

## PACKAGE DIMENSIONS

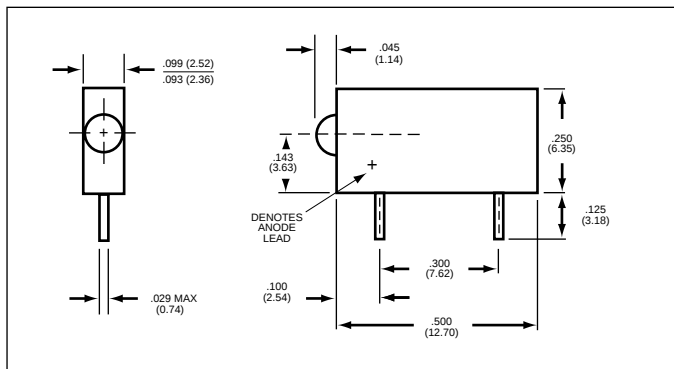


FIG. - 1

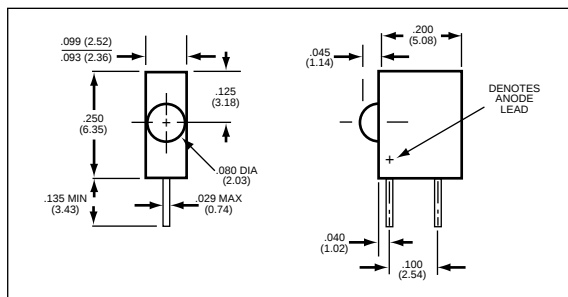


FIG. - 2

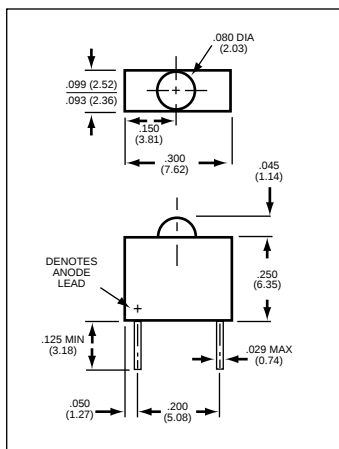


FIG. - 3

## DESCRIPTION

For right-angle and vertical viewing, the QT Optoelectronics LED circuit board indicators come in T-3/4, T-1 and T-1 3/4 lamp sizes, and in single, dual and multiple packages. The indicators are available in AlGaAs red, high-efficiency red, bright red, green, yellow, and bi-color at standard drive currents, as well as at 2 mA drive current. To reduce component cost and save space, 5 V and 12 V types are available with integrated resistors. The LEDs are packaged in a black plastic housing for optical contrast, and the housing meets UL94V-0 flammability specifications.

### T-3/4 (Subminiature)

| PART NUMBER       | COLOR | VF  | mcd | @ mA | PKG. FIG. |
|-------------------|-------|-----|-----|------|-----------|
| MV5000.MP1        | RED   | 1.7 | 3.0 | 20   | 1         |
| MV5300.MP1        | YLW   | 2.1 | 2.0 | 20   | 1         |
| MV5400.MP1        | GRN   | 2.3 | 3.5 | 20   | 1         |
| MV5000.MP2        | RED   | 1.7 | 3.0 | 20   | 2         |
| MV5300.MP2        | YLW   | 2.1 | 2.0 | 20   | 2         |
| MV5400.MP2        | GRN   | 2.3 | 3.5 | 20   | 2         |
| MV5000.MP3        | RED   | 1.7 | 3.0 | 20   | 3         |
| MV5300.MP3        | YLW   | 2.1 | 2.0 | 20   | 3         |
| MV5400.MP3        | GRN   | 2.3 | 3.5 | 20   | 3         |
| INTEGRAL RESISTOR |       |     |     |      |           |
| MR5000.MP1        | RED   | 5.0 | .6  | 3    | 1         |
| MR5010.MP1        | RED   | 5.0 | 1.2 | 6    | 1         |
| MR5020.MP1        | RED   | 5.0 | 2.0 | 16   | 1         |
| MR5310.MP1        | YLW   | 5.0 | .6  | 5    | 1         |
| MR5410.MP1        | GRN   | 5.0 | .5  | 5    | 1         |
| MR5000.MP2        | RED   | 5.0 | .6  | 3    | 2         |
| MR5010.MP2        | RED   | 5.0 | 1.2 | 6    | 2         |
| MR5020.MP2        | RED   | 5.0 | 2.0 | 16   | 2         |
| MR5310.MP2        | YLW   | 5.0 | .6  | 5    | 2         |
| MR5410.MP2        | GRN   | 5.0 | .5  | 5    | 2         |
| MR5000.MP3        | RED   | 5.0 | .6  | 3    | 3         |
| MR5010.MP3        | RED   | 5.0 | 1.2 | 6    | 3         |
| MR5020.MP3        | RED   | 5.0 | 2.0 | 16   | 3         |
| MR5310.MP3        | YLW   | 5.0 | .6  | 5    | 3         |
| MR5410.MP3        | GRN   | 5.0 | .5  | 5    | 3         |

### GENERAL NOTES:

1. All dimensions are in inches (mm).
2. Tolerance is  $\pm .015$  ( $\pm .38$ ) unless otherwise specified.
3. All electrical values are typical.
4. All parts have colored *diffused* lens except those with an asterik (\*), which denotes colored *clear* lens.

PACKAGE DIMENSIONS

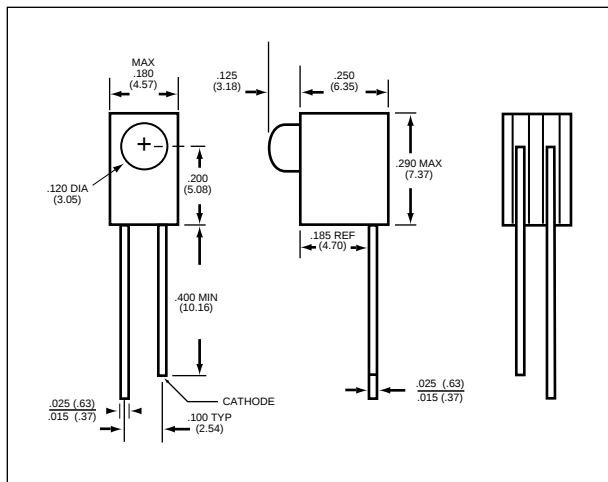


FIG. - 4A

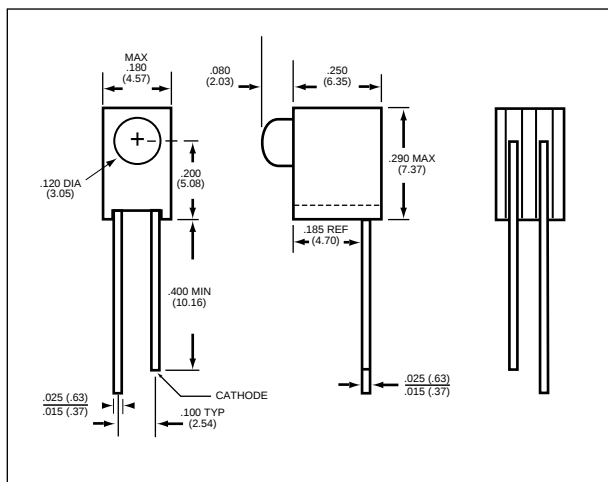


FIG. - 4B

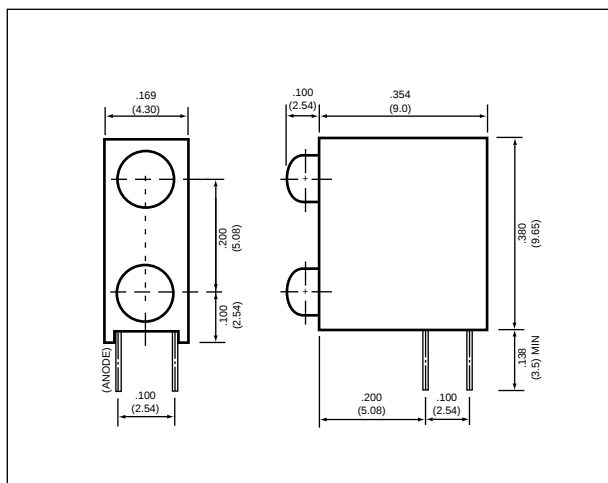


FIG. - 4C

T-1 (3mm)

| PART NUMBER | COLOR   | VF  | mcd | @ mA | PKG. FIG. |
|-------------|---------|-----|-----|------|-----------|
| MV5064.MP4A | RED     | 1.6 | 1.5 | 20   | 4A        |
| MV5364.MP4A | YELLOW  | 2.1 | 2.0 | 10   | 4A        |
| MV5464.MP4A | GREEN   | 2.2 | 5.0 | 20   | 4A        |
| MV5764.MP4A | H-E RED | 2.0 | 2.0 | 10   | 4A        |
| MV5064.MP4B | RED     | 1.6 | 1.5 | 20   | 4B        |
| MV5364.MP4B | YELLOW  | 2.1 | 2.0 | 10   | 4B        |
| MV5464.MP4B | GREEN   | 2.2 | 5.0 | 20   | 4B        |
| MV5764.MP4B | H-E RED | 2.0 | 2.0 | 10   | 4B        |

LOW CURRENT (2mA)

|                |         |     |     |   |    |
|----------------|---------|-----|-----|---|----|
| HLMP-1700.MP4A | H-E RED | 1.8 | 2.0 | 2 | 4A |
| HLMP-1719.MP4A | YELLOW  | 1.9 | 2.0 | 2 | 4A |
| HLMP-1790.MP4A | GREEN   | 1.9 | 2.0 | 2 | 4A |
| HLMP-1700.MP4B | H-E RED | 1.8 | 2.0 | 2 | 4B |
| HLMP-1719.MP4B | YELLOW  | 1.9 | 2.0 | 2 | 4B |
| HLMP-1790.MP4B | GREEN   | 1.9 | 2.0 | 2 | 4B |

AlGaAs RED

|                |             |     |      |    |    |
|----------------|-------------|-----|------|----|----|
| HLMP-K101.MP4A | AlGaAs RED  | 1.8 | 45.0 | 20 | 4A |
| HLMP-K105.MP4A | AlGaAs RED* | 1.8 | 65.0 | 20 | 4A |
| HLMP-K150.MP4A | AlGaAs RED  | 1.6 | 2.0  | 1  | 4A |
| HLMP-K155.MP4A | AlGaAs RED* | 1.6 | 3.0  | 1  | 4A |
| HLMP-K101.MP4B | AlGaAs RED  | 1.8 | 45.0 | 20 | 4B |
| HLMP-K105.MP4B | AlGaAs RED* | 1.8 | 65.0 | 20 | 4B |
| HLMP-K150.MP4B | AlGaAs RED  | 1.6 | 2.0  | 1  | 4B |
| HLMP-K155.MP4B | AlGaAs RED* | 1.6 | 3.0  | 1  | 4B |

INTEGRAL RESISTOR

|             |         |     |     |    |    |
|-------------|---------|-----|-----|----|----|
| MR5060.MP4A | RED     | 5.0 | 1.5 | 13 | 4A |
| MR5360.MP4A | YELLOW  | 5.0 | 4.0 | 10 | 4A |
| MR5460.MP4A | GREEN   | 5.0 | 4.0 | 12 | 4A |
| MR5760.MP4A | H-E RED | 5.0 | 4.0 | 10 | 4A |
| MR5060.MP4B | RED     | 5.0 | 1.5 | 13 | 4B |
| MR5360.MP4B | YELLOW  | 5.0 | 4.0 | 10 | 4B |
| MR5460.MP4B | GREEN   | 5.0 | 4.0 | 12 | 4B |
| MR5760.MP4B | H-E RED | 5.0 | 4.0 | 10 | 4B |

T-1 (3mm) bilevel

| PART NUMBER | COLOR           | VF  | mcd | @ mA | PKG. FIG. |
|-------------|-----------------|-----|-----|------|-----------|
| QLA694B-2H  | B. RED/B. RED   | 2.1 | 1.4 | 10   | 4C        |
| QLA694B-2I  | H-E RED/H-E RED | 2.0 | 6.0 | 10   | 4C        |
| QLA694B-2G  | GRN/GRN         | 2.1 | 6.0 | 10   | 4C        |
| QLA694B-2Y  | YEL/YEL         | 2.0 | 6.0 | 10   | 4C        |
| QLA694B-HG  | B. RED/GRN      | 2.1 | 1.4 | 10   | 4C        |
| QLA694B-GY  | GRN/YEL         | 2.1 | 6.0 | 10   | 4C        |

First color indicated is on top, and the second color is on the bottom.  
For example: QLA694B-GY has GRN(top)/YEL(bottom).

GENERAL NOTES:

1. All dimensions are in inches (mm).
2. Tolerance is  $\pm .015$  ( $\pm .38$ ) unless otherwise specified.
3. All electrical values are typical.
4. All parts have colored *diffused* lens except those with an asterik (\*), which denotes colored *clear* lens.
5. Custom color combinations are available.

## PACKAGE DIMENSIONS

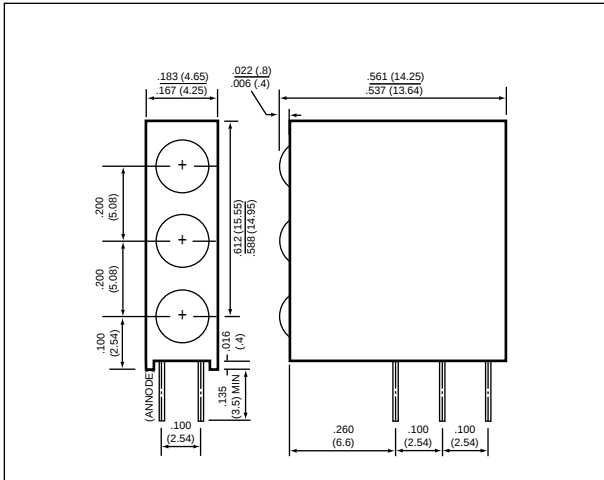


FIG. - 4D

### T-1 (3mm) trilevel

| PART NUMBER | COLOR          | VF  | mcd | @ mA | PKG. FIG. |
|-------------|----------------|-----|-----|------|-----------|
| QLA764B-3H  | B. RED         | 2.1 | 1.4 | 10   | 4D        |
| QLA764B-3I  | H-E RED        | 2.0 | 6.0 | 10   | 4D        |
| QLA764B-3G  | GRN            | 2.1 | 6.0 | 10   | 4D        |
| QLA764B-3Y  | YEL            | 2.0 | 6.0 | 10   | 4D        |
| QLA764B-HGY | B. RED/GRN/YEL | 2.1 | 1.4 | 10   | 4D        |
| QLA764B-YGH | YEL/GRN/B. RED | 2.1 | 1.4 | 10   | 4D        |

First color indicated is on top, the second is in the middle, and the third is on the bottom. For example: QLA764B-YGH has YEL(top)/GRN(middle)/B. RED(bottom).

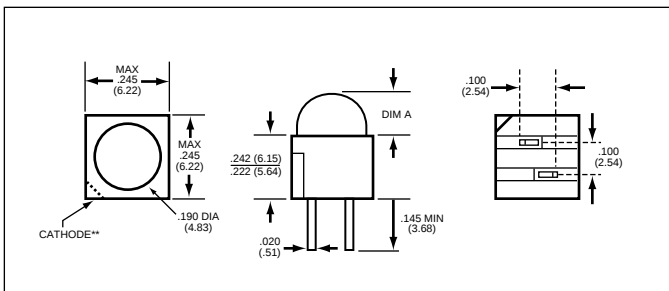


FIG. - 5

### T-1 3/4 (5mm)

| PART NUMBER | COLOR   | VF  | mcd  | @ mA | DIM A in. (mm) | PKG. FIG. |
|-------------|---------|-----|------|------|----------------|-----------|
| MV60538.MP5 | RED     | 1.7 | 2.0  | 20   | .125 (3.18)    | 5         |
| MV63538.MP5 | YLW     | 2.1 | 18.0 | 20   | .125 (3.18)    | 5         |
| MV64538.MP5 | GRN     | 2.2 | 26.0 | 20   | .125 (3.18)    | 5         |
| MV67538.MP5 | H-E RED | 2.1 | 14.0 | 20   | .125 (3.18)    | 5         |
| MV60539.MP5 | RED     | 1.7 | 3.2  | 20   | .180 (4.57)    | 5         |
| MV63539.MP5 | YLW     | 2.1 | 20.0 | 20   | .180 (4.57)    | 5         |
| MV64539.MP5 | GRN     | 2.2 | 28.0 | 20   | .180 (4.57)    | 5         |
| MV67539.MP5 | H-E RED | 2.1 | 15.0 | 20   | .180 (4.57)    | 5         |

#### LOW CURRENT (2mA)

|                |         |     |     |   |             |   |
|----------------|---------|-----|-----|---|-------------|---|
| HLMP-47009.MP5 | H-E RED | 1.8 | 2.0 | 2 | .180 (4.57) | 5 |
| HLMP-47199.MP5 | YLW     | 1.9 | 2.0 | 2 | .180 (4.57) | 5 |
| HLMP-47409.MP5 | GRN     | 1.9 | 3.0 | 2 | .180 (4.57) | 5 |

#### AlGaAs RED

|                |            |     |      |    |             |   |
|----------------|------------|-----|------|----|-------------|---|
| HLMP-D1019.MP5 | AlGaAs RED | 1.8 | 70.0 | 20 | .180 (4.57) | 5 |
| HLMP-D1509.MP5 | AlGaAs RED | 1.6 | 3.0  | 1  | .180 (4.57) | 5 |

#### ULTRA BRIGHT

|             |          |     |       |    |             |   |
|-------------|----------|-----|-------|----|-------------|---|
| MV33509.MP5 | YLW*     | 2.2 | 150.0 | 20 | .180 (4.57) | 5 |
| MV34509.MP5 | GRN*     | 2.2 | 150.0 | 20 | .180 (4.57) | 5 |
| MV37509.MP5 | H-E RED* | 2.2 | 150.0 | 20 | .180 (4.57) | 5 |

#### INTEGRAL RESISTOR

|             |         |      |     |    |             |   |
|-------------|---------|------|-----|----|-------------|---|
| MR30509.MP5 | RED     | 5.0  | 2.0 | 13 | .180 (4.57) | 5 |
| MR30519.MP5 | RED     | 12.0 | 2.0 | 13 | .180 (4.57) | 5 |
| MR33509.MP5 | YLW     | 5.0  | 4.0 | 10 | .180 (4.57) | 5 |
| MR33519.MP5 | YLW     | 12.0 | 4.0 | 13 | .180 (4.57) | 5 |
| MR34509.MP5 | GRN     | 5.0  | 4.0 | 12 | .180 (4.57) | 5 |
| MR34519.MP5 | GRN     | 12.0 | 4.0 | 13 | .180 (4.57) | 5 |
| MR37509.MP5 | H-E RED | 5.0  | 4.0 | 10 | .180 (4.57) | 5 |
| MR37519.MP5 | H-E RED | 12.0 | 4.0 | 13 | .180 (4.57) | 5 |

#### BICOLOR\*\*

|             |         |     |     |    |             |   |
|-------------|---------|-----|-----|----|-------------|---|
| MV54919.MP5 | RED/GRN | 2.3 | 6.0 | 20 | .180 (4.57) | 5 |
|-------------|---------|-----|-----|----|-------------|---|

#### GENERAL NOTES:

- All dimensions are in inches (mm).
- Tolerance is  $\pm .015$  ( $\pm .38$ ) unless otherwise specified.
- All electrical values are typical.
- All parts have colored *diffused* lens except those with an asterisk (\*), which denotes colored *clear* lens.
- A double asterik (\*\*) denotes that the cathode, as indicated, is the red cathode for the RED/GRN bicolor LED.
- Custom color combinations are available.

PACKAGE DIMENSIONS

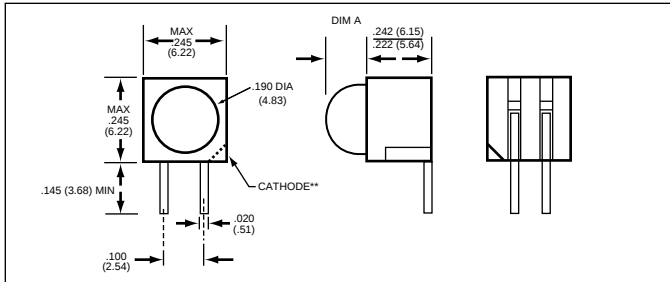


FIG. - 6

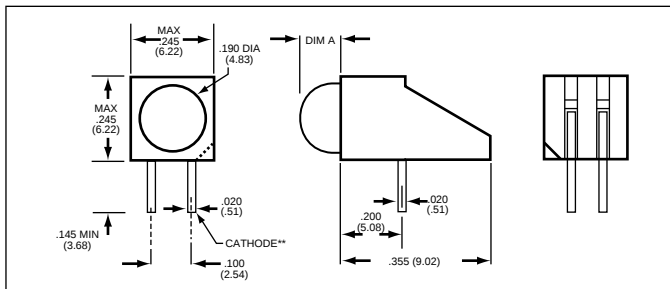


FIG. - 7

GENERAL NOTES:

1. All dimensions are in inches (mm).
2. Tolerance is  $\pm .015$  ( $\pm .38$ ) unless otherwise specified.
3. All electrical values are typical.
4. All parts have colored *diffused* lens except those with an asterik (\*), which denotes colored *clear* lens.
5. A double asterik (\*\*) denotes that the cathode, as indicated, is the red cathode for the RED/GRN bicolor LED.
6. Custom color combinations are available.

T-1 3/4 (5mm)

| PART NUMBER       | COLOR      | VF   | mcd   | @ mA | DIM A in. (mm) | PKG. FIG. |
|-------------------|------------|------|-------|------|----------------|-----------|
| MV60538.MP6       | RED        | 1.7  | 2.0   | 20   | .125 (3.18)    | 6         |
| MV63538.MP6       | YLW        | 2.1  | 18.0  | 20   | .125 (3.18)    | 6         |
| MV64538.MP6       | GRN        | 2.2  | 26.0  | 20   | .125 (3.18)    | 6         |
| MV67538.MP6       | H-E RED    | 2.1  | 14.0  | 20   | .125 (3.18)    | 6         |
| MV60539.MP6       | RED        | 1.7  | 3.2   | 20   | .180 (4.57)    | 6         |
| MV63539.MP6       | YLW        | 2.1  | 20.0  | 20   | .180 (4.57)    | 6         |
| MV64539.MP6       | GRN        | 2.2  | 28.0  | 20   | .180 (4.57)    | 6         |
| MV67539.MP6       | H-E RED    | 2.1  | 15.0  | 20   | .180 (4.57)    | 6         |
| LOW CURRENT (2mA) |            |      |       |      |                |           |
| HLMP-47009.MP6    | H-E RED    | 1.8  | 2.0   | 2    | .180 (4.57)    | 6         |
| HLMP-47199.MP6    | YLW        | 1.9  | 2.0   | 2    | .180 (4.57)    | 6         |
| HLMP-47409.MP6    | GRN        | 1.9  | 3.0   | 2    | .180 (4.57)    | 6         |
| AlGaAs RED        |            |      |       |      |                |           |
| HLMP-D1019.MP6    | AlGaAs RED | 1.8  | 70.0  | 20   | .180 (4.57)    | 6         |
| HLMP-D1509.MP6    | AlGaAs RED | 1.6  | 3.0   | 1    | .180 (4.57)    | 6         |
| ULTRA BRIGHT      |            |      |       |      |                |           |
| MV33509.MP6       | YLW*       | 2.2  | 150.0 | 20   | .180 (4.57)    | 6         |
| MV34509.MP6       | GRN*       | 2.2  | 150.0 | 20   | .180 (4.57)    | 6         |
| MV37509.MP6       | H-E RED*   | 2.2  | 150.0 | 20   | .180 (4.57)    | 6         |
| INTEGRAL RESISTOR |            |      |       |      |                |           |
| MR30509.MP6       | RED        | 5.0  | 2.0   | 13   | .180 (4.57)    | 6         |
| MR30519.MP6       | RED        | 12.0 | 2.0   | 13   | .180 (4.57)    | 6         |
| MR33509.MP6       | YLW        | 5.0  | 4.0   | 10   | .180 (4.57)    | 6         |
| MR33519.MP6       | YLW        | 12.0 | 4.0   | 13   | .180 (4.57)    | 6         |
| MR34509.MP6       | GRN        | 5.0  | 4.0   | 12   | .180 (4.57)    | 6         |
| MR34519.MP6       | GRN        | 12.0 | 4.0   | 13   | .180 (4.57)    | 6         |
| MR37509.MP6       | H-E RED    | 5.0  | 4.0   | 10   | .180 (4.57)    | 6         |
| MR37519.MP6       | H-E RED    | 12.0 | 4.0   | 13   | .180 (4.57)    | 6         |
| BICOLOR**         |            |      |       |      |                |           |
| MV54919.MP6       | RED/GRN    | 2.3  | 6.0   | 20   | .180 (4.57)    | 6         |

T-1 3/4 (5mm)

| PART NUMBER       | COLOR      | VF   | mcd   | @ mA | DIM A in. (mm) | PKG. FIG. |
|-------------------|------------|------|-------|------|----------------|-----------|
| MV60538.MP7       | RED        | 1.7  | 2.0   | 20   | .125 (3.18)    | 7         |
| MV63538.MP7       | YLW        | 2.1  | 18.0  | 20   | .125 (3.18)    | 7         |
| MV64538.MP7       | GRN        | 2.2  | 26.0  | 20   | .125 (3.18)    | 7         |
| MV67538.MP7       | H-E RED    | 2.1  | 14.0  | 20   | .125 (3.18)    | 7         |
| MV60539.MP7       | RED        | 1.7  | 3.2   | 20   | .183 (4.65)    | 7         |
| MV63539.MP7       | YLW        | 2.1  | 20.0  | 20   | .183 (4.65)    | 7         |
| MV64539.MP7       | GRN        | 2.2  | 28.0  | 20   | .183 (4.65)    | 7         |
| MV67539.MP7       | H-E RED    | 2.1  | 15.0  | 20   | .183 (4.65)    | 7         |
| LOW CURRENT (2mA) |            |      |       |      |                |           |
| HLMP-47009.MP7    | H-E RED    | 1.8  | 2.0   | 2    | .183 (4.65)    | 7         |
| HLMP-47199.MP7    | YLW        | 1.9  | 2.0   | 2    | .183 (4.65)    | 7         |
| HLMP-47409.MP7    | GRN        | 1.9  | 3.0   | 2    | .183 (4.65)    | 7         |
| AlGaAs RED        |            |      |       |      |                |           |
| HLMP-D1019.MP7    | AlGaAs RED | 1.8  | 70.0  | 20   | .183 (4.65)    | 7         |
| HLMP-D1509.MP7    | AlGaAs RED | 1.6  | 3.0   | 1    | .183 (4.65)    | 7         |
| ULTRA BRIGHT      |            |      |       |      |                |           |
| MV33509.MP7       | YLW*       | 2.2  | 150.0 | 20   | .183 (4.65)    | 7         |
| MV34509.MP7       | GRN*       | 2.2  | 150.0 | 20   | .183 (4.65)    | 7         |
| MV37509.MP7       | H-E RED*   | 2.2  | 150.0 | 20   | .183 (4.65)    | 7         |
| INTEGRAL RESISTOR |            |      |       |      |                |           |
| MR30509.MP7       | RED        | 5.0  | 2.0   | 13   | .183 (4.65)    | 7         |
| MR30519.MP7       | RED        | 12.0 | 2.0   | 13   | .183 (4.65)    | 7         |
| MR33509.MP7       | YLW        | 5.0  | 4.0   | 10   | .183 (4.65)    | 7         |
| MR33519.MP7       | YLW        | 12.0 | 4.0   | 13   | .183 (4.65)    | 7         |
| MR34509.MP7       | GRN        | 5.0  | 4.0   | 12   | .183 (4.65)    | 7         |
| MR34519.MP7       | GRN        | 12.0 | 4.0   | 13   | .183 (4.65)    | 7         |
| MR37509.MP7       | H-E RED    | 5.0  | 4.0   | 10   | .183 (4.65)    | 7         |
| MR37519.MP7       | H-E RED    | 12.0 | 4.0   | 13   | .183 (4.65)    | 7         |
| BICOLOR**         |            |      |       |      |                |           |
| MV54919.MP7       | RED/GRN    | 2.3  | 6.0   | 20   | .183 (4.65)    | 7         |

## PACKAGE DIMENSIONS

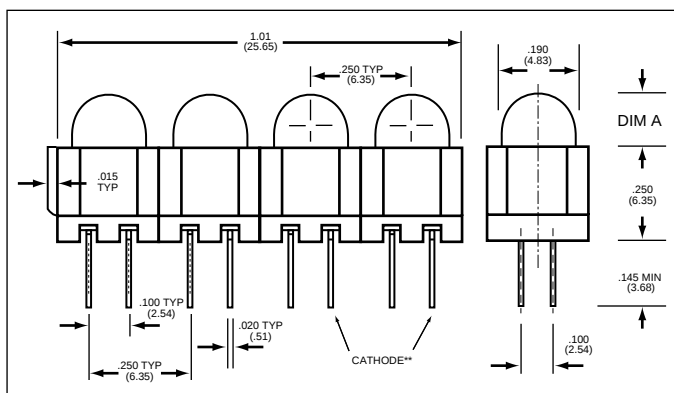


FIG. - 8

SPECIFIC NOTES:

For T-1 3/4 (5mm) multiple, multiples of four is the standard configuration.

Options — To obtain units in multiples of two add a “-2” suffix to the part number (i.e. MV64539.MP8-2). To obtain units in multiples of three add a “-3” suffix.

## T-1 3/4 (5mm) multiple

| PART NUMBER       | COLOR    | VF   | mcd   | @<br>mA | DIM A<br>in. (mm) | PKG.<br>FIG. |
|-------------------|----------|------|-------|---------|-------------------|--------------|
| MV60538.MP8       | RED      | 1.7  | 2.0   | 20      | .140 (3.56)       | 8            |
| MV63538.MP8       | YLW      | 2.1  | 18.0  | 20      | .140 (3.56)       | 8            |
| MV64538.MP8       | GRN      | 2.2  | 26.0  | 20      | .140 (3.56)       | 8            |
| MV67538.MP8       | H-E RED  | 2.1  | 14.0  | 20      | .140 (3.56)       | 8            |
| MV60539.MP8       | RED      | 1.7  | 3.2   | 20      | .195 (4.95)       | 8            |
| MV63539.MP8       | YLW      | 2.1  | 20.0  | 20      | .195 (4.95)       | 8            |
| MV64539.MP8       | GRN      | 2.2  | 28.0  | 20      | .195 (4.95)       | 8            |
| MV67539.MP8       | H-E RED  | 2.1  | 15.0  | 20      | .195 (4.95)       | 8            |
| LOW CURRENT (2mA) |          |      |       |         |                   |              |
| HLMP-47009.MP8    | H-E RED  | 1.8  | 2.0   | 2       | .195 (4.95)       | 8            |
| HLMP-47199.MP8    | YLW      | 1.9  | 2.0   | 2       | .195 (4.95)       | 8            |
| HLMP-47409.MP8    | GRN      | 1.9  | 3.0   | 2       | .195 (4.95)       | 8            |
| ULTRA BRIGHT      |          |      |       |         |                   |              |
| MV33509.MP8       | YLW*     | 2.2  | 150.0 | 20      | .195 (4.95)       | 8            |
| MV34509.MP8       | GRN*     | 2.2  | 150.0 | 20      | .195 (4.95)       | 8            |
| MV37509.MP8       | H-E RED* | 2.2  | 150.0 | 20      | .195 (4.95)       | 8            |
| INTEGRAL RESISTOR |          |      |       |         |                   |              |
| MR30509.MP8       | RED      | 5.0  | 2.0   | 13      | .195 (4.95)       | 8            |
| MR30519.MP8       | RED      | 12.0 | 2.0   | 13      | .195 (4.95)       | 8            |
| MR33509.MP8       | YLW      | 5.0  | 4.0   | 10      | .195 (4.95)       | 8            |
| MR33519.MP8       | YLW      | 12.0 | 4.0   | 13      | .195 (4.95)       | 8            |
| MR34509.MP8       | GRN      | 5.0  | 4.0   | 12      | .195 (4.95)       | 8            |
| MR34519.MP8       | GRN      | 12.0 | 4.0   | 13      | .195 (4.95)       | 8            |
| MR37509.MP8       | H-E RED  | 5.0  | 4.0   | 10      | .195 (4.95)       | 8            |
| MR37519.MP8       | H-E RED  | 12.0 | 4.0   | 13      | .195 (4.95)       | 8            |
| BICOLOR**         |          |      |       |         |                   |              |
| MV54919.MP8       | RED/GRN  | 2.3  | 6.0   | 20      | .195 (4.95)       | 8            |

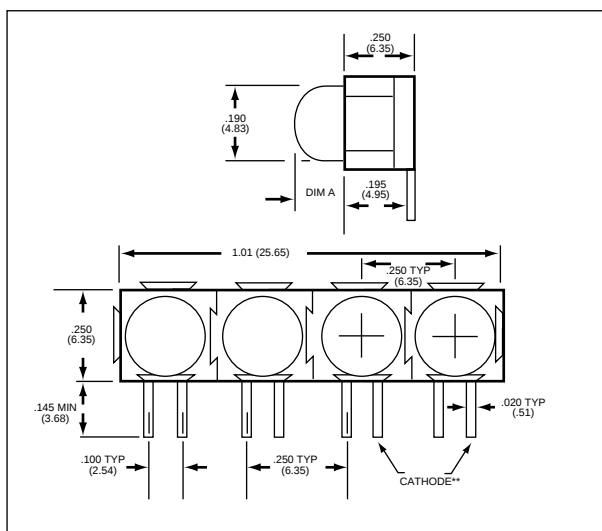


FIG. - 8A

GENERAL NOTES:

1. All dimensions are in inches (mm).
2. Tolerance is  $\pm .015$  ( $\pm .38$ ) unless otherwise specified.
3. All electrical values are typical.
4. All parts have colored *diffused* lens except those with an asterisk (\*), which denotes colored *clear* lens.
5. A double asterisk (\*\*) denotes that the cathode, as indicated, is the red cathode for the RED/GRN bicolor LED.
6. Custom color combinations are available.

## T-1 3/4 (5mm) multiple

| PART NUMBER       | COLOR     | VF   | mcd   | @ mA | DIM A in. | PKG. (mm) | FIG. |
|-------------------|-----------|------|-------|------|-----------|-----------|------|
| MV60538.MP8A      | RED       | 1.7  | 2.0   | 20   | .140      | (3.56)    | 8A   |
| MV63538.MP8A      | YLW       | 2.1  | 18.0  | 20   | .140      | (3.56)    | 8A   |
| MV64538.MP8A      | GRN       | 2.2  | 26.0  | 20   | .140      | (3.56)    | 8A   |
| MV67538.MP8A      | H-E RED   | 2.1  | 14.0  | 20   | .140      | (3.56)    | 8A   |
| MV60539.MP8A      | RED       | 1.7  | 3.2   | 20   | .195      | (4.95)    | 8A   |
| MV63539.MP8A      | YLW       | 2.1  | 20.0  | 20   | .195      | (4.95)    | 8A   |
| MV64539.MP8A      | GRN       | 2.2  | 28.0  | 20   | .195      | (4.95)    | 8A   |
| MV67539.MP8A      | H-E RED   | 2.1  | 15.0  | 20   | .195      | (4.95)    | 8A   |
| LOW CURRENT (2mA) |           |      |       |      |           |           |      |
| HLMP-47009.MP8A   | H-E RED   | 1.8  | 2.0   | 2    | .195      | (4.95)    | 8A   |
| HLMP-47199.MP8A   | YLW       | 1.9  | 2.0   | 2    | .195      | (4.95)    | 8A   |
| HLMP-47409.MP8A   | GRN       | 1.9  | 3.0   | 2    | .195      | (4.95)    | 8A   |
| ULTRA BRIGHT      |           |      |       |      |           |           |      |
| MV33509.MP8A      | YLW*      | 2.2  | 150.0 | 20   | .195      | (4.95)    | 8A   |
| MV34509.MP8A      | GRN*      | 2.2  | 150.0 | 20   | .195      | (4.95)    | 8A   |
| MV37509.MP8A      | H-E. RED* | 2.2  | 150.0 | 20   | .195      | (4.95)    | 8A   |
| INTEGRAL RESISTOR |           |      |       |      |           |           |      |
| MR30509.MP8A      | RED       | 5.0  | 2.0   | 13   | .195      | (4.95)    | 8A   |
| MR30519.MP8A      | RED       | 12.0 | 2.0   | 13   | .195      | (4.95)    | 8A   |
| MR33509.MP8A      | YLW       | 5.0  | 4.0   | 10   | .195      | (4.95)    | 8A   |
| MR33519.MP8A      | YLW       | 12.0 | 4.0   | 13   | .195      | (4.95)    | 8A   |
| MR34509.MP8A      | GRN       | 5.0  | 4.0   | 12   | .195      | (4.95)    | 8A   |
| MR34519.MP8A      | GRN       | 12.0 | 4.0   | 13   | .195      | (4.95)    | 8A   |
| MR37509.MP8A      | H-E RED   | 5.0  | 4.0   | 10   | .195      | (4.95)    | 8A   |
| MR37519.MP8A      | H-E RED   | 12.0 | 4.0   | 13   | .195      | (4.95)    | 8A   |
| BICOLOR**         |           |      |       |      |           |           |      |
| MV54919.MP8A      | RED/GRN   | 2.3  | 6.0   | 20   | .195      | (4.95)    | 8A   |

# PACKAGE DIMENSIONS

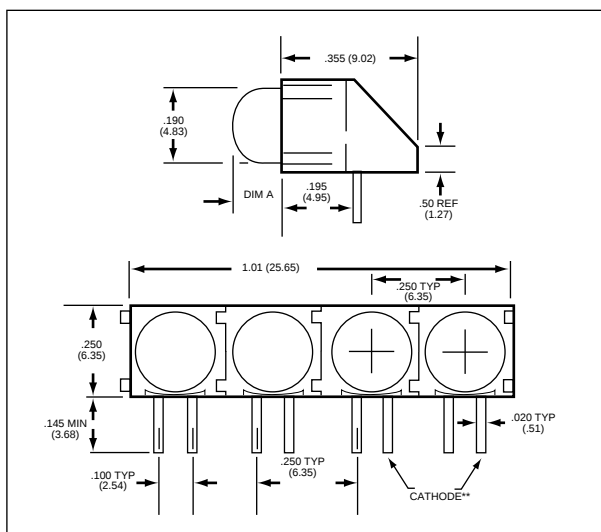


FIG. - 8B

## SPECIFIC NOTES:

For T-1 3/4 (5mm) multiple, multiples of four is the standard configuration.

Options — To obtain units in multiples of two add a "-2" suffix to the part number (i.e. MV64539.MP8-2). To obtain units in multiples of three add a "-3" suffix.

## T-1 3/4 (5mm) multiple

| PART NUMBER       | COLOR    | VF   | mcd   | @ mA | DIM A in. (mm) | PKG. FIG. |
|-------------------|----------|------|-------|------|----------------|-----------|
| MV60538.MP8B      | RED      | 1.7  | 2.0   | 20   | .140 (3.56)    | 8B        |
| MV63538.MP8B      | YLW      | 2.1  | 18.0  | 20   | .140 (3.56)    | 8B        |
| MV64538.MP8B      | GRN      | 2.2  | 26.0  | 20   | .140 (3.56)    | 8B        |
| MV67538.MP8B      | H-E RED  | 2.1  | 14.0  | 20   | .140 (3.56)    | 8B        |
| MV60539.MP8B      | RED      | 1.7  | 3.2   | 20   | .195 (4.95)    | 8B        |
| MV63539.MP8B      | YLW      | 2.1  | 20.0  | 20   | .195 (4.95)    | 8B        |
| MV64539.MP8B      | GRN      | 2.2  | 28.0  | 20   | .195 (4.95)    | 8B        |
| MV67539.MP8B      | H-E RED  | 2.1  | 15.0  | 20   | .195 (4.95)    | 8B        |
| LOW CURRENT (2mA) |          |      |       |      |                |           |
| HLMP-47009.MP8B   | H-E RED  | 1.8  | 2.0   | 2    | .195 (4.95)    | 8B        |
| HLMP-47199.MP8B   | YLW      | 1.9  | 2.0   | 2    | .195 (4.95)    | 8B        |
| HLMP-47409.MP8B   | GRN      | 1.9  | 3.0   | 2    | .195 (4.95)    | 8B        |
| ULTRA BRIGHT      |          |      |       |      |                |           |
| MV33509.MP8B      | YLW*     | 2.2  | 150.0 | 20   | .195 (4.95)    | 8B        |
| MV34509.MP8B      | GRN*     | 2.2  | 150.0 | 20   | .195 (4.95)    | 8B        |
| MV37509.MP8B      | H-E RED* | 2.2  | 150.0 | 20   | .195 (4.95)    | 8B        |
| INTEGRAL RESISTOR |          |      |       |      |                |           |
| MR30509.MP8B      | RED      | 5.0  | 2.0   | 13   | .195 (4.95)    | 8B        |
| MR30519.MP8B      | RED      | 12.0 | 2.0   | 13   | .195 (4.95)    | 8B        |
| MR33509.MP8B      | YLW      | 5.0  | 4.0   | 10   | .195 (4.95)    | 8B        |
| MR33519.MP8B      | YLW      | 12.0 | 4.0   | 13   | .195 (4.95)    | 8B        |
| MR34509.MP8B      | GRN      | 5.0  | 4.0   | 12   | .195 (4.95)    | 8B        |
| MR34519.MP8B      | GRN      | 12.0 | 4.0   | 13   | .195 (4.95)    | 8B        |
| MR37509.MP8B      | H-E RED  | 5.0  | 4.0   | 10   | .195 (4.95)    | 8B        |
| MR37519.MP8B      | H-E RED  | 12.0 | 4.0   | 13   | .195 (4.95)    | 8B        |
| BICOLOR**         |          |      |       |      |                |           |
| MV54919.MP8B      | RED/GRN  | 2.3  | 6.0   | 20   | .195 (4.95)    | 8B        |

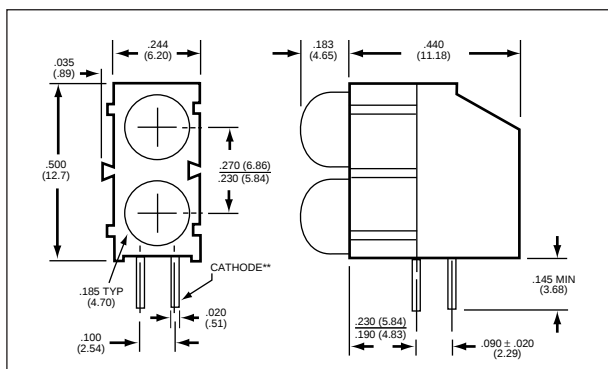


FIG. - 9  
Parts are stackable

## GENERAL NOTES:

- All dimensions are in inches (mm).
- Tolerance is  $\pm .015$  ( $\pm .38$ ) unless otherwise specified.
- All electrical values are typical.
- All parts have colored *diffused* lens except those with an asterik (\*), which denotes colored *clear* lens.
- A double asterik (\*\*) denotes that the cathode, as indicated, is the red cathode for the RED/GRN bicolor LED.
- Custom color combinations are available.

## T-1 3/4 (5 mm) bilevel

| PART NUMBER       | COLOR            | VF  | mcd   | @ mA | PKG. FIG. |
|-------------------|------------------|-----|-------|------|-----------|
| MV60539.MP90      | RED/RED          | 1.7 | 3.2   | 20   | 9         |
| MV63539.MP93      | YLW/YLW          | 2.1 | 20.0  | 20   | 9         |
| MV64539.MP94      | GRN/GRN          | 2.2 | 28.0  | 20   | 9         |
| MV67539.MP97      | H-E RED/H-E RED  | 2.1 | 15.0  | 20   | 9         |
| LOW CURRENT (2mA) |                  |     |       |      |           |
| HLMP-47009.MP97   | H-E RED/H-E RED  | 1.8 | 2.0   | 2    | 9         |
| HLMP-47199.MP93   | YLW/YLW          | 1.9 | 2.0   | 2    | 9         |
| HLMP-47409.MP94   | GRN/GRN          | 1.9 | 3.0   | 2    | 9         |
| ULTRA BRIGHT      |                  |     |       |      |           |
| MV33509.MP93      | YLW/YLW*         | 2.2 | 150.0 | 20   | 9         |
| MV34509.MP94      | GRN/GRN*         | 2.2 | 150.0 | 20   | 9         |
| MV37509.MP97      | H-E RED/H-E RED* | 2.2 | 150.0 | 20   | 9         |
| INTEGRAL RESISTOR |                  |     |       |      |           |
| MR30509.MP90      | RED/RED          | 5.0 | 2.0   | 13   | 9         |
| MR33509.MP93      | YLW/YLW          | 5.0 | 4.0   | 10   | 9         |
| MR34509.MP94      | GRN/GRN          | 5.0 | 4.0   | 12   | 9         |
| MR37509.MP97      | H-E RED/H-E RED  | 5.0 | 4.0   | 10   | 9         |
| BICOLOR**         |                  |     |       |      |           |
| MV54919.MP91      | R/G/R/G          | 2.3 | 6.0   | 20   | 9         |

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