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LED SMD

Lead-Free Parts

# LG-150VIR-CT

# DATA SHEET

DOC. NO : QW0905-LG-150VIR-CT

REV. : A

DATE : 15 - Jan. - 2014

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## Features:

1. Package in 8.0mm carrier tape on 7" diameter reel.
2. Low forward voltage
3. Good spectral matehing to Si photo detecor

## Descriptions:

1. The LG-150VIR is an infrared emitting diode in miniature SMD package which is molded in a water cleatr plastic with flat top view lens.
2. The device is spectrally matched with silicon photodiode and phototransistor.

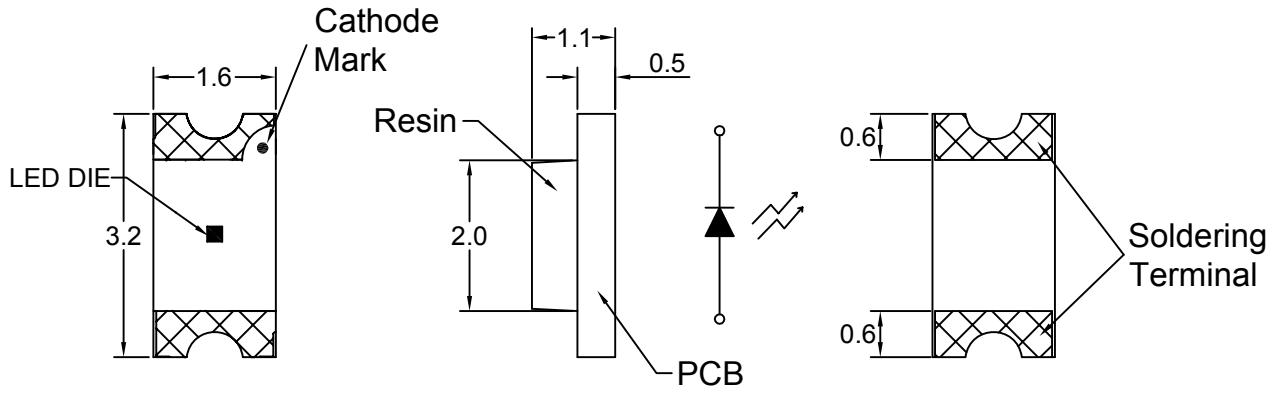
## Applications:

1. PCB mounted infrared sensor
2. Infrared emitting for miniature light barrier
3. Floppy disk drive
4. Optoelectronic switch
5. Smoke detector

## Device Selection Guide:

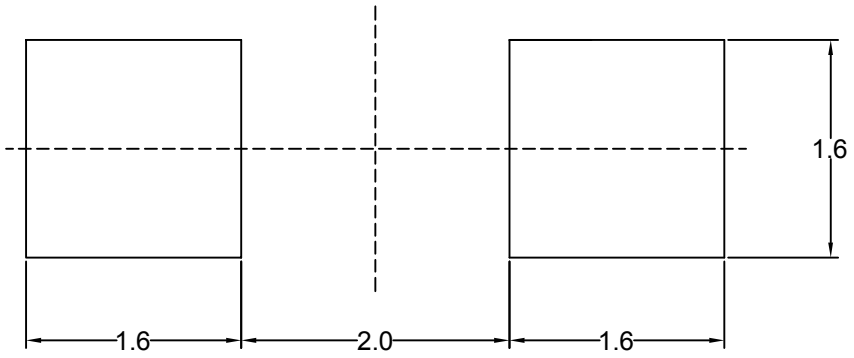
| PART NO | MATERIAL | Lens Color |
|---|---|---|
| LG-150VIR-CT | GaAlAs | Water Clear |

## Package Dimensions




Note : 1.All dimension are in millimeter tolerance is ±0.1mm unless otherwise noted.
2.Specifications are subject to change without notice.

## Recommended Soldering Pad Dimensions




Note : The tolerances unless mentioned is ±0.1mm,Angle±0.5. Unit=mm.

## Absolute Maximum Ratings at Ta=25℃

| Parameter | Symbol | Ratings | UNIT |
|---|---|---|---|
| Power Dissipation | PD | 80 | mW |
| Peak Forward Current Duty 1/11@10KHz | $I_{FP}$ | 1 | mA |
| Forward Current | $I_F$ | 50 | mA |
| Reverse Current @5V | Ir | 5 | μA |
| Electrostatic Discharge | ESD | 2000 | V |
| Operating Temperature | $T_{opr}$ | -40 ~ + 85 | ℃ |
| Storage Temperature | Tstg | -40 ~ + 85 | ℃ |

## Typical Electrical & Optical Characteristics (Ta=25℃)

| PARAMETER | SYMBOL | Min. | Typ. | Max. | UNIT | TEST CONDITION |
|---|---|---|---|---|---|---|
| Radiant Intensity | Le | 0.85 | 1.4 | ---- | mW/sr | IF=20mA |
| Peak Emission Wavelength | λ peak | ---- | 940 | ---- | nm | IF=20mA |
| Spectral Line Half Width | △λ | ---- | 50 | ---- | nm | IF=20mA |
| Forward Voltage | VF | 1.2 | ---- | 1.6 | V | IF=20mA |
| Reverse Current | IR | ---- | ---- | 100 | μA | VR=5V |
| Viewing Angle | 2θ1/2 | ---- | 140 | ---- | deg | IF=20mA |

Note : 1.The forward voltage data did not including ±0.1V testing tolerance.
2. The Radiant intensity data did not including ±15% testing tolerance.

# Radiant Intensity Classification

| BIN CODE | Po(mw/sr) at 20mA | |
|---|---|---|
| | Min. | Max. |
| J | 0.85 | 1.1 |
| K | 1.1 | 1.4 |
| L | 1.4 | 1.8 |
| M | 1.8 | 2.4 |
| N | 2.4 | 3.2 |

# Typical Electro-Optical Characteristics Curve

## VIR CHIP

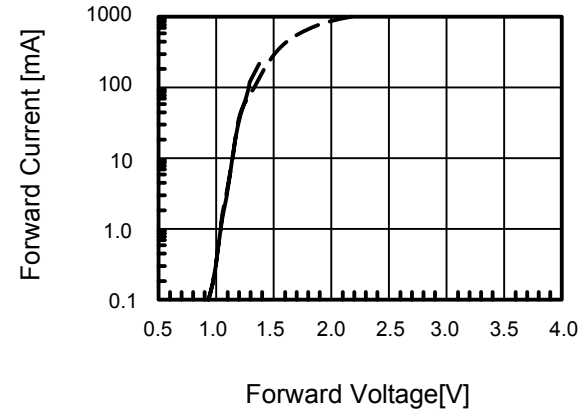



Fig 3. Relative Radiant Power vs. Forward Peak Current

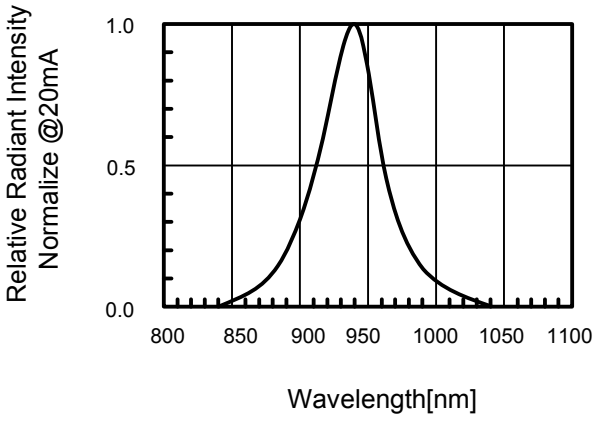



Fig.4 Relative Radiant Power vs. Forward Peak Current

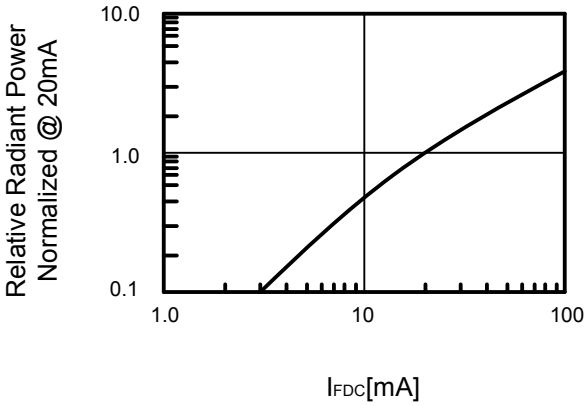



Fig.5 Forward DC Voltage vs. Temperature

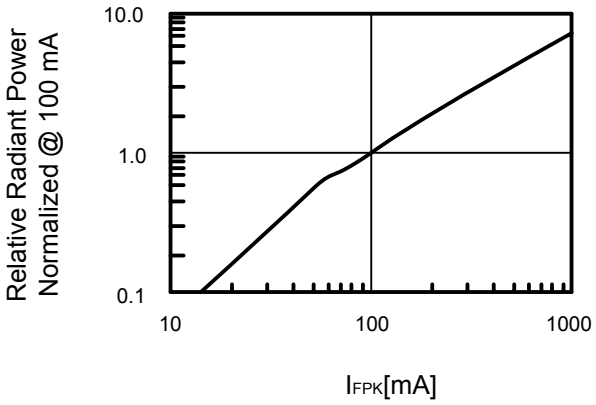
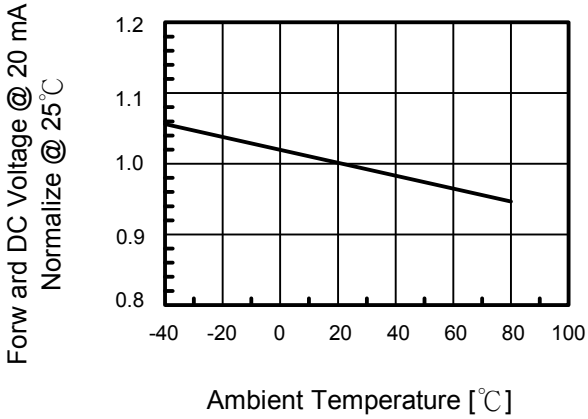
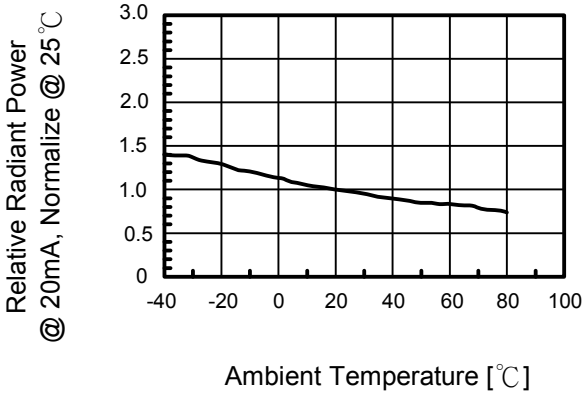
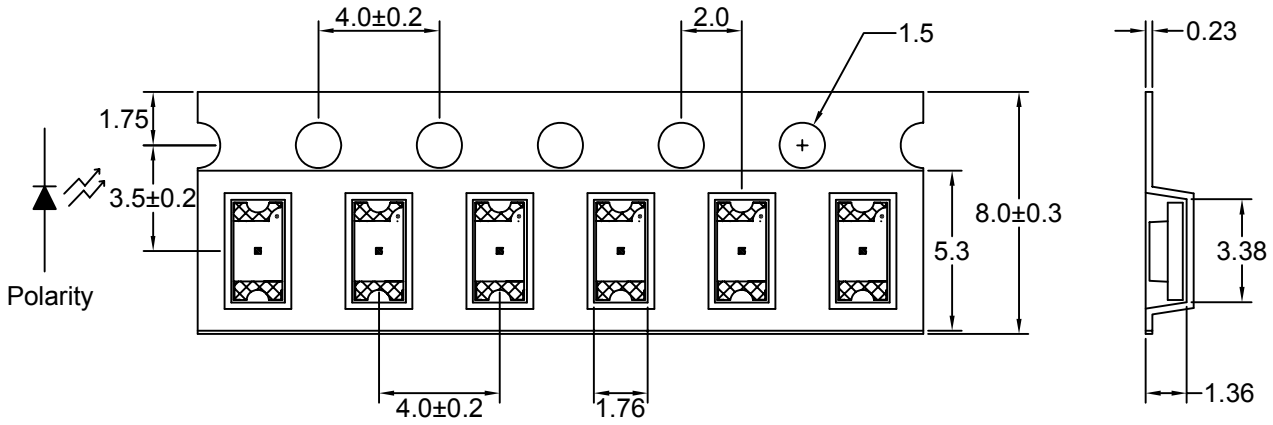



Fig.6 Relative Radiant Power vs. Temperature



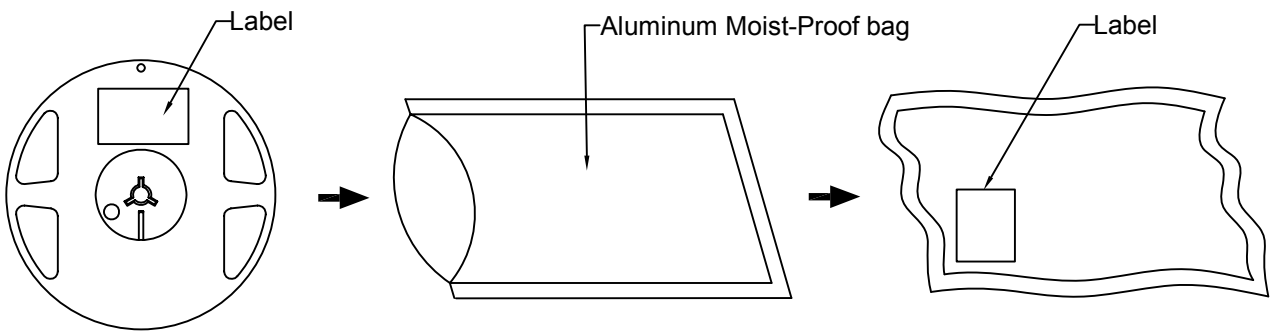



# Carrier Type Dimensions



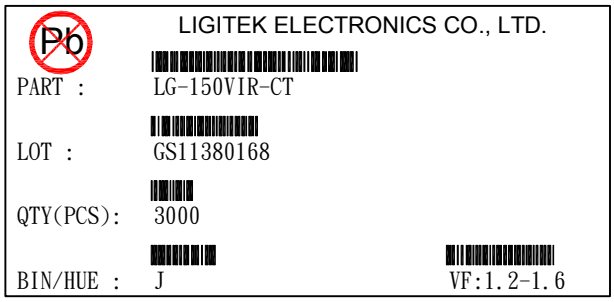

Note : The tolerances unless mentioned is ±0.1mm,Angle± 0.5. Unit=mm.

## • Packing Specifications




| Part No. | Description | Quantity/Reel |
|---|---|---|
| LG-150VIR-CT | 8.0mm tape,7"reel | 3000 devices |

## Label Explanation

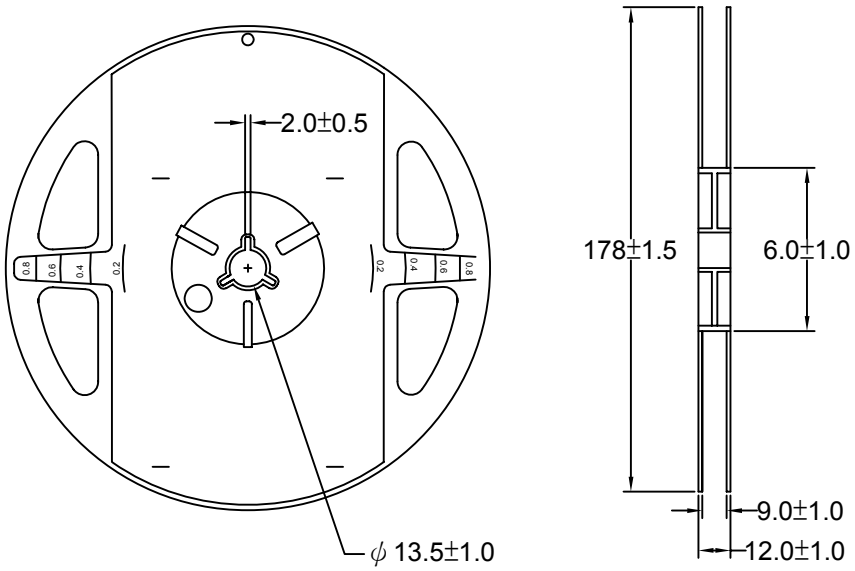



BIN : Luminous Intensity

HUE : Dominant Wavelength

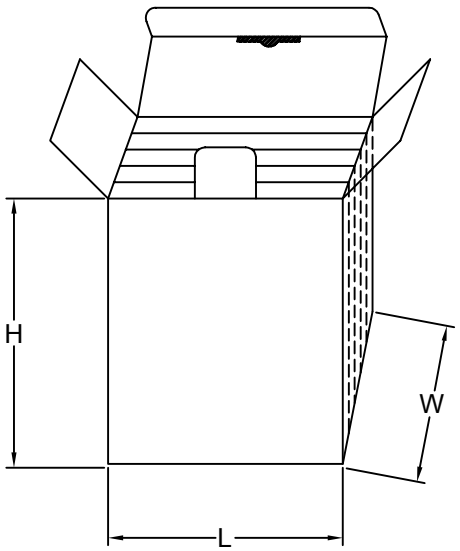
VF : Forward Voltage

## Reel Dimensions

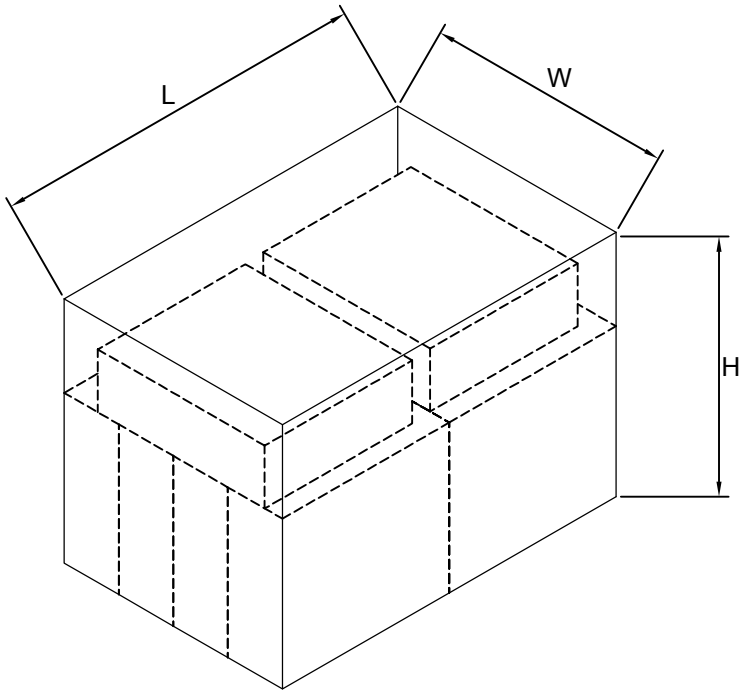


# Box Explanation

1. 5 BAG / INNER BOX
2. INNER BOX SIZE : L X W X H 23cm X 8.5cm x 26cm



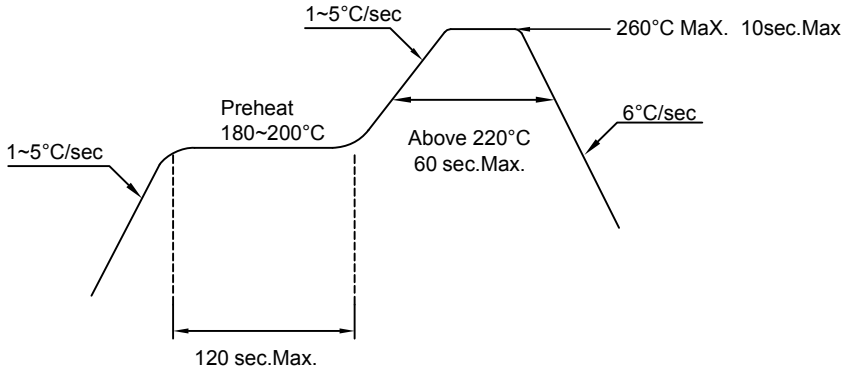

3. 10 INNER BOXES / CARTON
4. CARTON SIZE : L X W X H 58cm X 34cm x 35cm



Recommended Soldering Conditions

1. Hand Solder
   Basic spec is ≦ 280℃ 3 sec one time only.

2. PB-Free Reflow Solder




Note:
1.Reflow soldering should not be done more than two times.
2.When soldering,do not put stress on the LEDs during heating.
3.After soldering,do not warp the circuit board.

## Precautions For Use:

### Storage time:

1.The operation of Temperatures and RH are : 5℃~35℃,RH60%.

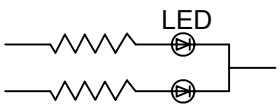
2.Once the package is opened, the products should be used within a week.
Otherwise, they should be kept in a damp proof box with descanting agent.
Considering the tape life, we suggest our customers to use our products within a year(from production date).

3.If opened more than one week in an atmosphere 5℃ ~ 35℃,RH60%,
they should be treated at 60℃±5 ℃fo r 15hrs.

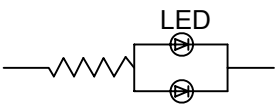
## Drive Method:

LED is a current operated device, and therefore, requirer some kind of current limiting incorporated into the driver circuit. This current limiting typically takes the form of a current limiting resistor placed in series with the LED.
Consider worst case voltage variations than could occur across the current limiting resistor. The forward current should not be allowed to change by more than 40% of its desired value.

Circuit model A




Circuit model B




(A) Recommended circuit.
(B) The difference of brightness between LED could be found due to the VF-IF characteristics of LED.

## Cleaning:

Use alcohol-based cleaning solvents such as isopropyl alcohol to clean the LED.

## ESD(Electrostatic Discharge):

Static Electricity or power surge will damage the LED. Use of a conductive wrist band or anti-electrosatic glove is recommended when handing these LED. All devices, equipment and machinery must be properly grounded.

Reliability Test:

| Classification | Test Item | Test Condition | Reference Standard |
|---|---|---|---|
| Endurance Test | Operating Life Test | 1.Ta=Under Room Temperature As Per Data Sheet Maximum Rating.<br>2.If=20mA<br>3.t=1000 hrs (-24hrs, +72hrs) | MIL-STD-750D: 1026<br>MIL-STD-883D: 1005<br>JIS C 7021: B-1 |
| | High Temperature Storage Test | 1.Ta=105℃±5℃<br>2.t=1000 hrs (-24hrs, +72hrs) | MIL-STD-883D:1008<br>JIS C 7021: B-10 |
| | Low Temperature Storage Test | 1.Ta=-40℃±5℃<br>2.t=1000 hrs (-24hrs, +72hrs) | JIS C 7021: B-12 |
| | High Temperature High Humidity Storage Test | 1.Ta=65℃±5℃<br>2.RH=90%~95%<br>3.t=1000hrs¡Ó2hrs | MIL-STD-202F:103B<br>JIS C 7021: B-11 |
| Environmental Test | Thermal Shock Test | 1.Ta=105℃±5℃&-40℃±5℃<br>(10min) (10min)<br>2.total 10 cycles | MIL-STD-202F: 107D<br>MIL-STD-750D: 1051<br>MIL-STD-883D: 1011 |
| | Solderability Test | 1.T.Sol=235℃±5℃<br>2.Immersion time 2±0.5sec<br>3.Coverage ≧95% of the dipped surface | MIL-STD-202F: 208D<br>MIL-STD-750D: 2026<br>MIL-STD-883D: 2003<br>IEC 68 Part 2-20<br>JIS C 7021: A-2 |
| | Temperature Cycling | 1.105℃ ~ 25℃ ~ -55℃ ~ 25℃<br>30mins 5mins 30mins 5mins<br>2.10 Cyeles | MIL-STD-202F: 107D<br>MIL-STD-750D: 1051<br>MIL-STD-883D: 1010<br>JIS C 7021: A-4 |
| | IR Reflow | 1.T=260°C Max. 10sec.Max.<br>2. 6 Min | MIL-STD-750D:2031.2<br>J-STD-020 |