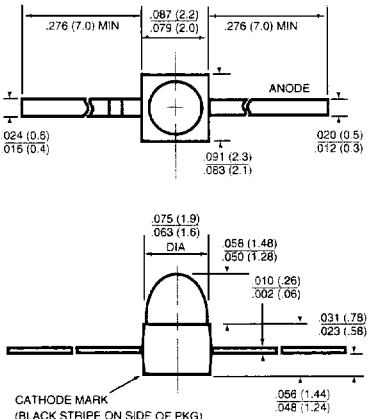
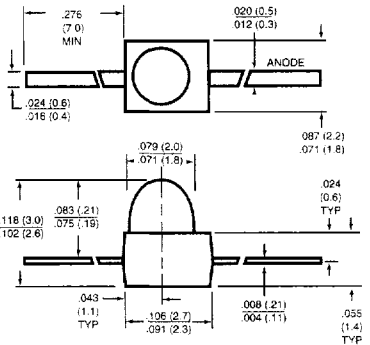


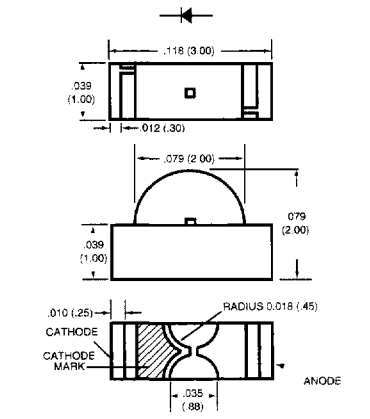
| T-3/4 Square Base, Super Bright (Subminiature) Clear Lens |                |                              |             |                       |                                   |  |       |  |  |
|---|----------------|------------------------------|-------------|-----------------------|-----------------------------------|--|-------|--|--|
| Part Number   | Source Color   | Wave-length $\lambda_p$ (nm) | Lens Color  | Typical Viewing Angle | Forward Voltage $V_F$ (V) typ max | Luminous Intensity $I_V$ (mcd) min typ | Notes |  |  |
| HLMA-QH00A  |                | 620                          | Water Clear | 20°                   | 2.1 2.8                           | 160 250                                | 4     |  |  |
| HLMP-Q106A  |                | 660                          | Water Clear | 20°                   | 1.7 2.4                           | 100 160                                | 4     |  |  |
| HLMA-QL00A  | AlInGaP Yellow | 590                          | Water Clear | 20°                   | 2.0 2.8                           | 160 250                                | 4     |  |  |

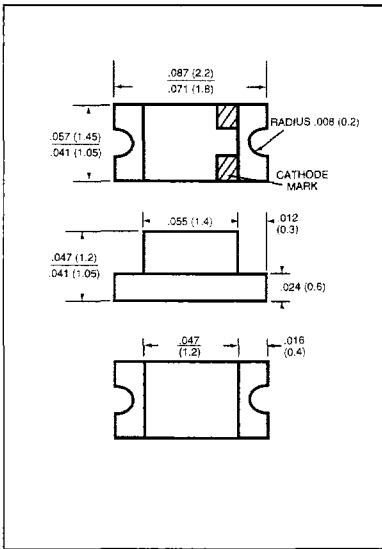


| T-3/4 Square Base, Super Bright (Subminiature) Water Clear Offset Lens |                |                              |             |                       |                                   |  |       |  |  |
|--|----------------|------------------------------|-------------|-----------------------|-----------------------------------|--|-------|--|--|
| Part Number  | Source Color   | Wave-length $\lambda_p$ (nm) | Lens Color  | Typical Viewing Angle | Forward Voltage $V_F$ (V) typ max | Luminous Intensity $I_V$ (mcd) min typ | Notes |  |  |
| QTLP912-E  |                | 620                          | Water Clear | 25°                   | 2.0 2.8                           | 100 250                                | 4     |  |  |
| QTLP912-R  |                | 660                          | Water Clear | 25°                   | 1.7 2.4                           | 100 160                                | 4     |  |  |
| QTLP912-Y  | AlInGaP Yellow | 590                          | Water Clear | 25°                   | 2.0 2.8                           | 100 250                                | 4     |  |  |

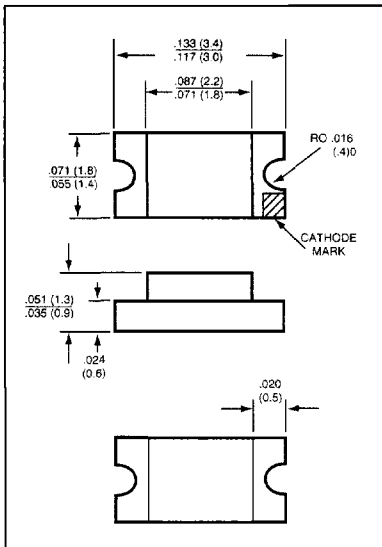


| Super Bright SMD Right Angle |                |                              |             |                       |                                   |  |       |  |  |
|------------------------------|----------------|------------------------------|-------------|-----------------------|-----------------------------------|--|-------|--|--|
| Part Number                  | Source Color   | Wave-length $\lambda_p$ (nm) | Lens Color  | Typical Viewing Angle | Forward Voltage $V_F$ (V) typ max | Luminous Intensity $I_V$ (mcd) min typ | Notes |  |  |
| QTLP610C-E                   |                | 620                          | Water Clear | 140°                  | 2.0 2.8                           | 18 30                                  | 4     |  |  |
| QTLP610C-R                   |                | 660                          | Water Clear | 140°                  | 2.0 2.8                           | 10 15                                  | 4     |  |  |
| QTLP610C-Y                   | AlInGaP Yellow | 590                          | Water Clear | 140°                  | 2.1 2.8                           | 18 30                                  | 4     |  |  |





| SMD 0805 Package, Super Bright |                |                              |             |                       |                           |     |                                |     |       |
|--------------------------------|----------------|------------------------------|-------------|-----------------------|---------------------------|-----|--------------------------------|-----|-------|
| Part Number                    | Source Color   | Wave-length $\lambda_p$ (nm) | Lens Color  | Typical Viewing Angle | Forward Voltage $V_F$ (V) |     | Luminous Intensity $I_V$ (mcd) |     | Notes |
|                                |                |                              |             |                       | typ                       | max | min                            | typ |       |
| QTLP630C-E                     |                | 620                          | Water Clear | 140°                  | 2.1                       | 2.8 | 25                             | 40  | 4     |
| QTLP630C-R                     |                | 660                          | Water Clear | 140°                  | 1.7                       | 2.4 | 17                             | 29  | 4     |
| QTLP630C-Y                     | AllnGaP Yellow | 590                          | Water Clear | 140°                  | 2.1                       | 2.8 | 42                             | 72  | 4     |



| SMD 1206 Package, Super Bright |                |                              |             |                       |                           |     |                                |     |       |
|--------------------------------|----------------|------------------------------|-------------|-----------------------|---------------------------|-----|--------------------------------|-----|-------|
| Part Number                    | Source Color   | Wave-length $\lambda_p$ (nm) | Lens Color  | Typical Viewing Angle | Forward Voltage $V_F$ (V) |     | Luminous Intensity $I_V$ (mcd) |     | Notes |
|                                |                |                              |             |                       | typ                       | max | min                            | typ |       |
| QTLP650C-E                     |                | 620                          | Water Clear | 140°                  | 1.7                       | 2.8 | 16                             | 28  | 4     |
| QTLP650C-R                     |                | 660                          | Water Clear | 140°                  | 2.1                       | 2.8 | 12                             | 25  | 4     |
| QTLP650C-Y                     | AllnGaP Yellow | 590                          | Water Clear | 140°                  | 2.1                       | 2.8 | 26                             | 44  | 4     |

**Notes**

4.  $V_F$  &  $I_V$  @  $I_F=20$  mA  
 HER = High Efficiency Red