SPECIFICATION

REFOND P/N

RF-FPR2W**1K-C5

Mass Product

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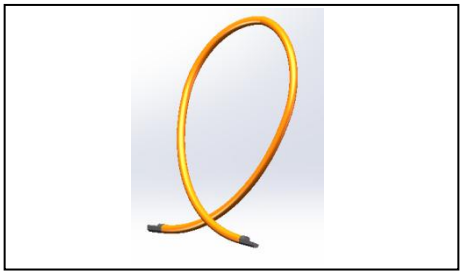
1. Description

1.1



TheWhiteLED whichwas fabricatedusing abluechipandthephosphor

LED .

1.2Features

IntegratedPackage.

360 ° Full Angle Luminescence.360°

Suitable for spot welding process.

Moisture sensitivity level: Level 5. Level 5

RoHS compliant. RoHS

Product size:Length* width*thick 134mmX1.7mmX1.9mm

1.3 Application

Decorative applications.

Other indoor lighting.

1.5 Product Parameters

Table 1-1 Electrical / Optical Characteristics at Ts=25°C

Item	Symbol	Test Condition	Value			Unit
			Min.	Typ	Max.	
Forward Voltage	V_F	I_F=10mA	266	---	274	V
Leakage current	Vf	If=10uA	200	---	---	uA
Luminous Flux		I_F=10mA	220	---	310	lm
Viewing Angle		I_F=10mA	---	---	360	deg
Color Rendering Index	Ra	I_F=10mA	93	---	---	/
Color Rendering Index	R9	I_F=10mA	45	---	---	/
Thermal Resistance.	R_{THJ-S}	I_F=10mA	---	---	70	℃/W

Table 1-2 Absolute Maximum Ratings at Ts=25°C

Parameter	Symbol	Rating	Units
Power Dissipation	P_D	2760	mW
Forward Current	I_F	10	mA
Peak Forward Current	I_{FP}	12	mA
Electrostatic Discharge (HBM)	E_{SD}	2000	V
Operating Temperature	T_{OPR}	-40 ~ +85	℃
Storage Temperature	T_{OPR}	-40 ~ +85	℃
Junction Temperature	T_J	110	℃

Notes

1. 1/10 Duty cycle, 0.1ms pulse width. 0.1ms, 1/10.

2. The above forward voltage measurement allowance tolerance is ±1V.

3. The above color coordinates measurement allowance tolerance is ±0.005. ±0.005.

4. The above luminous intensity measurement allowance tolerance ±10%. ±10%.

5. Care is to be taken that power dissipation does not exceed the absolute maximum rating of the product.

6. All measurements were made under the standardized environment of Refond.

7.When the LEDs are in operation the maximum current should be decided after measuring the package temperature junction temperature should not exceed the maximum rate. LED

8. ESD yield is over 90% at 2000V ESD (HBM). ESD protection during products handing is needed. 90% LED ESD2000V ,

9.The filament is a non-spectroscopic product, and the commitment batch meets the optical/electrical parameter range of more than 90 %. / 90%

1.6 Bin Range Of Luminous Flux and The Chromaticity Diagram (IF=10mA)

BIN (IF=10mA)

Table 1-3

RF-FPR2W2C1K-C5 2200K	Rank250	
	220	280
RF-FPR2W2E1K-C5 2700K	Rank280	
	250	310

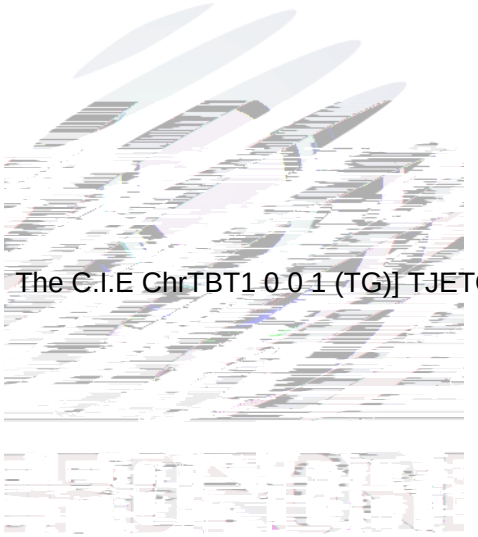


Fig 1-3 The C.I.E ChrTBT1 0 0 1 (TG)] TJETQq455.71 780.24 109.22 12.72 reW* nBT/F4

1.7 Typical optical characteristics curves

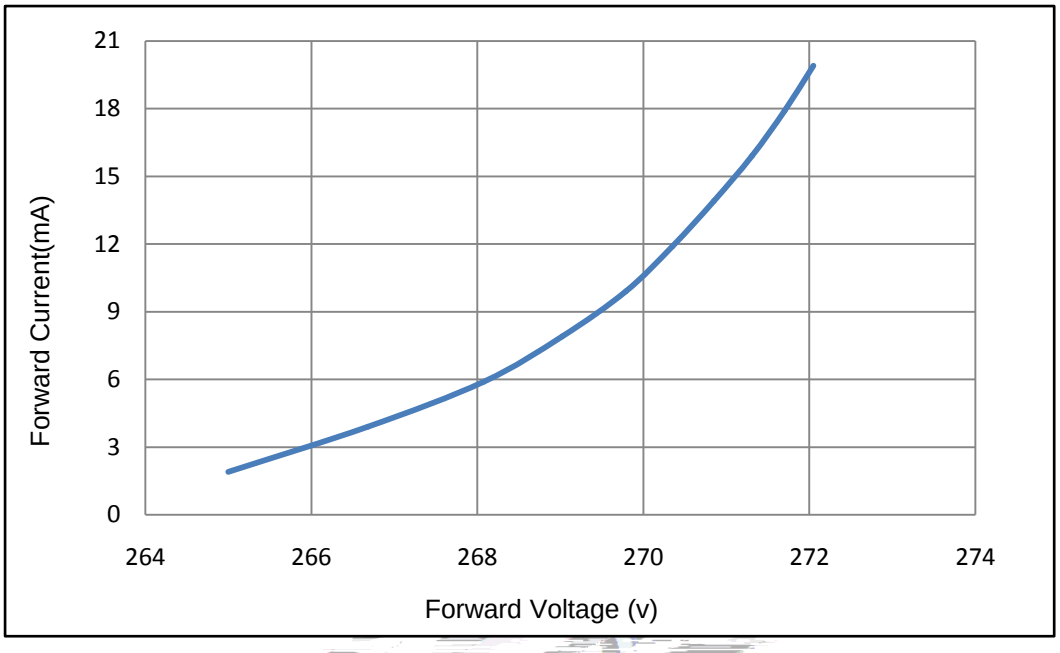


Fig 1-1 Forward Voltage Vs. Forward Current

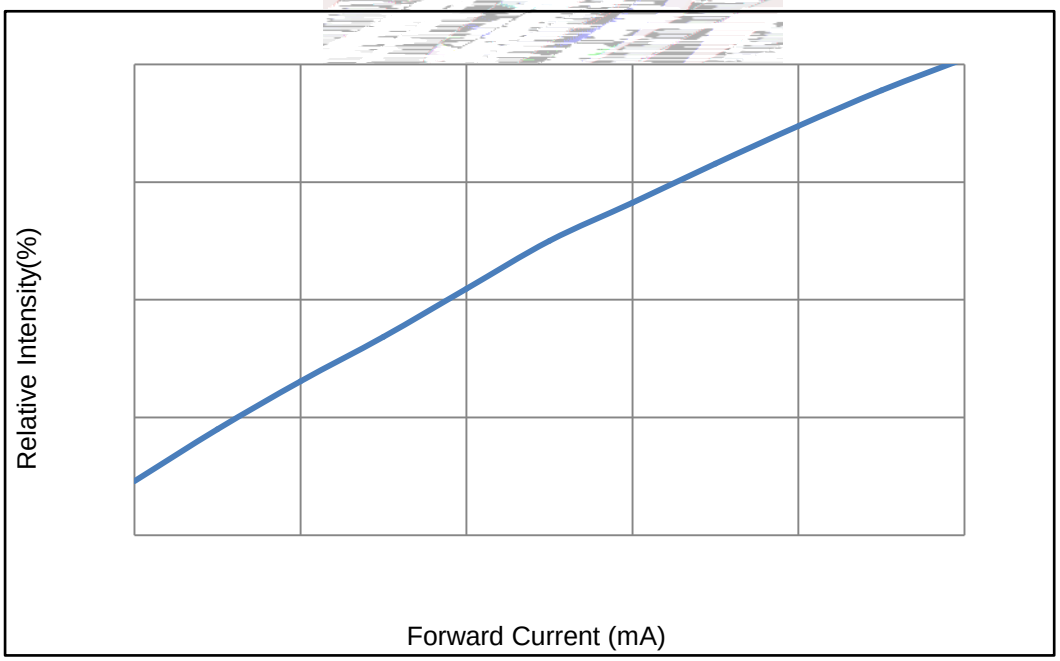


Fig 1-2 Forward Current Vs. Relative Intensity

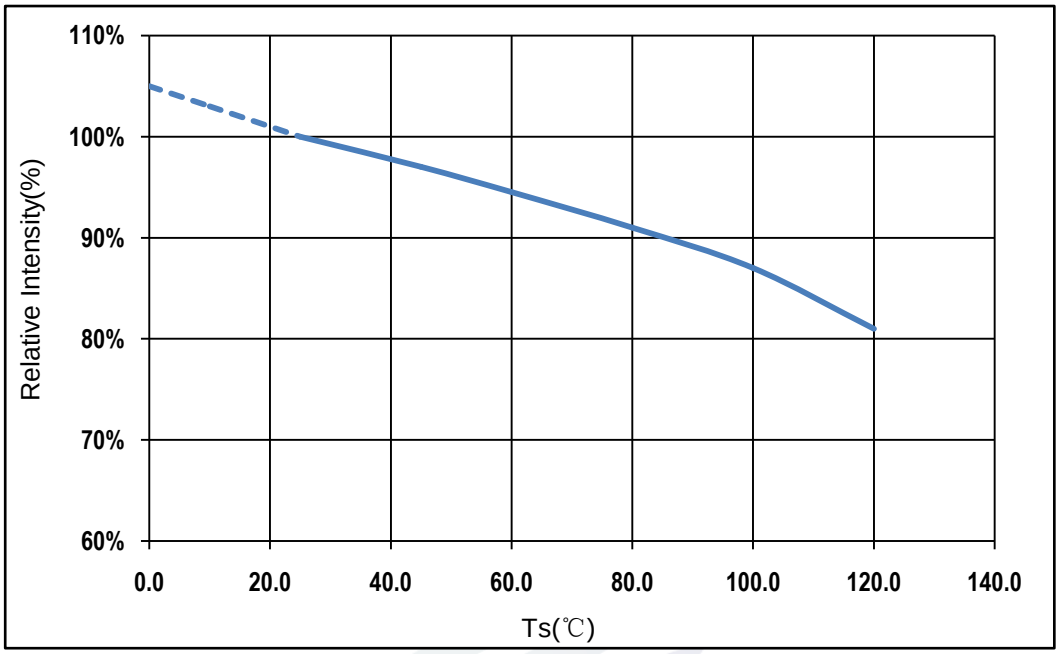


Fig 1-3 Central surface temperature Vs Relative Intensity

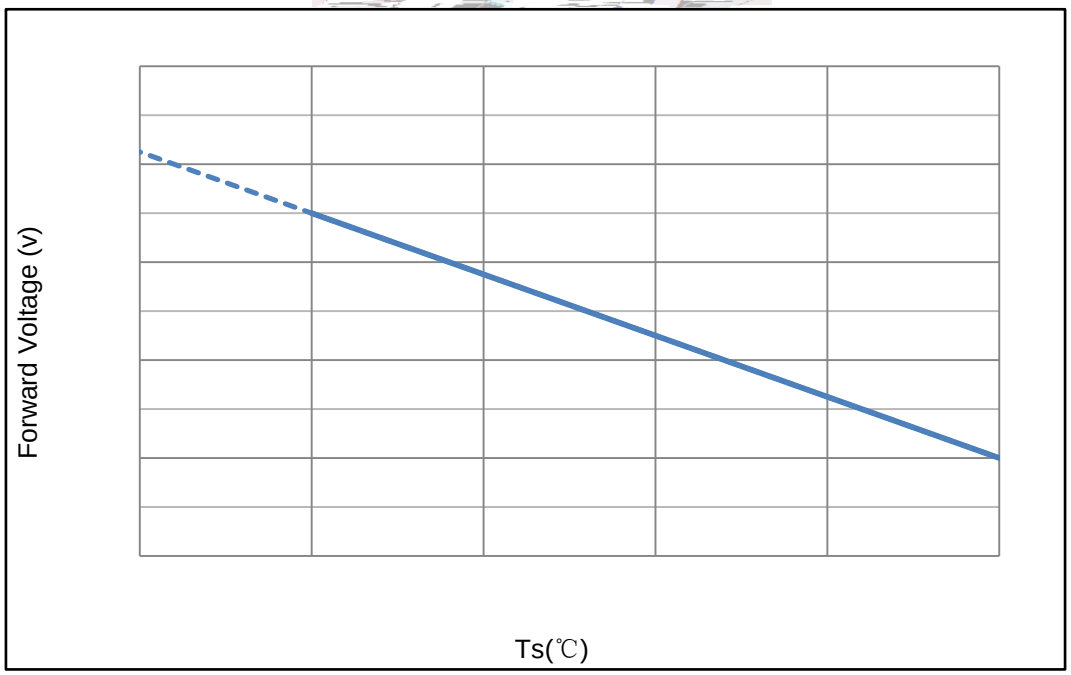


Fig 1-4 Forward Voltage Vs Central surface temperature

Fig 1-6 Spectrum Distribution

2. Packaging

2.1 Packaging Specification

2.3 Cardboard Box

Fig.2-4Cardboard Box

2.4 Reliability Test Items And Conditions

Table 2-3 Reliability Test Items And Conditions

TestItems	Ref.Standard	Test Condition	Time	Quantity	Ac/Re /
Thermal Shock	JEITAED-4701 300307	-40 15min 10s 100 15min	100 cycle	20pcs	0/1
Switching Test	/	25℃, On 2.5min Off 2.5min	2500cycle	20pcs	0/1
Life Test	JESD22-A108	Ta=25 I_F=10mA	1000hrs	10pcs	0/1
High Temperature High Humidity Life Test	JESD22-A101	60 / 90%R_H I_F=10mA	500hrs	10pcs	0/1

2.5 Criteria For Judging Damage

Table 2-4 Criteria For Judging Damage

Test Items	Symbol	Test Condition	Criteria For Judgement	
			Min.	Max.
Forward Voltage	V_F	I_F=10mA	L.S.L*)x0.90	U.S.L*)x1.1
Luminous Flux		I_F=10mA	No open circuit, shortcircuit or flicke ,	

Notes

1.U.S.L: Upper standard level L.S.L: Lower standard level

2.

3. Handling Precautions

3.1 Handling Precautions

(1) LED operating environment and sulfur element composition cannot be over 100PPM in the LEDmating usage material. This is provided for informational purposes only and is not a warranty or endorsement.LED LED 100PPM.

(2) In order to prevent ex- ternal material from getting into the inside of LED, which may cause the malfunction of LED, the single content of Bromine element is required to be less than 900PPM,the single content of Chlorine elementis required to be less than 900PPM,the total content of Bromine element and Chlorine element in the external materials of the application products is required to be less than 1500PPM. This is provided for informational purposes only and is not a warranty or endorsement. LED LED 900PPM 900PPM 1500PPM.

(3) VOCs (Volatile organic compounds) emitted from materials used in the construction of fixtures can penetrate silicone encapsulants of LEDs and discolor when exposed to heat and photonic energy. The result can be a significant loss of light output from the fixture. Knowledge of the properties of the materials selected to be used in the construction of fixtures can help prevent these issues. Refond advises against theuse of any chemicals or materials that have been found or are suspected to have an adverse affect on device performance or reliability. To verifycompatibility, Refond recommends that all chemicals and materials be tested in the specific application and environment for which they are intended tobe used. Attaching LEDs, do not use adhesives that outgas organic vapor. LED

LED

LED

LED

(4) Handle the component along the side surface by using forceps or appropriate tools; do not directlytouch or Handle the silicone lens surface, it may damage the internal circuitry.

Fig 4-1Clip filament specification

(5) In designing a circuit,the current through each LED must be exceed the absolute maximum rating specified for each LED.In the meanwhile,resistors for protection should be applied,otherwise slight voltage shift will cause big current change,burn out may happen. The driving circuit must be designed to allow forward voltage only when it is ON or OFF.If the reverse voltage is applied to LED, migration can be generated resulting in LED damage.

LED

LED

(6) Thermal Design is paramount importance because heat generation may result in the Characteristics decline,such as brightness decreased,Color change and so on.Please consider the heat generation of the LEDs when making the system design.LED

LED

(7) Compared to standard encapsulants, silicone is generally softer, and the surface is more likely to attract dust requiring special care during processing. In cases where a minimal level of dirt and dust particles cannot be guaranteed, a suitable cleaning solution must be applied to the surface after the soldering of components. Refond suggests using isopropyl alcohol for cleaning. In case other solvents are used, it must be assured that these solvents do not dissolve the package or resin. Ultrasonic cleaning is not recommended. Ultrasonic cleaning may cause