

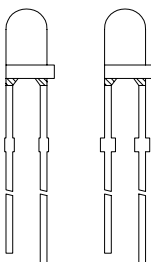
## Standard Features

- Produced with steel leadframe
- Supplied with standard leads (SL)
- Supplied with lead stand off (SO)
- Water clear epoxy
- Products bin coded for hue and intensity
- Class II ESD Rating

## Special Features

- Long life – 75K hours 50% lumen maintenance (see sheet 4)
- High brightness – 5000 mcd typical
- High Efficiency 44 lm/w
- Weather resistant package design
- Suitable for outdoor displays and signs
- Ideal for traffic signal and VMS applications

## Electro / Optical Characteristics $I_F = 20 \text{ mA}$ $T_a = 25^\circ \text{ C}$

| Lamp Package  | LED Part Number | Emitting Colour | Leads     | Die Material | Chromaticity Coordinates |      | Forward Voltage $V_F$ |      | Luminous Intensity $I_V$ |         | Viewing $\angle$ 20 $\frac{1}{2}$ |
|---|-----------------|-----------------|-----------|--------------|--------------------------|------|-----------------------|------|--------------------------|---------|-----------------------------------|
|   |                 |                 |           |              | x                        | y    | typical               | max  | min                      | typical |                                   |
| <br>SL    SO | FUL-R334WWCSL   | White           | Std       | InGaN/SiC    | 0.31                     | 0.31 | 3.20                  | 3.80 | 2500                     | 5000    | 34                                |
|   |                 |                 |           |              |                          |      |                       |      |                          |         |                                   |
|   | FUL-R334WWCSO   | White           | Stand off | InGaN/SiC    | 0.31                     | 0.31 | 3.20                  | 3.80 | 2500                     | 5000    | 34                                |
|   |                 |                 |           |              |                          |      |                       |      |                          |         |                                   |
| 3.0 mm  | Units           |                 |           |              | Typical                  |      | V                     |      | mcd                      |         | deg                               |

## Maximum Ratings $T_a = 25^\circ \text{ C}$ ( Derate above 25° C )

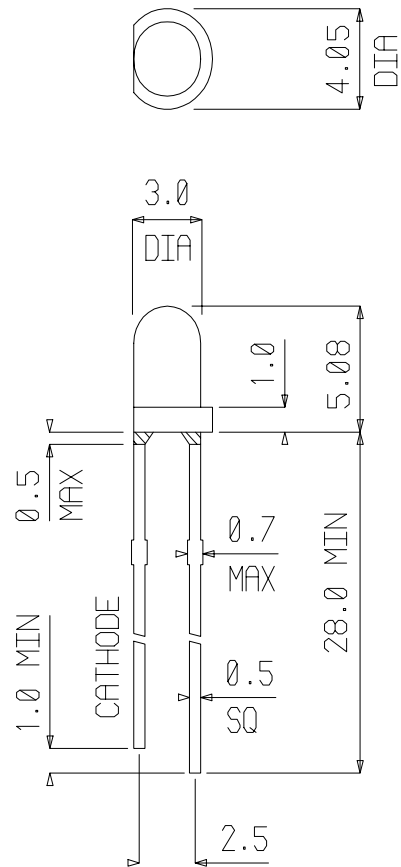
| Characteristic             | Condition                          | Symbol    | Rating        | Units              |
|----------------------------|------------------------------------|-----------|---------------|--------------------|
| Pulse Forward Current      | $t \leq 0.1\text{ms}$ , $D = 1/10$ | $I_{FP}$  | 100           | mA                 |
| DC Forward Current         |                                    | $I_F$     | 30            | mA                 |
| Reverse Voltage            | $I_R = 5 \mu\text{A}$              | $V_R$     | 5             | V                  |
| Power Dissipation          |                                    | $P_D$     | 114           | mW                 |
| Operating Temperature      |                                    | $T_{opr}$ | - 30 to + 85  | $^\circ \text{ C}$ |
| Storage Temperature        |                                    | $T_{stg}$ | - 40 to + 100 | $^\circ \text{ C}$ |
| Lead soldering temperature | 3 mm from body - max 10 s          | $T_s$     | 260           | $^\circ \text{ C}$ |

The maximum forward current for LEDs ( $I_F \text{ max}$ ) is determined by the thermal resistance between the LED p-n junction and the ambient environment ( $\theta_{ja}$ ). Since thermal resistance is strongly application dependant, designers should take care to observe design limits. It is critical to maintain both  $I_F \text{ max}$  and  $\theta_{ja}$  within design limits in order to optimise LED performance in terms of colour and intensity change as a factor of time. Thermal derating characteristics for temperatures above  $T_a = 25^\circ \text{ C}$  are available upon request.

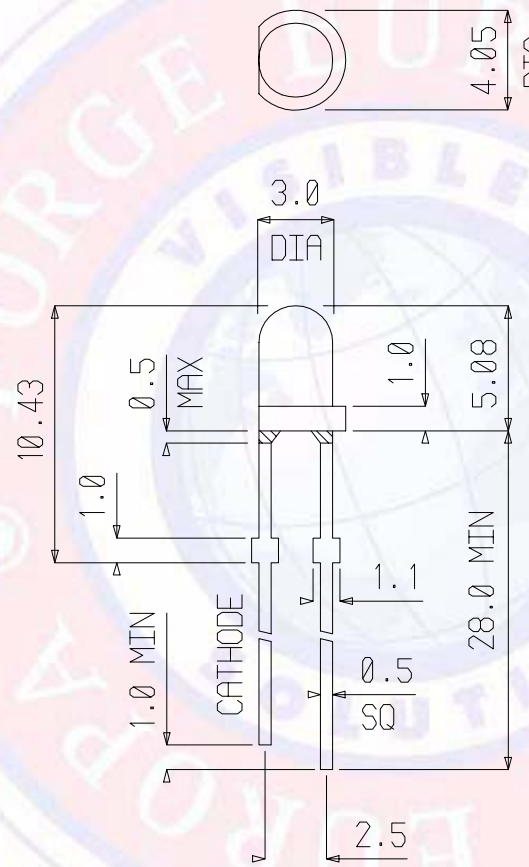
It is the responsibility of the customer to verify the suitability of the product for the application.

**Package Outlines**    Dimensions in mm    Tol  $\pm 0.2$  mm unless stated

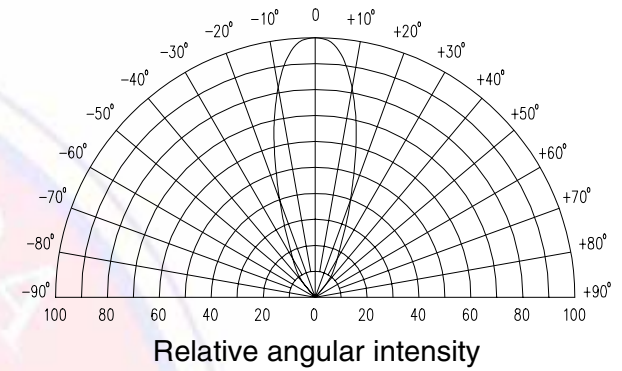
### Standard Leads



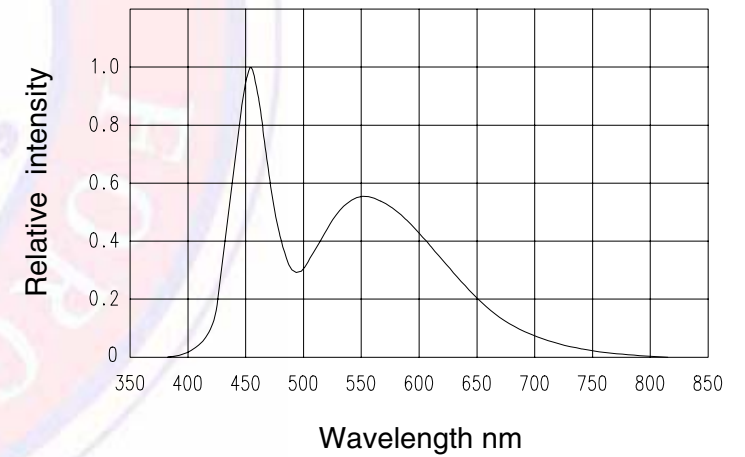
### Leads with stand off



**Radiation Diagram**     $T_a = 25^\circ\text{C}$      $I_F = 20$  mA



**Emission Spectrum**     $T_a = 25^\circ\text{C}$      $I_F = 20$  mA

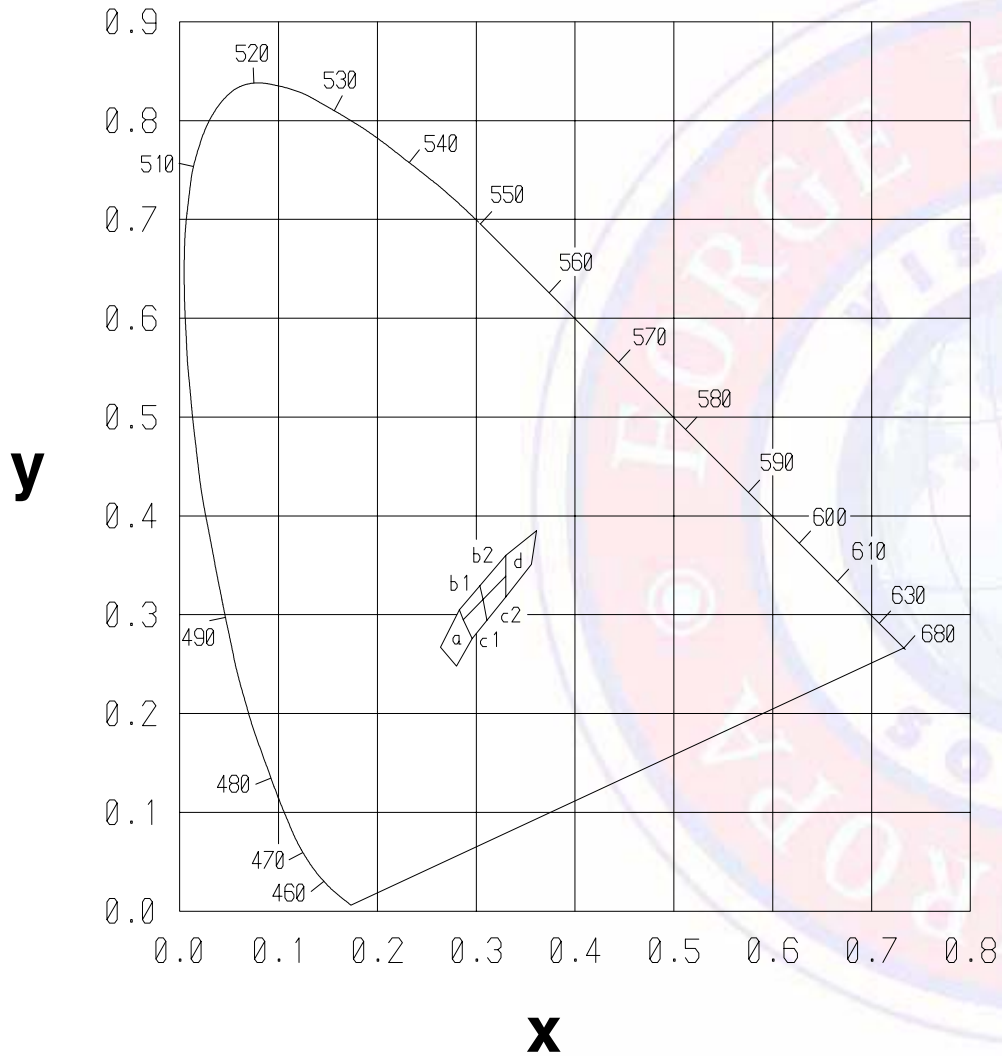


### WARNING

This range of LEDs is produced with die having a high radiant flux. Care must be taken when viewing the product at close range as the light may be intense enough to cause damage to the human eye.

**Note:** Industry standard procedures regarding static must be observed when handling this product.

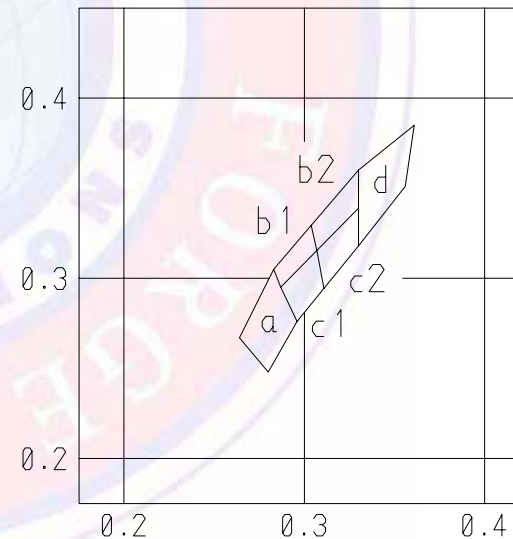
### CIE 1931 - Chromaticity Diagram



### Ranking Codes

Measurement Tolerance x and y  $\pm 0.01$

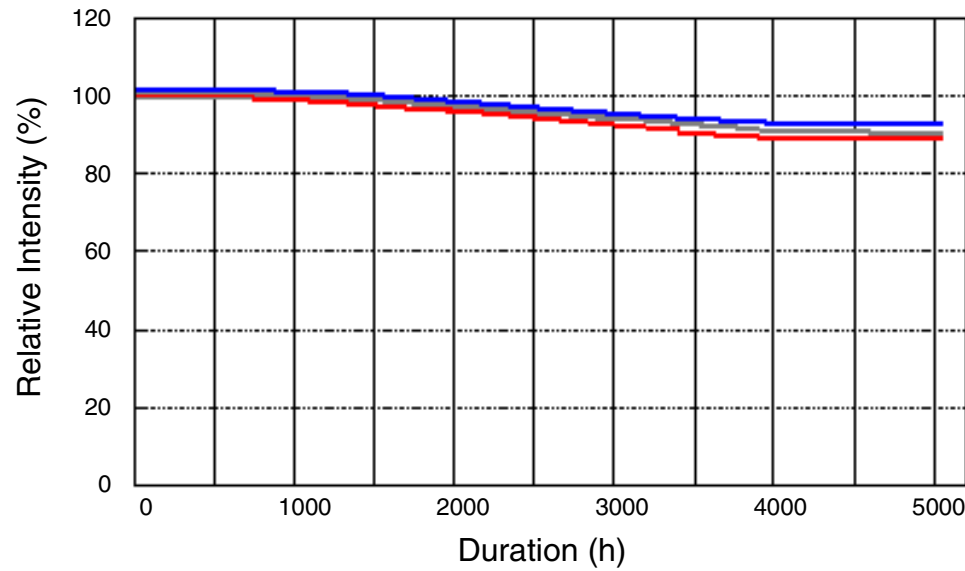
|    |   |       |       |       |       |
|----|---|-------|-------|-------|-------|
| a  | X | 0.264 | 0.280 | 0.296 | 0.283 |
|    | Y | 0.267 | 0.248 | 0.276 | 0.305 |
| b1 | X | 0.283 | 0.304 | 0.307 | 0.287 |
|    | Y | 0.305 | 0.329 | 0.315 | 0.295 |
| b2 | X | 0.304 | 0.330 | 0.330 | 0.307 |
|    | Y | 0.329 | 0.360 | 0.339 | 0.315 |
| c1 | X | 0.287 | 0.307 | 0.311 | 0.296 |
|    | Y | 0.295 | 0.315 | 0.294 | 0.276 |
| c2 | X | 0.307 | 0.330 | 0.330 | 0.311 |
|    | Y | 0.315 | 0.339 | 0.318 | 0.294 |
| d  | X | 0.330 | 0.330 | 0.356 | 0.361 |
|    | Y | 0.360 | 0.318 | 0.351 | 0.385 |



## Operating Test

$T_a = 25^\circ \text{C}$

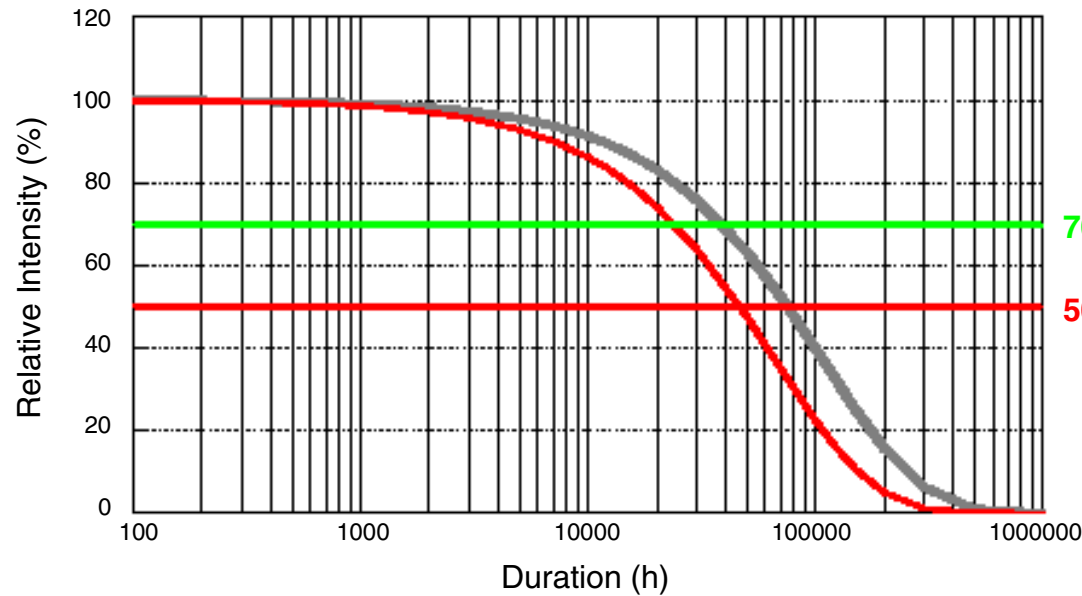
- $I_F = 20\text{mA}$
- $I_F = 30\text{mA}$
- $I_F = 50\text{mA}$



## Life Simulation

$T_a = 25^\circ \text{C}$

- $I_F = 20\text{mA}$
- $I_F = 30\text{mA}$



| % of Initial Intensity | Test Current | Test Duration |
|------------------------|--------------|---------------|
| 70                     | 20           | 38000         |
|                        | 30           | 23000         |
| 50                     | 20           | 75000         |
|                        | 30           | 46000         |
|                        | mA           | hours         |