

**Technical Data Sheet****Mini Top LEDs (Reverse Gull Wing)****65-21/R6C-AQ1R2B/2AA****Features**

- White SMT package.
- Optical indicator.
- Wide viewing angle.
- Soldering methods: IR reflow soldering
- Available on tape and reel
- Pb-free
- The product itself will remain within RoHS compliant version.

**Descriptions**

The 65-21 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. Besides, LED is mounted top down and emits through the PCB. This feature makes the ideal for light pipe application.

**Applications**

- Optical indicators.
- Coupling into light guides.
- Backlighting (LCD, cellular phones, switches, keys, displays, illuminated advertising, general lighting).
- Coupling into light guides; Interior automotive lighting (e.g. dashboard backlighting, etc.).

**Device Selection Guide**

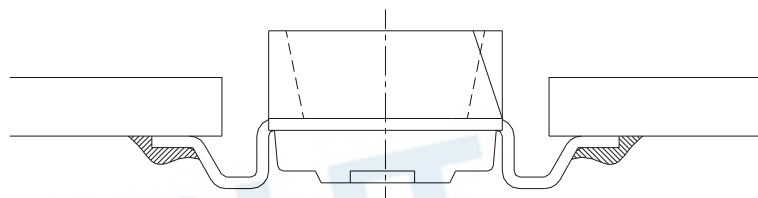
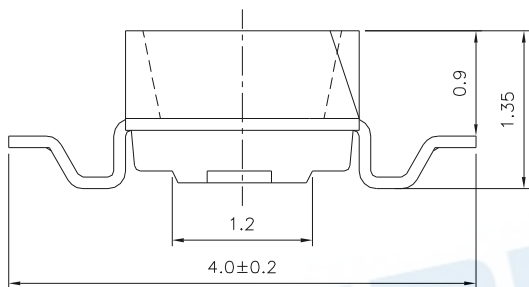
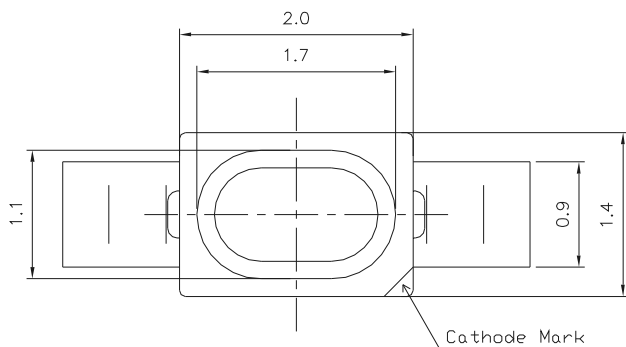
Chip	Emitted Color	Resin Color
Material		
AlGaInP	Brilliant Red	Water Clear

# Technical Data Sheet

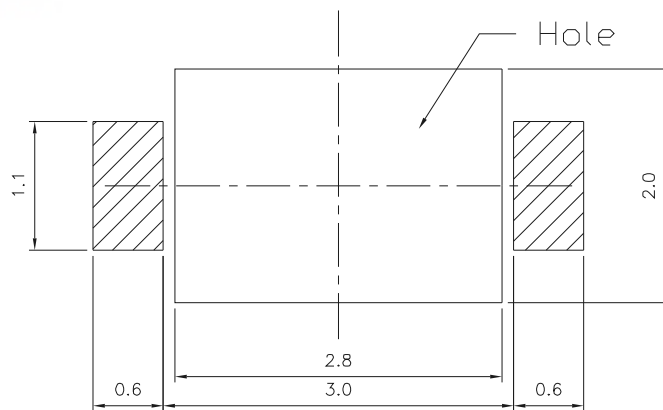
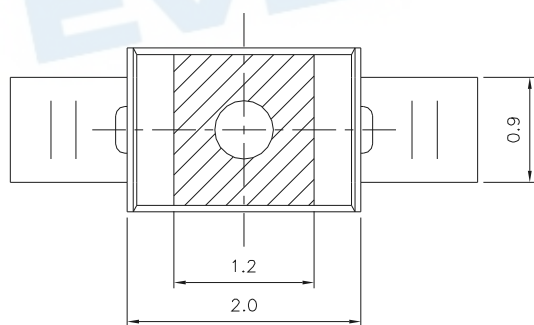
## Mini Top LEDs (Reverse Gull Wing)

**65-21/R6C-AQ1R2B/2AA**

### Package Outline Dimensions



Recommet soldering Pad



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

**Technical Data Sheet****Mini Top LEDs (Reverse Gull Wing)****65-21/R6C-AQ1R2B/2AA****Absolute Maximum Ratings (Ta=25°C)**

Parameter	Symbol	Rating	Unit
Reverse Voltage	$V_R$	5	V
Forward Current	$I_F$	25	mA
Power Dissipation	$P_d$	60	mW
Peak Forward Current (Duty 1/10 @ 1KHz)	$I_{FP}$	60	mA
Electrostatic Discharge (HBM)	ESD	2000	V
Operating Temperature	$T_{opr}$	-40 ~ +85	°C
Storage Temperature	$T_{stg}$	-40 ~ +90	°C
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	$I_v$	72	-----	180	mcd	$I_F=20mA$
Viewing Angle	$2\theta_{1/2}$	-----	120	-----	deg	$I_F=20mA$
Peak Wavelength	$\lambda_p$	-----	632	-----	nm	$I_F=20mA$
Dominant Wavelength	$\lambda_d$	617.5	-----	633.5	nm	$I_F=20mA$
Spectrum Radiation Bandwidth	$\Delta\lambda$	-----	20	-----	nm	$I_F=20mA$
Forward Voltage	$V_F$	1.75	-----	2.35	V	$I_F=20mA$
Reverse Current	$I_R$	-----	-----	10	$\mu A$	$V_R=5V$

**Notes:**

1. Tolerance of Luminous Intensity:  $\pm 11\%$
2. Tolerance of Dominant Wavelength:  $\pm 1nm$
3. Tolerance of Forward Voltage:  $\pm 0.1V$

**Technical Data Sheet****Mini Top LEDs (Reverse Gull Wing)****65-21/R6C-AQ1R2B/2AA****Bin Range of Dominant Wavelength**

Group	Bin	Min	Max	Unit	Condition
A	E4	617.5	621.5	nm	I <sub>F</sub> =20mA
	E5	621.5	625.5		
	E6	625.5	629.5		
	E7	629.5	633.5		

**Bin Range of Luminous Intensity**

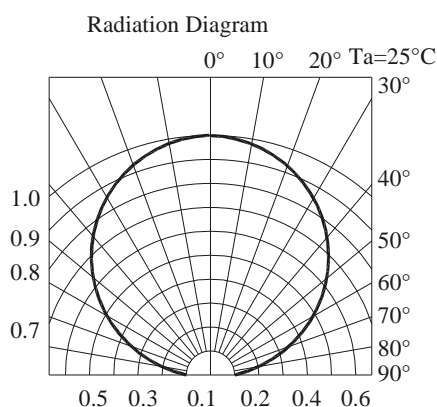
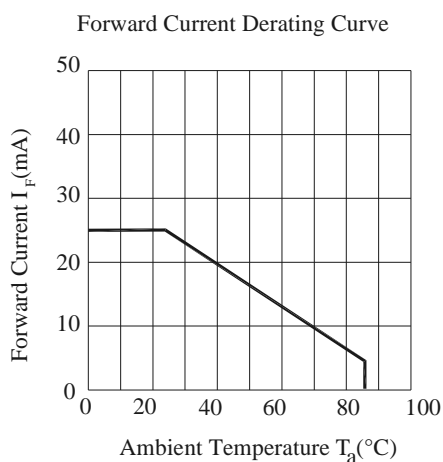
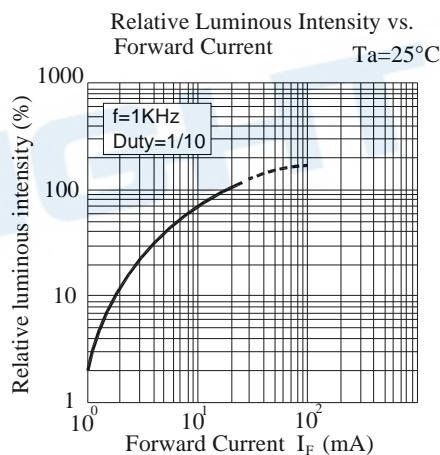
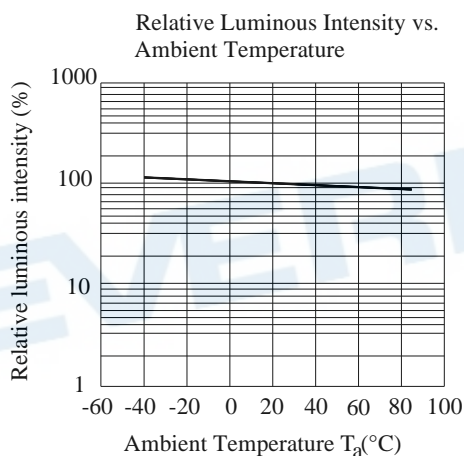
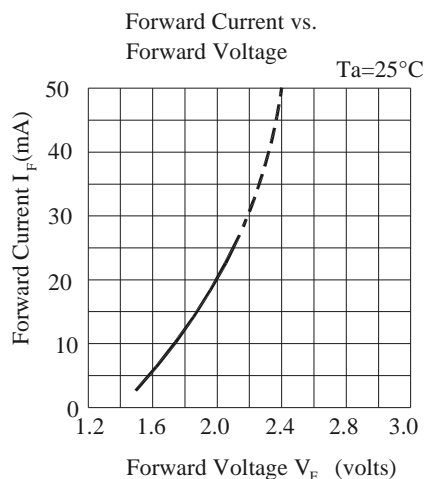
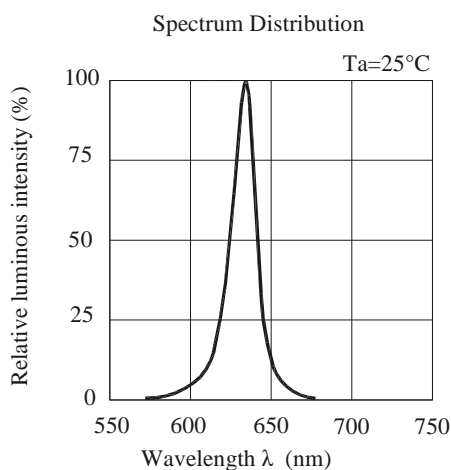
Bin	Min	Max	Unit	Condition
Q1	72	90	mcd	I <sub>F</sub> =20mA
Q2	90	112		
R1	112	140		
R2	140	180		

**Bin Range of Forward Voltage**

Group	Bin	Min	Max	Unit	Condition
B	0	1.75	1.95	V	I <sub>F</sub> =20mA
	1	1.95	2.15		
	2	2.15	2.35		

**Notes:**

1. Tolerance of Luminous Intensity:  $\pm 11\%$
2. Tolerance of Dominant Wavelength:  $\pm 1\text{nm}$
3. Tolerance of Forward Voltage:  $\pm 0.1\text{V}$

**Technical Data Sheet****Mini Top LEDs (Reverse Gull Wing)****65-21/R6C-AQ1R2B/2AA****Typical Electro-Optical Characteristics Curves**

## Technical Data Sheet

### Mini Top LEDs (Reverse Gull Wing)

**65-21/R6C-AQ1R2B/2AA**

#### Label Explanation

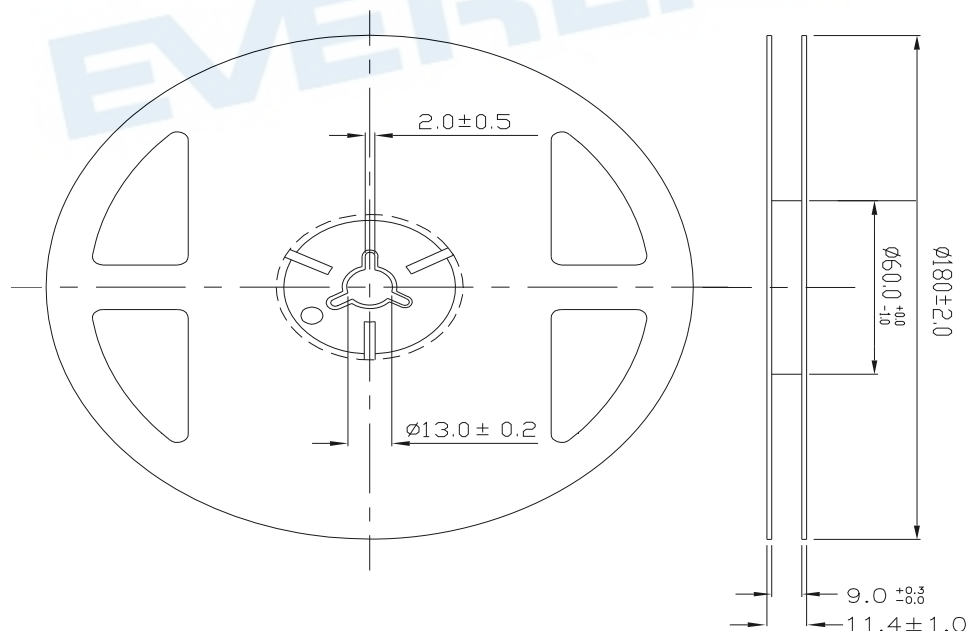
**CAT:** Luminous Intensity Rank

**HUE:** Dom. Wavelength Rank

**REF:** Forward Voltage Rank



#### Reel Dimensions



**Note:** Tolerance unless mentioned is  $\pm 0.1$ mm; Unit = mm



**Technical Data Sheet****Mini Top LEDs (Reverse Gull Wing)****65-21/R6C-AQ1R2B/2AA****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. 10sec.	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 <sub>F</sub> = 20 mA	1000 Hrs.	22 PCS.	0/1
7	High Temperature / High Humidity	85°C / 85%RH	1000 Hrs.	22 PCS.	0/1



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### Mini Top LEDs (Reverse Gull Wing)

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#### 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.

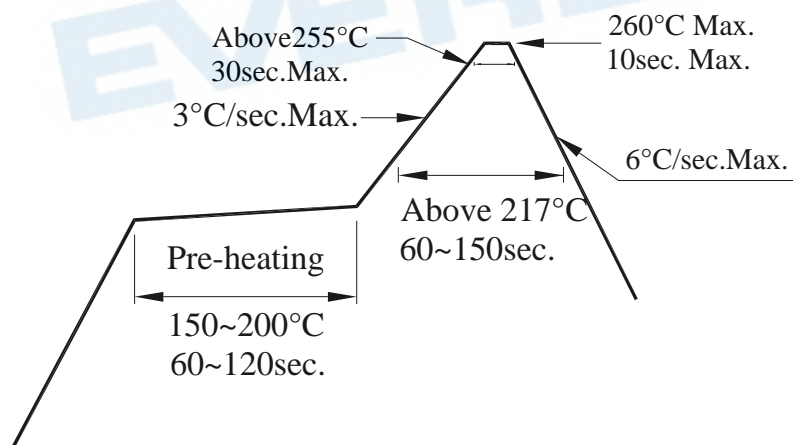
2.3 After opening the package: The LED's floor life is 1 year under 30°C or less and 60% RH or less. If unused LEDs remain, it should be stored in moisture proof packages.

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.

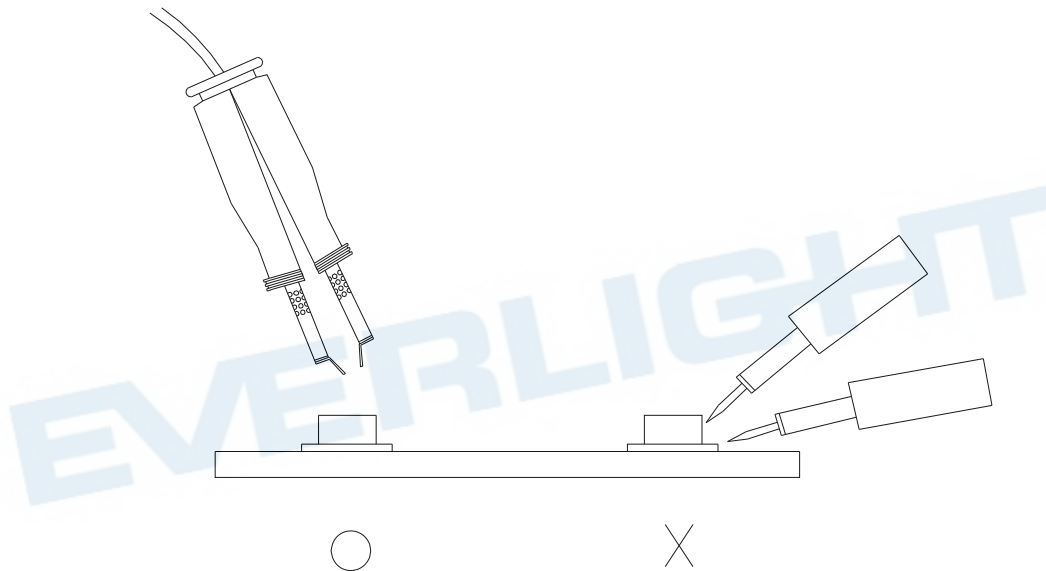
3.4 After soldering, do not warp the circuit board.

**Technical Data Sheet****Mini Top LEDs (Reverse Gull Wing)****65-21/R6C-AQ1R2B/2AA****4. Soldering Iron**

Each terminal is to go to the tip of soldering iron temperature less than 280°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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#### DISCLAIMER

1. EVERLIGHT reserves the right(s) on the adjustment of product material mix for the specification.
2. The product meets EVERLIGHT published specification for a period of twelve (12) months from date of shipment.
3. The graphs shown in this datasheet are representing typical data only and do not show guaranteed values.
4. When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. EVERLIGHT assumes no responsibility for any damage resulting from the use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.
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