



**Pb-free  
HEAT**



# 1104B Series

Single Color High Brightness Type

## Features

Package	PLCC-2 Type, Water clear resin
Product features	<ul style="list-style-type: none"> <li>• Outer Dimension 3.5 x 2.8 x 1.9mm ( L x W x H )</li> <li>• Temperature range Storage Temperature : -40°C~110°C Operating Temperature : -40°C~100°C</li> <li>• Lead-free soldering compatible</li> <li>• RoHS compliant</li> </ul>
Dominant wavelength	Yellow Green : 572nm(YPY) Yellow : 587nm(FY) Orange : 605nm(FA) Red : 632nm(FR)
Half Intensity Angle	120 deg.
Die materials	YPY,FY,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	2,000pcs per reel in a 8mm width tape. (Standard) Reel diameter: $\phi$ 180mm
ESD	More than 2kV(HBM)

## Recommended Applications

Amusement Equipment, Electric Household Appliances, Other General Applications

**Color and Luminous Intensity**

(Ta=25°C)

Part No.	Material	Emitted Color	Lens Color	Dominant Wavelength		Luminous Intensity		
				$\lambda_d$ (nm)		Iv (mcd)		
				TYP.	I <sub>F</sub>	MIN.	TYP.	I <sub>F</sub>
YPY1104B	AlGaInP	Yellow Green	Water Clear	572	20	35	70	20
FY1104B	AlGaInP	Yellow		587	20	35	150	20
FA1104B	AlGaInP	Orange		605	20	35	150	20
FR1104B	AlGaInP	Red		632	20	35	120	20

## Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	Absolute Maximum Ratings				Unit
		YPY	FY	FA	FR	
Power Dissipation	$P_d$	81	81	81	81	mW
Forward Current	$I_F$	30	30	30	30	mA
Pulse Forward Current ※1	$I_{FRM}$	100	100	100	100	mA
Derating (Ta=60°C or higher)	$\Delta I_F$	0.75	0.75	0.75	0.75	mA/°C
	$\Delta I_{FRM}$	2.5	2.5	2.5	2.5	mA/°C
Reverse Voltage	$V_R$	5	5	5	5	V
Operating Temperature	$T_{opr}$	-40~+100				°C
Storage Temperature	$T_{stg}$	-40~+110				°C

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

## Electro-Optical Characteristics

(Ta=25°C)

Item	Conditions	Symbol	Characteristics				Unit	
			YPY	FY	FA	FR		
Forward Voltage	I <sub>F</sub> =20mA	V <sub>F</sub>	TYP.	2.1	2.0	2.0	2.0	V
			MAX.	2.5	2.5	2.5	2.5	
Reverse Current	V <sub>R</sub> =5V	I <sub>R</sub>	MAX.	100	100	100	100	μ A
Peak Wavelength	I <sub>F</sub> =20mA	λ <sub>p</sub>	TYP.	575	588	609	645	nm
Dominant Wavelength	I <sub>F</sub> =20mA	λ <sub>d</sub>	TYP.	572	587	605	632	nm
Spectral Line Half Width	I <sub>F</sub> =20mA	Δλ	TYP.	15	15	15	15	nm
Half Intensity Angle	I <sub>F</sub> =20mA	2θ 1/2	TYP.	120	120	120	120	deg.

## Luminous Intensity Rank

(Ta=25°C)

Rank	I <sub>v</sub> (mcd)							
	YPY		FY		FA		FR	
	I <sub>F</sub> =20mA		I <sub>F</sub> =20mA		I <sub>F</sub> =20mA		I <sub>F</sub> =20mA	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
<b>A</b>	35	70	35	70	35	70	35	70
<b>B</b>	50	100	50	100	50	100	50	100
<b>C</b>	70	140	70	140	70	140	70	140
<b>D</b>	100	200	100	200	100	200	100	200
<b>E</b>	140	-	140	-	140	-	140	-

Please contact our sales staff concerning rank designation.

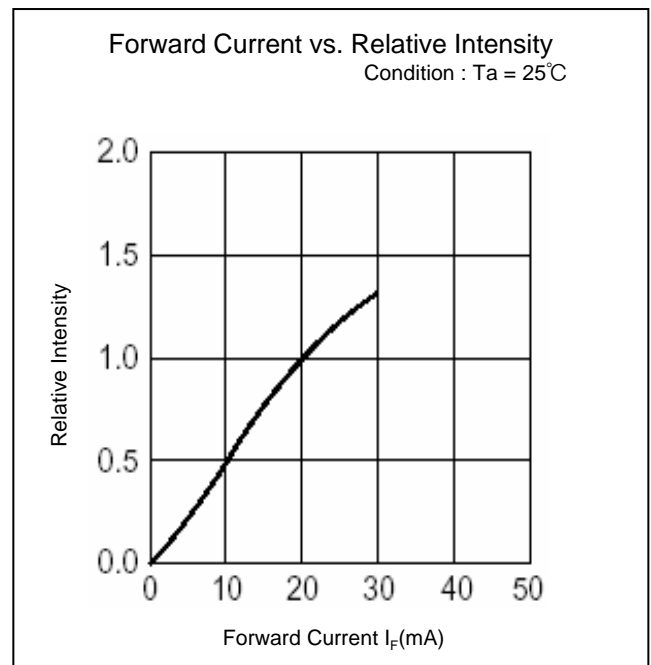
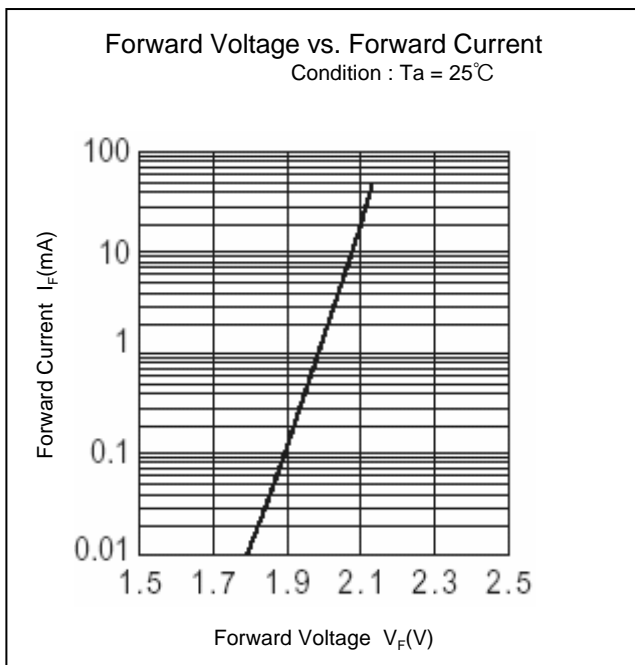
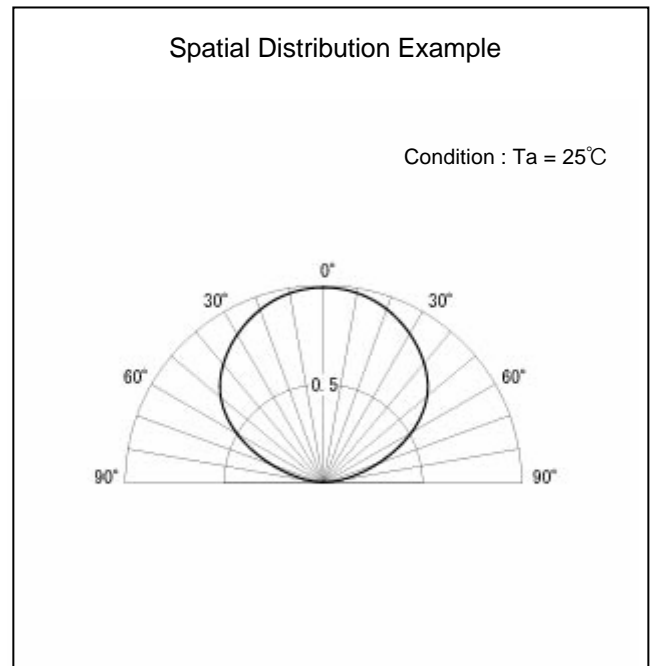
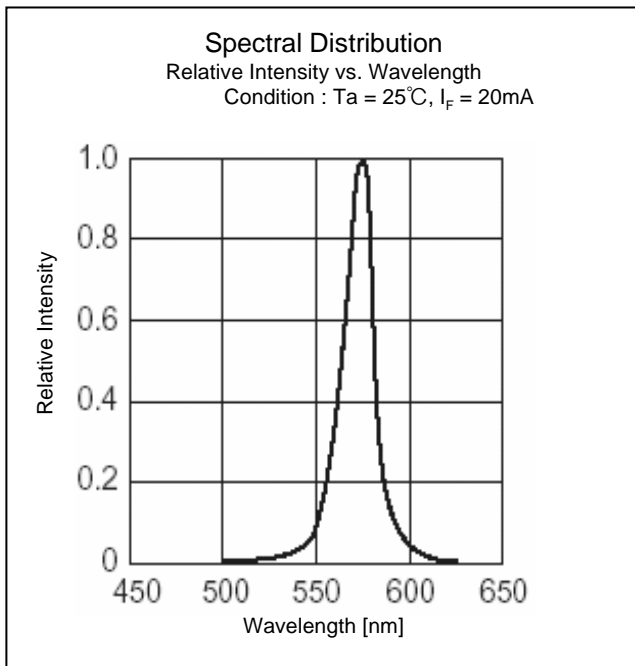
Color Tone Groups (  $\lambda d$  )

(Ta=25°C)

Rank	Dominant Wavelength $\lambda d$ (nm)			
	FY		FA	
	I <sub>F</sub> =20mA		I <sub>F</sub> =20mA	
	MIN.	MAX.	MIN.	MAX.
<b>A</b>	581.5	585.0	599.0	603.0
<b>B</b>	584.0	587.5	601.0	605.0
<b>C</b>	586.5	590.0	603.0	607.0
<b>D</b>	589.0	592.5	605.0	609.0
<b>E</b>	591.5	595.0	607.0	611.0

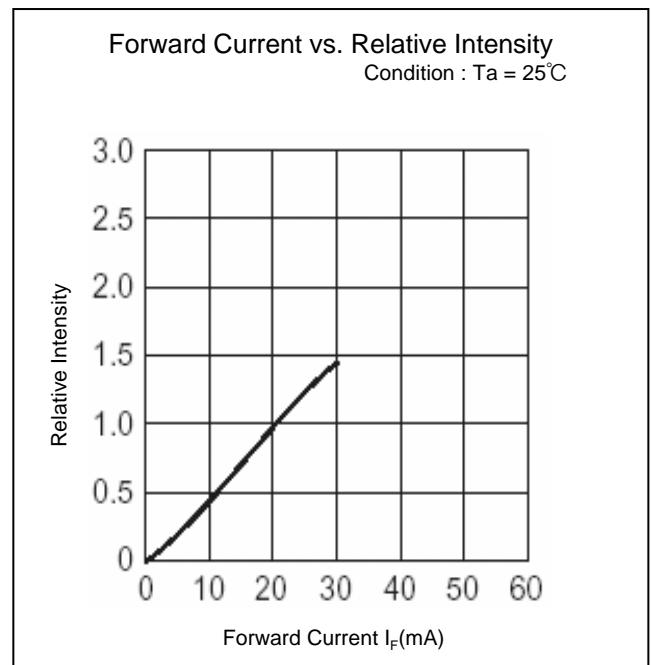
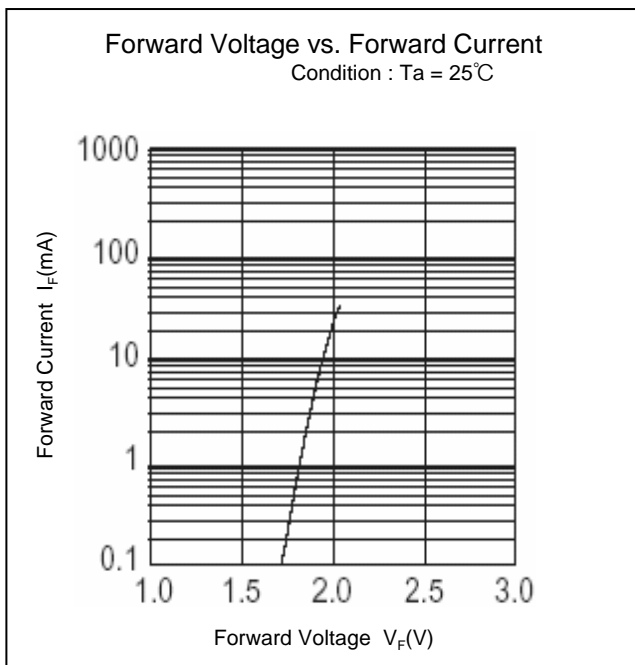
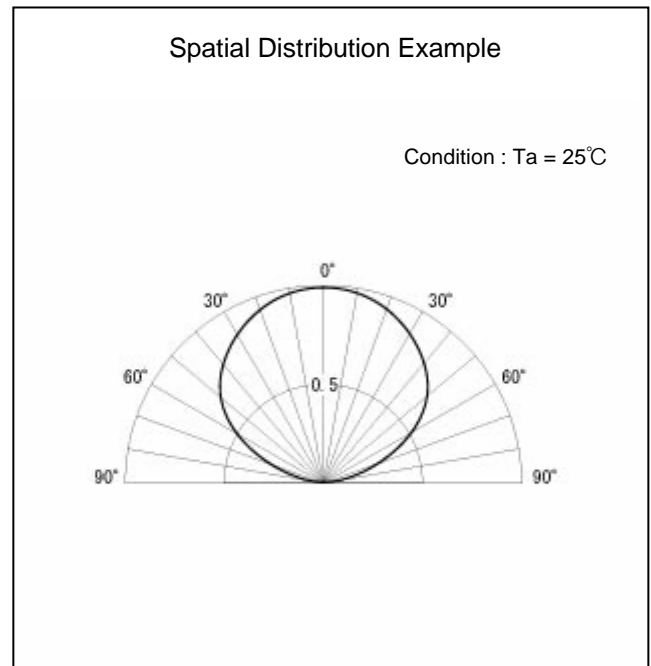
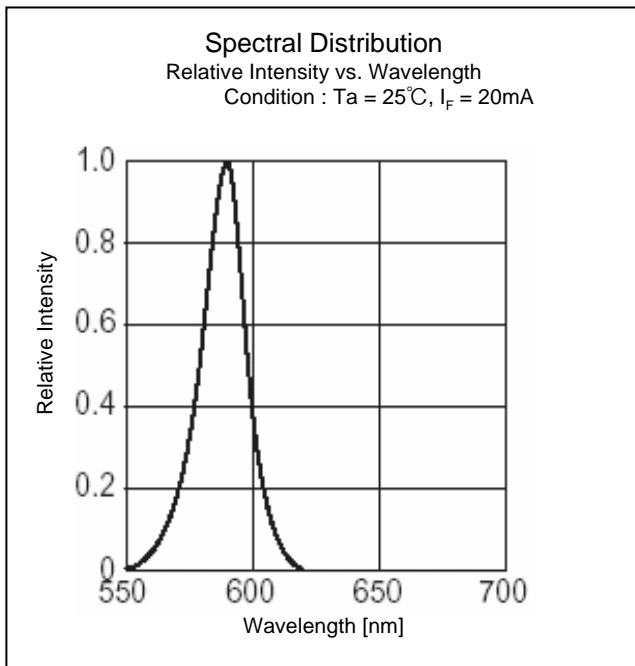
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## Technical Data(YPY)



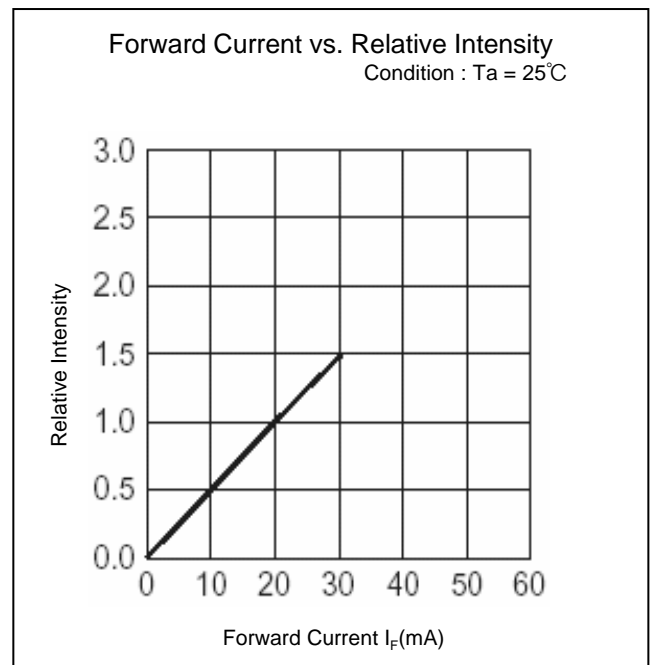
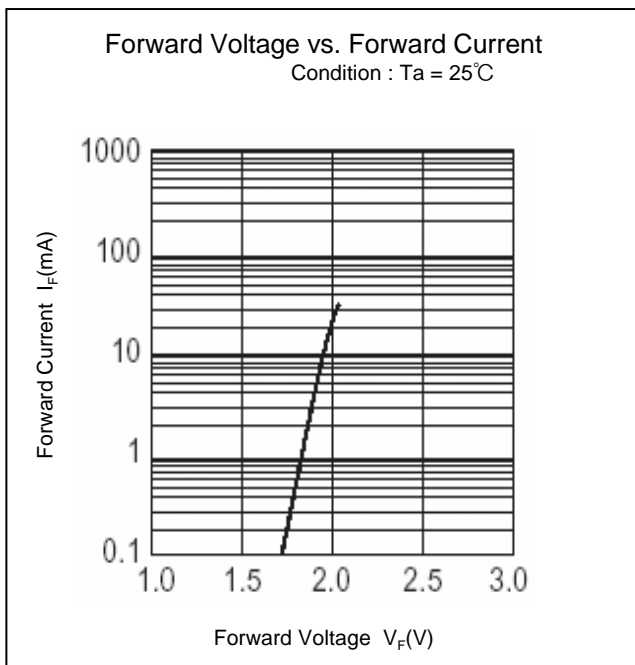
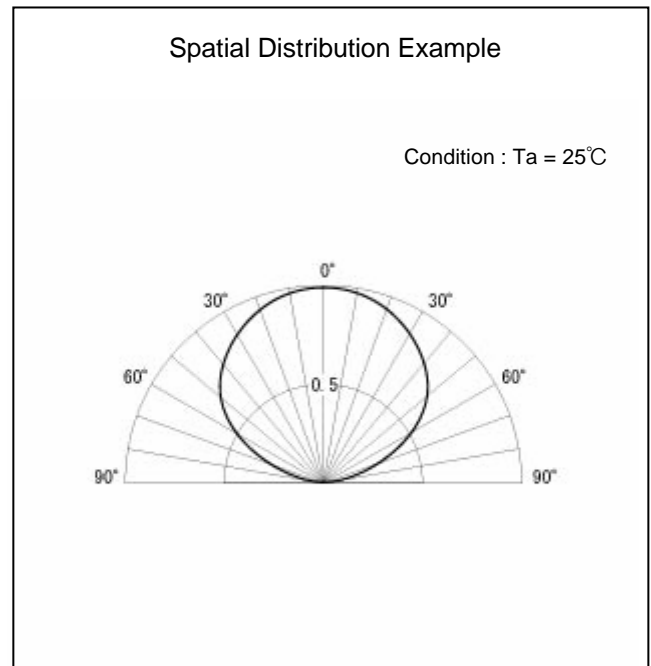
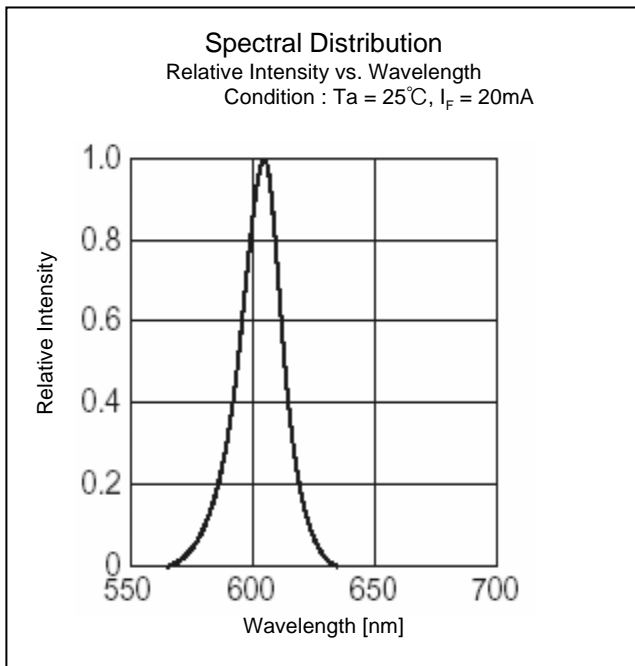


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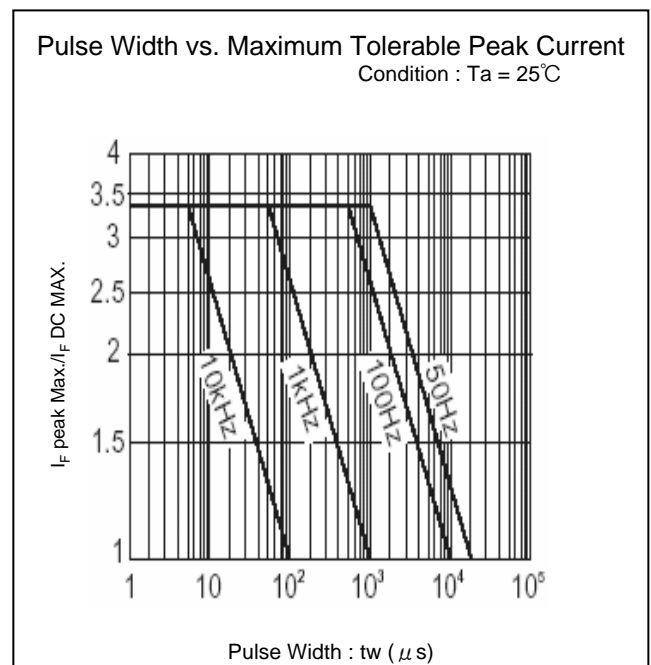
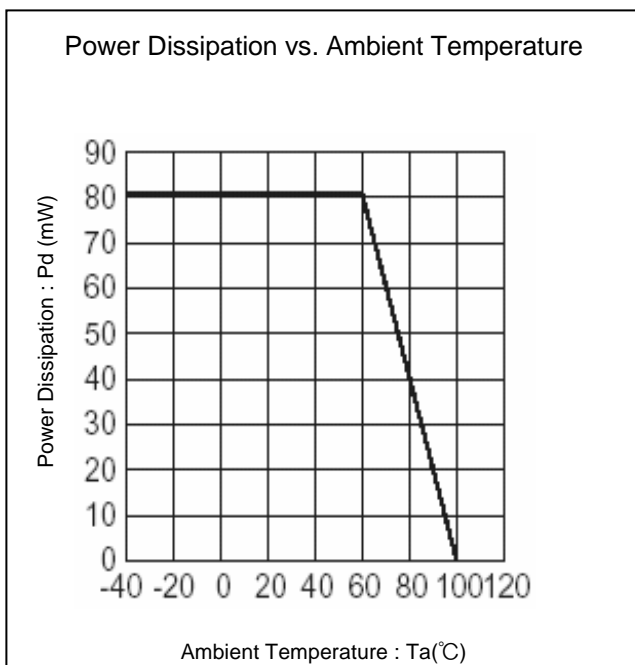
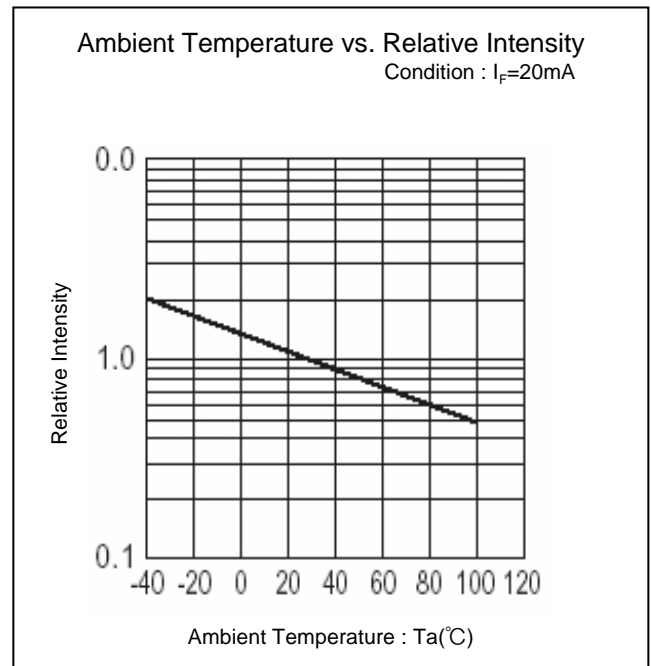
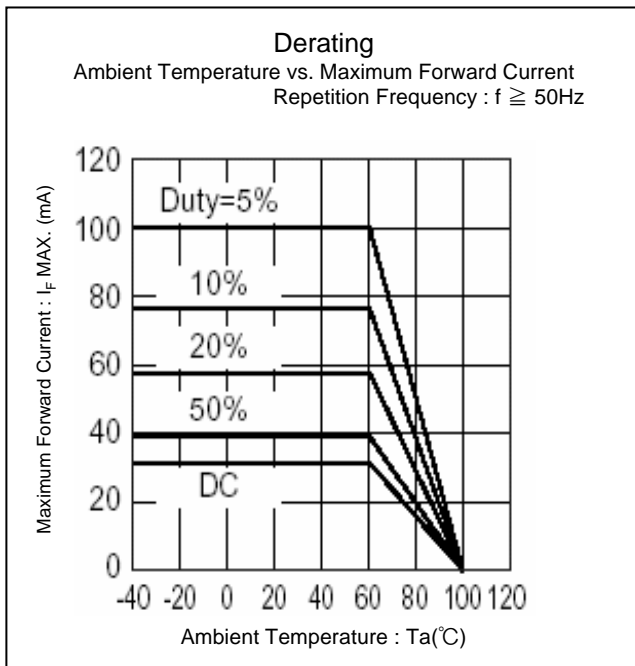




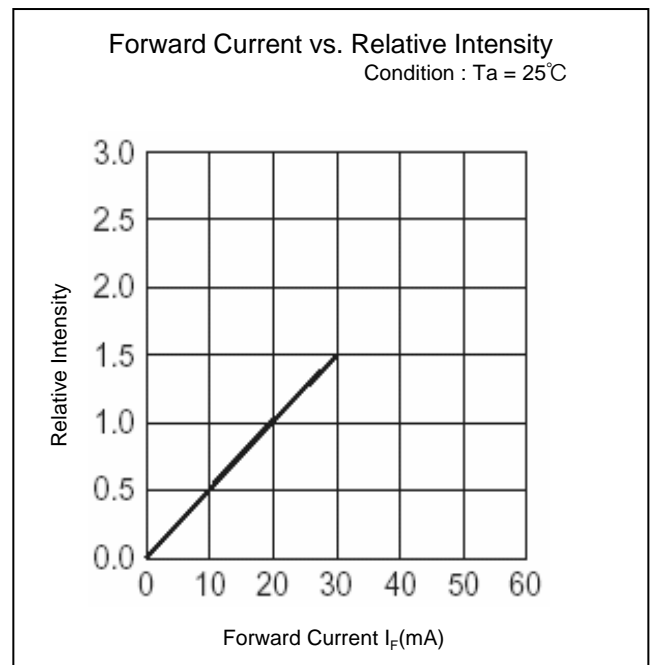
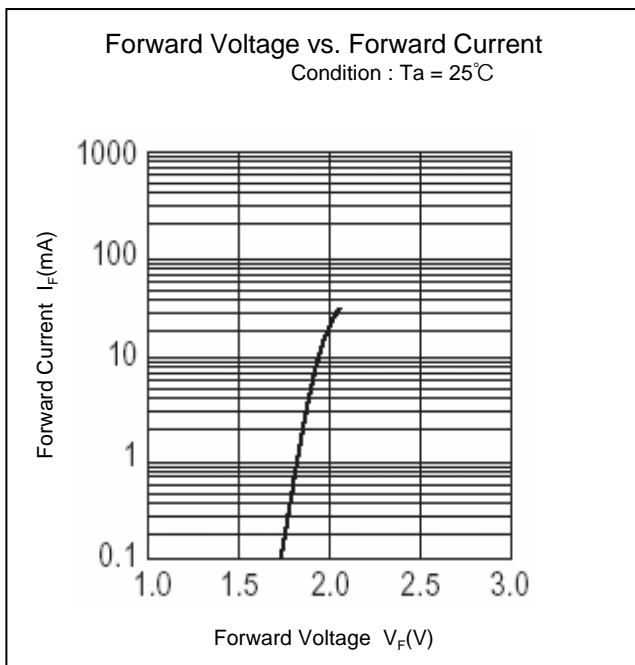
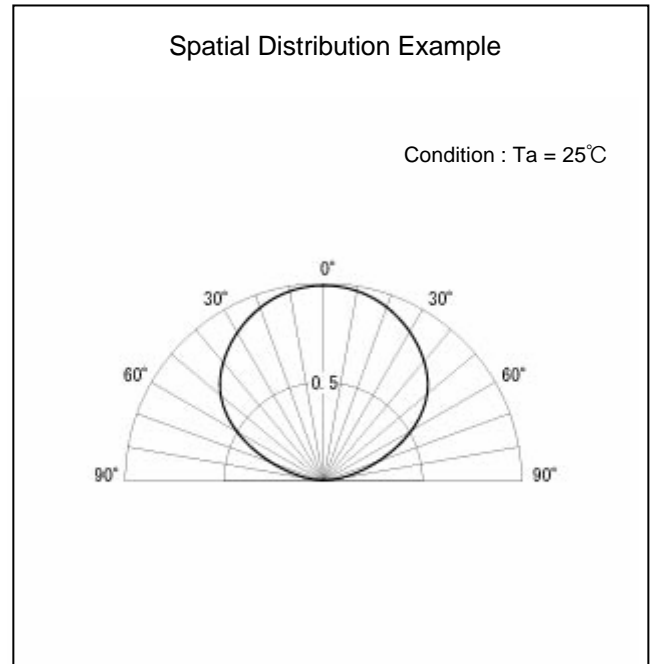
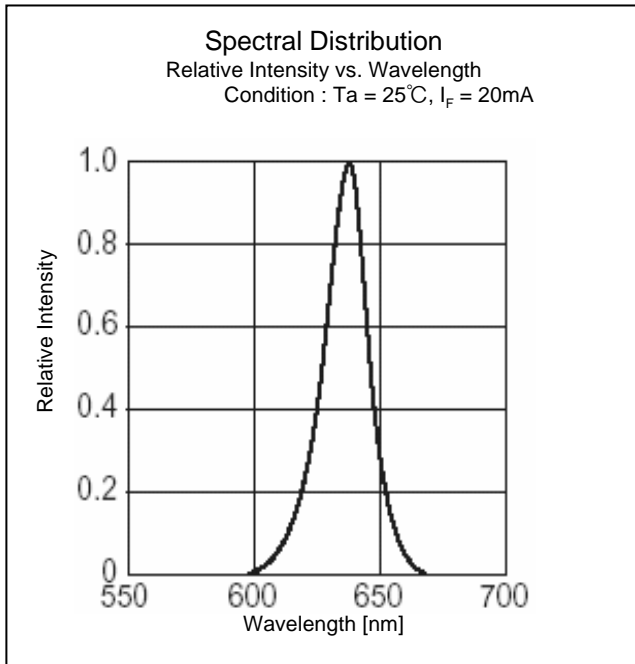
## Technical Data(FA)



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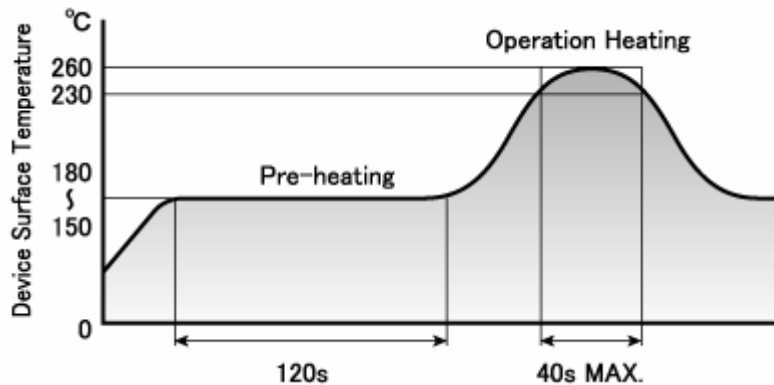
## Technical Data(FR)







## 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	EIAJED-4701/100(101)	Ta = 25°C, If = Maximum Rated Current	1,000 h	0/25
Resistance to Soldering Heat	EIAJED-4701/300(301)	Pre-heating : 150~180°C 120s Max. Operation Heating : 230°C 40s Max. Peak Temperature : 260°C	Twice	0/25
Temperature Cycling	EIAJED-4701/100(105)	Minimum Rated Storage Temperature(30min) ~Normal Temperature(15min) ~Maximum Rated Storage Temperature(30min) ~Normal Temperature(15min)	200 cycles	0/25
High Temp. Operating Life	EIAJED-4701/100(101)	Ta = 85°C, If = 10mA	1,000 h	0/25
Humidity Temp. Operating Life	EIAJED-4701/100(102)	Ta = 60±2°C, RH = 90±5%, If = 30mA	1,000 h	0/25
High Temp. Storage Life	EIAJED-4701/200(201)	Ta = Maximum Rated Storage Temperature	1,000 h	0/25
Low Temp. Storage Life	EIAJED-4701/200(202)	Ta = Minimum Rated Storage Temperature	1,000 h	0/25
Vibration, Variable Frequency	EIAJED-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	-	-	Occurrence of notable decoloration, deformation and cracking

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