



**Pb-free  
HEAT**



# U□38□4X Series

Single Color φ3 Flush Mount Round Shape Type

## Features

Package	φ3 Round shape type, UB,UG : Water Clear epoxy UY : Pale Yellow Clear epoxy UR : Pale Red Clear epoxy
Product features	<ul style="list-style-type: none"> <li>• Outer Dimension φ3 Round shape type</li> <li>• Operation temperature range. Storage Temperature : -40°C~100°C Operating Temperature : -40°C~85°C</li> <li>• Lead-free soldering compatible</li> <li>• RoHS compliant</li> </ul>
Dominant wavelength	Blue : 470nm (UB) Green : 525nm (UG) Yellow : 590nm (UY) Red : 626nm (UR)
Half Intensity Angle	UB,UG : 56 deg. UY,UR : 66 deg.
Die materials	UB,UG : InGaN, UY,UR : AlGaN
Rank grouping parameter	Sorted by luminous intensity per rank taping
Soldering methods	TTW (Through The Wave) soldering and manual soldering
ESD	InGaN : Less than 1kV(HBM), AlGaN : More than 2kV(HBM)
Packing	Bulk : 200pcs(MIN.)

## Recommended Applications

Amusement Equipment, Electric Household Appliances, OA/FA, 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>
					<b>UB3804X</b>	<b>InGaN</b>	Blue	Water Clear	Clear
<b>UG3804X</b>	<b>InGaN</b>	Green	<b>525</b>	<b>20</b>	<b>960</b>	<b>2,688</b>	<b>20</b>		
<b>UY3864X</b>	<b>AlGaInP</b>	Yellow	Pale Yellow	<b>590</b>	<b>20</b>	<b>250</b>	<b>500</b>	<b>20</b>	
<b>UR3864X</b>	<b>AlGaInP</b>	Red	Pale Red	<b>630</b>	<b>20</b>	<b>220</b>	<b>440</b>	<b>20</b>	

## Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	Absolute Maximum Ratings				Unit
		UB	UG	UY	UR	
Power Dissipation	$P_d$	105	105	150	150	mW
Forward Current	$I_F$	25	25	50	50	mA
Pulse Forward Current ※1	$I_{FRM}$	60	60	100	100	mA
Derating (Ta=25°C or higher)	$\Delta I_F$	0.33	0.33	0.67	0.67	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  $I_{FRM}$  Measurement condition : Pulse Width  $\leq$  1ms., Duty  $\leq$  1/20.

## Electro-Optical Characteristics

(Ta=25°C)

Item	Conditions	Symbol	Characteristics				Unit	
			UB	UG	UY	UR		
Forward Voltage	I <sub>F</sub> =20mA	V <sub>F</sub>	TYP.	3.7	3.7	2.2	2.2	V
			MAX.	4.2	4.2	2.8	2.8	
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.	465	517	592	641	nm
Dominant Wavelength	I <sub>F</sub> =20mA	λ <sub>d</sub>	TYP.	470	525	590	630	nm
Spectral Line Half Width	I <sub>F</sub> =20mA	Δλ	TYP.	26	35	18	18	nm
Half Intensity Angle	I <sub>F</sub> =20mA	2θ 1/2	TYP.	56	56	66	66	deg.

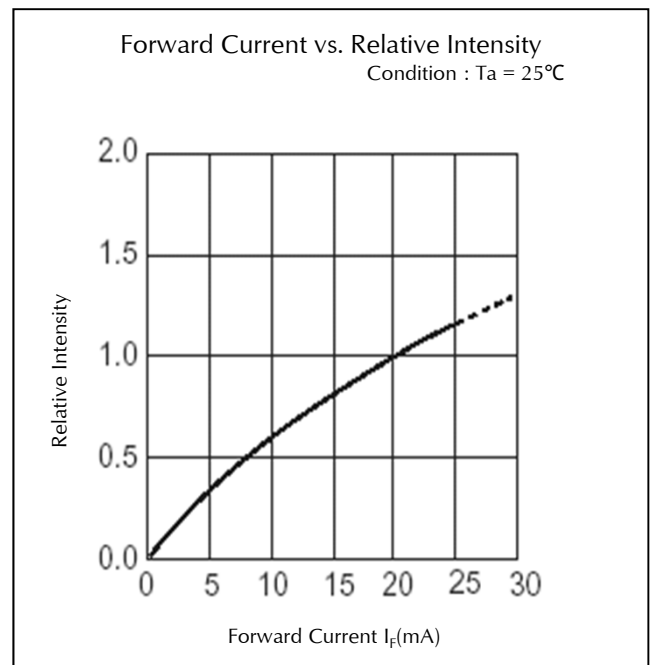
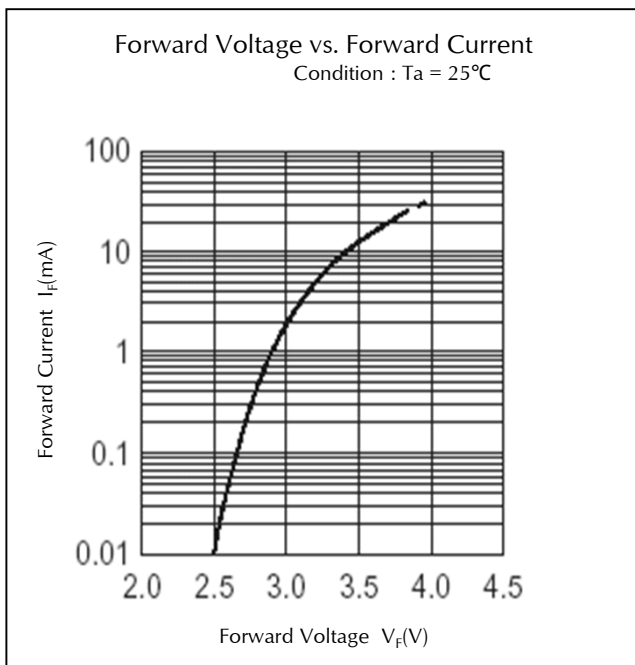
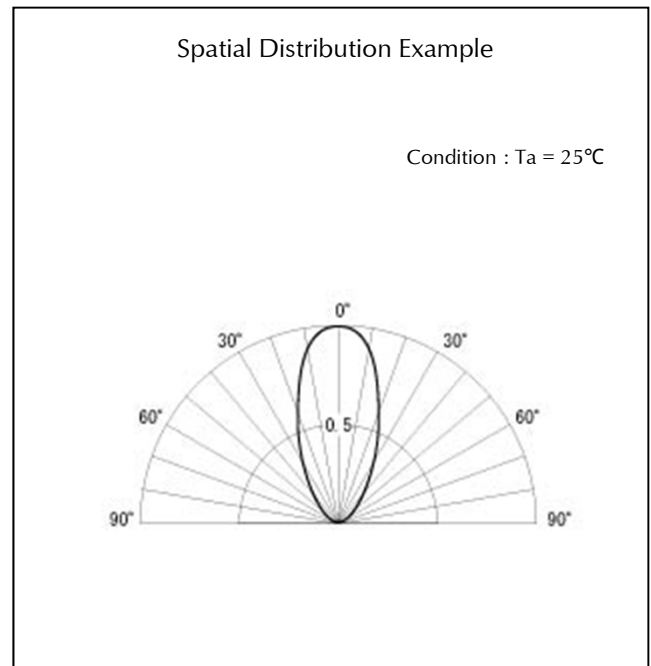
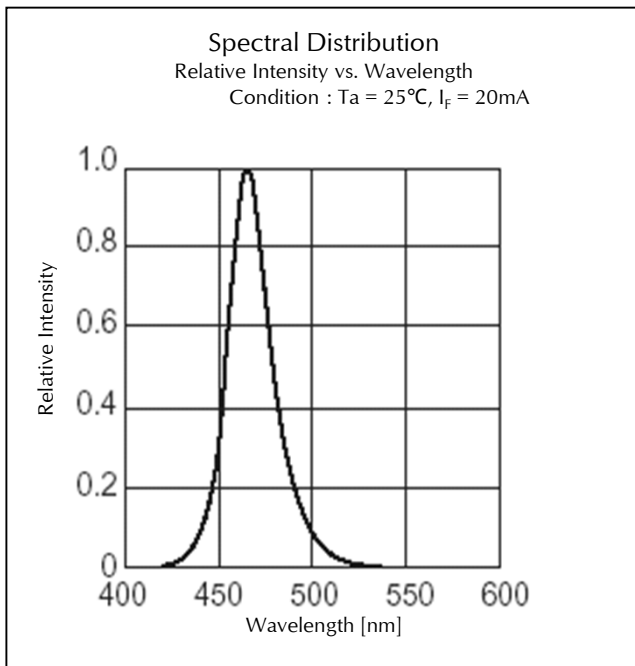
## Luminous Intensity Rank

(Ta=25°C)

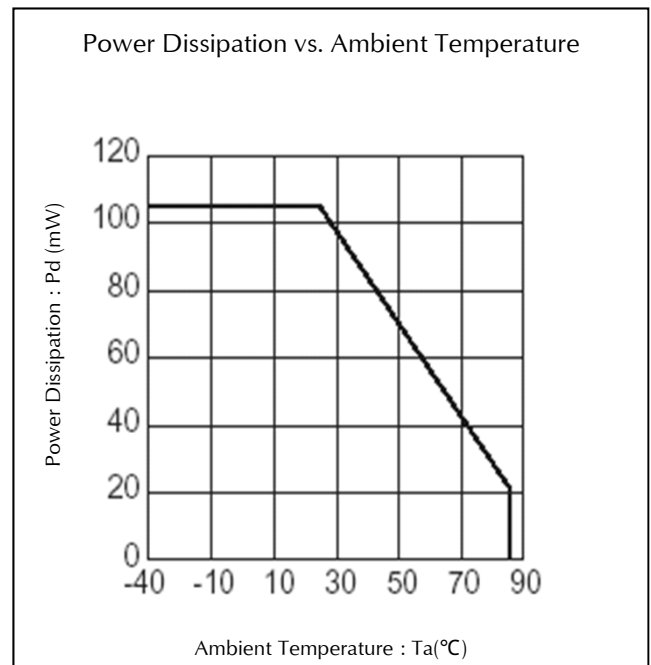
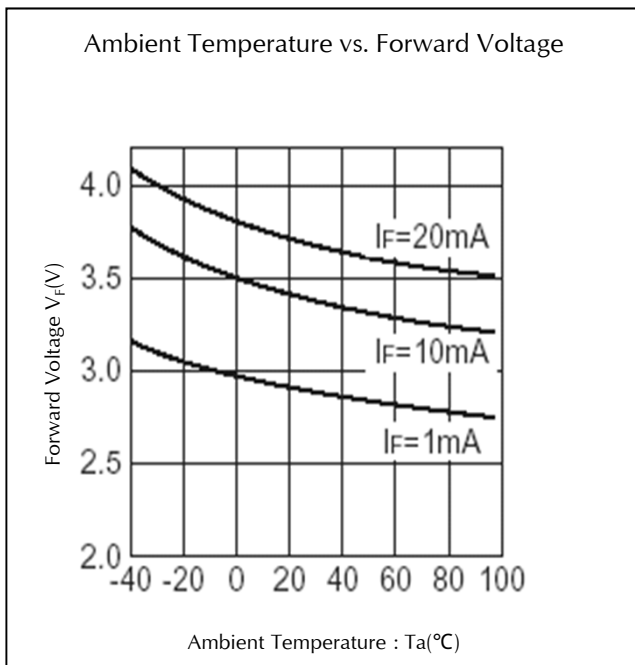
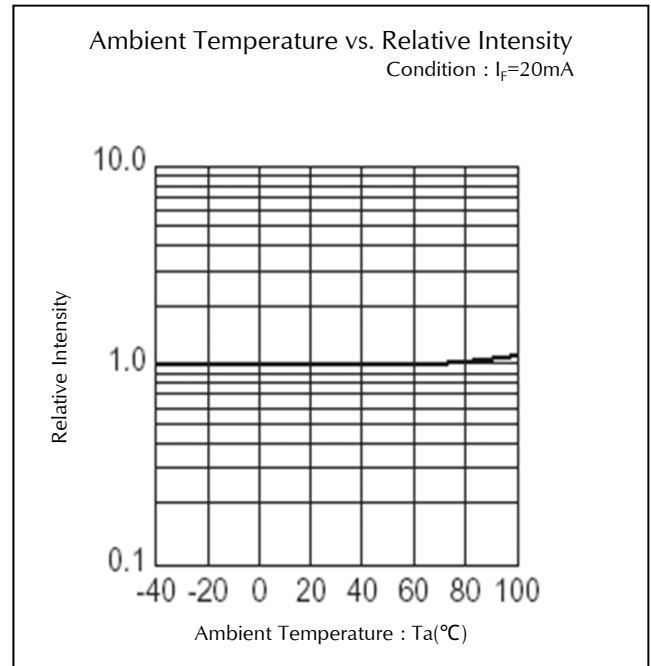
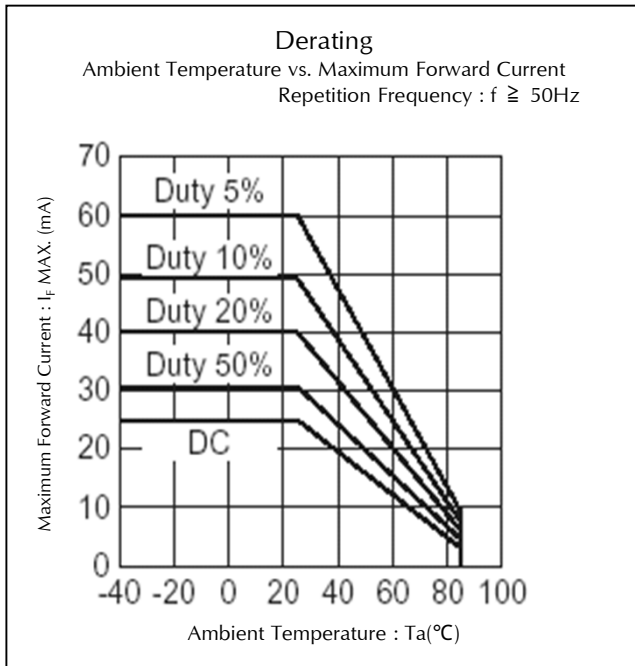
Rank	I <sub>v</sub> (mcd)								Condition
	UB		UG		UY		UR		
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
A					250	500	220	440	I <sub>F</sub> = 20mA
B					350	700	300	600	
C	240	480	960	1,920	500	1,000	440	880	
D	336	672	1,344	2,688	700	1,400	600	1,200	
E	480	960	1,920	3,840	1,000	2,000	880	1,760	
F	672	1,344	2,688	5,376	1,400	-	1,200	-	
G	960	1,920	3,840	7,680					
H	1,344	-	5,376	-					

※ Please contact our sales staff concerning rank designation of UY and UR.

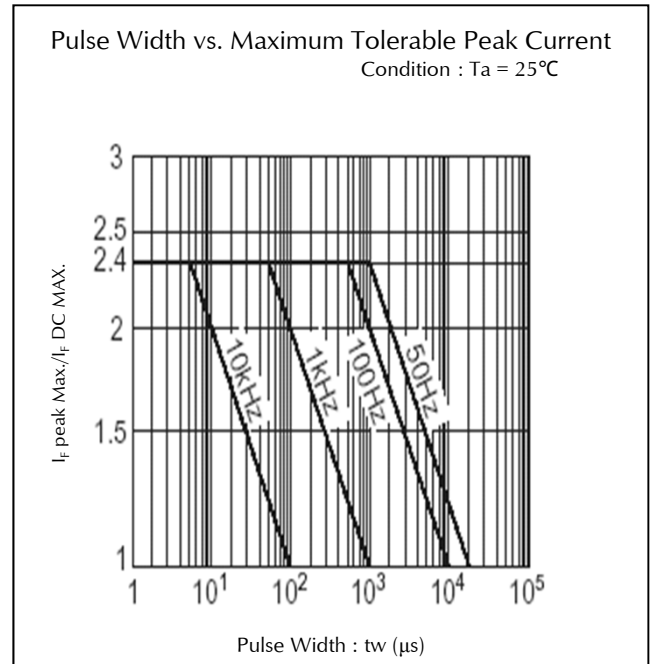
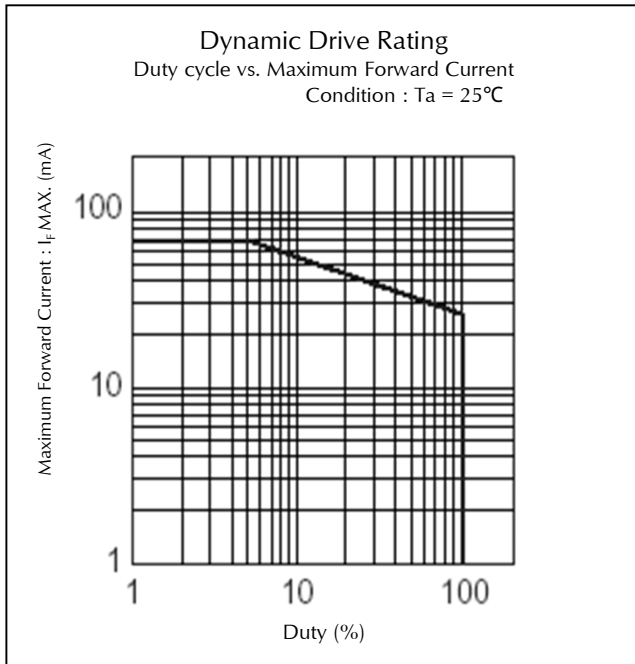
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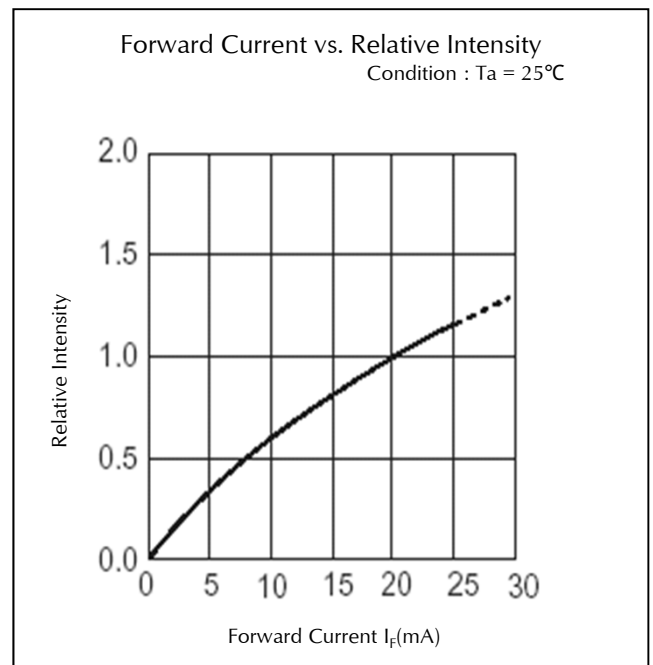
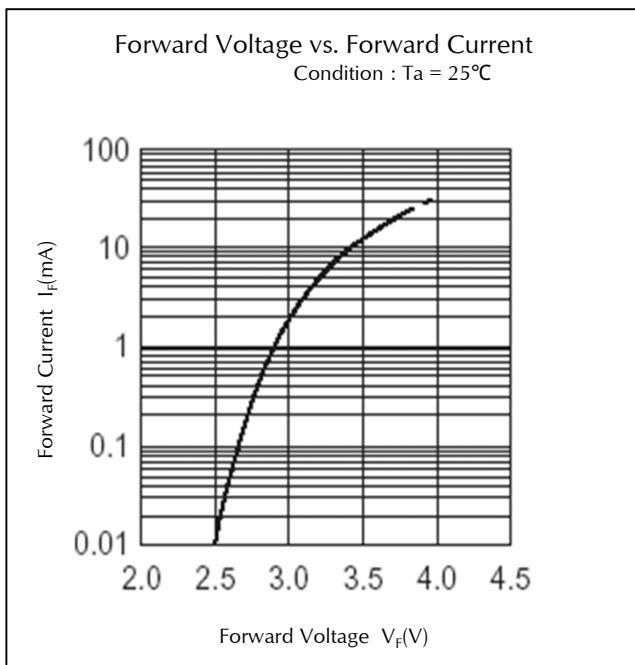
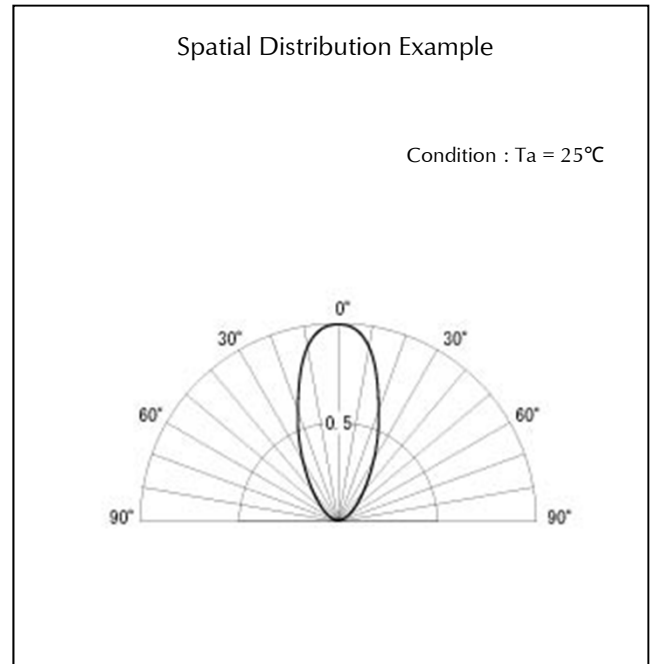
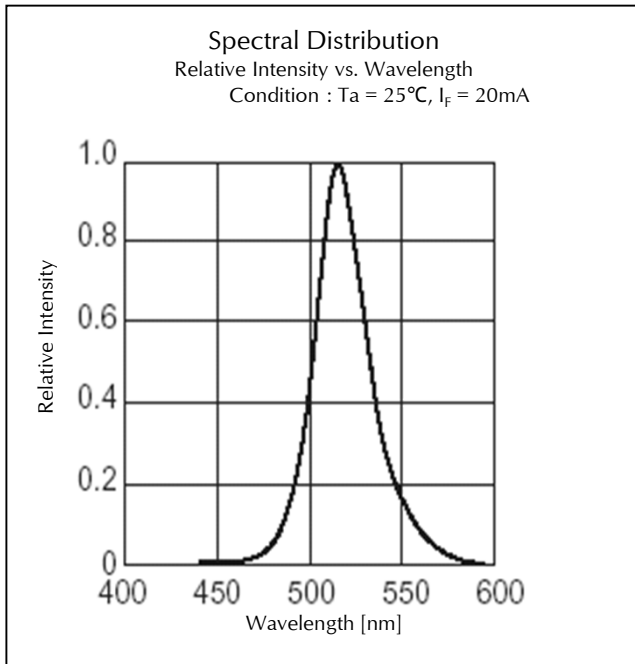


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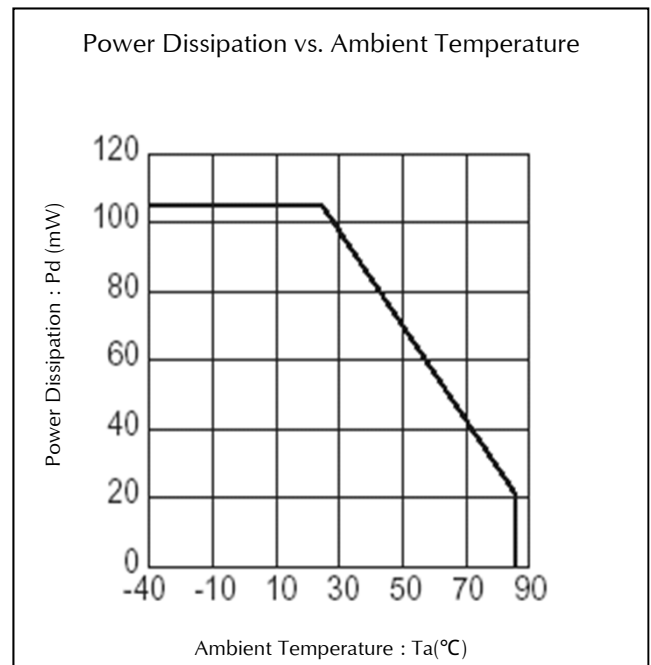
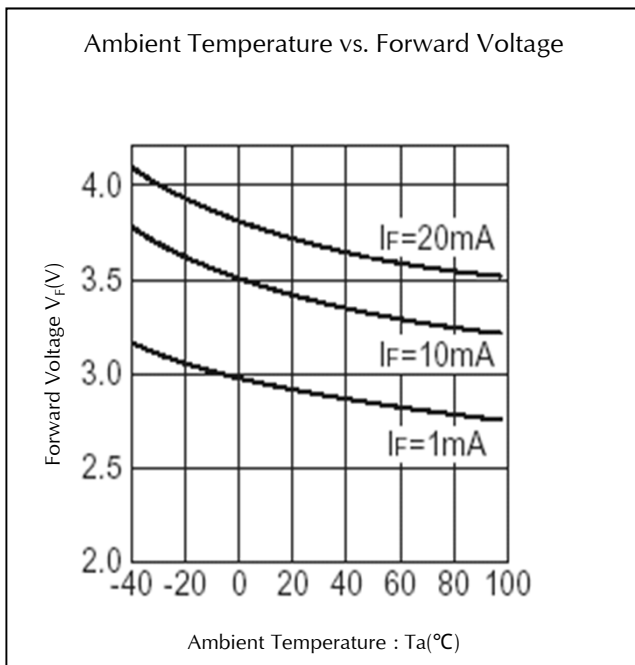
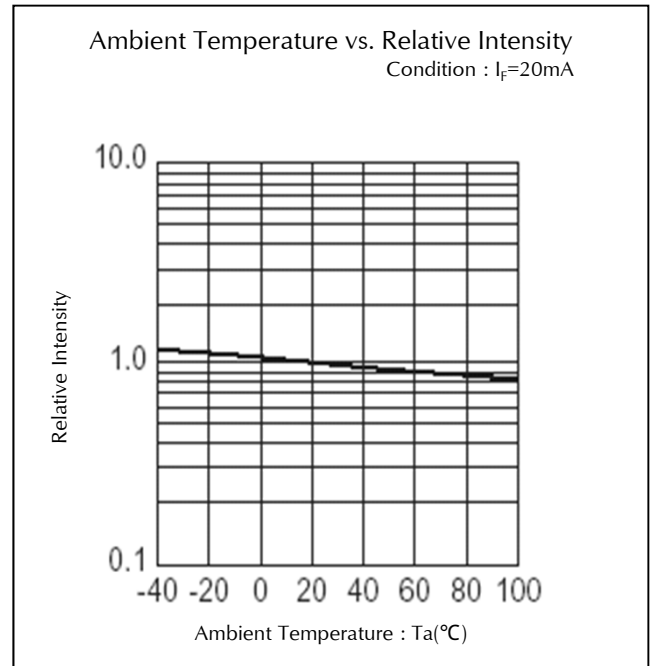
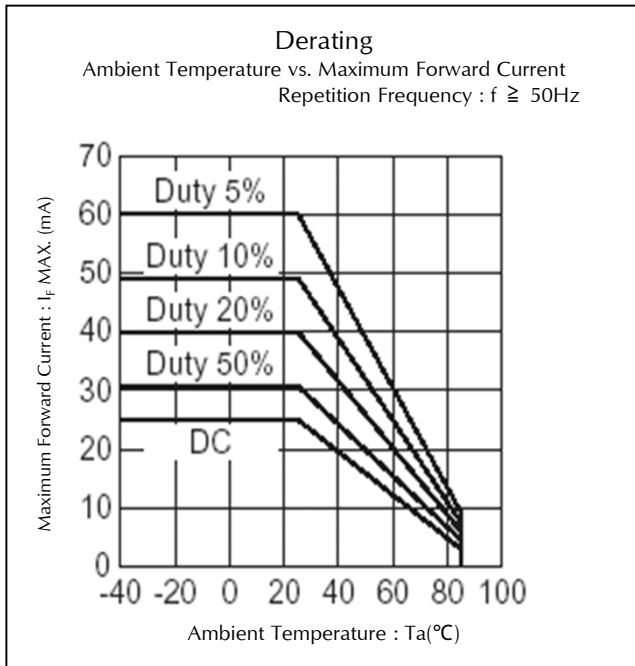




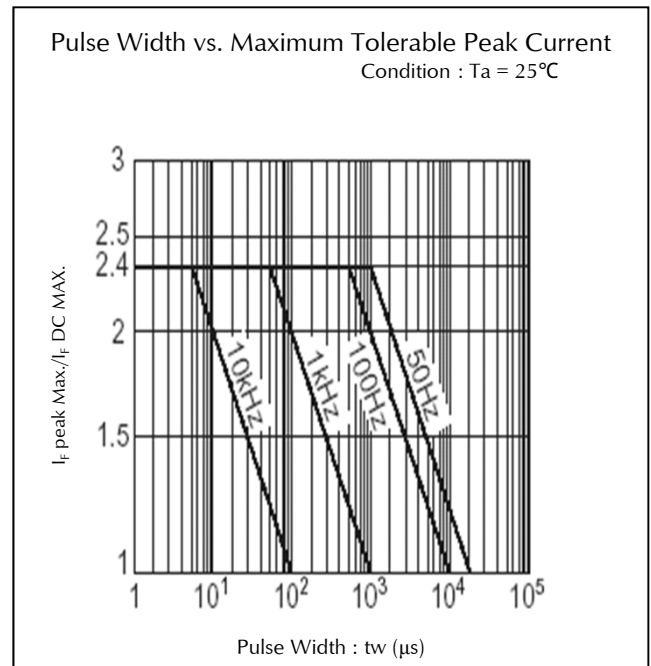
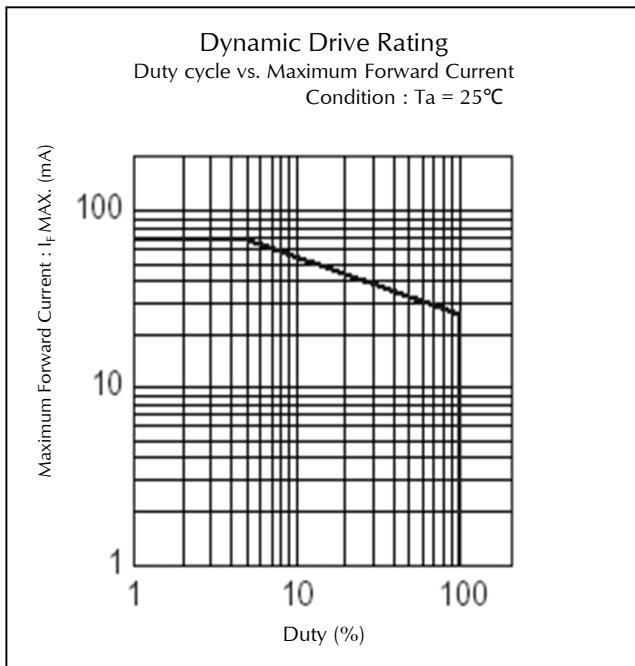
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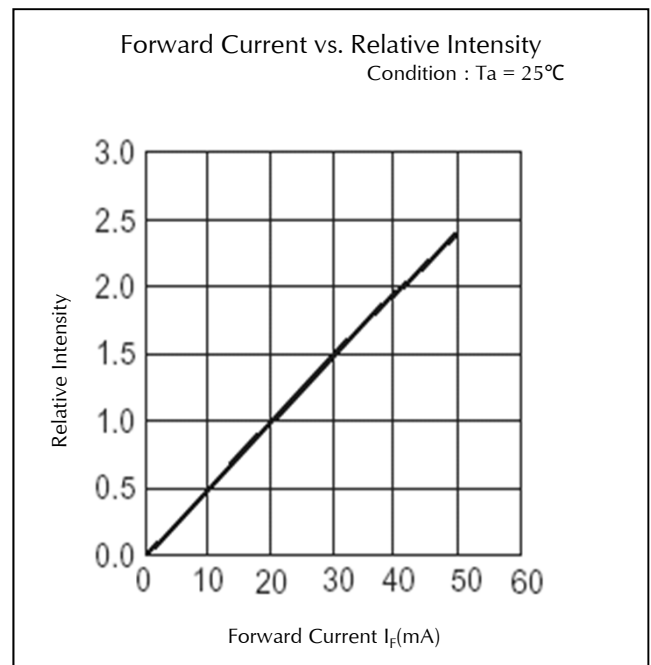
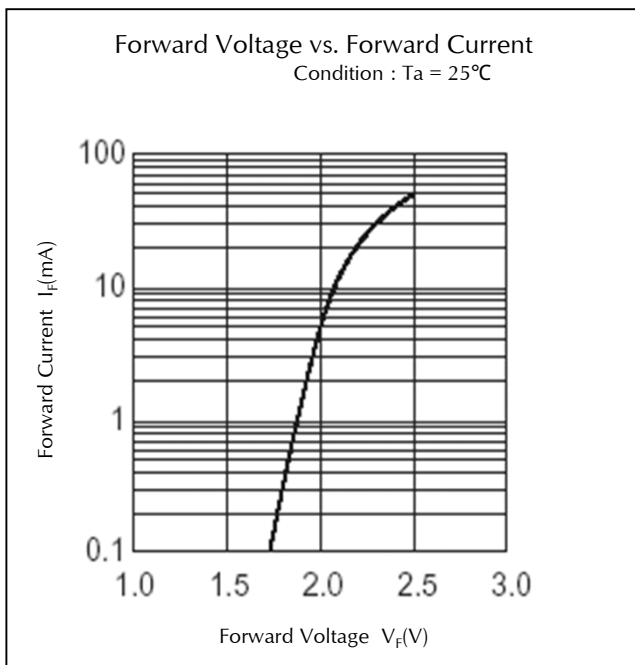
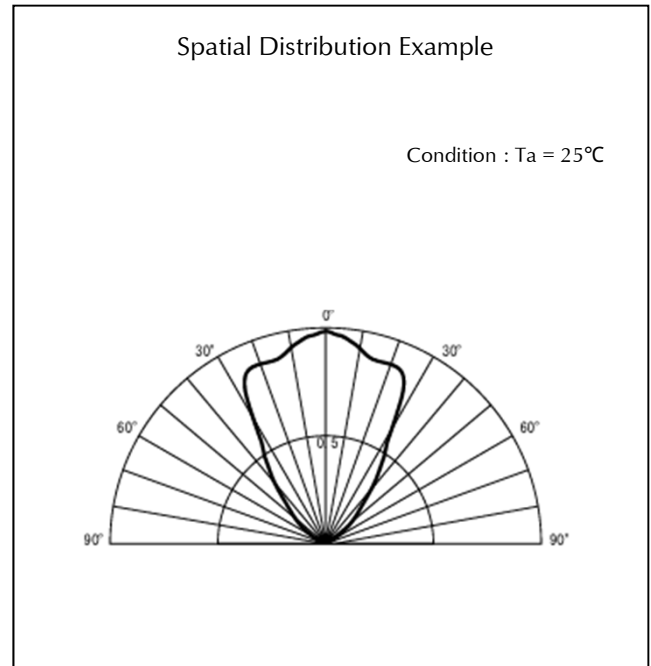
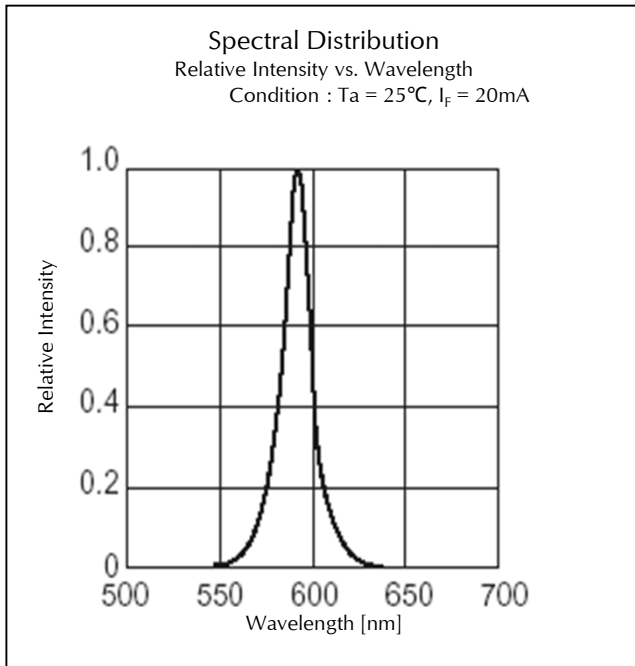
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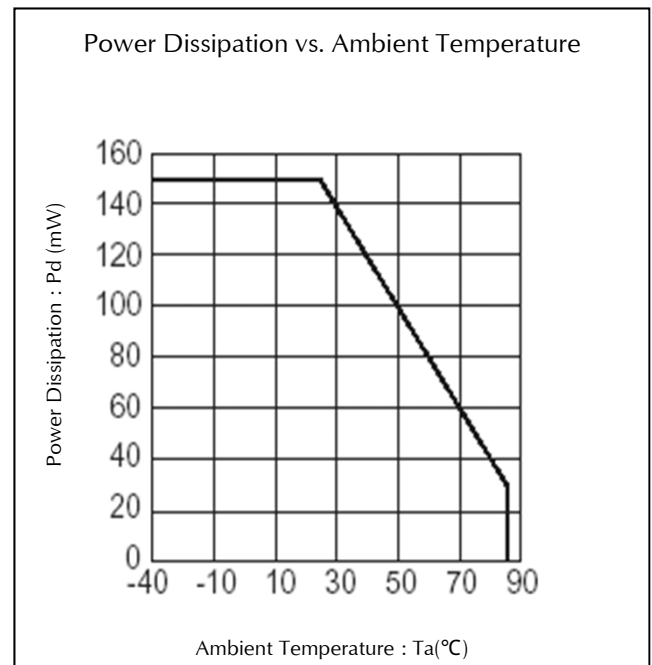
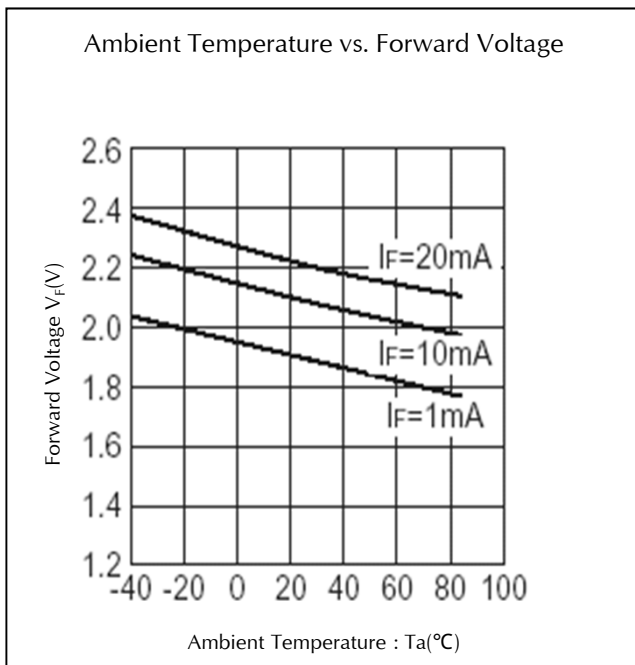
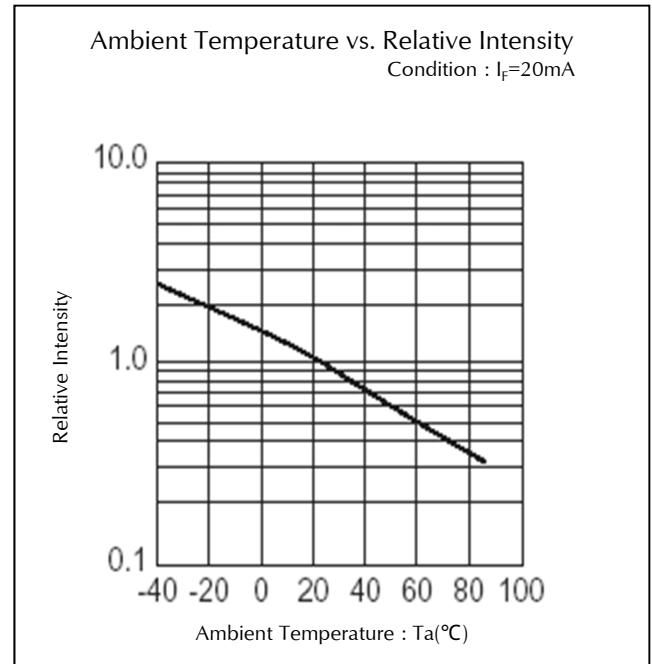
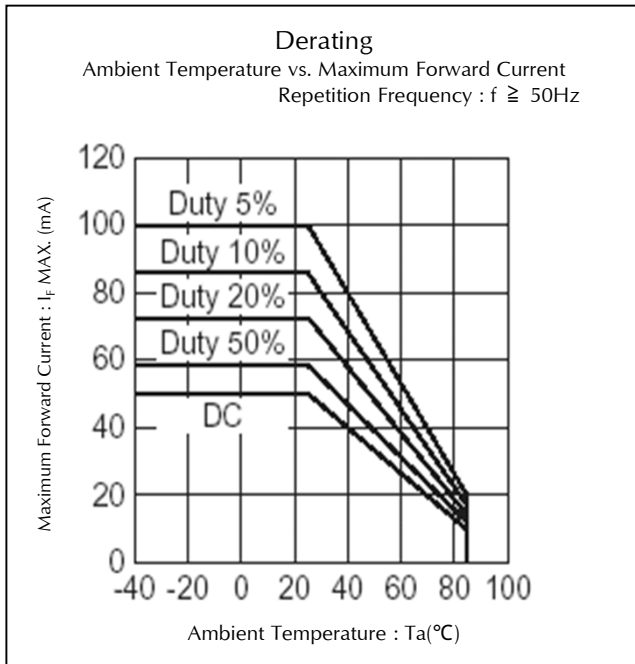
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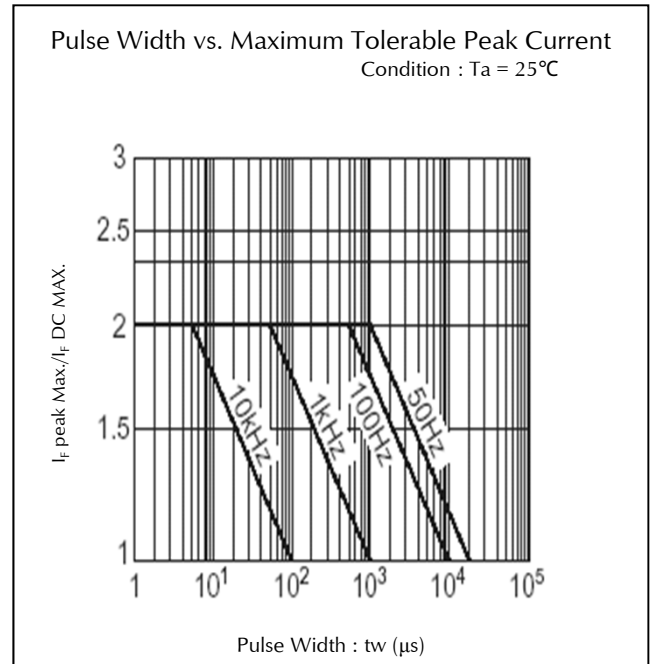
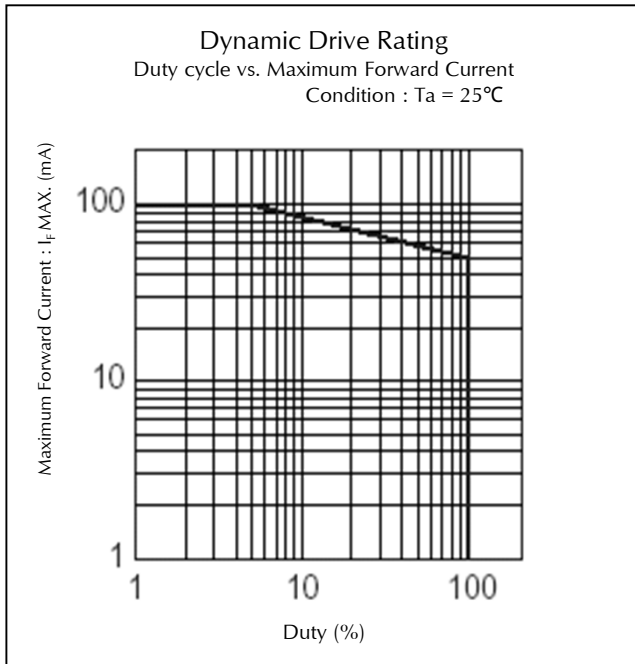
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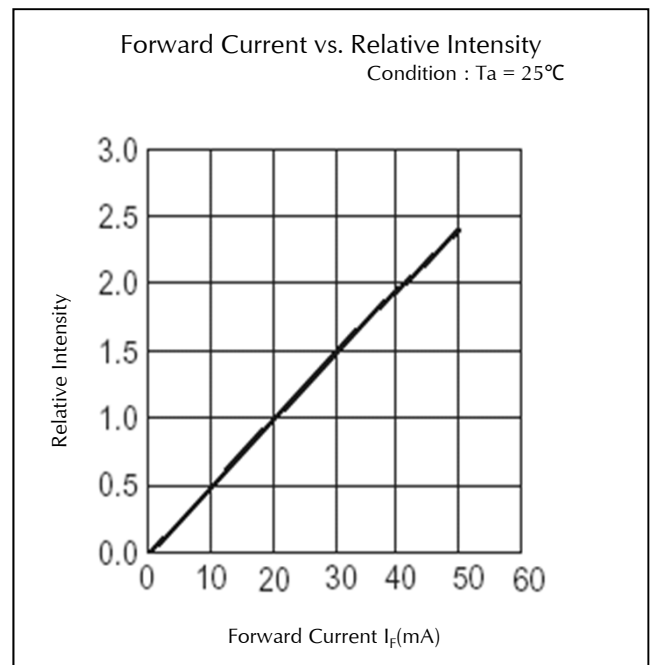
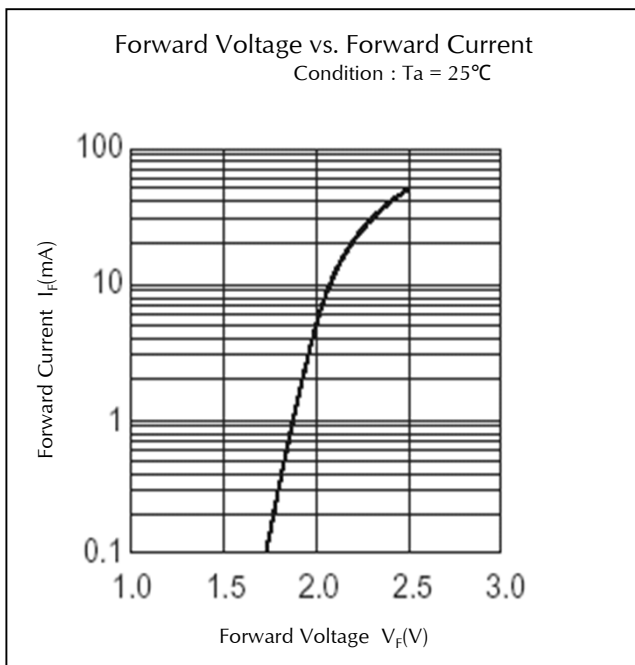
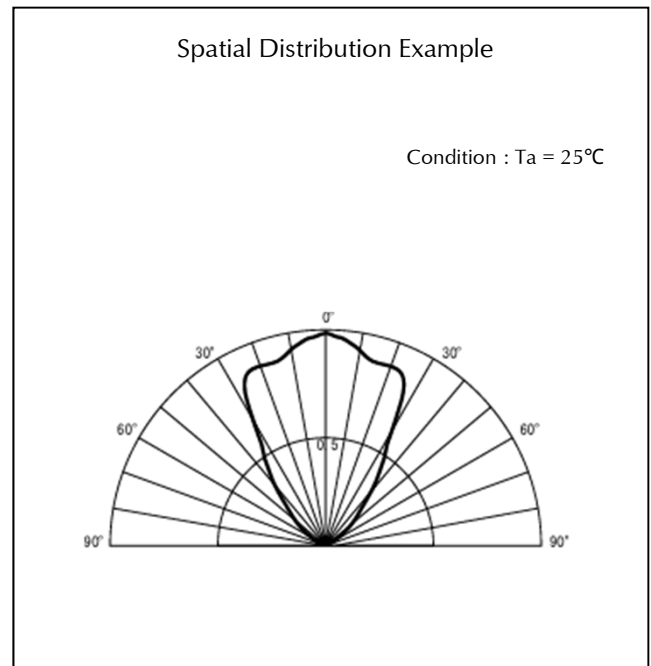
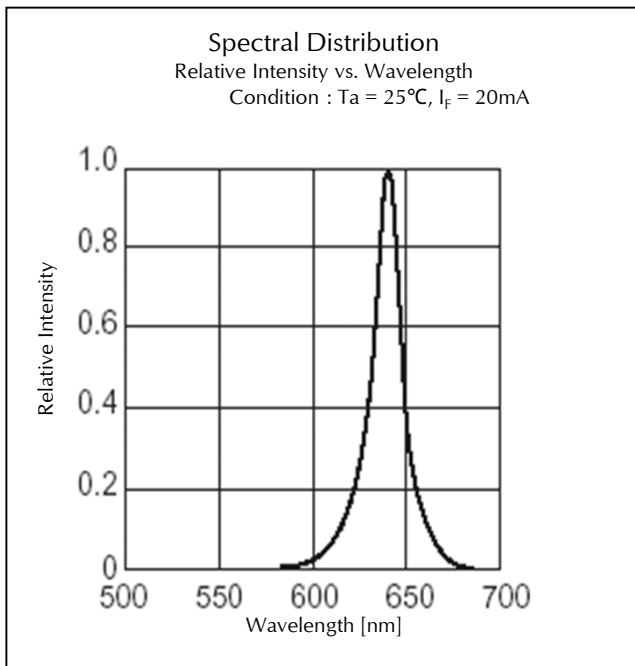
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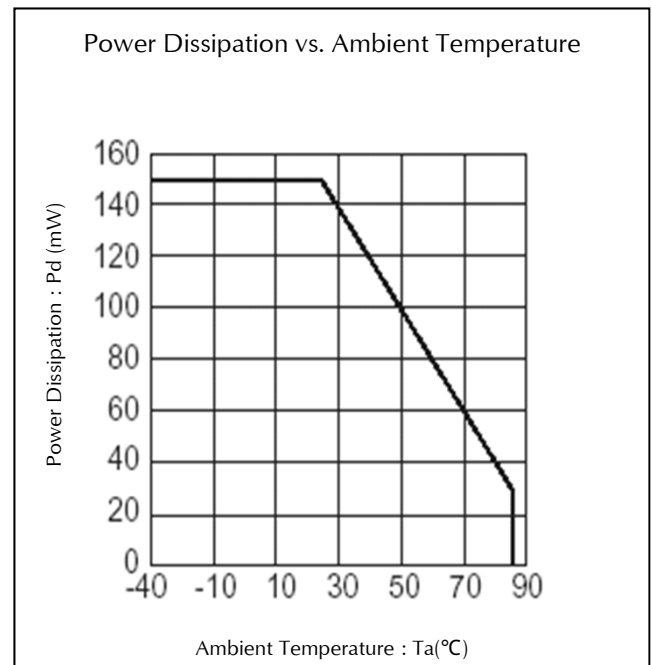
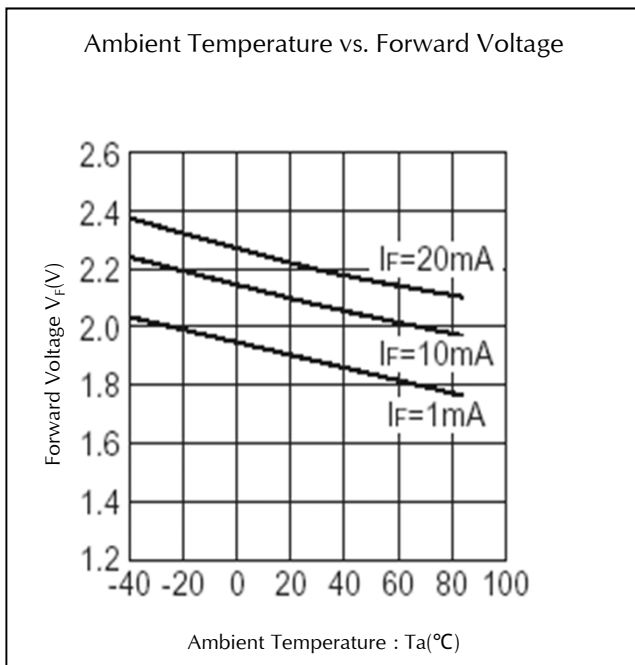
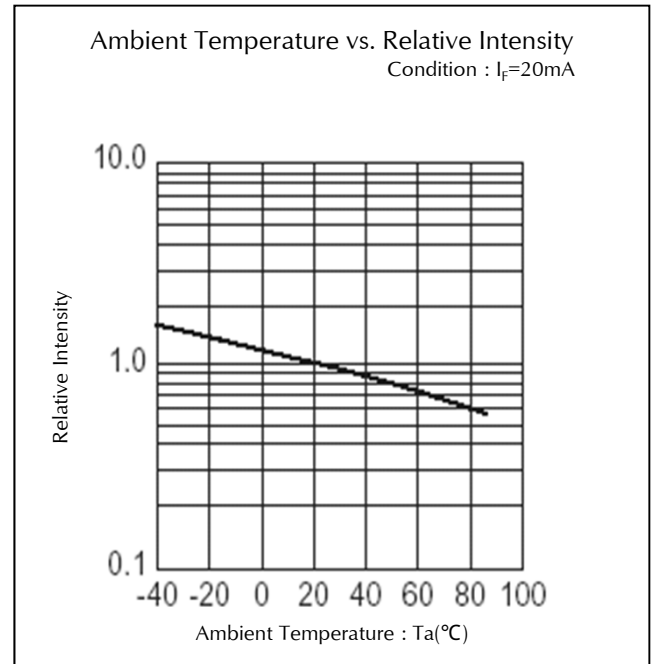
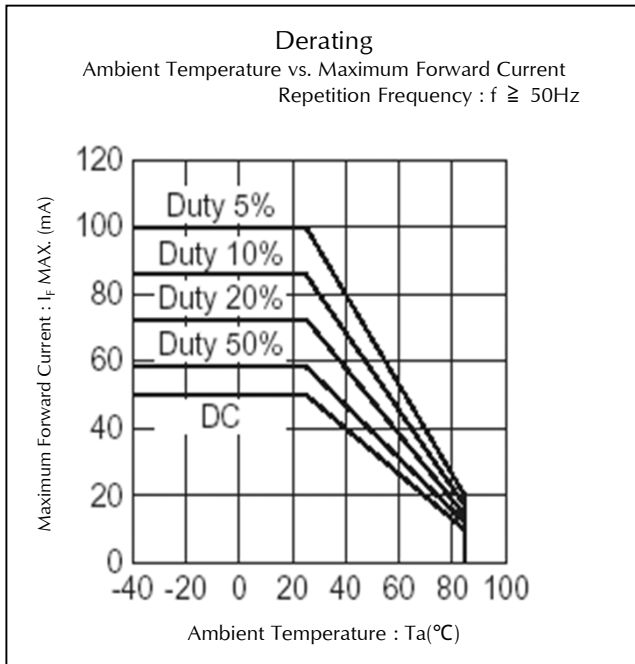
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## Technical Data(UR)

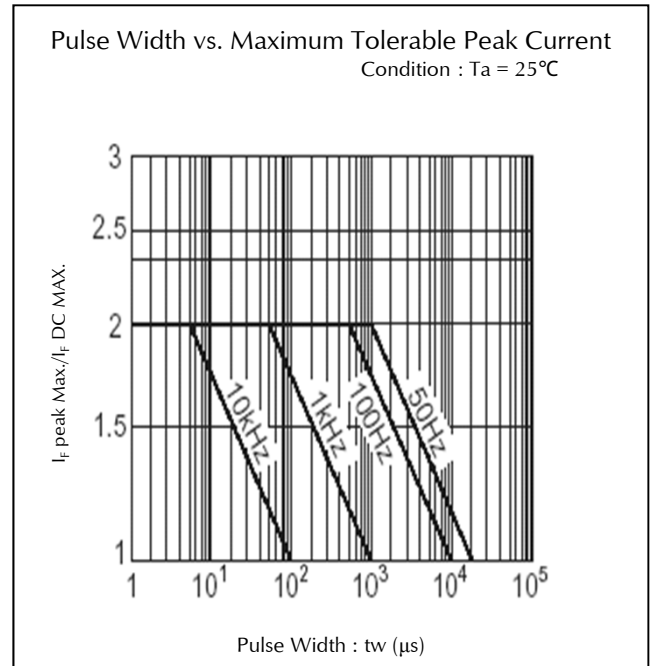
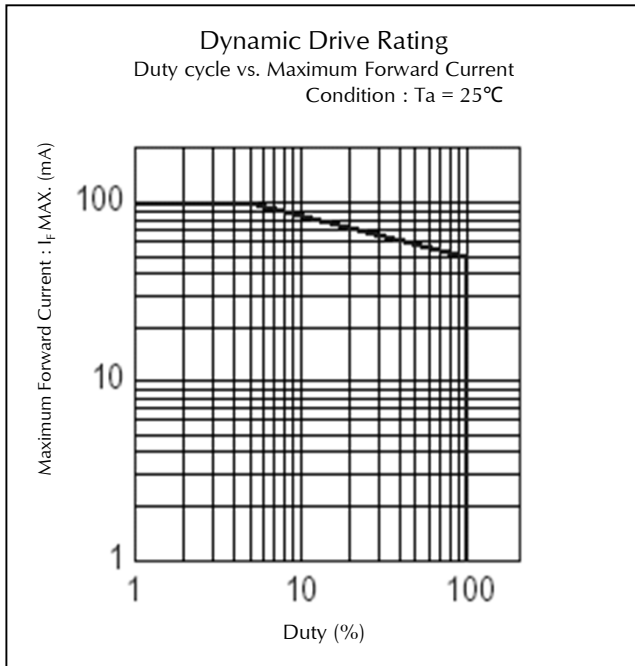


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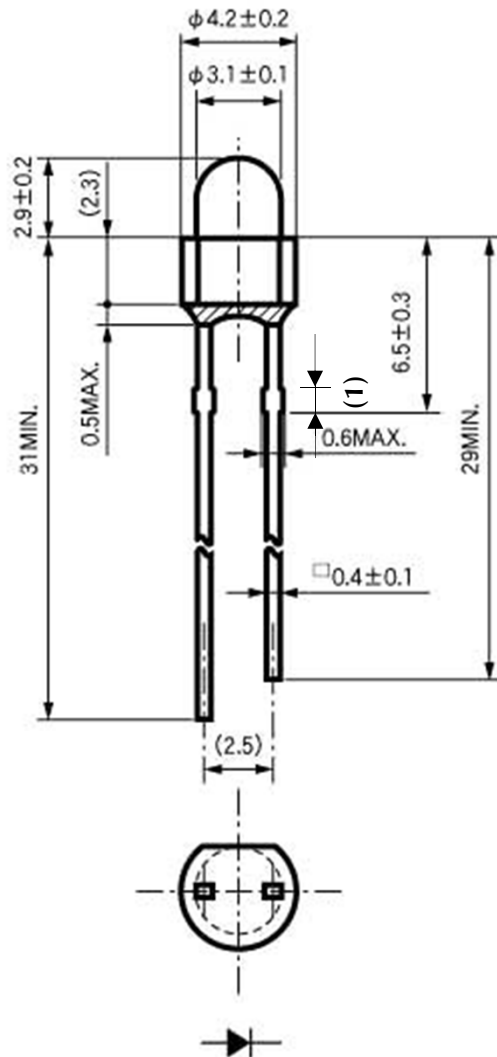


## Technical Data(UR)



## Package Dimensions

(Unit: mm)



## TTW (Through The Wave) soldering Conditions

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Pre-heating	100 °C	(MAX.)
Solder Bath Temp.	265°C	(MAX.)
Dipping Time	5 s	(MAX.)

- 1) The dip soldering process shall be 2 times maximum.
- 2) The product shall be cooled to room temp. before the second dipping process.
  - ※ The detail is described to LED and Photodetector handling precautions of home page: "Mounting through-hole Type Devices" and "Soldering", and use it after the confirmation, please.

## Manual Soldering Conditions

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Iron tip temp.	360°C	(MAX.)
Soldering time and frequency	3 s	(MAX.)
	2 times	(MAX.)

- ※ The detail is described to LED and Photodetector handling precautions of home page: "Mounting through-hole Type Devices" and "Soldering", and use it after the confirmation, please.

## Reliability Testing Result

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(302)	260±5°C, 1.6mm from package base	10s	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
Lead Tension	EIAJ ED-4701/400(401)	10N, 1time (□0.4 and Flat Package : 5N)	10s	0/10
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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