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ROUND TYPE LED LAMPS



Lead-Free Parts

LWK3333-X

DATA SHEET

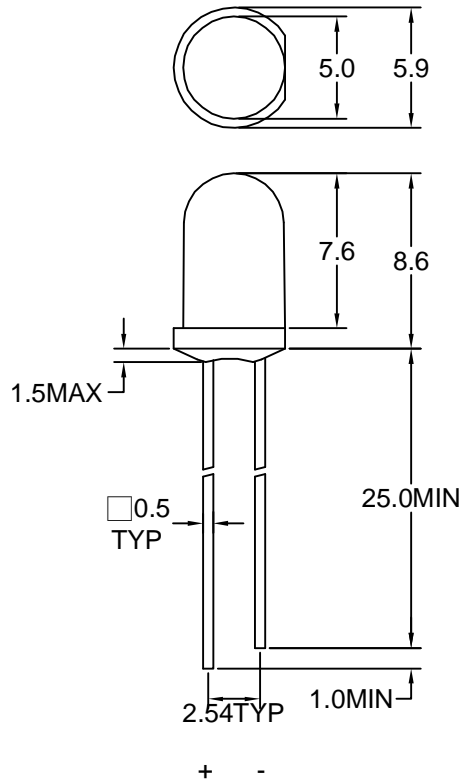
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REV. : A

DATE : 24 - Nov. - 2006

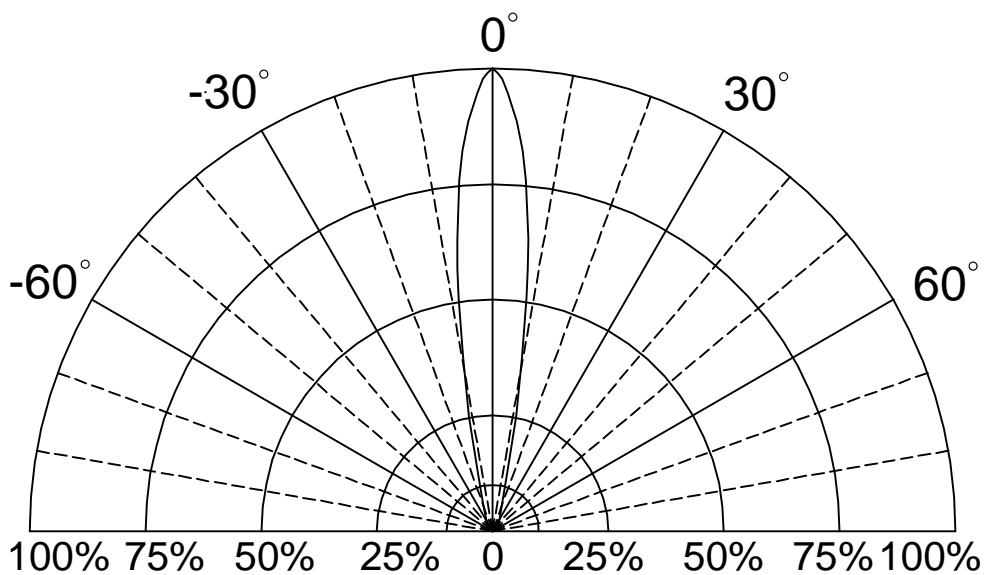


Package Dimensions



Note : 1.All dimension are in millimeter tolerance is $\pm 0.25\text{mm}$ unless otherwise noted.
2.Specifications are subject to change without notice.

Directivity Radiation





Absolute Maximum Ratings at Ta=25 °C

Parameter	Symbol	Ratings	UNIT
		WK	
Forward Current	IF	30	mA
Peak Forward Current Duty 1/10@10KHz	IFP	100	mA
Power Dissipation	PD	120	mW
Reverse Current @5V	Ir	50	μA
Electrostatic Discharge(*)	ESD	150	V
Operating Temperature	Topr	-20~ +80	°C
Storage Temperature	Tstg	-30~ +100	°C

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

Typical Electrical & Optical Characteristics (Ta=25 °C)

PART NO	MATERIAL	COLOR		Color Temperature (°K)		Forward voltage @20mA(V)		Luminous intensity @20mA(mcd)		Viewing angle 2θ 1/2 (deg)
		Emitted	Lens	Min.	Max.	Typ.	Max.	Min.	Typ.	
LWK3333-X	InGaN/GaN	White	Water Clear	3000	3500	3.5	4.0	6200	11500	16

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



Correspondence table of Color Temperature - 1931 CIE(Reference)

Color Temperature	1931 CIE	
Kelvin(°K)	X	Y
1000	0.653	0.344
1200	0.625	0.367
1400	0.599	0.386
1500	0.588	0.393
1600	0.573	0.399
1700	0.561	0.404
1800	0.549	0.408
1900	0.538	0.411
2000	0.527	0.413
2100	0.516	0.415
2200	0.506	0.415
2300	0.496	0.415
2400	0.486	0.415
2500	0.477	0.414
2600	0.468	0.412
2700	0.46	0.411
2800	0.452	0.409
2900	0.444	0.407
3000	0.437	0.404
3100	0.43	0.402
3200	0.423	0.399
3250	0.42	0.398
3300	0.417	0.396
3400	0.411	0.394
3500	0.405	0.391
3600	0.409	0.388
3700	0.395	0.385
3800	0.39	0.382
3900	0.385	0.38
4000	0.381	0.377

Color Temperature	1931 CIE	
Kelvin(°K)	X	Y
4100	0.376	0.374
4200	0.372	0.371
4300	0.368	0.369
4400	0.364	0.366
4500	0.361	0.364
4600	0.357	0.361
4800	0.351	0.356
4900	0.348	0.354
5000	0.345	0.352
5200	0.34	0.347
5400	0.335	0.343
5600	0.33	0.339
5800	0.326	0.335
6000	0.322	0.332
6500	0.314	0.354
7000	0.306	0.317
7500	0.3	0.31
8000	0.295	0.305
8500	0.291	0.3
9000	0.287	0.296
9300	0.285	0.293
10000	0.281	0.288
15000	0.264	0.267



Typical Electro-Optical Characteristics Curve

WK CHIP

Fig.1 Forward current vs. Forward Voltage

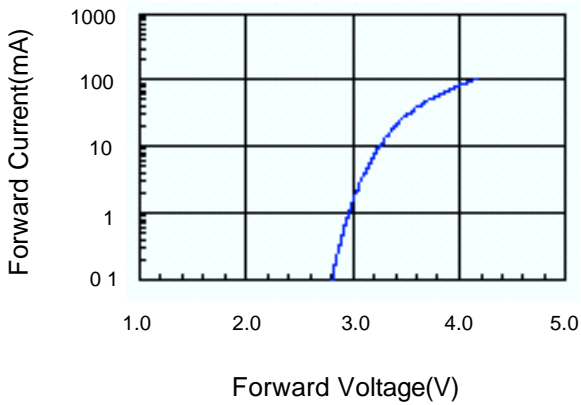


Fig.2 Relative Intensity vs. Forward Current

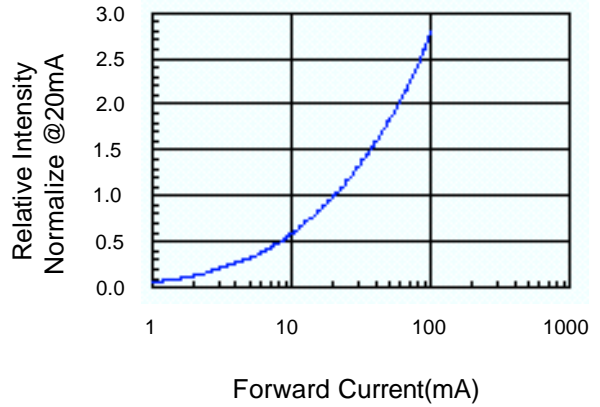


Fig.3 Forward Voltage vs. Temperature

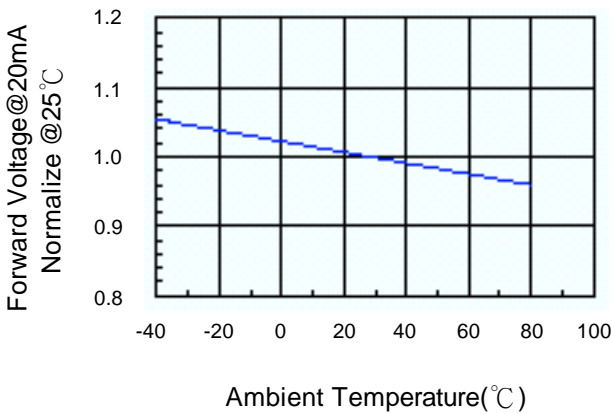


Fig.4 Relative Intensity vs. Temperature

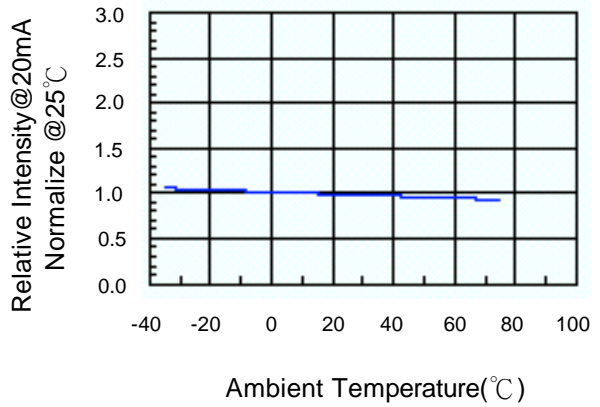
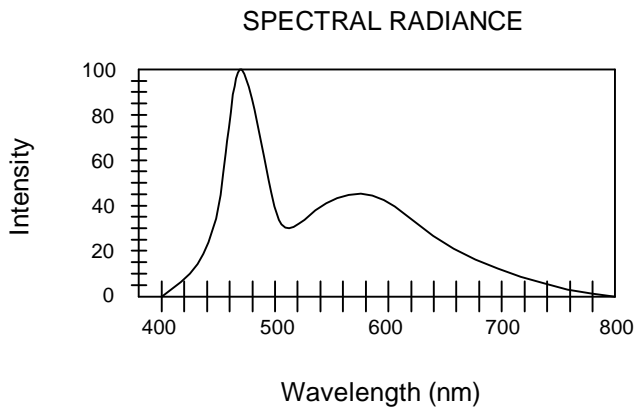


Fig.5 Luminous Spectrum(Ta=25°C)





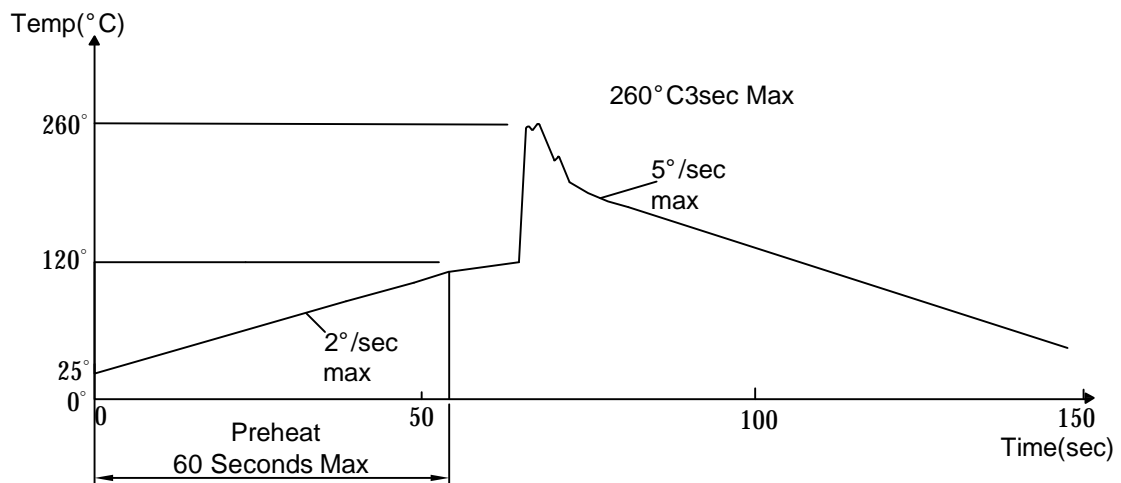
Soldering Condition(Pb-Free)

1.Iron:

- Soldering Iron:30W Max
- Temperature 350° C Max
- Soldering Time:3 Seconds Max(One Time)
- Distance:2mm Min(From solder joint to body)

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:2mm Min(From solder joint to body)





Reliability Test:

Test Item	Test Condition	Description	Reference Standard
Operating Life Test	1.Under Room Temperature 2.If=20mA 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