



U□38□4X Series

Single Color ϕ 3 Flush Mount Round Shape Type

Features

Package	ϕ 3 Round shape type, UB,UC,UG : Water Clear epoxy UY : Pale Yellow Clear epoxy UR : Pale Red Clear epoxy
Product features	- Outer Dimension ϕ 3 Round shape type - Operation temperature range. Storage Temperature : -40°C~100°C Operating Temperature : -40°C~85°C - No lead package and lead-free soldering compatible
Dominant wavelength	Blue : 470nm (UB) Blue Green : 505nm (UC) Green : 525nm (UG) Yellow : 590nm (UY) Red : 626nm (UR)
Half Intensity Angle	UB,UC,UG : 56 deg. UY,UR : 66 deg.
Die materials	UB,UC,UG : InGaN, UY,UR : AlGaInP
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), AlGaInP : 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 _F	MIN.	TYP.	I _F
UB3804X	InGa N	Blue	Water Clear Clear		470	20	240	672	20
UC3804X	InGa N	Blue Green			505	20	672	2,688	20
UG3804X	InGa N	Green			525	20	960	2,688	20
UY3864X	AlGaInP	Yellow			590	20	250	500	20
UR3864X	AlGaInP	Red			630	20	220	440	20

Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	Absolute Maximum Ratings					Unit
		UB	UC	UG	UY	UR	
Power Dissipation	P _d	105	105	105	150	150	mW
Forward Current	I _F	25	25	25	50	50	mA
Pulse Forward Current ※1	I _{FRM}	60	60	60	100	100	mA
Derating (Ta=25°C or higher)	ΔI _F	0.33	0.33	0.33	0.67	0.67	mA/°C
Reverse Voltage	V _R	5	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 ≤ 1ms., Duty ≤ 1/20.

Electro-Optical Characteristics

(Ta=25°C)

Item	Conditions	Symbol	Characteristics						Unit
				UB	UC	UG	UY	UR	
Forward Voltage	I _F =20mA	V _F	TYP.	3.7	3.7	3.7	2.2	2.2	V
			MAX.	4.2	4.2	4.2	2.8	2.8	
Reverse Current	V _R =5V	I _R	MAX.	100	100	100	100	100	μ A
Peak Wavelength	I _F =20mA	λ _p	TYP.	465	502	517	592	641	nm
Dominant Wavelength	I _F =20mA	λ _d	TYP.	470	505	525	590	630	nm
Spectral Line Half Width	I _F =20mA	Δλ	TYP.	26	30	35	18	18	nm
Half Intensity Angle	I _F =20mA	2θ 1/2	TYP.	56	56	56	66	66	deg.

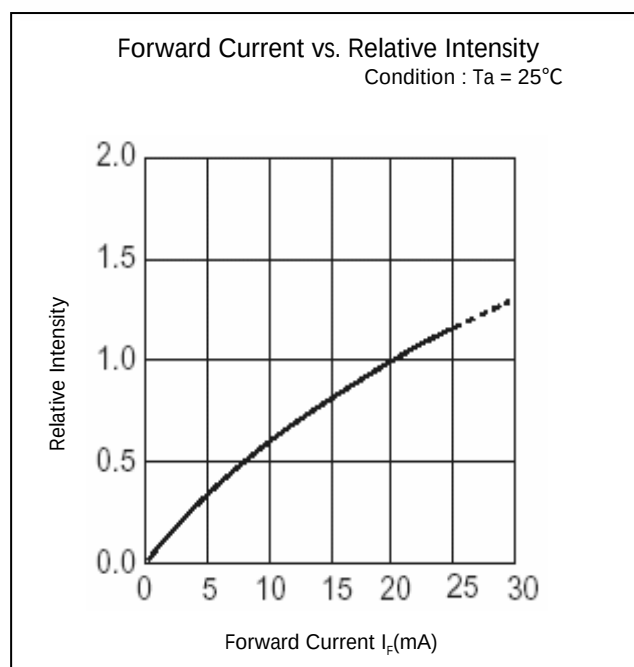
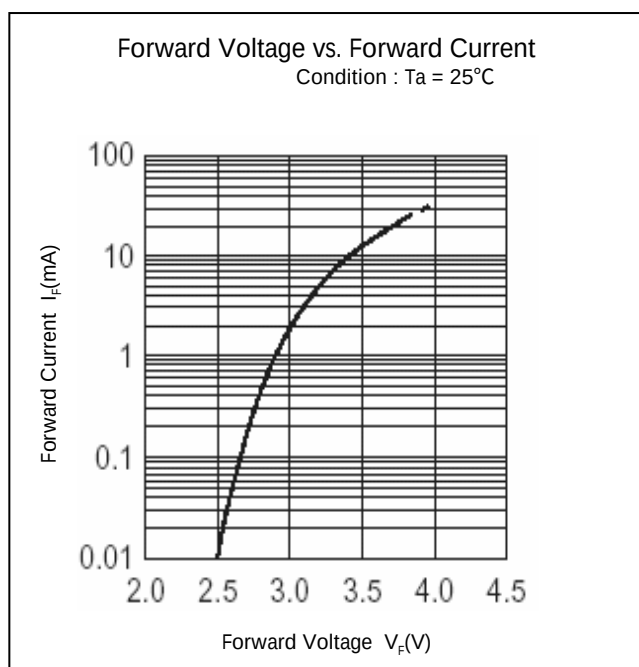
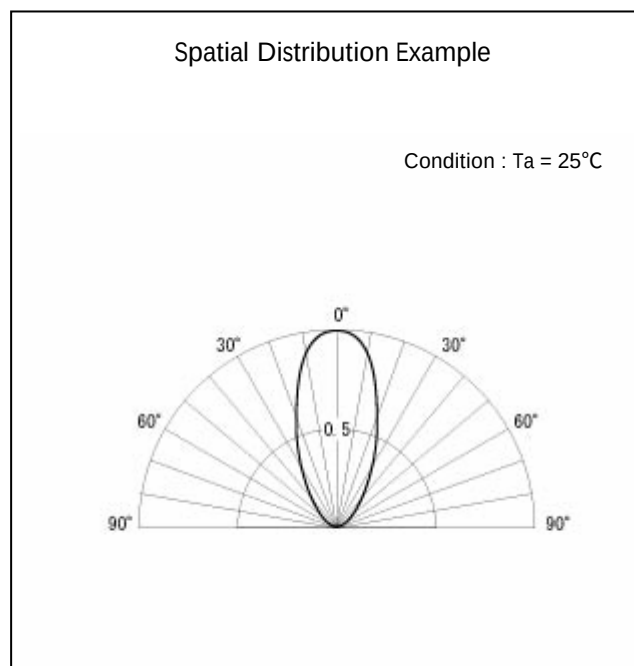
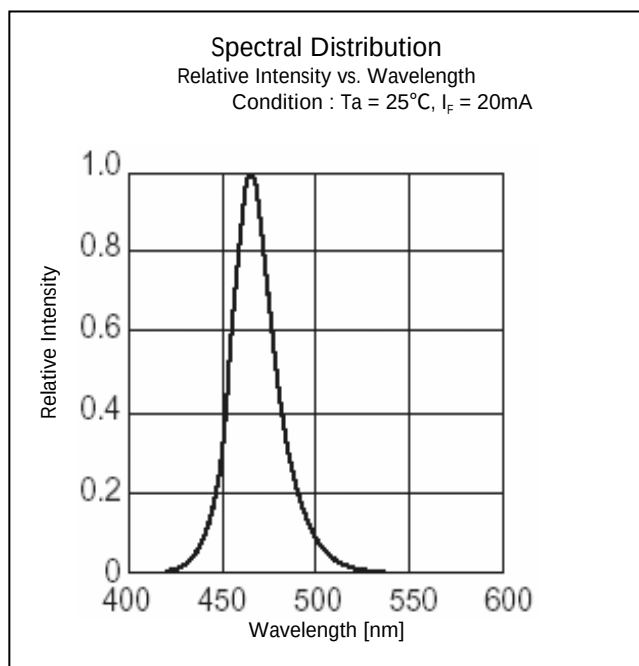
Luminous Intensity Rank

(Ta=25°C)

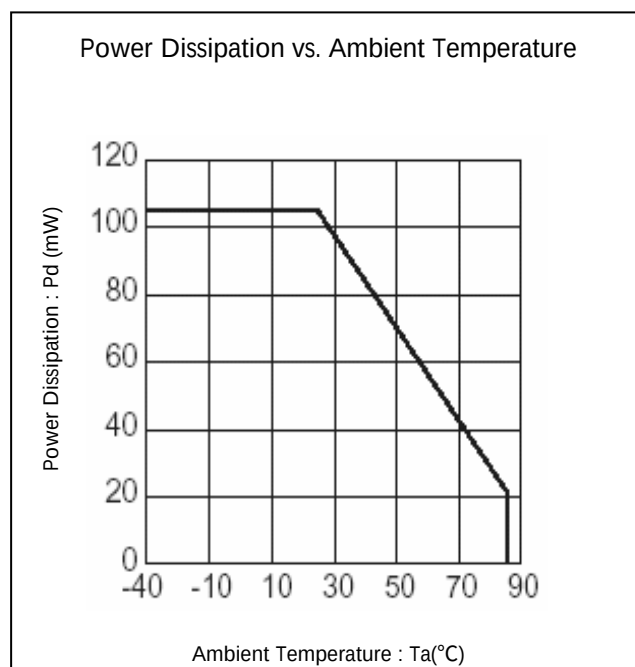
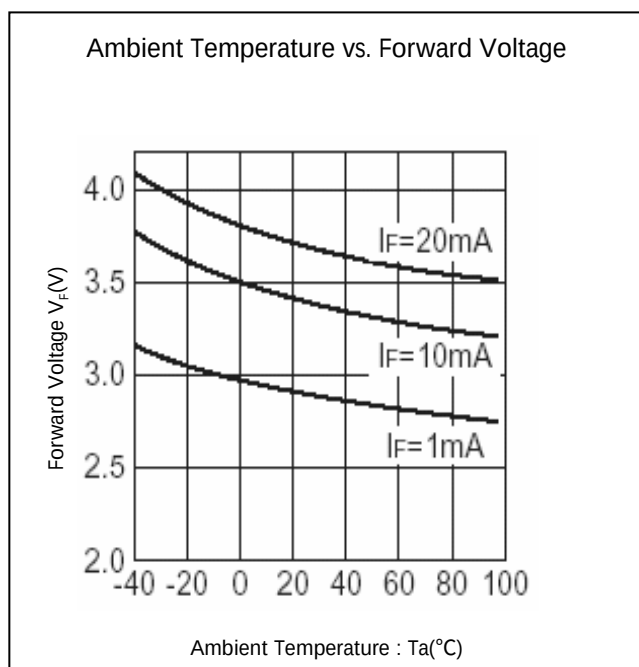
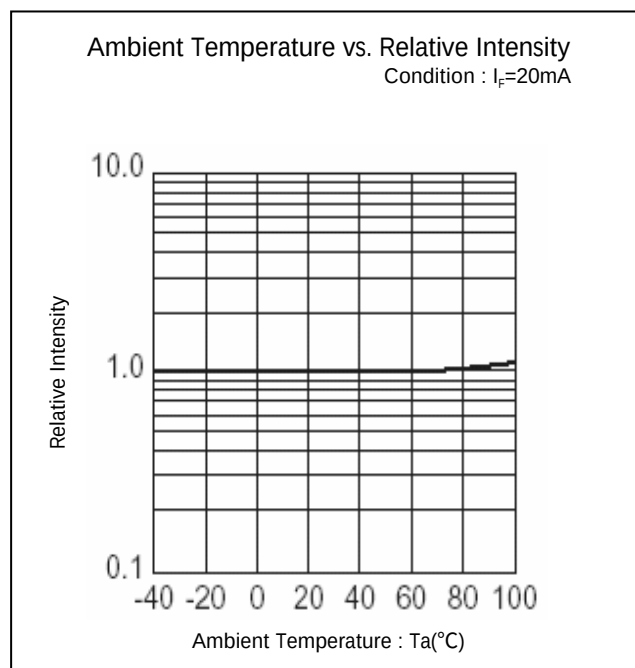
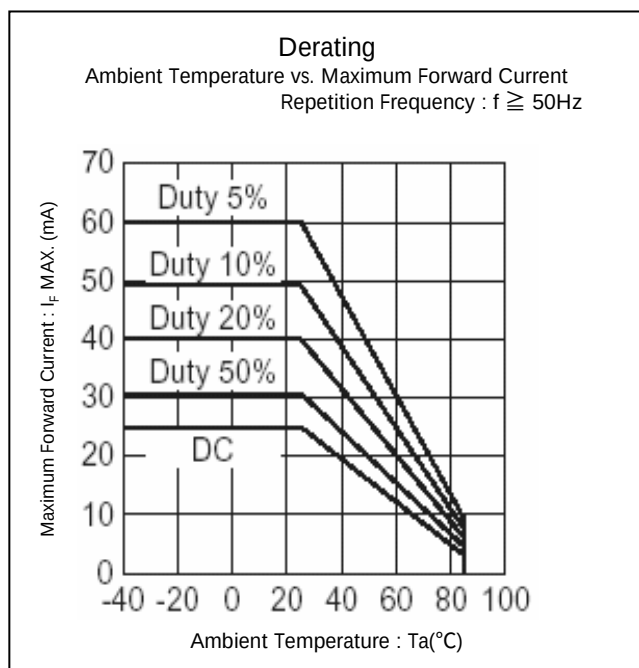
Rank	I _v (mcd)										Condition
	UB		UC		UG		UY		UR		
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
A			672	1,344			250	500	220	440	I _F = 20mA
B			960	1,920			350	700	300	600	
C	240	480	1,344	2,688	960	1,920	500	1,000	440	880	
D	336	672	1,920	3,840	1,344	2,688	700	1,400	600	1,200	
E	480	960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

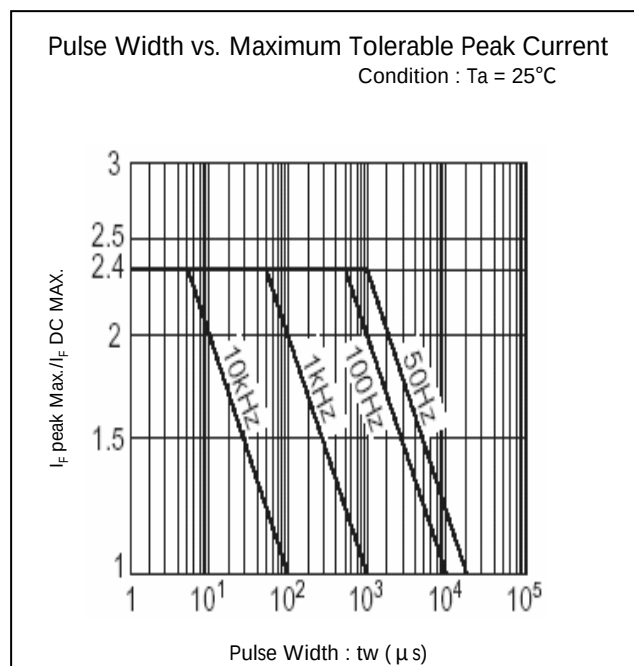
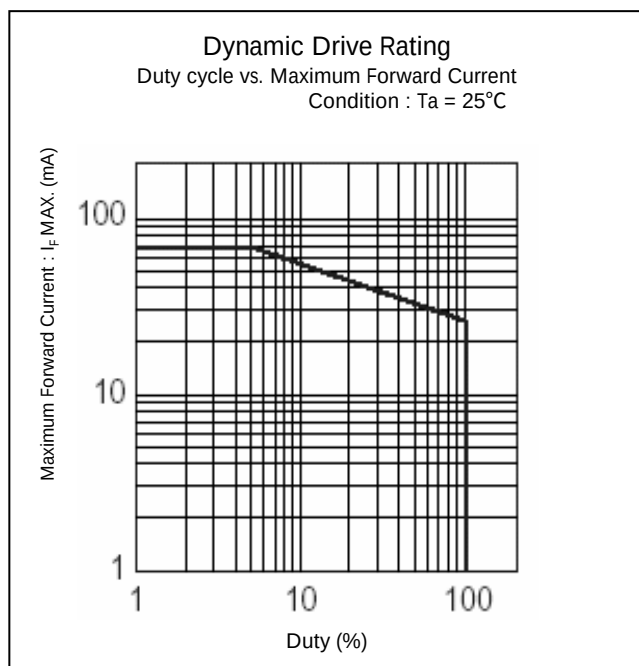
Technical Data(UB)



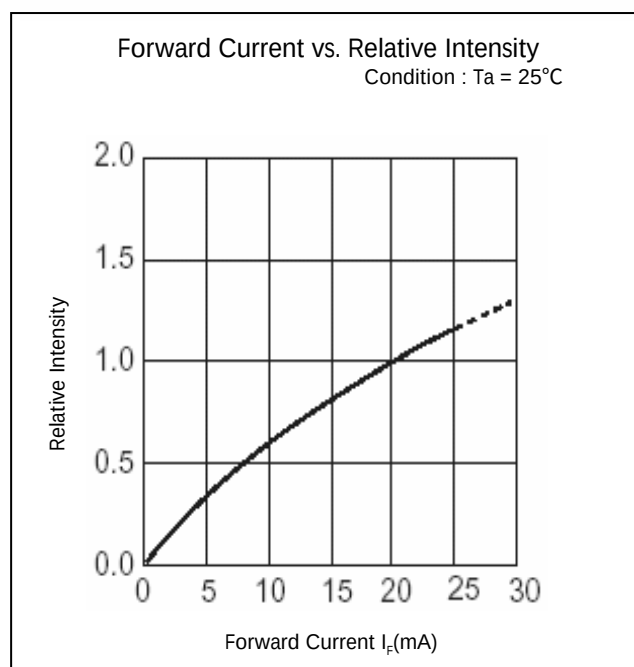
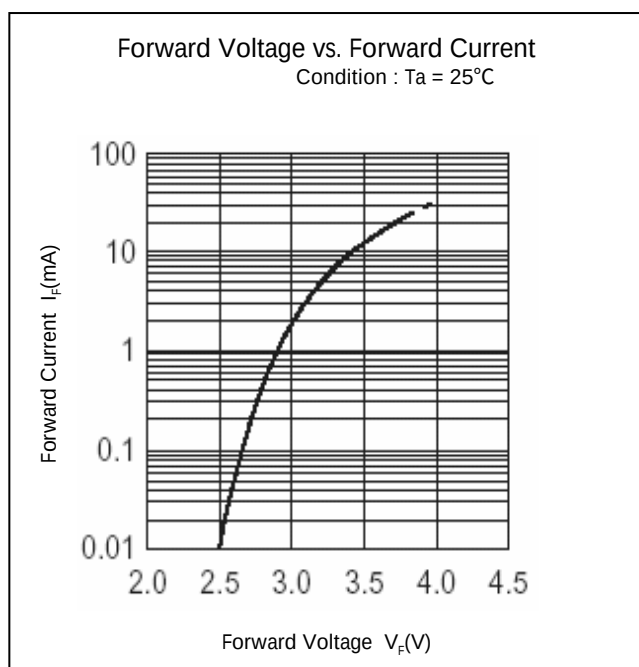
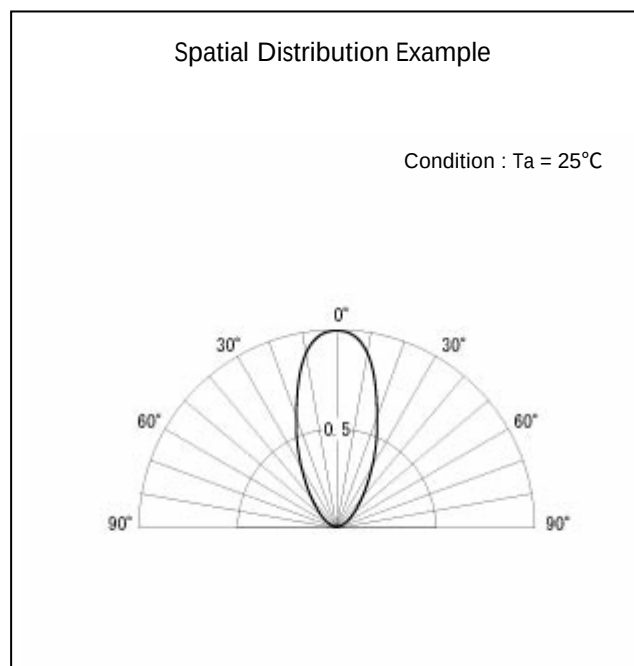
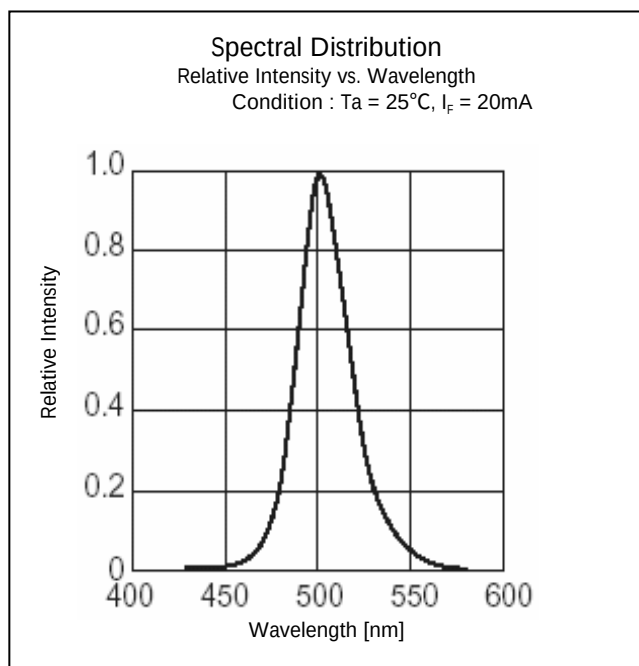
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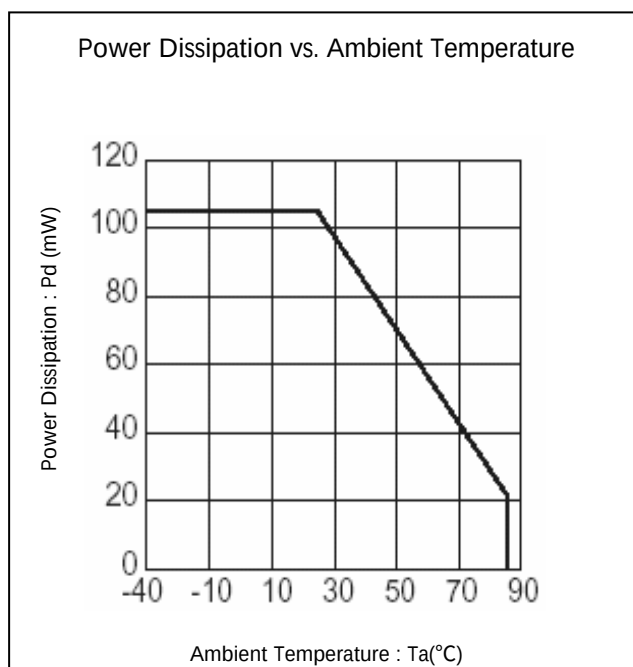
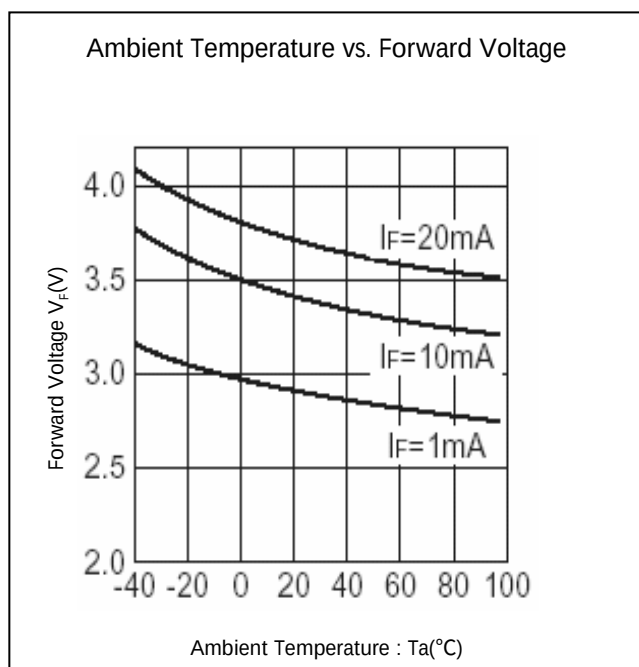
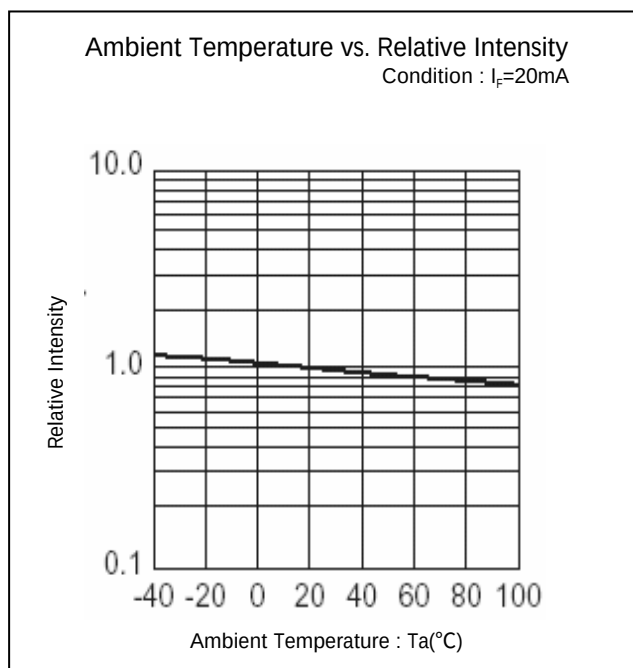
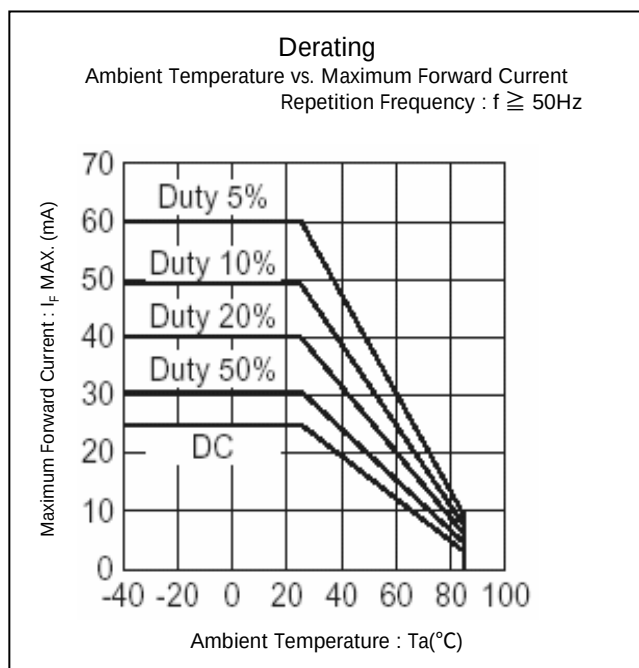
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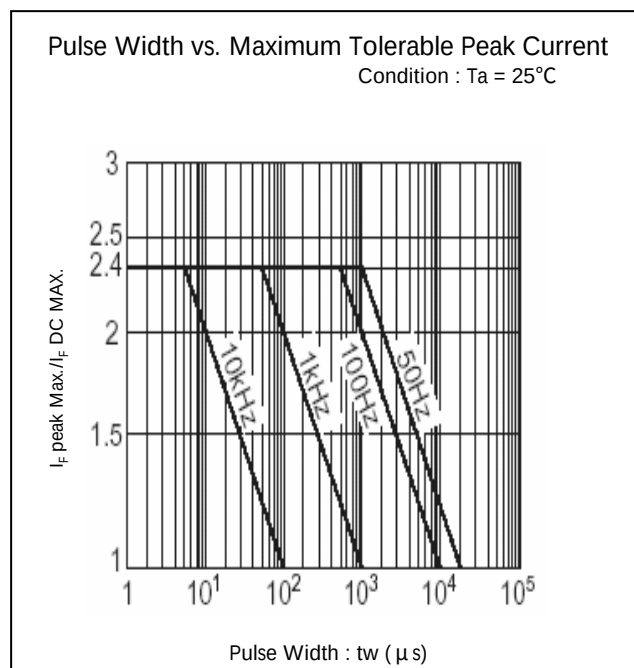
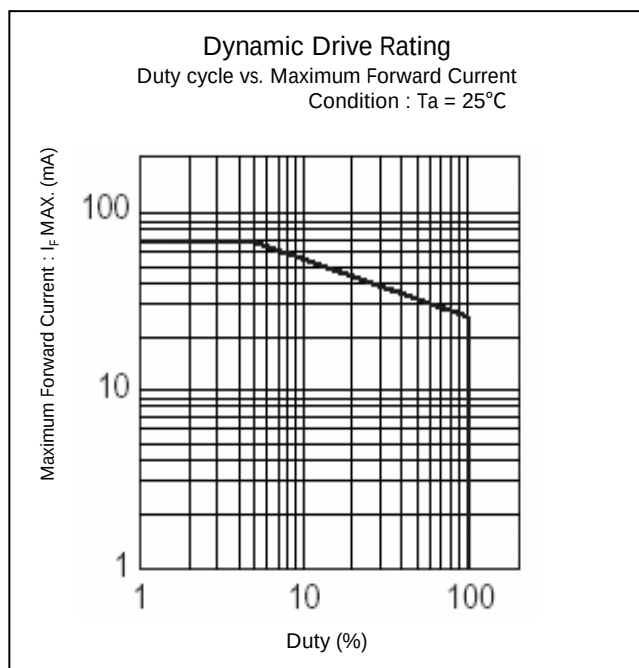
Technical Data(UC)



Technical Data(UC)

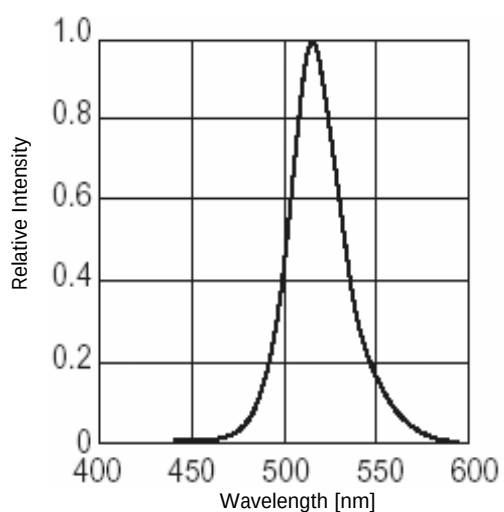


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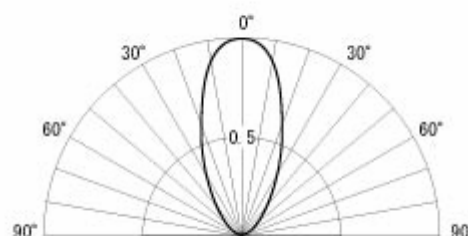
Technical Data(UG)

Spectral Distribution
Relative Intensity vs. Wavelength
Condition : $T_a = 25^\circ\text{C}$, $I_F = 20\text{mA}$

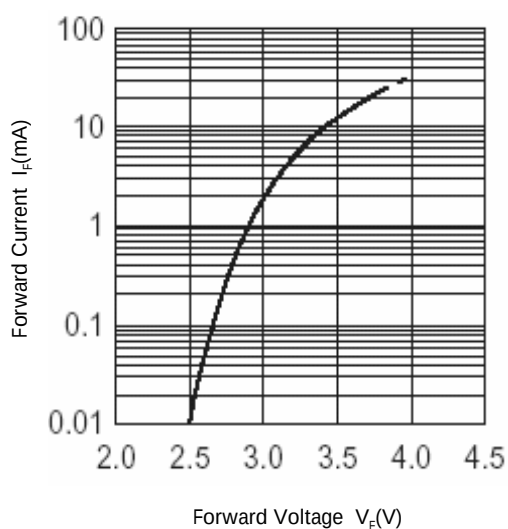


Spatial Distribution Example

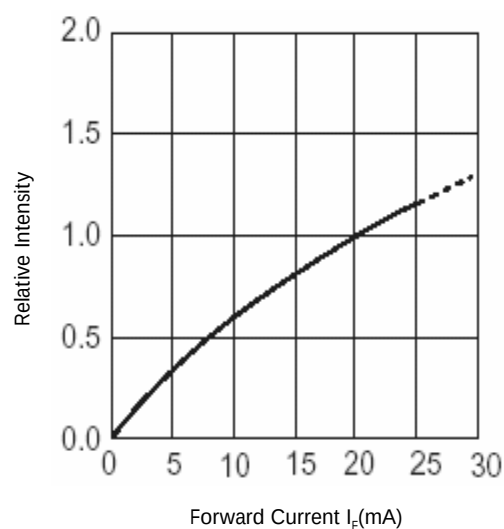
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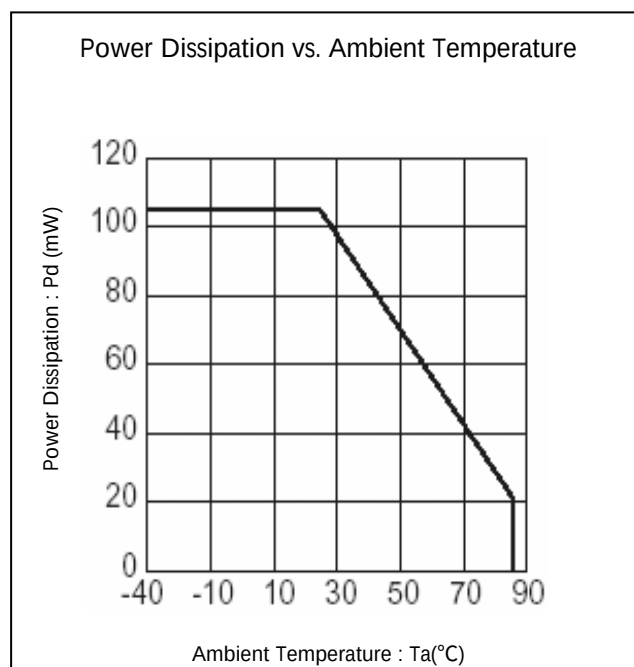
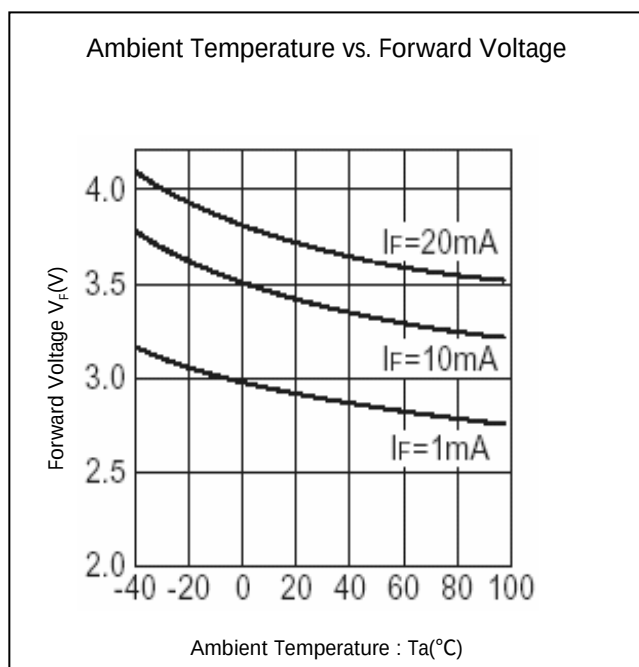
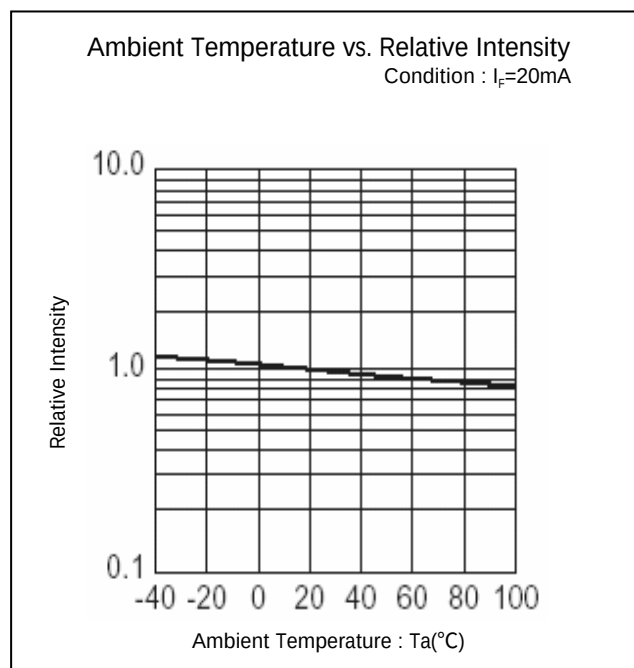
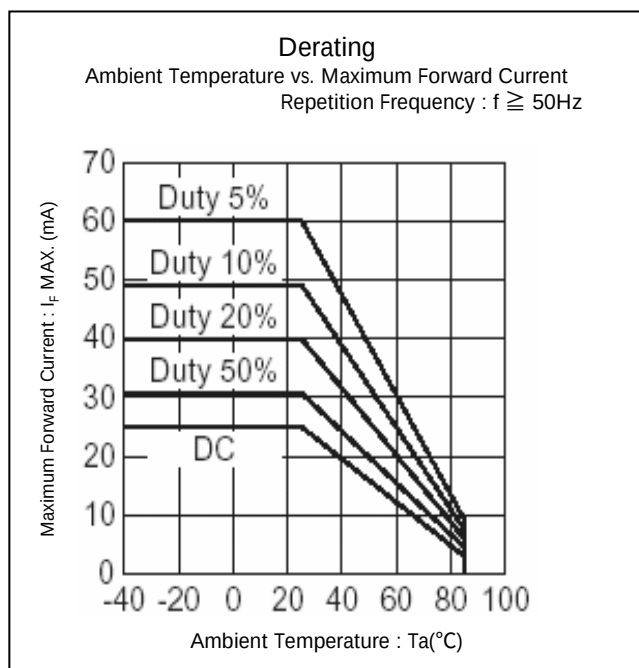
Forward Voltage vs. Forward Current
Condition : $T_a = 25^\circ\text{C}$



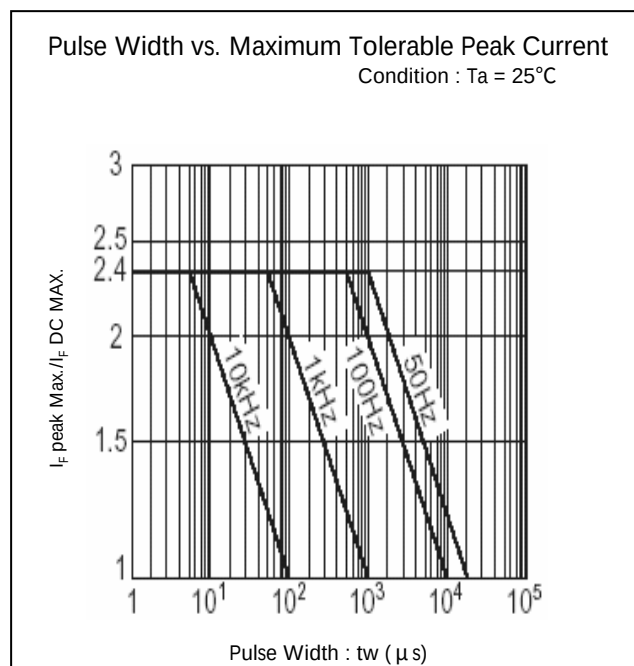
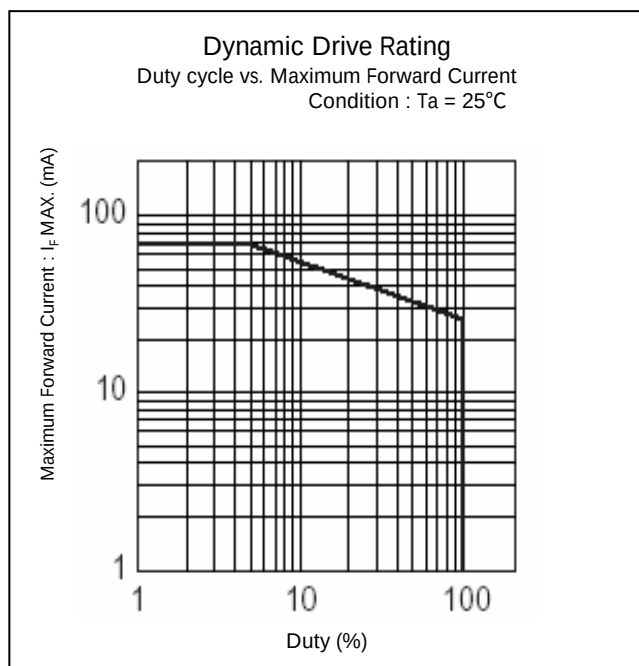
Forward Current vs. Relative Intensity
Condition : $T_a = 25^\circ\text{C}$



Technical Data(UG)

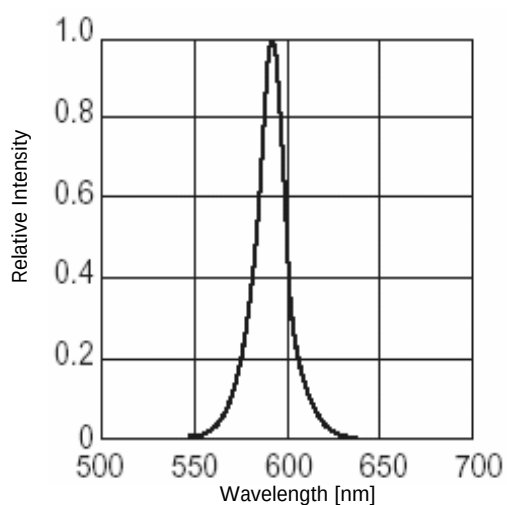


Technical Data(UG)



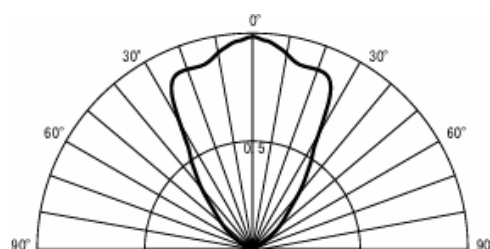
Technical Data(UY)

Spectral Distribution
Relative Intensity vs. Wavelength
Condition : $T_a = 25^\circ\text{C}$, $I_F = 20\text{mA}$

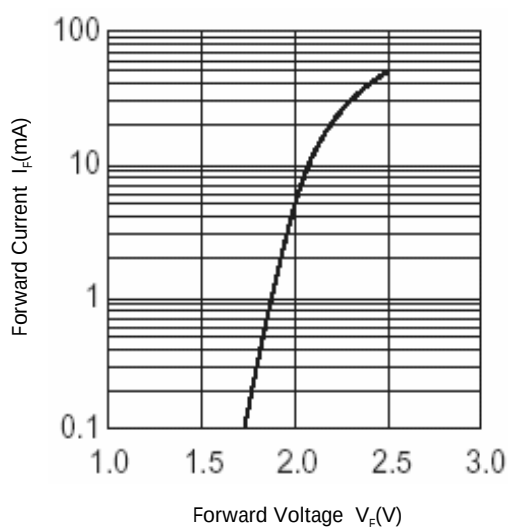


Spatial Distribution Example

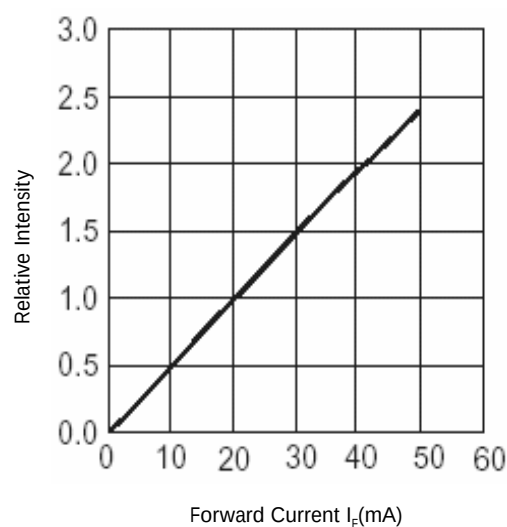
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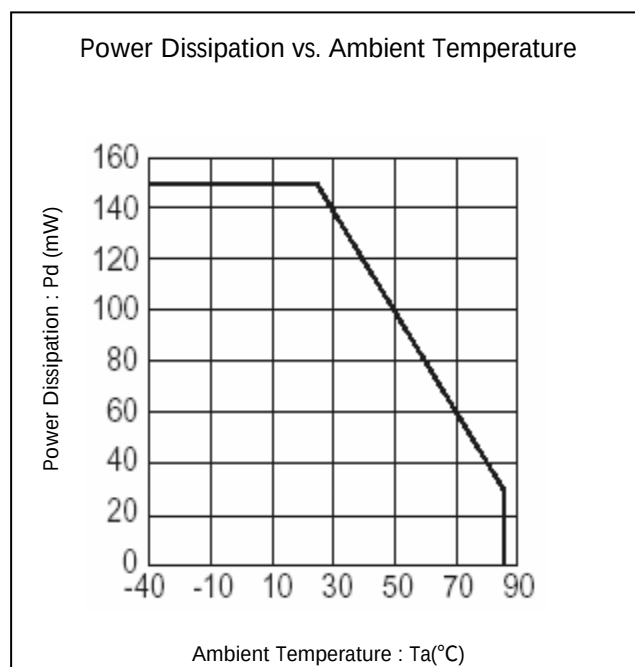
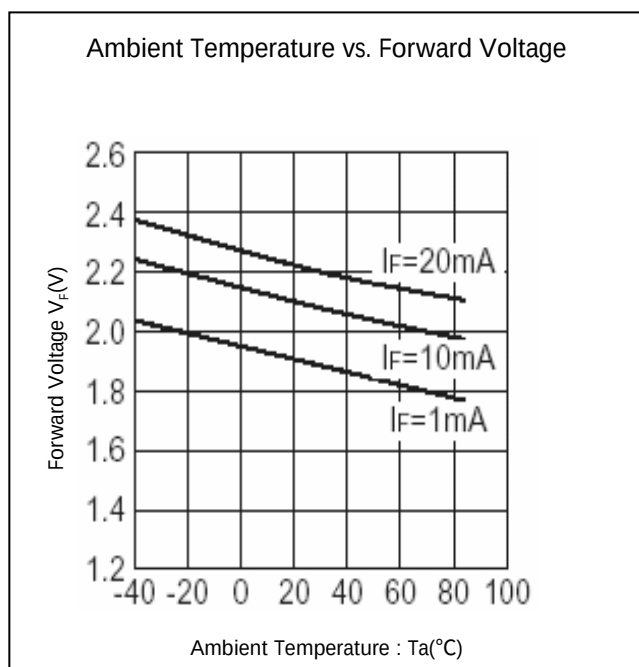
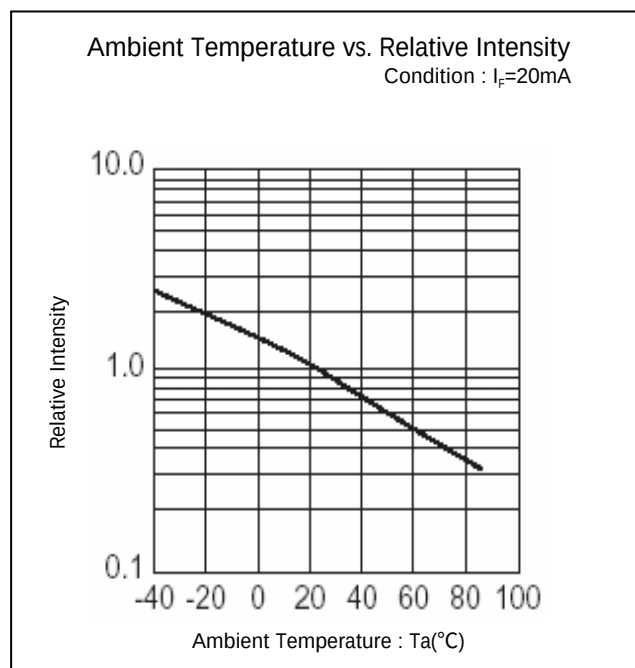
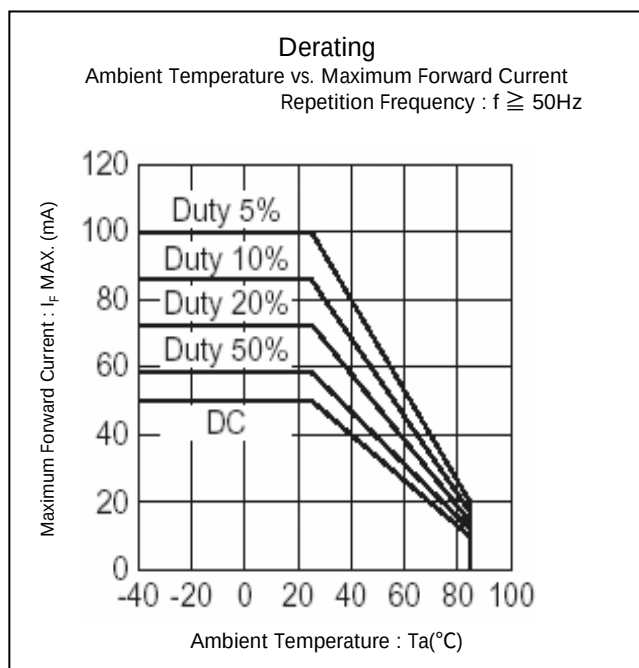
Forward Voltage vs. Forward Current
Condition : $T_a = 25^\circ\text{C}$



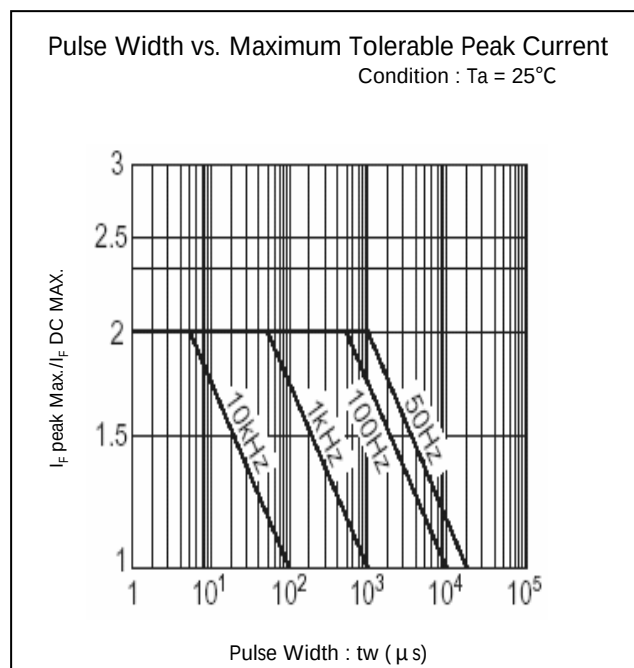
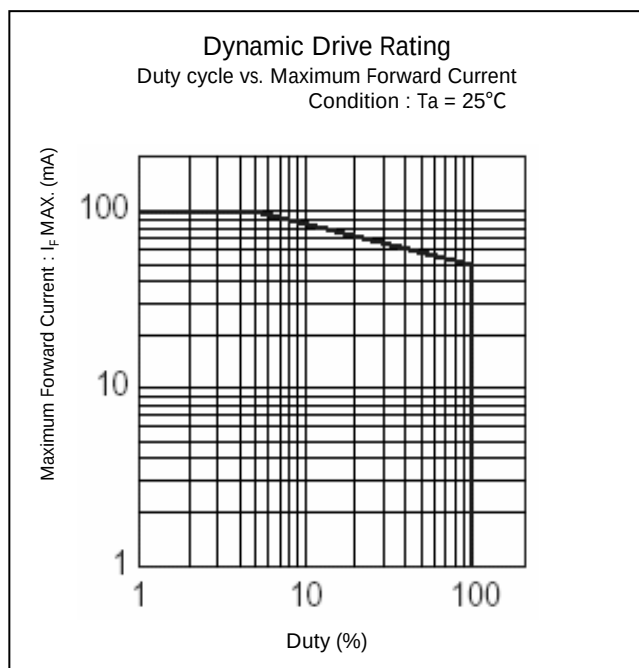
Forward Current vs. Relative Intensity
Condition : $T_a = 25^\circ\text{C}$



Technical Data(UY)

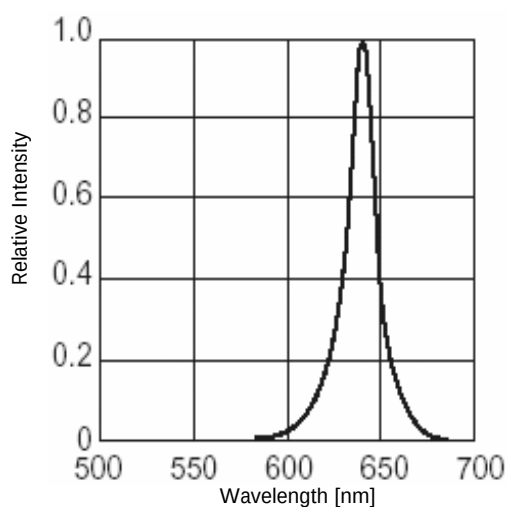


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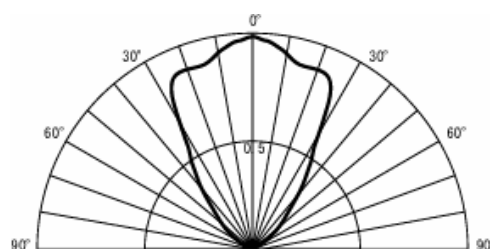
Technical Data(UR)

Spectral Distribution
Relative Intensity vs. Wavelength
Condition : $T_a = 25^\circ\text{C}$, $I_F = 20\text{mA}$

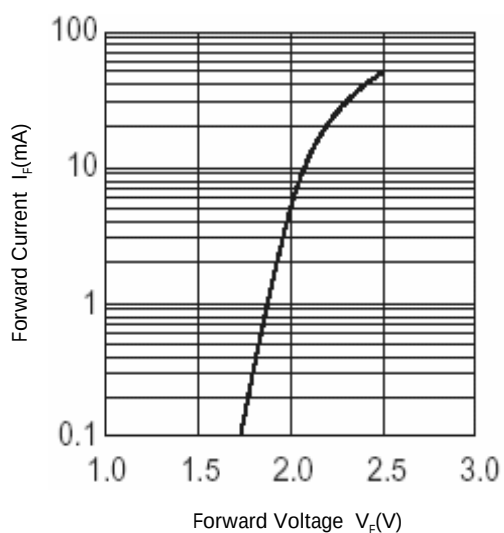


Spatial Distribution Example

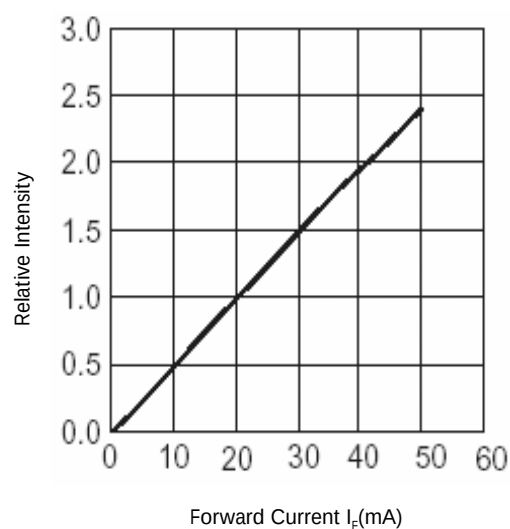
Condition : $T_a = 25^\circ\text{C}$



Forward Voltage vs. Forward Current
Condition : $T_a = 25^\circ\text{C}$



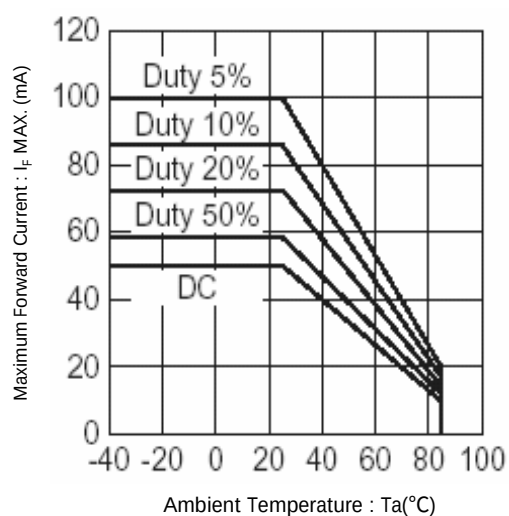
Forward Current vs. Relative Intensity
Condition : $T_a = 25^\circ\text{C}$



Technical Data(UR)

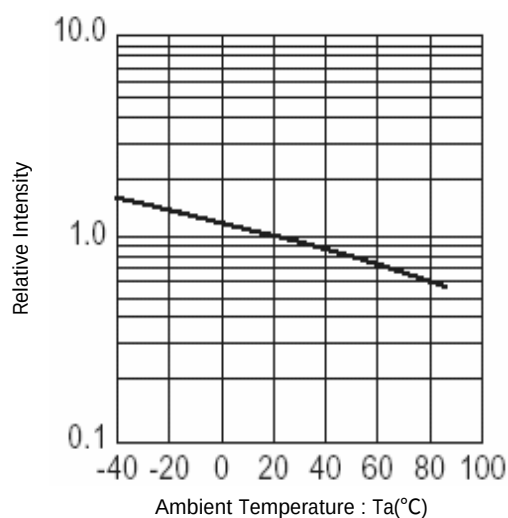
Derating

Ambient Temperature vs. Maximum Forward Current
Repetition Frequency : $f \geq 50\text{Hz}$

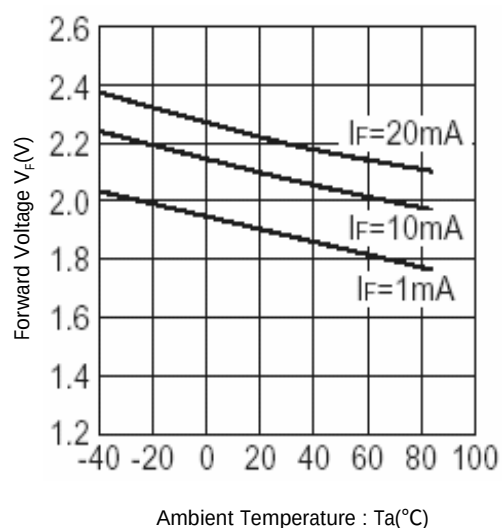


Ambient Temperature vs. Relative Intensity

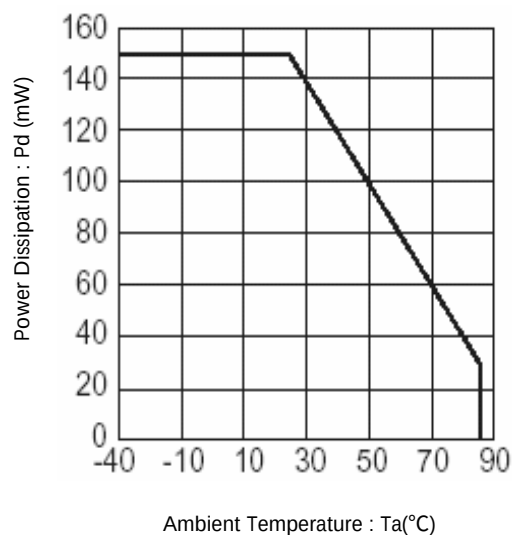
Condition : $I_F = 20\text{mA}$



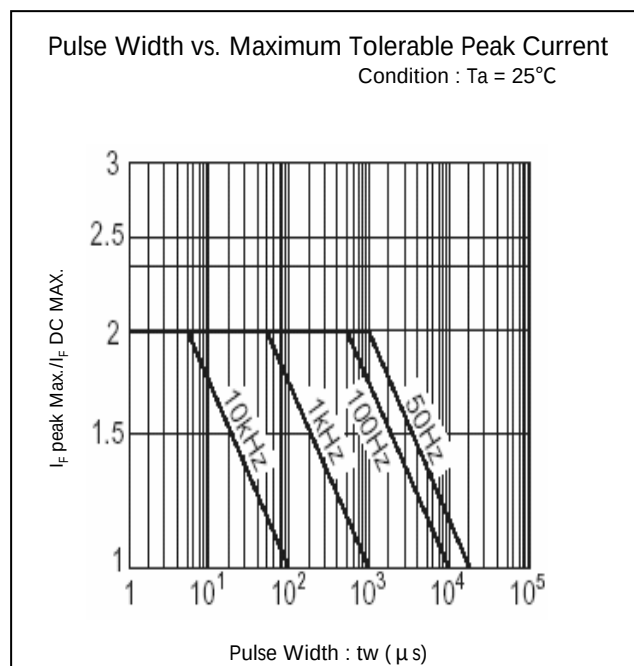
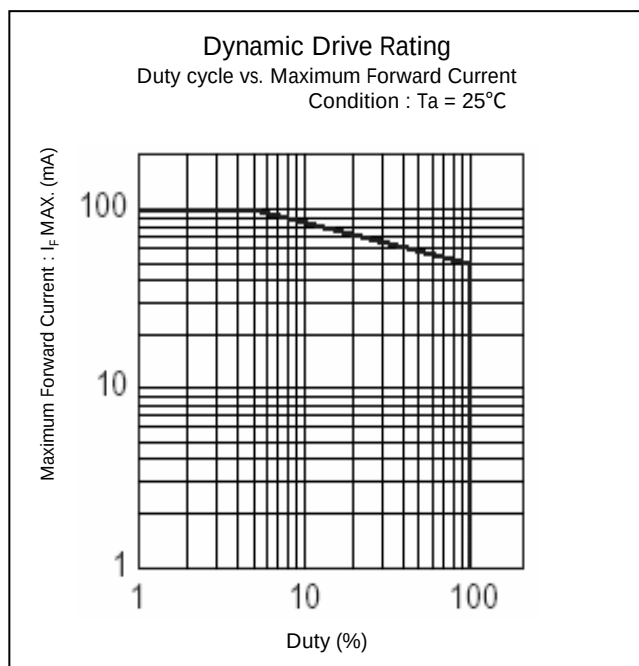
Ambient Temperature vs. Forward Voltage



Power Dissipation vs. Ambient Temperature

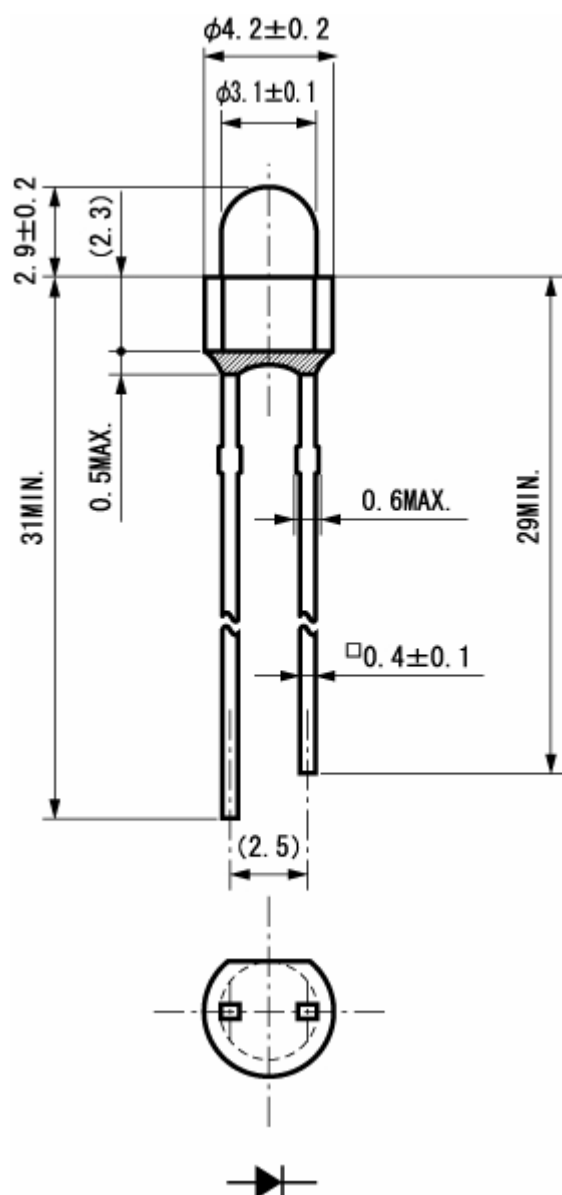


Technical Data(UR)



Package Dimensions

(Unit: mm)



TTW (Through The Wave) soldering Conditions

Pre-heating	100 °C 60 s	(MAX.) (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 normal temperature before the second dipping process.

Manual Soldering Conditions

Iron tip temp.	400 °C	(MAX.)
Soldering time and frequency	3 s 2 times	(MAX.) (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, If = Maximum Rated Current	1,000 h	0/25
Resistance to Soldering Heat	EIAJ ED-4701/300(302)	260±5°C, 3mm from package base	10sec	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)	10sec	0/10
Vibration, Variable Frequency	EIAJ ED-4701/400(403)	98.1m/s ² (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 _F	If Value of each product Forward Voltage	Testing Max. Value ≥ Spec. Max. Value x 1.2
Reverse Current	I _R	V _R = Maximum Rated Reverse Voltage V	Testing Max. Value ≥ Spec. Max. Value x 2.5
Cosmetic Appearance	-	-	No notable, decoloration, deformation and cracking