



Technical Data Sheet

1.8mm round Subminiature Chip LED

42-21/R6C-F4954/1T

Features

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



Descriptions

- The 42-21 SMD Taping 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.

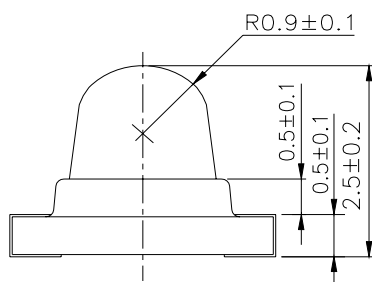
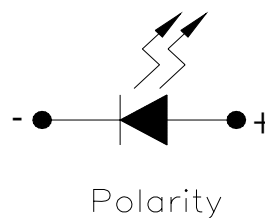
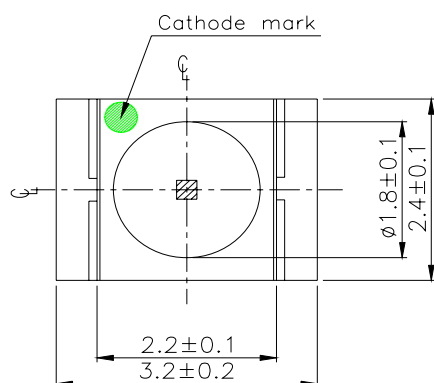
Applications

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

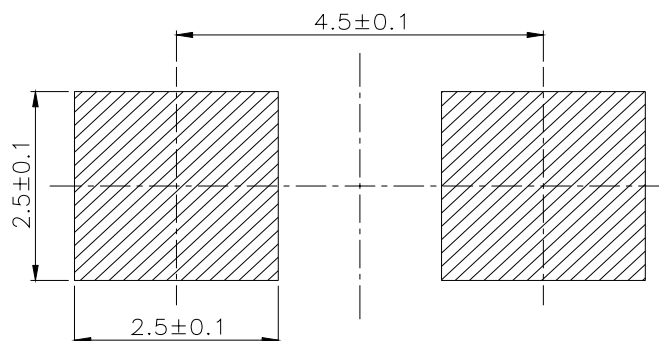
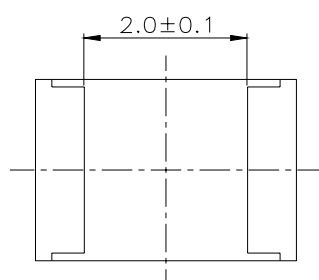
Device Selection Guide

Part No.	Chip		Lens Color
	Material	Emitted Color	
42-21/R6C-F4954/1T	AlGaInP	Brilliant Red	Water Clear

Package Outline Dimensions



For reflow soldering (propose)



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

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Reverse Voltage	V _R	5	V
Forward Current	I _F	25	mA
Operating Temperature	T _{opr}	-40 ~ +85	°C
Storage Temperature	T _{stg}	-40 ~ +90	°C
Soldering Temperature	T _{sol}	260 (for 5 seconds)	°C
Electrostatic Discharge(HBM)	ESD	2000	V
Power Dissipation	P _d	60	mW
Peak Forward Current (Duty 1/10 @1KHz)	I _{FP}	60	mA
Soldering Temperature	T _{sol}	Reflow Soldering : 260 °C for 10 sec. Hand Soldering : 350 °C for 3 sec.	

Electro-Optical Characteristics (Ta=25°C)

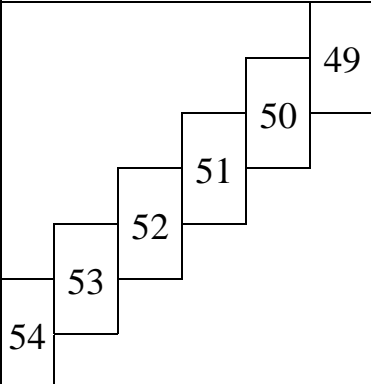
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	I _v	875	----	2325	mcd	I _F =20mA
Peak Wavelength	λ _p	----	632	-----	nm	
Dominant Wavelength	λ _d	621	----	631	nm	
Spectrum Radiation Bandwidth	△λ	----	20	-----	nm	
Viewing Angle	2θ 1/2	----	30	-----	deg	
Forward Voltage	V _F	1.7	2.0	2.4	V	V _R =5V
Reverse Current	I _R	----	-----	10	μA	

Notes:
1.Tolerance of Luminous Intensity ±10%
2.Tolerance of Dominant Wavelength ±1nm

Bin Range Of Dom. Wavelength

Group	Bin	Min	Max	Unit	Condition
F	FF1	621	626	nm	If=20mA
	FF2	626	631		

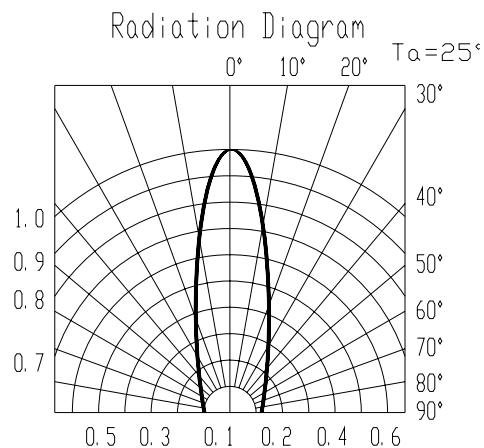
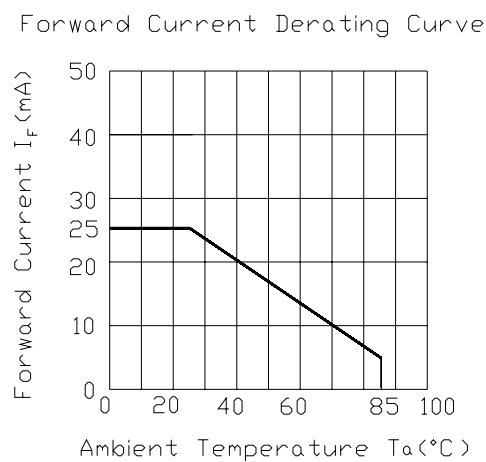
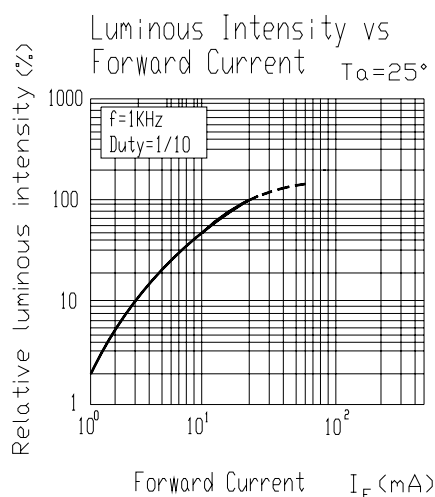
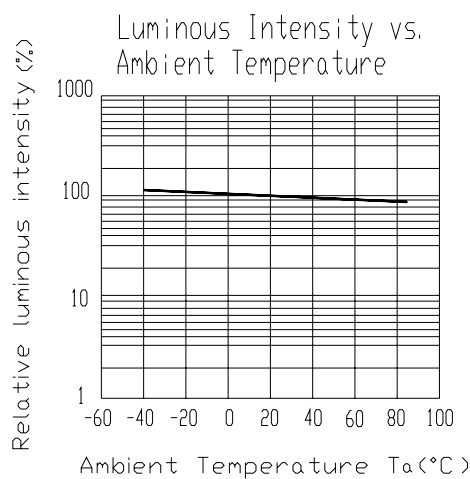
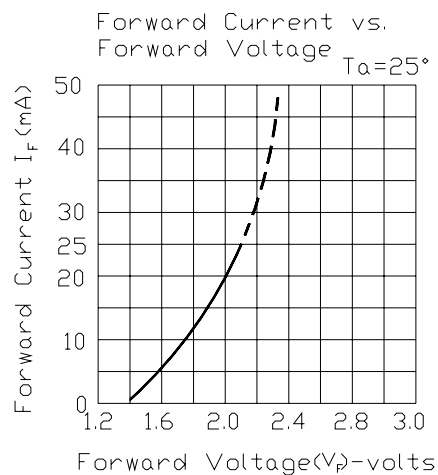
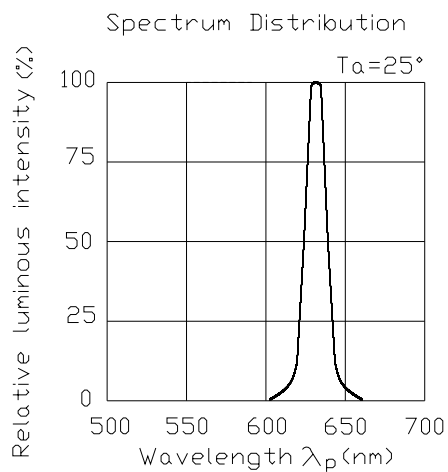
Bin Range Of Luminous Intensity

Group		Bin	Min	Max	Unit	Condition
	49	49	875	1005	mcd	If=20mA
	50	50	1005	1155		
	51	51	1155	1330		
	52	52	1330	1530		
	53	53	1530	1760		
	54	54	1760	2020		
	55	55	2020	2325		

Notes:

- 1.Tolerance of Luminous Intensity $\pm 10\%$**
- 2.Tolerance of Dominant Wavelength $\pm 1\text{nm}$**

Typical Electro-Optical Characteristics Curves

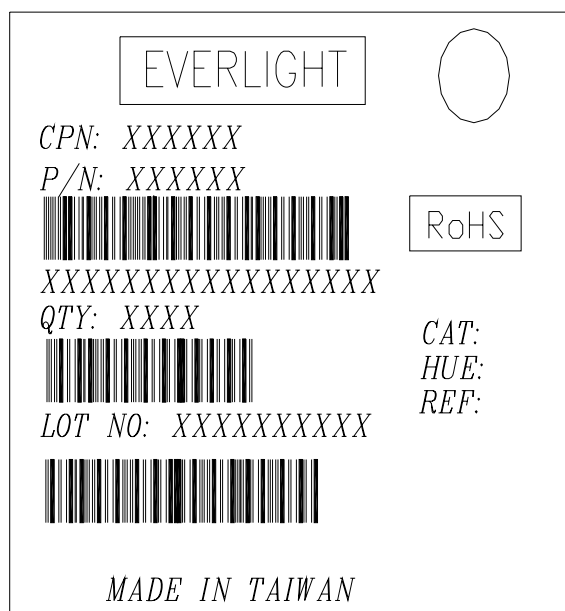


Label explanation

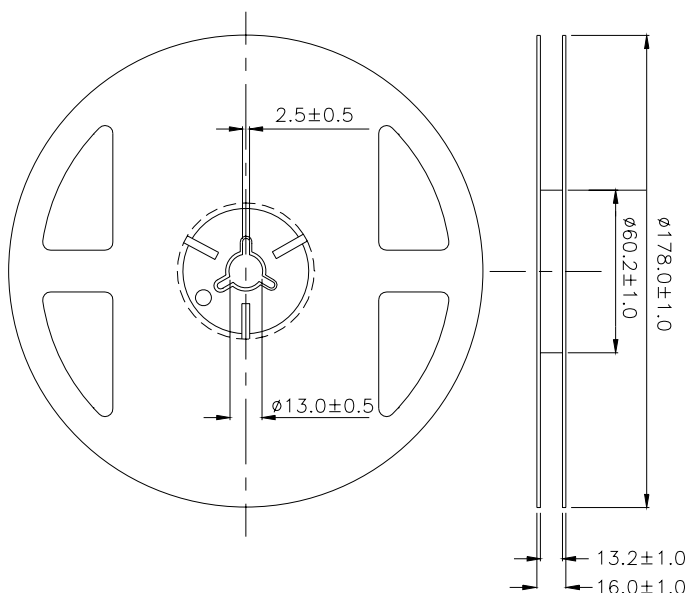
CAT: Luminous Intensity Rank

HUE: Dom. Wavelength Rank

REF: Forward Voltage Rank

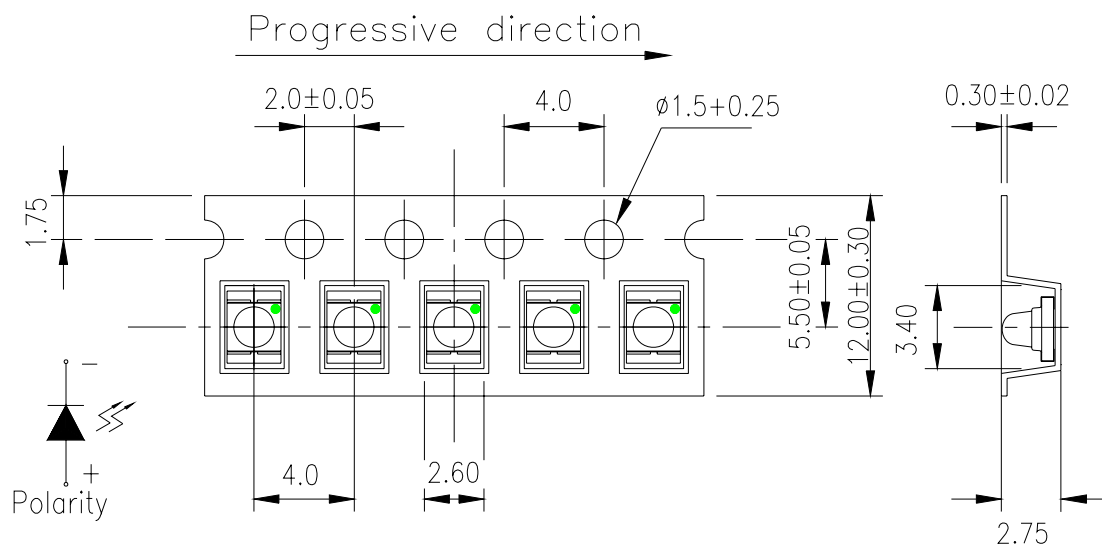


Reel Dimensions



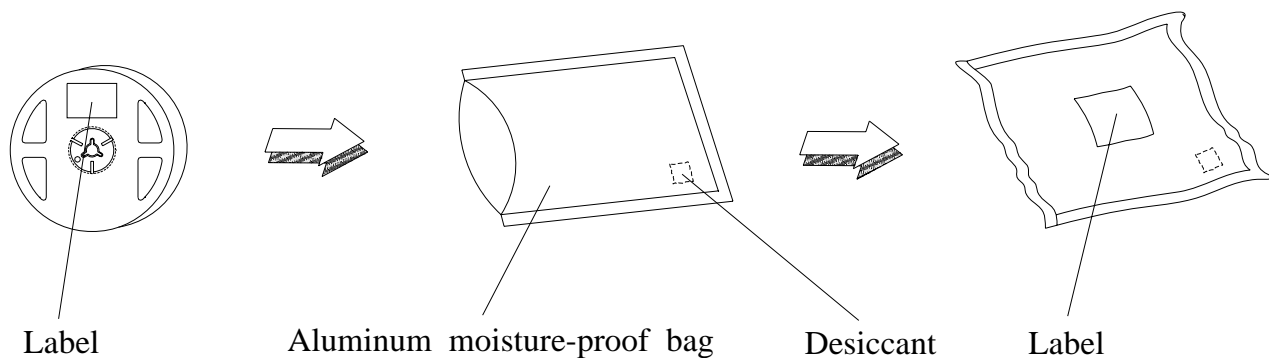
Note: The tolerances unless mentioned is $\pm 0.1\text{mm}$, Unit = mm

Carrier Tape Dimensions: Loaded quantity 1000 PCS per reel



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

Moisture Resistant Packaging



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 ∫ 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°C	1000 Hrs.	22 PCS.	0/1
6	DC Operating Life	I _F = 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

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 deg C or less and 60% RH or less.

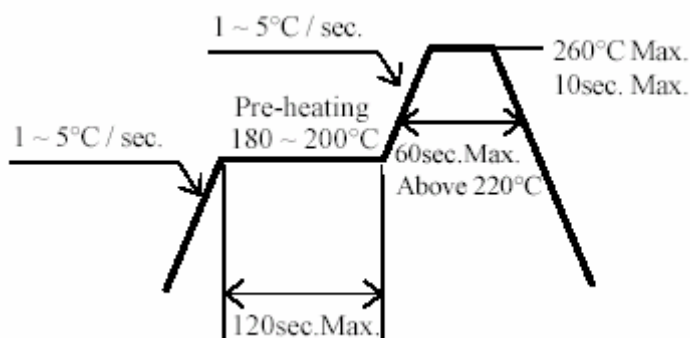
If unused LEDs remain, it should be stored in moisture proof packages.

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 : $60\pm5^{\circ}\text{C}$ 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.

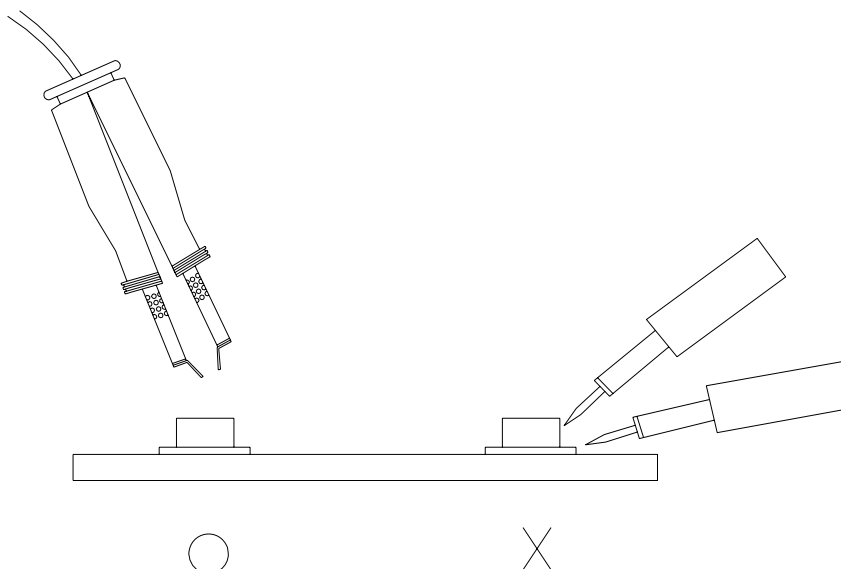
3.4 After soldering, do not warp the circuit board.

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.



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