

**Pb-free  
HEAT**



# 1315C Series

Top View Type Tri-color

## Features

Package	Top View Type, Milky White Resin
Product features	<ul style="list-style-type: none"> <li>• Outer Dimension 1.65 x 2.1 x 0.4 mm( L x W x H )</li> <li>• Temperature range. Storage Temperature : -40°C~100°C Operating Temperature : -40°C~ 85°C</li> <li>• No lead package</li> <li>• Lead-free soldering compatible</li> <li>• RoHS compliant</li> </ul>
Dominant wavelength	Blue : 470nm (KB) Green : 533nm (KG) Orange : 605nm (FA) Red : 626nm (FR)
Half Intensity Angle	KB/KG : $\theta_x = 120 \text{ deg.}, \theta_y = 135 \text{ deg.}$ FA/FR : $\theta_x = 110 \text{ deg.}, \theta_y = 125 \text{ deg.}$
Die materials	KB,KG : InGaN, FA,FR : AlGaInP
Rank grouping parameter	Sorted by luminous intensity and wavelength per rank taping
Assembly method	Auto pick & place machine (Auto Mounter)
Soldering methods	Reflow soldering and manual soldering
Taping and reel	4,000pcs per reel in a 8mm width tape. (Standard) Reel diameter: $\phi 180\text{mm}$
ESD	1kV (HBM)

## Recommended Applications

Cellular Phone, Mobile Equipment

## Color Variations and Luminous Intensity

(Ta=25°C)

Part No.	Die Name	Material	Emitted Color	Lens Color	Dominant Wavelength $\lambda d$ (nm)		Luminous Intensity $I_v$ (mcd)		
					TYP.	$I_F$	MIN.	TYP.	$I_F$
					FAGB1315C	KB	InGaN	Blue	Milky White
KG	InGaN	Green	533	10		105	156	10	
FA	AlGaInP	Orange	605	10		30	60	10	
FRGB1315C	KB	InGaN	Blue	Milky White	470	10	22	43	10
	KG	InGaN	Green		533	10	105	156	10
	FR	AlGaInP	Red		626	10	26	52	10

※Note : The luminous intensity( $I_v$ ) and dominant wavelength( $\lambda d$ ) above are the setup values of the sorting machine.

(Tolerance :  $I_v \dots \pm 10\%$ ,  $\lambda d \dots \pm 2\text{nm}$ )

**Absolute Maximum Ratings**

(Ta=25°C)

Item	Symbol	Absolute Maximum Ratings				Unit	
		KB	KG	FA	FR		
Power Dissipation	$P_d$	98	98	81	81	mW	
Total Value of Power Dissipation	$P_d$	150 <sup>※1</sup>				mW	
Forward Current (One diode lighted.)	$I_F$	25	25	30	30	mA	
Forward Current (All diodes lighted.)	$I_F$	15	15	15	15	mA	
Pulse Forward Current <sup>※2</sup>	$I_{FRM}$	100	100	100	100	mA	
Derating (Ta=25°C or higher)	DC(One diode lighted.)	$\Delta I_F$	0.33	0.33	0.40	0.40	mA/°C
	DC(All diodes lighted.)		0.20	0.20	0.20	0.20	mA/°C
	Pulse	$\Delta I_{FRM}$	1.00	1.00	1.00	1.00	mA/°C
Reverse Voltage	$V_R$	5	5	5	5	V	
Operating Temperature	$T_{opr}$	-40~+85				°C	
Storage Temperature	$T_{stg}$	-40~+100				°C	

※1 The maximum power dissipation at the time of Simultaneous three diodes lighting

 ※2  $I_{FRM}$  Measurement condition : Pulse Width  $\leq 1ms.$ , Duty  $\leq 1/20$ .

## Electro-Optical Characteristics

(Ta=25°C)

Item	Conditions	Symbol	Characteristics				Unit	
			KB	KG	FA	FR		
Forward Voltage	I <sub>F</sub> =10mA	V <sub>F</sub>	TYP.	3.2	3.2	2.0	2.0	V
			MAX.	3.7	3.7	2.5	2.5	
Reverse Current	V <sub>R</sub> =5V	I <sub>R</sub>	MAX.	100	100	100	100	μA
Peak Wavelength	I <sub>F</sub> =10mA	λ <sub>p</sub>	TYP.	465	520	609	635	nm
Dominant Wavelength	I <sub>F</sub> =10mA	λ <sub>d</sub>	TYP.	470	533	605	626	nm
Spectral Line Half Width	I <sub>F</sub> =10mA	Δλ	TYP.	25	35	15	15	nm
Half Intensity Angle	I <sub>F</sub> =10mA	2θ <sub>1/2</sub>	TYP.	120(θ <sub>x</sub> )	120(θ <sub>x</sub> )	110(θ <sub>x</sub> )	110(θ <sub>x</sub> )	deg.
				135(θ <sub>y</sub> )	135(θ <sub>y</sub> )	125(θ <sub>y</sub> )	125(θ <sub>y</sub> )	

Note: The dominant wavelength (λ<sub>d</sub>) above is the setup value of the sorting machine.  
(Tolerance: λ<sub>d</sub> ... ±2nm)

**Luminous Intensity Rank**

(Ta=25°C)

Intensity Tolerance each Rank : +/- 10%

Rank	I <sub>v</sub> (mcd)											
	FAGB1315C						FRGB1315C					
	KB		KG		FA		KB		KG		FR	
	I <sub>F</sub> =10mA						I <sub>F</sub> =10mA					
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
A	22	38	105	182	30	60	22	38	105	182	26	45
B	38						38					
C	22	38	182				22	38	182			
D	38						38					
E	22	38	105	182	60		22	38	105	182	45	
F	38						38					
G	22	38	182				22	38	182			
H	38						38					

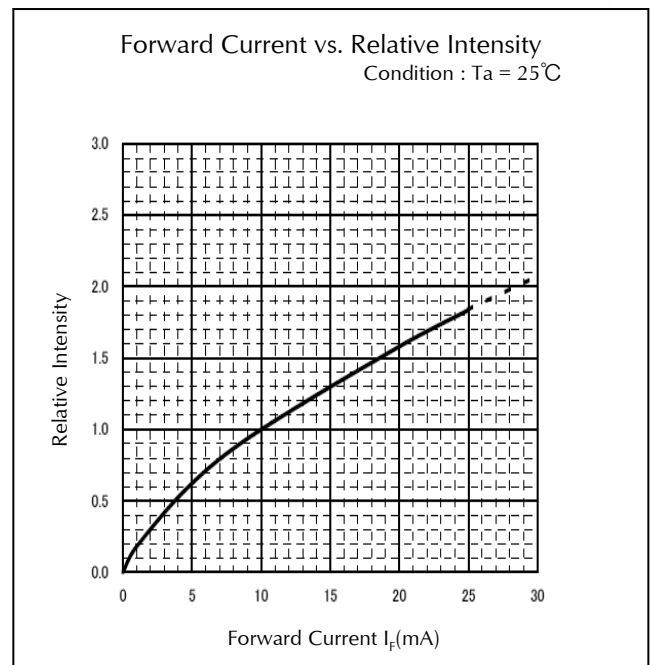
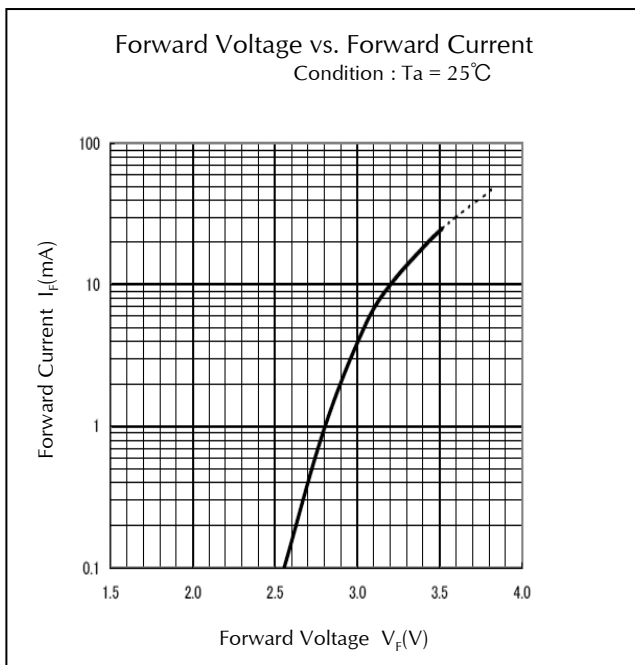
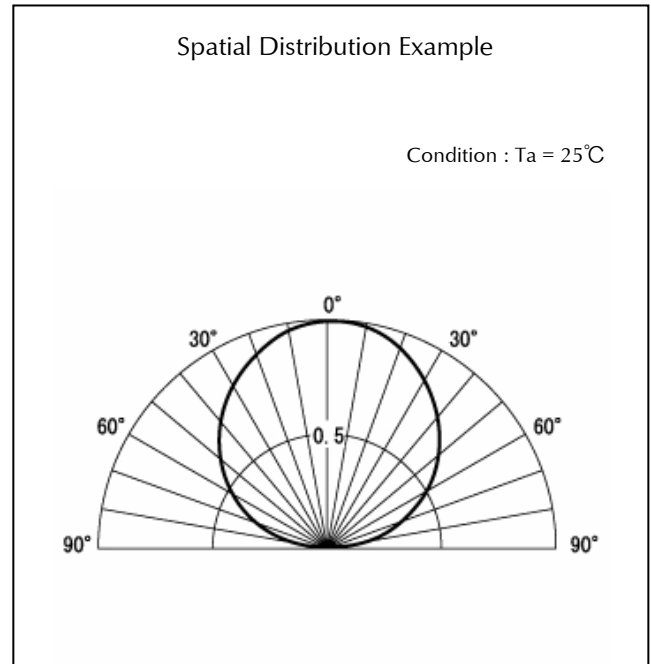
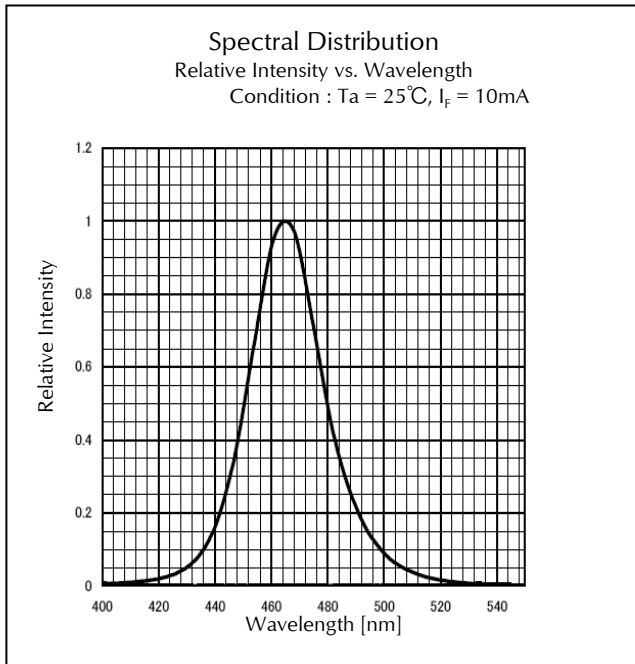
## Color Tone Groups ( $\lambda d$ )

( $T_a=25^\circ\text{C}$ )

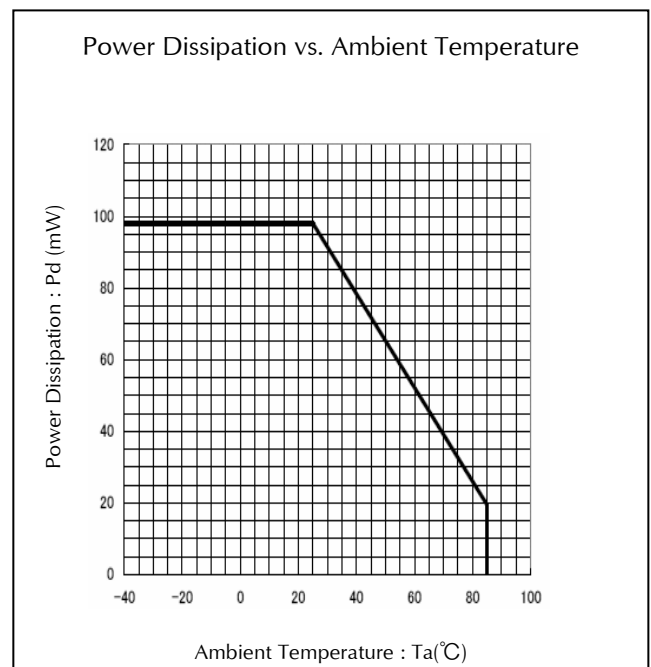
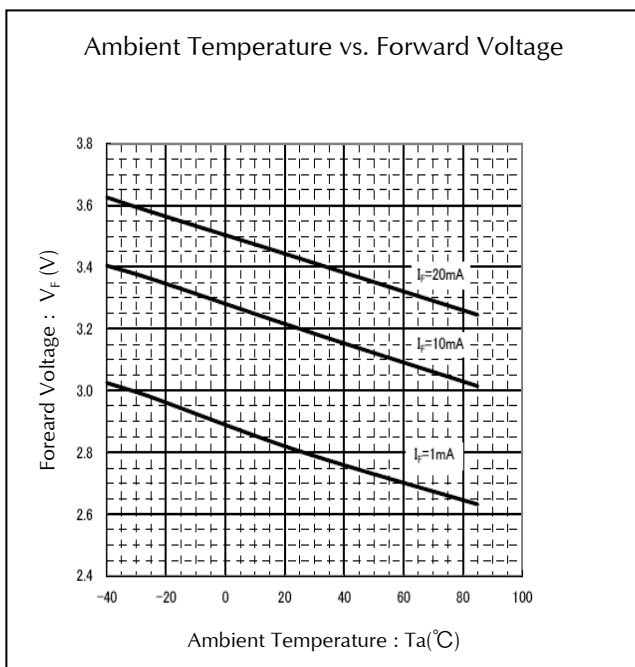
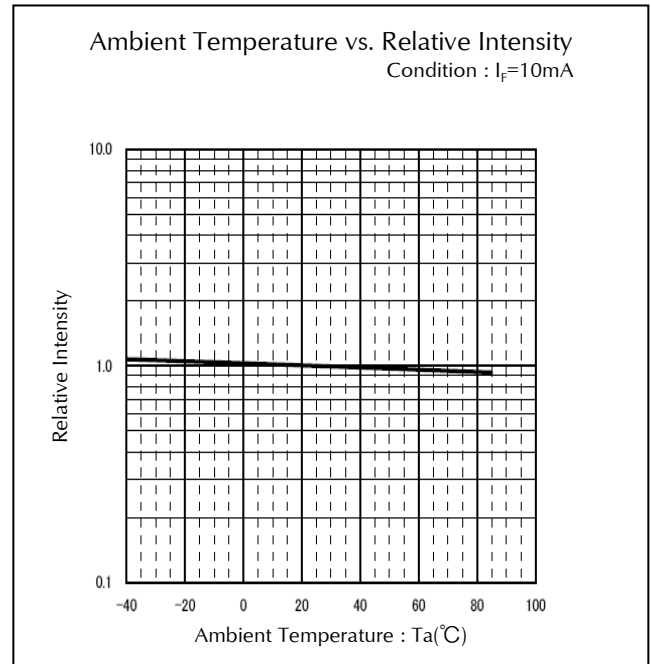
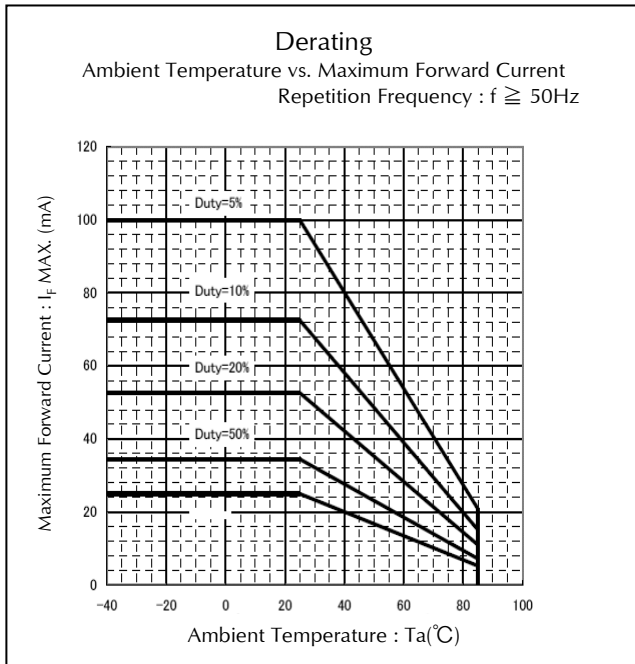
Tolerance: +/- 2nm

Rank	Dominant Wave Length $\lambda d$ (nm)											
	FAGB1315C						FRGB1315C					
	KB		KG		FA		KB		KG		FR	
	$I_f=10\text{mA}$						$I_f=10\text{mA}$					
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
A	460	470	515	550	595	613	460	470	515	550	615	635
B	470	480					470	480				

## Technical Data(KB)

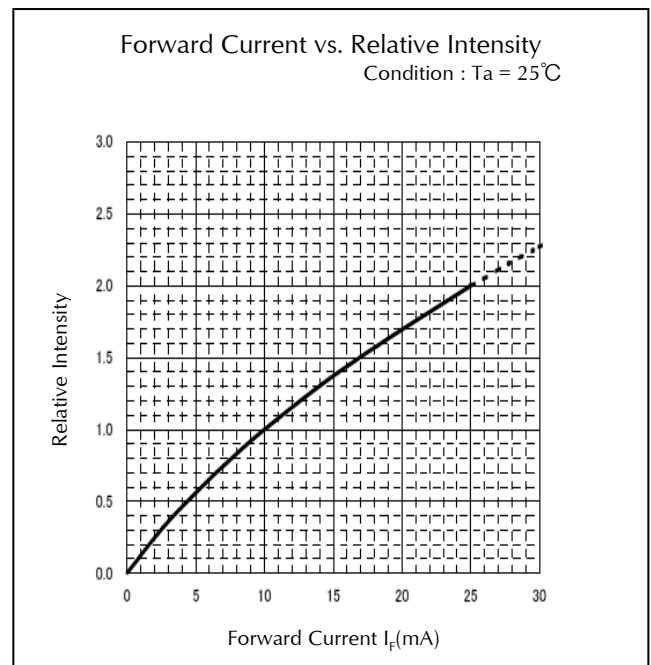
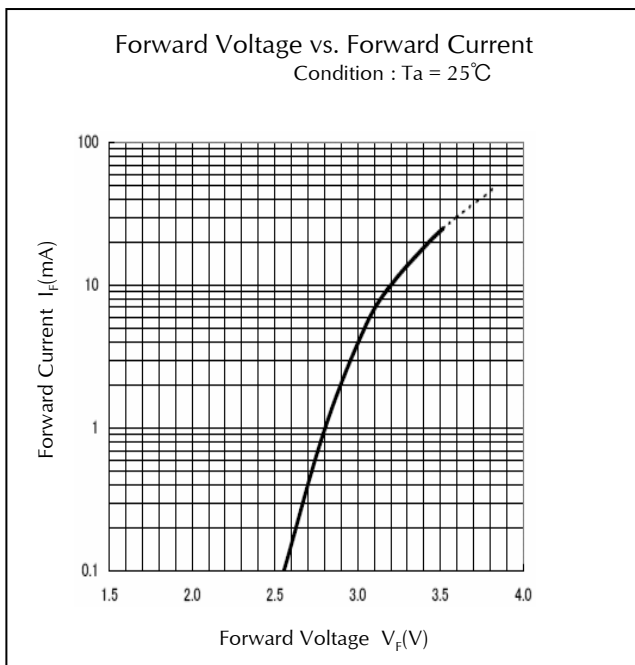
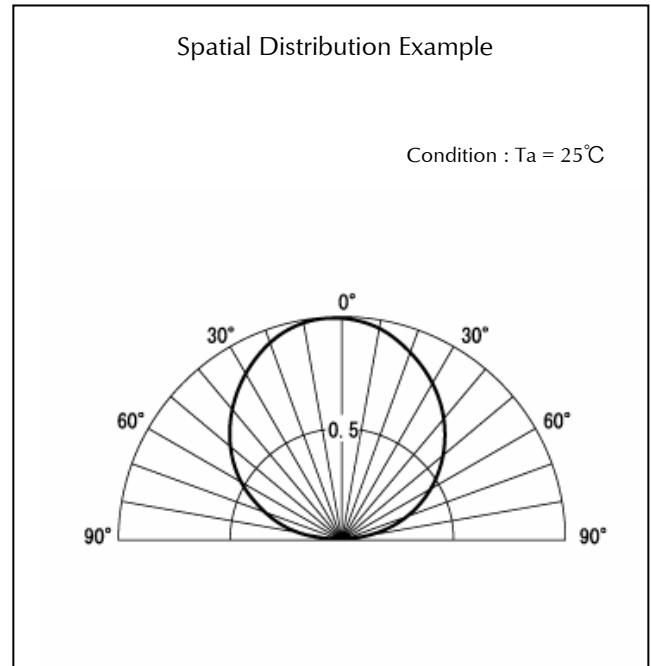
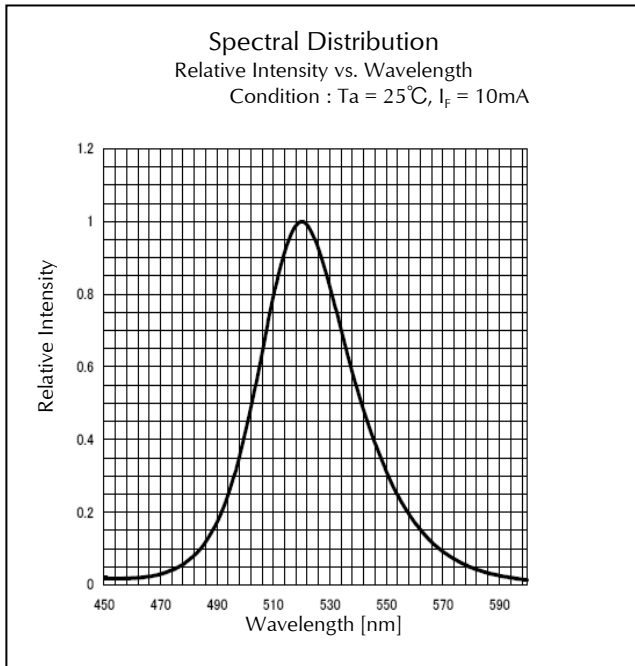


## Technical Data(KB)

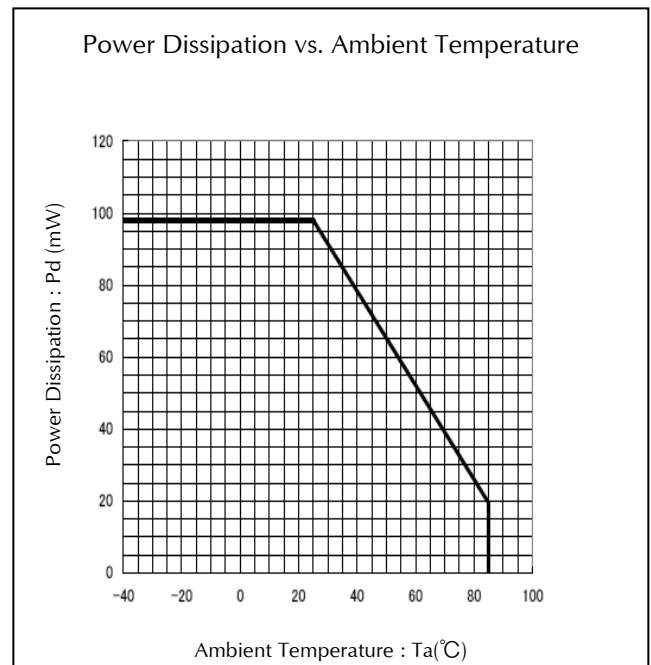
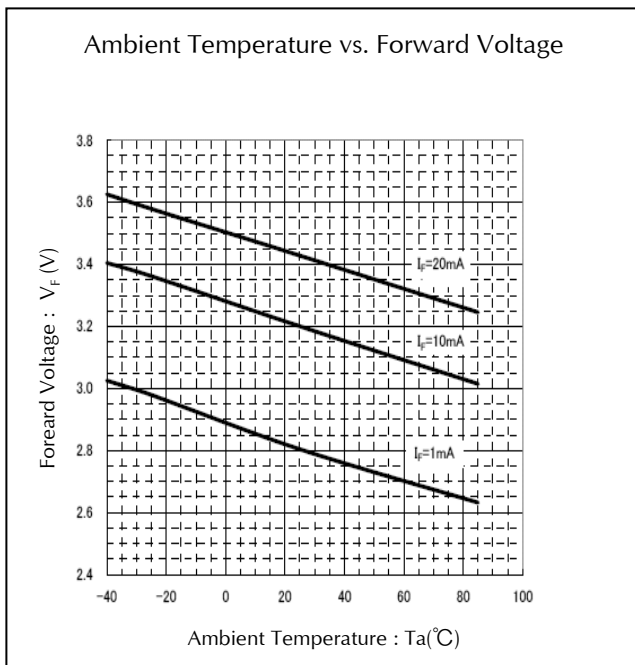
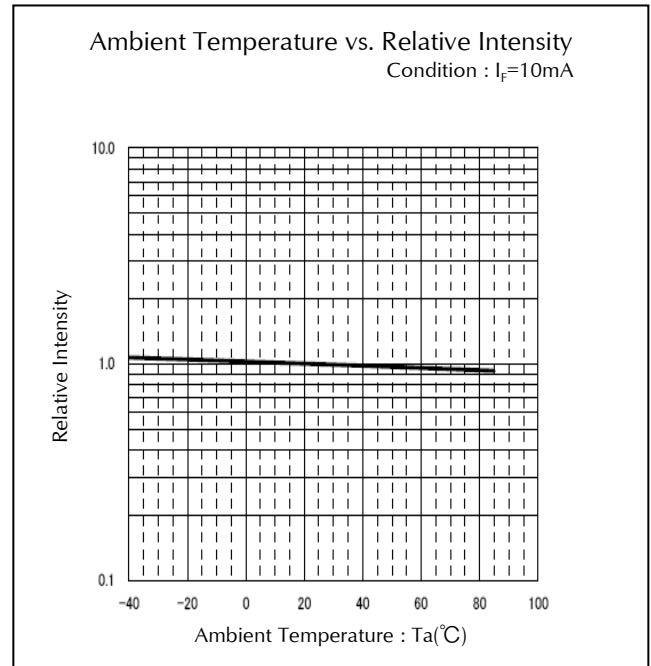
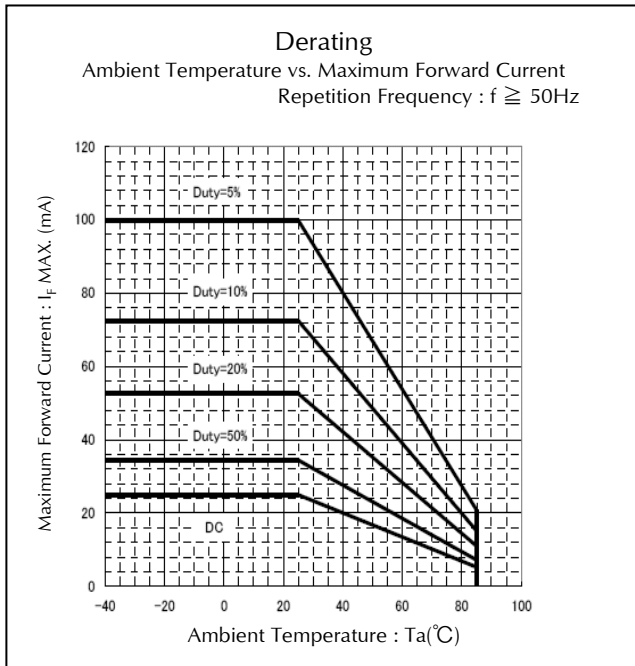




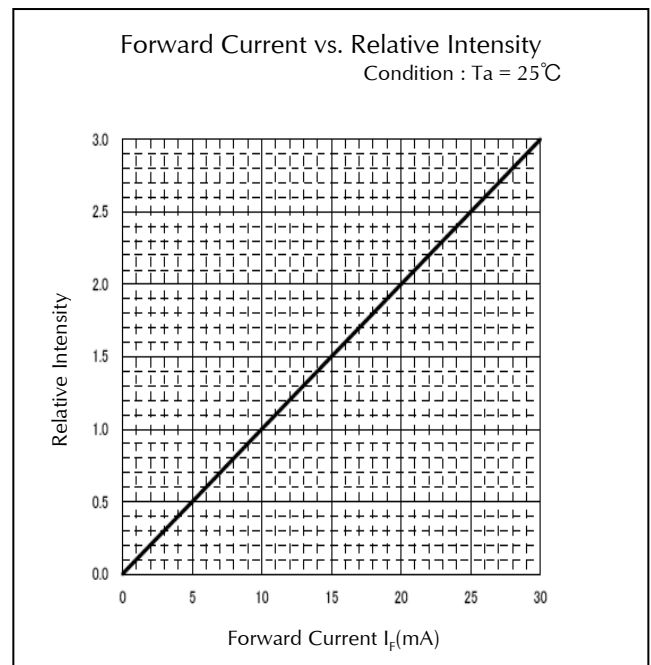
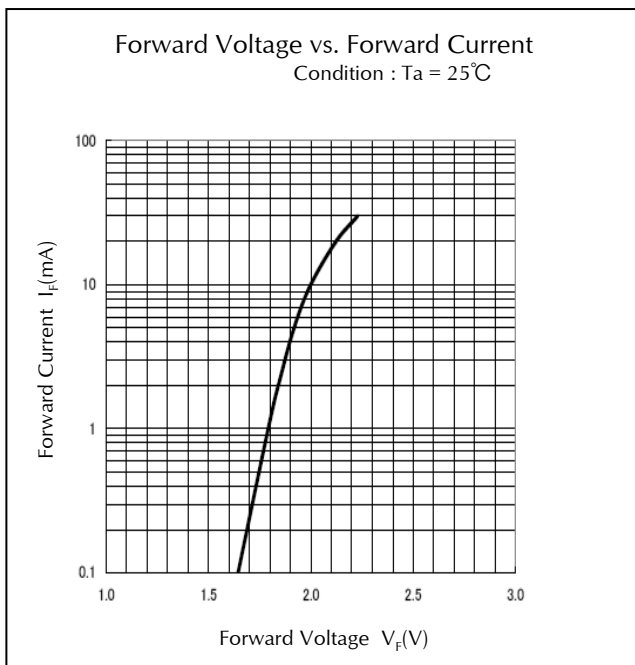
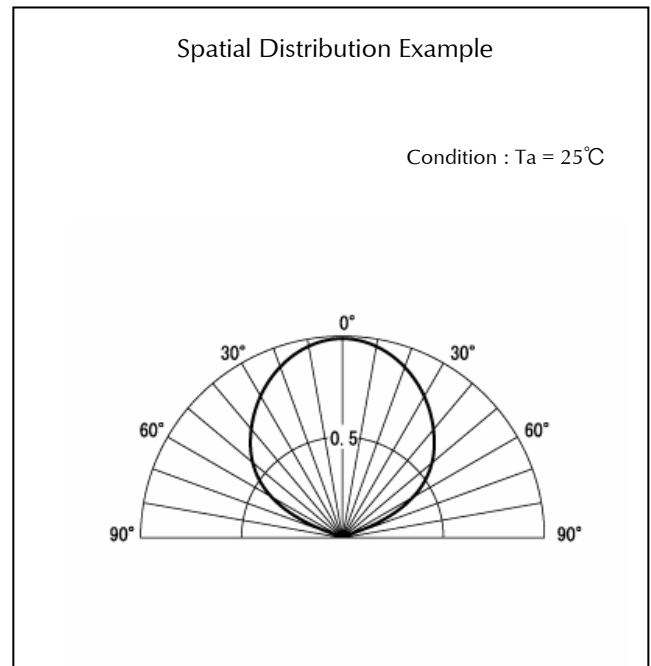
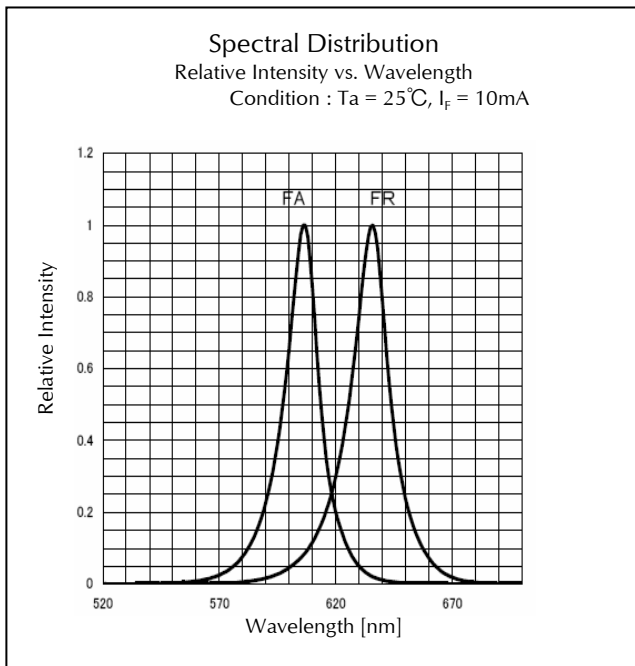
## Technical Data(KG)



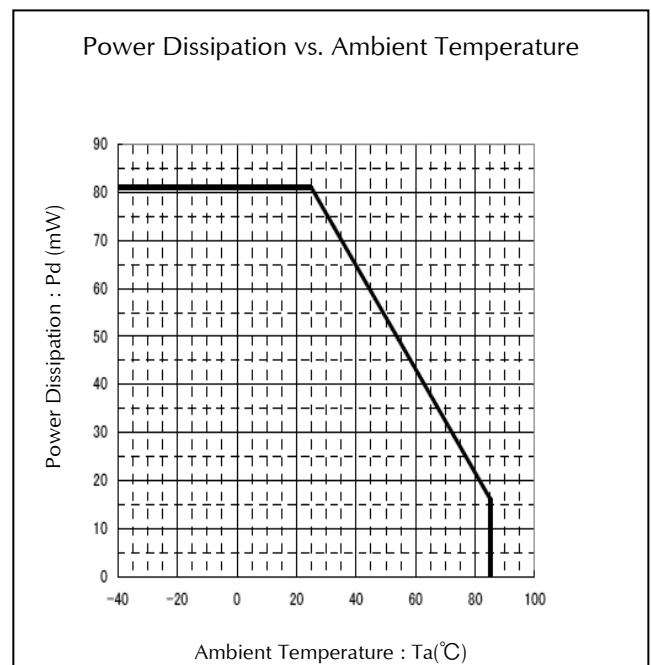
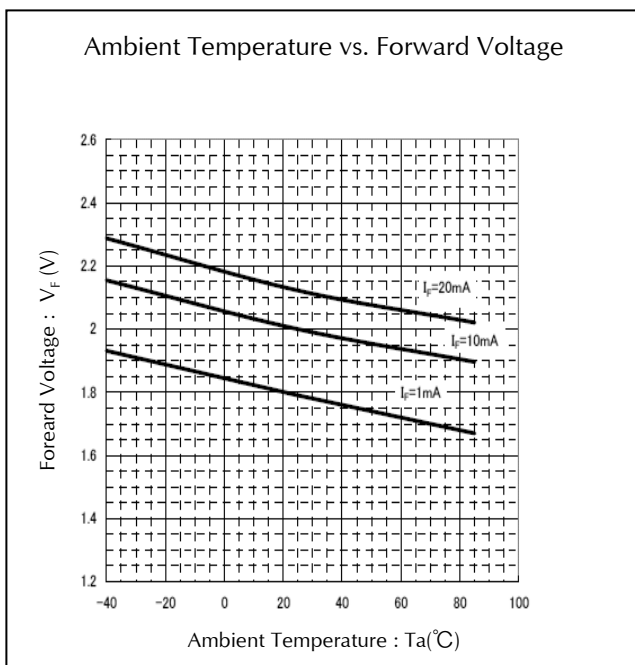
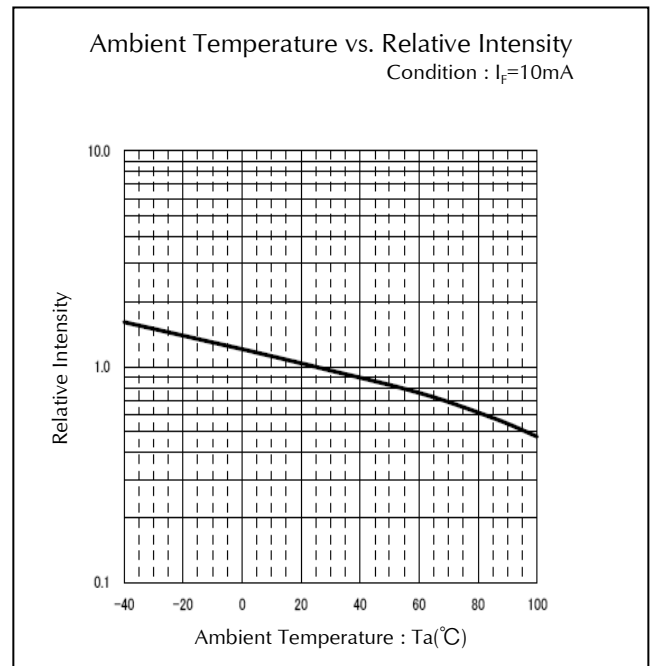
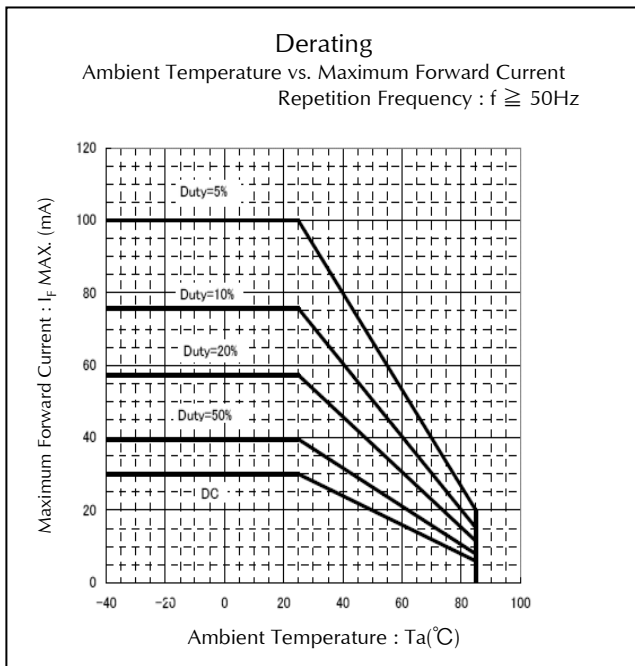
## Technical Data(KG)



## Technical Data(FA/FR)



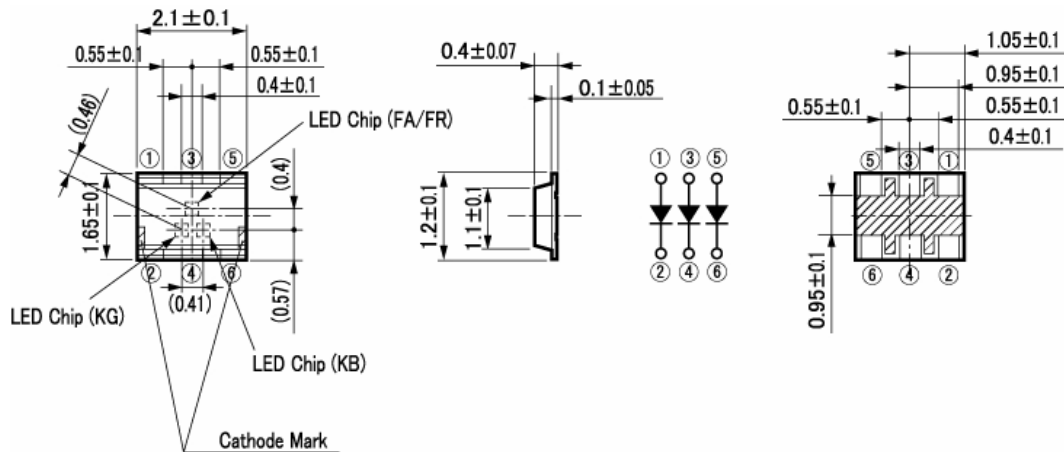
## Technical Data(FA/FR)



## Package Dimensions

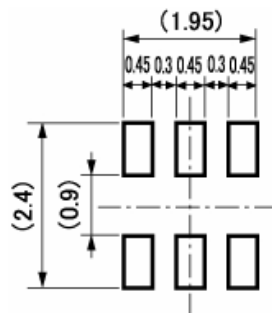
(Unit: mm)

Weight:(2.4)mg



## Recommended Soldering Pattern

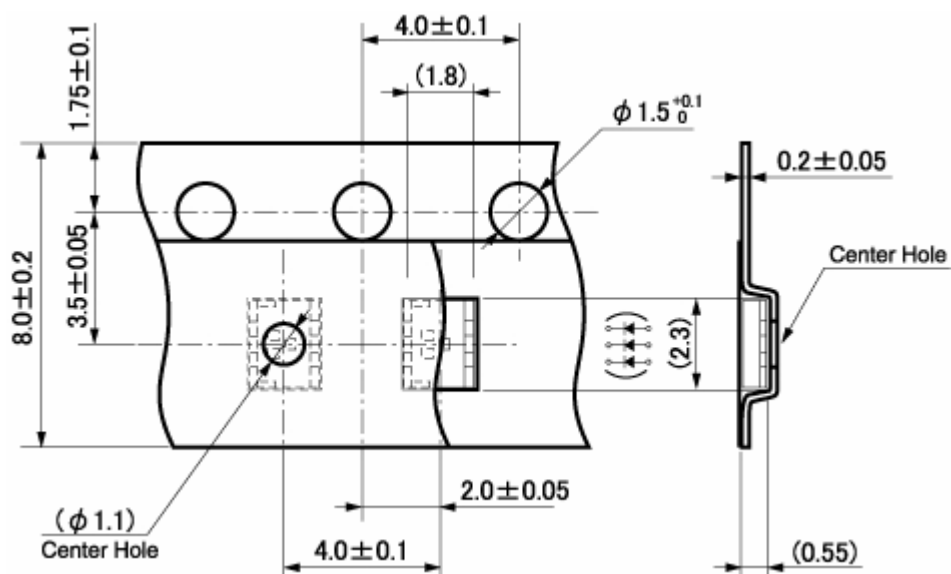
(Unit: mm)



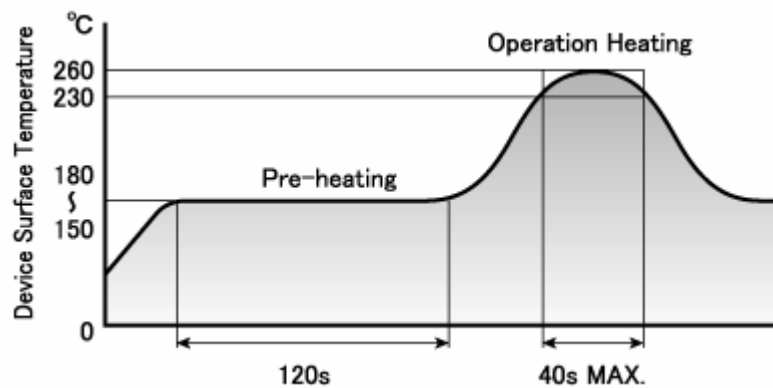
## Taping Specification

(Unit: mm)

Quantity: 4,000pcs/ reel (standard)



## Reflow Soldering Conditions



- 1) The above profile temperature gives the maximum temperature of the LED resin surface. Please set the temperature so as to avoid exceeding this range.
- 2) Total times of reflow soldering process shall be no more than 2 times. When the second reflow soldering process is performed, intervals between the first and second reflow should be short as possible (while allowing some time for the component to return to normal temperature after the first reflow) in order to prevent the LED from absorbing moisture.
- 3) Temperature fluctuation to the LED during the pre-heating process shall be minimized. (6°C maximum)

## Manual Soldering Conditions

Iron tip temp.	350 °C	(MAX.)
Soldering time and frequency	3 s	(MAX.)
	1 time	(MAX.)

## Reliability Testing Result

Reliability Testing Result	Applicable Standard	Testing Conditions	Duration	Failure
Room Temp. Operating Life	EIAJ ED-4701/100(101)	Ta = 25°C, All diode lighted : If = 15mA/chip	1,000 h	0/25
Resistance to Soldering Heat	EIAJ ED-4701/300(302)	260±5°C	5sec	0/25
Temperature Cycling	EIAJ ED-4701/100(105)	Minimum Rated Storage Temperature(30min) ~Normal Temperature(15min) ~Maximum Rated Storage Temperature(30min) ~Normal Temperature(15min)	5 cycles	0/25
Wet High Temp. Storage Life	EIAJ ED-4701/100(103)	Ta = 60±2°C, RH = 90±5%	1,000 h	0/25
High Temp. Storage Life	EIAJ ED-4701/200(201)	Ta = Maximum Rated Storage Temperature	1,000 h	0/25
Low Temp. Storage Life	EIAJ ED-4701/200(202)	Ta = Minimum Rated Storage Temperature	1,000 h	0/25
Vibration, Variable Frequency	EIAJ ED-4701/400(403)	98.1m/s <sup>2</sup> (10G), 100 ~ 2KHz sweep for 20min., XYZ each direction	2 h	0/10

## Failure Criteria

Items	Symbols	Conditions	Failure criteria
Luminous Intensity	Iv	If Value of each product Luminous Intensity	Testing Min. Value < Spec. Min. Value x 0.5
Forward Voltage	V <sub>F</sub>	If Value of each product Forward Voltage	Testing Max. Value ≥ Spec. Max. Value x 1.2
Reverse Current	I <sub>R</sub>	V <sub>R</sub> = Maximum Rated Reverse Voltage V	Testing Max. Value ≥ Spec. Max. Value x 2.5
Cosmetic Appearance	-	-	No notable, decoloration, deformation and cracking

## Special Notice to Customers Using the Products and Technical Information Shown in This Data Sheet

---

- 1) The technical information shown in the data sheets are limited to the typical characteristics and circuit examples of the referenced products. It does not constitute the warranting of industrial property nor the granting of any license.
- 2) For the purpose of product improvement, the specifications, characteristics and technical data described in the data sheets are subject to change without prior notice. Therefore it is recommended that the most updated specifications be used in your design.
- 3) When using the products described in the data sheets, please adhere to the maximum ratings for operating voltage, heat dissipation characteristics, and other precautions for use. We are not responsible for any damage which may occur if these specifications are exceeded.
- 4) The products described in the data sheets are made to be used in standard electronic applications such as office automation appliances, communication devices, audio visual, home appliances, and measuring instruments.
- 5) If the products in the data sheets are to be used for purposes other than the above which requires high level reliability and safety where failure and or malfunction of the product may cause death or other serious effects on the human body such as airplane, space activity, transportation, medical, nuclear), please contact our sales personnel.
- 6) In order to export the products or technologies described in this data sheet which are under the "Foreign Exchange and Foreign Trade Control Law," it is necessary to first obtain an export permit from the Japanese government.
- 7) No part of this data sheet may be reprinted or reproduced without prior written permission from Stanley Electric Co., Ltd.
- 8) The most updated edition of this data sheet can be obtained from the address below:  
<http://www.stanley-components.com>