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DATA SHEET

PART NO. : L-S153CIR1CT-HD

REV : A / 0

CUSTOMER'S APPROVAL : _____ DCC : _____



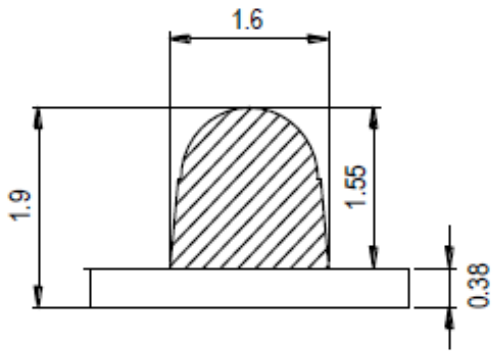
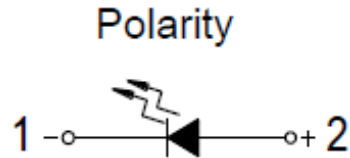
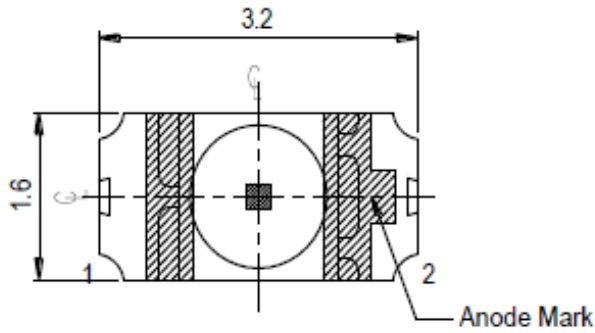
3.2*1.6*1.9 mm SMD LED

L-S153CIR1CT-HD

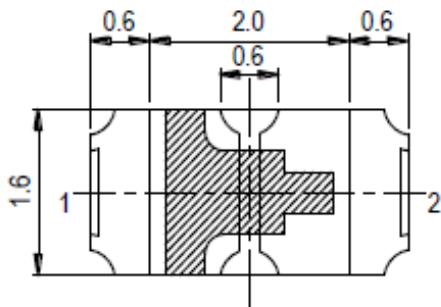
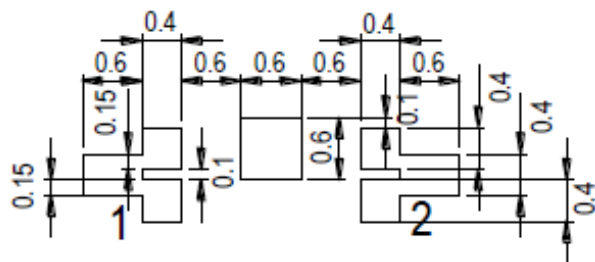
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PACKAGE DIMENSIONS

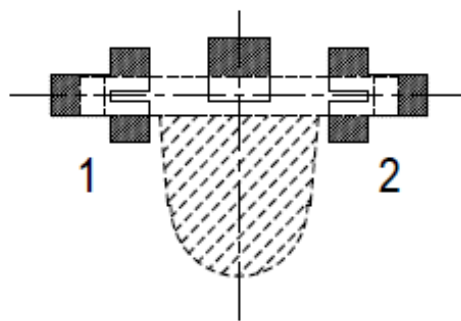
Package Dimensions



Recommended Solder Pad



Component Location on pad



Note:
Tolerance unless mentioned is $\pm 0.1\text{mm}$, Unit = mm.



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FEATURES

- * 3.2*1.6*1.9 mm SMD LED
- * LOW POWER CONSUMPTION
- * I.C. COMPATIBLE
- * LONGLIFE SOLID STATE RELIABILITY

CHIP MATERIALS

- * Dice Material :GaAIAs
- * Lens Color : WATER CLEAR

ABSOLUTE MAXIMUM RATING : (Ta = 25°C)

SYMBOL	PARAMETER	Rating	UNIT
PAD	Power Dissipation Per Chip	130	mW
VR	Reverse Voltage Per Chip	5	V
IAF	Continuous Forward Current Per Chip	100	mA
Topr	Operating Temperature Range	-40°C to~85°C	
Tstg	Storage Temperature Range	-40°C to~100°C	

ELECTRO-OPTICAL CHARACTERISTICS : (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Radiant Intensity	IE	12		24	Mw/sr	IF=20mA
			90			IF=100mA
Viewing Angle	2 θ 1/2		30		deg	IF=20mA
Peak Wavelength	λ p		940		nm	IF=100mA
Forward Voltage	VF	1.2		1.6	V	IF=20mA
			1.8	2.4		IF=100mA
Reverse Current	IR			10	μ A	VR=5V



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Typical Electro-Optical Characteristics Curves

Fig.1-Forward Current vs. Ambient Temperature

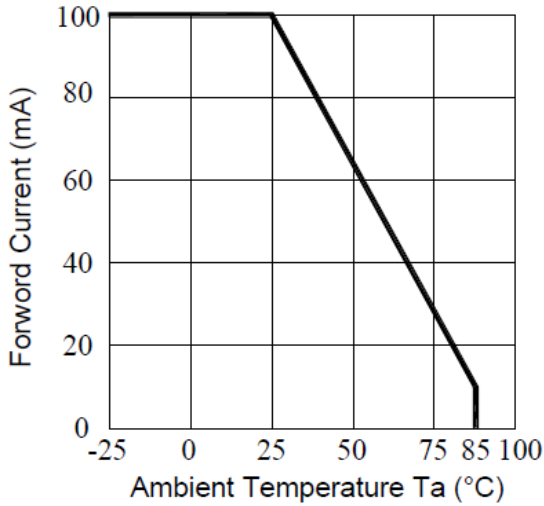


Fig.2-Spectral Sensitivity $T_a=25^\circ\text{C}$

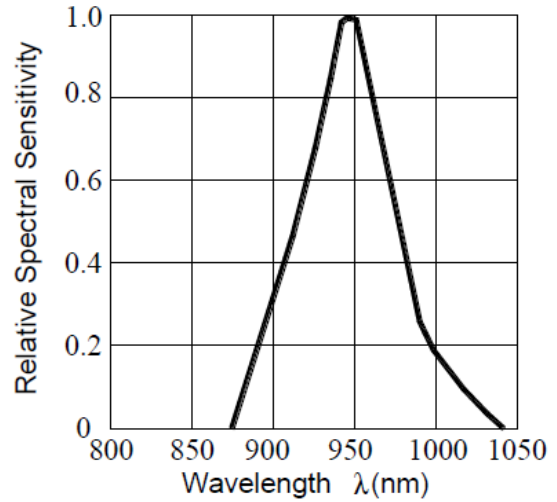


Fig.3-Forward Current vs. Forward Voltage $T_a=25^\circ\text{C}$

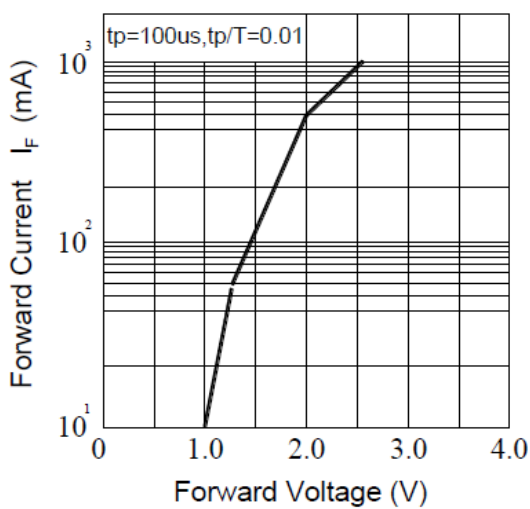
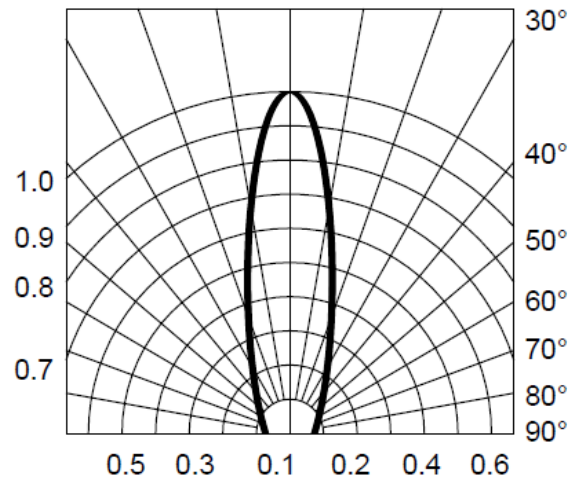


Fig.4-Radiation Diagram $T_a=25^\circ\text{C}$





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Typical Electro-Optical Characteristics Curves

Fig.5-Peak Emission Wavelength vs. Ambient Temperature

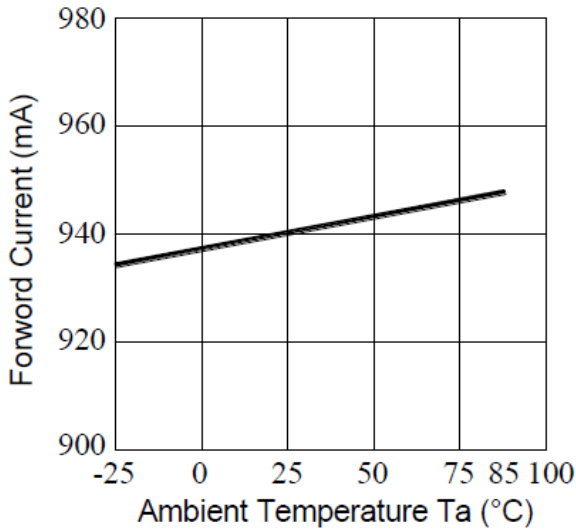


Fig.6-Relative Intensity vs. Forward Current

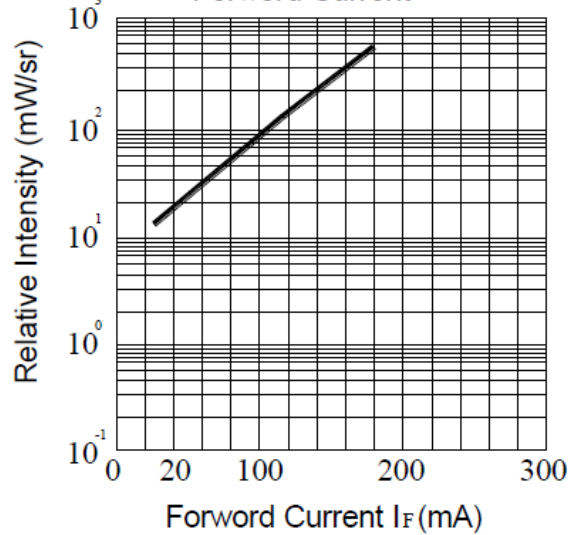


Fig.7-Relative Intensity vs. Ambient Temperature $T_a=25^\circ\text{C}$

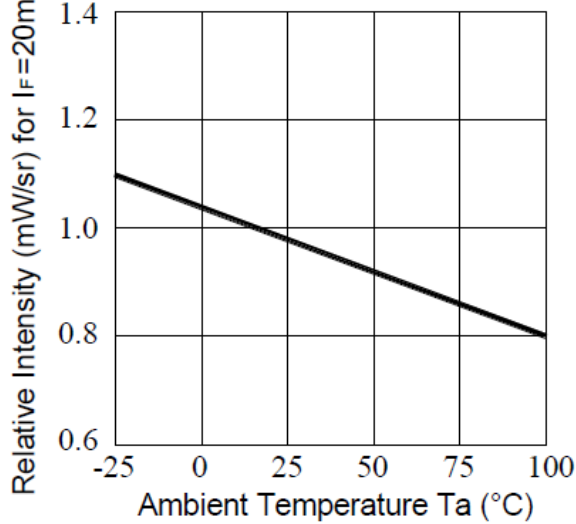
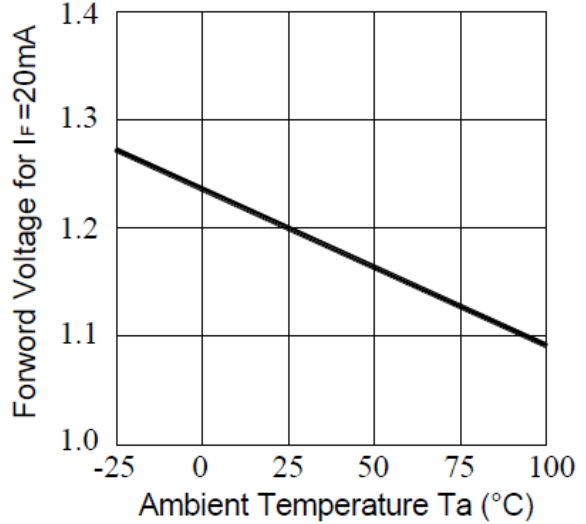


Fig.8-Forward Voltage vs. Ambient Temperature $T_a=25^\circ\text{C}$



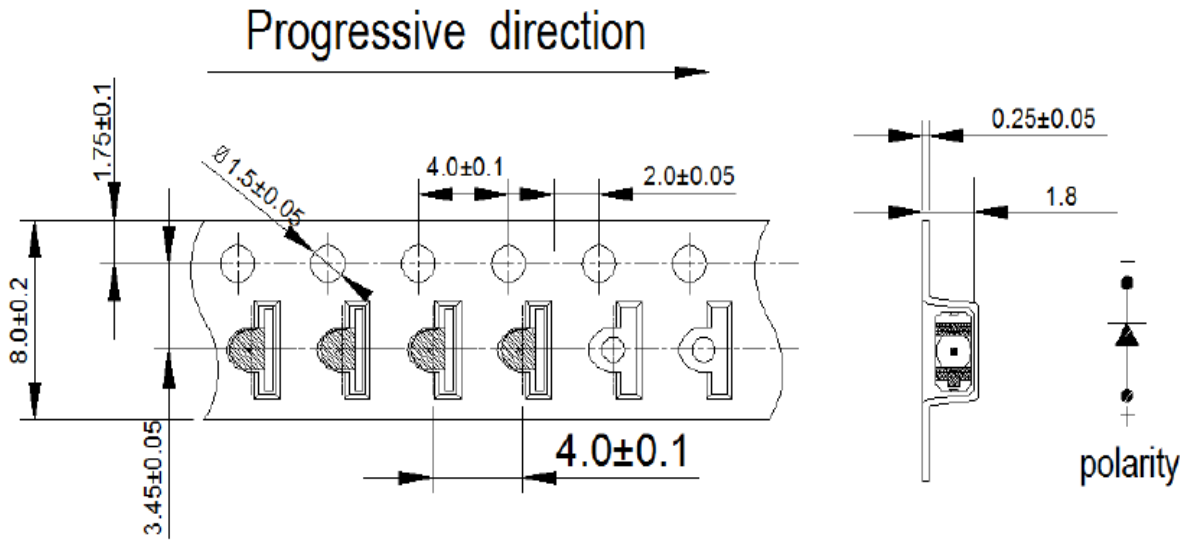


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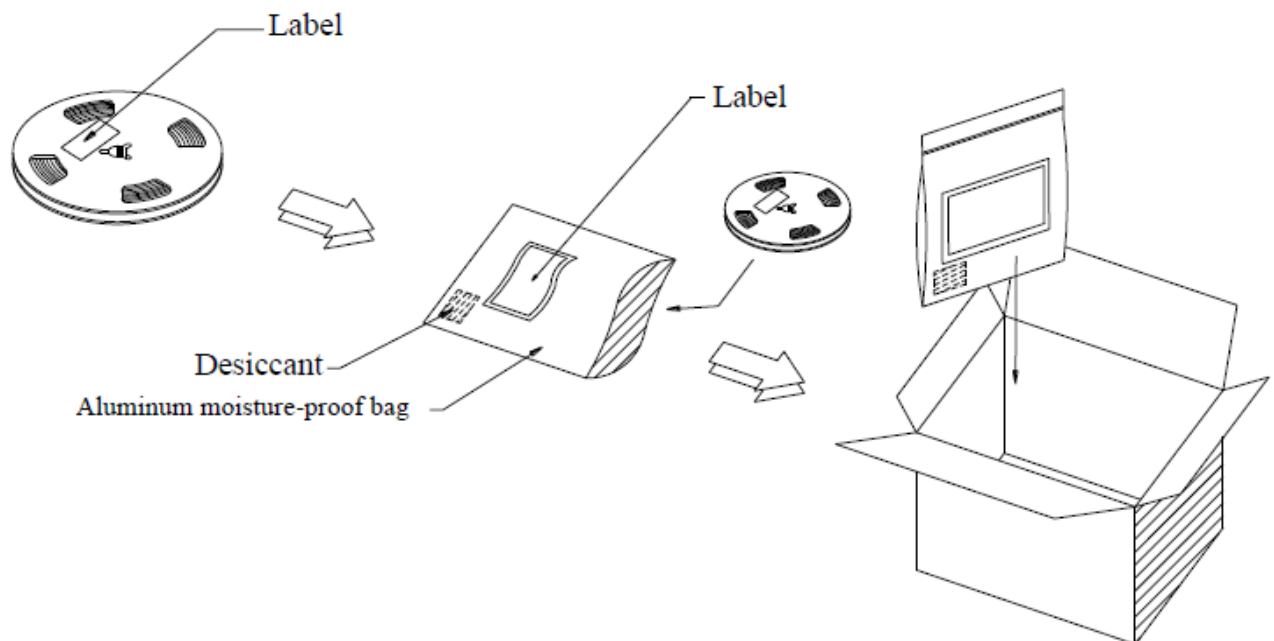
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Carrier Tape Dimensions: Loaded Quantity 2000 pcs Per Reel



- Note:
1. Tolerance unless mentioned is ± 0.1 mm, Unit = mm.
 2. Minimum packing amount is 1000 pcs per reel.

Moisture Resistant Packing Process





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Bin Range of Radiant Intensity

Bin Code	Min.	Max.	Unit	Condition
A11	12	14	mW/sr	I _F =20mA
A12	14	16		
A13	16	20		
A14	20	24		

Note:
Tolerance of Luminous Intensity: ±10%.

Bin Range of Forward Voltage

Bin Code	Min.	Max.	Unit	Condition
19	1.2	1.3	V	I _F =20mA
20	1.3	1.4		
21	1.4	1.5		
22	1.5	1.6		

Note:
Tolerance of Forward Voltage: ± 0.05V.



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Reliability Test Items and Conditions

The reliability of products shall be satisfied with items listed below.

Confidence level : 90%

LTPD : 10%

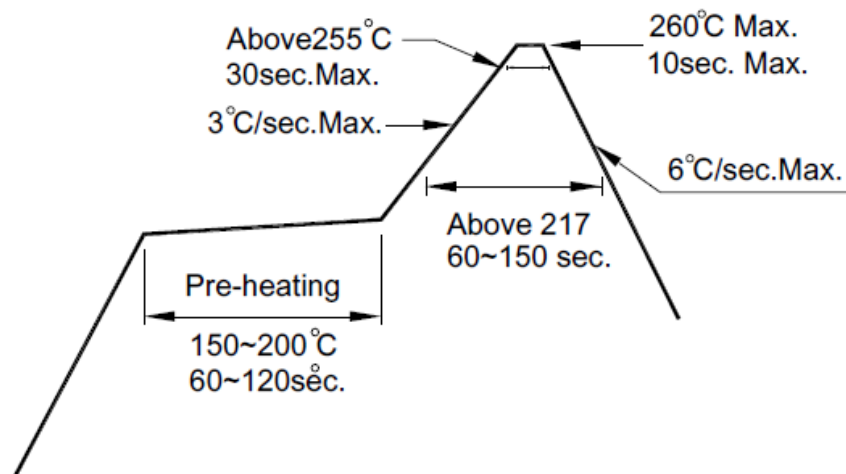
No.	Items	Test Condition	Test Hours/Cycles	Sample Size	Ac/Re
1	Reflow Soldering	Temp. : 260°C/10sec.	6 Min.	22 PCS.	0/1
2	Thermal Shock	H : +100°C 5min ∩ 10 sec L : -10°C 5min	300 Cycles	22 PCS.	0/1
3	Temperature Cycle	H : +100°C 15min ∩ 5 min L : -40°C 15min	300 Cycles	22 PCS.	0/1
4	High Temperature/Humidity Reverse Bias	Ta=85°C,85%RH	1000 Hrs.	22 PCS.	0/1
5	Low Temperature Storage	Ta=-40°C	1000 Hrs.	22 PCS.	0/1
6	High Temperature Storage	Ta=100°C	1000 Hrs.	22 PCS.	0/1
7	DC Operation Life	Ta=25°C, I _F = 20 mA	1000 Hrs.	22 PCS.	0/1

Precautions for Use

1. Over-current-proof
Customer must apply resistors for protection; otherwise slight voltage shift will cause big current change (Burn out will happen).
2. Storage
 - 2.1 Do not open moisture proof bag before the products are ready to use.
 - 2.2 Before opening the package: The LEDs should be kept at 30°C or less and 90%RH or less.
 - 2.3 After opening the package: The LED's floor life is 1 year under 30°C or less and 60% RH or less. If unused LEDs remain, it should be stored in moisture proof packages.
 - 2.4 If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions.
Baking treatment: 60±5°C for 24 hours.

3. Soldering Condition

3.1 Pb-free solder temperature profile



- 3.2 Reflow soldering should not be done more than two times.
- 3.3 When soldering, do not put stress on the LEDs during heating.
- 3.4 After soldering, do not warp the circuit board.

4. Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 350°C for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

5. Repairing

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.