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1W Power Light LED

**LGSW-311H**

# DATA SHEET

DOC. NO : QW0905-LGSW-311H#

DATE : 04- Jun - 2007

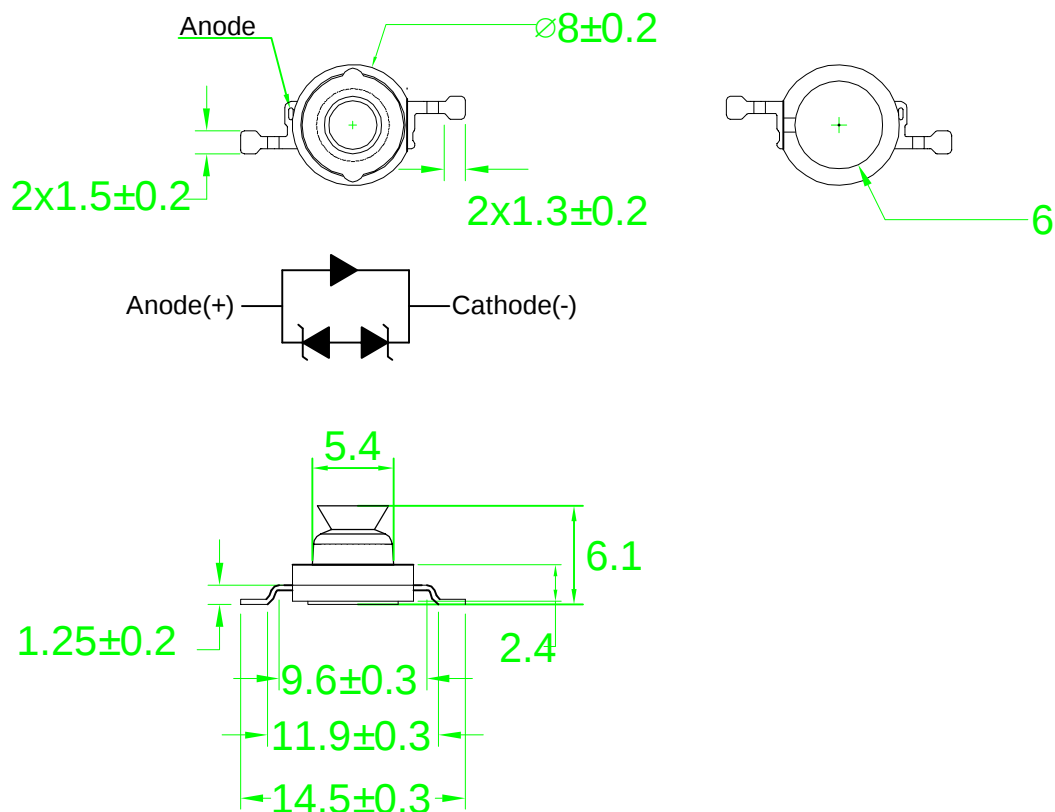
## Features

- \*. High Flux per LED
- \*. Very long operating life(up to 100k hours).
- \*. Available in White.
- \*. More Energy Efficient than Incandescent and most Halogen lamps.
- \*. Low voltage DC operated..
- \*. Cool beam, safe to the touch.
- \*. Instant light(less than 100 ns).
- \*. Fully dimmable.
- \*. No UV.
- \*. Superior ESD protection..
- \*. Soldering methods: hand Soldering.

## Typical Applications

- \*. Reading Light (car,bus,aircraft)
- \*. Portable(flashlight,bicycle).
- \*. LCD Backlights / Light Guides.
- \*. Automotive Exterior (Stop-Tail-Turn,CHMSL,Mirror Side Repeat).
- \*. Commercial and Residential Architectural lighting.
- \*. Mini-accent / Uplighters / Downlighters / Orientation lighting
- \*. Fiber Optic Alternative / Decorative / Entertainment lighting.
- \*. Security / Garden lighting.
- \*. Cove / Underself / Task lighting.
- \*. Traffic signaling / Beacons / Rail crossing and Wayside lighting.
- \*. Decorative.
- \*. Sign and channel Letter.

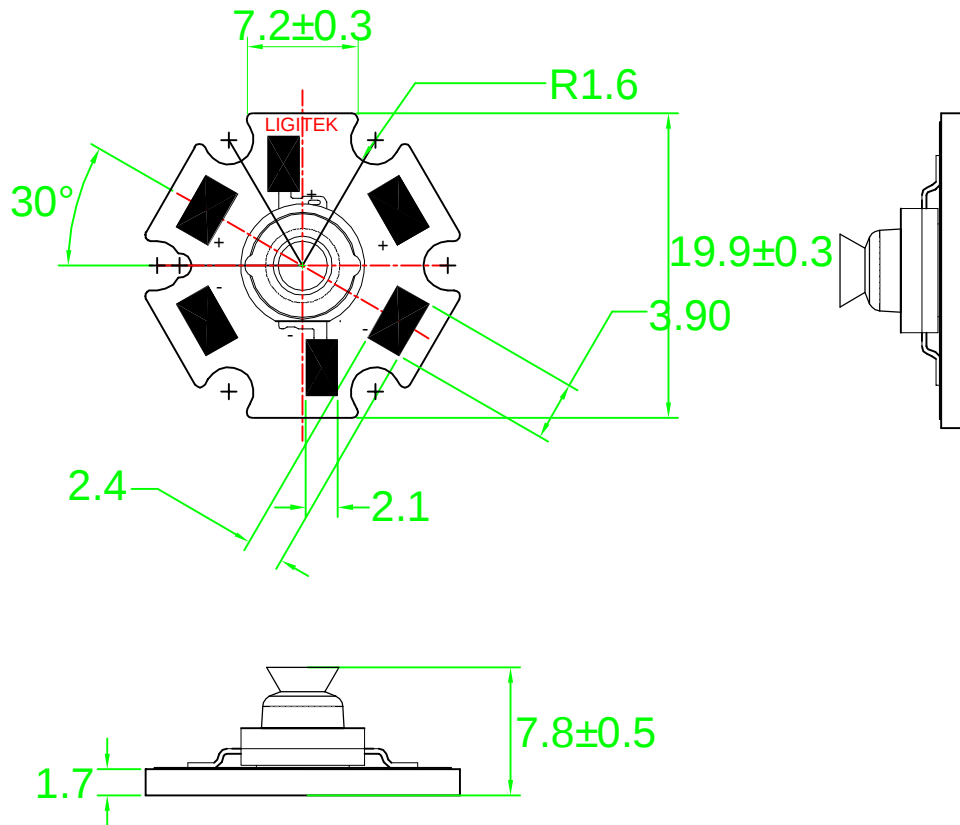
## Dimension



Note:1.All dimension are in millimeter  
 2.Specifications are subject to change without notice



## Star Mechanical Dimensions



Note:1.All dimension are in millimeter



## Absolute Maximum Ratings at Ta=25

| Parameter                              | Symbol           | Ratings    | UNIT    |
|----------------------------------------|------------------|------------|---------|
|                                        |                  | White      |         |
| DC Forward Current                     | I <sub>F</sub>   | 350        | mA      |
| Power Dissipation                      | PD               | 1.4        | W       |
| Peak pulse current<br>Duty 1/10@10KHz  | I <sub>FP</sub>  | 500        | mA      |
| LED junction Temperature               | T <sub>j</sub>   | 125        |         |
| Reverse Current(VR=5V)                 | I <sub>r</sub>   | 100        | μA      |
| Storage Temperature                    | T <sub>stg</sub> | -40 ~ +120 |         |
| Operating Temperature                  | T <sub>opr</sub> | -40 ~ +100 |         |
| Manual Soldering Time<br>at 260°C(Max) | T <sub>sol</sub> | 5          | seconds |

. Luminous Flux Characteristics at 350mA  
(Ratings At 25 Ambient)

| Radiation<br>Pattern | PART NO   | Emission<br>Color | Luminous<br>Flux<br>@350mA(I <sub>m</sub> ) |      |      | Units          |
|----------------------|-----------|-------------------|---------------------------------------------|------|------|----------------|
|                      |           |                   | Min.                                        | Typ. | Max. | I <sub>m</sub> |
| Lambertian           | LGSW-311H | White             | 30.6                                        | 48   | ---- |                |

Note : White emitters are built with InGaN.



## **. Forward Voltage Characteristics at 350mA**

**(Ratings At 25    Ambient)**

| Radiation Pattern | PART NO   | Emission Color | Vf   |      |      | Units |
|-------------------|-----------|----------------|------|------|------|-------|
|                   |           |                | Min. | Typ. | Max. |       |
| Lambertian        | LGSW-311H | White          | 3.0  | 3.6  | 4.0  | V     |

Note : Forward Voltage is measured with an accuracy of  $\pm 0.1V$

## **. Color Temperature Characteristics at 350mA**

**(Ratings At 25    Ambient )**

| Radiation Pattern | PART NO   | Emission Color | CCT  |       |       | Units |
|-------------------|-----------|----------------|------|-------|-------|-------|
|                   |           |                | Min. | Typ.  | Max.  |       |
| Lambertian        | LGSW-311H | White          | 5500 | ----- | 10000 | K     |

Note : CCT $\pm 5\%$  tester tolerance.

## **. Temperature Coefficient Of Forward Voltage&Thermal Resistance Junction To Board Characteristics at 350mA**

**(Ratings At 25    Ambient )**

| Radiation Pattern | PART NO   | Emission Color | $\Delta V_f / \Delta T$ |                 | Rth,j-B |               |
|-------------------|-----------|----------------|-------------------------|-----------------|---------|---------------|
|                   |           |                | Typ.                    | Units           | Typ.    | Units         |
| Lambertian        | LGSW-311H | White          | -2                      | mV/ $^{\circ}C$ | 18      | $^{\circ}C/W$ |

## **. Emission Angle Characteristics at 350mA**

**(Ratings At 25    Ambient )**

| PART NO   | Emission Color | Side emitting<br>$\theta_{PEAK}(Typ.)$ | Units   |
|-----------|----------------|----------------------------------------|---------|
| LGSW-311H | White          | $\pm 80$                               | Degrees |



### Brightness Code For High Power LED

| Group | Luminous flux(lm) |      |
|-------|-------------------|------|
|       | Min               | Max  |
| F21   | 30.6              | 39.8 |
| F22   | 39.8              | 51.7 |
| F23   | 51.7              | 67.2 |

Note : Flux is measured with an accuracy of  $\pm 10\%$

### Color Temperature For High Power LED

| Group |      | CCT        |
|-------|------|------------|
| C1    | C1-1 | 5500-6000  |
|       | C1-2 | 6000-6500  |
|       | C1-3 | 6500-7000  |
| C2    | C2-1 | 7000-7500  |
|       | C2-2 | 7500-8000  |
|       | C2-3 | 8000-8500  |
| C3    | C3-1 | 8500-9000  |
|       | C3-2 | 9000-9500  |
|       | C3-3 | 9500-10000 |



Fig.1 Forward current vs. Forward Voltage

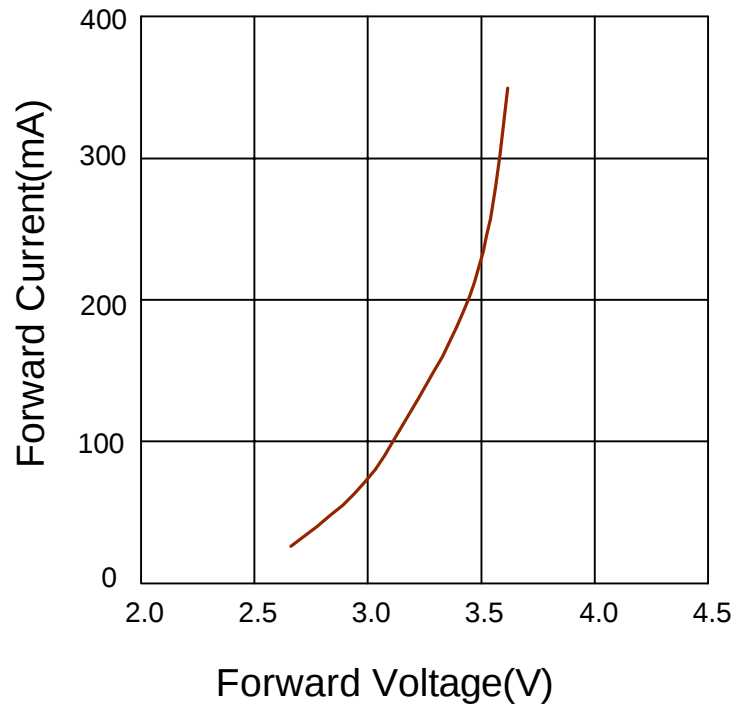


Fig.2 Operating current vs. Ambient Temperature

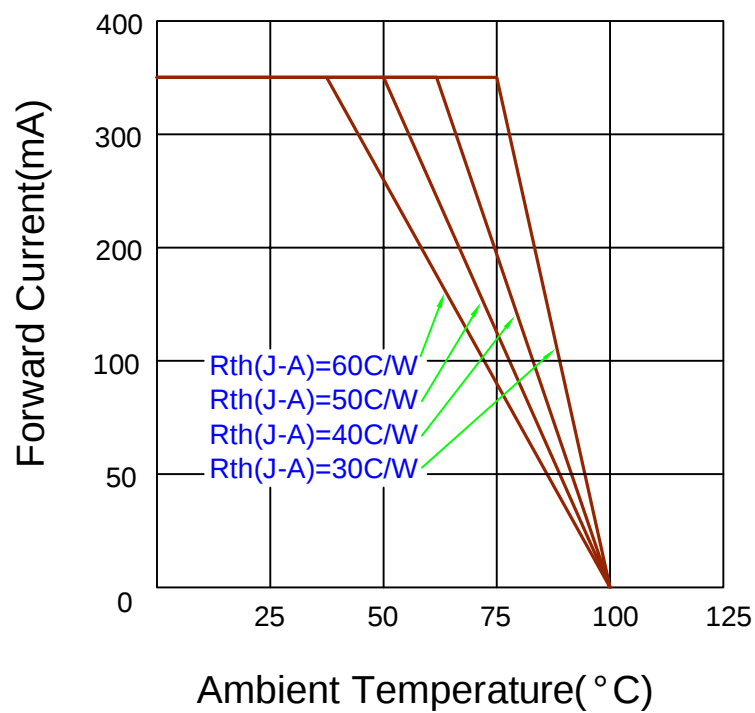




Fig.3 Forward current vs. Luminous Flux

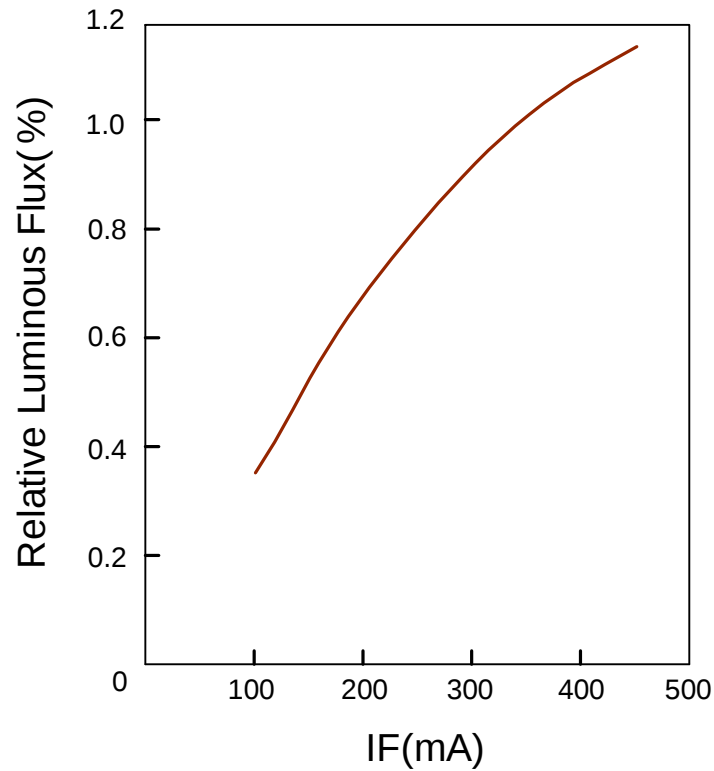


Fig.4 Junction Temperature vs. Forward Voltage

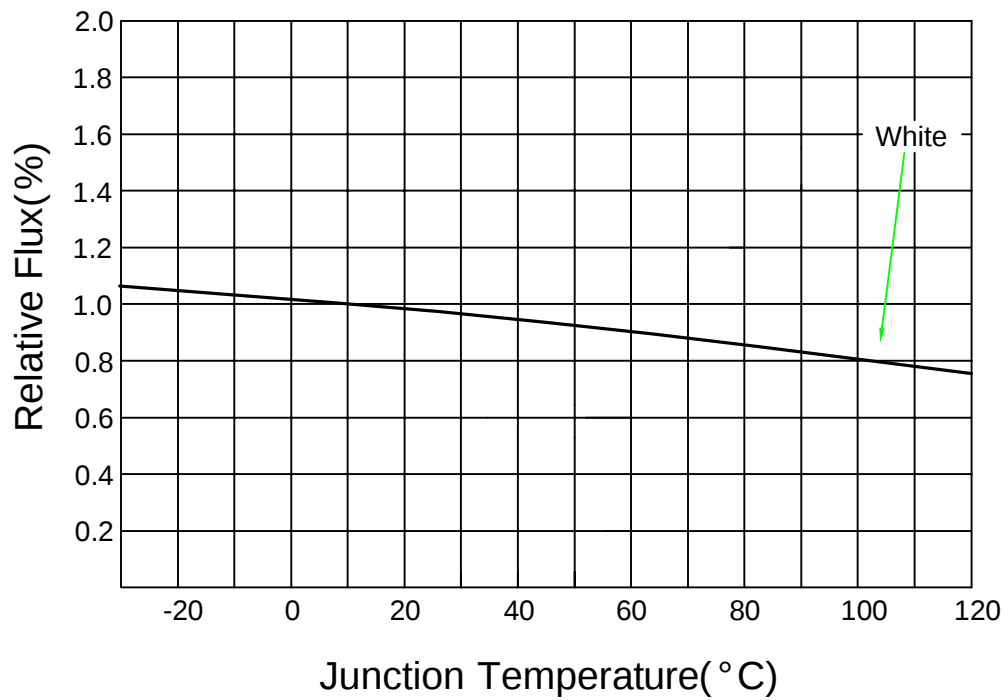




Fig.5 Luminous Spectrum( $T_a=25^\circ\text{C}$ )

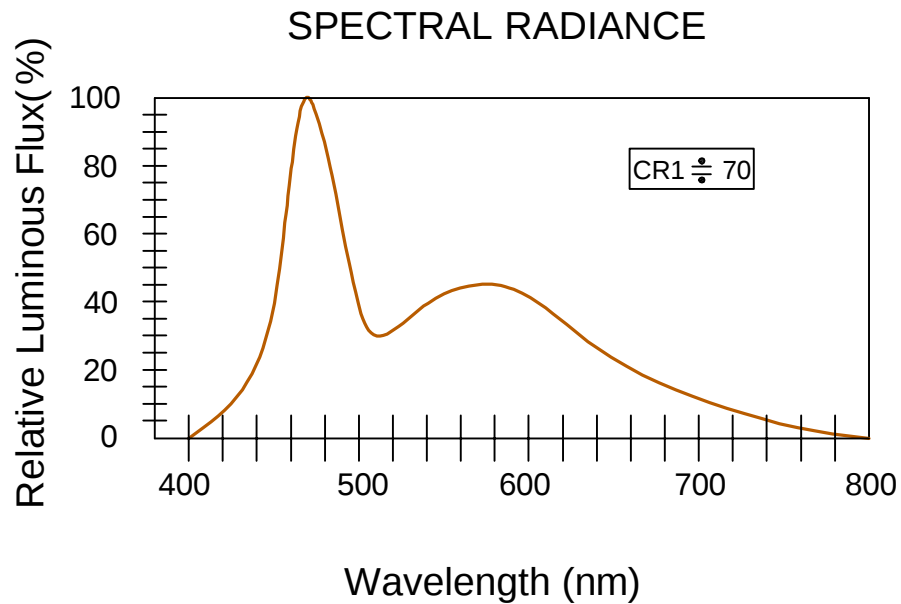
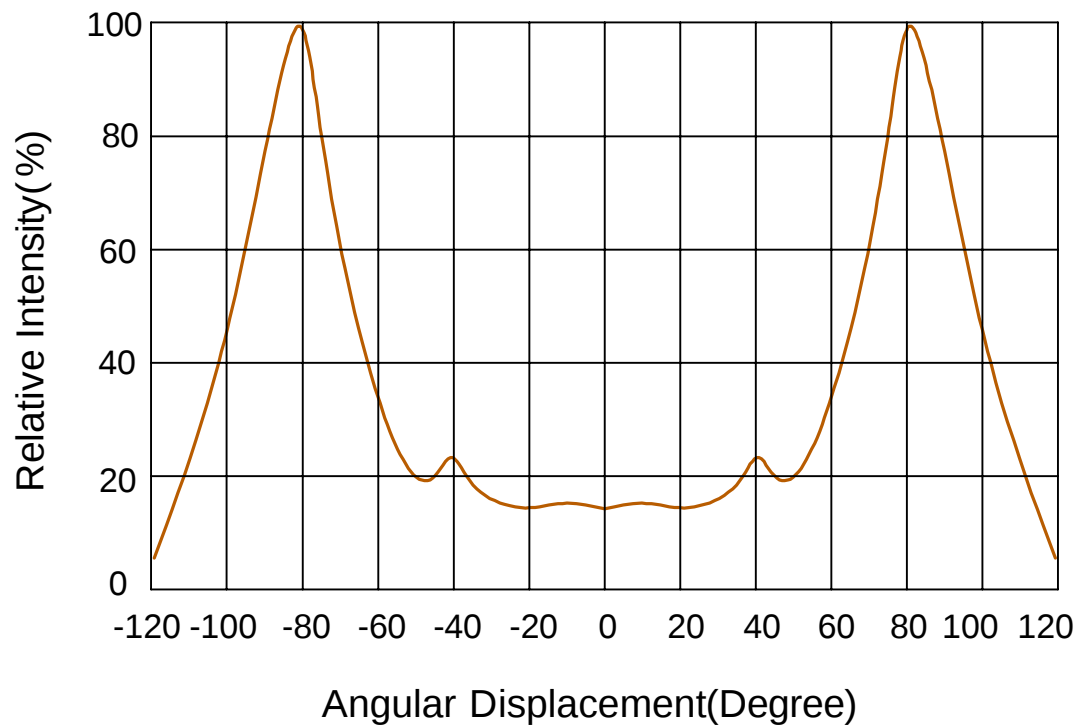
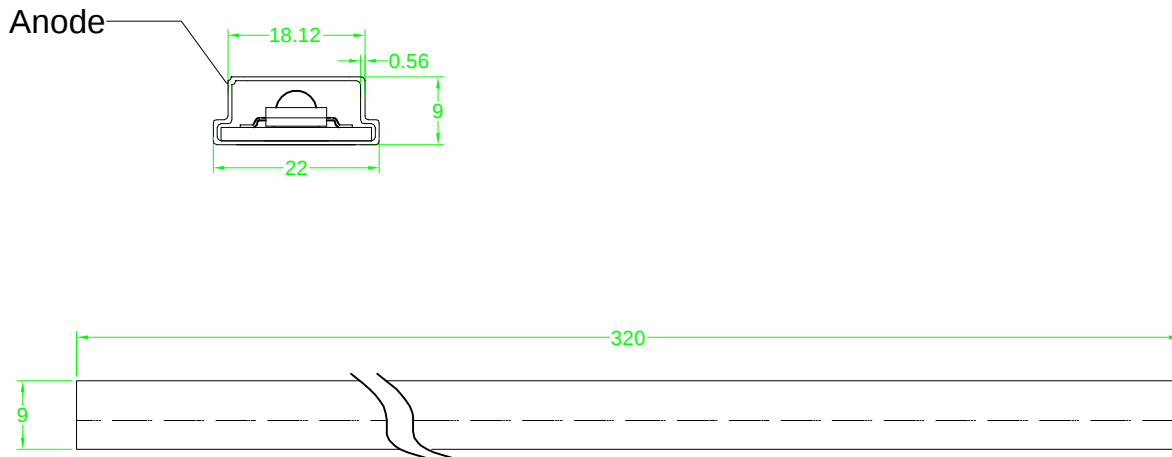


Fig.6 Directivity Radiation



## Package Specifications



1. All dimensions are in mm.
2. There are 20 pcs emitters in a tube.
3. There are 64 tubes in a inner box.



## Reliability Test

| Item | Description                     | Stress Condition                                | Test Duration |
|------|---------------------------------|-------------------------------------------------|---------------|
| RTOL | Room Temperature Operation Life | 25° C, Max. IF                                  | 1000 hours    |
| WHT  | Wet High Temperature            | 85° C/85%RH                                     | 1000 hours    |
| TC   | Temperature Cycling             | -40/+110° C,<br>30min dwell,<5min trans.        | 200 cycles    |
| TS   | Thermal Shock                   | -40/+110° C,<br>20min dwell,<20min trans.       | 200 cycles    |
| HTSL | High Temperature Storage Life   | 120° C                                          | 1000 hours    |
| LTOL | Low Temperature Storage Life    | -40° C                                          | 1000 hours    |
| SHR  | Solder Heat Resistance          | 260±5° C, 5secs                                 |               |
| MS   | Mechanical Shock                | 1500G,0.5msec pulse,<br>5 shocks each 6 axis    |               |
| ND   | Natural Drop                    | On concrete from 1.2m, 3times                   |               |
| RV   | Random Vibration                | 6G RMS from 10 to 2KHz,<br>10mins/axis          |               |
| VVF  | Variable Vibration Frequency    | 10-2000-10Hz, 20G<br>1 min, 1.5mm, 3timesx/axis |               |

Note :

Failure criteria:

Electrical failures

$V_F$  shife  $\geq 10\%$

$I_R < 50\mu A @ V_r = 5v$

Ligitek output Degradation

$\%I_v$  shift  $\geq 30\% @ 1000hrs$  or 200cycle

Visual failures

Broken or damaged pockage or lead

Dimension out of tolerance