



Pb-free
HEAT



U□53□6X Series

Single Color Ultra High Brightness ϕ 5 Type

Features

Package	ϕ 5 Round shape type, UB,UC,UG : Water Clear epoxy UY : Pale Yellow Clear epoxy UR : Pale Red Clear epoxy
Product features	• Outer Dimension ϕ 5 Round shape type • Operation temperature range. Storage Temperature : -40°C~100°C Operating Temperature : -40°C~85°C • Lead-free soldering compatible • RoHS compliant
Dominant wavelength	Blue : 470nm (UB) Blue Green : 505nm (UC) Green : 525nm (UG) Yellow : 590nm (UY) Red : 626nm (UR)
Half Intensity Angle	UB,UC,UG : 10 deg. UY,UR : 8 deg.
Die materials	UB,UC,UG : InGa _N , UY,UR : AlGaInP
Rank grouping parameter	Sorted by luminous intensity per rank taping
Soldering methods	TTW (Through The Wave) soldering and manual soldering
ESD	InGa _N : 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		Luminous Intensity		
					λ d (nm)		I_v (mcd)		
					TYP.	I _F	MIN.	TYP.	I _F
UB5306X	InGa N	Blue	Water Clear	Clear	470	20	1,000	2,800	20
UC5306X	InGa N	Blue Green			505	20	2,400	6,720	20
UG5306X	InGa N	Green			525	20	3,360	6,720	20
UY5366X	AlGa InP	Yellow	Pale Yellow		590	20	2,000	4,000	20
UR5366X	AlGa InP	Red	Pale Red		630	20	1,800	3,600	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 ≤ 1 ms., Duty $\leq 1/20$.

Electro-Optical Characteristics

(Ta=25°C)

Item	Conditions	Symbol	Characteristics						Unit
				UB	UC	UG	UY	UR	
Forward Voltage	$I_F=20\text{mA}$	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	$V_R=5\text{V}$	I_R	MAX.	100	100	100	100	100	μA
Peak Wavelength	$I_F=20\text{mA}$	λ_p	TYP.	465	502	517	592	641	nm
Dominant Wavelength	$I_F=20\text{mA}$	λ_d	TYP.	470	505	525	590	630	nm
Spectral Line Half Width	$I_F=20\text{mA}$	$\angle \lambda$	TYP.	26	30	35	18	18	nm
Half Intensity Angle	$I_F=20\text{mA}$	$2\theta_{1/2}$	TYP.	10	10	10	8	8	deg.



U□53□6X Series

Single Color Ultra High Brightness $\phi 5$ Type

Luminous Intensity Rank

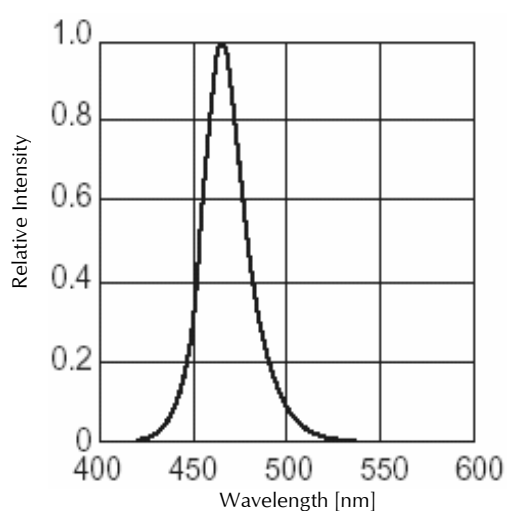
(Ta=25°C)

Rank	I _V (mcd)										Condition
	UB		UC		UG		UY		UR		
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
A			2,400	4,800			2,000	4,000	1,800	3,600	I _F = 20mA
B			3,360	6,720			2,800	5,600	2,520	5,040	
C	1,000	2,000	4,800	9,600	3,360	6,720	4,000	8,000	3,600	7,200	
D	1,400	2,800	6,720	13,440	4,800	9,600	5,600	11,200	5,040	10,080	
E	2,000	4,000	9,600	19,200	6,720	13,440	8,000	16,000	7,200	14,400	
F	2,800	5,600	13,440	-	9,600	19,200	11,200	-	10,080	-	
G	4,000	8,000			13,440	26,880					
H	5,600	-			19,200	-					

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

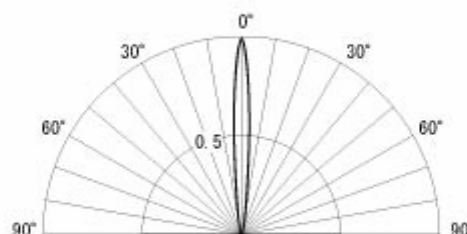
Technical Data(UB)

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

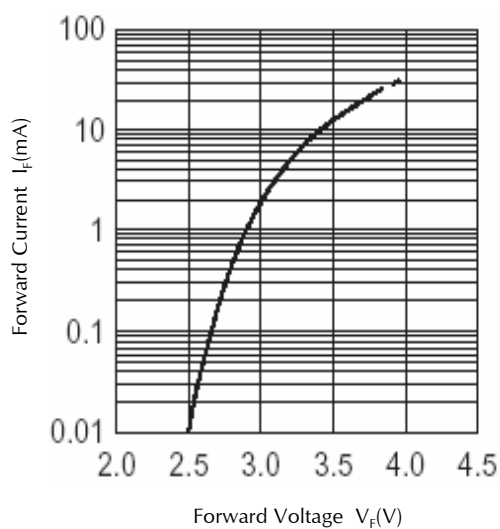


Spatial Distribution Example

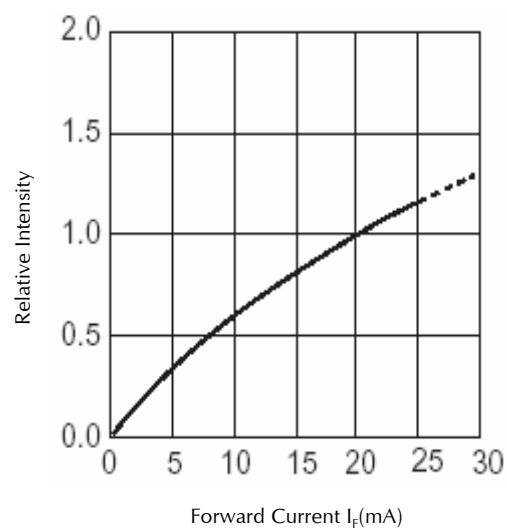
Condition : $T_a = 25^\circ\text{C}$



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



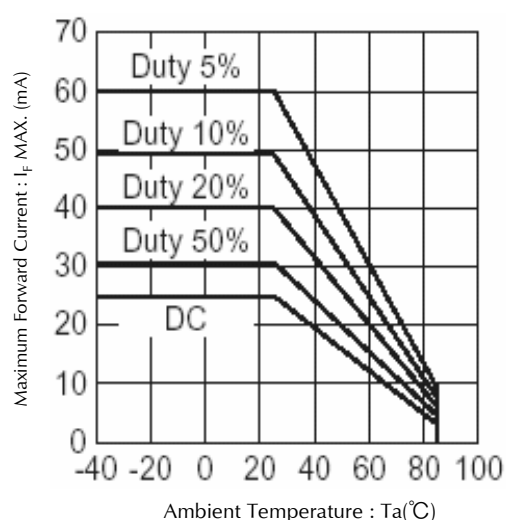
Forward Current vs. Relative Intensity
Condition : $T_a = 25^\circ\text{C}$



Technical Data(UB)

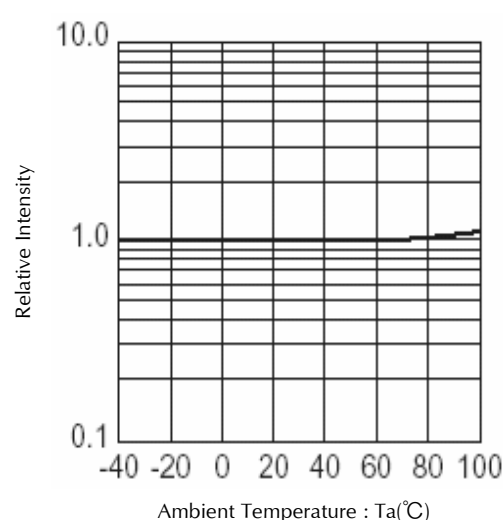
Derating

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

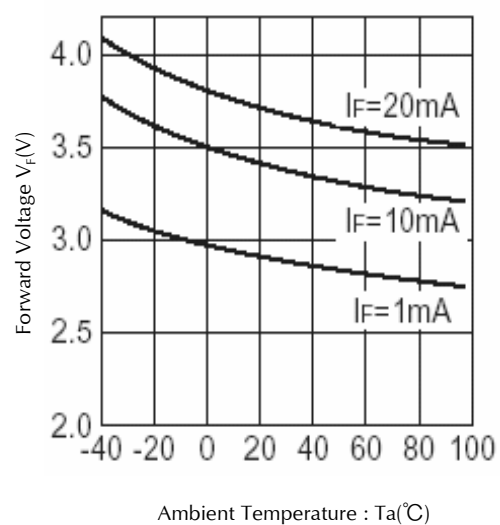


Ambient Temperature vs. Relative Intensity

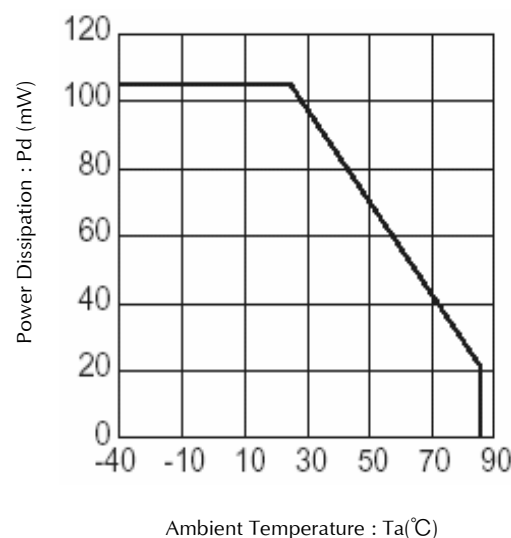
Condition : $I_F=20\text{mA}$



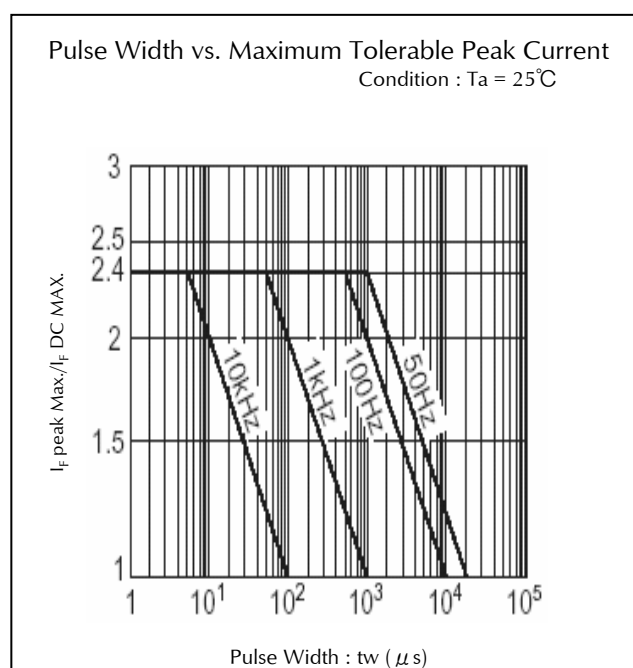
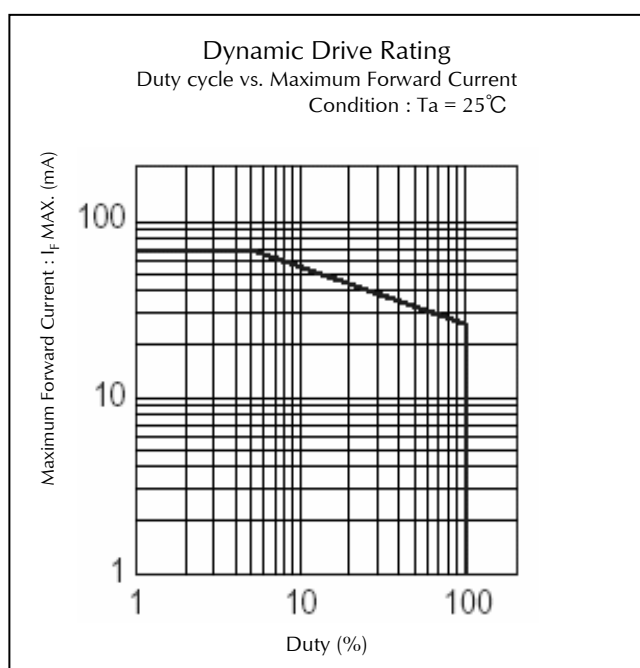
Ambient Temperature vs. Forward Voltage



Power Dissipation vs. Ambient Temperature

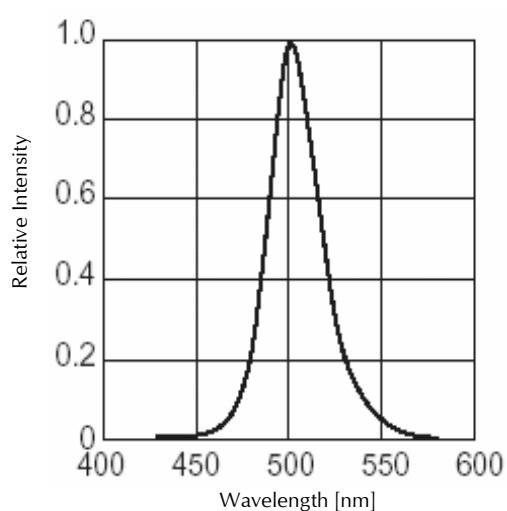


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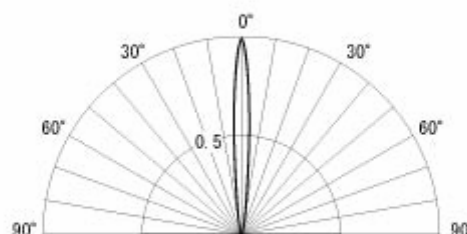
Technical Data(UC)

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

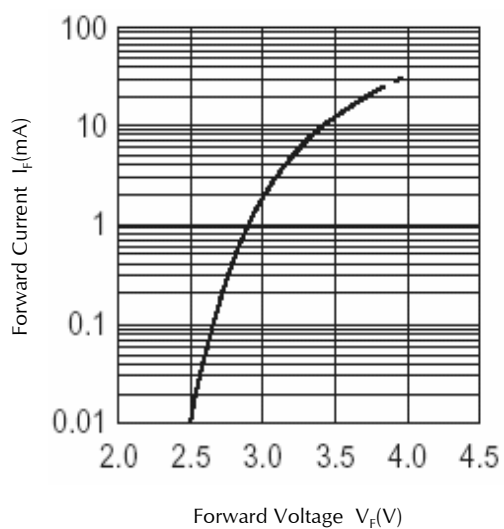


Spatial Distribution Example

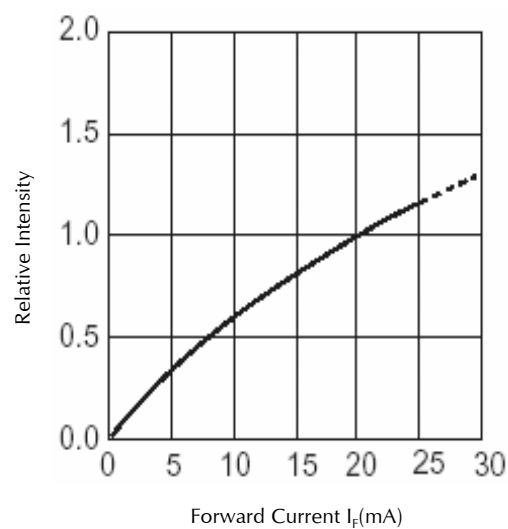
Condition : $T_a = 25^\circ\text{C}$



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



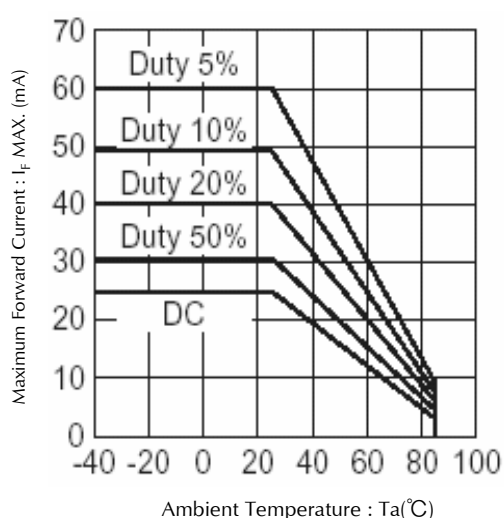
Forward Current vs. Relative Intensity
Condition : $T_a = 25^\circ\text{C}$



Technical Data(UC)

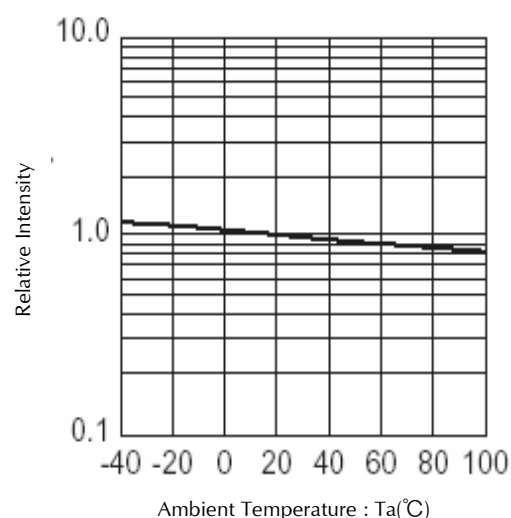
Derating

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

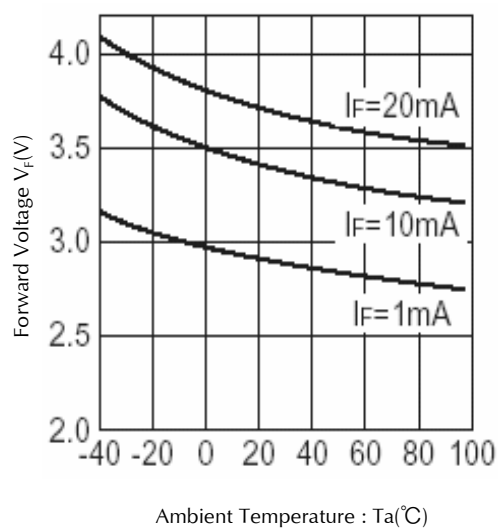


Ambient Temperature vs. Relative Intensity

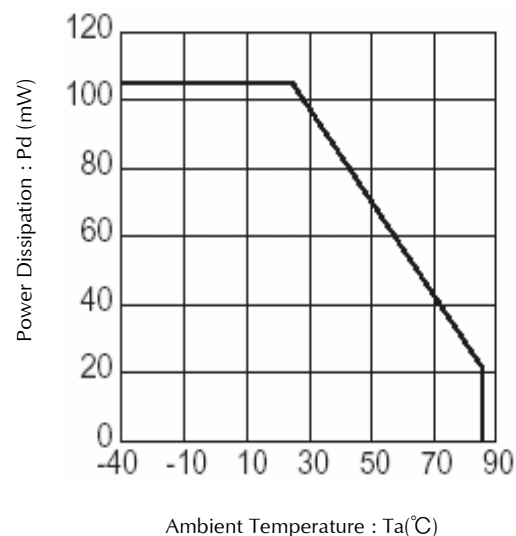
Condition : $I_f = 20\text{mA}$



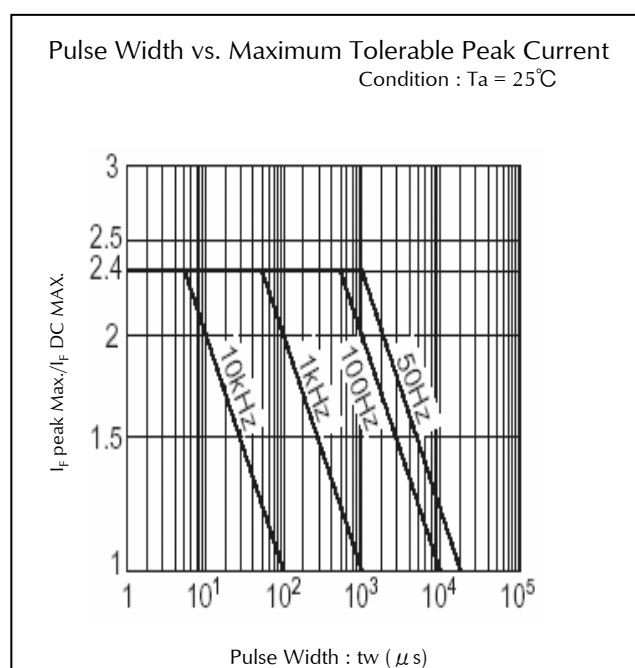
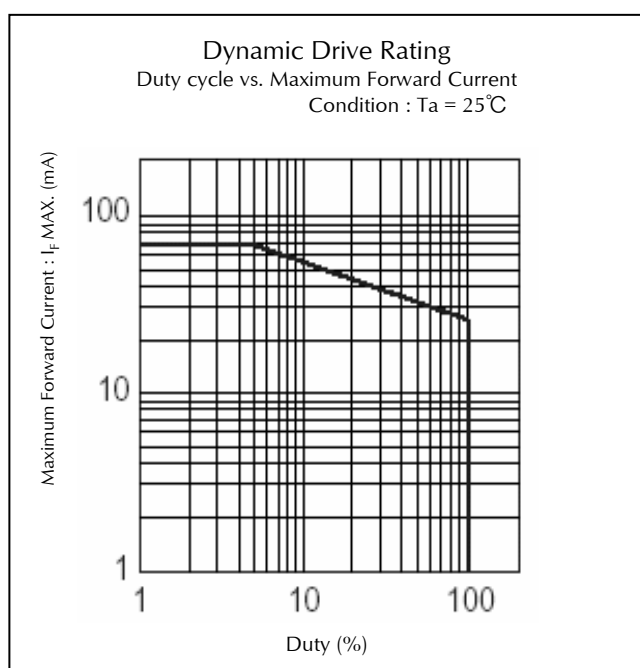
Ambient Temperature vs. Forward Voltage



Power Dissipation vs. Ambient Temperature

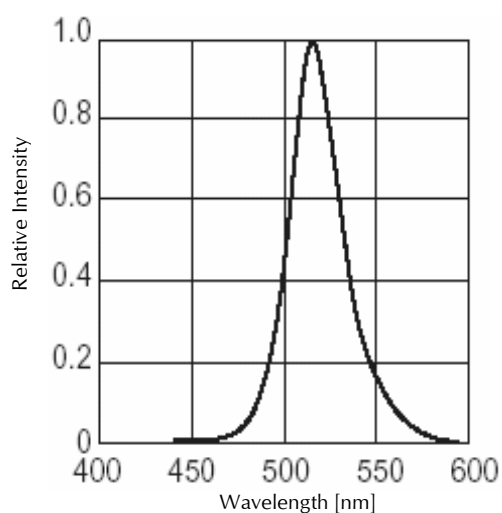


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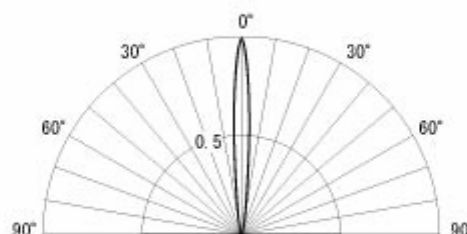
Technical Data(UG)

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

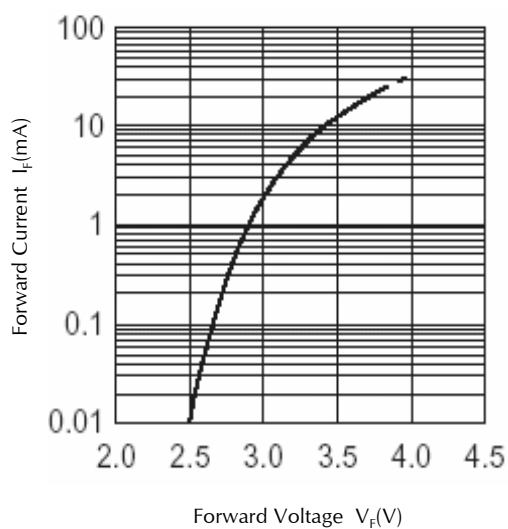


Spatial Distribution Example

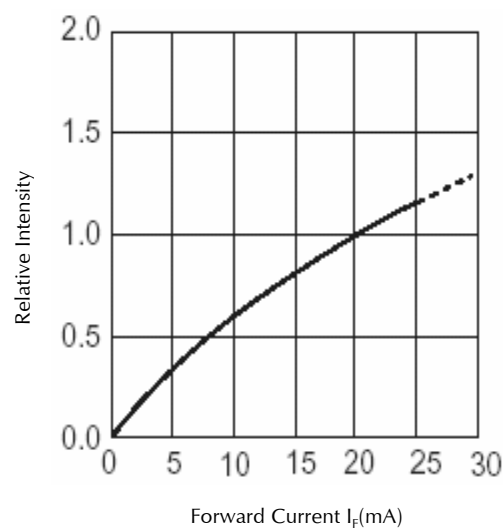
Condition : $T_a = 25^\circ\text{C}$



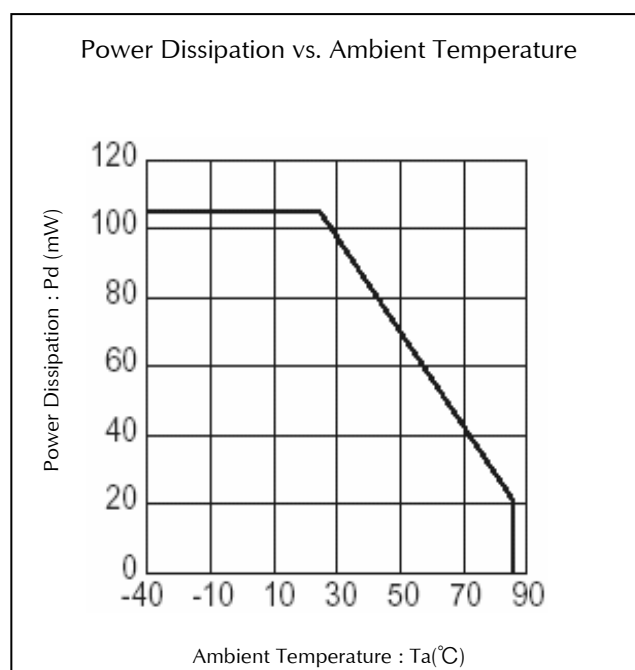
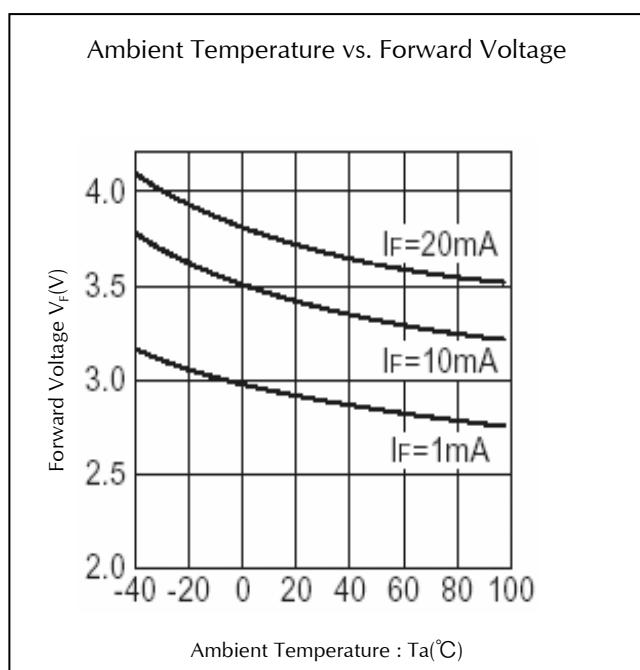
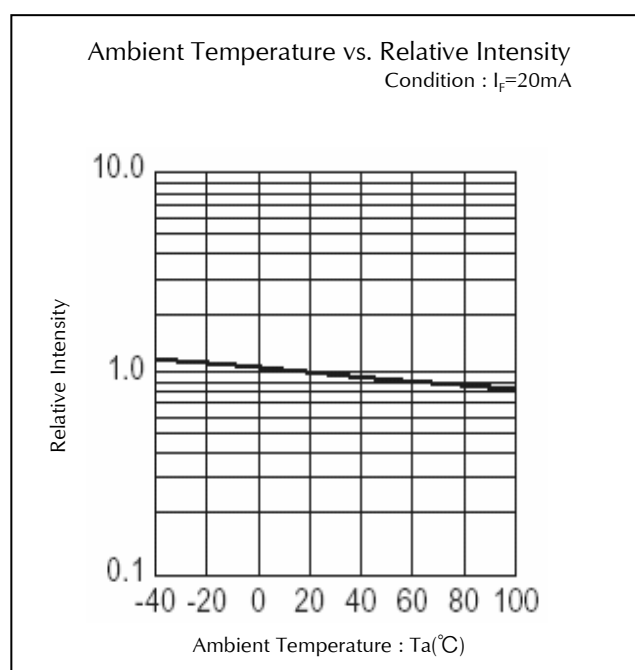
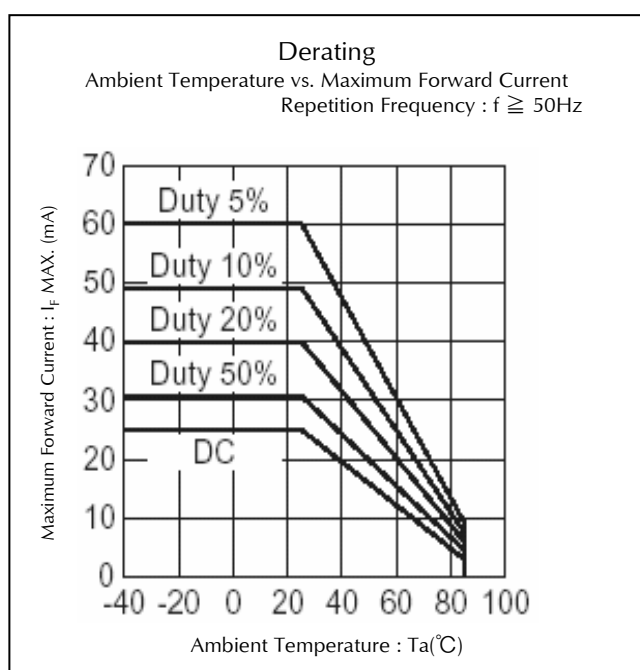
Forward Voltage vs. Forward Current
Condition : $T_a = 25^\circ\text{C}$



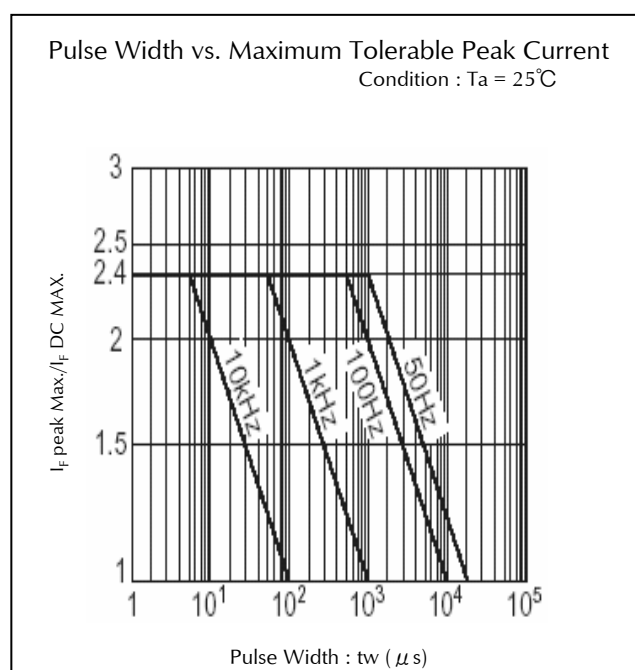
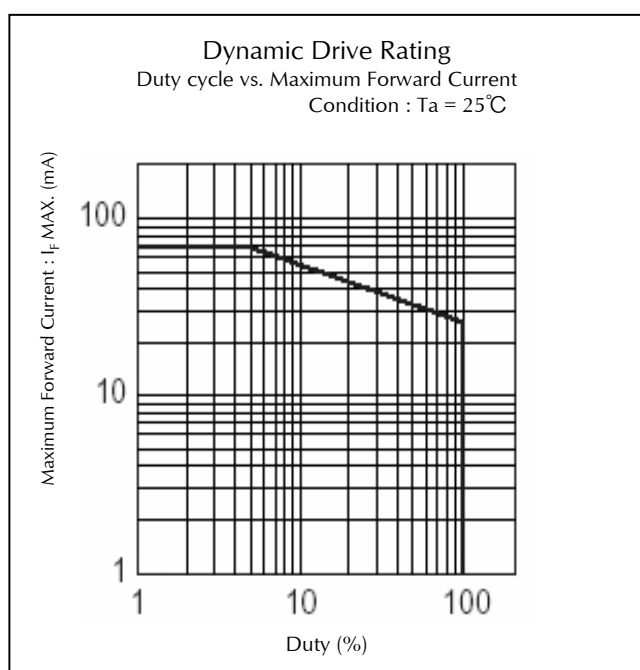
Forward Current vs. Relative Intensity
Condition : $T_a = 25^\circ\text{C}$



Technical Data(UG)

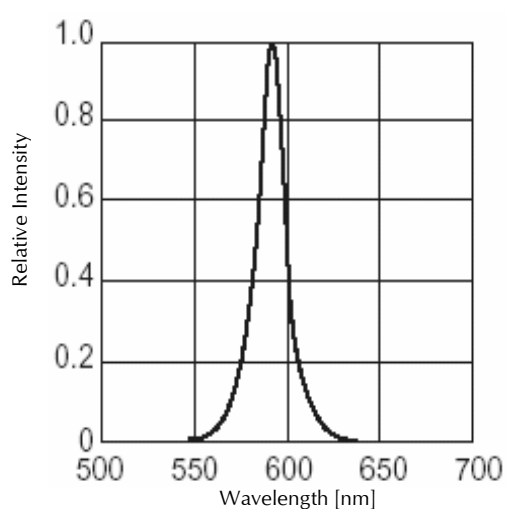


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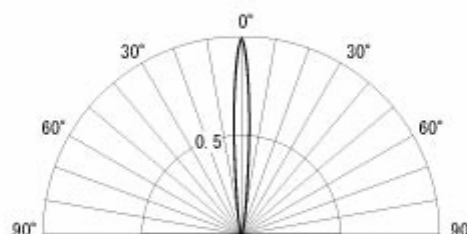
Technical Data(UY)

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

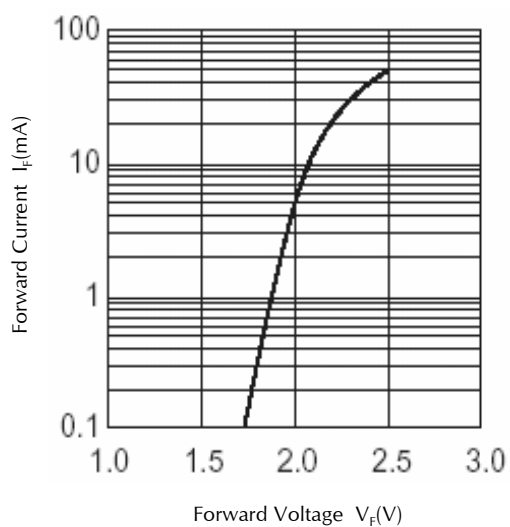


Spatial Distribution Example

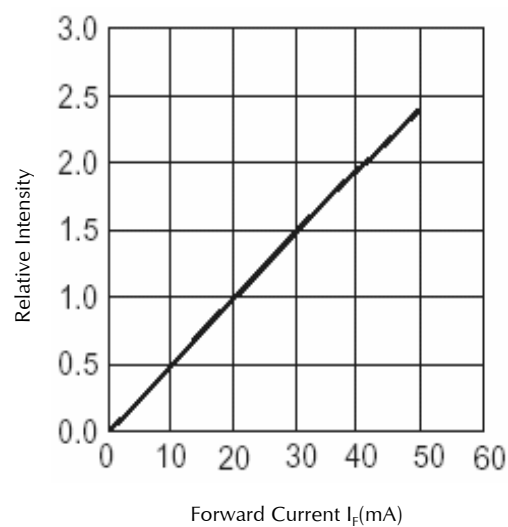
Condition : $T_a = 25^\circ\text{C}$



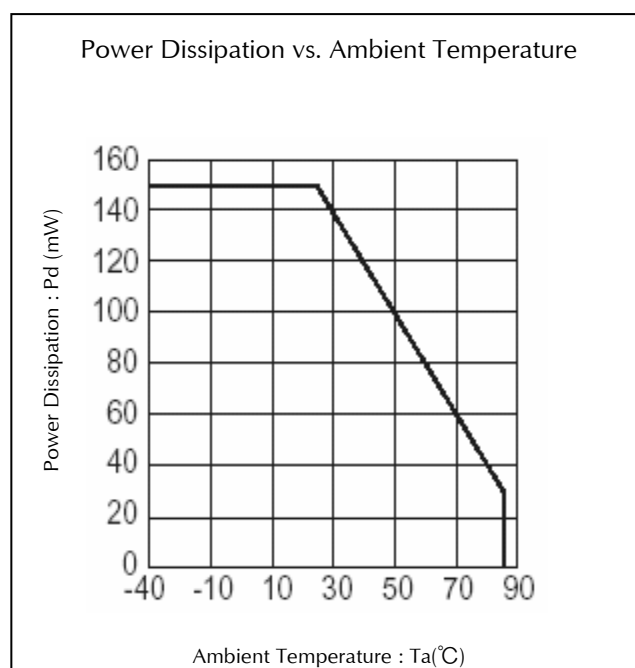
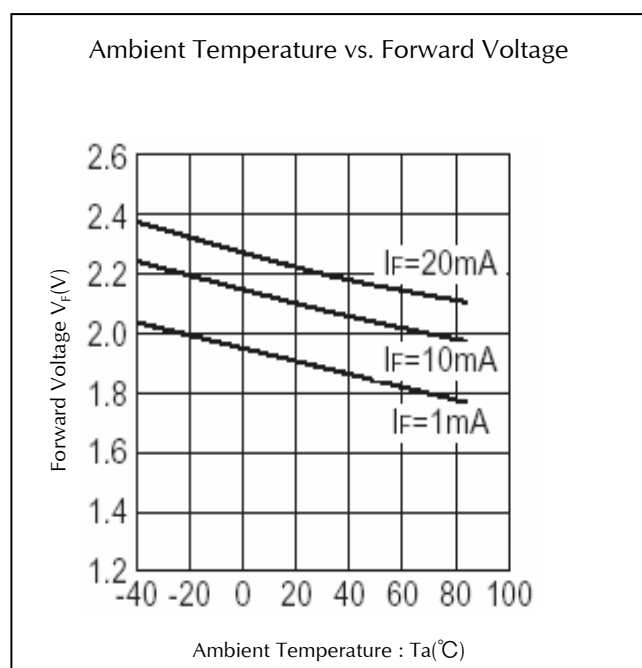
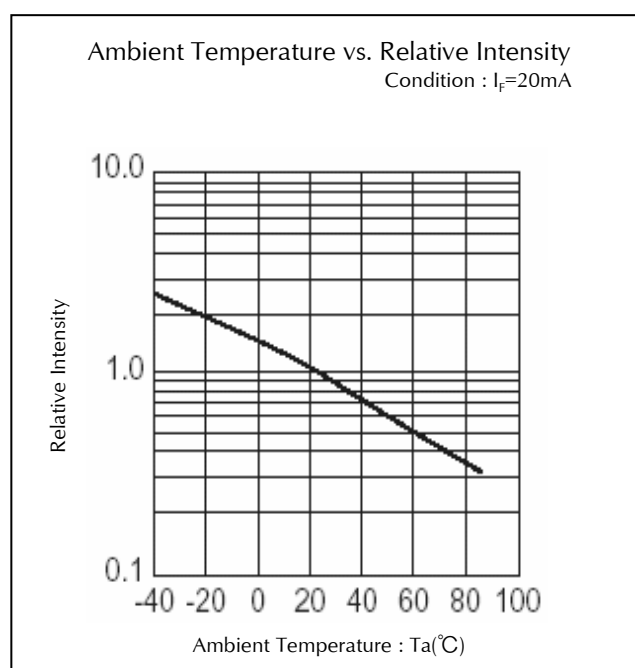
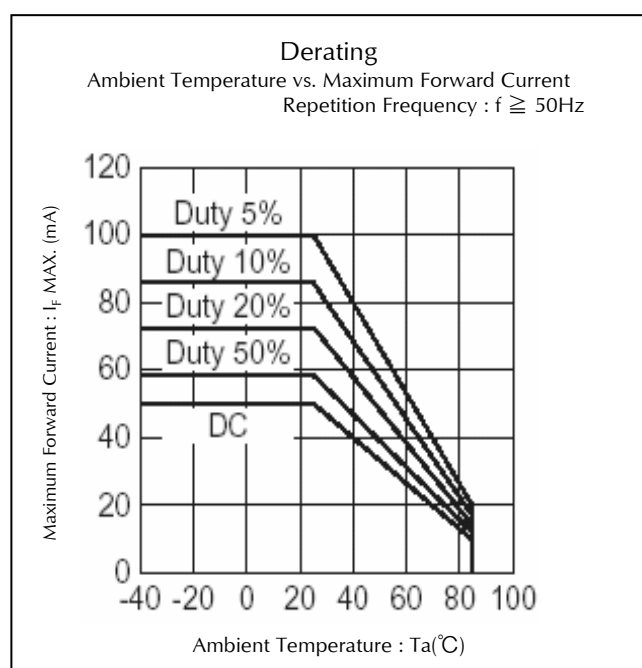
Forward Voltage vs. Forward Current
Condition : $T_a = 25^\circ\text{C}$



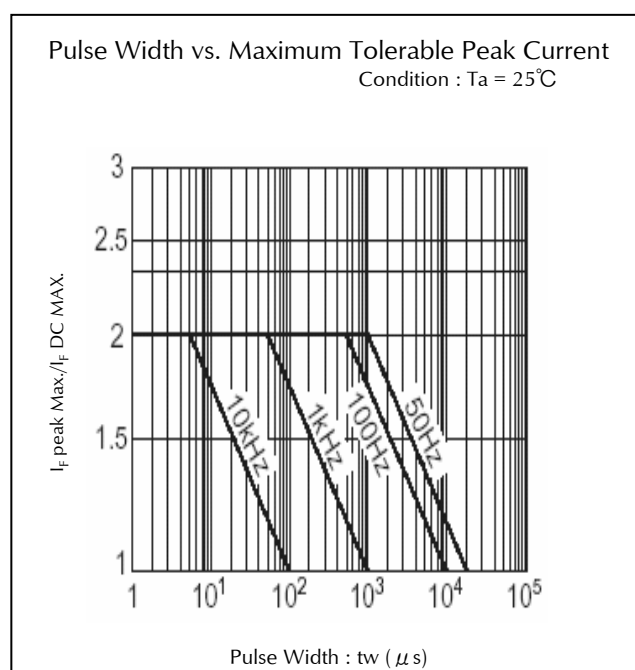
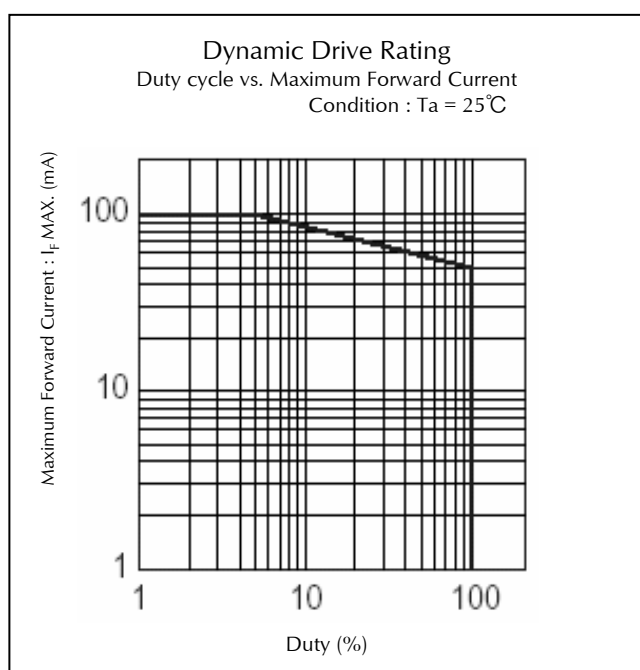
Forward Current vs. Relative Intensity
Condition : $T_a = 25^\circ\text{C}$



Technical Data(UY)

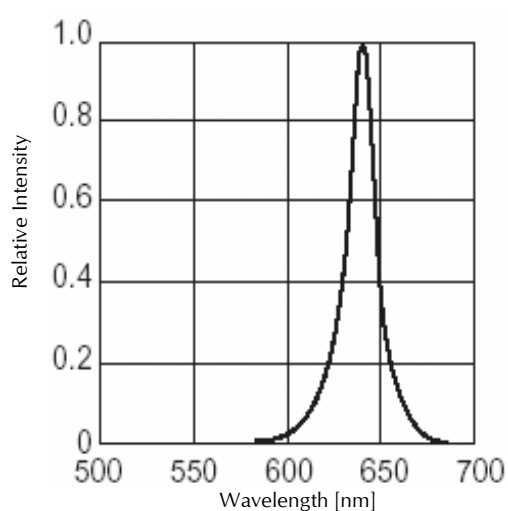


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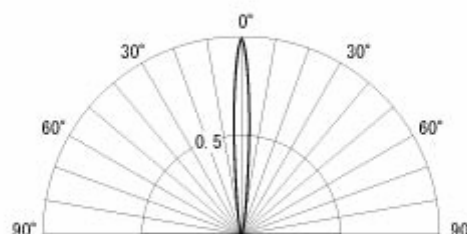
Technical Data(UR)

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

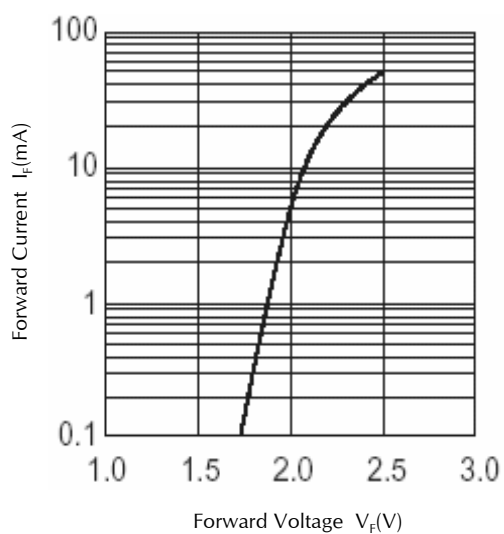


Spatial Distribution Example

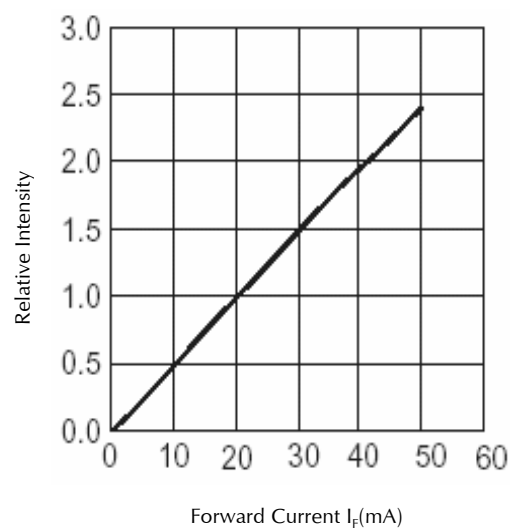
Condition : $T_a = 25^\circ\text{C}$



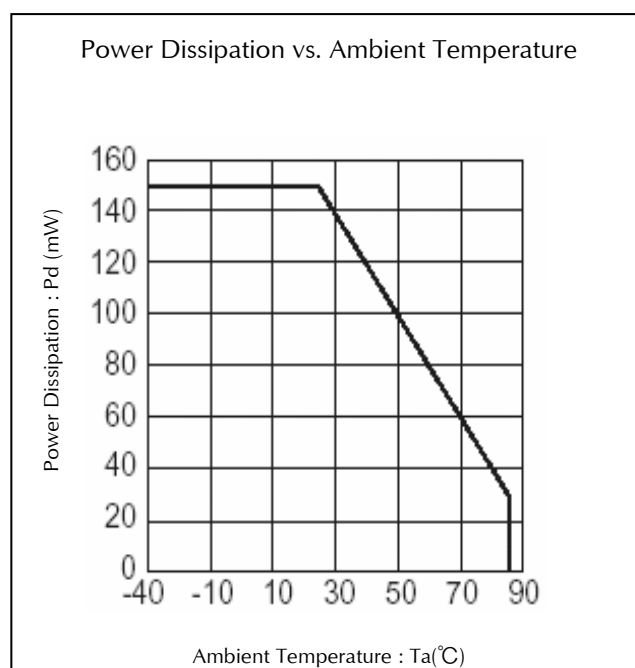
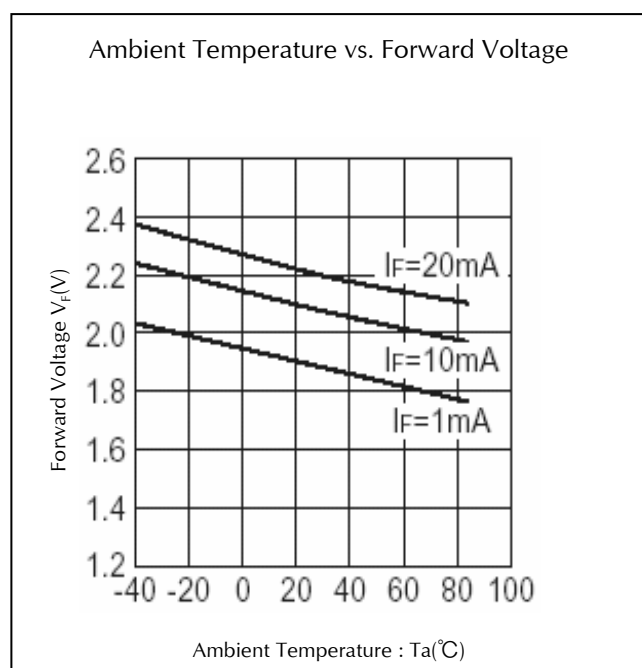
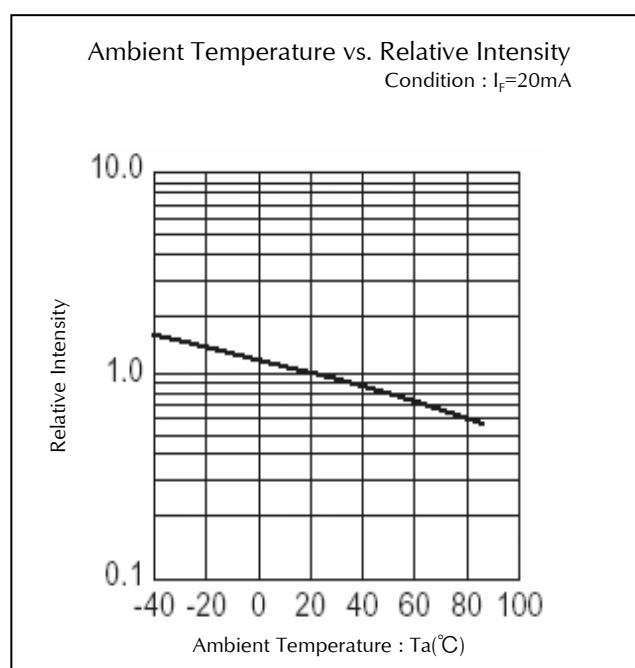
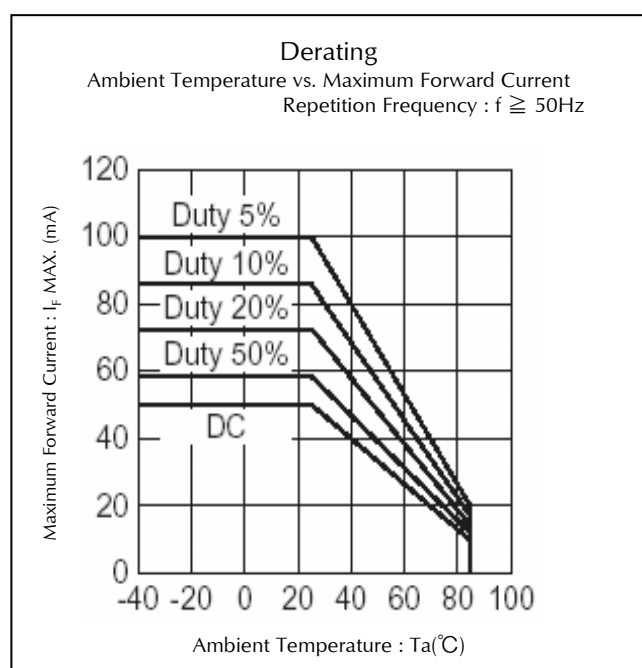
Forward Voltage vs. Forward Current
Condition : $T_a = 25^\circ\text{C}$



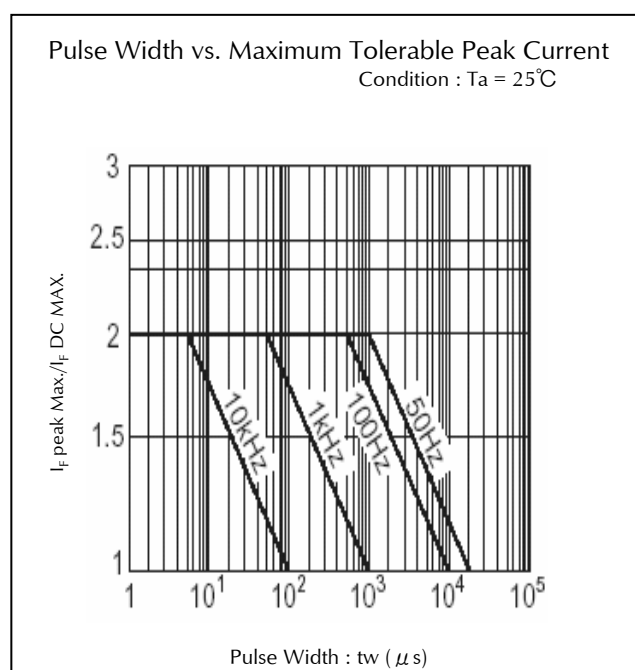
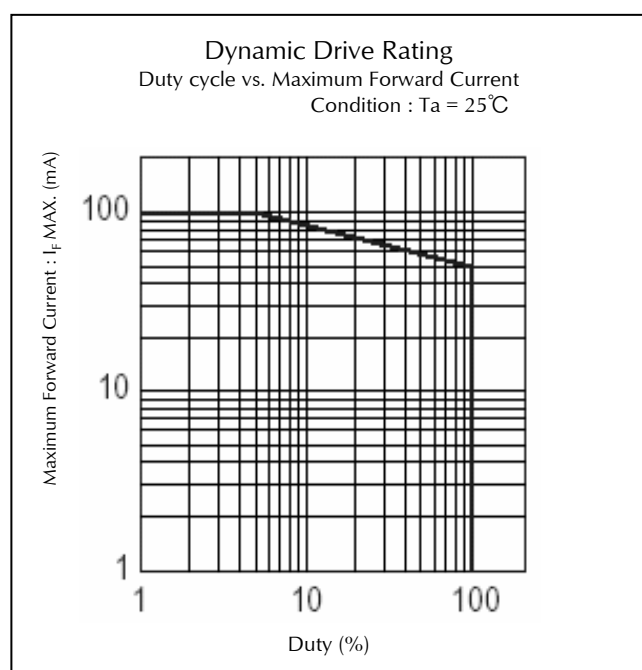
Forward Current vs. Relative Intensity
Condition : $T_a = 25^\circ\text{C}$



Technical Data(UR)

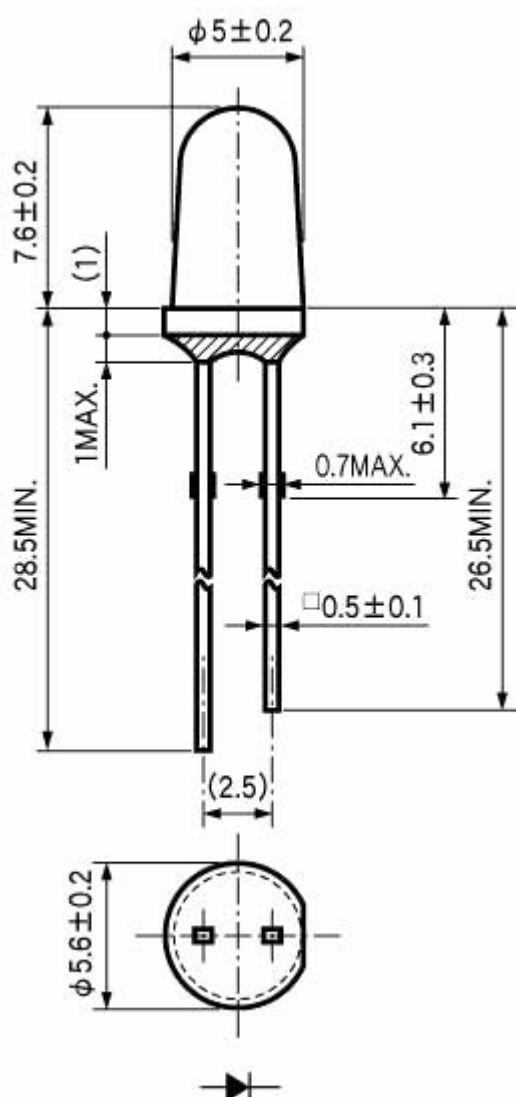


Technical Data(UR)



Package Dimensions

(Unit: mm)



TTW (Through The Wave) soldering Conditions

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

Iron tip temp.	400°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, 3mm 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 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	-	-	Occurrence of notable decoloration, deformation and cracking

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