



Surface Mounted Chip LED

Model No. : LS-SP190DBW91-5

■ Features :

- Compatible with automatic placement equipment
- Compatible with reflow solder process

■ Applications :

- Automotive_Telecommunication
- Indicators
- LCD Back-lights
- Illuminations

Dice Material	Light Color	Lens Color
InGaN	white	Milky Diffused

Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	Maximum	Unit
Power Dissipation	P _D	100	mW
Continuous Forward Current	I _F	25	mA
Peak Forward Current (1/10 Duty Cycle 0.1ms Pulse Width)	I _{FP}	100	mA
Reverse Voltage	V _R	5	V
Derating Linear From 25°C		0.4	mA/°C
Operating Temperature Range	T _{opr}	-30 to +80	°C
Storage Temperature Range	T _{stg}	-40 to +85	°C

Electrical / Optical Characteristics

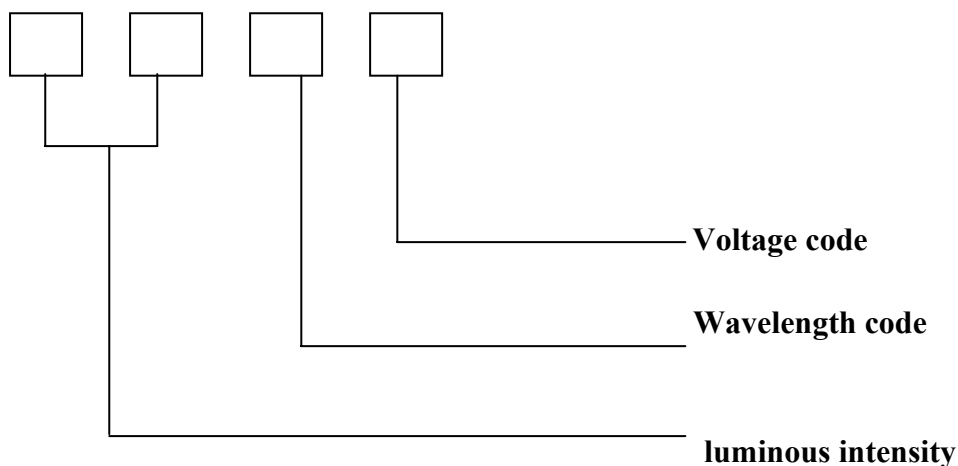
(Ta=25°C)

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage	V _F	I _F =5mA		3.0	3.5	V
Reverse Current	I _R	V _R =5V			10	uA
Chromaticity coordinate	X	I _F =5mA		0.30		
Chromaticity coordinate	Y	I _F =5mA		0.31		
Viewing Angle	2 θ 1/2	I _F =5mA		110		Deg
Luminous Intensity	I _V	I _F =5mA	145	180		mcd

ISSUE	DIMENSION NO :	VERSION :	DATE :
		B	2013/03/26
	APPROVAL :	CHECK :	EDIT :

◆ Packing coding principle

Notice: Bin code: luminous intensity / wavelength / voltage.



◆ The Luminous Intensity Grade of White Chip-LED Products

● Test Condition : @ 5mA

Range,mcd	Bin code
145/180	L2
180/225	M1
225/285	M2

◆ Dominant Wavelength Grade of White Chip-LED Products

● I type @5mA

BIN	CIE	Top	Right	Bottom	Left	BIN	CIE	Top	Right	Bottom	Left
R29	X	0.285	0.290	0.310	0.305	R30	X	0.290	0.295	0.315	0.310
	Y	0.290	0.300	0.300	0.290		Y	0.300	0.310	0.310	0.300
R31	X	0.295	0.300	0.320	0.315	R32	X	0.300	0.305	0.325	0.320
	Y	0.310	0.320	0.320	0.310		Y	0.320	0.330	0.330	0.320
R33	X	0.305	0.310	0.330	0.325						
	Y	0.330	0.340	0.340	0.330						

◆ Forward Voltage Grade of White Chip-LED Products

● I type @ 5mA

BIN	Range	BIN	Range
2	2.7/2.8	5	3.0/3.1
3	2.8/2.9	6	3.1/3.2
4	2.9/3.0		



◆ Descriptions :

- The Chip-LED 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 application, etc.

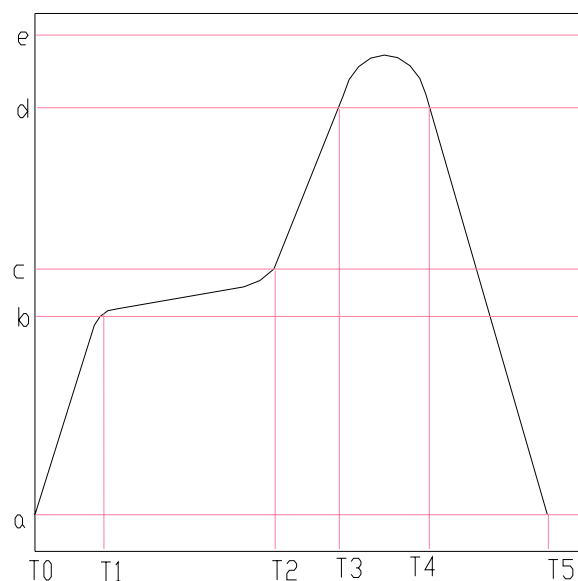
◆ Reliability Test Items And Conditions :

NO.	Item	Test Conditions	Test Hours / Cycle	Sample Q'ty	Ac / Re
1	Solder Heat	TEMP : 260°C±5°C	5 sec	36 pcs	0 / 1
2	Temperature Cycle	H : +100°C 30min. ∩ 5min. L : -40°C 30min.	50 cycle	36 pcs	0 / 1
3	Thermal Shock	H : +100°C 5min. ∩ 10sec L : -40°C 5min.	50 cycle	36 pcs	0 / 1
4	High Temperature Storage	TEMP : 100°C	1000 hrs	36 pcs	0 / 1
5	Low Temperature Storage	TEMP : -40°C	1000 hrs	36 pcs	0 / 1
6	DC Operating Life	I _F = 20mA	1000 hrs	36 pcs	0 / 1
7	High Temperature / High Humidity	85°C / 90~95%R.H.	1000 hrs	36 pcs	0 / 1

◆ Reflow Temp. / Time : :

Please refer to the following figure :

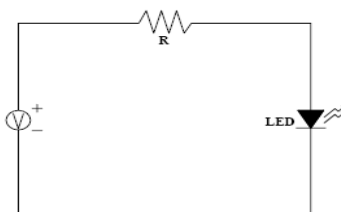
Temp.(°C)		Time(Sec)	
a	25	T0~T1	Max. 3°C/sec
b	150	T1~T2	90~130 sec
c	200	T2~T3	Max. 3°C/sec
d	220	T3~T4	Max. 30~50 sec
e	250		
		T4~T5	Max. -3°C/sec
Blet Speed		70~90 cm/min	



◆ Precautions For Use :

- Over – current – proof

Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change (Burn out will happen)



- Storage

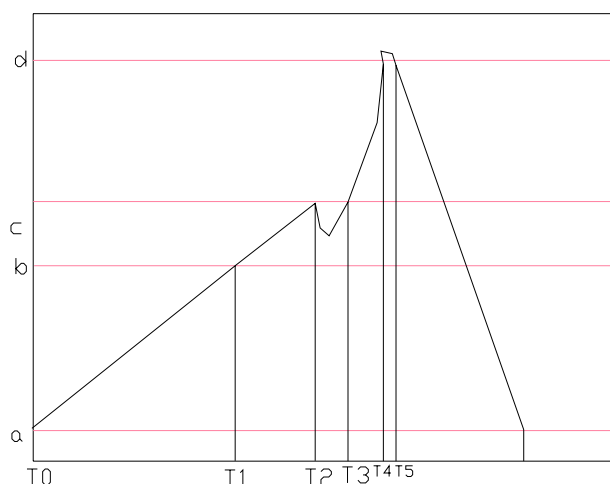
1. The operation of temperature and R.H. are : $5^{\circ}\text{C} \sim 30^{\circ}\text{C}$, R.H.60% Max..
2. Once the package is opened, the products should be used within 72 hrs. Otherwise, they should be kept in a dampproof box with desiccating regent. Considering the tape life, we suggest our customers to use our products within 1 year (from production date) .
3. It's recommended to bake before soldering when the package is unsealed after 72 hrs. The condition is : $80^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for 24hrs.

◆ Soldering Iron :

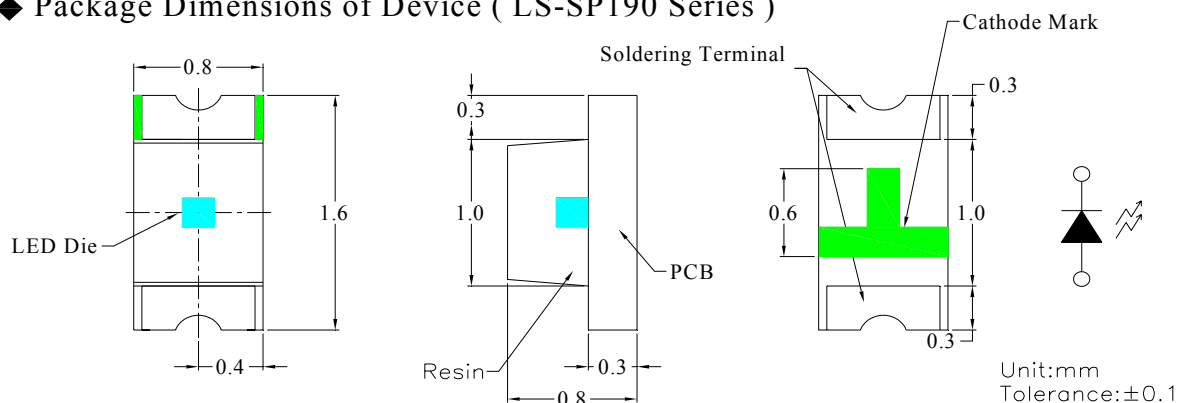
- Temperature at tip of iron : 300°C Max. (25W Max.)
- Soldering time : $5 \pm 1\text{sec}$.

◆ Wave Soldering Temp. / Time :

Temp.($^{\circ}\text{C}$)		Time(Sec)	
a	25	T1~T2	60 ± 20
b	130 ± 10	T2~T3	
c	185	T3~T6	
d	250 ± 3	T4~T5	3 ± 2

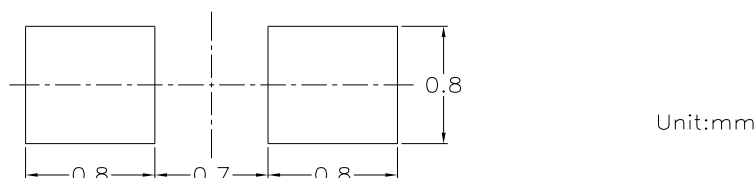


◆ Package Dimensions of Device (LS-SP190 Series)



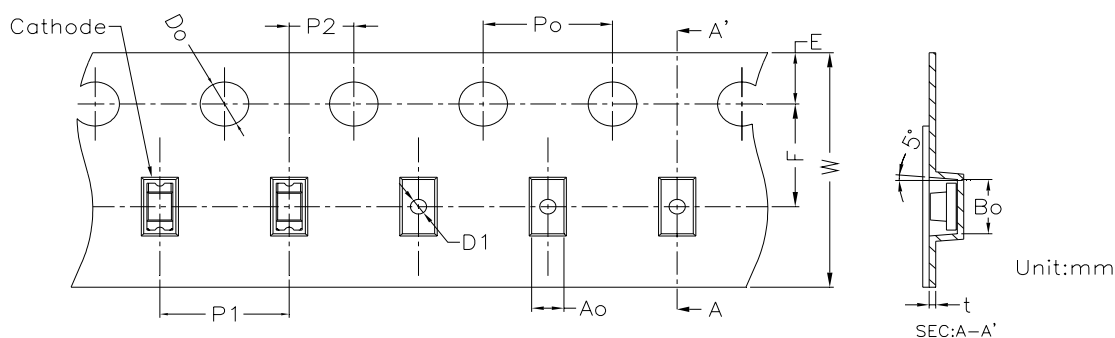
1. Soldering terminal may shift in x, y direction.
2. Polarity referring onto the cathode mark is reversed on the UR/HR/SR

◆ Recommended Soldering Pad Dimensions

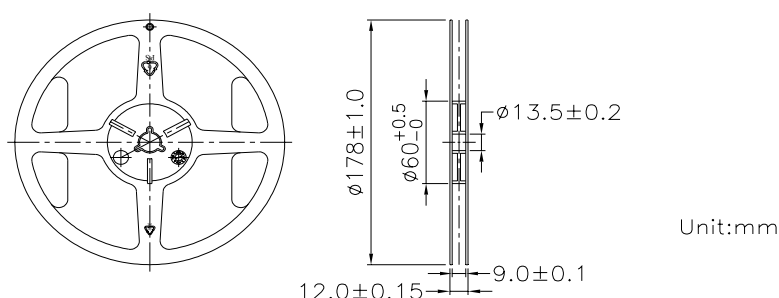


◆ Tape Specification : 4000pcs Per Reel

Packing Size													
Item	W	P1	E	F	Do	D1	Po	10Po	P2	Ao	Bo	Ko	t
Spec.	8.00	4.00	1.75	3.50	1.50	0.5	4.00	40.00	2.00	0.95	1.80	0.96	0.22
Tolerance	±0.20	±0.10	±0.10	±0.05	$^{+0.10}_{-0.00}$	±0.05	±0.05	±0.20	±0.05	±0.10	±0.10	±0.10	±0.05

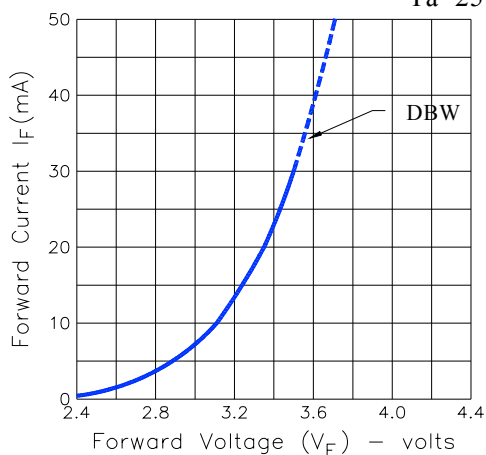


◆ Package Dimensions of Reel



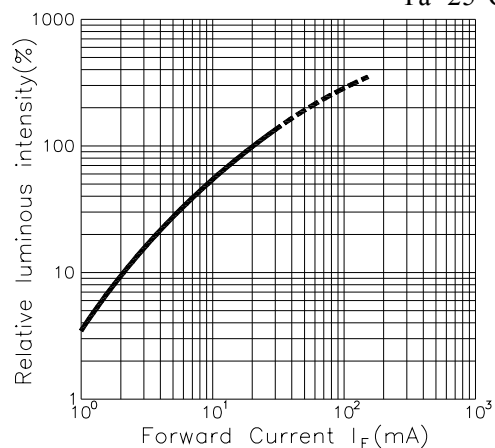
Forward Current Vs. Forward Voltage

Ta=25°C

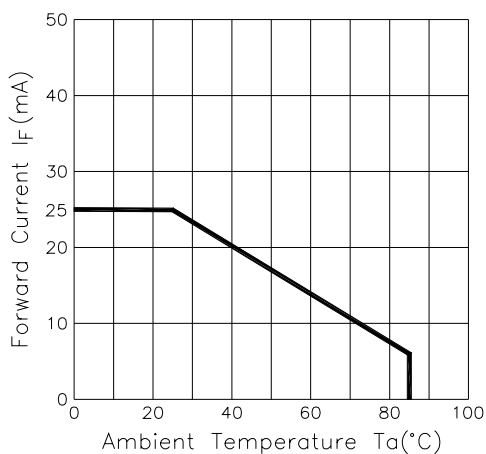


Luminous Intensity Vs. Forward Current

Ta=25°C

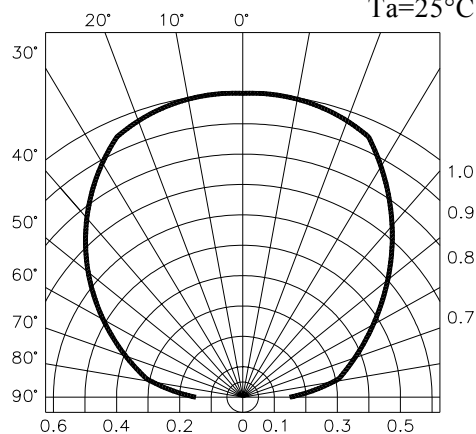


Forward Current Derating Curve



Radiation Diagram

Ta=25°C



Spectrum Distribution

