



**Pb-free  
HEAT**



# U□1104B Series

Single Color Ultra 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	Blue : 470nm(UB) Green : 530nm(UG) Yellow : 590nm(UY) Red : 630nm(UR)
Half Intensity Angle	120 deg.
Die materials	UB,UG : InGaN, UY,UR : 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	InGaN : 1kV(HBM), AlGaInP : 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 λ d (nm)		Luminous Intensity Iv (mcd)		
				TYP.	I <sub>F</sub>	MIN.	TYP.	I <sub>F</sub>
				UB1104B	InGaN	Blue	Water Clear	470
UG1104B	InGaN	Green	530	10	120	300		10
UY1104B	AlGaInP	Yellow	590	20	70	140		20
UR1104B	AlGaInP	Red	630	20	70	140		20

## Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	Absolute Maximum Ratings				Unit
		UB	UG	UY	UR	
Power Dissipation	$P_d$	84	84	87	87	mW
Forward Current	$I_F$	20	20	30	30	mA
Pulse Forward Current ※1	$I_{FRM}$	50	50	100	100	mA
Derating (Ta=60°C or higher)	$\Delta I_F$	0.5	0.5	0.75	0.75	mA/°C
	$\Delta I_{FRM}$	1.25	1.25	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  $\leq 1$ ms., Duty  $\leq 1/20$ .

**Electro-Optical Characteristics(UB,UG)**

(Ta=25°C)

Item	Conditions	Symbol	Characteristics		Unit	
			UB	UG		
Forward Voltage	I <sub>F</sub> =10mA	V <sub>F</sub>	TYP.	3.4	V	
			MAX.	4.0		
Reverse Current	V <sub>R</sub> =5V	I <sub>R</sub>	MAX.	100	μ A	
Peak Wavelength	I <sub>F</sub> =10mA	λ <sub>p</sub>	TYP.	465	522	nm
Dominant Wavelength	I <sub>F</sub> =10mA	λ <sub>d</sub>	TYP.	470	530	nm
Spectral Line Half Width	I <sub>F</sub> =10mA	Δλ	TYP.	26	35	nm
Half Intensity Angle	I <sub>F</sub> =10mA	2θ 1/2	TYP.	120	120	deg.

**Electro-Optical Characteristics(UY,UR)**

(Ta=25°C)

Item	Conditions	Symbol	Characteristics		Unit	
			UY	UR		
Forward Voltage	I <sub>F</sub> =20mA	V <sub>F</sub>	TYP.	2.2	V	
			MAX.	2.8		
Reverse Current	V <sub>R</sub> =5V	I <sub>R</sub>	MAX.	100	100	μ A
Peak Wavelength	I <sub>F</sub> =20mA	λ <sub>p</sub>	TYP.	592	641	nm
Dominant Wavelength	I <sub>F</sub> =20mA	λ <sub>d</sub>	TYP.	590	630	nm
Spectral Line Half Width	I <sub>F</sub> =20mA	Δλ	TYP.	18	18	nm
Half Intensity Angle	I <sub>F</sub> =20mA	2θ 1/2	TYP.	120	120	deg.

# Luminous Intensity Rank

(Ta=25°C)

Rank	I <sub>V</sub> (mcd)							
	UB		UG		UY		UR	
	I <sub>F</sub> =10mA		I <sub>F</sub> =10mA		I <sub>F</sub> =20mA		I <sub>F</sub> =20mA	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
A	/		/		70	140	70	140
B					100	200	100	200
C					120	240	140	280
D	40	80	168	336	200	400	200	400
E	56	112	240	480	280	560	280	560
F	80	160	336	672	400	-	400	800
G	112	224	480	960	/		560	1,120
H	160	320	672	-			800	-
J	224	-	/				/	

Please contact our sales staff concerning rank designation.

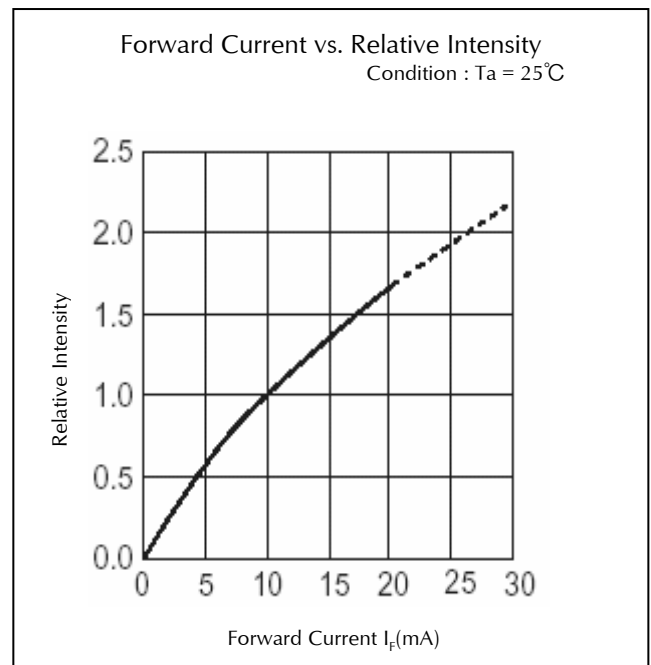
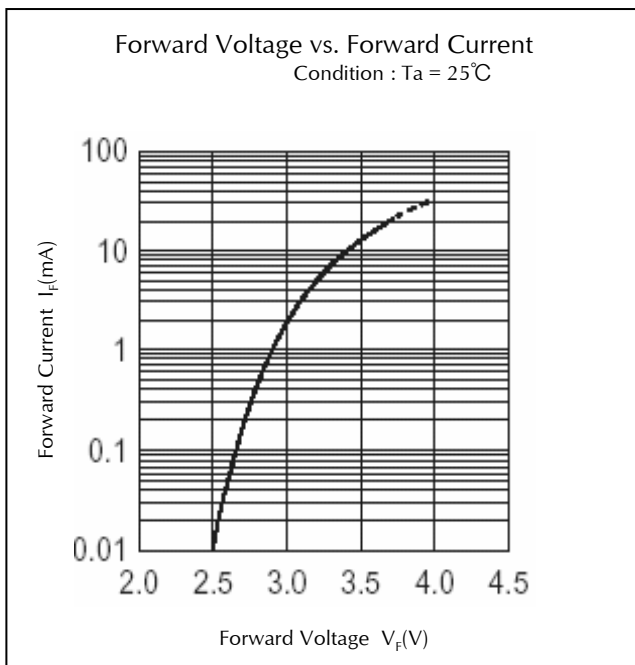
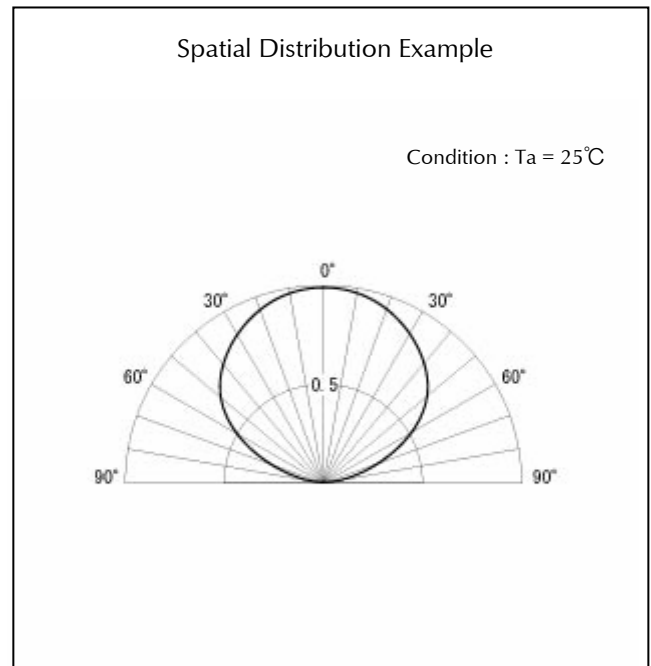
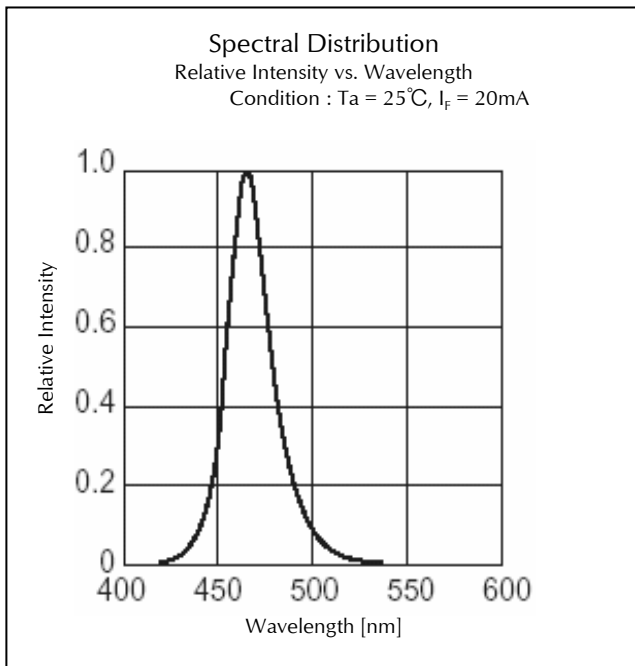
Color Tone Groups (  $\lambda d$  )

(Ta=25°C)

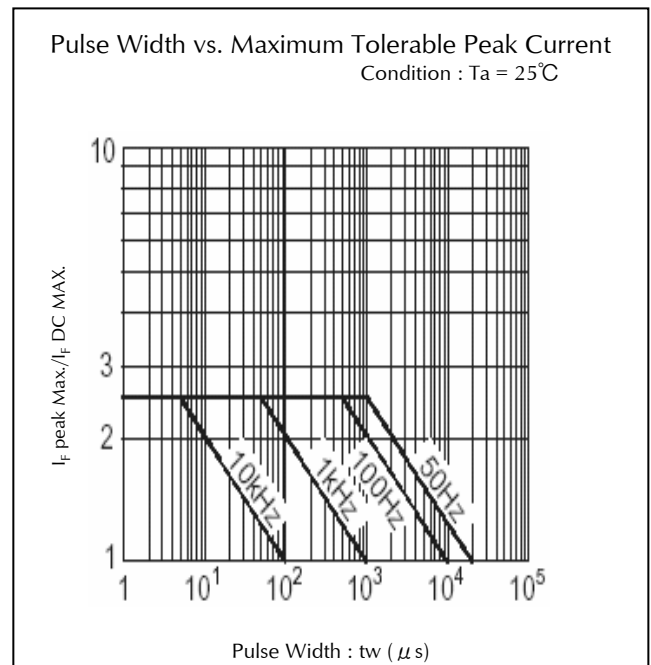
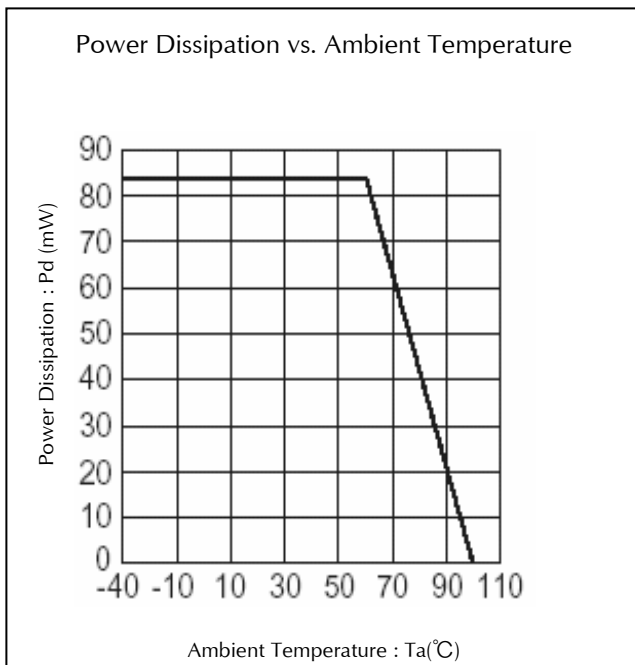
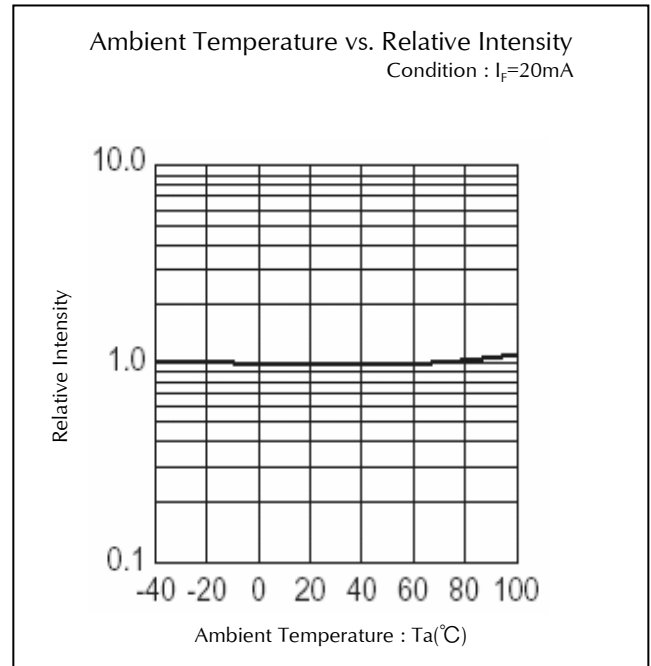
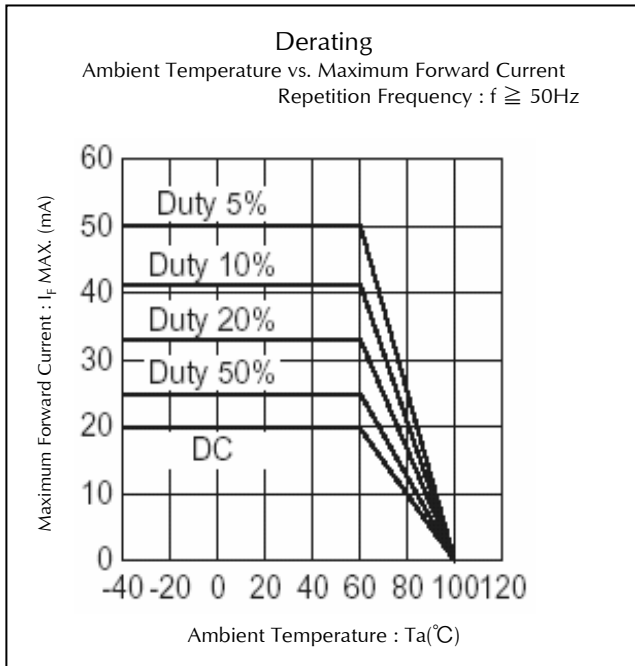
Rank	UY		UR	
	I <sub>f</sub> =20mA		I <sub>f</sub> =20mA	
	MIN.	MAX.	MIN.	MAX.
A	580	585	620	630
B	584	589	628	638
C	588	593	/	
D	592	597		
E	596	601		

Please contact our sales staff concerning rank designation.

## Technical Data(UB)

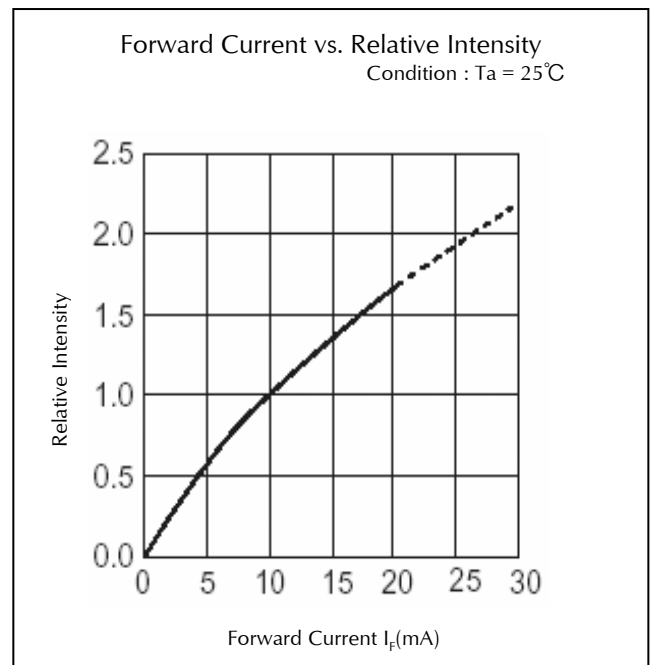
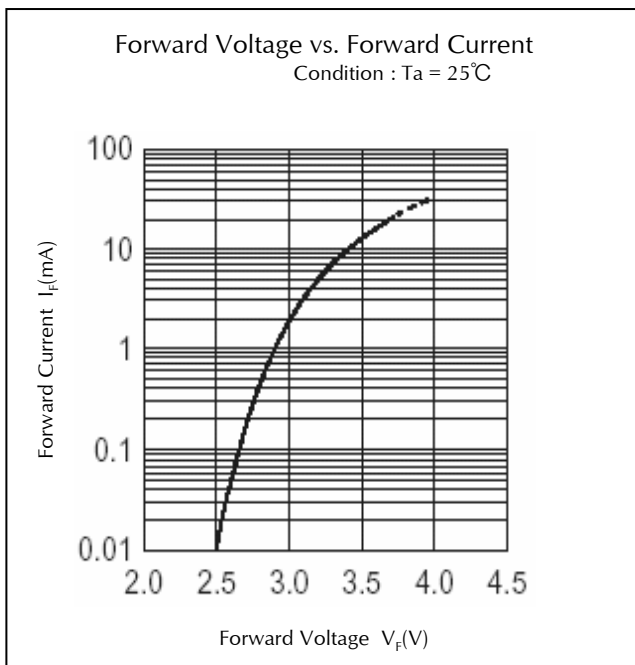
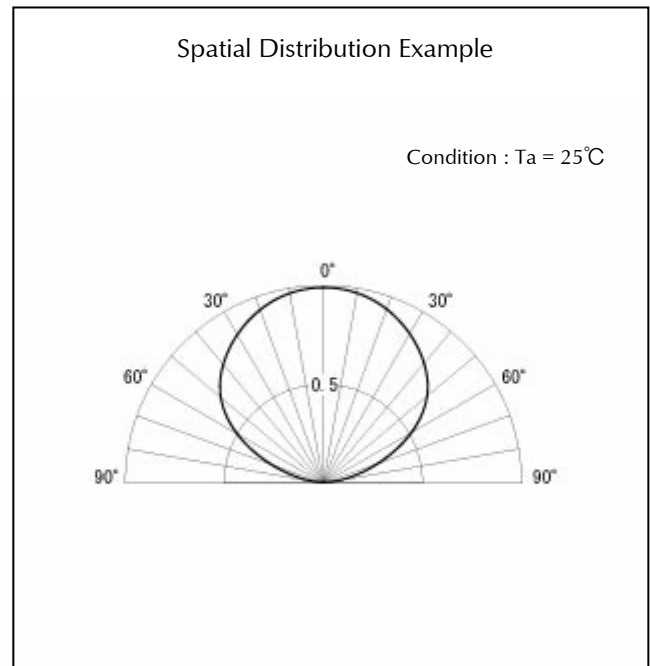
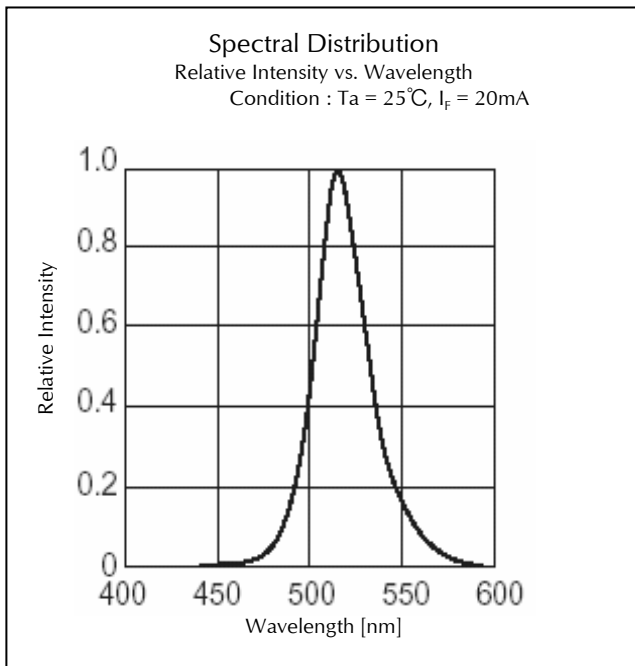


## Technical Data(UB)

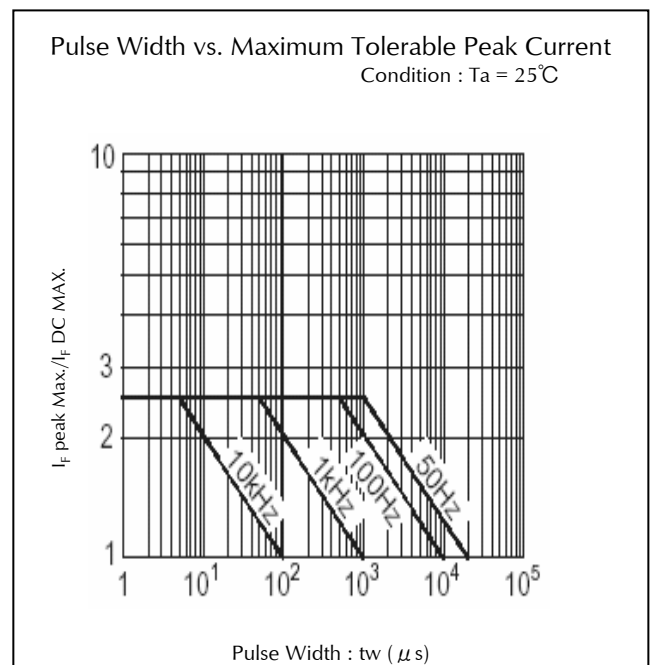
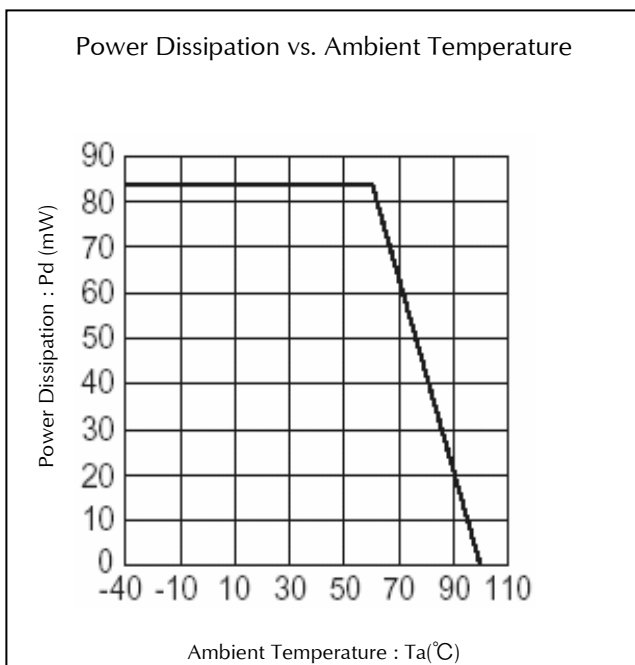
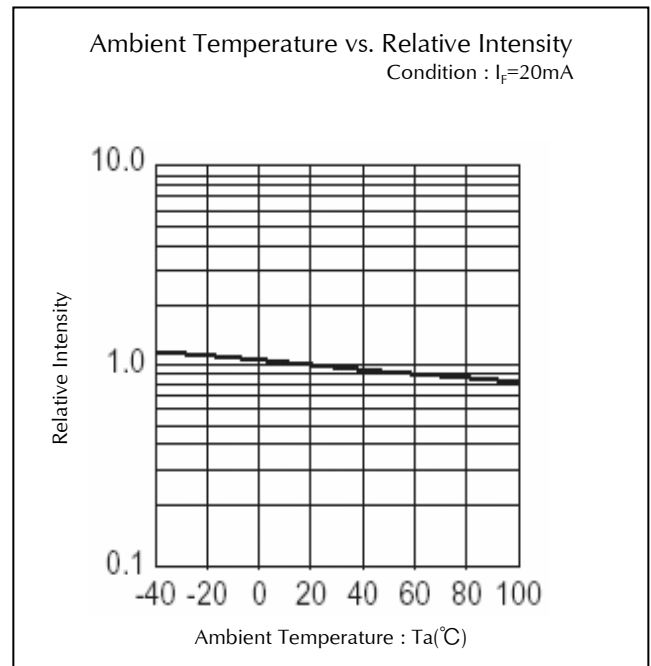
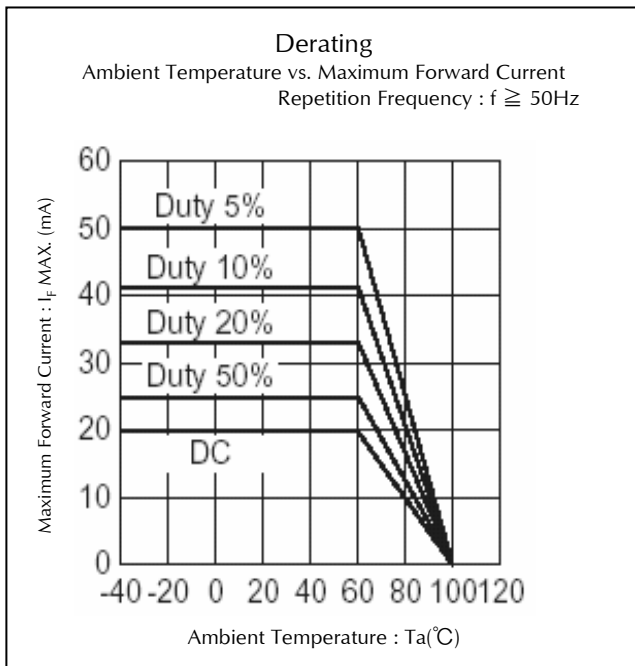




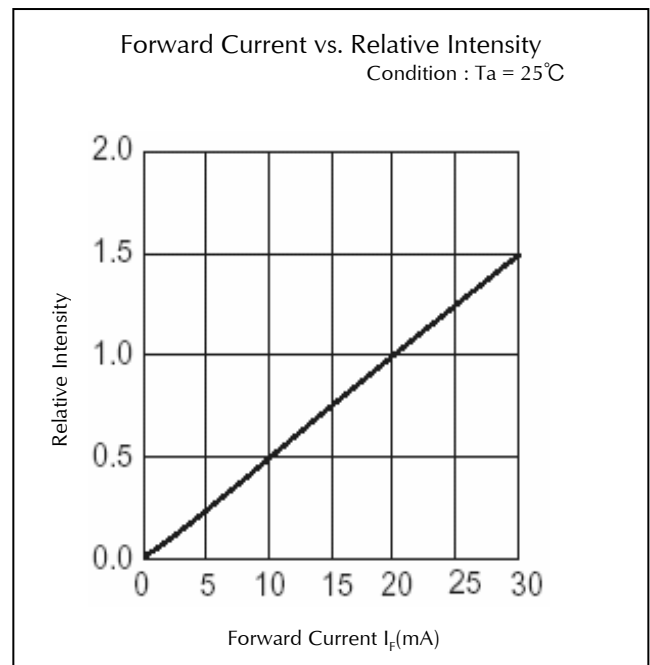
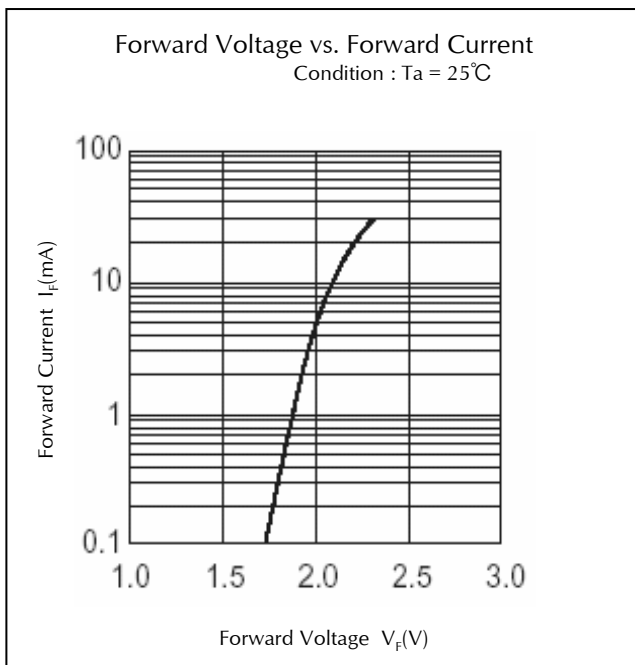
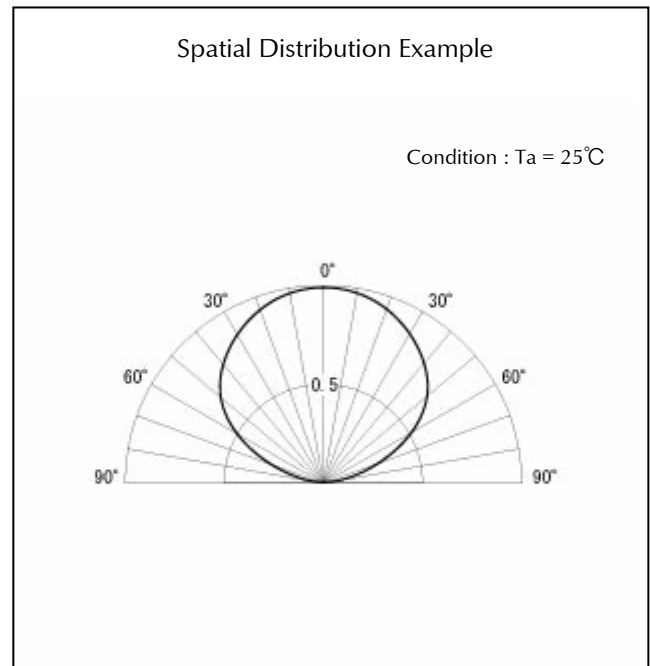
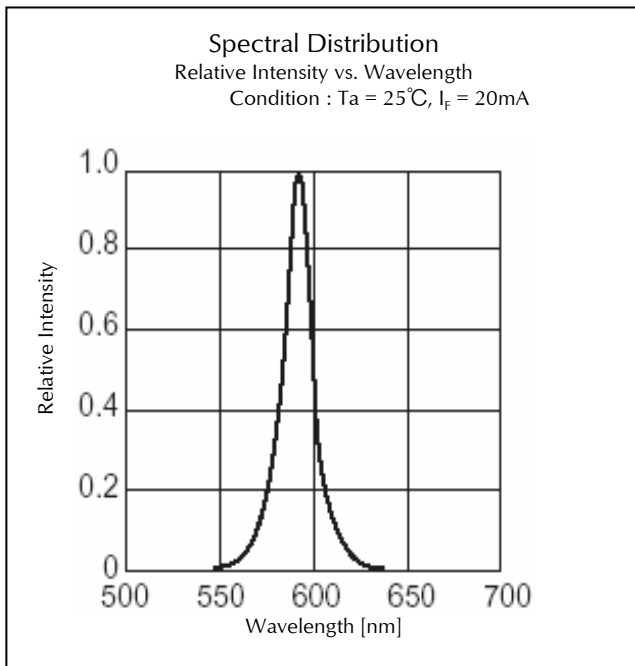
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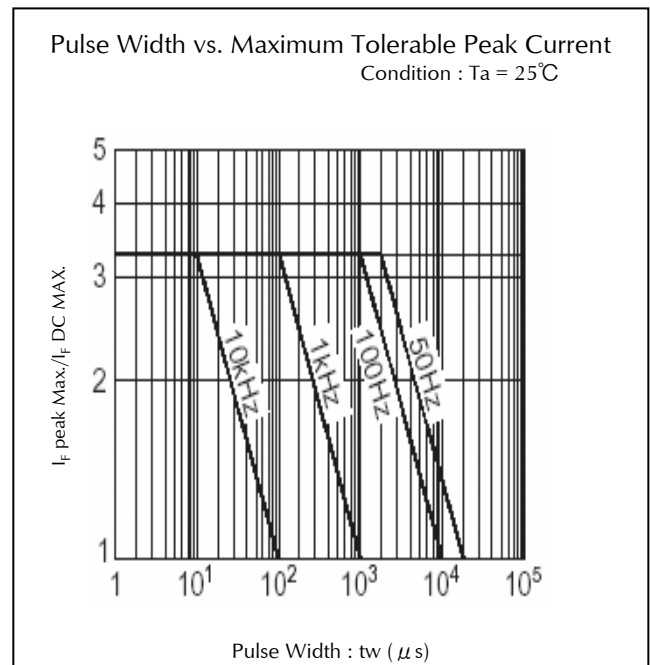
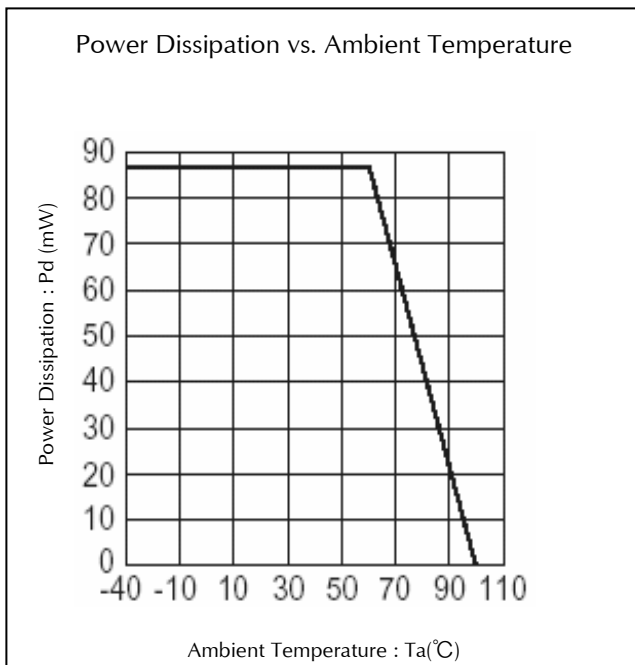
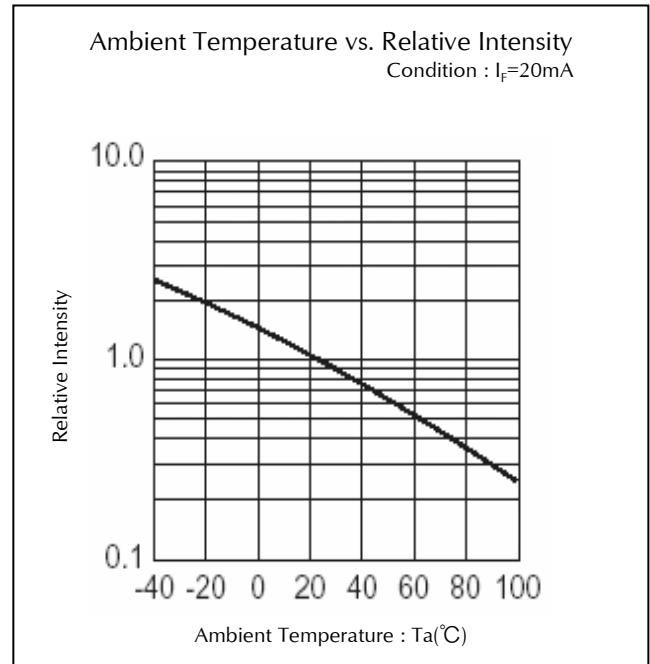
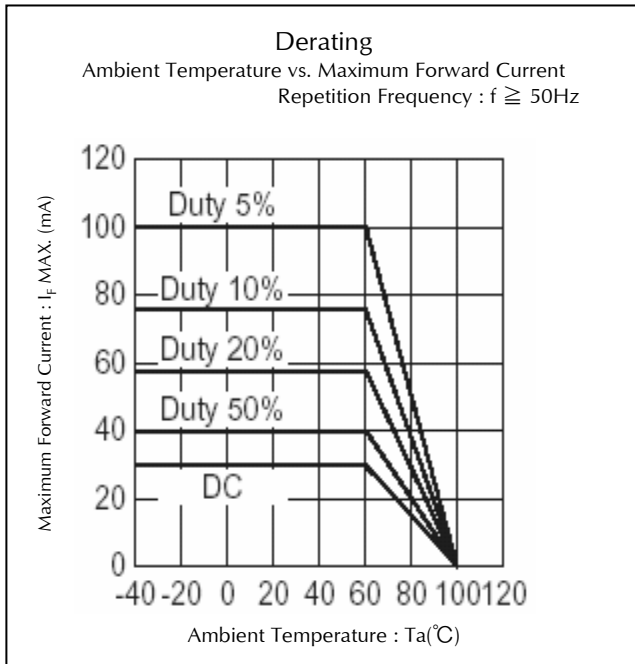
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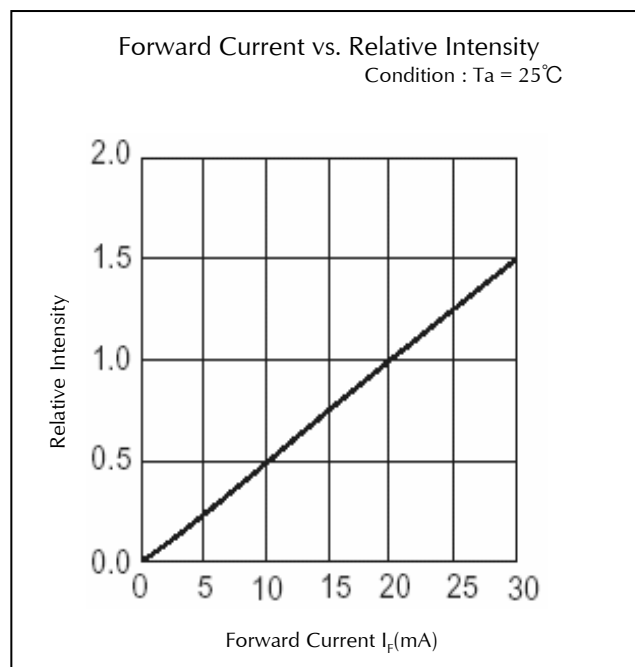
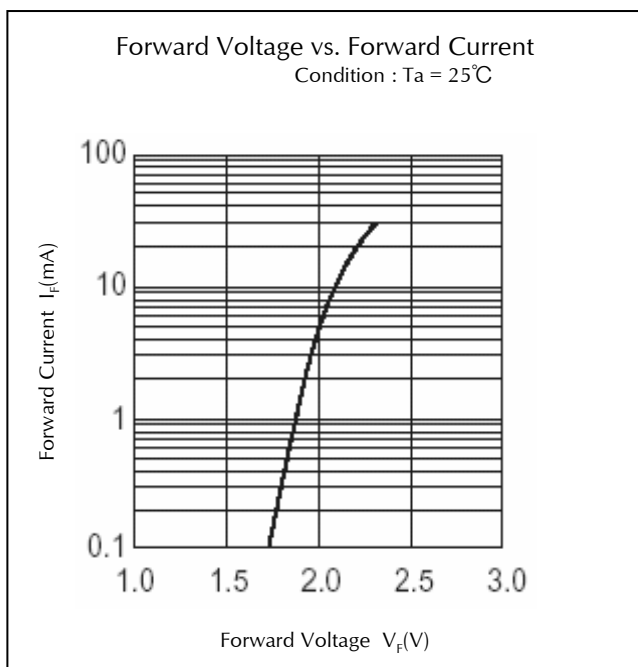
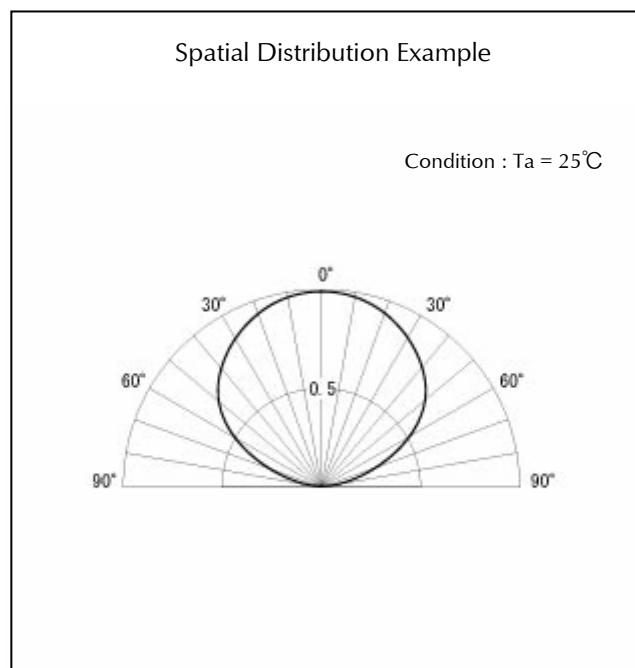
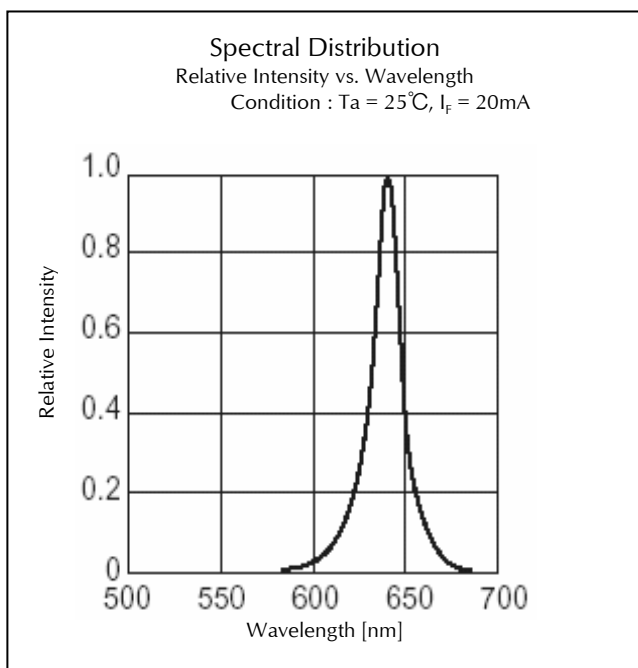
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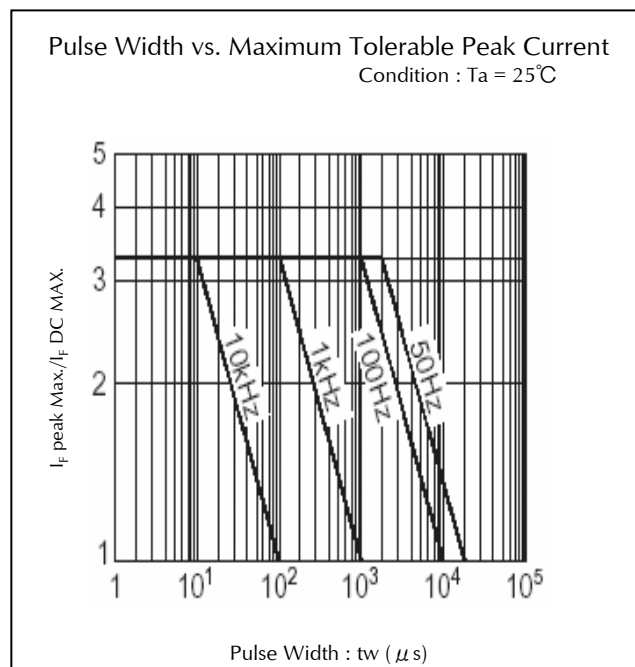
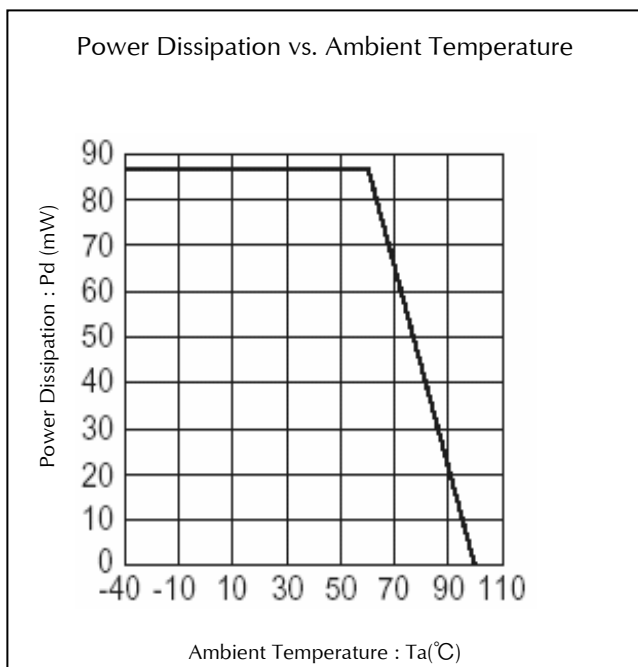
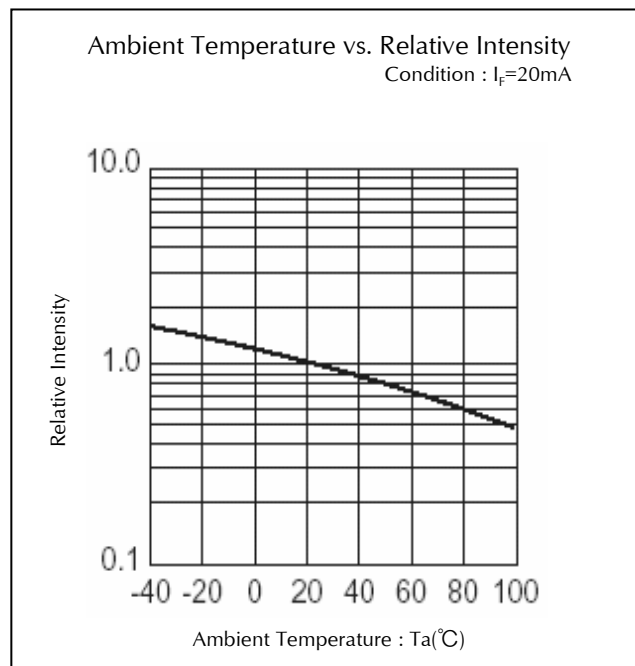
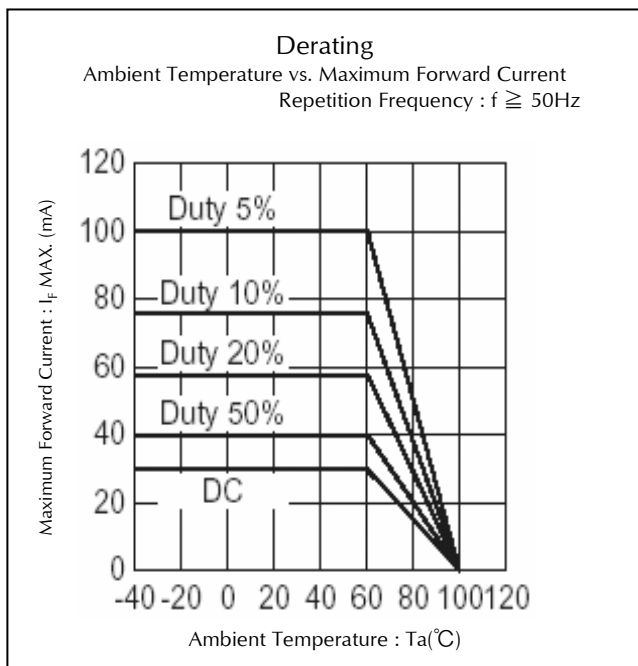
## Technical Data(UY)



## Technical Data(UR)

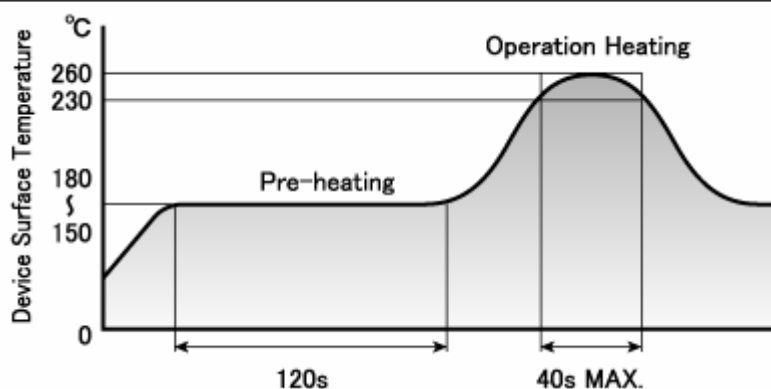


## Technical Data(UR)





## 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(UB,UG)

Reliability Testing Result	Applicable Standard	Testing Conditions	Duration	Failure
Room Temp. Operating Life	EIAJ ED-4701/100(101)	Ta = 25°C, If = Maximum Rated Current	1,000 h	0/25
Resistance to Soldering Heat	EIAJ ED-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	EIAJ ED-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	EIAJ ED-4701/100(101)	Ta = 85°C, If = 7.5mA	1,000 h	0/25
Humidity Temp. Operating Life	EIAJ ED-4701/100(102)	Ta = 60±2°C, RH = 90±5%, If = 20mA	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

## Reliability Testing Result(UY,UR)

Reliability Testing Result	Applicable Standard	Testing Conditions	Duration	Failure
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Humidity Temp. Operating Life	EIAJ ED-4701/100(102)	Ta = 60±2°C, RH = 90±5%, If = 30mA	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	-	-	Occurrence of notable decoloration, deformation and cracking

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