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LIGHT BAR LED DISPLAY



Lead-Free Parts

## LBD511SGM-XX-PF

# DATA SHEET

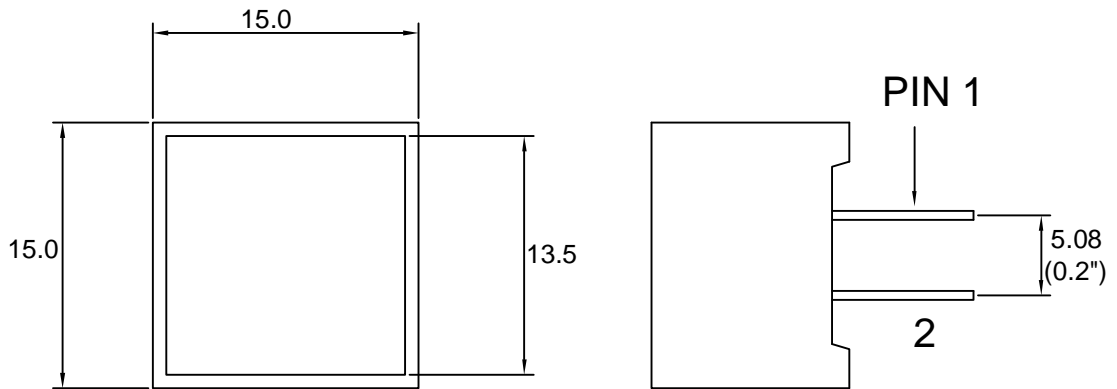
DOC. NO : QW0905-LBD511SGM-XX-PF

REV. : A

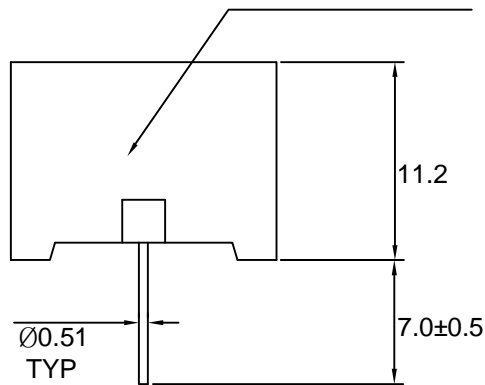
DATE : 15 - Aug. - 2006



### Package Dimensions



LBD511SGM-XX-PF  
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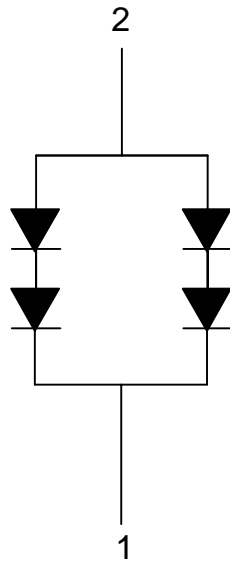


Note : 1.All dimension are in millimeters and (Inch) tolerance is  $\pm 0.25$ mm unless otherwise noted.  
2.Specifications are subject to change without notice.



### Internal Circuit Diagram

LBD511SGM-XX-PF



1.CATHODE  
2.ANODE

### Electrical Connection

PIN NO.1	LBD511SGM-XX-PF
1	Cathode
2	Anode



Absolute Maximum Ratings at Ta=25 °C

Parameter	Symbol	Ratings	UNIT
		SGM	
Forward Current Per Chip	IF	30	mA
Peak Forward Current Per Chip (Duty 1/10,0.1ms Pulse Width)	IFP	100	mA
Power Dissipation Per Chip	PD	100	mW
Reverse Current Per Any Chip	Ir	50	μA
Electrostatic Discharge( * )	ESD	1000	V
Operating Temperature	Topr	-25 ~ +85	°C
Storage Temperature	Tstg	-25 ~ +85	°C
Solder Temperature 1/16 Inch Below Seating Plane For 3 Seconds At 260 °C			

\* Static Electricity or power surge will damage the LED. Use of a conductive wrist band or anti-electrosatic glove is recommended when handing these LED. All devices, equipment and machinery must be properly grounded.

Part Selection And Application Information(Ratings at 25°C)

PART NO	CHIP		common cathode or anode	λ P (nm)	λ D (nm)	Δ λ (nm)	Electrical				IV-M
	Material	Emitted					Vf(v)		Iv(mcd)		
							Typ.	Max.	Min.	Typ.	
LBD511SGM-XX-PF	InGaN/SiC	Green	Common Cathode	518	525	35	3.5	4.2	68	91	2:1

Note : 1.The forward voltage data did not including ±0.1V testing tolerance.  
2. The luminous intensity data did not including ±15% testing tolerance.

**Test Condition For Each Parameter**

Parameter	Symbol	Unit	Test Condition
Forward Voltage Per Chip	V <sub>f</sub>	volt	I <sub>f</sub> =20mA
Luminous Intensity Per Chip	I <sub>v</sub>	mcd	I <sub>f</sub> =20mA
Peak Wavelength	$\lambda P$	nm	I <sub>f</sub> =20mA
Dominant Wavelength	$\lambda D$	nm	I <sub>f</sub> =20mA
Spectral Line Half-Width	$\Delta \lambda$	nm	I <sub>f</sub> =20mA
Reverse Current Any Chip	I <sub>r</sub>	$\mu A$	V <sub>r</sub> =5V
Luminous Intensity Matching Ratio	IV-M		



### Typical Electro-Optical Characteristics Curve

#### SGM CHIP

Fig.1 Forward current vs. Forward Voltage

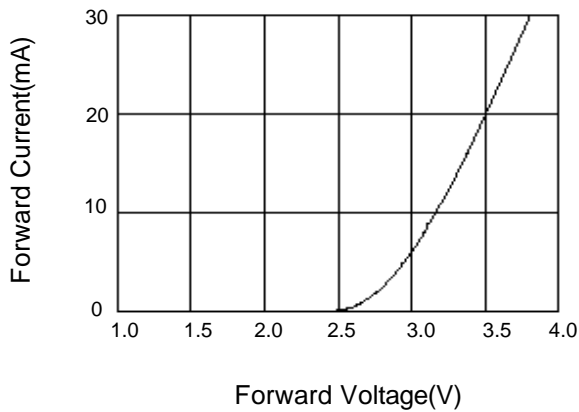


Fig.2 Forward Current vs. Relative Intensity

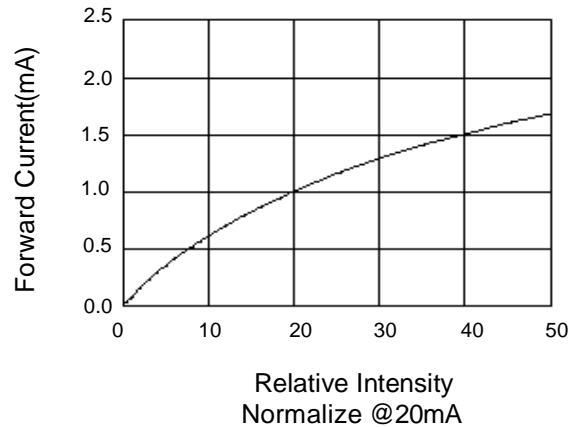


Fig.3 Forward Current vs. Temperature

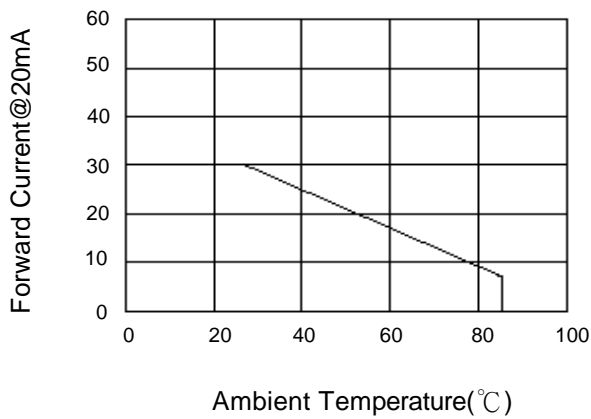


Fig.4 Relative Intensity vs. Temperature

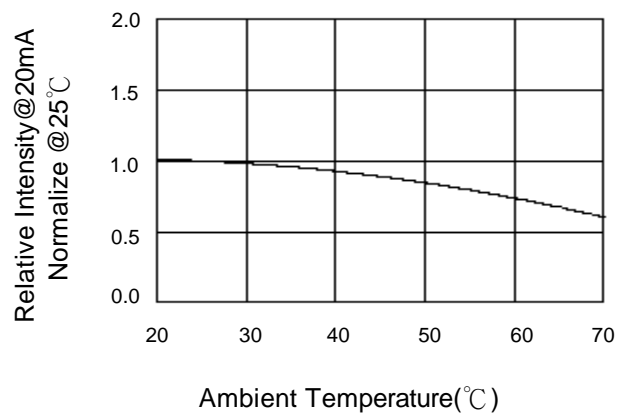
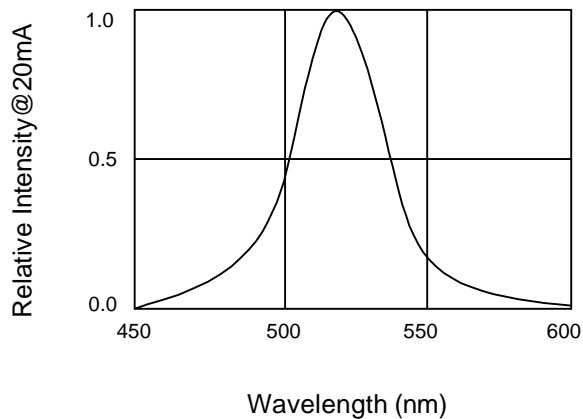


Fig.5 Relative Intensity vs. Wavelength





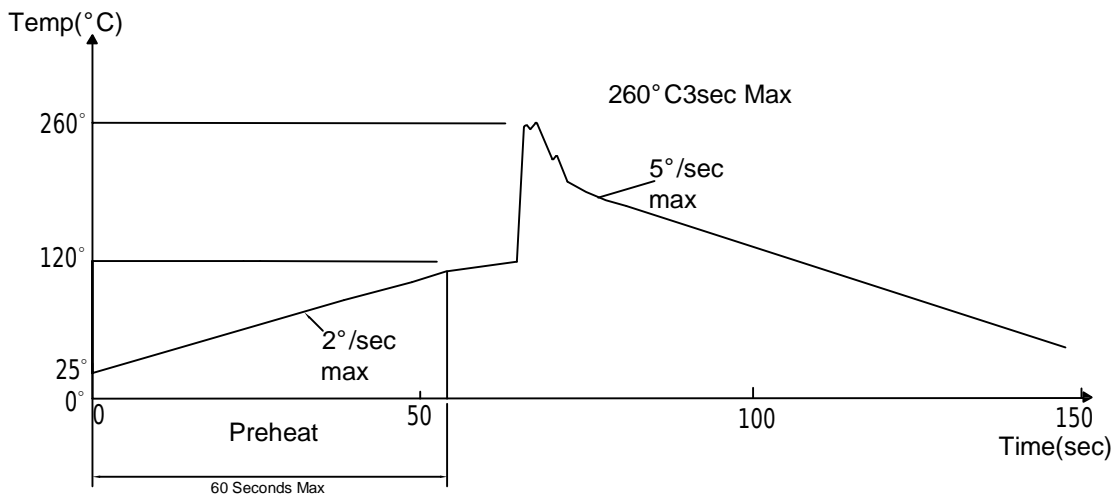
### Soldering Condition(Pb-Free)

#### 1.Iron:

- Soldering Iron:30W Max
- Temperature 350° C Max
- Soldering Time:3 Seconds Max(One Time)
- Distance:Solder Temperature 1/16 Inch Below Seating Plane For 3 Seconds At 260° C

#### 2.Wave Soldering Profile

- Dip Soldering
- Preheat: 120° C Max
- Preheat time: 60seconds Max
- Ramp-up
- 2° C/sec(max)
- Ramp-Down:-5° C/sec(max)
- Solder Bath:260° C Max
- Dipping Time:3 seconds Max
- Distance:Solder Temperature 1/16 Inch Below Seating Plane For 3 Seconds At 260° C





## Reliability Test:

Test Item	Test Condition	Description	Reference Standard
Operating Life Test	1.Under Room Temperature 2.If=10mA 3.t=1000 hrs (-24hrs, +72hrs)	This test is conducted for the purpose of determining the resistance of a part in electrical and thermal stressed.	MIL-STD-750: 1026 MIL-STD-883: 1005 JIS C 7021: B-1
High Temperature Storage Test	1.Ta=105°C±5°C 2.t=1000 hrs (-24hrs, +72hrs)	The purpose of this is the resistance of the device which is laid under condition of high temperature for hours.	MIL-STD-883:1008 JIS C 7021: B-10
Low Temperature Storage Test	1.Ta=-40°C±5°C 2.t=1000 hrs (-24hrs, +72hrs)	The purpose of this is the resistance of the device which is laid under condition of low temperature for hours.	JIS C 7021: B-12
High Temperature High Humidity Test	1.Ta=65°C±5°C 2.RH=90%~95% 3.t=240hrs±2hrs	The purpose of this test is the resistance of the device under tropical for hours.	MIL-STD-202:103B JIS C 7021: B-11
Thermal Shock Test	1.Ta=105°C±5°C & -40°C±5°C (10min) (10min) 2.total 10 cycles	The purpose of this is the resistance of the device to sudden extreme changes in high and low temperature.	MIL-STD-202: 107D MIL-STD-750: 1051 MIL-STD-883: 1011
Solder Resistance Test	1.T.Sol=260°C±5°C 2.Dwell time= 10±1sec.	This test intended to determine the thermal characteristic resistance of the device to sudden exposures at extreme changes in temperature when soldering the lead wire.	MIL-STD-202: 210A MIL-STD-750: 2031 JIS C 7021: A-1
Solderability Test	1.T.Sol=230°C±5°C 2.Dwell time=5±1sec	This test intended to see soldering well performed or not.	MIL-STD-202: 208D MIL-STD-750: 2026 MIL-STD-883: 2003 JIS C 7021: A-2