

## **Technical Data Sheet**

### **High Performance with Reflector LEDs**

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**94-22 SUBC/S400-XX/S2**

#### **Features :**

- White package.
- Dual-chip, wide-angle, low-profile LEDs .
- Excellent chip to chip consistency.
- Super Intensity.
- High performance.
- Pb-free

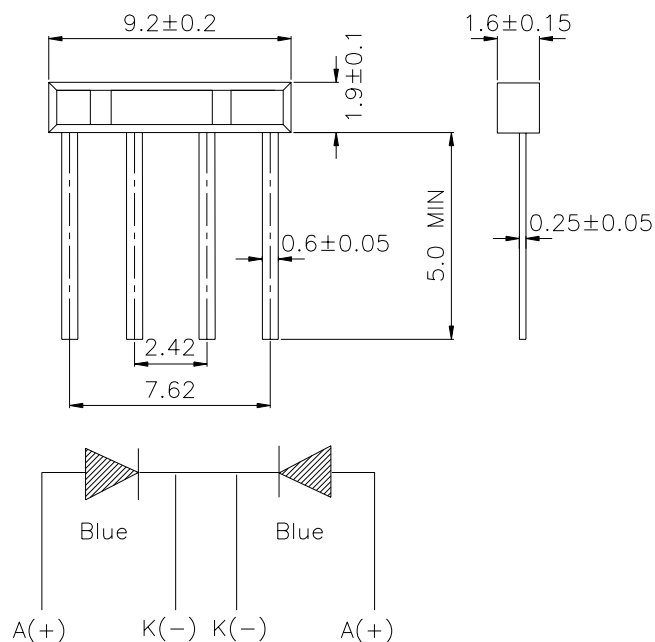


#### **Applications :**

- Automotive: backlighting in dashboard and switch.
- Telecommunication: indicator and backlighting in telephone and fax.
- Indicator and backlight for audio and video equipment.
- Indicator and backlight for battery driven equipment.
- Display Screen Illumination on Portable Devices.
- Indicator and backlight in office equipment.
- General use.

#### **Device Selection Guide**

<b>Chip</b>		<b>Lens Color</b>
<b>Material</b>	<b>Emitted Color</b>	
<b>InGaN</b>	<b>Blue</b>	<b>Water Clear</b>

**94-22 SUBC/S400-XX/S2**
**Package Dimensions**


UNIT:mm  
TOLERANCE UNLESS DIMENSSIONS  $\pm 0.1$

**Notes:** All dimensions are in millimeters.

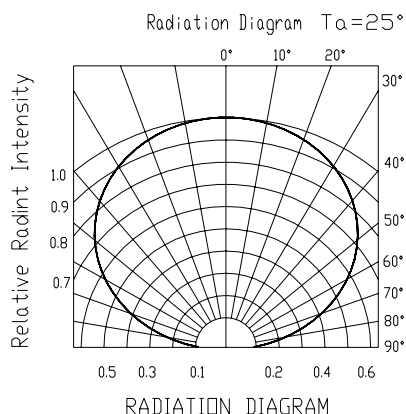
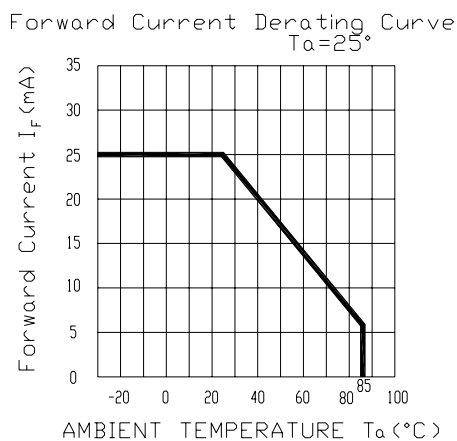
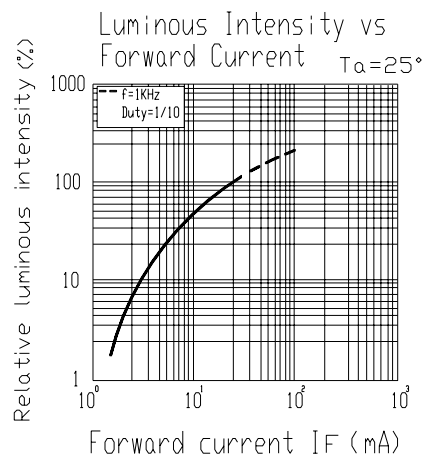
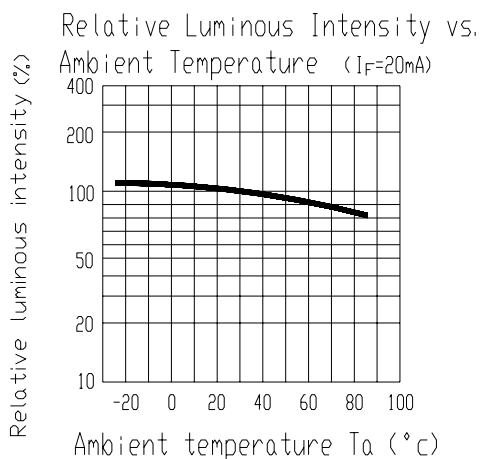
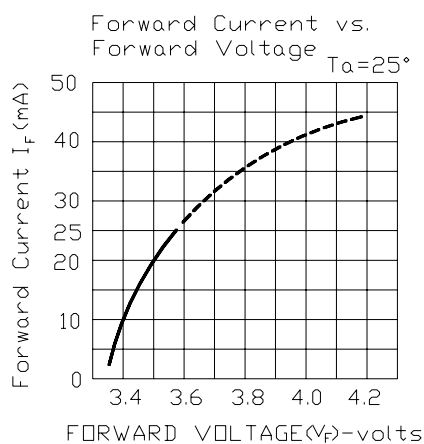
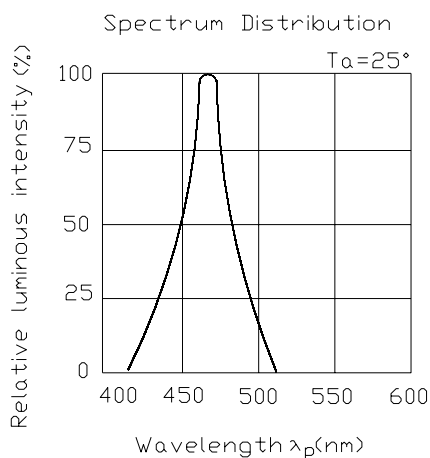
**Absolute Maximum Ratings (Ta=25°C)**

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 second)	°C
Electrostatic Discharge	ESD	150	V
Power Dissipation	$P_d$	110	mW
Peak Forward Current(Duty 1/10 @ 1KHZ)	$I_{FP}$	100	mA

**Electro-Optical Characteristics (Ta=25°C)**

Parameter	Symbol	*Chip Rank	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	I <sub>v</sub>	A4	50	60	-----	mcd	I <sub>F</sub> =20mA
		A5	60	70	-----		
Viewing Angle	2 θ 1/2	-----	-----	130	-----	deg	I <sub>F</sub> =20mA
Peak Wavelength	λ <sub>p</sub>	-----	-----	468	-----	nm	I <sub>F</sub> =20mA
Dominant Wavelength	λ <sub>d</sub>	-----	-----	470	-----	nm	I <sub>F</sub> =20mA
Spectrum Radiation Bandwidth	△ λ	-----	-----	35	-----	nm	I <sub>F</sub> =20mA
Forward Voltage	V <sub>F</sub>	-----	-----	3.5	4.3	V	I <sub>F</sub> =20mA
Reverse Current	I <sub>R</sub>	-----	-----	-----	50	μ A	V <sub>R</sub> =5V

## Typical Electro-Optical Characteristics Curves

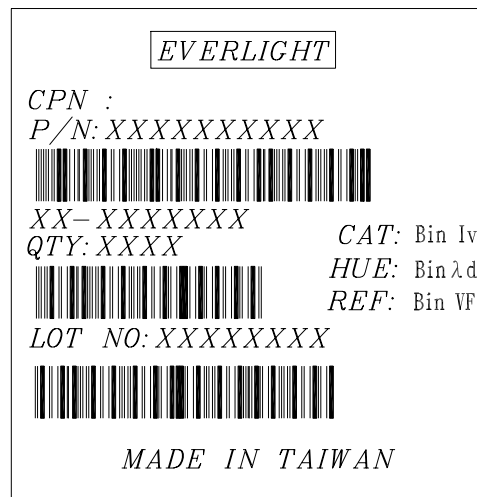


## Label explanation

**CAT: Luminous Intensity Rank**

**HUE: Dom. Wavelength Rank**

**REF: Forward Voltage Rank**



## 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/Rc
1	Soldering Heat	Temp. : 260°C±5°C	10 sec.	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/RH85%	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 The LEDs should be used within a year.

2.4 After opening the package, the LEDs should be kept at 30°C or less and 70%RH or less.

2.5 The LEDs should be used within 168 hours (7 days) after opening the package.

2.6 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 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.

### 4.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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