



Pb-free
HEAT

STANLEY

3863X Series

Single Color $\phi 3$ Flush Mount Round Shape Type

Features

Package	$\Phi 3$ Round shape type, YPY : Pale Yellow Clear epoxy FA : Pale Orange Clear epoxy FR : Pale Red Clear epoxy
Product features	• Outer Dimension $\phi 3$ Flush Mount Round shape type • Operation temperature range. Storage Temperature : -40 ~ 100 Operating Temperature : -40 ~ 85 • Lead-free soldering compatible • RoHS compliant
Dominant wavelength	Yellow Green : 572nm (YPY) Orange : 605nm (FA) Red : 626nm (FR)
Half Intensity Angle	YPY,FA,FR : 20 deg.
Die materials	YPY,FA,FR : AlGaInP
Rank grouping parameter	Sorted by luminous intensity per rank taping
Soldering methods	TTW (Through The Wave) soldering and manual soldering
ESD	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)

Part No.	Material	Emitted Color	Lens Color		Dominant Wavelength λ_d (nm)		Luminous Intensity I_v (mcd)		
					TYP.	I_F	MIN.	TYP.	I_F
YPY3863X	AlGaInP	Yellow Green	Palle Yellow	Clear	572	20	180	360	20
FA3863X	AlGaInP	Orange	Pale Orange		605	20	400	800	20
FR3863X	AlGaInP	Red	Pale Red		626	20	320	640	20

Absolute Maximum Ratings

(Ta=25)

Item	Symbol	Absolute Maximum Ratings			Unit
		YPY	FA	FR	
Power Dissipation	P_d	130	125	125	mW
Forward Current	I_F	50	50	50	mA
Pulse Forward Current ※1	I_{FRM}	200	200	200	mA
Derating (Ta=25°C or higher)	ΔI_F	0.67	0.67	0.67	mA/°C
Reverse Voltage	V_R	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)

Item	Conditions	Symbol	Characteristics				Unit
				YPY	FA	FR	
Forward Voltage	I _F =20mA	V _F	TYP.	2.1	1.9	1.9	V
			MAX.	2.5	2.4	2.4	
Reverse Current	V _R =5V	I _R	MAX.	100	100	100	μ A
Peak Wavelength	I _F =20mA	λ_p	TYP.	575	609	635	nm
Dominant Wavelength	I _F =20mA	λ_d	TYP.	572	605	626	nm
Spectral Line Half Width	I _F =20mA	$\Delta \lambda$	TYP.	15	15	15	nm
Half Intensity Angle	I _F =20mA	2 θ 1/2	TYP.	20	20	20	deg.

Luminous Intensity Rank

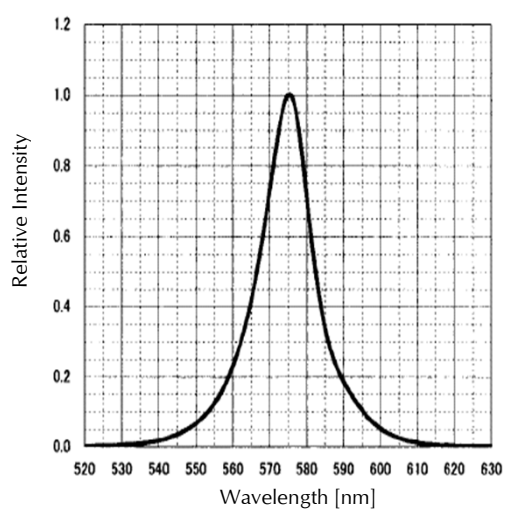
(Ta=25)

Rank	I _V (mcd)						Condition
	YPY		FA		FR		
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
A	180	360	400	800	320	640	I _F = 20mA
B	250	500	560	1,120	450	900	
C	360	780	800	1,600	640	1,280	
D	500	1,000	1,120	2,240	900	1,800	
E	780	-	1,600	-	1,280	-	

※Please contact our sales staff concerning rank designation.

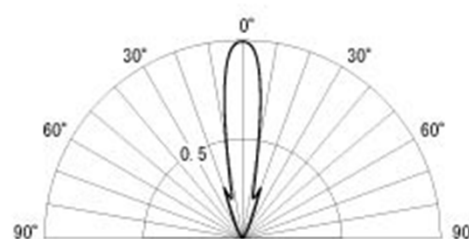
Technical Data(YPY)

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

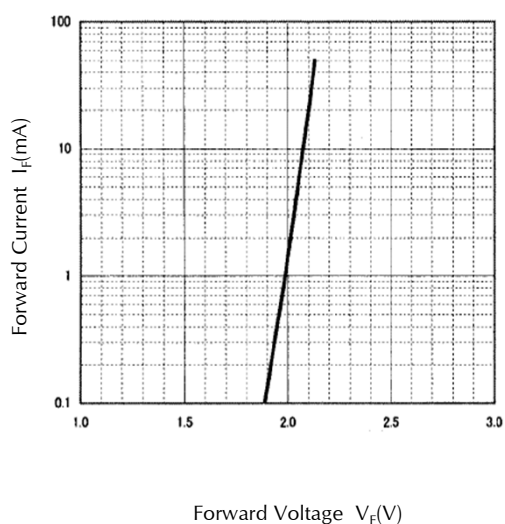


Spatial Distribution Example

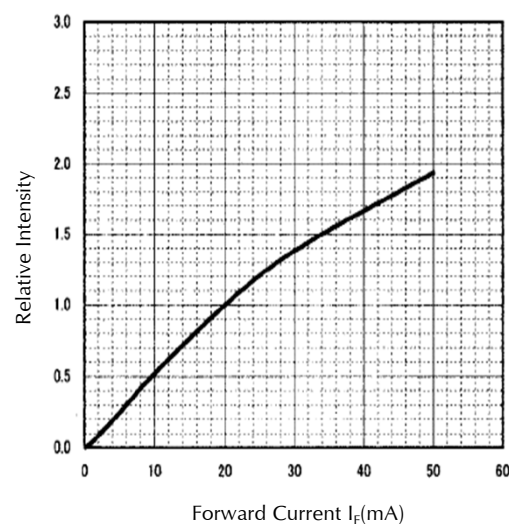
Condition : $T_a = 25$



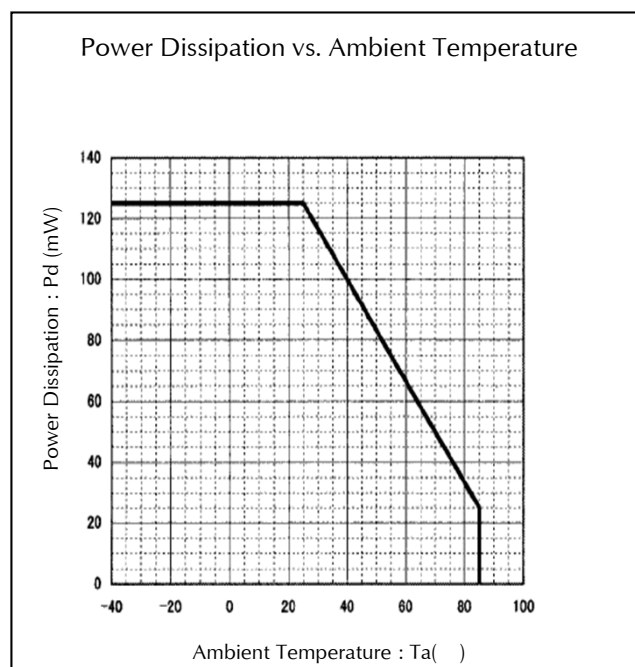
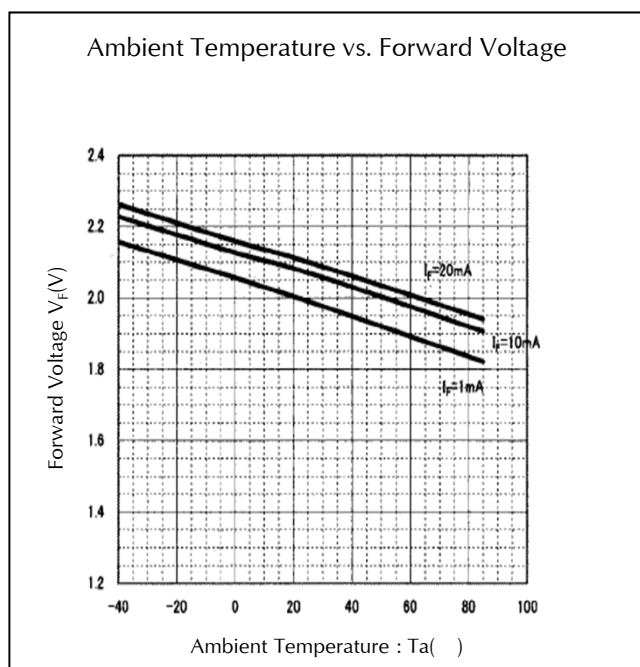
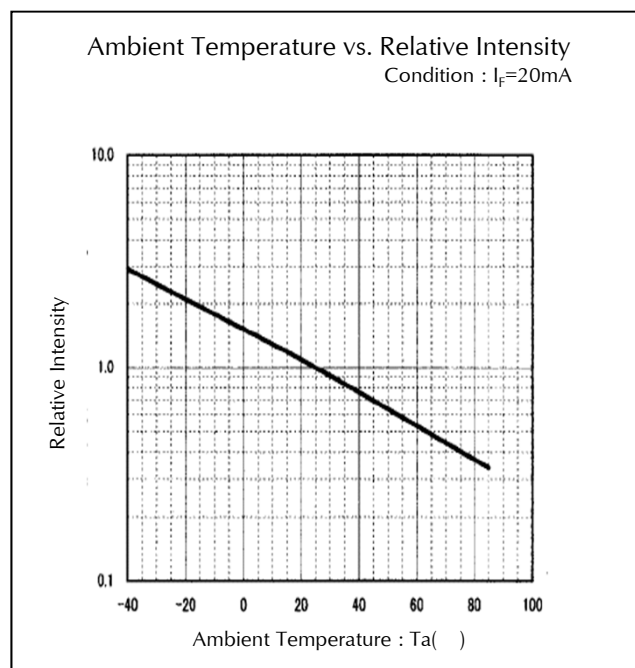
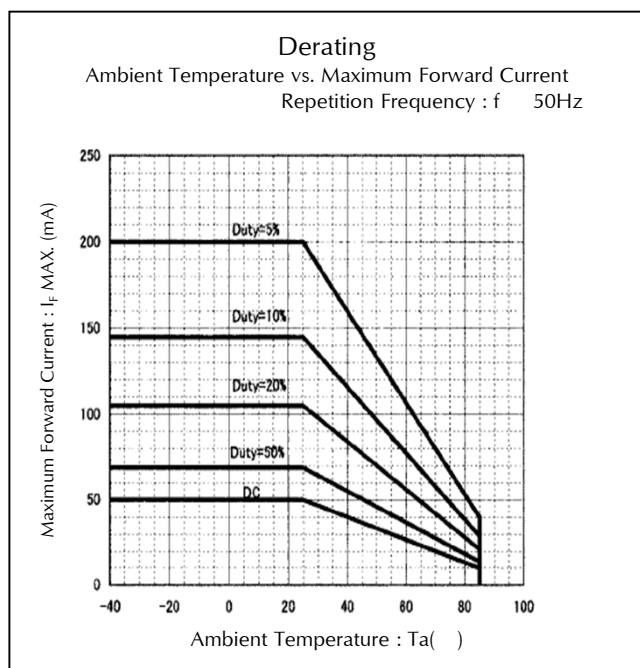
Forward Voltage vs. Forward Current
Condition : $T_a = 25$



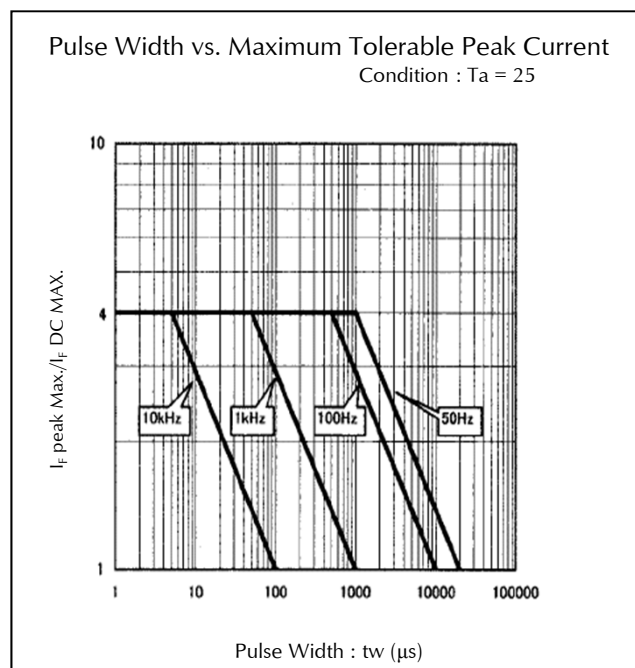
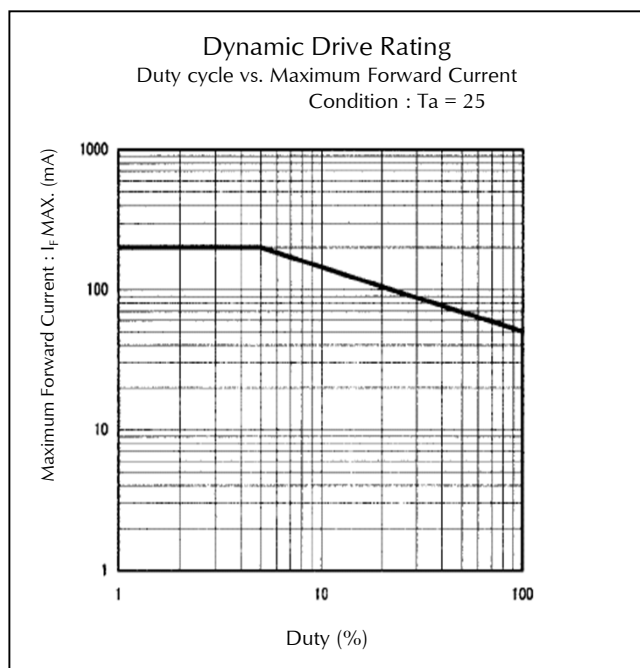
Forward Current vs. Relative Intensity
Condition : $T_a = 25$



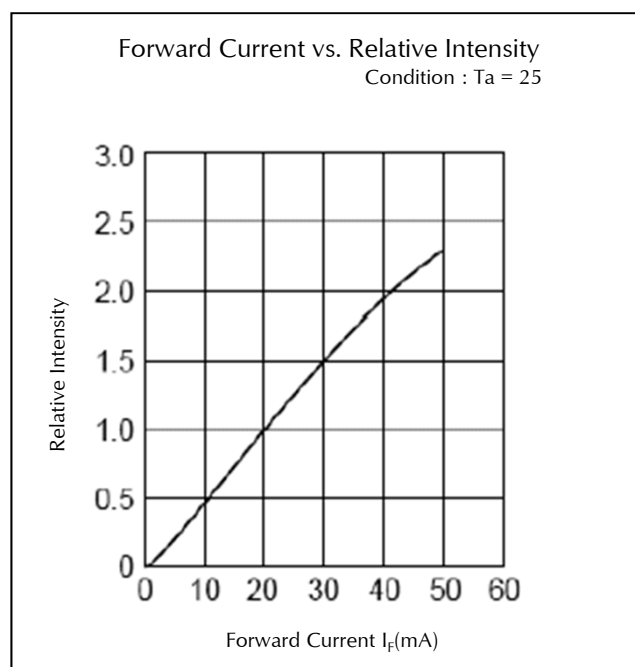
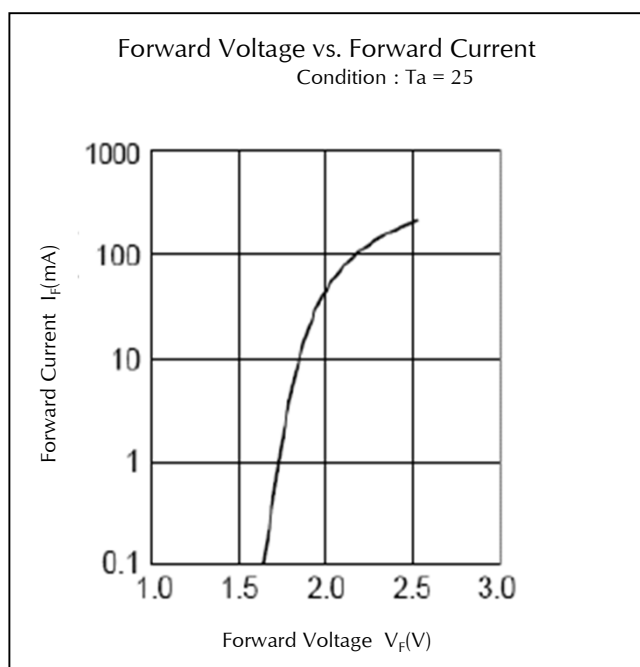
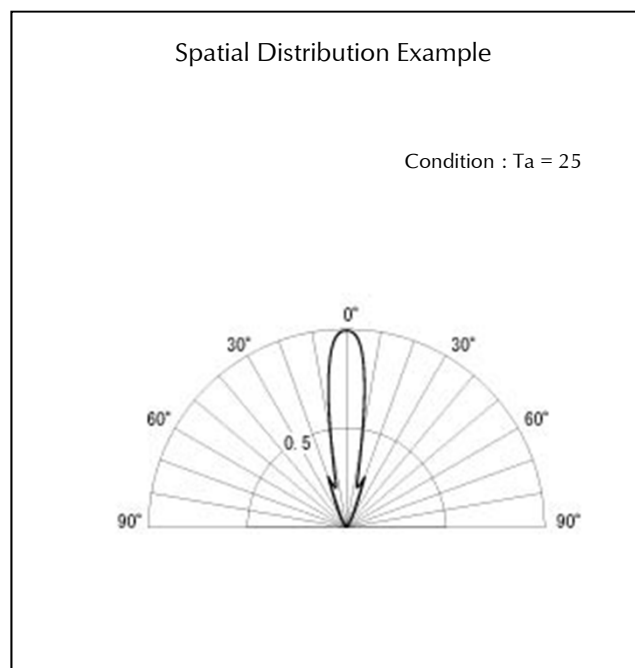
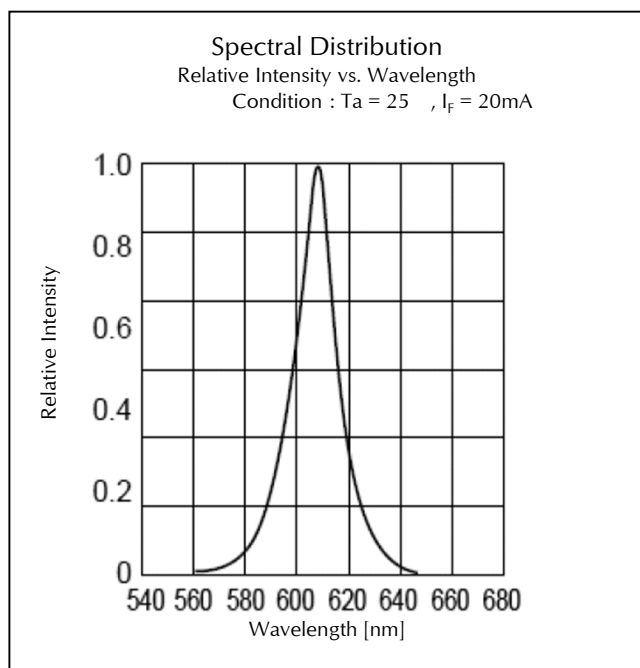
Technical Data(YPY)



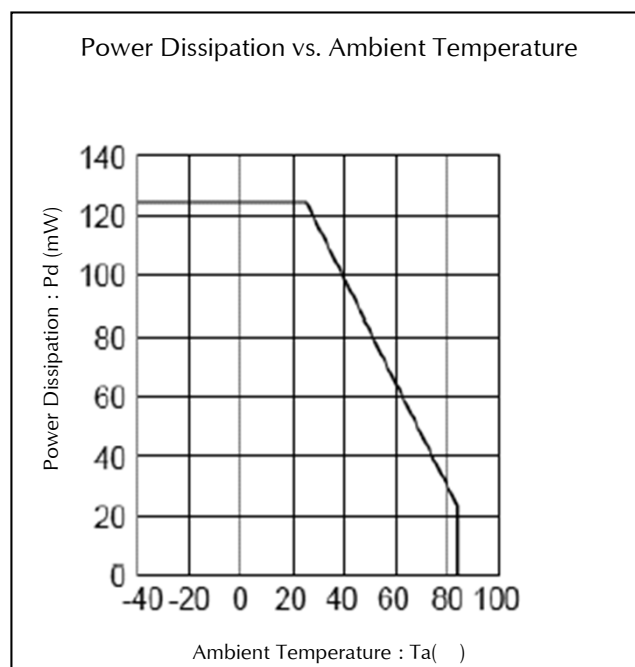
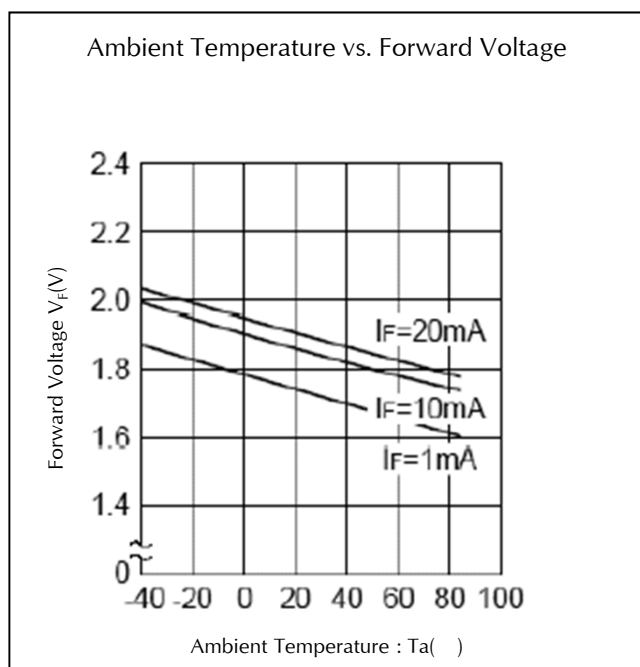
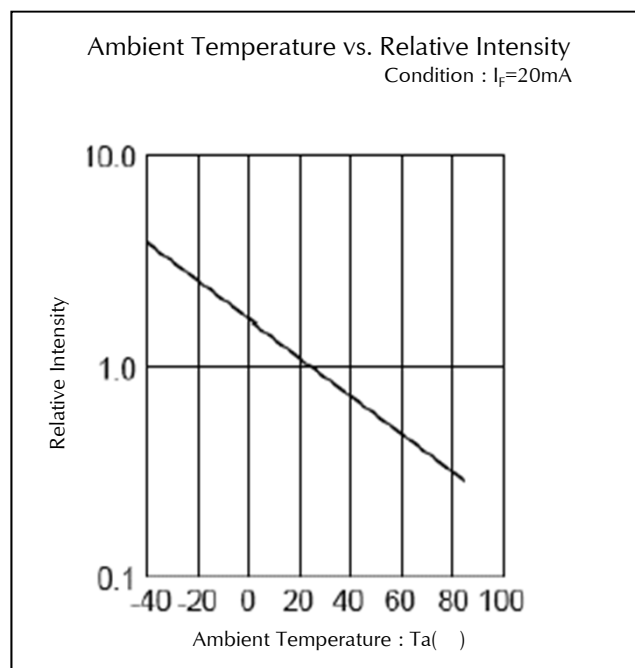
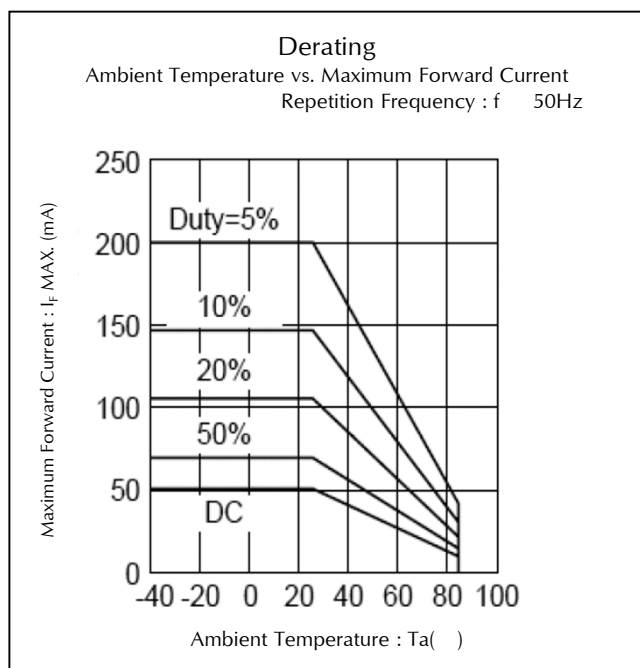
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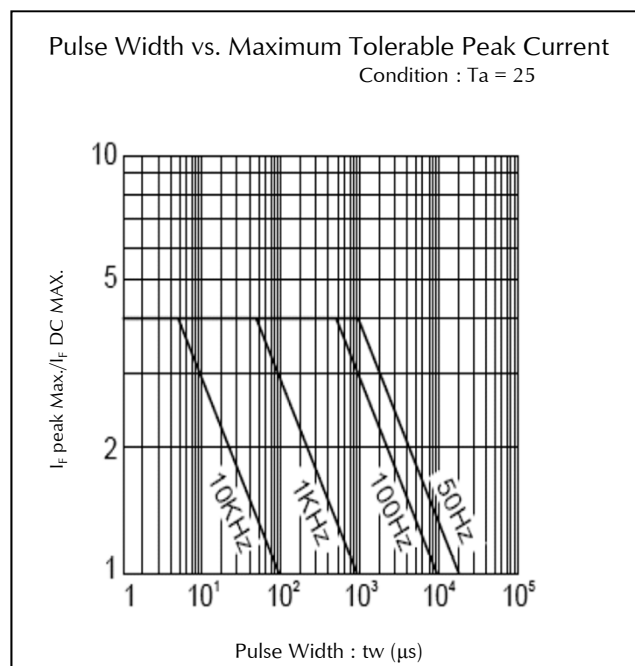
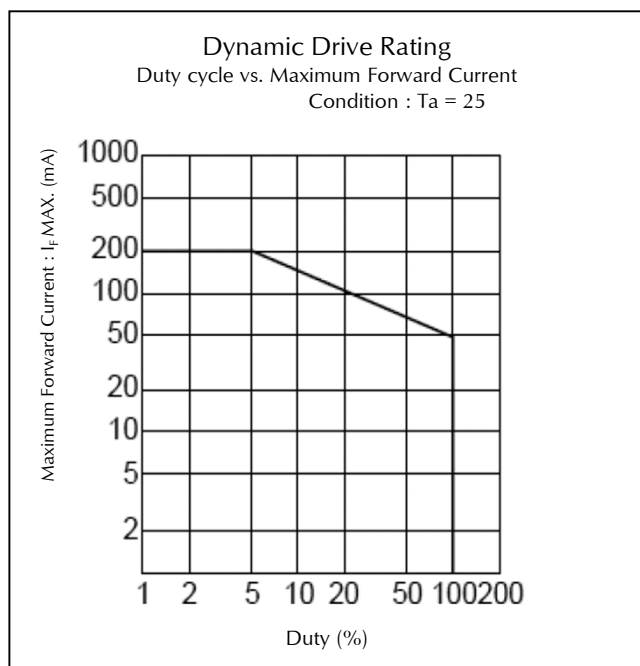
Technical Data(FA)



Technical Data(FA)

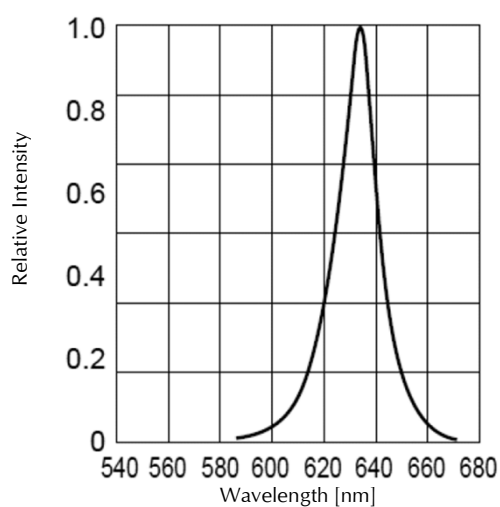


Technical Data(FA)



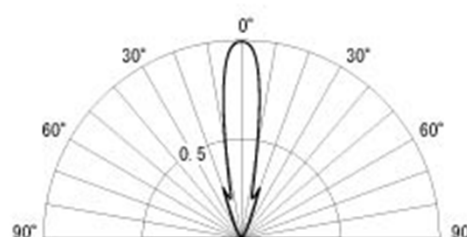
Technical Data(FR)

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

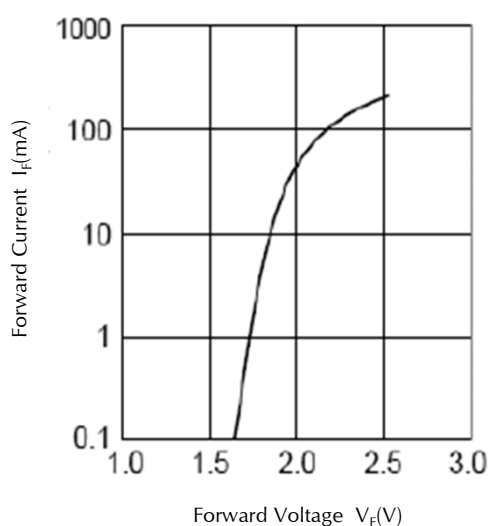


Spatial Distribution Example

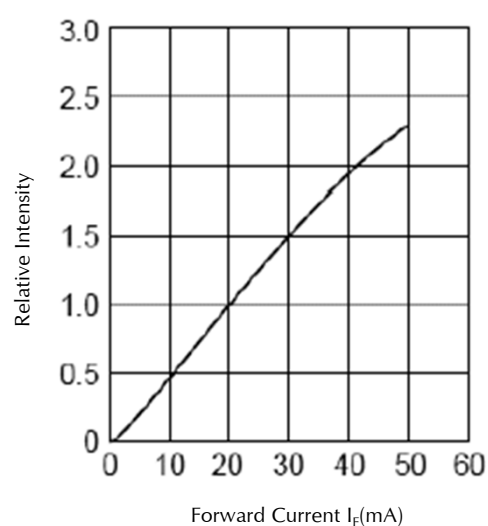
Condition : $T_a = 25$



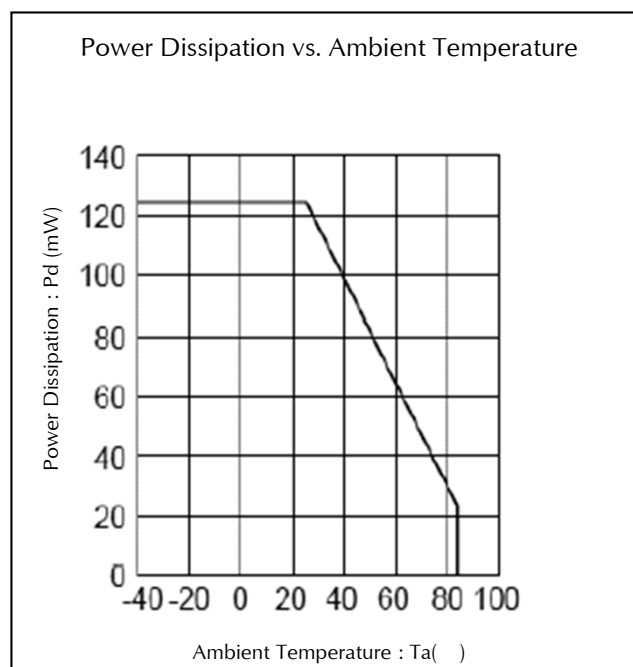
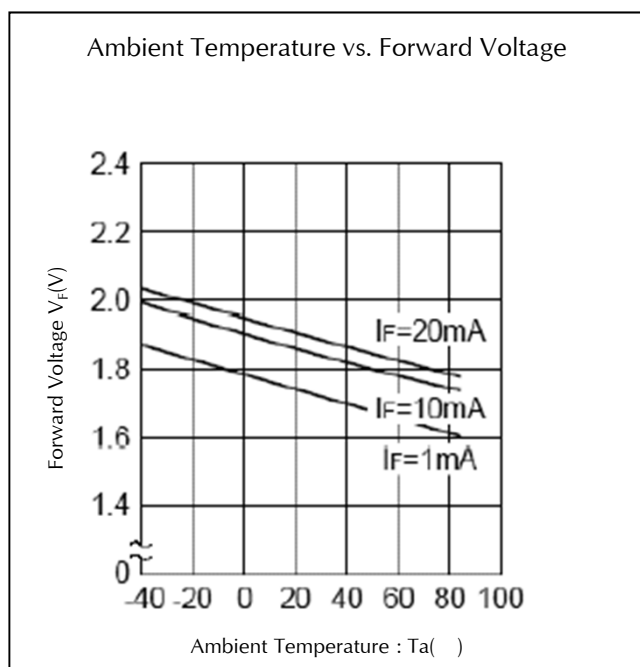
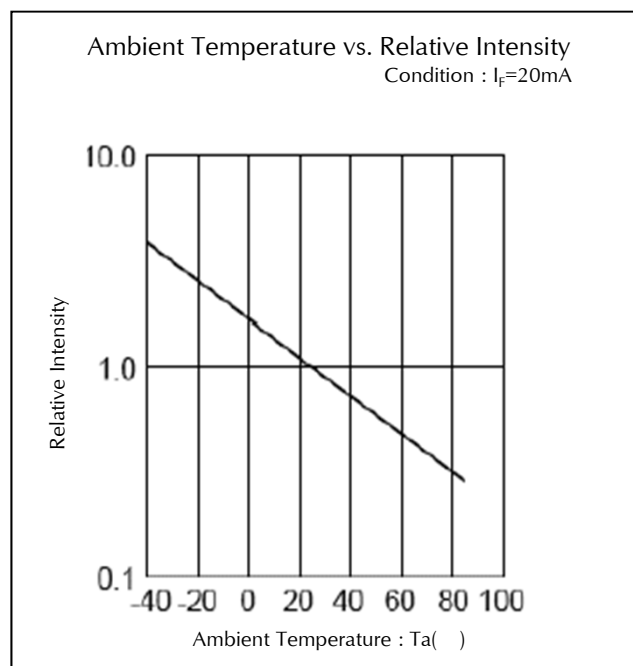
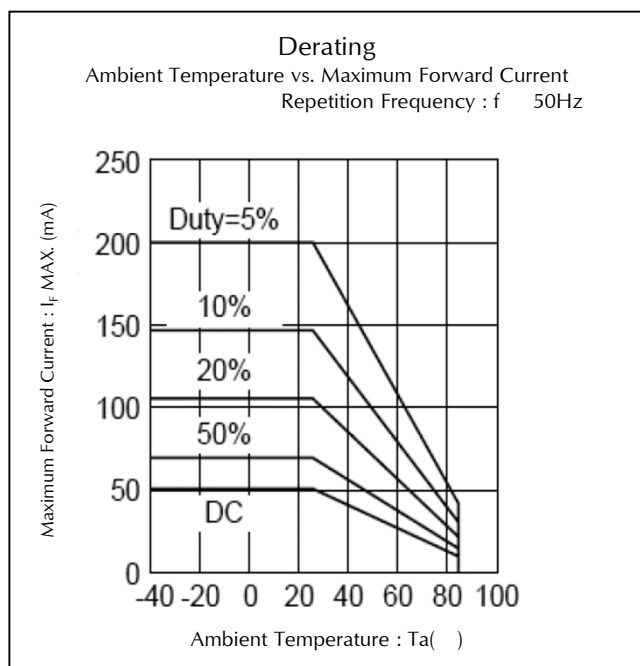
Forward Voltage vs. Forward Current
Condition : $T_a = 25$



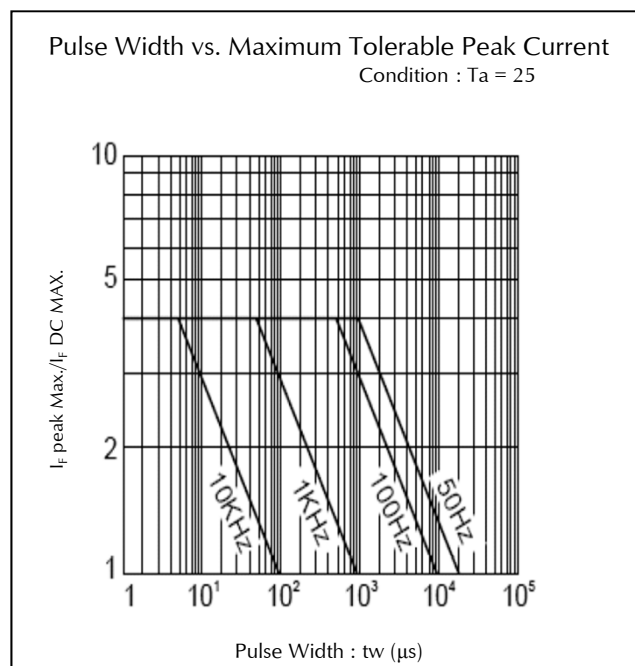
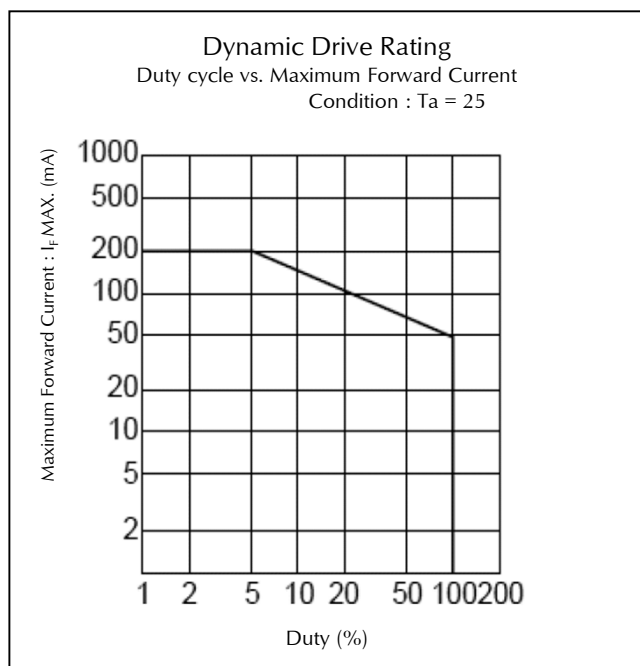
Forward Current vs. Relative Intensity
Condition : $T_a = 25$



Technical Data(FR)



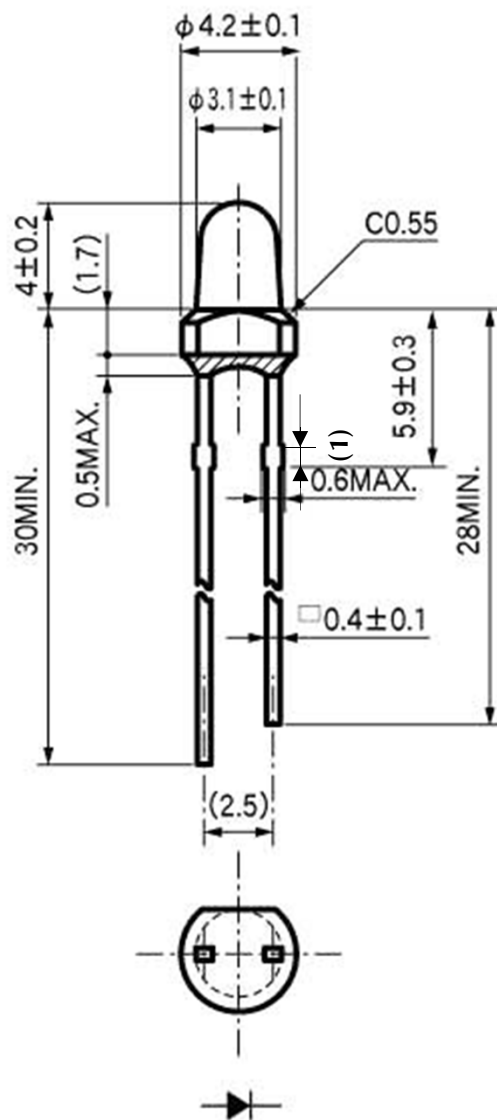
Technical Data(FR)



Package Dimensions

(Unit: mm)

Mass : (0.16)g



TTW (Through The Wave) soldering Conditions

Pre-heating	100	(MAX.)
Solder Bath Temp.	265	(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.	360	(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 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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