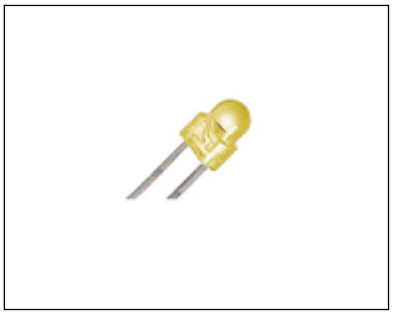


Pb-free HEAT

3864X Series

Single Color ϕ3 Flush Mount Round Shape Type

Features

Package	Φ3 Round shape type, YPY,FY : Pale Yellow Clear epoxy FA : Pale Orange Clear epoxy FR : Pale Red Clear epoxy
Product features	・Outer Dimension ϕ3 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) Yellow : 590nm (FY) Orange : 605nm (FA) Red : 626nm (FR)
Half Intensity Angle	YPY,FY,FA,FR : 70 deg.
Die materials	YPY,FY,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 λd (nm)		Luminous Intensity Iv (mcd)		
					TYP.	I_F	MIN.	TYP.	I_F
YPY3864X	AlGaInP	Yellow Green	Palle Yellow	Clear	572	20	60	120	20
FY3864X	AlGaInP	Yellow			590	20	125	250	20
FA3864X	AlGaInP	Orange	Pale Orange		605	20	140	280	20
FR3864X	AlGaInP	Red	Pale Red		626	20	110	220	20

Absolute Maximum Ratings

(Ta=25℃)

Item	Symbol	Absolute Maximum Ratings				Unit
		YPY	FY	FA	FR	
Power Dissipation	P_d	130	125	125	125	mW
Forward Current	I_F	50	50	50	50	mA
Pulse Forward Current ※1	I_{FRM}	200	200	200	200	mA
Derating (Ta=25℃ or higher)	ΔI_F	0.67	0.67	0.67	0.67	mA/℃
Reverse Voltage	V_R	5	5	5	5	V
Operating Temperature	T_{opr}	-40～+85				℃
Storage Temperature	T_{stg}	-40～+100				℃

※1 I_{FRM} Measurement condition : Pulse Width≦1ms., Duty≦1/20.

Electro-Optical Characteristics

(Ta=25℃)

Item	Conditions	Symbol	Characteristics					Unit
				YPY	FY	FA	FR	
Forward Voltage	I_F=20mA	V_F	TYP.	2.1	1.9	1.9	1.9	V
			MAX.	2.5	2.4	2.4	2.4	
Reverse Current	V_R=5V	I_R	MAX.	100	100	100	100	μA
Peak Wavelength	I_F=20mA	λ_p	TYP.	575	592	609	635	nm
Dominant Wavelength	I_F=20mA	λ_d	TYP.	572	590	605	626	nm
Spectral Line Half Width	I_F=20mA	$\Delta\lambda$	TYP.	15	15	15	15	nm
Half Intensity Angle	I_F=20mA	$2\theta 1/2$	TYP.	70	70	70	70	deg.

Luminous Intensity Rank

(Ta=25℃)

Rank	I_V (mcd)								Condition
	YPY		FY		FA		FR		
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
A	60	120	125	250	140	280	110	220	I_F = 20mA
B	85	170	175	350	200	400	150	300	
C	120	240	250	500	280	560	220	440	
D	170	340	350	700	400	800	300	600	
E	240	-	500	-	560	-	440	-	

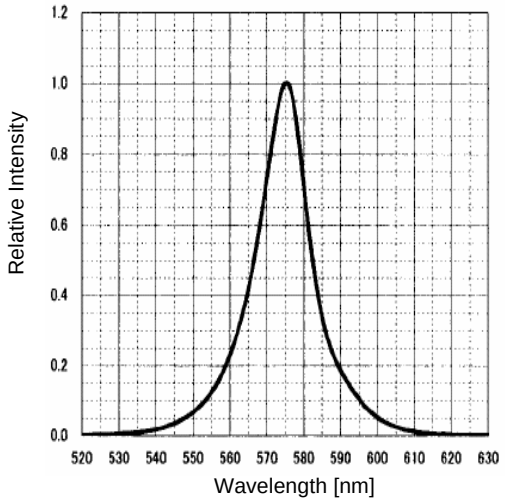
※Please contact our sales staff concerning rank designation.

Technical Data**(YPY)**

Spectral Distribution

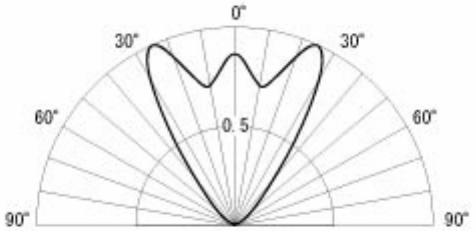
Relative Intensity vs. Wavelength

Condition : Ta = 25℃, I_F = 20mA



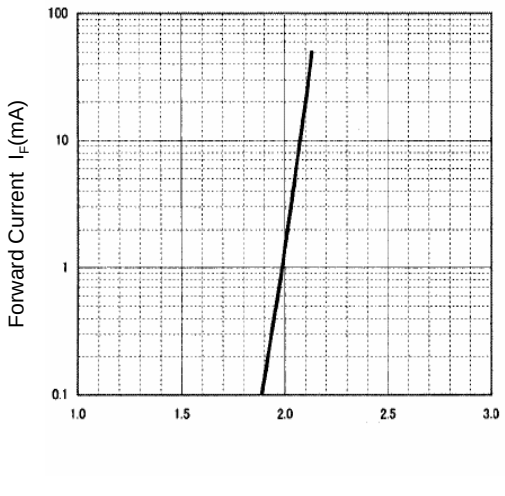
Spatial Distribution Example

Condition : Ta = 25℃



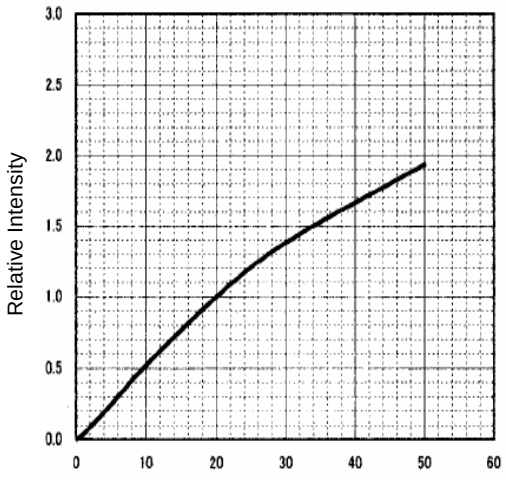
Forward Voltage vs. Forward Current

Condition : Ta = 25℃



Forward Current vs. Relative Intensity

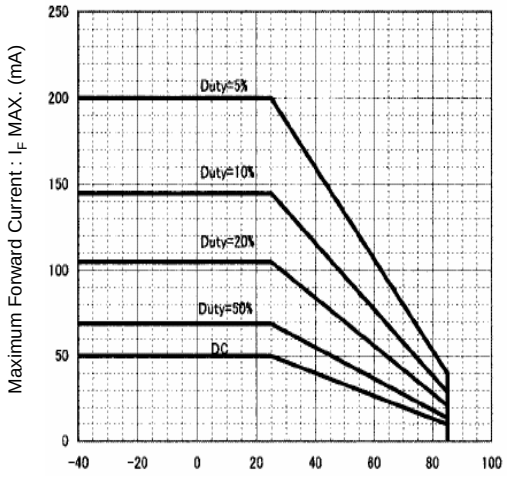
Condition : Ta = 25℃



Technical Data**(YPY)**

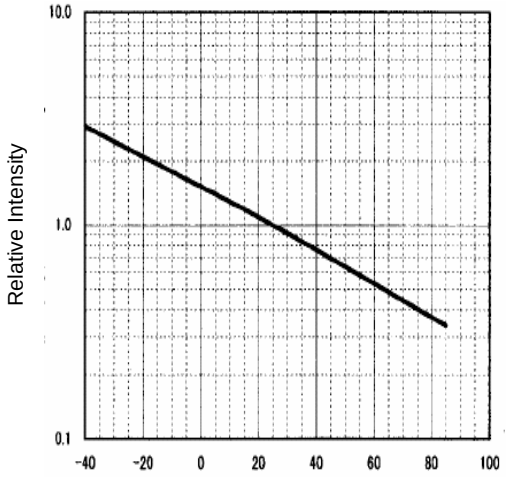
Derating

Ambient Temperature vs. Maximum Forward Current
Repetition Frequency : f ≧ 50Hz

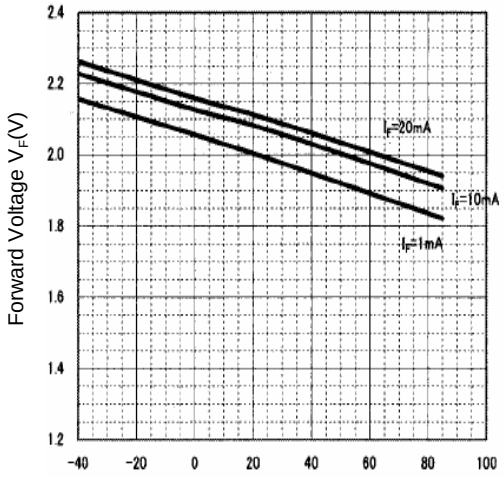


Ambient Temperature vs. Relative Intensity

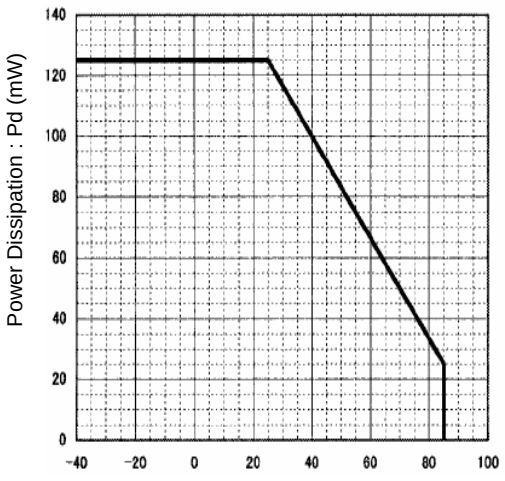
Condition : I_F=20mA



Ambient Temperature vs. Forward Voltage



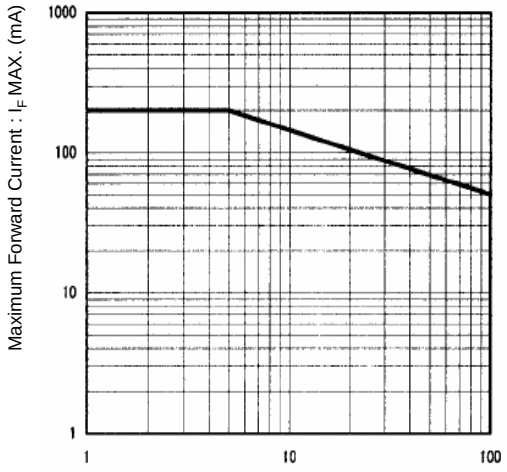
Power Dissipation vs. Ambient Temperature



Technical Data**(YPY)**

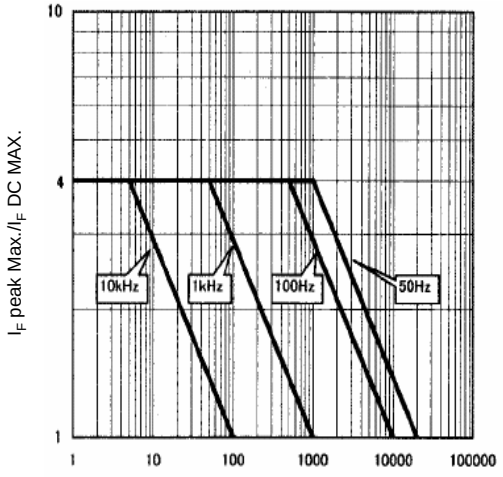
Dynamic Drive Rating

Duty cycle vs. Maximum Forward Current
Condition : Ta = 25℃



Pulse Width vs. Maximum Tolerable Peak Current

Condition : Ta = 25℃

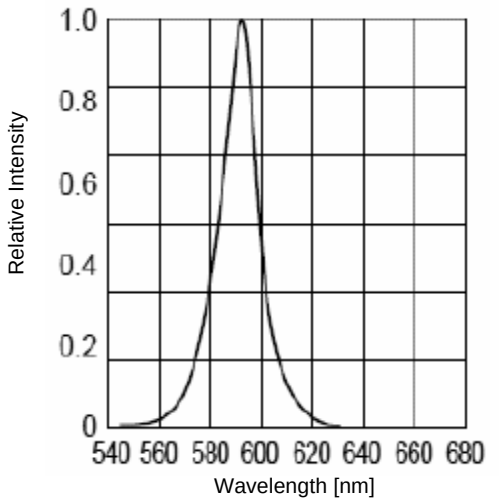


Technical Data**(FY)**

Spectral Distribution

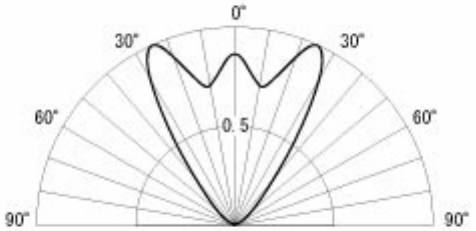
Relative Intensity vs. Wavelength

Condition : Ta = 25℃, I_F = 20mA



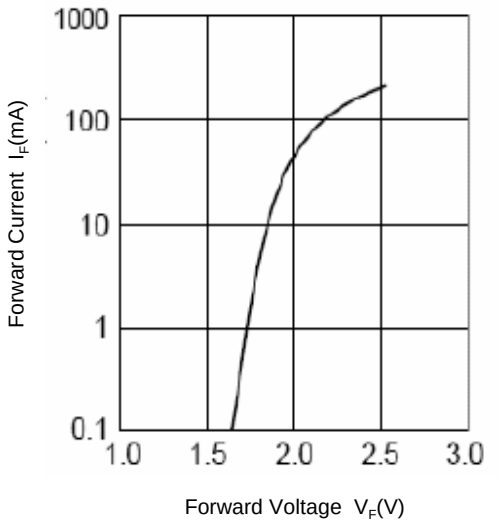
Spatial Distribution Example

Condition : Ta = 25℃



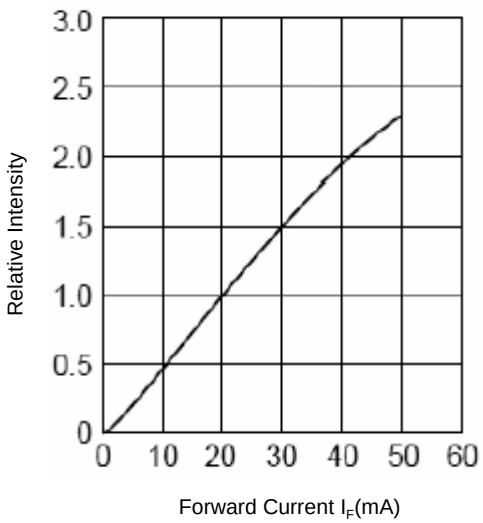
Forward Voltage vs. Forward Current

Condition : Ta = 25℃



Forward Current vs. Relative Intensity

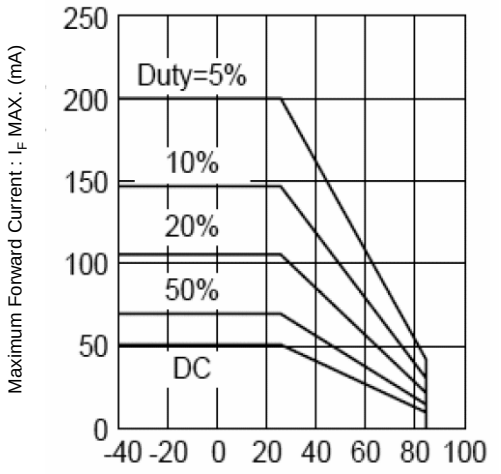
Condition : Ta = 25℃



Technical Data**(FY)**

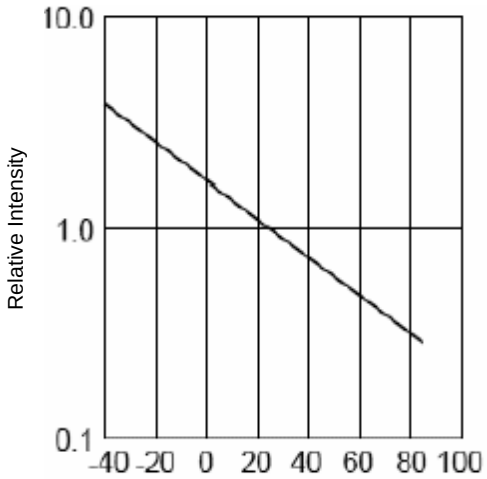
Derating

Ambient Temperature vs. Maximum Forward Current
Repetition Frequency : f ≧ 50Hz

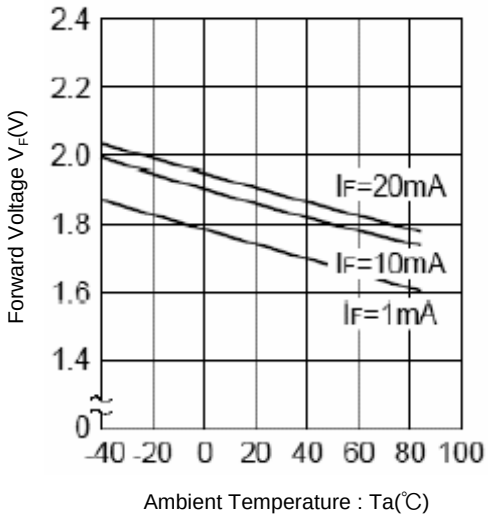


Ambient Temperature vs. Relative Intensity

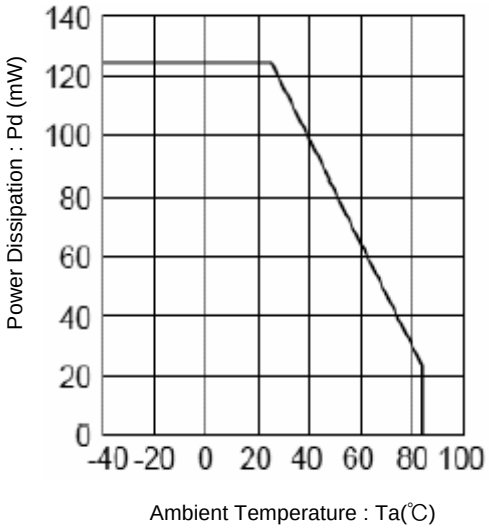
Condition : I_F=20mA



Ambient Temperature vs. Forward Voltage



Power Dissipation vs. Ambient Temperature

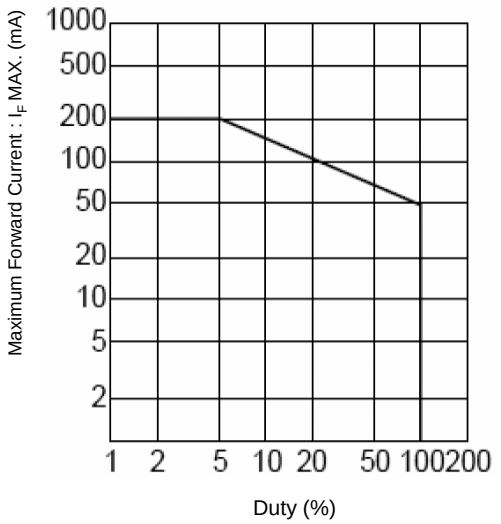


Technical Data**(FY)**

Dynamic Drive Rating

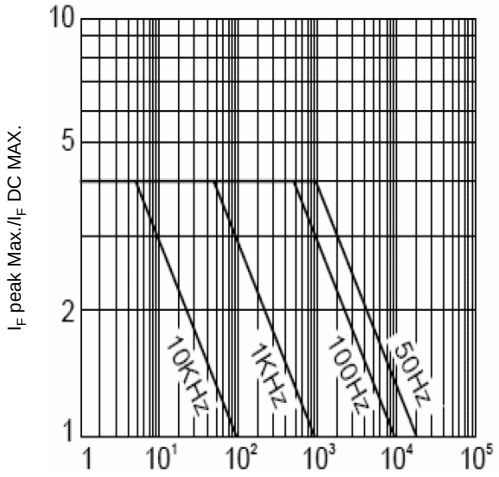
Duty cycle vs. Maximum Forward Current

Condition : Ta = 25℃



Pulse Width vs. Maximum Tolerable Peak Current

Condition : Ta = 25℃

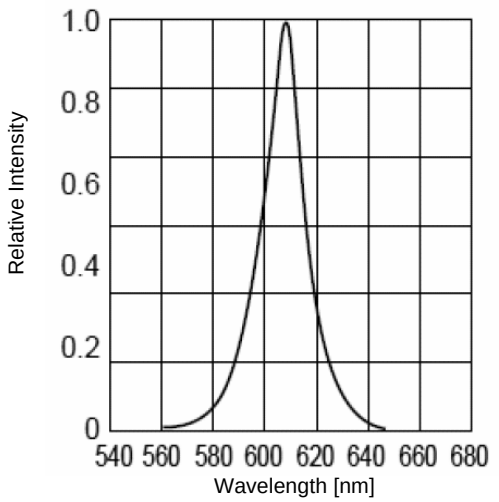


Technical Data**(FA)**

Spectral Distribution

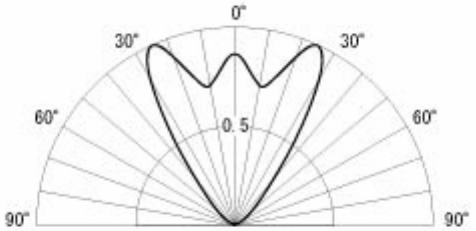
Relative Intensity vs. Wavelength

Condition : Ta = 25℃, I_F = 20mA



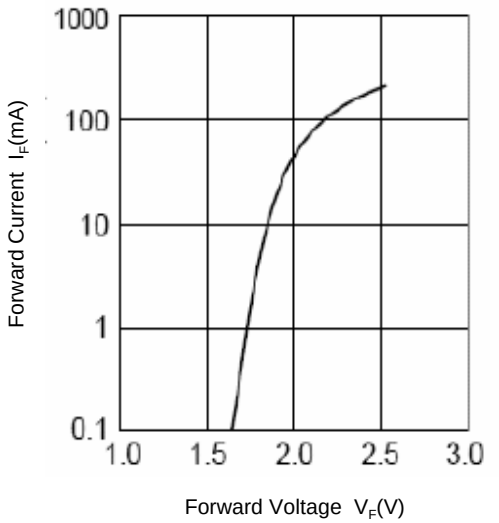
Spatial Distribution Example

Condition : Ta = 25℃



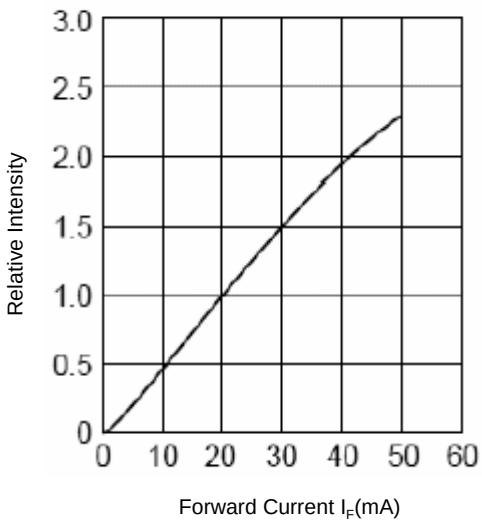
Forward Voltage vs. Forward Current

Condition : Ta = 25℃



Forward Current vs. Relative Intensity

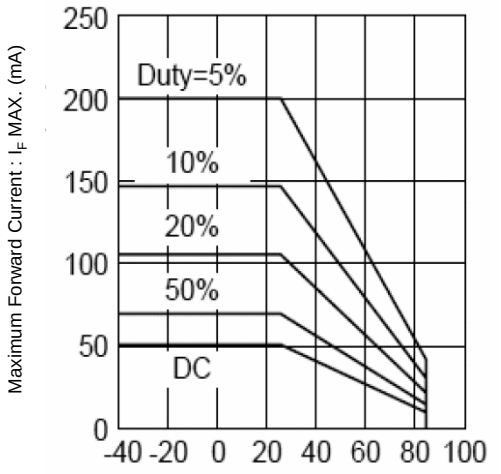
Condition : Ta = 25℃



Technical Data**(FA)**

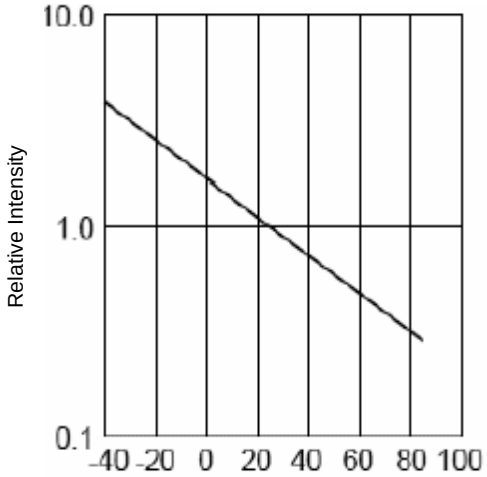
Derating

Ambient Temperature vs. Maximum Forward Current
Repetition Frequency : f ≧ 50Hz

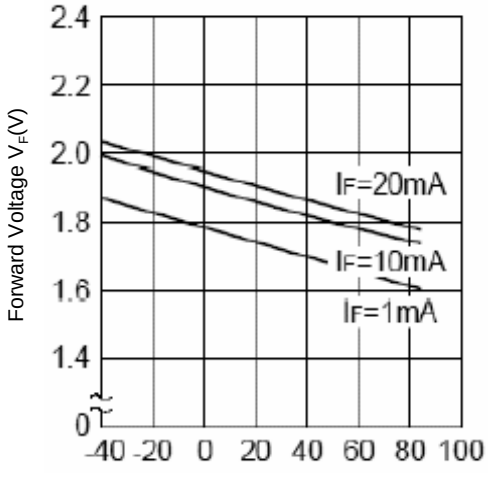


Ambient Temperature vs. Relative Intensity

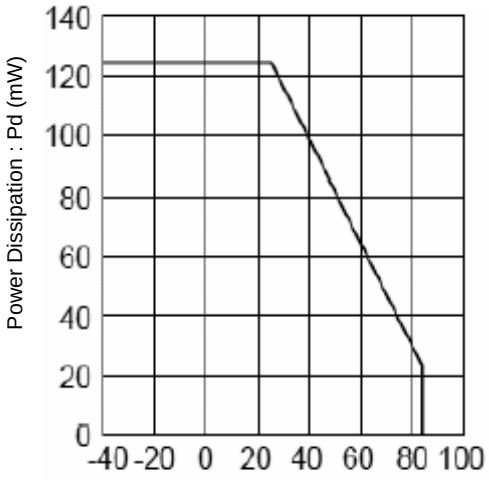
Condition : I_F=20mA



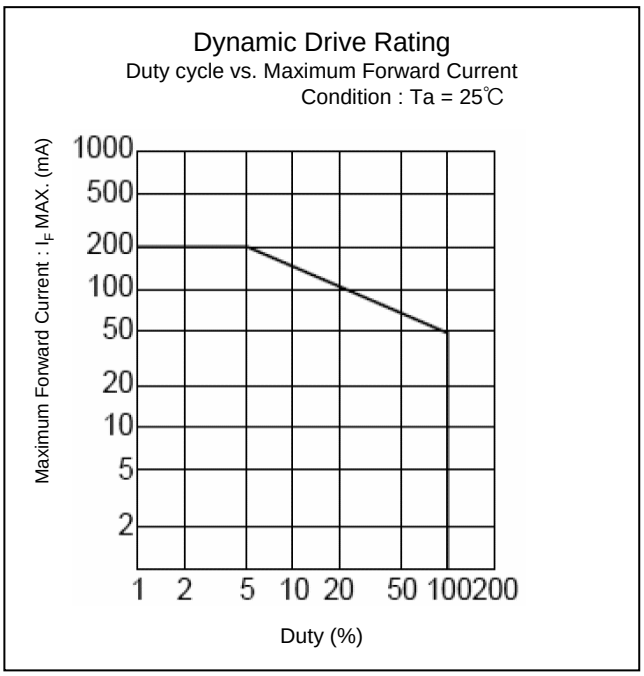
Ambient Temperature vs. Forward Voltage

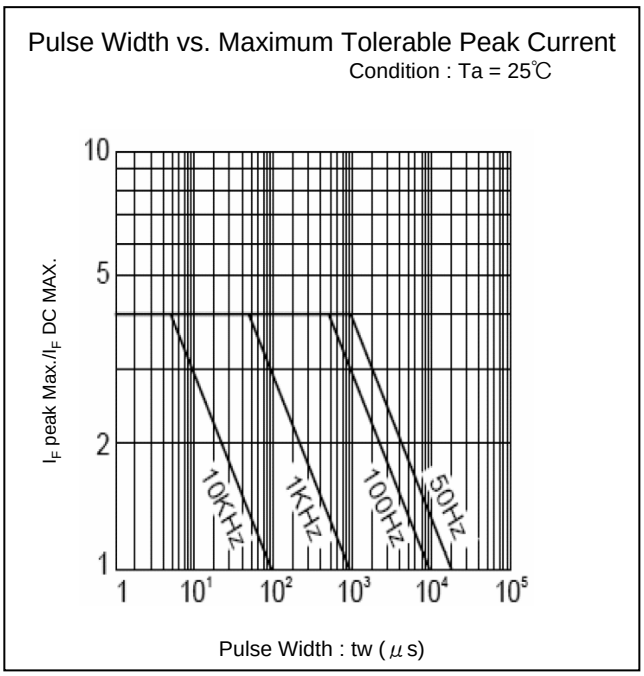


Power Dissipation vs. Ambient Temperature



Technical Data**(FA)**



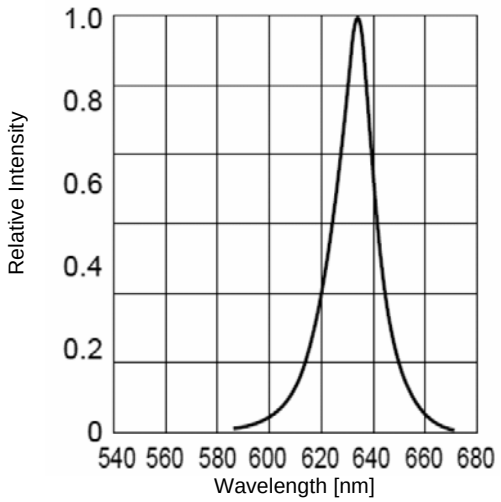


Technical Data**(FR)**

Spectral Distribution

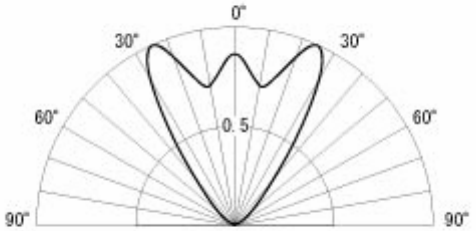
Relative Intensity vs. Wavelength

Condition : Ta = 25℃, I_F = 20mA



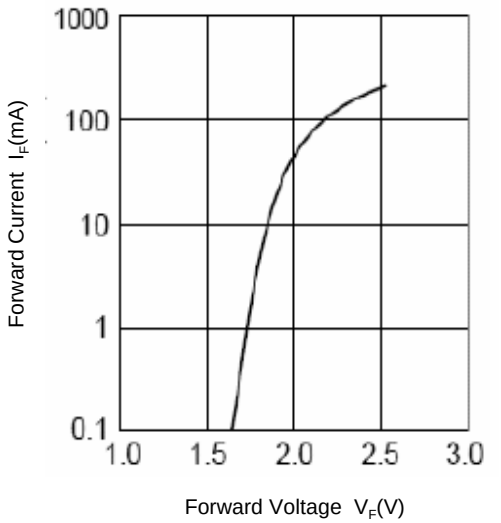
Spatial Distribution Example

Condition : Ta = 25℃



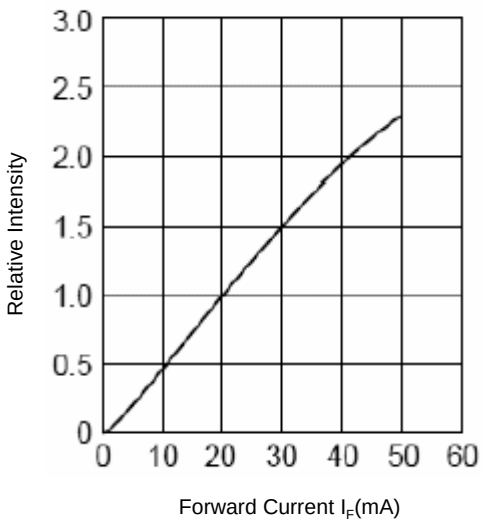
Forward Voltage vs. Forward Current

Condition : Ta = 25℃



Forward Current vs. Relative Intensity

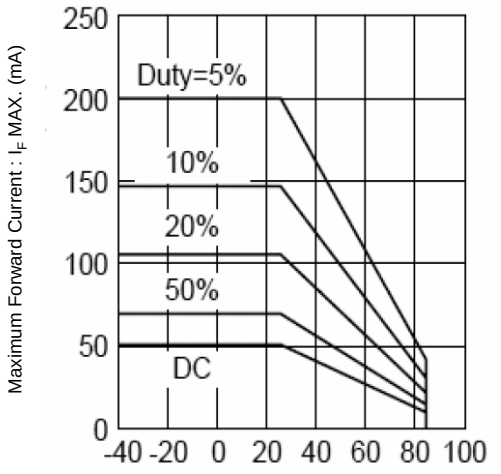
Condition : Ta = 25℃



Technical Data**(FR)**

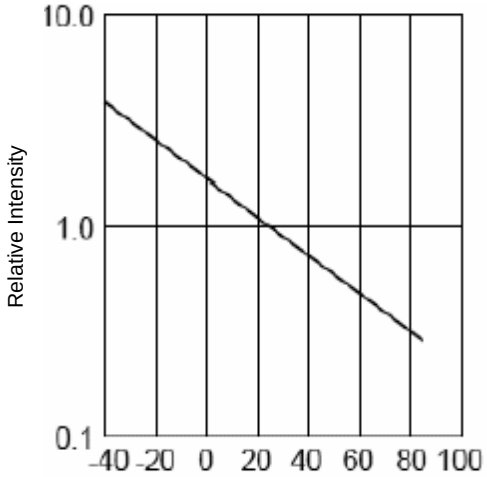
Derating

Ambient Temperature vs. Maximum Forward Current
Repetition Frequency : f ≧ 50Hz

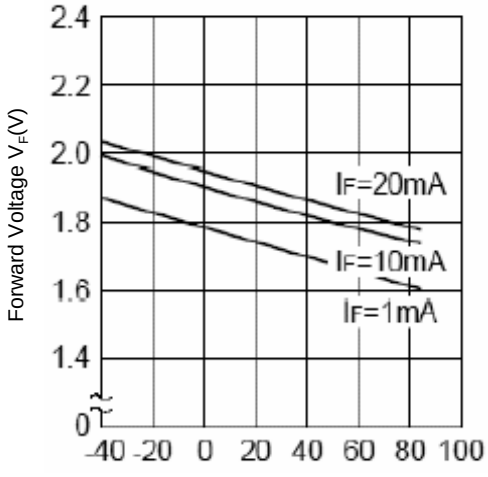


Ambient Temperature vs. Relative Intensity

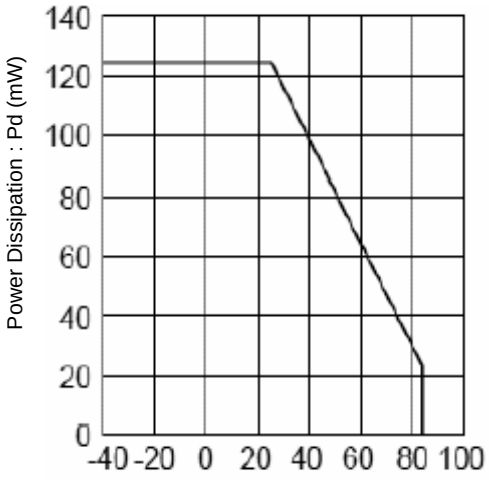
Condition : I_F=20mA



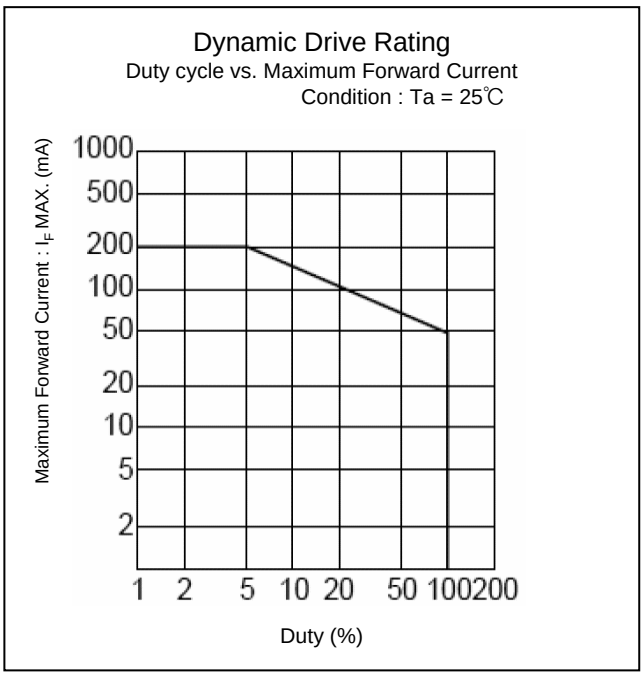
Ambient Temperature vs. Forward Voltage

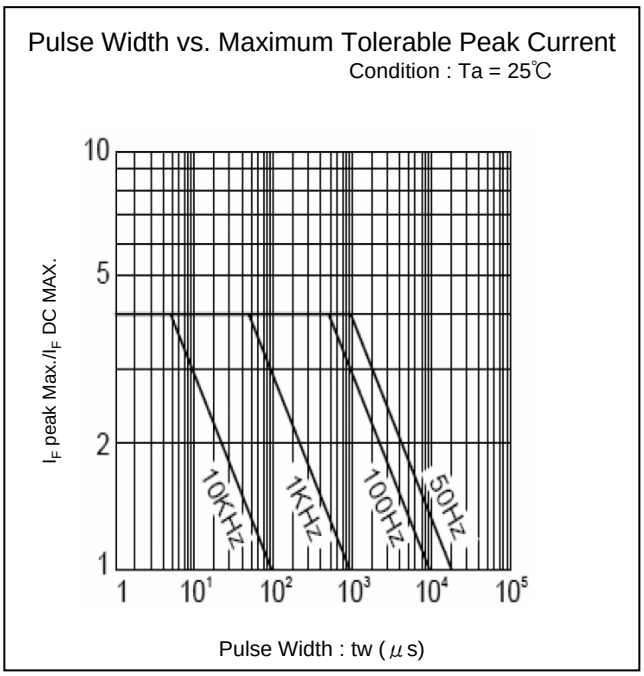


Power Dissipation vs. Ambient Temperature



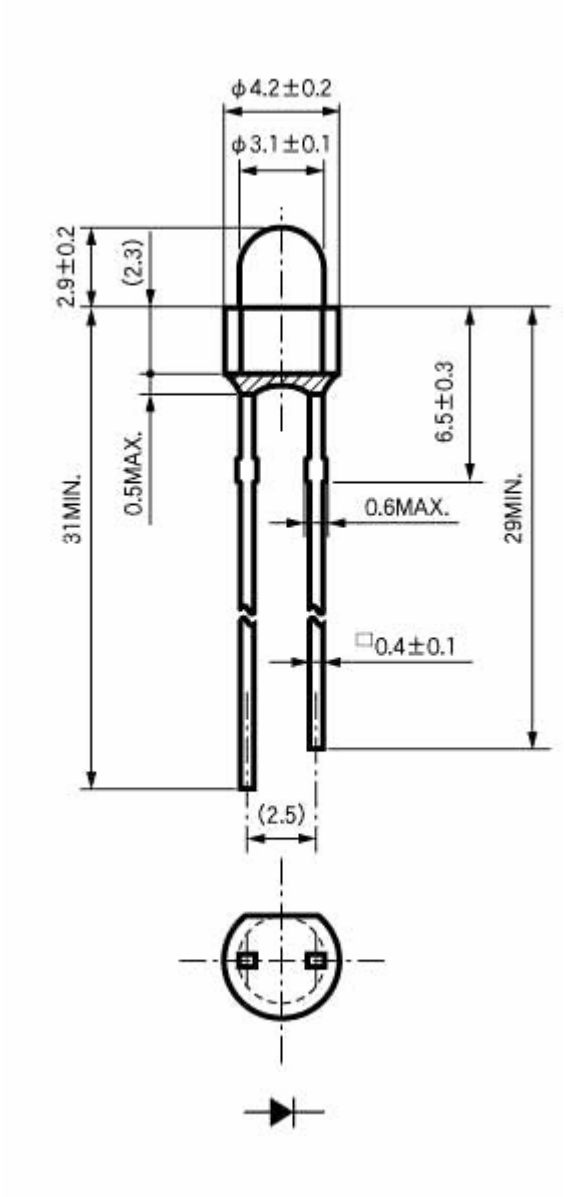
Technical Data**(FR)**





Package Dimensions

(Unit: mm)



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.	400℃	(MAX.)
Soldering time and frequency	3 s 2 times	(MAX.) (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	EIAJED-4701/100(101)	Ta = 25℃, I_F = Maxium Rated Current	1,000 h	0/25
Resistance to Soldering Heat	EIAJED-4701/300(302)	260±5℃, 1.6mm from package base	10s	0/25
Temperature Cycling	EIAJED-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	EIAJED-4701/100(103)	Ta = 60±2℃, RH = 90±5%	1,000 h	0/25
High Temp. Storage Life	EIAJED-4701/200(201)	Ta = Maximum Rated Storage Temperature	1,000 h	0/25
Low Temp. Storage Life	EIAJED-4701/200(202)	Ta = Minimum Rated Storage Temperature	1,000 h	0/25
Lead Tension	EIAJED-4701/400(401)	10N,1time ($\square$0.4 and Flat Package : 5N)	10s	0/10
Vibration, Variable Frequency	EIAJED-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	I_F Value of each product Luminous Intensity	Testing Min. Value < Spec. Min. Value x 0.5
Forward Voltage	V_F	I_F 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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1) The technical information shown in the data sheets are limited to the typical characteristics and circuit examples of the referenced products. It does not constitute the warranting of industrial property nor the granting of any license.

2) For the purpose of product improvement, the specifications, characteristics and technical data described in the data sheets are subject to change without prior notice. Therefore it is recommended that the most updated specifications be used in your design.

3) When using the products described in the data sheets, please adhere to the maximum ratings for operating voltage, heat dissipation characteristics, and other precautions for use. We are not responsible for any damage which may occur if these specifications are exceeded.

4) The products that have been described to this catalog are manufactured so that they will be used for the electrical instrument of the benchmark (OA equipment, telecommunications equipment, AV machine, home appliance and measuring instrument).
The application of aircrafts, space borne application, transportation equipment, medical equipment and nuclear power control equipment, etc. needs a high reliability and safety, and the breakdown and the wrong operation might influence the life or the human body. Please consult us beforehand if you plan to use our product for the usages of aircrafts, space borne application, transportation equipment, medical equipment and nuclear power control equipment, etc. except OA equipment, telecommunications equipment, AV machine, home appliance and measuring instrument.

5) In order to export the products or technologies described in this data sheet which are under the "Foreign Exchange and Foreign Trade Control Law," it is necessary to first obtain an export permit from the Japanese government.

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7) The most updated edition of this data sheet can be obtained from the address below:
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