

FOREVER

Full Color Chip LED (Chip LED with Right Angle Lens)

Features

LIGHTING

- Package in 8mm tape on 7" diameter reel.
- Compatible with automatic placement equipment.
- Compatible with infrared and vapor phase reflow solder process.
- Multi-color type.
- Pb-free.
- The product itself will remain within RoHS compliant version.

Descriptions

- The 12-23C SMD LED is much smaller than lead frame type components, thus enable smaller board size, higher packing density, reduced storage space and finally smaller equipment to be obtained.
- Besides, lightweight makes them ideal for miniature applications. etc.

Applications

- Backlighting in dashboard and switch.
- Telecommunication: indicator and backlighting in telephone and fax.
- Flat backlight for LCD, switch and symbol.
- General use.

Device Selection Guide

Chip				
Туре	Material	Emitted Color	Resin Color	
R6	AlGaInP	Brilliant Red		
GH	InGaN	Brilliant Green	Water Clear	
BH	InGaN	Blue		

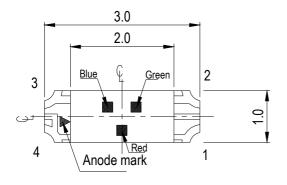


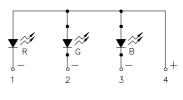
12-23C/R6GHBHC-A01/2C



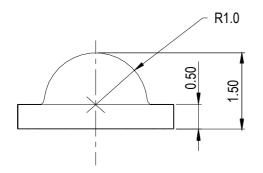
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Package Outline Dimensions

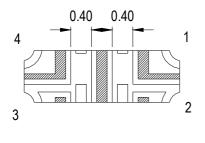


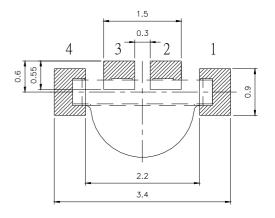


Polarity



For reflow soldering (propose)





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

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Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit	
Reverse Voltage	VR	5	V	
		R6:25		
Forward Current	IF	GH:25	mA	
		BH:25		
Peak Forward Current		R6:60		
	Ifp	GH:100	mA	
(Duty 1/10 @1KHz)		BH:100		
		R6:60		
Power Dissipation	Pd	GH:95	mW	
		BH:95		
		R6:2000		
Electrostatic Discharge (HBM)	ESD	GH:150	V	
		BH:150		
Operating Temperature	Topr	-40 ~ +85	°C	
Storage Temperature	Tstg	-40 ~ +90	°C	
Soldering Temperature	Tsol	Reflow Soldering : 260 $^{\circ}$ C for 10 sec. Hand Soldering : 350 $^{\circ}$ C for 3 sec.		

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Electro-Optical Characteristics (Ta=25°C)

Parameter	Symbo	ol	Min.	Тур.	Max.	Unit	Condition
Luminous Intensity]	R6	63	90			
	Iv C	ΞH	125	180		mcd	
	В	BH	32	50			
Viewing Angle	2 0 1/2			100		deg	
]	R6		632			
Peak Wavelength	λp C	GΗ		518		nm	
	E	ЗH		468			
	F	R6		624			
Dominant Wavelength	λd C	GΗ		525		nm	IF=20mA
	F	ЗH		470			
	F	R6		20			
Spectrum Radiation Bandwidth	$ riangle \Lambda$ G	Н		35		nm	
	В	BH		25			
	R	86		2.0	2.4		
Forward Voltage	VF G	Η		3.3	3.9	V	
	В	Н		3.3	3.9		
	R	86			10		
Reverse Current	Ir G	Н			50	μA	Vr=5V
	В	Н			50		

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Ta=25°C

2.8

Ta=25°C

10

Ta=25°C

20°

30°

40°

50°

60°

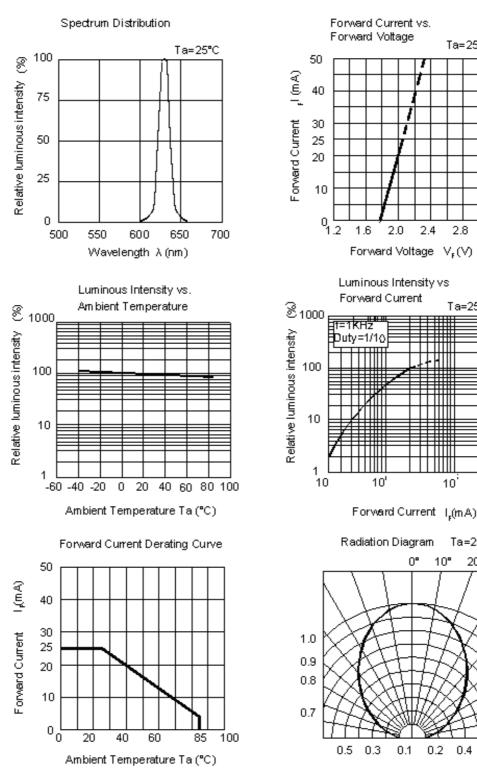
70°

80°

90°

3.0

Typical Electro-Optical Characteristics Curves R6



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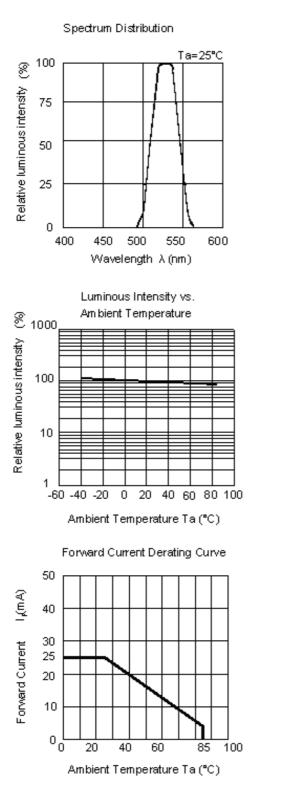
http://www.everlight.com Prepared date: 30-Jun-2011 0.4 0.6 EVERLIGHT

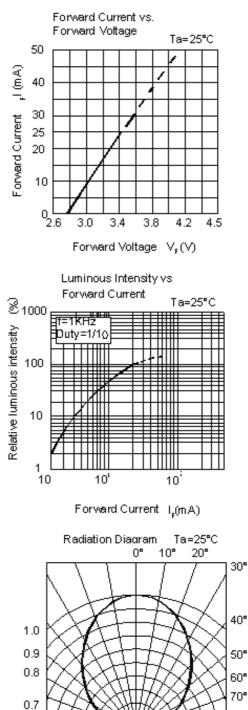
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Typical Electro-Optical Characteristics Curves GH





0.5 0.3

0.1

0.2

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80°

90°

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12-23C/R6GHBHC-A01/2C

4.5

30°

40°

50°

60°

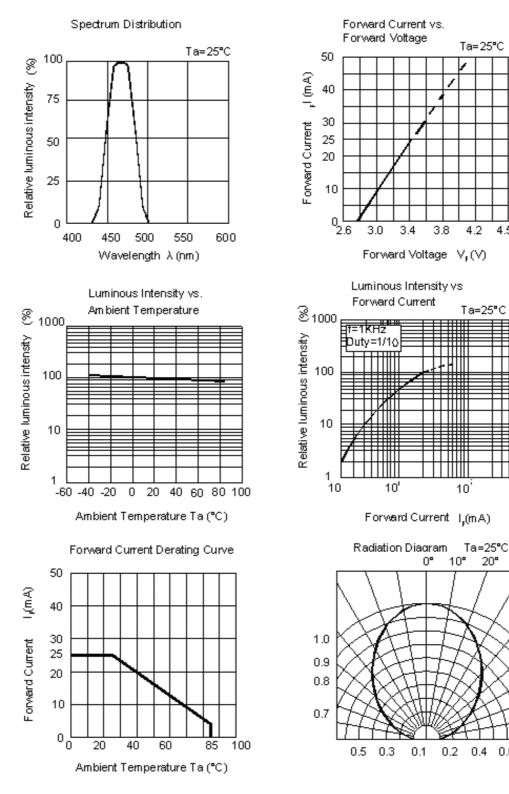
70°

80°

90°

0.6

Typical Electro-Optical Characteristics Curves BH



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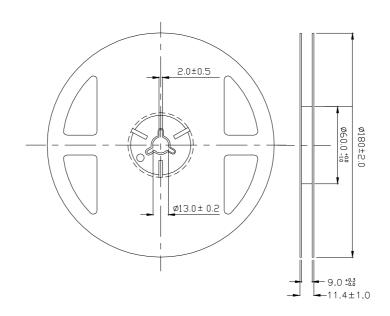
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Label explanation

- **CAT: Luminous Intensity Rank**
- HUE: Dom. Wavelength Rank
- **REF: Forward Voltage Rank**



Reel Dimensions



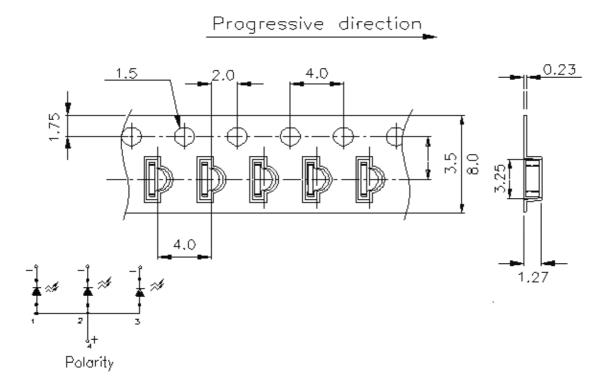
Note: The tolerances unless mentioned is ± 0.1 mm, Unit = mm

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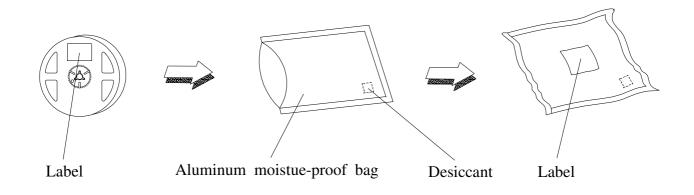
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Carrier Tape Dimensions: Loaded quantity 2000 PCS per reel



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

Moisture Resistant Packaging





12-23C/R6GHBHC-A01/2C

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±5°C Min. 5sec.	6 Min.	22 PCS.	0/1
2	Temperature Cycle	H : +100°C 15min ∫ 5 min L : -40°C 15min	300 Cycles	22 PCS.	0/1
3	Thermal Shock	H : +100°C 5min \int 10 sec L : -10°C 5min	300 Cycles	22 PCS.	0/1
4	High Temperature Storage	Temp. : 100°C	1000 Hrs.	22 PCS.	0/1
5	Low Temperature Storage	Temp. : -40°℃	1000 Hrs.	22 PCS.	0/1
6	DC Operating Life	IF = 20 mA	1000 Hrs.	22 PCS.	0/1
7	High Temperature / High Humidity	85°C/85% RH	1000 Hrs.	22 PCS.	0/1



Precautions For Use

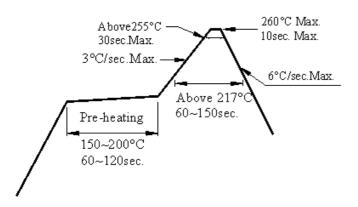
12-23C/R6GHBHC-A01/2C

1. Over-current-proof

Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change (Burn out will happen).

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- 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 : $60\pm5^{\circ}$ 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.



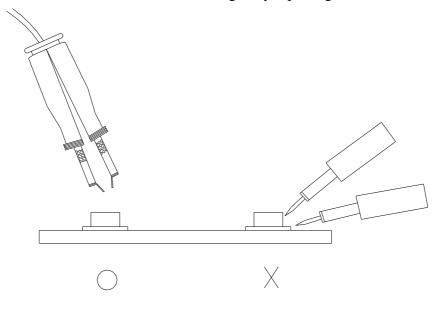
4.Soldering Iron

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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.



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