Technical Data Sheet
Top View LEDs

45-21/YSC-AU1V1C/2T-AFM

Features

- Top view red LEDs
- White SMT package.
- Lead frame package with individual 2 pins.
- Wide viewing angle.
- Soldering methods: IR reflow soldering
- Pb-free.
- The product itself will remain within RoHS compliant version.
- Compliance with EU REACH.
- Compliance Halogen Free .(Br <900 ppm ,Cl <900 ppm , Br+Cl < 1500 ppm).
- Qualification according to AEC Q101
- Interior automotive lighting (e.g. dashboard backlighting)

Descriptions

- The 45-21 series is available in soft orange, green, blue and yellow. Due to the package design, the LED has wide viewing angle and optimized light coupling by inter reflector. This feature makes the device ideal for light pipe application. The low current requirement makes this device ideal for portable equipment or any other application where power is at a premium.

Applications

- Telecommunication: indicator and backlighting in telephone and fax
- Flat backlight for LCD, switch and symbol
- Light pipe application
- General use

Device Selection Guide

Chip Material	Emitted Color	Resin Color
AlGaInP	Brilliant Yellow	Water Clear

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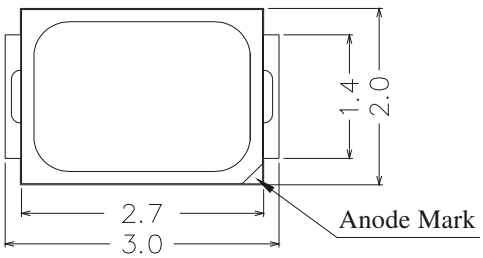
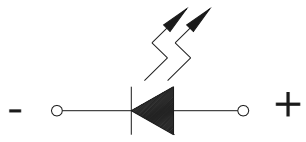
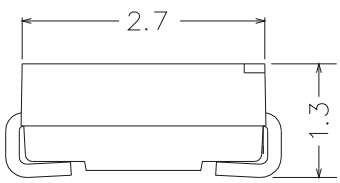
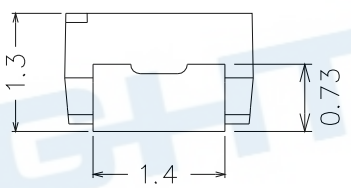
Package Outline Dimensions

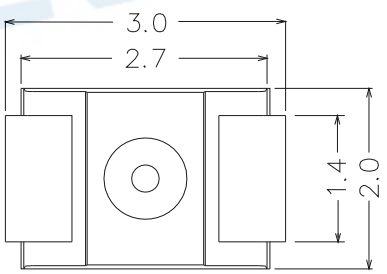


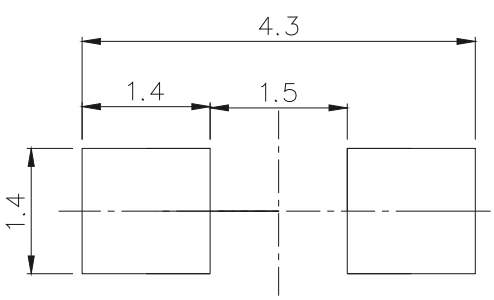


Polarity









Recommended soldering pad design

Note: Tolerances unless mentioned is ±0.1mm; Unit = mm

45-21/YSC-AU1V1C/2T-AFM

Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Rating	Unit
Reverse Voltage	V_R	5	V
Forward Current	I_F	50	mA
Peak Forward Current (Duty 1/10 @1KHz)	I_{FP}	100	mA
Power Dissipation	Pd	120	mW
Electrostatic Discharge(HBM)	ESD	2000	V
Operating Temperature	Topr	-40 ~ +85	℃
Storage Temperature	Tstg	-40 ~ +90	℃
Soldering Temperature	Tsol	Reflow Soldering: 260 ℃ for 10 sec. Hand Soldering : 350 ℃ for 3 sec.	

Note: The products are sensitive to static electricity and must be carefully taken when handling products.

Electro-Optical Characteristics (Ta=25℃)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	Iv	450	-----	900	mcd	I_F=20mA
Viewing Angle	2θ1/2	----	120	----	deg	
Peak Wavelength	λp	----	591	----	nm	
Dominant Wavelength	λd	585.5	-----	594.5	nm	
Spectrum Radiation Bandwidth	Δλ	----	15	----	nm	
Forward Voltage	V_F	1.95	----	2.55	V	
Reverse Current	I_R	----	----	10	μA	V_R=5V

Notes:

1.Tolerance of Luminous Intensity: ±11%

2. Tolerance of Dominant Wavelength: ±1nm

3. Tolerance of Forward Voltage: ±0.1V

45-21/YSC-AU1V1C/2T-AFM

Bin Range of Luminous Intensity

Bin Code	Min.	Max.	Unit	Conduction
U1	450	565	mcd	I_F=20mA
U2	565	715		
V1	715	900		

Bin Range of Dominant Wavelength

Group	Bin Code	Min.	Max.	Unit	Condition
A	D3	585.5	588.5	nm	I_F =20mA
	D4	588.5	591.5		
	D5	591.5	594.5		

Bin Range of Forward Voltage

Group	Group	Min.	Max.	Unit	Condition
C	1	1.95	2.15	V	I_F=20mA
	2	2.15	2.35		
	3	2.35	2.55		

Notes:

1.Tolerance of Luminous Intensity: ±11%

2. Tolerance of Dominant Wavelength: ±1nm

3. Tolerance of Forward Voltage: ±0.1V

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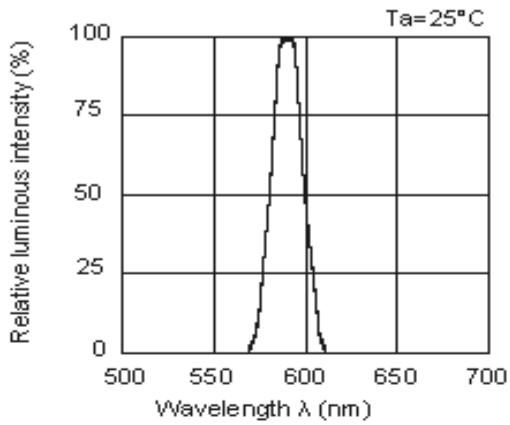
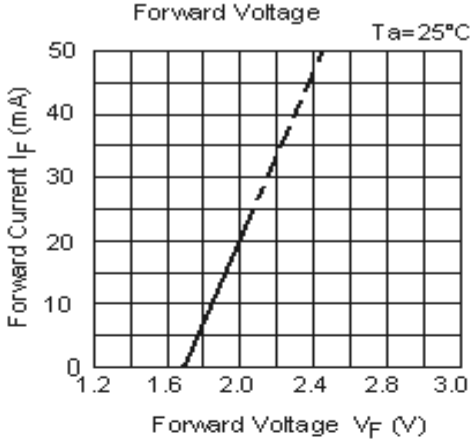
Typical Electro-Optical Characteristics Curves

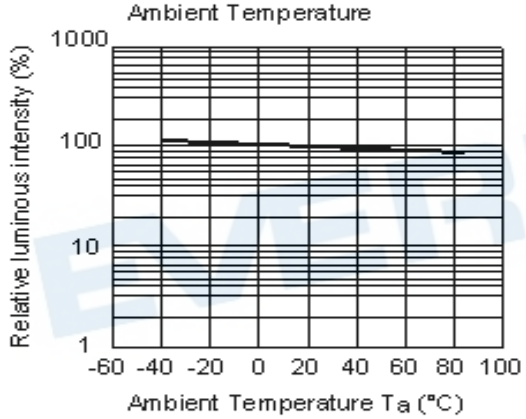
Spectrum Distribution



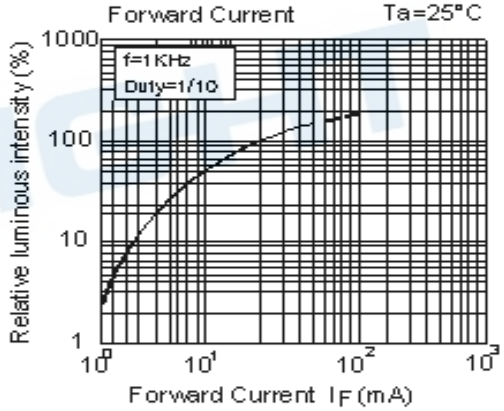
Forward Current vs. Forward Voltage



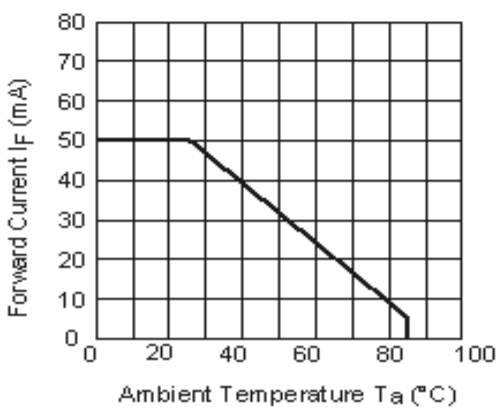
Relative Luminous Intensity vs. Ambient Temperature



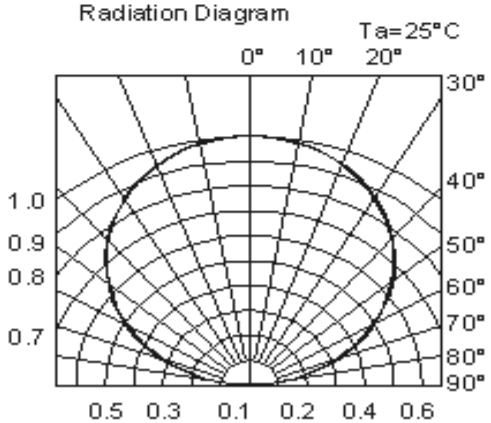
Relative Luminous Intensity vs. Forward Current



Forward Current Derating Curve



Radiation Diagram



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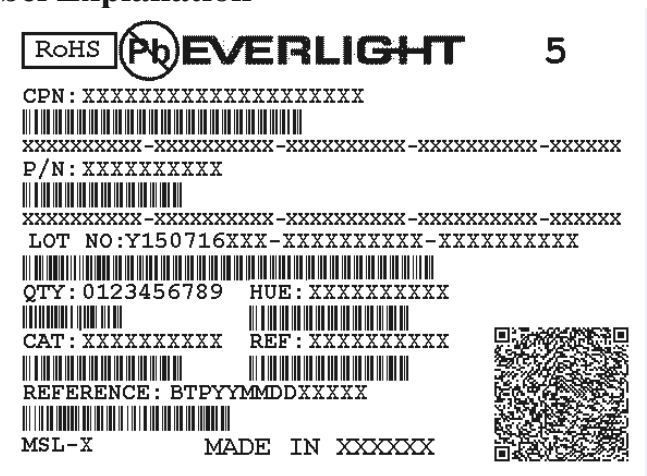
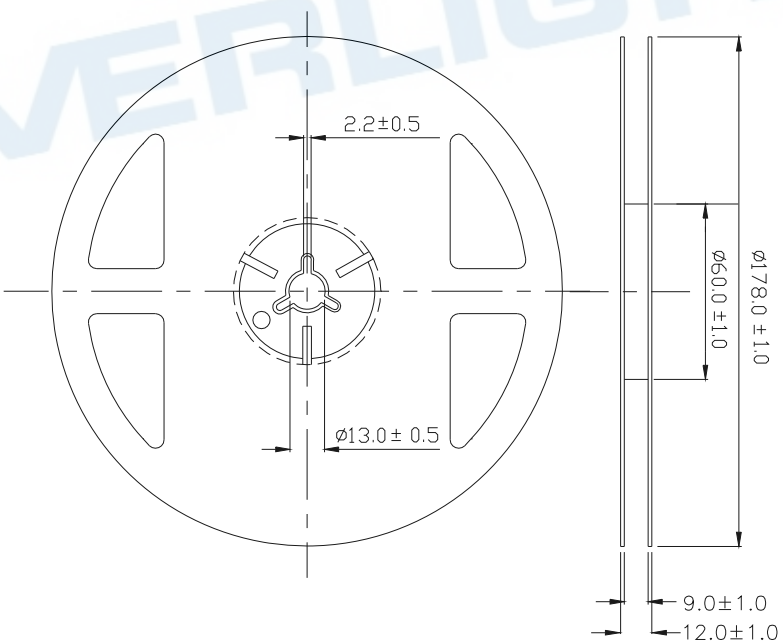
Label Explanation



- CPN: Customer's Product Number
- P/N: Product Number
- LOT No: Lot Number
- QTY: Packing Quantity
- CAT: Luminous Intensity Rank
- HUE: Dom. Wavelength Rank
- REF: Forward Voltage Rank

Reel Dimensions



Note:.Tolerance unless mentioned is ±0.1mm; Unit = mm

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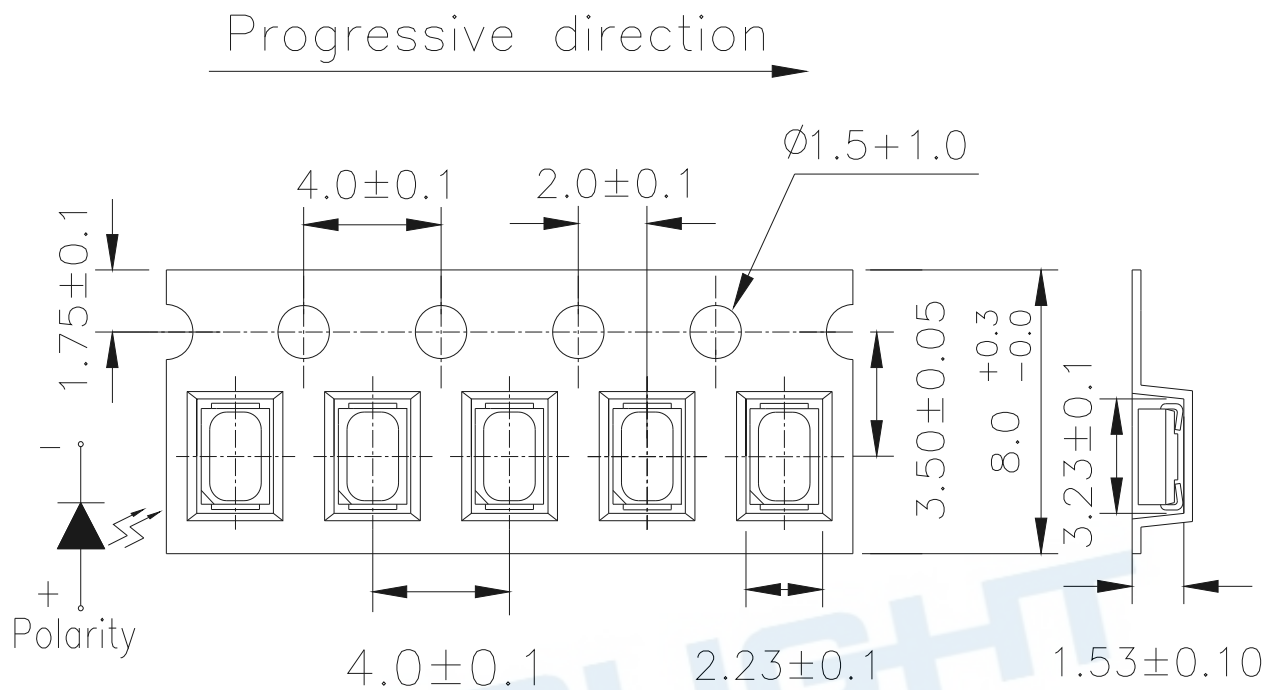
Carrier Tape Dimensions: Loaded Quantity 2000 pcs Per Reel



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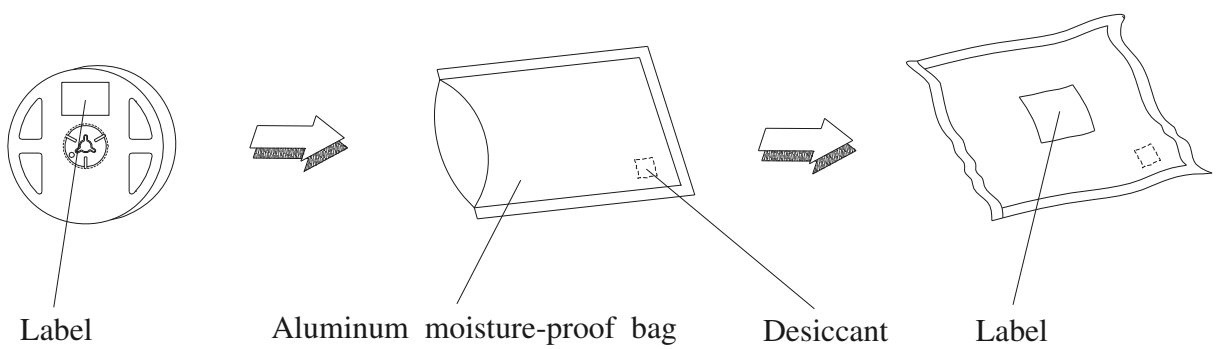
Moisture Resistant Packaging



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.

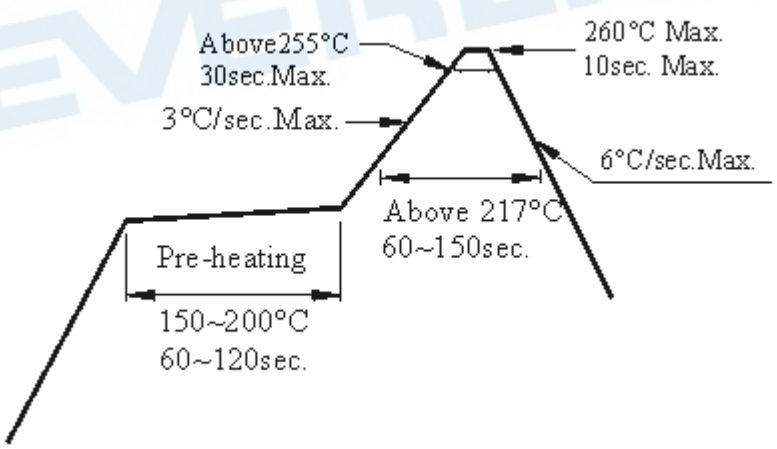
   2.2 Before opening the package: The LEDs should be used within one year and kept at 30℃ or less and 70%RH or less.

   2.3 After opening the package: We recommend that the LED should be soldered quickly (within 3 days).The soldering condition is 30℃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℃ for 24 hours.(One time only)

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℃ 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.