早安股份有限公司
YELLOW STONE CORP.

PRELIMINARY SPEC

3.5x2.8mm SMD CHIP LED

PART NO: MS-PA3528SBKC BLUE

ATTENTION
OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC DISCHARGE SENSITIVE DEVICES

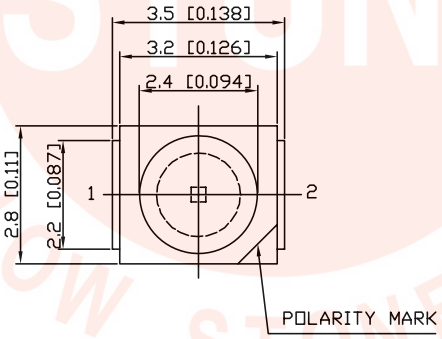
Features

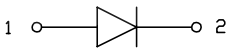
- 3.5mmx2.8mm SMT LED, 1.9mm THICKNESS.
- WIDE VIEWING ANGLE.
- IDEAL FOR BACKLIGHT AND INDICATOR.
- PACKAGE : 2000PCS / REEL.
- RoHS COMPLIANT.

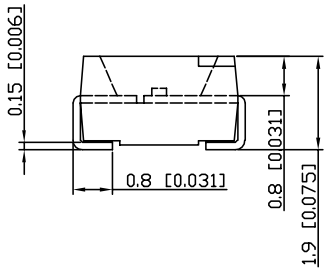
Applications

- Automotive: backlighting in dashboard and switch.
- Telecommunication: indicator and back-lighting in telephone and fax.
- Flat backlight for LCD switch and symbol.

Package Dimensions







Notes:
1. All dimensions are in millimeters.
2. Tolerance is ±0.25 unless otherwise noted.
3. Specifications are subject to change without notice.

Device Selection Guide

Part No.	Chip		Lens color
MS-PA3528SBKC	Material	Emitted color	Water clear
	(InGaN)	BLUE	

Absolute Maximum Ratings at T_A=25°C

Parameter	Symbol	Value	Unit
Power Dissipation	P_D	100	mW
Forward Current	I_F	25	mA
Peak Forward Current*1	I_{FP}	100	mA
Reverse Voltage	V_R	5	V
Operating Temperature	Topr	-40°C To +85°C	
Storage Temperature	Tstg	-40°C To +85°C	

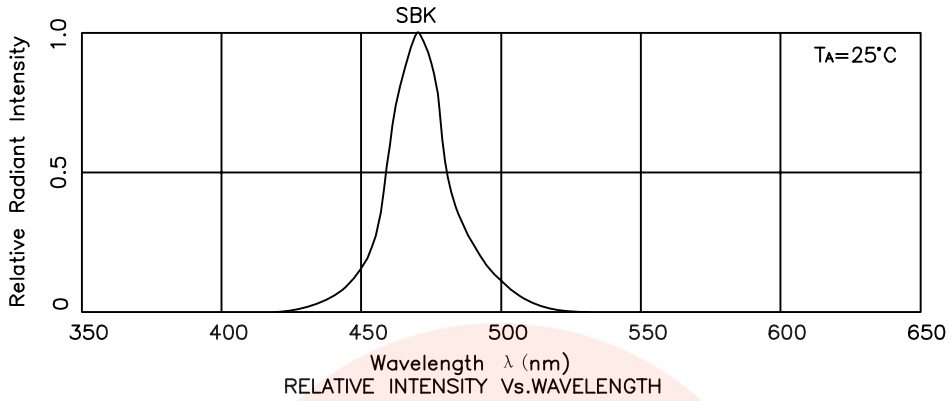
Notes:
*1: Pulse width≤0.1ms, Duty cycle≤1/10

Electrical / Optical Characteristics at T_A=25°C

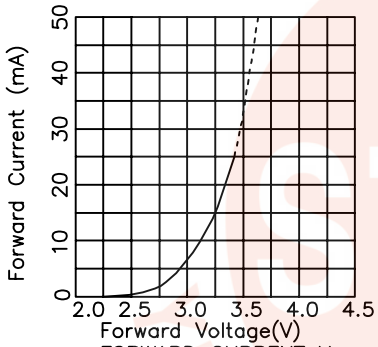
Parameter	Symbol	Min.	Typ.	Max	Unit	Test Conditions
Forward Voltage	V_F	2.8	—	3.6	V	IF=20mA
Reverse Current	I_R	—	—	10	μA	VR=5V
Dominate Wavelength	λ_D	464	—	473	nm	IF=20mA
Luminous Intensity	I_V	295	—	650	mcd	IF=20mA
Viewing Angle	$2\theta 1/2$	—	120	—	Deg.	IF=20mA

Remarks:
If special sorting is required (e.g. binning based on forward voltage, luminous intensity, or chromaticity), the typical accuracy of the sorting process is as follows:
1. wavelength: ±1nm
2. Luminous Intensity: ±15%
3. Forward Voltage: ±0.1V

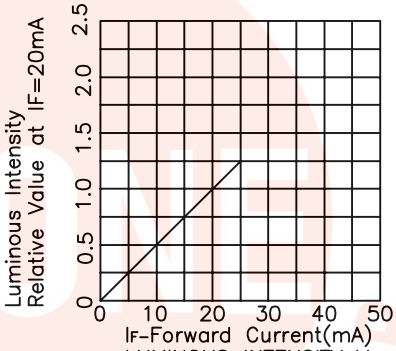
Typical Electrical/Optical Characteristics Curves



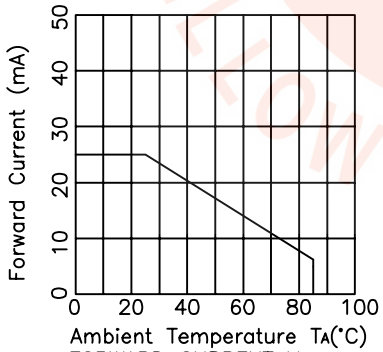
RELATIVE INTENSITY Vs.WAVELENGTH



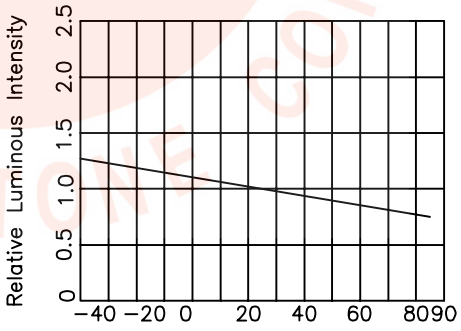
FORWARD CURRENT Vs.
FORWARD VOLTAGE



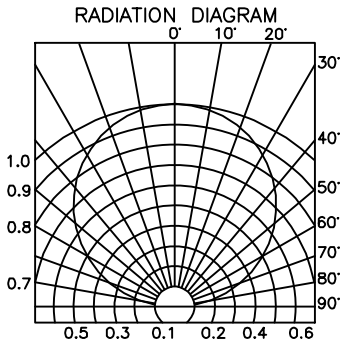
LUMINOUS INTENSITY Vs.
FORWARD CURRENT



FORWARD CURRENT Vs.
DERATING CURVE

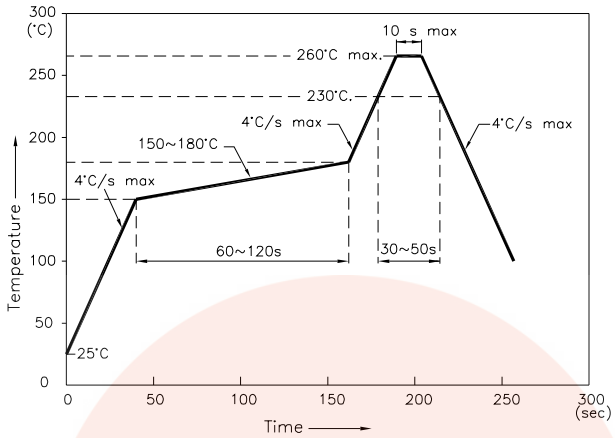


LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE



Soldering Profile

Reflow Soldering Profile For Lead-free SMT Process.

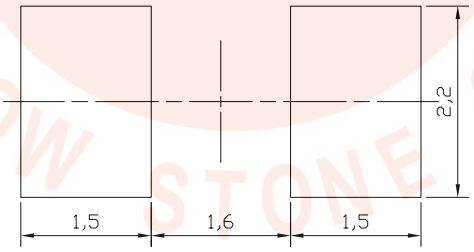


NOTES:

1. We recommend the reflow temperature 245°C(+/−5°C).The maximum soldering temperature should be limited to 260°C.
2. Don't cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

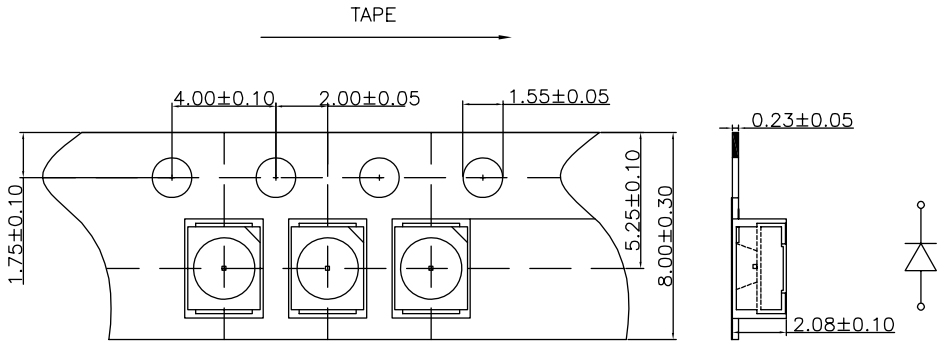
Recommended soldering pattern

(Units:mm)



Tape specifications

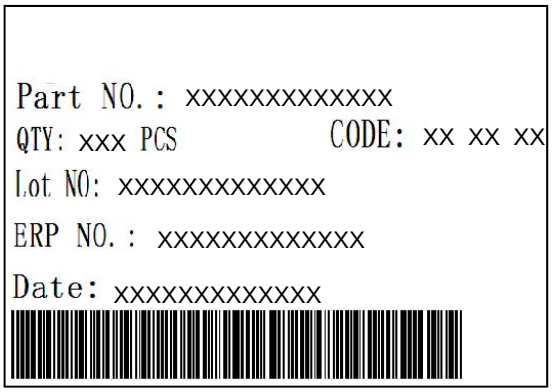
(Units:mm)



Label Explanation

CODE：XX XX XX

XX	XX	XX
IV	X/Y (WL)	VF
亮度	坐标(波长)	电压



VF Rank

Rank	VF(V)		Condition
	Min	Max	
G	2.8	3.0	IF=20mA
H	3.0	3.2	
J	3.2	3.4	
K	3.4	3.6	

Tolerance:±0.1V

λD Rank

Rank	λD(nm)		Condition
	Min	Max	
4	464	467	IF=20mA
5	467	470	
6	470	473	

Tolerance:±1nm

IV Rank

Rank	IV(mcd)		Condition
	Min	Max	
S	295	385	IF=20mA
T	385	500	
U	500	650	

Tolerance:±15%

◆ CAUTIONS:

1.Storage
储存

- Storage condition before opening the package: 5℃~30℃, the largest percentage relative humidity is 60% and the storage period is one month. The LEDs beyond the storge period just can be used after dealing as step 4.
- After opening the package, If the LEDs will be Infrared reflow soldering, Oxygen phase reflow soldering or any other welding.
  a. must be welding within 24 hours.
  b. the storage humidity must be below 30% .
- If the situation does not satisfy 2a or 2b, the LEDs must be roasted.
- If the LEDs need to be roasted, the roast temperature should be 60℃+/-3 and the roast timeshould be 48 hours.
- 未拆封前的储存条件：5℃~30℃，最大相对湿度60%，储存时间1个月，超过1个月的LED按步骤4处理后才能正常使用。
- 袋子开封后，元件若将进行红外线回焊、氧相回焊或类似的焊接处理，必须在
  a. 24小时内完成焊接工作。
  b. 储存湿度低于30% 。
- 假如不符合2a或2b的条件，则元件必须烘烤。
- 若元件须烘烤，烘烤条件为：60℃±3，48小时。

2.ESD (Electrostatic Discharge)
静电

Static Electricity or power surge will damage the LED.
The following procedures may decrease the possibility of ESD damage.

- All production machinery and test instruments must be electrically grounded.
- Use a conductive wrist band or anti-electrostatic glove when handling these LEDs.
- Maintain a humidity level of 50% or higher in production areas.
- Use anti-static packaging for transport and storage.

静电和电涌会对LED造成损毁。
下列方式有减少静电危害的可能性。

- 所有生产机械和测试设备必须接地。
- 操作LED灯时，需佩戴防静电手环或防静电手套。
- 在生产车间维持湿度等级在50%或以上。
- 运输和储存需用抗静电袋包装。

3.Cleaning
清洗

- Led should be cleaned in a normal temperature and the time for cleaning should be less than 3 minutes ; please use Alcohol as cleaner ,before you use other cleaning solvent ,please make sure that the cleaner will not make any damage to the LED performance or the appearance .
- Ultrasonic Cleaning is also commonly used for cleaning LED , please verify the Ultrasonic cleaning 's Power and time to avoid any damage to the LED .
- The recommended solvent for cleaning：
- LED的清洗推荐在常温下进行且清洗时间不超过3分钟，建议优先选用酒精做为清洗剂，在选用其他溶剂清洗前请先确认不会对LED封装性能或外观造成损伤。
- 超声波清洗也是常用的有效方法，在进行大批量清洗前请先验证超声波清洗的功率及时间是否会对LED造成损伤。

• 推荐的溶剂：

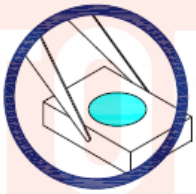
Common cleaning solvent 常用清洁溶剂	Disable cleaning solvent 禁用清洁溶剂
Alcohol 酒精	Thinner、Acetone、Two fluorine resin 、Acetone b dilute 稀释剂、丙酮、 二氟脂、三氯乙稀

4.Handing Precautions

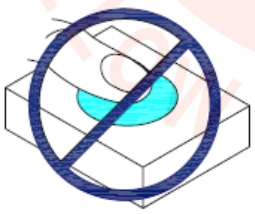
警惕手取

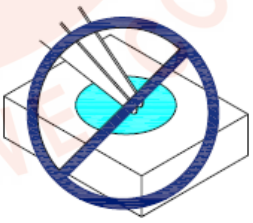
Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more susceptible to damage by external mechanical force.
As a result, special handling precautions need to be observed during assembly using silicone encapsulated LED products. Failure to comply might leads to damage and premature failure of the LED.

1. Handle the component along the side surfaces by using forceps or appropriate tools.



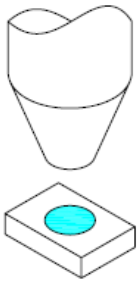
2. Do not directly touch or handle the silicone lens surface. It may damage the internal circuitry.

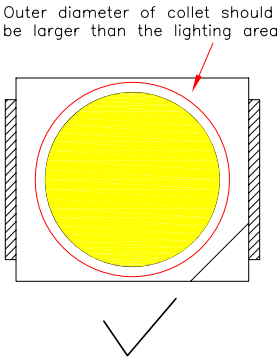


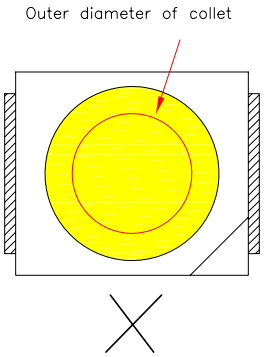


3. Do not stack together assembled PCBs containing exposed LEDs. Outside impact may scratch the silicone lens or damage the internal circuitry.

4. During surface-mounting, the pickup capillary diameter should be larger than the silicone lens to insure the capillary does not scratch or damage the lens.




Outer diameter of collet should be larger than the lighting area


Outer diameter of collet