4.78  |
| P         | 0.045  | 0.060 | 1.14        | 1.52  |
| R         | 0.038  | 0.048 | 0.97        | 1.22  |

### Dimensions — TO-251AA (V-Package) — V-PAK Through Hole



| Dim | Inches |       |       | Millimeters |      |      |
|-----|--------|-------|-------|-------------|------|------|
|     | Min    | Typ   | Max   | Min         | Typ  | Max  |
| A   | 0.037  | 0.040 | 0.043 | 0.94        | 1.01 | 1.09 |
| B   | 0.235  | 0.242 | 0.245 | 5.97        | 6.15 | 6.22 |
| C   | 0.350  | 0.361 | 0.375 | 8.89        | 9.18 | 9.53 |
| D   | 0.205  | 0.208 | 0.213 | 5.21        | 5.29 | 5.41 |
| E   | 0.255  | 0.262 | 0.265 | 6.48        | 6.66 | 6.73 |
| F   | 0.027  | 0.031 | 0.033 | 0.69        | 0.80 | 0.84 |
| G   | 0.087  | 0.090 | 0.093 | 2.21        | 2.28 | 2.36 |
| H   | 0.085  | 0.092 | 0.095 | 2.16        | 2.34 | 2.41 |
| I   | 0.176  | 0.180 | 0.184 | 4.47        | 4.57 | 4.67 |
| J   | 0.018  | 0.020 | 0.023 | 0.46        | 0.51 | 0.58 |
| K   | 0.035  | 0.037 | 0.039 | 0.90        | 0.95 | 1.00 |
| L   | 0.018  | 0.020 | 0.023 | 0.46        | 0.52 | 0.58 |
| P   | 0.042  | 0.047 | 0.052 | 1.06        | 1.20 | 1.32 |
| Q   | 0.034  | 0.039 | 0.044 | 0.86        | 1.00 | 1.11 |
| R   | 0.034  | 0.039 | 0.044 | 0.86        | 1.00 | 1.11 |
| S   | 0.074  | 0.079 | 0.084 | 1.86        | 2.00 | 2.11 |

### Dimensions — TO-252AA (D-Package) — D-PAK Surface Mount



| Dim | Inches |       |       | Millimeters |      |      |
|-----|--------|-------|-------|-------------|------|------|
|     | Min    | Typ   | Max   | Min         | Typ  | Max  |
| A   | 0.037  | 0.040 | 0.043 | 0.94        | 1.01 | 1.09 |
| B   | 0.235  | 0.243 | 0.245 | 5.97        | 6.16 | 6.22 |
| C   | 0.106  | 0.108 | 0.113 | 2.69        | 2.74 | 2.87 |
| D   | 0.205  | 0.208 | 0.213 | 5.21        | 5.29 | 5.41 |
| E   | 0.255  | 0.262 | 0.265 | 6.48        | 6.65 | 6.73 |
| F   | 0.027  | 0.031 | 0.033 | 0.69        | 0.80 | 0.84 |
| G   | 0.087  | 0.090 | 0.093 | 2.21        | 2.28 | 2.36 |
| H   | 0.085  | 0.092 | 0.095 | 2.16        | 2.33 | 2.41 |
| I   | 0.176  | 0.179 | 0.184 | 4.47        | 4.55 | 4.67 |
| J   | 0.018  | 0.020 | 0.023 | 0.46        | 0.51 | 0.58 |
| K   | 0.035  | 0.037 | 0.039 | 0.90        | 0.95 | 1.00 |
| L   | 0.018  | 0.020 | 0.023 | 0.46        | 0.51 | 0.58 |
| M   | 0.000  | 0.000 | 0.004 | 0.00        | 0.00 | 0.10 |
| N   | 0.021  | 0.026 | 0.027 | 0.53        | 0.67 | 0.69 |
| O   | 0°     | 0°    | 5°    | 0°          | 0°   | 5°   |
| P   | 0.042  | 0.047 | 0.052 | 1.06        | 1.20 | 1.32 |
| Q   | 0.034  | 0.039 | 0.044 | 0.86        | 1.00 | 1.11 |

### Product Selector

| Part Number | Voltage |      |      |       | Gate Sensitivity Quadrants |       | Type            | Package      |
|-------------|---------|------|------|-------|----------------------------|-------|-----------------|--------------|
|             | 400V    | 600V | 800V | 1000V | I – II – III               | IV    |                 |              |
| Lxx04L3     | X       | X    |      |       | 3 mA                       | 3 mA  | Sensitive Triac | TO-220L      |
| Lxx04D3     | X       | X    |      |       | 3 mA                       | 3 mA  | Sensitive Triac | TO-252 D-PAK |
| Lxx04R3     | X       | X    |      |       | 3mA                        | 3mA   | Sensitive Triac | TO-220R      |
| Lxx04V3     | X       | X    |      |       | 3 mA                       | 3 mA  | Sensitive Triac | TO-251 V-PAK |
| Lxx04L5     | X       | X    |      |       | 5 mA                       | 5 mA  | Sensitive Triac | TO-220L      |
| Lxx04D5     | X       | X    |      |       | 5 mA                       | 5 mA  | Sensitive Triac | TO-252 D-PAK |
| Lxx04R5     | X       | X    |      |       | 5mA                        | 5mA   | Sensitive Triac | TO-220R      |
| Lxx04V5     | X       | X    |      |       | 5 mA                       | 5 mA  | Sensitive Triac | TO-251 V-PAK |
| Lxx04L6     | X       | X    |      |       | 5 mA                       | 10 mA | Sensitive Triac | TO-220L      |
| Lxx04D6     | X       | X    |      |       | 5 mA                       | 10 mA | Sensitive Triac | TO-252 D-PAK |
| Lxx04R6     | X       | X    |      |       | 5mA                        | 10mA  | Sensitive Triac | TO-220R      |
| Lxx04V6     | X       | X    |      |       | 5 mA                       | 10 mA | Sensitive Triac | TO-251 V-PAK |
| Lxx04L8     | X       | X    |      |       | 10 mA                      | 20 mA | Sensitive Triac | TO-220L      |
| Lxx04D8     | X       | X    |      |       | 10 mA                      | 20 mA | Sensitive Triac | TO-252 D-PAK |
| Lxx04R8     | X       | X    |      |       | 10mA                       | 20mA  | Sensitive Triac | TO-220R      |
| Lxx04V8     | X       | X    |      |       | 10 mA                      | 20 mA | Sensitive Triac | TO-251 V-PAK |
| Qxx04L3     | X       | X    |      |       | 10 mA                      |       | Standard Triac  | TO-220L      |
| Qxx04D3     | X       | X    |      |       | 10 mA                      |       | Standard Triac  | TO-252 D-PAK |
| Qxx04V3     | X       | X    |      |       | 10 mA                      |       | Standard Triac  | TO-251 V-PAK |
| Qxx04R3     | X       | X    |      |       | 10mA                       |       | Standard Triac  | TO-220R      |
| Qxx04L4     | X       | X    | X    | X     | 25 mA                      |       | Standard Triac  | TO-220L      |
| Qxx04D4     | X       | X    | X    | X     | 25 mA                      |       | Standard Triac  | TO-252 D-PAK |
| Qxx04R4     | X       | X    | X    | X     | 25mA                       |       | Standard Triac  | TO-220R      |
| Qxx04V4     | X       | X    | X    | X     | 25 mA                      |       | Standard Triac  | TO-251 V-PAK |

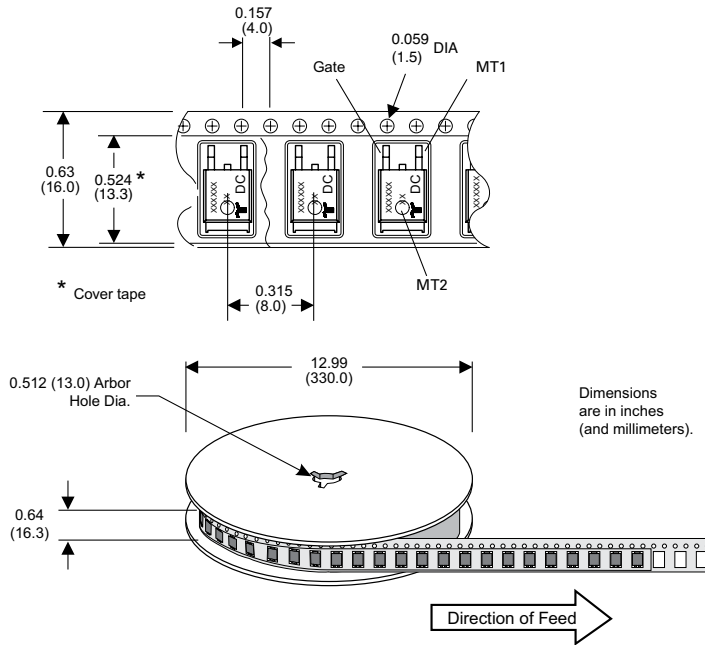
### Packing Options

| Part Number | Marking   | Weight | Packing Mode     | Base Quantity     |
|-------------|-----------|--------|------------------|-------------------|
| L/Qxx04LyTP | L/Qxx04Ly | 2.2 g  | Tube             | 500 (50 per tube) |
| L/Qxx04DyRP | L/Qxx04Dy | 0.3 g  | Embossed Carrier | 2500              |
| L/Qxx04DyTP | L/Qxx04Dy | 0.3 g  | Tube Pack        | 750 (75 per tube) |
| L/Qxx04VyTP | L/Qxx04Vy | 0.4 g  | Tube Pack        | 750 (75 per tube) |

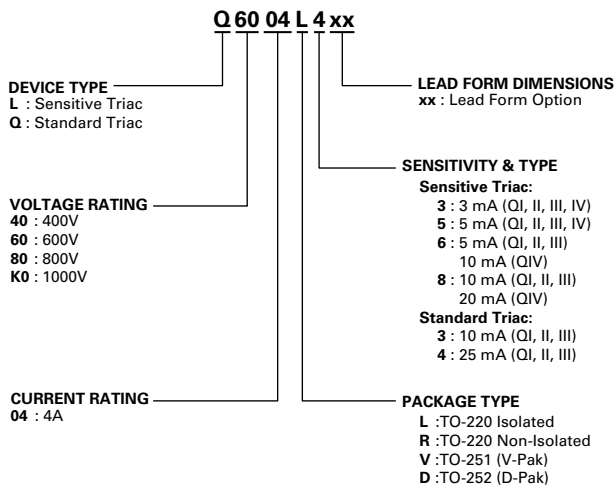
Note: xx = Voltage/10; y = Sensitivity

### TO-252 Embossed Carrier Reel Pack (RP) Specifications

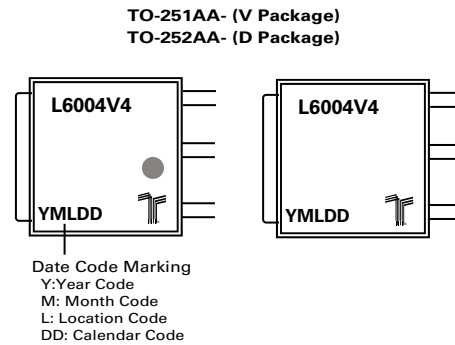
Meets all EIA-481-2 Standards



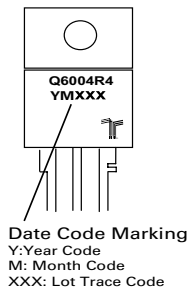
### Part Numbering System



### Part Marking System



### TO-220 AB - (L and R Package)



# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

## Littelfuse:

[L4004V3](#) [L4004V6](#) [L4004V8](#) [L4004V5](#) [L4008L8](#) [L6008L8](#) [Q2004F312](#) [Q6004F321](#) [Q2004F321](#) [Q4006F42](#)  
[Q4004L356](#) [Q2006F41](#) [Q2008R4](#) [Q6006F51](#) [Q6006F52](#) [Q2008L4](#) [L2004L6](#) [L2004V3](#) [L2004L8](#) [L2004L5](#)  
[L2004L3](#) [L4X8E3](#) [Q2010R5](#) [Q2015R5](#) [L6X3](#) [Q2015L5](#) [L4X5](#) [L4X3](#) [L4N5](#) [L4N3](#) [L201E5](#) [L201E3](#) [L201E8](#)  
[L201E6](#) [QK004V4](#) [Q4008F42](#) [Q4008F41](#) [Q2008F41](#) [Q4004V4](#) [Q201E3](#) [Q4004V3](#) [Q2025R5](#) [L4006L6](#) [L4006L8](#)  
[L4006L5](#) [L4008V6](#) [L2X8E3](#) [L6008V6](#) [L2X8E8](#) [L2X8E6](#) [L2X8E5](#) [L6004V3](#) [L6004V6](#) [Q4004F421](#) [Q2X3RP](#)  
[Q6004F441](#) [Q6016LH653](#) [Q6004F41](#) [Q4004F41](#) [Q2004L4](#) [L4004F81](#) [Q6004F42](#) [L2004F81](#) [L6004F81](#) [Q2004L3](#)  
[Q4004F42](#) [Q2X4RP](#) [L6004V5](#) [L6006L8](#) [L6006L5](#) [L6006L6](#) [Q2N3RP](#) [L6X5](#) [L4008L6](#) [L4008V8](#) [L4X8E8](#) [L4X8E6](#)  
[L4X8E5](#) [L6008V8](#) [Q6008F51](#) [L2004F31](#) [Q6004F32](#) [L2004F61](#) [Q2006L4](#) [L6N3](#) [L6N5](#) [Q2X8E4](#) [Q2X8E3](#)  
[L4004L556](#) [Q8004V4](#) [L6004L8](#) [L6004V8](#) [L6004L5](#) [L6004L6](#) [L6004L3](#) [L2008L6](#) [L6004L556](#) [L2008L8](#) [L4004L6](#)  
[L4004L3](#)