



LIGITEK ELECTRONICS CO.,LTD.
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DUAL COLOR LED LAMPS

TWO IN ONE



Lead-Free Parts

LHRFWK3392/R2/A

DATA SHEET

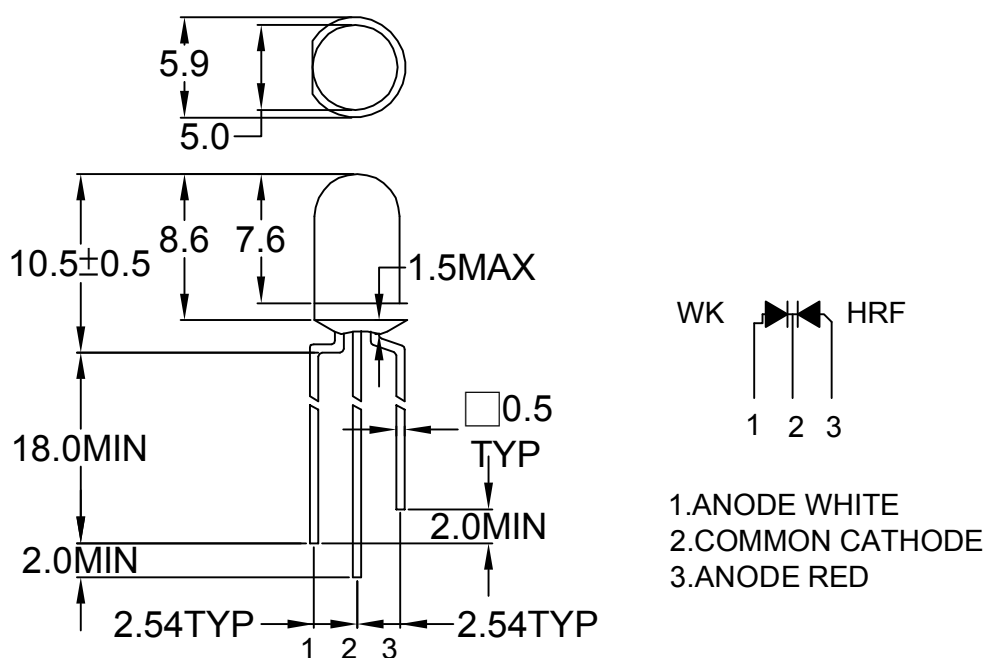
DOC. NO : QW0905-LHRFWK3392/R2/A

REV. : A

DATE : 04 - Apr. - 2018

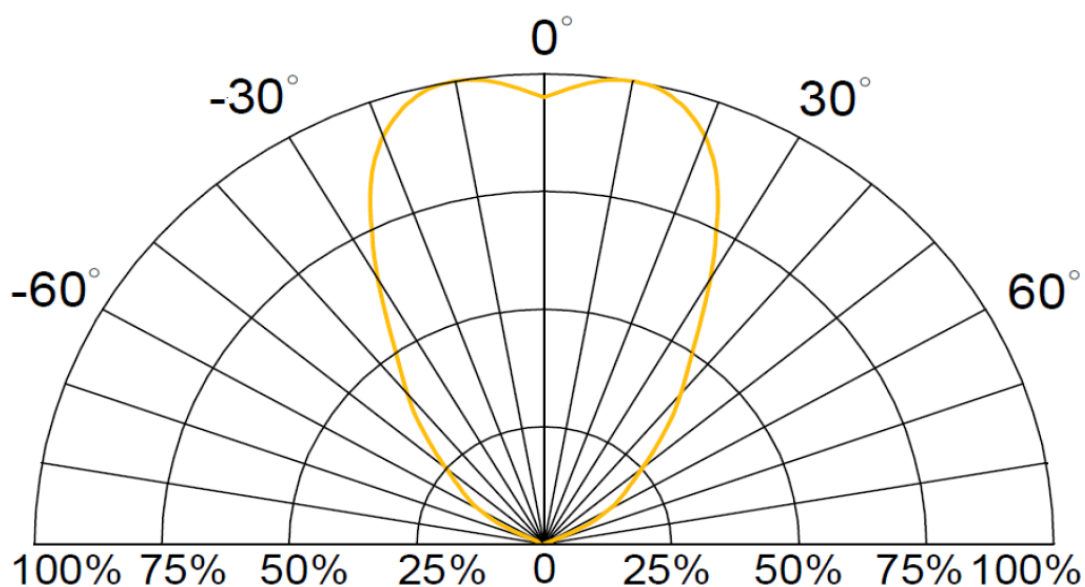


Package Dimensions



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
		HRF	WK	
Forward Current	IF	30	30	mA
Peak Forward Current Duty 1/10@10KHz	IFP	90	100	mA
Power Dissipation	PD	75	120	mW
Reverse Current @5V	Ir	10	50	μ A
Electrostatic Discharge	ESD	2000	500	V
Operating Temperature	Topr	-40 ~ +85	-20~ +80	°C
Storage Temperature	Tstg	-40 ~ +100	-30~ +100	°C

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

PART NO	MATERIAL	COLOR		Dominant wave length λ Dnm	Spectral halfwidth Δ λ nm	Forward voltage @20mA(V)		Luminous intensity @20mA(mcd)		Viewing angle 2θ 1/2 (deg)
		Emitted	Lens			Min.	Max.	Min.	Typ.	
LHRFWK3392/R2/A	AlGaInP	Red	Red Diffused	630	20	1.5	2.4	300	550	70
	MATERIAL	COLOR		Chromaticity Coordinates		Forward voltage @20mA(V)		Luminous intensity @20mA(mcd)		Viewing angle 2θ 1/2 (deg)
		Emitted	Lens	X	Y	Typ.	Max.	Min.	Typ.	
	InGaN	White	White Diffused	0.28±0.03	0.28±0.06	3.5	4.0	700	1100	70

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

Brightness Code For Standard LED Lamps**HRF CHIP**

Group	Luminous Intensity(mcd) at 20 mA	
	Min.	Max.
A16	300	350
A17	350	450
A18	450	550
A19	550	700
A20	700	900
A21	900	1100

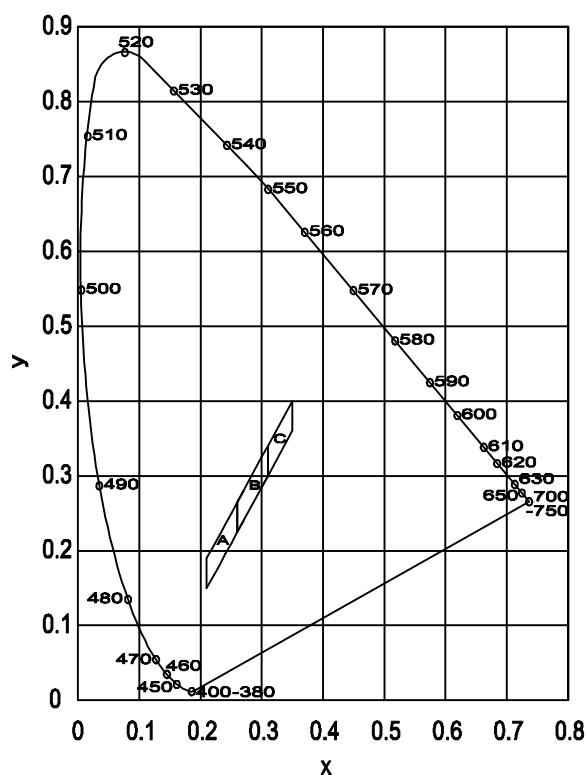
WK CHIP

Group	Luminous Intensity(mcd) at 20 mA	
	Min.	Max.
A20	700	900
A21	900	1100
A22	1100	1500
A23	1500	1800
A24	1800	2200
A25	2200	2700

. Chromaticity Coordinates Specifications for Bin Grading

BIN	X	Y	BIN	X	Y	BIN	X	Y
A1	0.21	0.190	B1	0.26	0.265	C1	0.31	0.340
	0.21	0.150		0.26	0.225		0.31	0.300
	0.22	0.165		0.27	0.240		0.32	0.315
	0.22	0.205		0.27	0.280		0.32	0.355
A2	0.22	0.205	B2	0.27	0.280	C2	0.32	0.355
	0.22	0.165		0.27	0.240		0.32	0.315
	0.23	0.180		0.28	0.255		0.33	0.330
	0.23	0.220		0.28	0.295		0.33	0.370
A3	0.23	0.220	B3	0.28	0.295	C3	0.33	0.370
	0.23	0.180		0.28	0.255		0.33	0.330
	0.24	0.195		0.29	0.270		0.34	0.345
	0.24	0.235		0.29	0.310		0.34	0.385
A4	0.24	0.235	B4	0.29	0.310	C4	0.34	0.385
	0.24	0.195		0.29	0.270		0.34	0.345
	0.25	0.210		0.30	0.285		0.35	0.360
	0.25	0.250		0.30	0.325		0.35	0.400
A5	0.25	0.250	B5	0.30	0.325			
	0.25	0.210		0.30	0.285			
	0.26	0.225		0.31	0.300			
	0.26	0.265		0.31	0.340			

. CIE Chromaticity Diagram



Typical Electro-Optical Characteristics Curve

HRF CHIP

Fig.1 Forward current vs. Forward Voltage

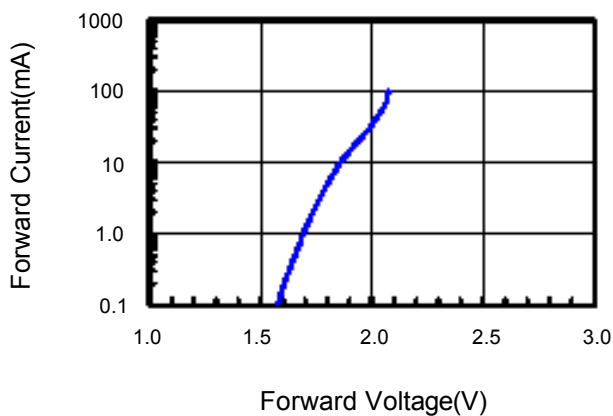


Fig.2 Relative Intensity vs. Forward Current

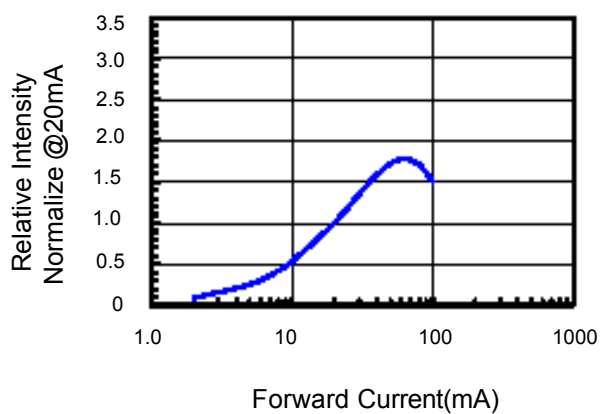


Fig.3 Forward Voltage vs. Temperature

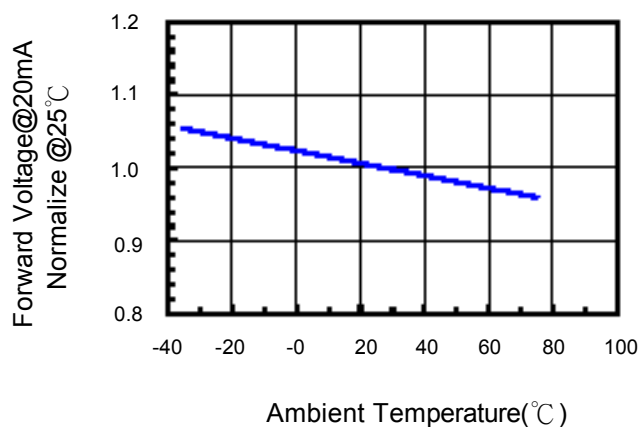


Fig.4 Relative Intensity vs. Temperature

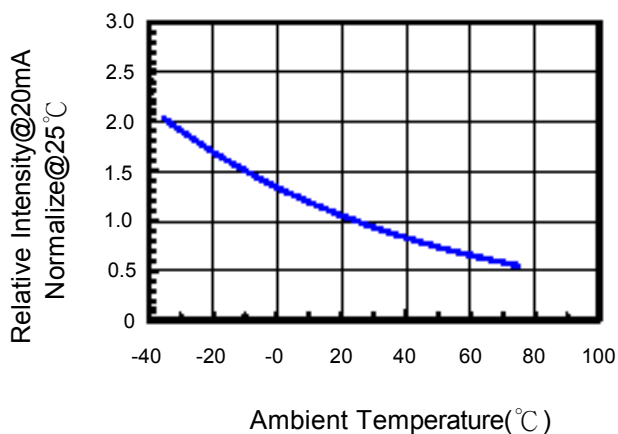
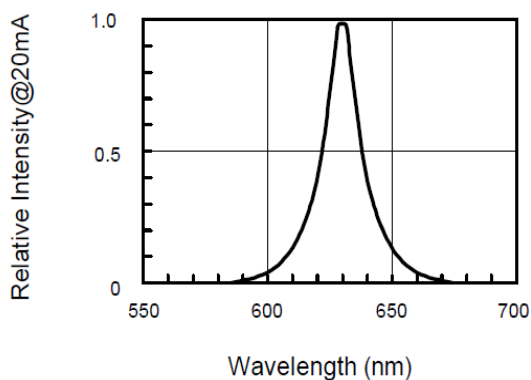


Fig.5 Relative Intensity vs. Wavelength



Typical Electro-Optical Characteristics Curve

WK CHIP

Fig.1 Forward current vs. Forward Voltage

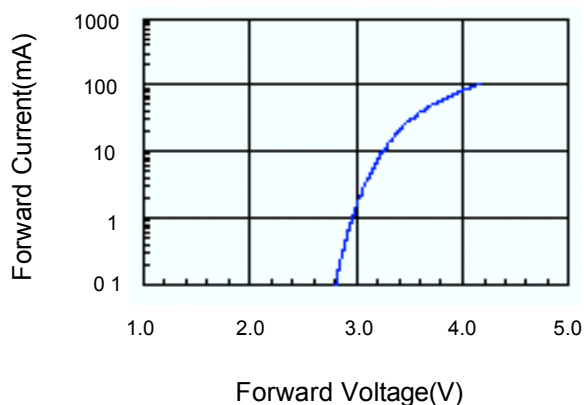


Fig.2 Relative Intensity vs. Forward Current

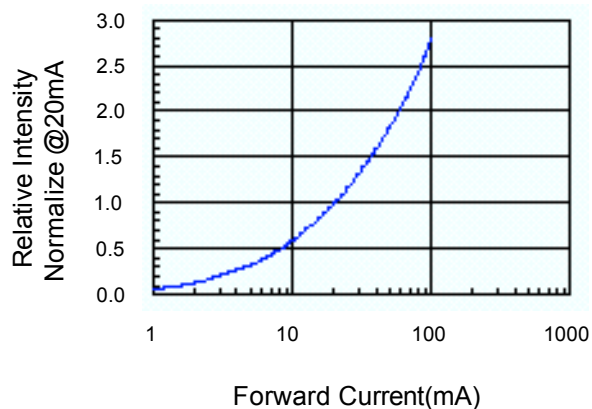


Fig.3 Forward Voltage vs. Temperature

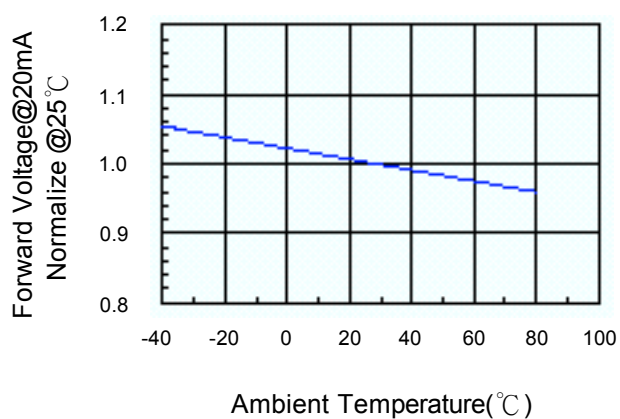


Fig.4 Relative Intensity vs. Temperature

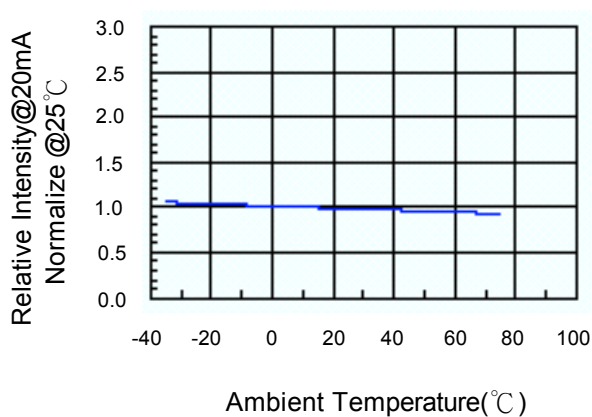
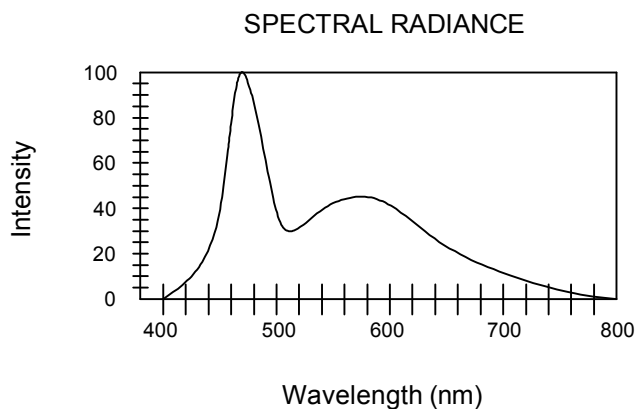


Fig.5 Luminous Spectrum (Ta=25°C)

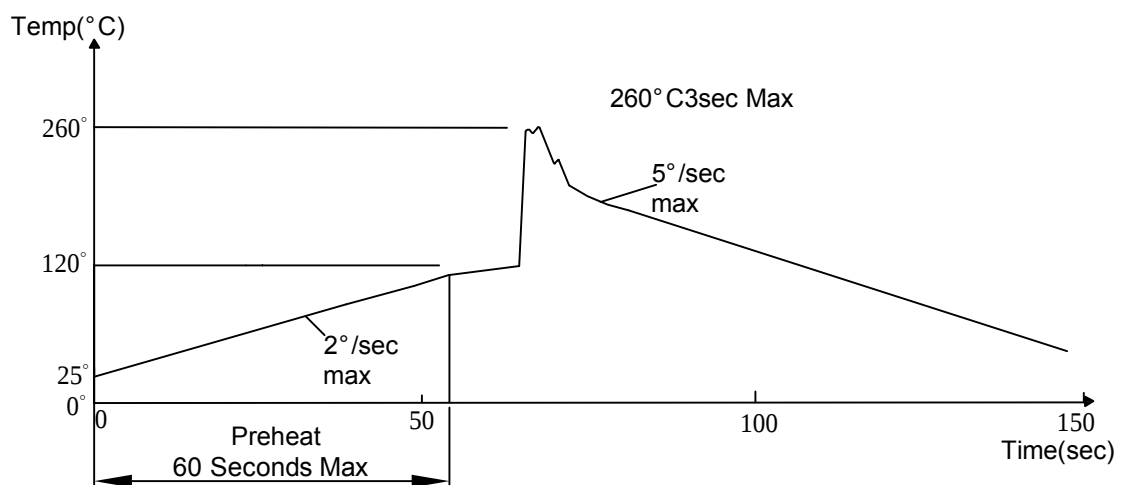


Soldering Condition(Pb-Free)**1.Iron:**

Soldering Iron:30W Max
Temperature 350° C Max
Soldering Time:3 Seconds Max(One time only)
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)



Note: 1.Wave solder should not be made more than one time.
2.You can just only select one of the soldering conditions as above.

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=245 °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