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DUAL COLOR LED LAMPS



Lead-Free Parts

**LHRF8UG42293/S1-PF**

**DATA SHEET**

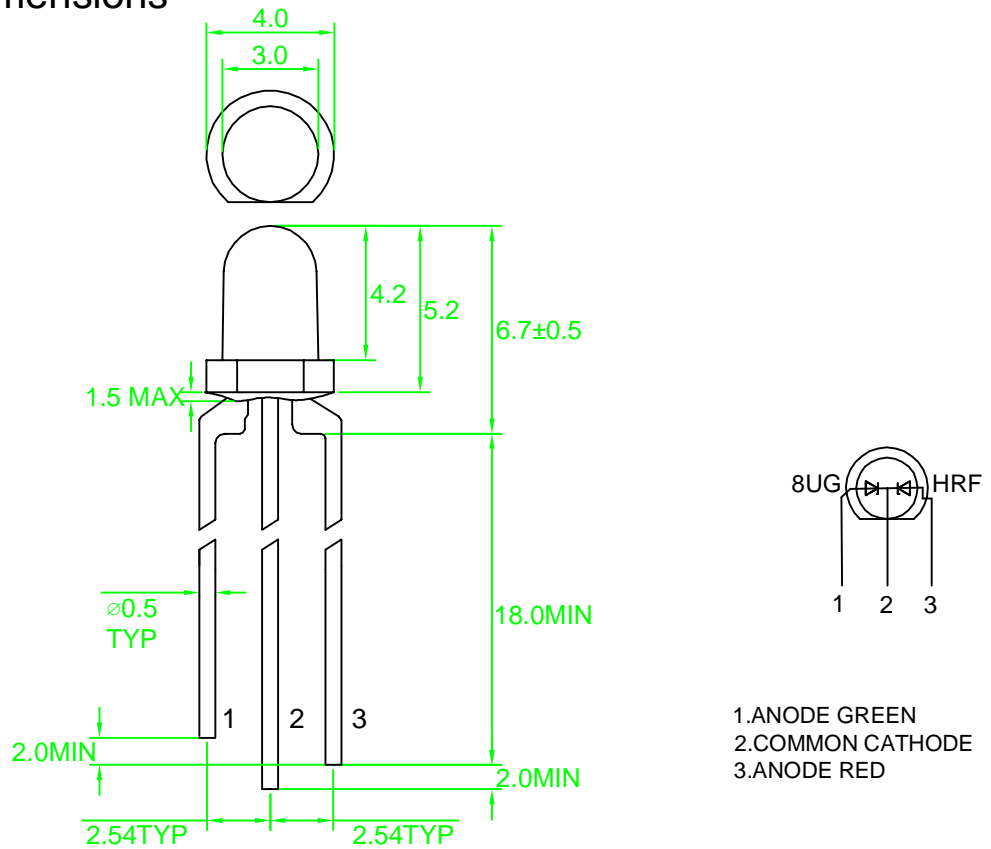
DOC. NO : QW0905- LHRF8UG42293/S1-PF

REV. : A

DATE : 16 -Apr.-2014

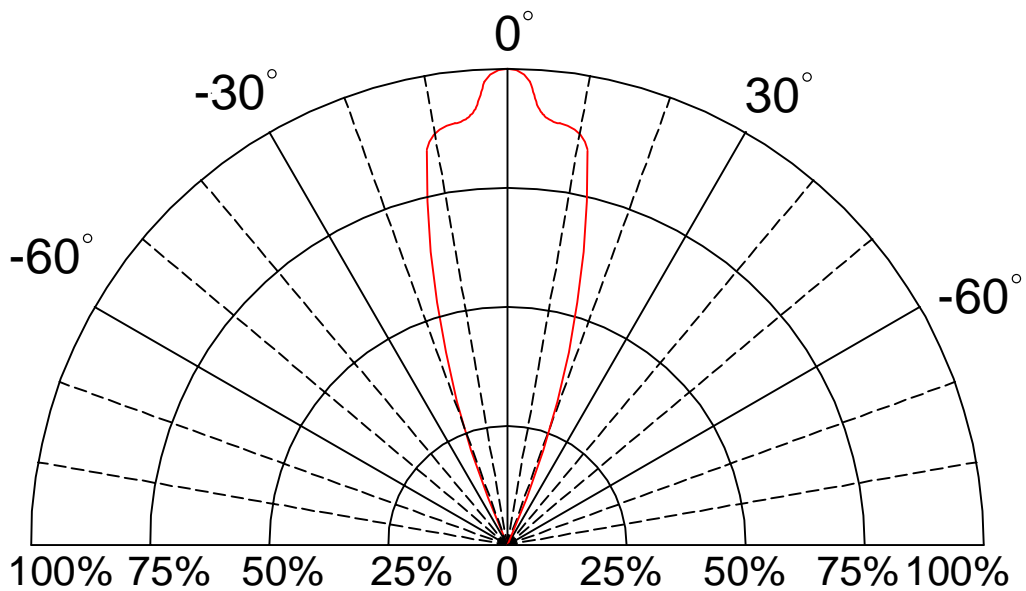


## Package Dimensions



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	8UG	
Forward Current	IF	30	30	mA
Peak Forward Current Duty 1/10@10KHz	IFP	90	60	mA
Power Dissipation	PD	75	75	mW
Electrostatic Discharge( * )	ESD	2000		V
Reverse Current @5V	Ir	10		μA
Operating Temperature	Topr	-40 ~ +85		°C
Storage Temperature	Tstg	-40 ~ +100		°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.

### 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.	
LHRF8UG42293/S1-PF	AlGaInP	Red	Water Clear	630	20	1.5	2.4	90	180	30
	AlGaInP	Green		574	20	1.7	2.6	65	160	30

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.
A12	90	120
A13	120	160
A14	160	220
A15	220	300
A16	300	350
A17	350	450

## Brightness Code For Standard LED Lamps

## 8UG CHIP

Group	Luminous Intensity(mcd) at 20 mA	
	Min.	Max.
A11	65	90
A12	90	120
A13	120	160
A14	160	220
A15	220	300
A16	300	350

## Color Code

## 8UG CHIP

Group	Dominant Wave length(nm) at 20 mA	
	Min.	Max.
7	568	570
8	570	572
9	572	574

## Typical Electro-Optical Characteristics Curve

### HRF CHIP

Fig.1 Forward current vs. Forward Voltage

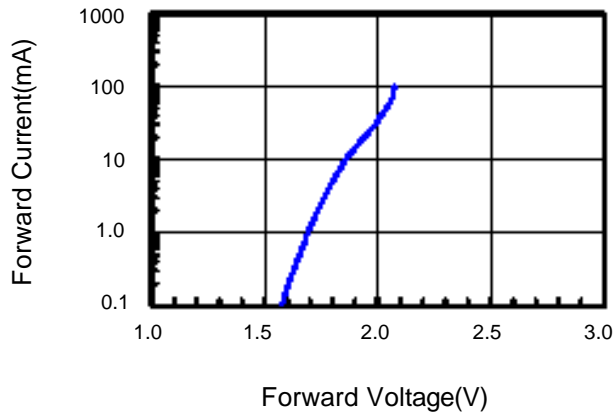


Fig.2 Relative Intensity vs. Forward Current

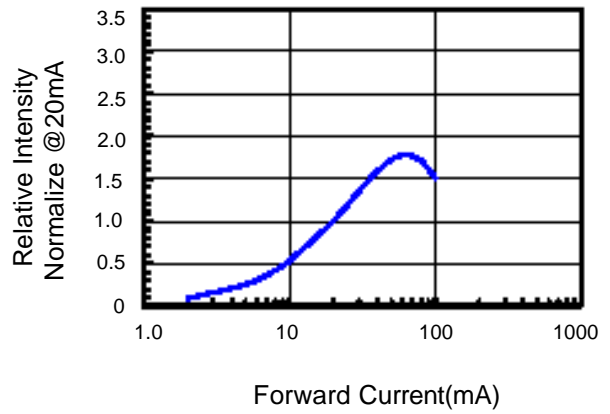


Fig.3 Forward Voltage vs. Temperature

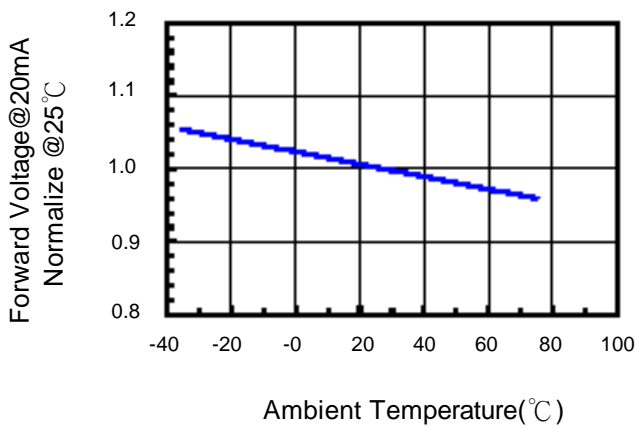


Fig.4 Relative Intensity vs. Temperature

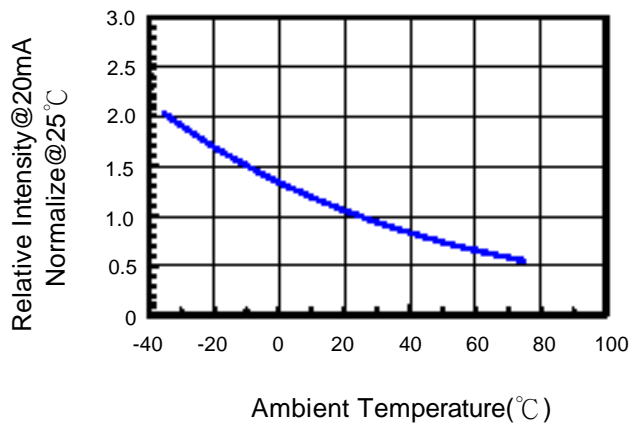
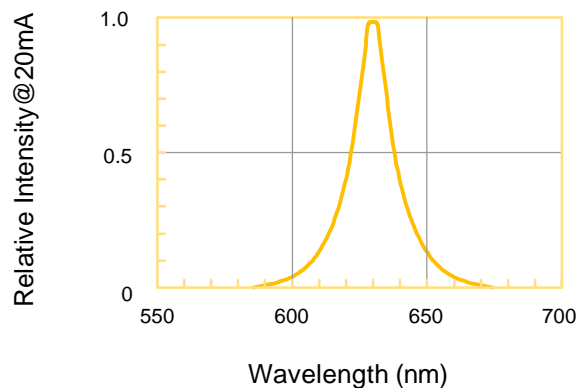


Fig.5 Relative Intensity vs. Wavelength



## Typical Electro-Optical Characteristics Curve 8UG CHIP

Fig.1 Forward current vs. Forward Voltage

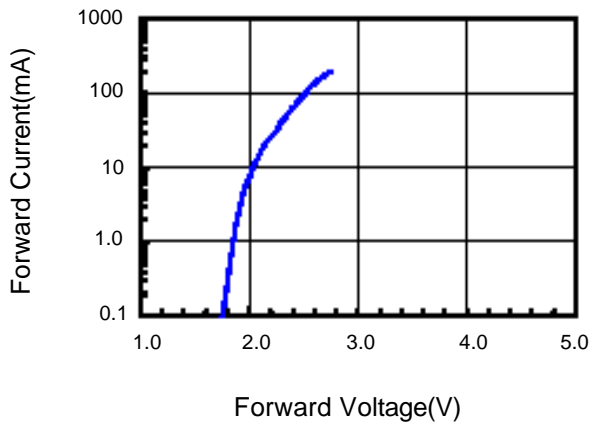


Fig.2 Relative Intensity vs. Forward Current

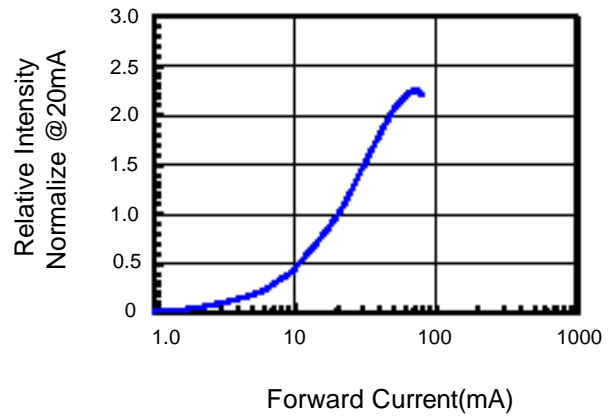


Fig.3 Forward Voltage vs. Temperature

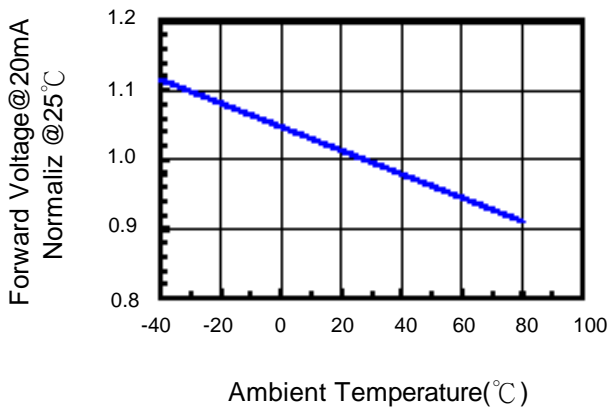


Fig.4 Relative Intensity vs. Temperature

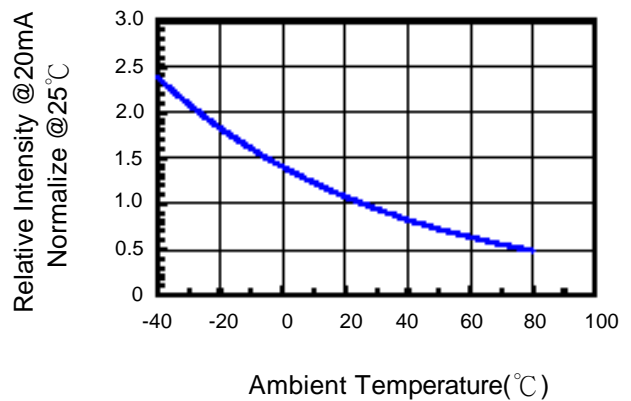
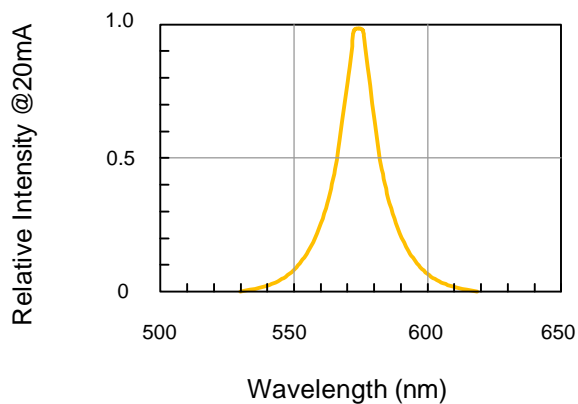


Fig.5 Relative Intensity vs. Wavelength



## 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

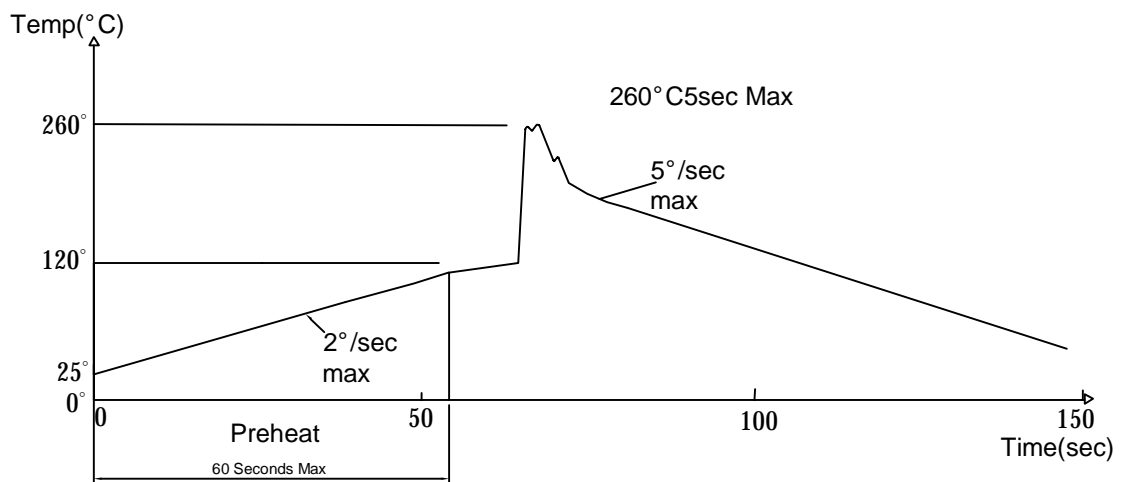
2° C/sec(max)

Ramp-Down:-5° C/sec(max)

Solder Bath:260° C Max

Dipping Time:5 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