SPECIFICATION

REFOND P/N

RF-A3H10-W63P-E4B

- P$B
- Mass Production

0755-2967-5000
0755-6683-9322
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Contents

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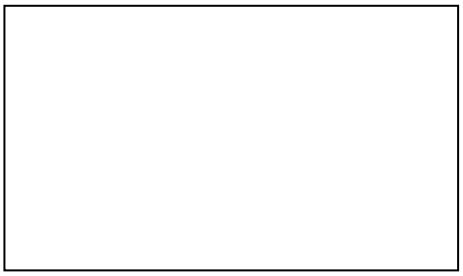
1. Description

1.1 General Description



This product uses ceramic package structure, high reliability. Widely used in car exterior lighting.
Product size(mm): 2.00X1.60X0.80mm.

. . 2.00X1.60X0.80mm

1.2 Features

Ceramic Package.

High Power and High Luminance.

Pb-free reflow soldering application.

Moisture sensitive level:Level 2. Level 2

Compliance with RoHS and REACH. PmFQ PC?AF

Qualifications: The product qualification test plan is based on the guidelines of AEC-Q102 Stress Test Qualification for Automotive Grade Discrete Semiconductors

?CA+O/ .0

1.3 Application

Automotive Exterior Lighting, Daytime Running Lamp, Headlamp, Fog lamp.

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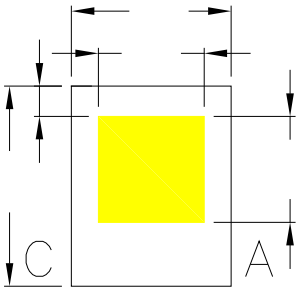
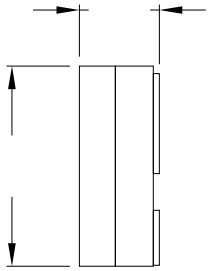
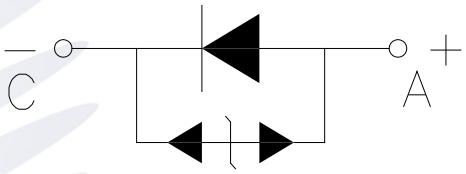
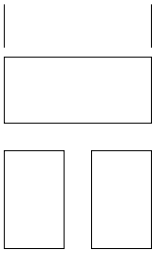
1.4 Package Dimension









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1.5 Product Parameters

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

Item	Symbol	Test Condition	Value			Unit
			Min.	Typ.	Max.	
Forward Voltage	V_F	I_F=1000mA	2.8	---	3.4	V
Reverse Current	I_R	V_R=5V	---	---	10	uA
luminous flux ( )		I_F=1000mA	360	---	460	lm
Viewing Angle		I_F=1000mA	---	120	---	deg
Color Rendering Index & '	R_a	I_F=1000mA	---	---	---	---
Thermal Resistance (Junction to Solder	Rth JS real	I_F=1000mA	---	3.1	4.3	¸ /W
	Rth JS el	I_F=1000mA	---	1.8	2.5	¸ /W

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

Parameter	Symbol	Value	Units
Power Dissipation	P_D	4080	mW
Forward Current	I_F	1200	mA
Peak Forward Current	IFP	2000	mA
Reverse Voltage	V_R	5	V
Electrostatic Discharge (HBM)	ESD	8000	V
Operating Temperature	T_{OPR}	-40 ~ +125	¸
Storage Temperature	T_{STG}	-40 ~ +125	¸
Junction Temperature	T_J	150	¸

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Notes

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

2. The above forward voltage measurement allowance tolerance is ±0.1V. ±0.1V,

3. The above color coordinates measurement allowance tolerance is 0.005. ®0.005,

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

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

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

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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, JCB

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8.At 25 e=42%. 25

42% k

9.Thermal resistance values (Rth JS Electrical) measure current is 1000mA ,Temperature constant at 25°C.

&Prf HQ Cjcarpga_j' / . . . k ? 03-A k

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1.6 Bin Range Of Forward Voltage and Luminous Flux (IF=1000mA)

BIN (IF=1000mA)

Table 1-3

V_F V	G0	H0	I0	
	2.8-3.0	3.0-3.2	3.2-3.4	
(lm)	BG	BH	FD	FE
	360-380	380-400	400-430	430-460

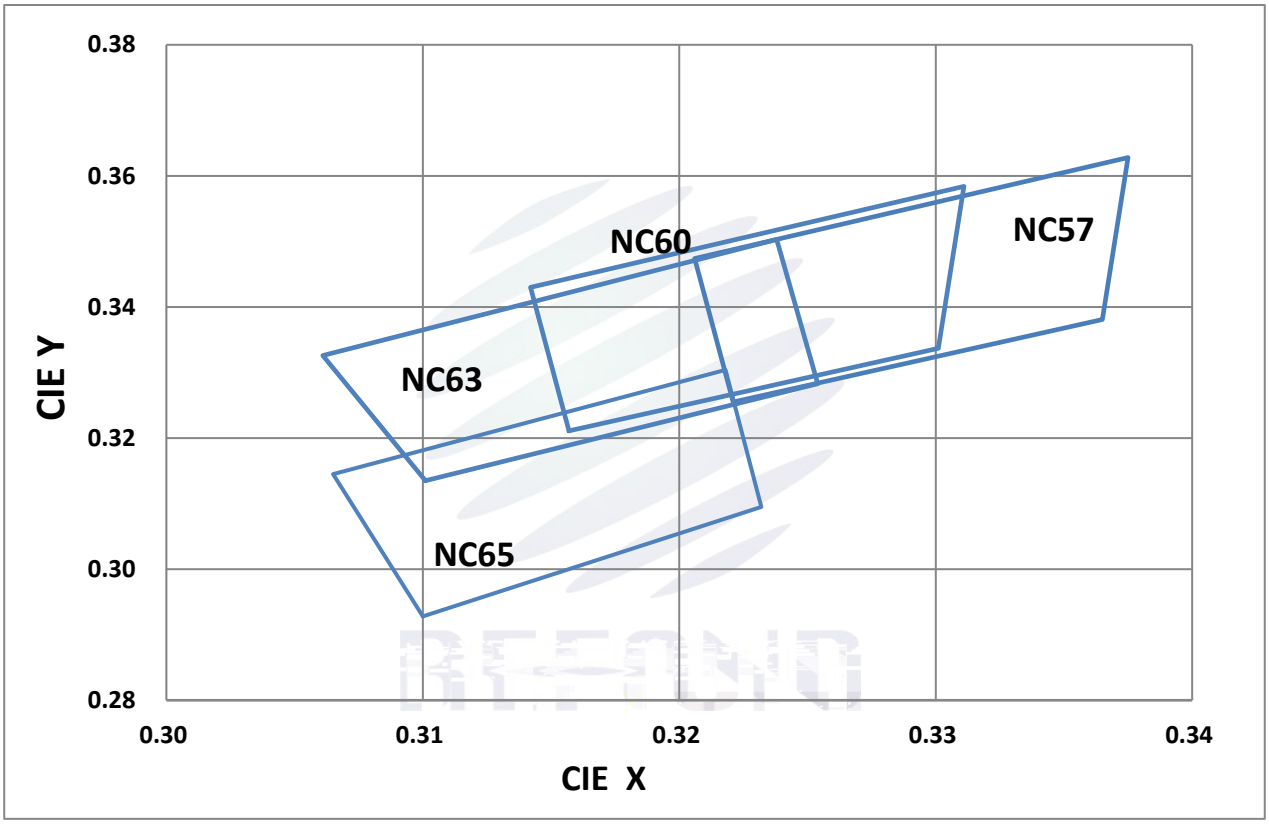

Fig. 1-6 The C.I.E Chromaticity Diagram CIE

Table 1-4

Bin Code	X1	Y1	X2	Y2	X3	Y3	X4	Y4
NC57	0.3221	0.3255	0.3206	0.3474	0.3375	0.3628	0.3365	0.3381
NC60	0.3157	0.3211	0.3142	0.3430	0.3311	0.3584	0.3301	0.3337
NC63	0.3101	0.3135	0.3061	0.3326	0.3238	0.3503	0.3254	0.3283
NC65	0.3100	0.2928	0.3065	0.3145	0.3218	0.3304	0.3232	0.3095

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1.7 Typical optical characteristics curves

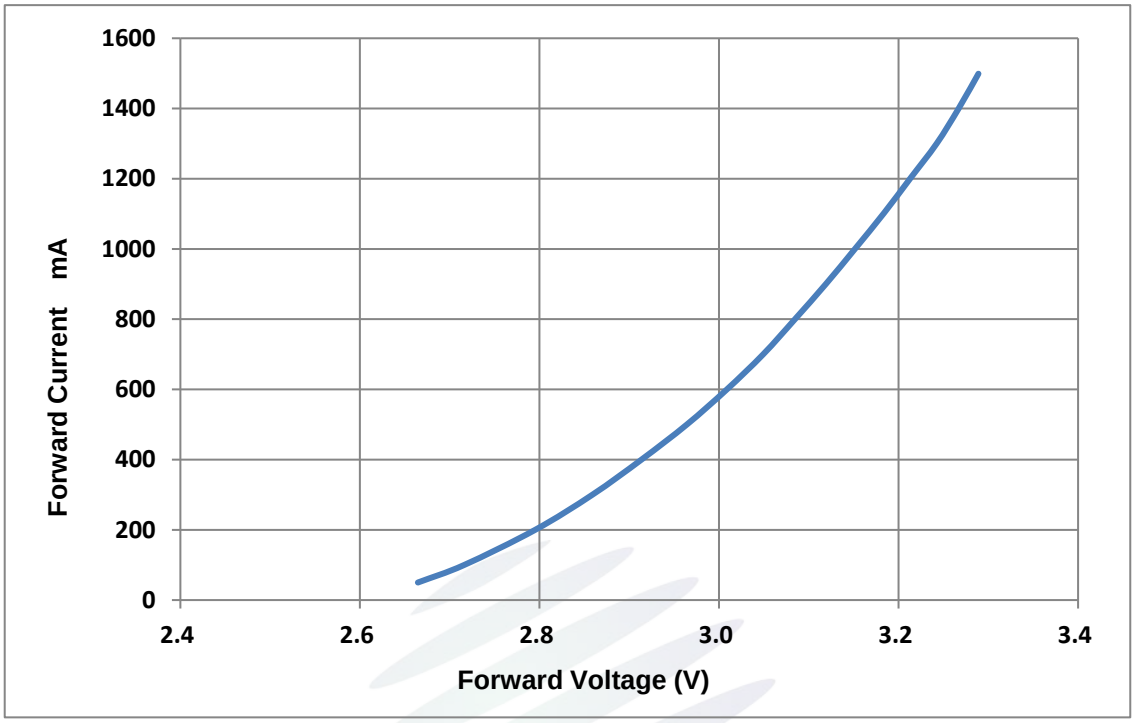

Fig 1-7 Forward Voltage Vs. Forward Current

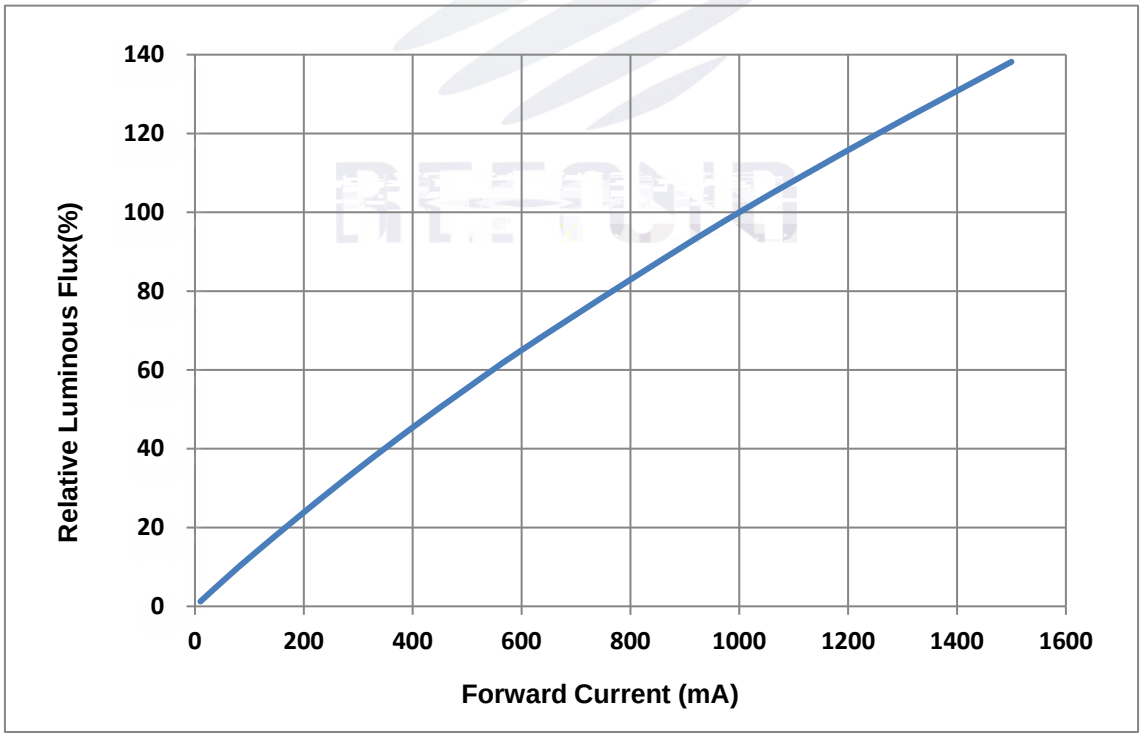

Fig 1-8 Forward Current Vs. Relative Intensity

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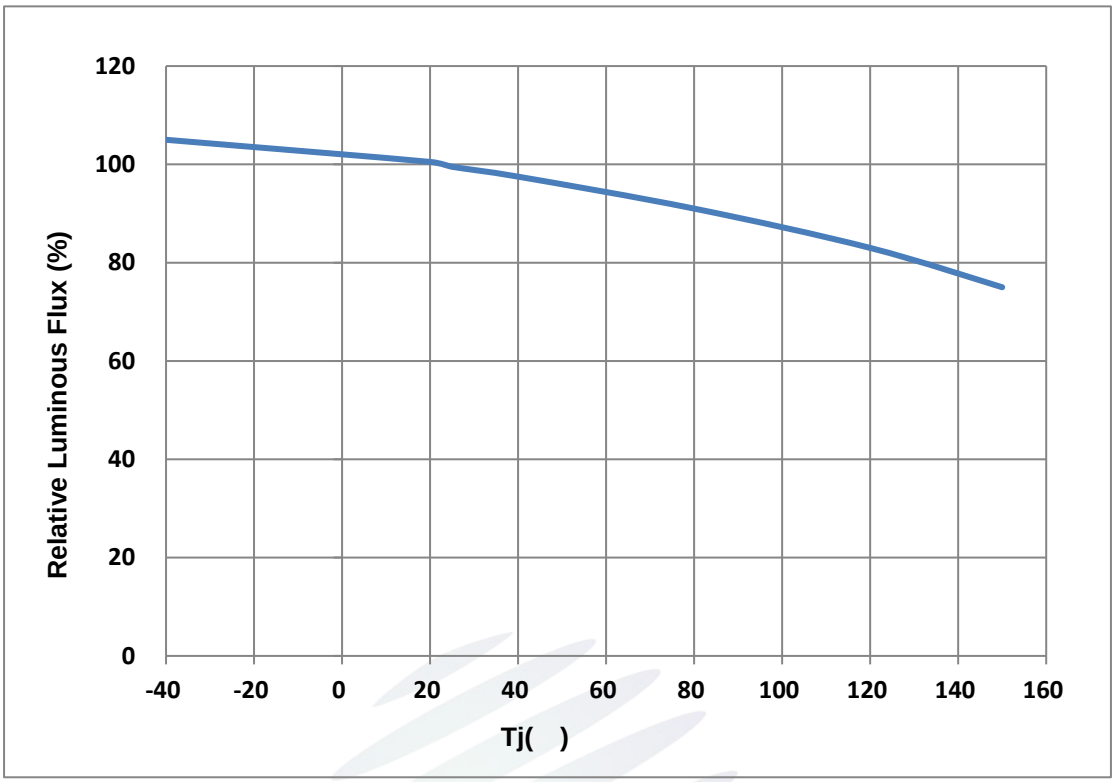

Fig. 1-9 Junction Temperature Vs Relative Intensity

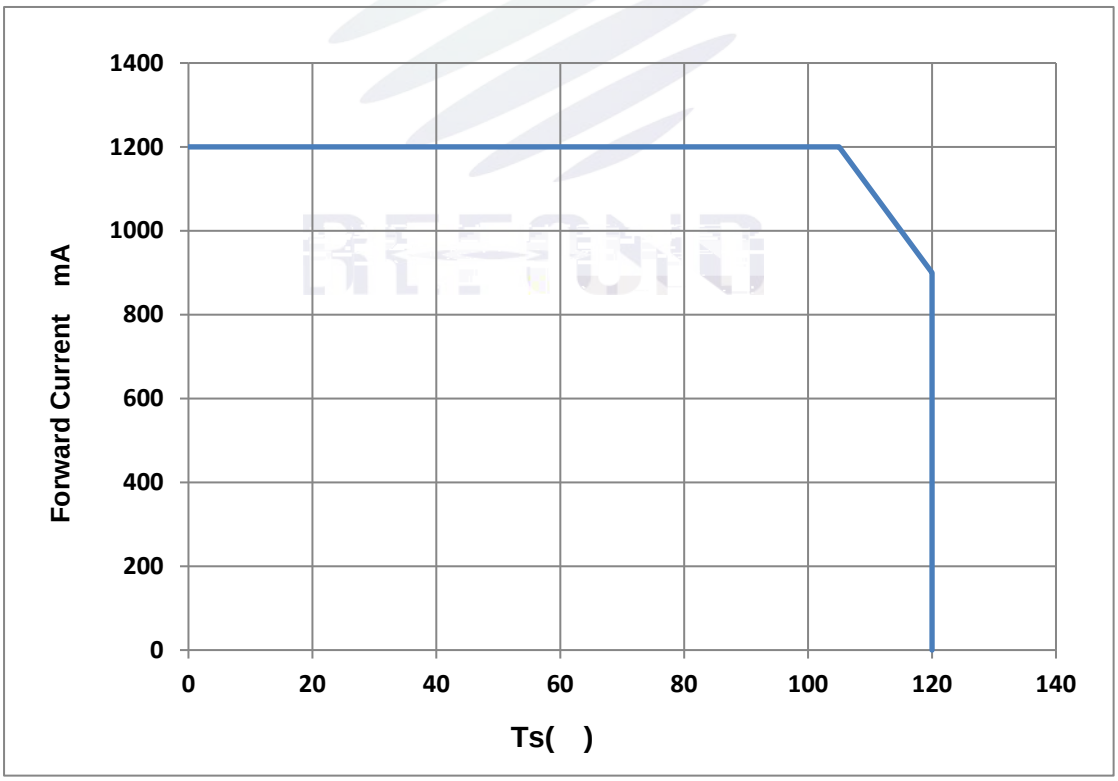

Fig 1-10 Solder Temperature Vs Forward Current

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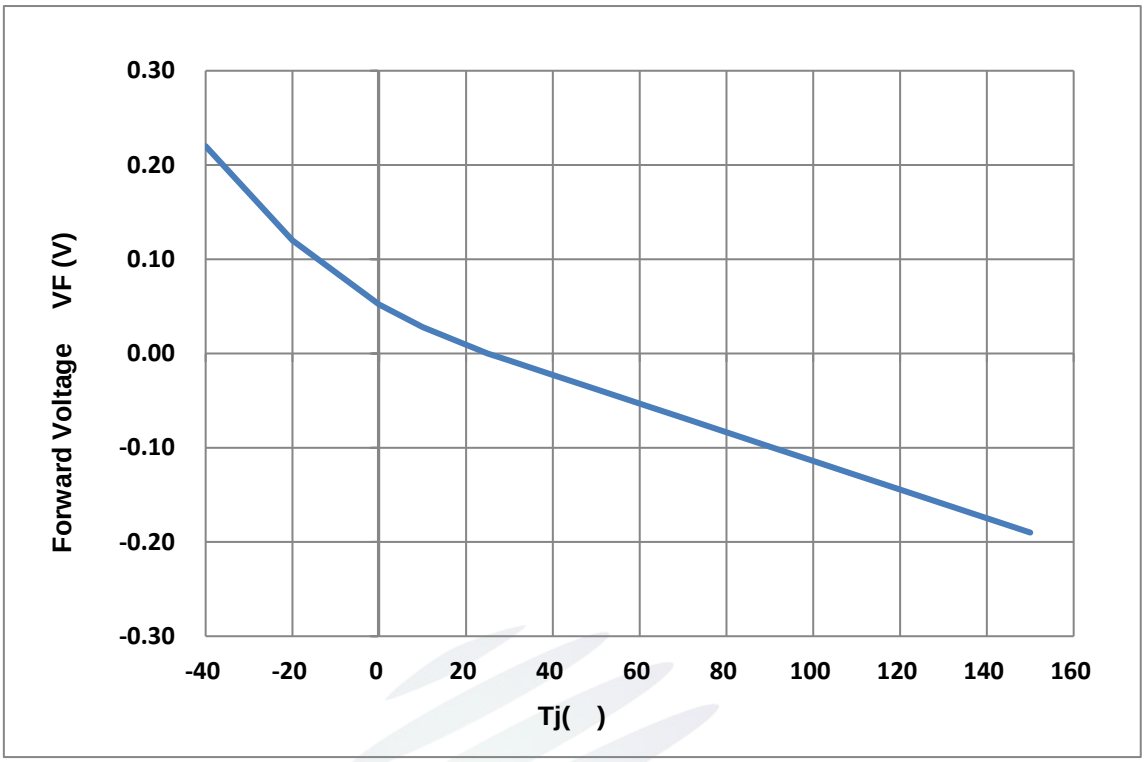

Fig. 1-11 Voltage Shift Vs Junction Temperature

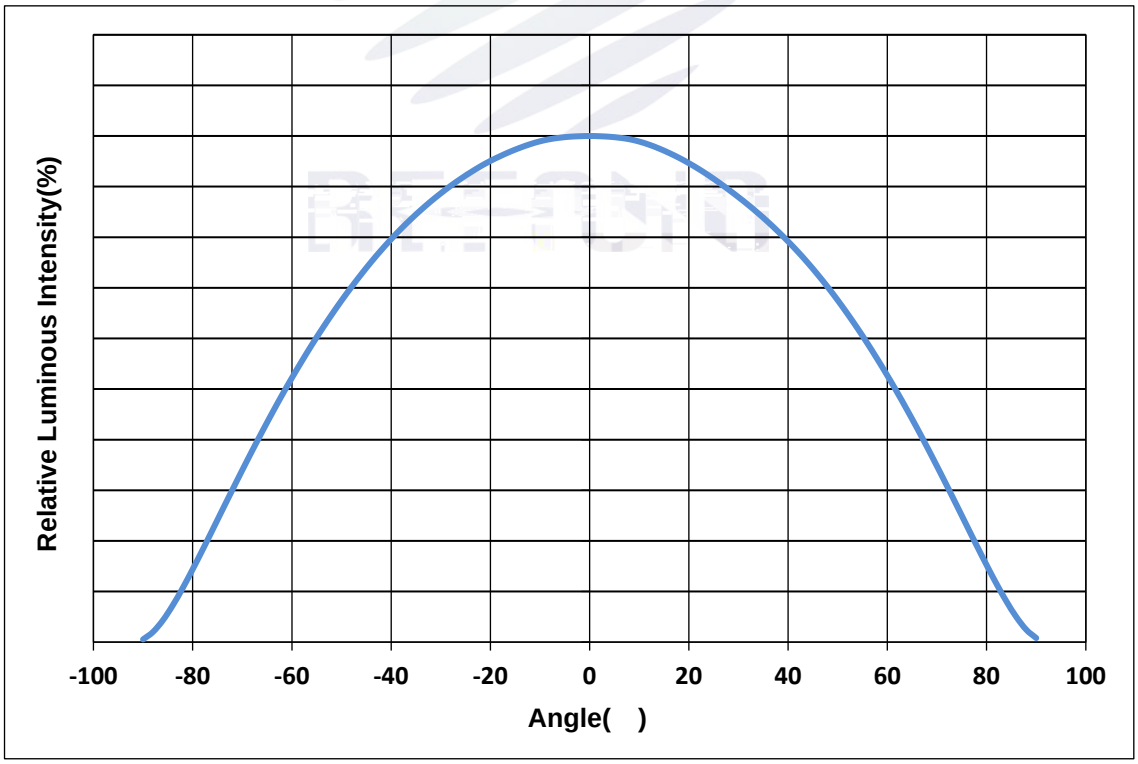

Fig 1-12 Radiation diagram

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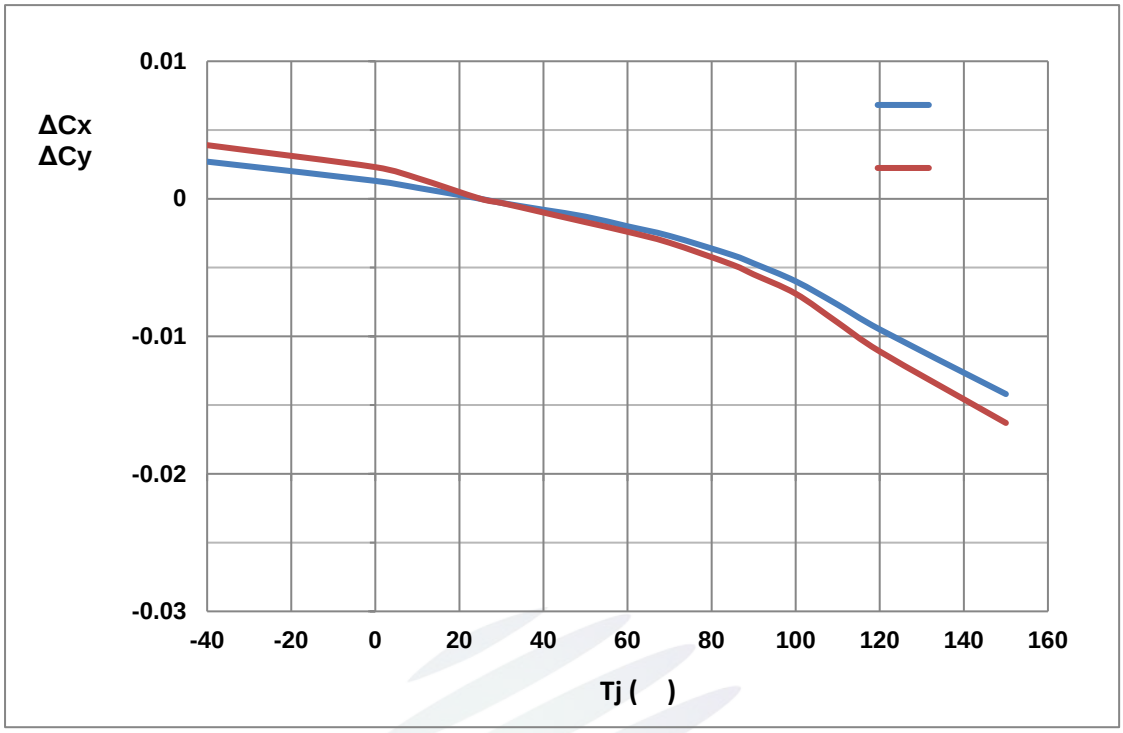

Fig. 1-13 Chromaticity Coordinate Shift Vs Junction Temperature

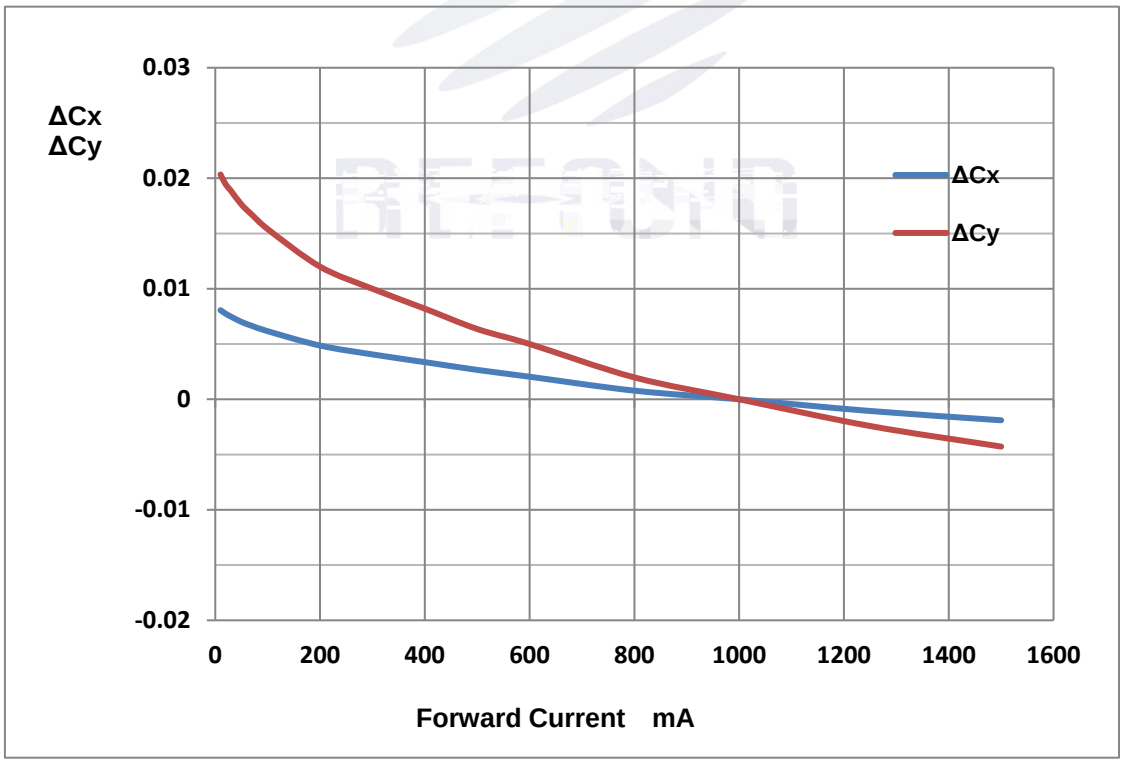

Fig. 1-14 Chromaticity Coordinate Shift Vs Forward Current

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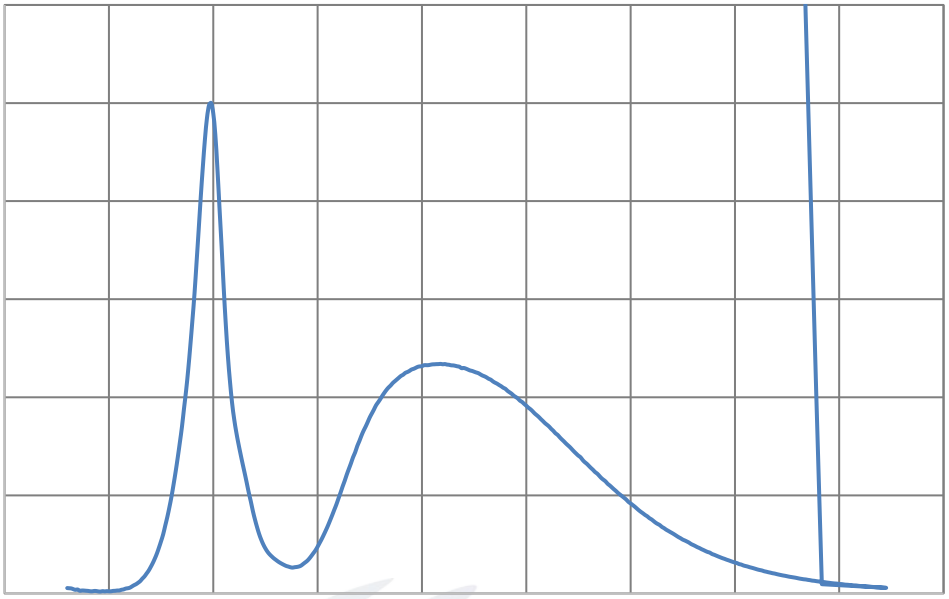

Fig 1-15 Spectrum Distribution

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2. Packaging

2.1 Packaging Specification

Package:4000pcs/reel. 2 . . . naq ᵏ

2.1.1 Carrier Tape Dimension

Fig.2-1 Carrier Tape Dimension

2.1.2 Reel Dimension

Table 2-1 Dimension

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Fig.2-2Reel Dimension

Notes

The tolerances unless mentioned ±0.1mm. Unit : mm ±0.1 ᵏ

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2.1.3 Label Form Specification

Table 2-2 Label Form Specification

PART NO	Part Number
SPEC NO	Spec Number
LOT NO	Lot Number
BIN CODE	Bin Code
	Luminous flux
X/Y	Chromaticity Bin
V_F	Forward Voltage
QTY	Packing Quantity
DATE	Made Date

Fig 2-3 Label Form Specification

2.2 Moisture Resistant Packing

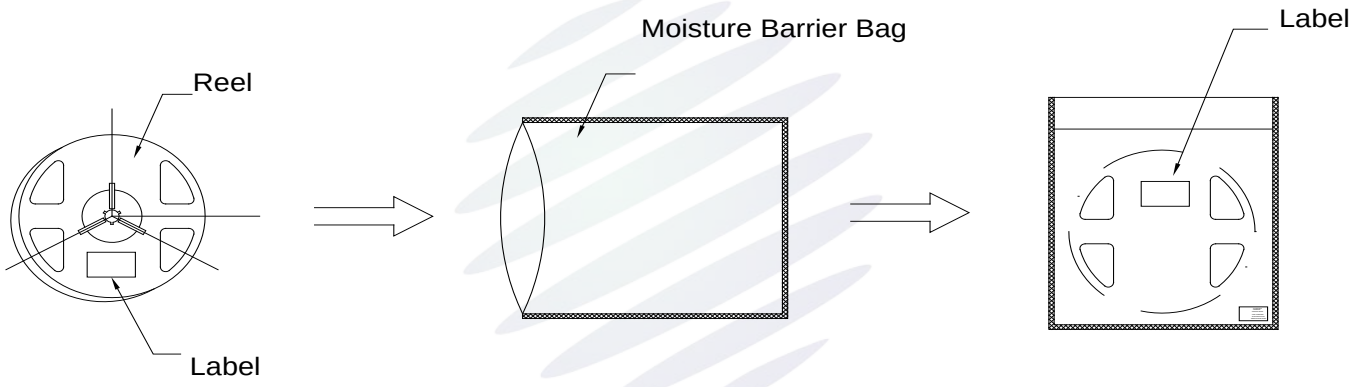

Fig.2-4 Moisture Resistant Packing

2.3 Cardboard Box

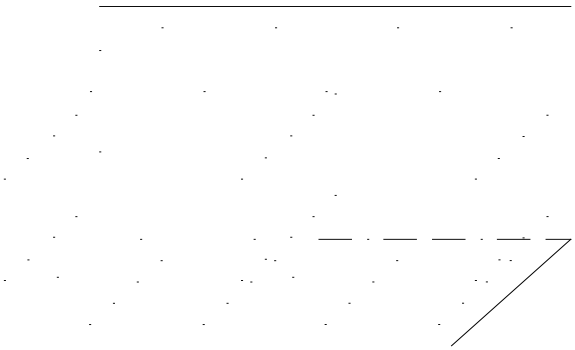

Fig.2-5 Cardboard Box

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2.5 Criteria For Judging Damage

Table Criteria For Judging Damage

Test Items	Symbol	Test Condition	Criteria For Judgement	
			Min.	Max.
Forward Voltage	V_F	I_F=1000mA	-	U.S.L*)x1.1
Reverse Current	I_R	V_R = 5V	-	U.S.L*)x2.0

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3.SMT Reflow Soldering Instructions SMT

3.1 SMT Reflow Soldering Instructions SMT

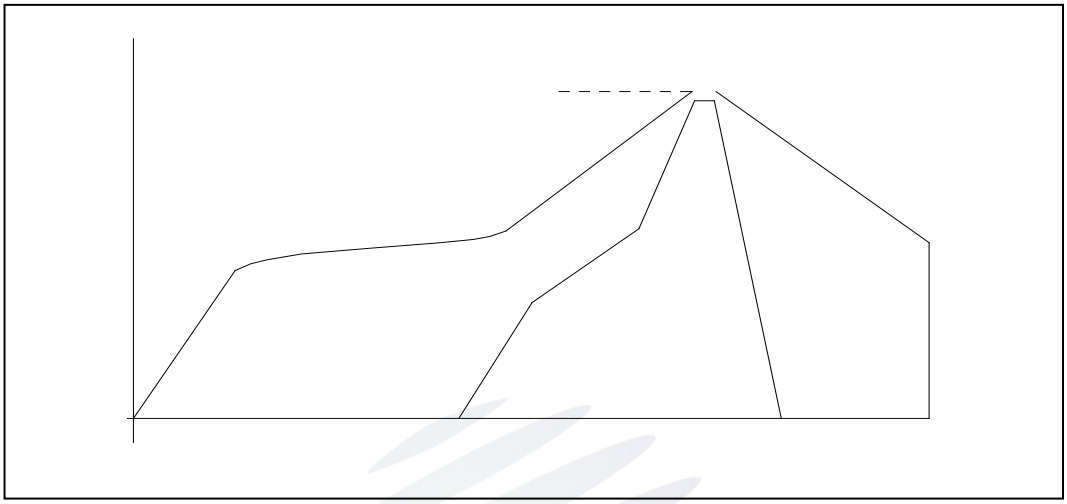

Fig.3-1 SMT Reflow Soldering Instructions SMT

Table 3-1Reflow parameters

Average temperature rise speed Tsmax T_P	3 °C/ Max 3 °C/ s
Preheating: minimum temperature (Tsmin)	150 °C
Preheating: Max temperature (Tsmax)	200 °C
Preheating: Time Tsmin Tsmax	60 - 120 60s-120s
Time limited to maintain high temperature: the temperature (T_L)	217 °C
Time limited to maintain high temperature: The Time (t_L)	60 Max 60s
Peak /Classification of temperature: / (T_P)	260 °C
Time limit classification of peak temperature time t_p	10 Max 10s
(T_P) 5 °C Hold time within 5 -C with the actual peak temperature (TP)	30 Max 30s
Cooling speed	6 °C/ Max 6 °C/ s
25 °C Needed time from 25 °C to Tp	8 Max 8 minutes

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Notes

(1)Reflow soldering should not be done more than twice. If more than 24 hours between the two soldering , LED will be damaged. 02 JCB

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(2)When soldering , do not put stress on the LEDs during heating.

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3.1.1 Repairing

Repairing should not be done after the LEDs have been soldered. When repairing is unavoidable,a double-head soldering iron should be used (as below figure). It should be confirmed in advance whether the characteristics of LEDs will or not be damaged by repairing.

LED JCB

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3.1.2 Cautions

The encapsulated material of the LEDs is silicone. Therefore the LEDs have a soft surface on the top of package. The pressure to the top surface will be impacted on the reliability of the LEDs. Precautions should be taken to avoid the strong pressure on the encapsulated part. So when use the picking up nozzle, the pressure on the silicone resin should be proper. LED JCB

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(2) Components should not be mounted on warped (non coplanar) portion of PCB. After soldering, do not warp the circuit board.LED NA@ k

(3) Do not apply mechanical force or excess vibration during the cooling process to normal temperature after soldering. Do not rapidly cool device after soldering.

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4. Handling Precautions

4.1 Handling Precautions

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

JCB /..NNK, k

(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 element is 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. JCB

JCB 7..NNK

7..NNK /3..NNK, k

(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 the use of any chemicals or materials that have been found or are suspected to have an adverse affect on device performance or reliability. To verify compatibility, Refond recommends that all chemicals and materials be tested in the specific application and environment for which they are intended to be used. Attaching LEDs, do not use adhesives that outgas organic vapor. JCB

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

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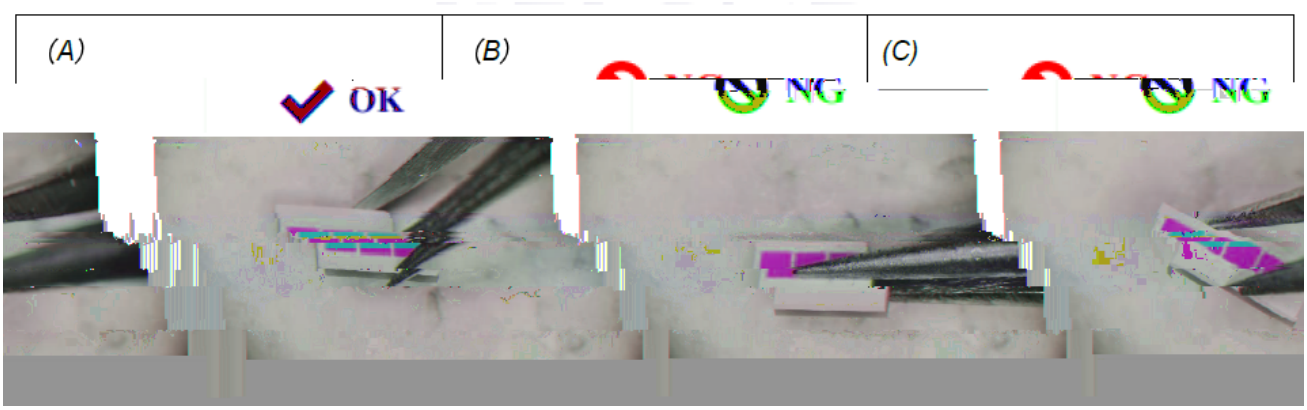

Fig 4-1 Cautions

(5) In designing a circuit, the current through each LED can not 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. JCB

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(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 JCB

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(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 damage to the LED.

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Table 4-1Storage

Conditions		Temperature	Humidity	Time
Storage	Before Opening Aluminum Bag	30¸	75%	Within 1 Year From Date
	After Opening Aluminum Bag	30¸	60%	Recommended for use within 24 hours 24
Baking		60®5¸	-	24hours 24

(8) If the moisture absorbent material silica gel has faded away or the LEDs have exceeded the storage time, baking treatment should be performed after unpacking and based on the following condition 60±5 for above 24 hours.

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If the package is flatulence or damaged, please notify the sales staff to assist.

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(9)Similar to most Solid state devices; LEDs are sensitive to Electro-Static Discharge (ESD) and Electrical Over Stress (EOS). JCB k

(10) Other points for attention, please refer to our relevant information. k

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Version History/

Date	Revisor	Version	Verifier	Remarks
2022/05/10	Xian Zhou	E0	Zhu Yiming	New issue

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Declare

This specification is written both in English and in Chinese and the latter is formal.

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