



**Pb-free  
HEAT**

**STANLEY**

# 1113F Series

Single Color High Brightness Type

## Features

Package	Right Angle Type (2.1 x 1.0 mm) Type, Milky White resin
Product features	<ul style="list-style-type: none"> <li>• Outer Dimension 2.1 x 1.0 x 0.6mm ( L x W x H )</li> <li>• 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	Yellow Green : 572nm(YPY) Yellow : 590nm(FY) Orange : 605nm(FA) Red : 626nm(FR)
Half Intensity Angle	YPY : $\theta_x = 150 \text{ deg.}, \theta_y = 147 \text{ deg.}$ FY,FA,FR : $\theta_x = 134 \text{ deg.}, \theta_y = 150 \text{ deg.}$
Die materials	YPY,FY,FA,FR : AlGaInP
Rank grouping parameter	Sorted by luminous intensity and wavelength per rank taping
Assembly method	Auto pick & place machine (Auto Mounter)
Soldering methods	Reflow soldering and manual soldering
Taping and reel	4,000pcs per reel in a 8mm width tape. (Standard) Reel diameter: $\phi 180\text{mm}$
ESD	AlGaInP : More than 2kV(HBM)

## Recommended Applications

Cellular Phone, Electric Household Appliances, OA/FA, Other General Applications

## Color and Luminous Intensity

(Ta=25°C)

Part No.	Material	Emitted Color	Lens Color	Dominant Wavelength $\lambda d$ (nm)		Luminous Intensity $I_v$ (mcd)		
				TYP.	$I_F$	MIN.	TYP.	$I_F$
				YPY1113F	AlGaInP	Yellow Green	Milky White	572
FY1113F	AlGaInP	Yellow	590	20	25	65		20
FA1113F	AlGaInP	Orange	605	20	25	65		20
FR1113F	AlGaInP	Red	626	20	25	50		20

## Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	Absolute Maximum Ratings				Unit
		YPY	FY	FA	FR	
Power Dissipation	$P_d$	62.5	81	81	81	mW
Forward Current	$I_F$	25	30	30	30	mA
Pulse Forward Current ※1	$I_{FRM}$	60	100	100	100	mA
Derating (Ta=25°C or higher)	$\Delta I_F$	0.36	0.43	0.43	0.43	mA/°C
	$\Delta I_{FRM}$	0.86	1	1	1	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  $\leq 1$  ms., Duty  $\leq 1/20$ . (FY,FA,FR : Duty  $\leq 1/10$ )

## Electro-Optical Characteristics (YPY, FY, FA, FR)

(Ta=25°C)

Item	Conditions	Symbol	Characteristics				Unit	
			YPY	FY	FA	FR		
Forward Voltage	I <sub>F</sub> =20mA	V <sub>F</sub>	TYP.	2.1	1.9	1.9	1.9	V
			MAX.	2.5	2.4	2.4	2.4	
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.	575	592	609	635	nm
Dominant Wavelength	I <sub>F</sub> =20mA	λ <sub>d</sub>	TYP.	572	590	605	626	nm
Spectral Line Half Width	I <sub>F</sub> =20mA	Δλ	TYP.	15	15	15	15	nm
Half Intensity Angle	I <sub>F</sub> =20mA	2θ 1/2	TYP.	150(θ x)	134(θ x)	134(θ x)	134(θ x)	deg.
				147(θ y)	150(θ y)	150(θ y)	150(θ y)	

## Luminous Intensity Rank

(Ta=25°C)

Rank	I <sub>v</sub> (mcd)							
	YPY		FY		FA		FR	
	I <sub>F</sub> =20mA		I <sub>F</sub> =20mA		I <sub>F</sub> =20mA		I <sub>F</sub> =20mA	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
A	19.8	28.0	25	50	25	50	25	50
B	23.3	33.0	35	70	35	70	35	70
C	28.0	40.0	50	100	50	100	50	100
D	33.0	46.7	70	140	70	140	70	140
E	40.0	56.6	100	200	100	200	100	200
F	46.7	-	140	-	140	-	140	-

Please contact our sales staff concerning rank designation.

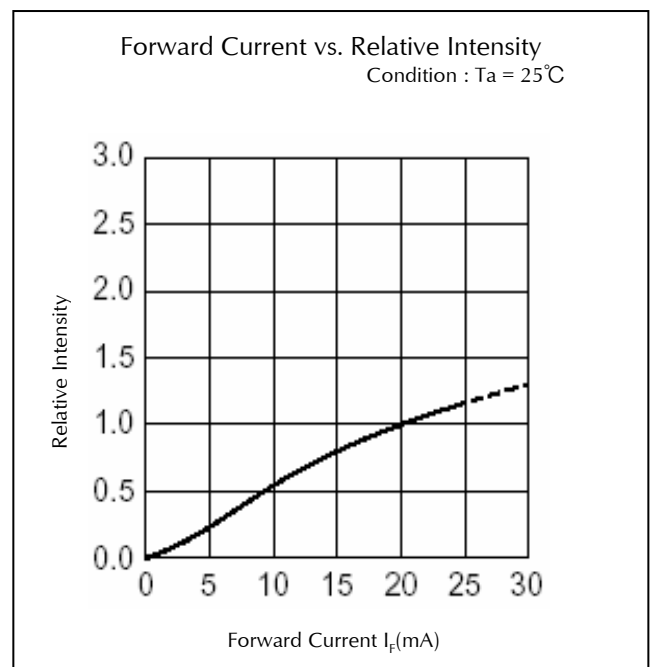
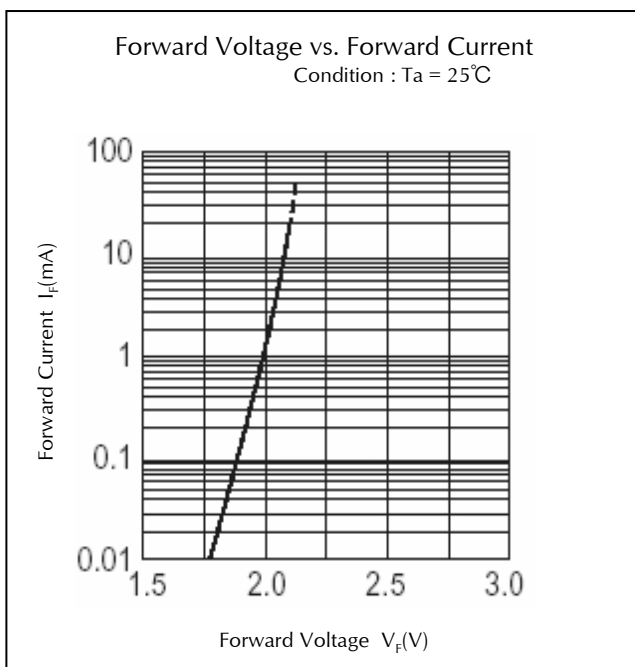
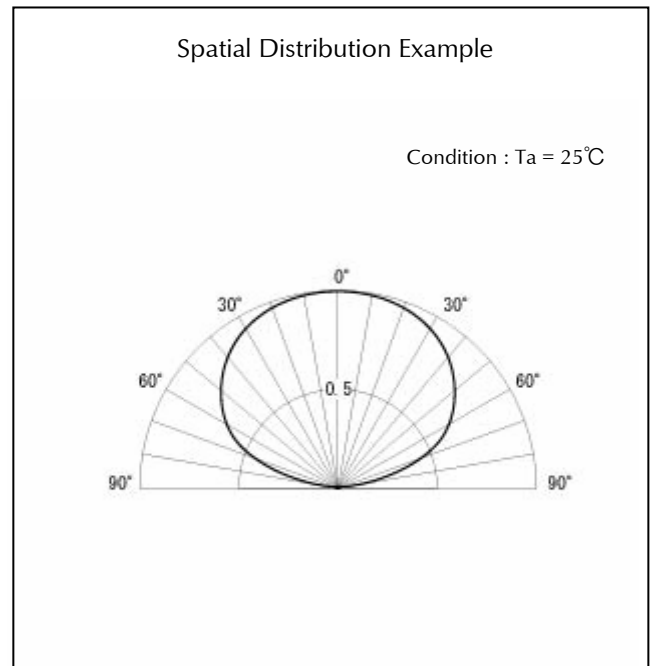
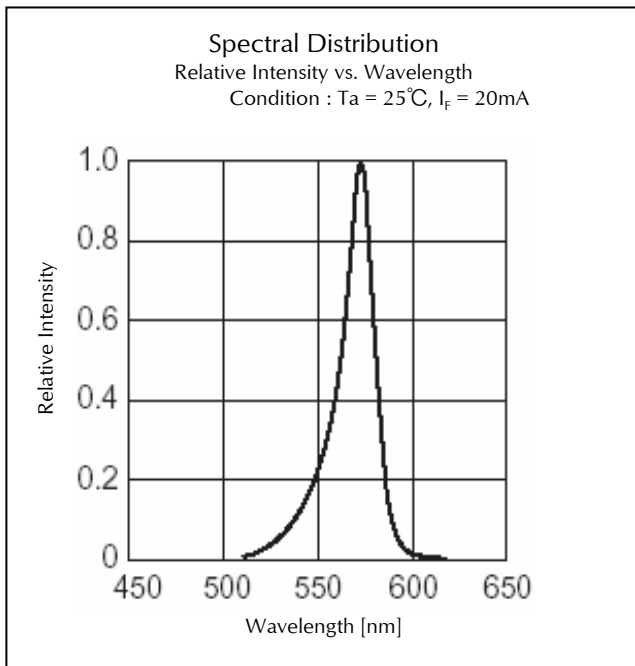
## Color Tone Groups ( $\lambda d$ )

(Ta=25°C)

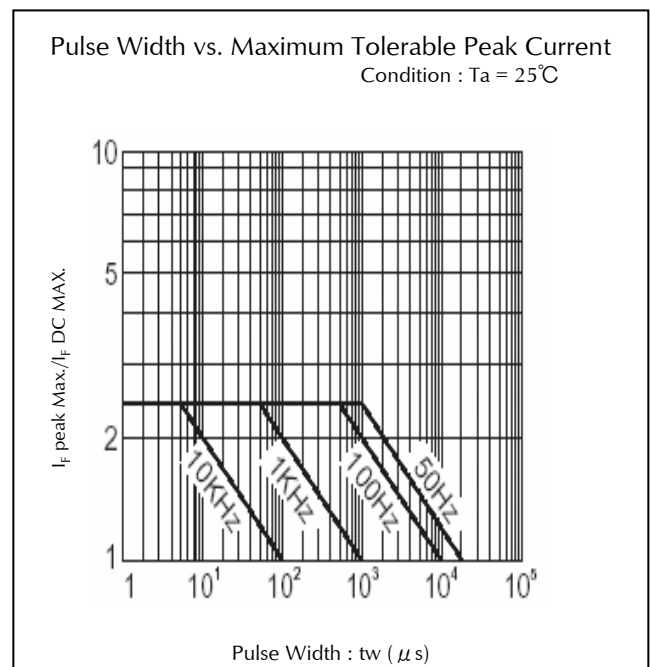
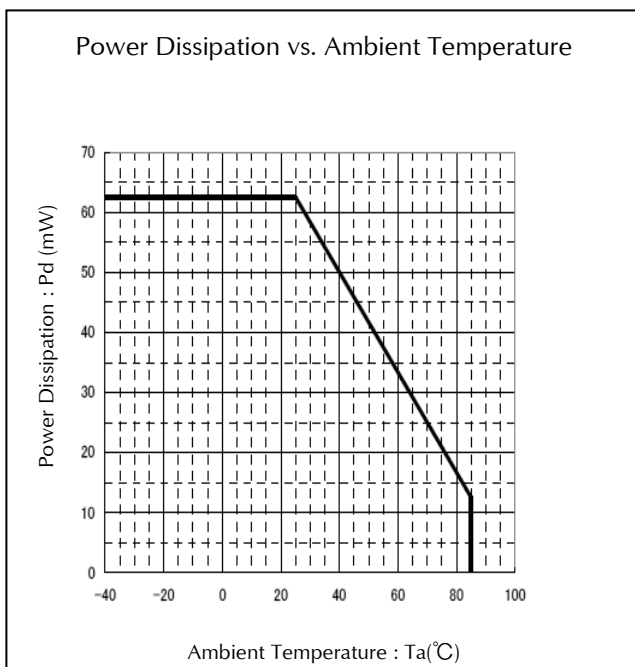
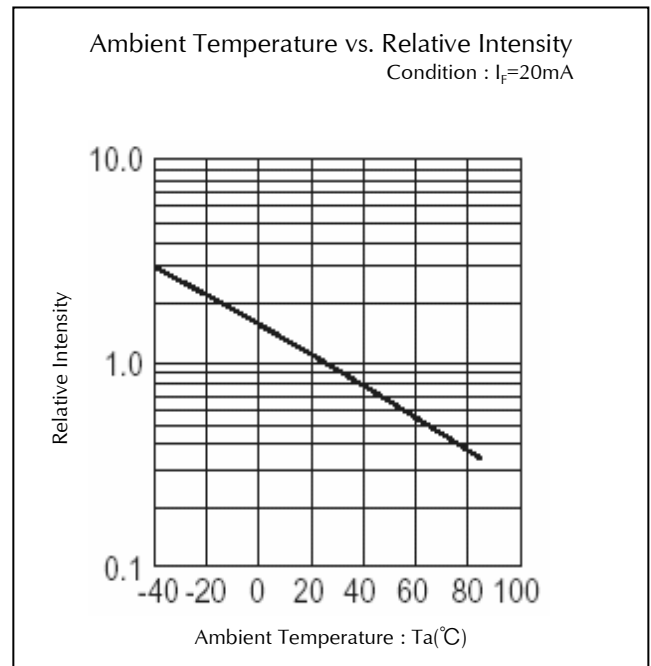
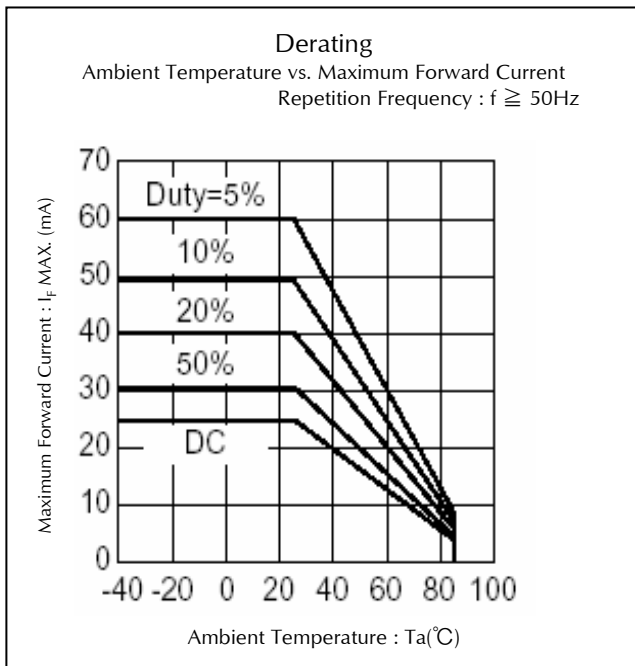
Rank	Dominant Wavelength $\lambda d$ (nm)					
	FY		FA		FR	
	I <sub>F</sub> =20mA		I <sub>F</sub> =20mA		I <sub>F</sub> =20mA	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
A	581.5	585.0	596.1	600.9	621.0	632.0
B	584.0	587.5	599.1	603.9	/	
C	586.5	590.0	602.1	606.9		
D	589.0	592.5	605.1	609.9		
E	591.5	595.0	608.1	612.9		
F	594.0	597.5				

Please contact our sales staff concerning rank designation.

## Technical Data(YPY)

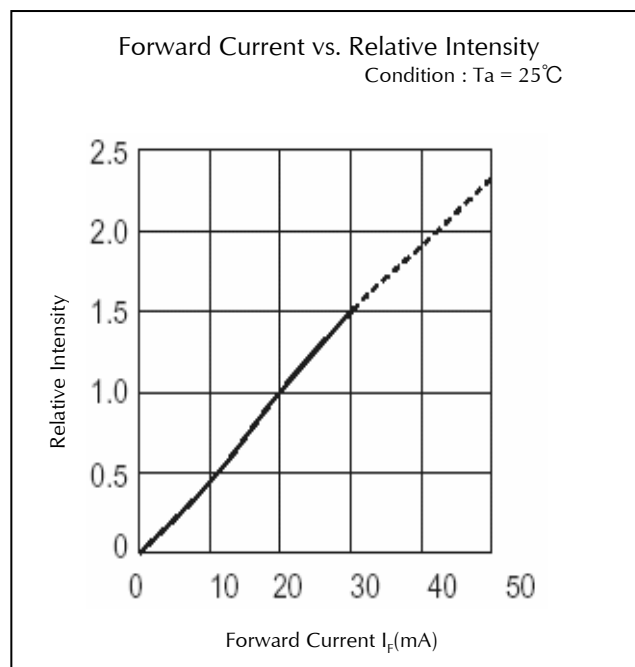
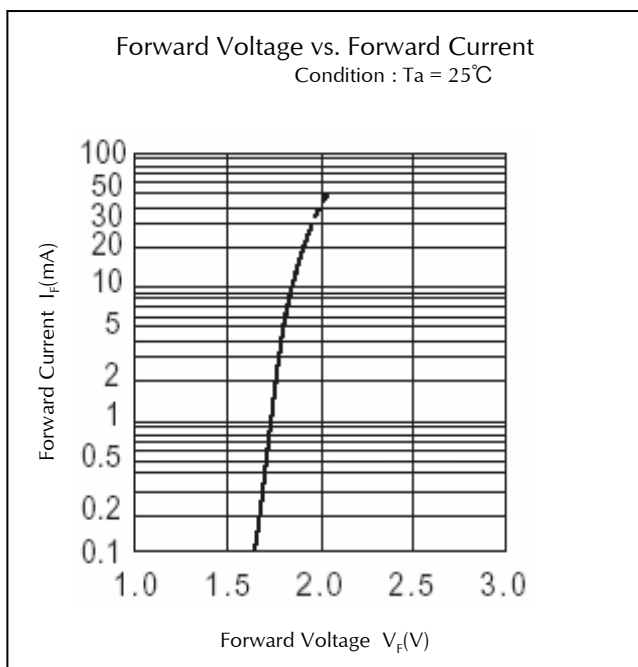
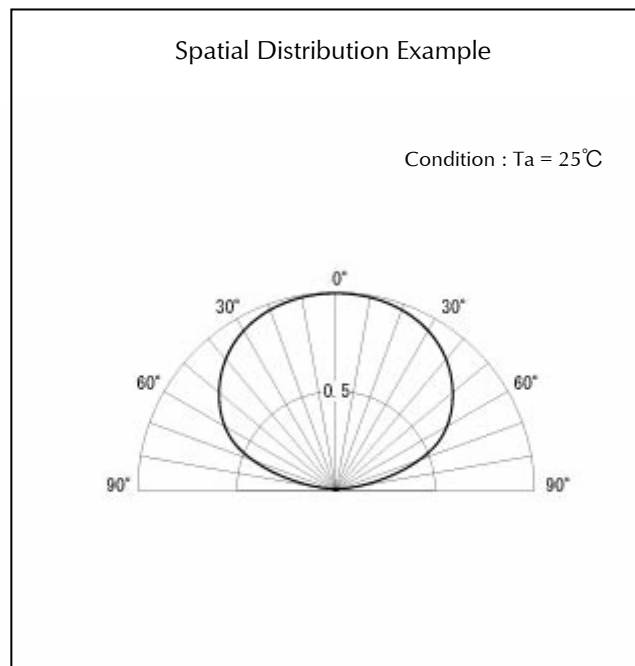
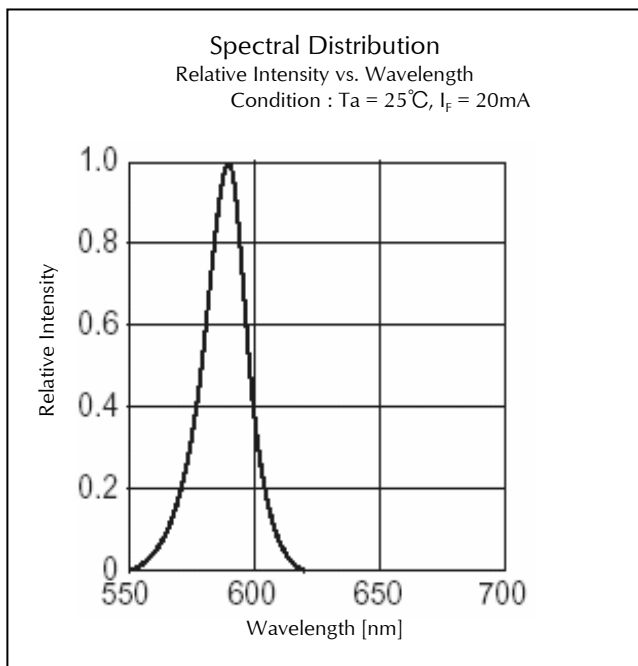


## Technical Data(YPY)

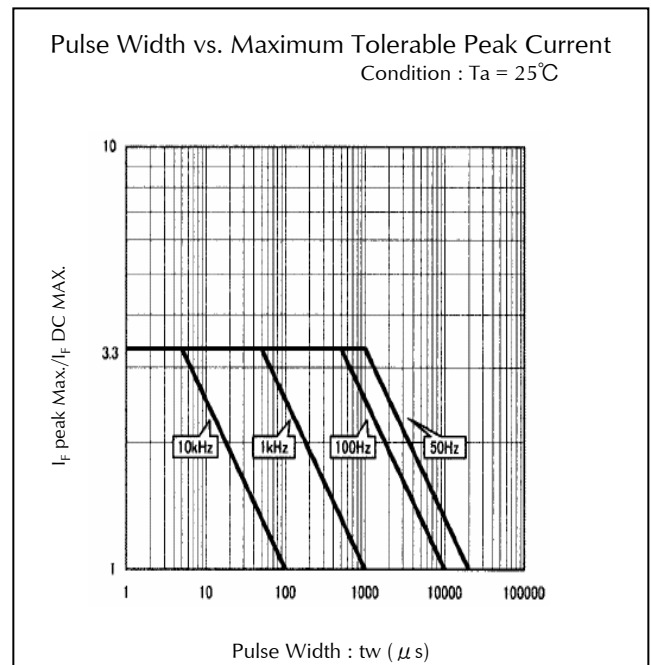
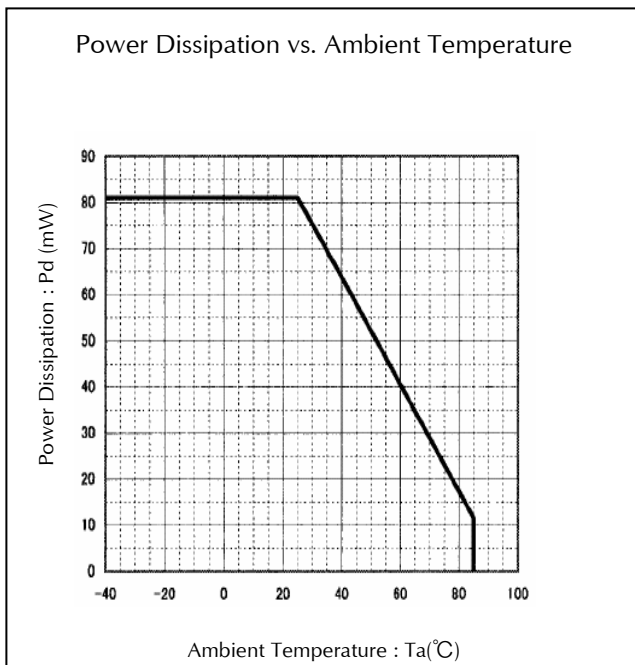
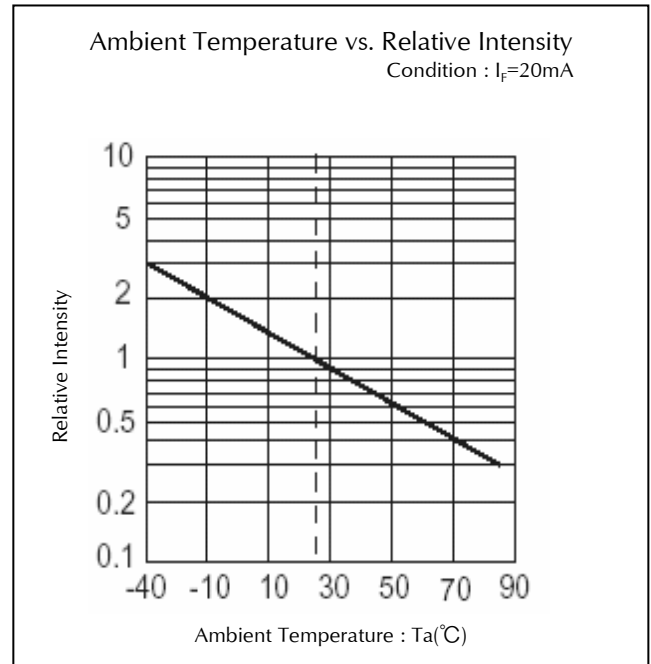
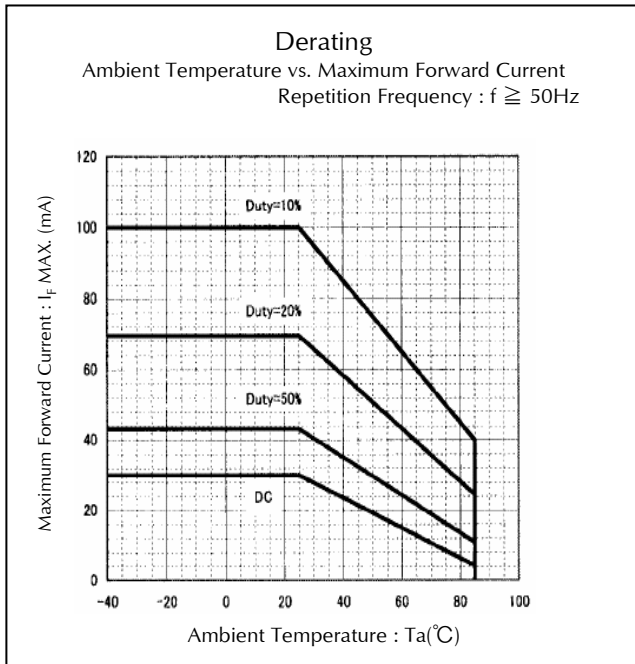




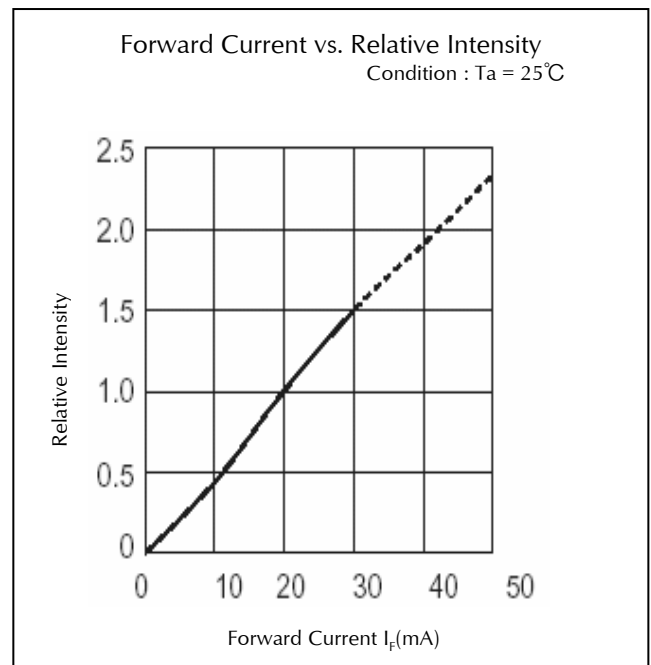
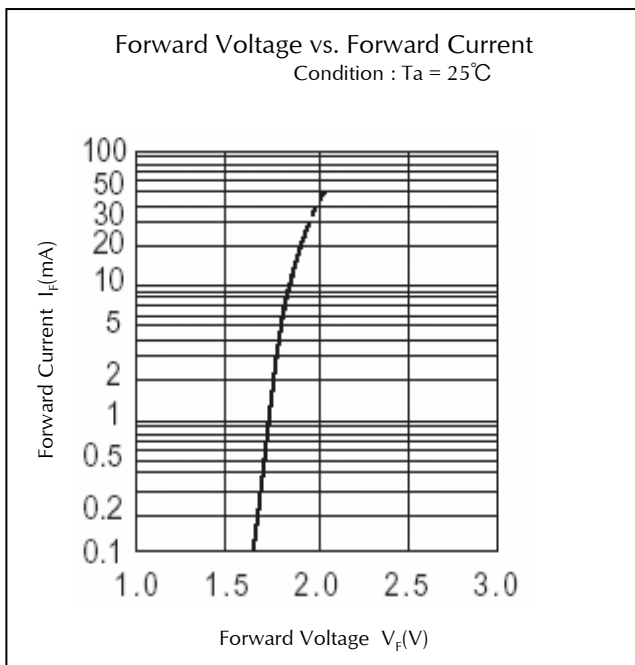
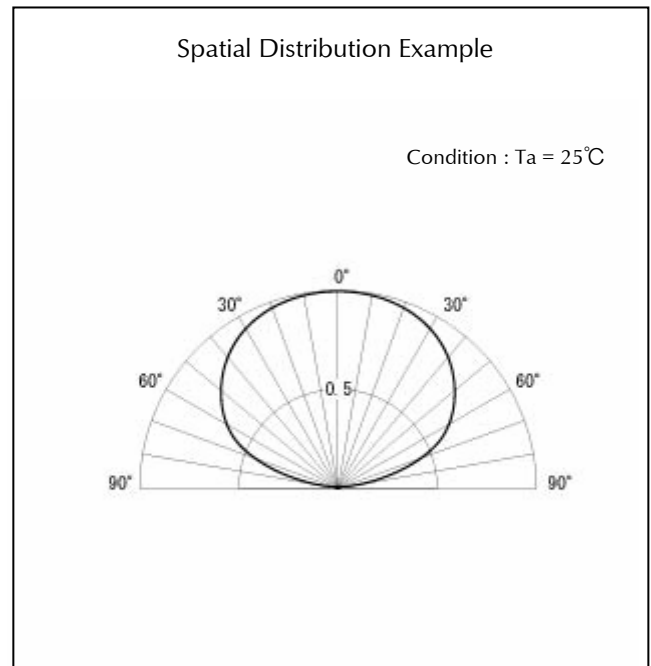
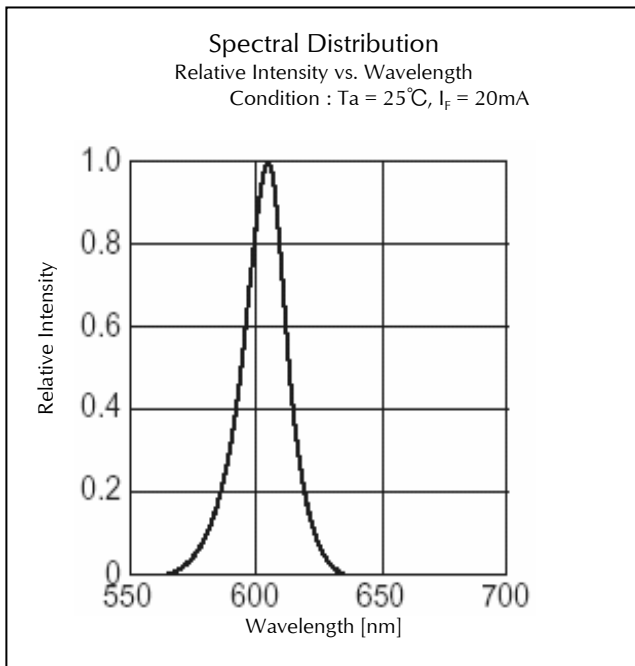
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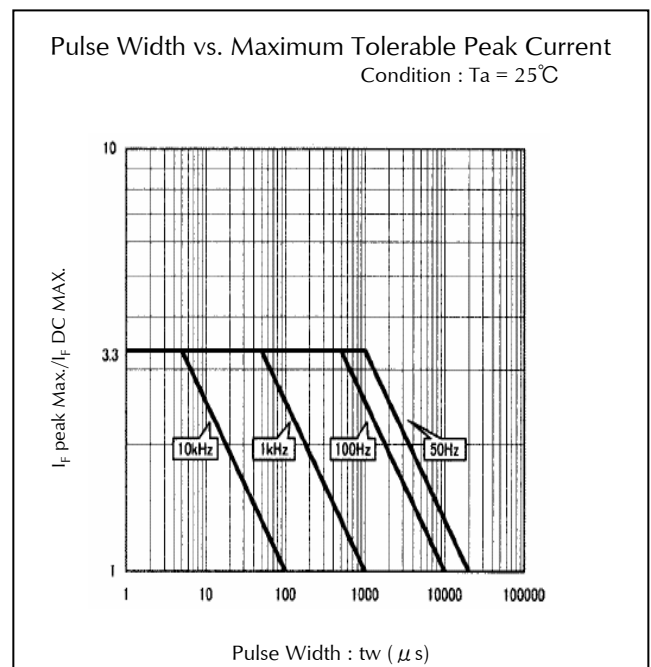
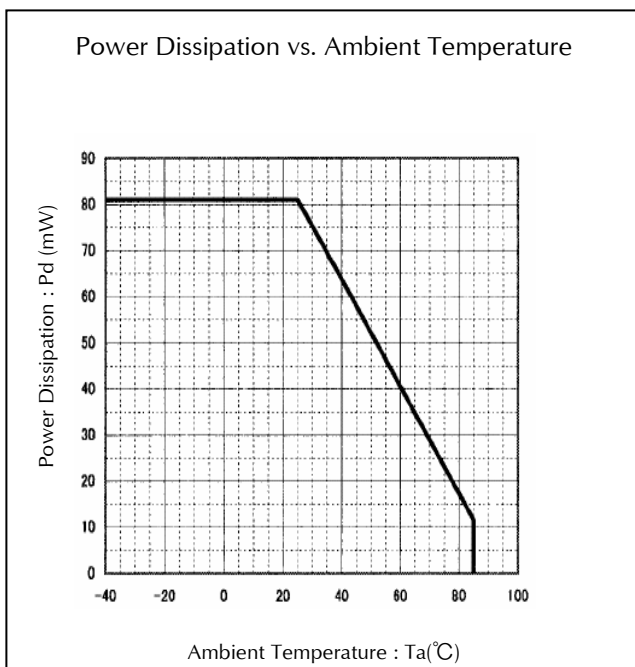
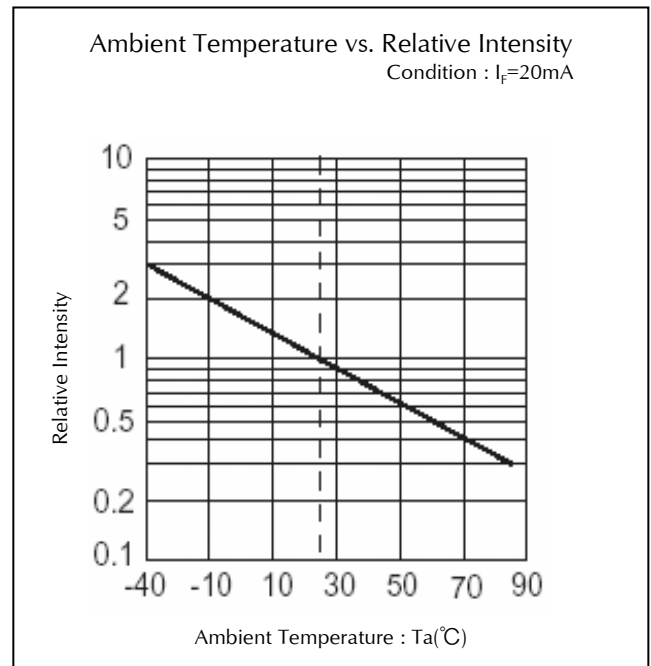
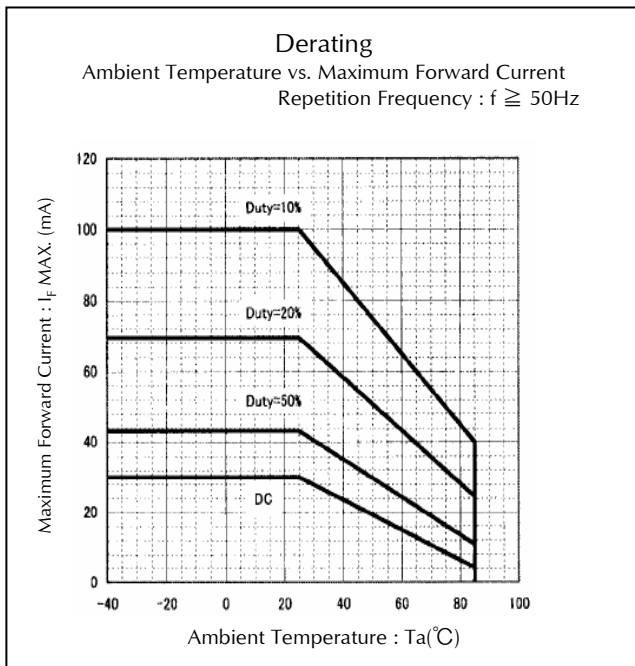
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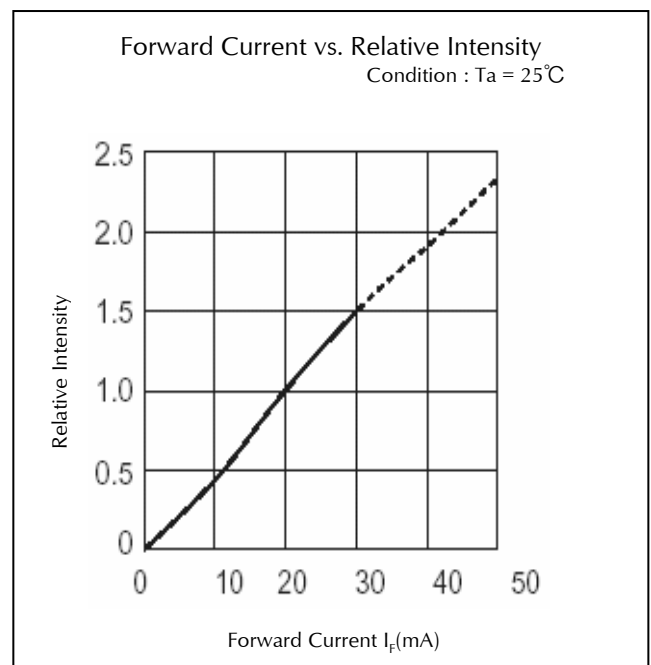
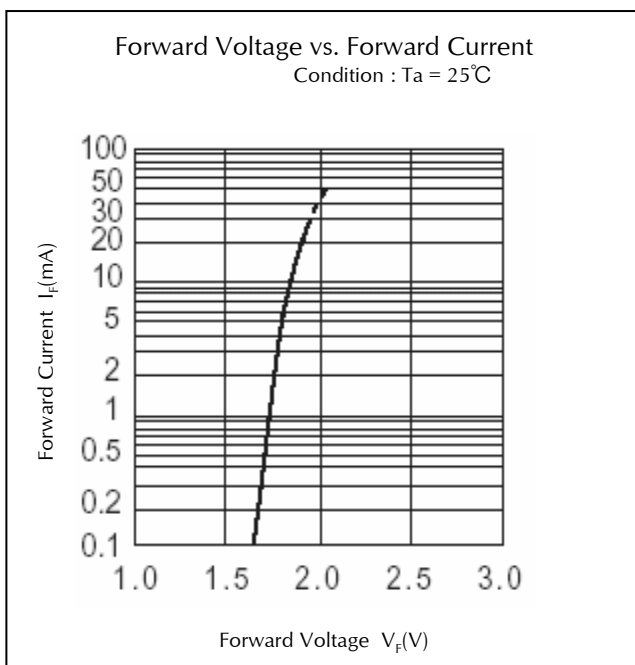
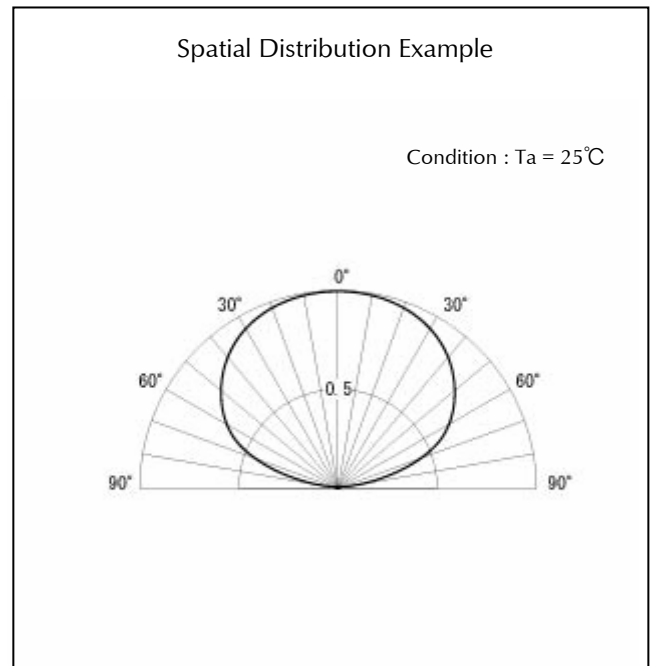
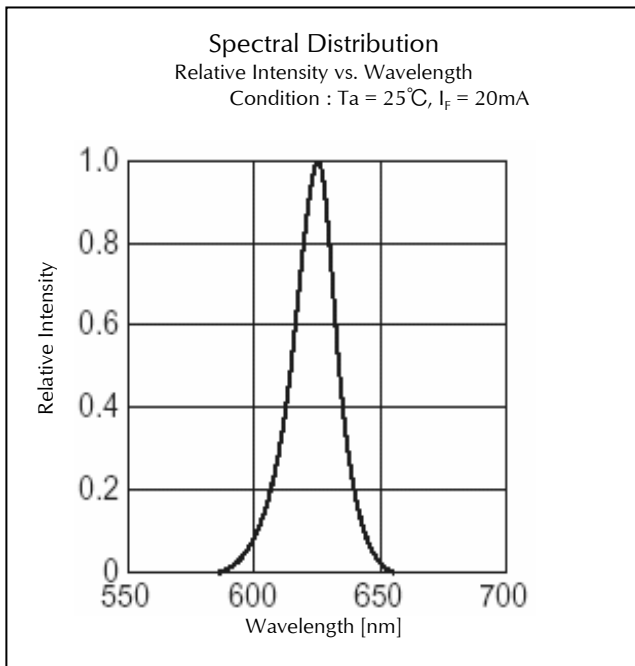
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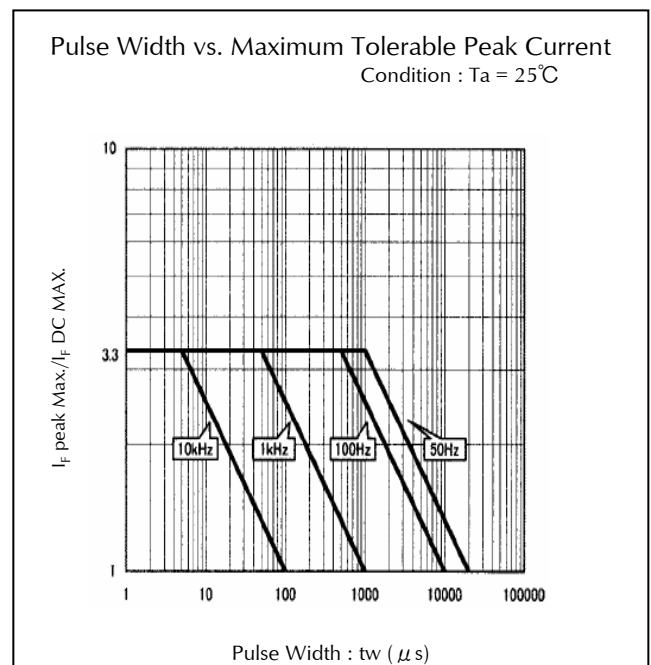
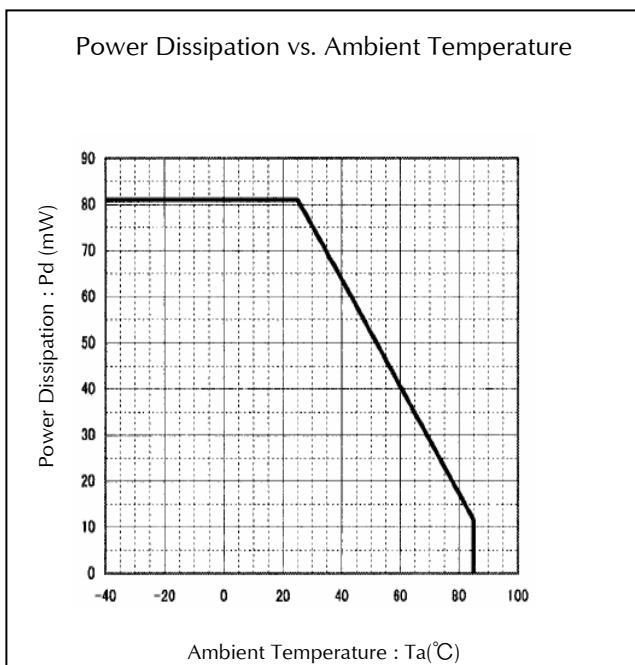
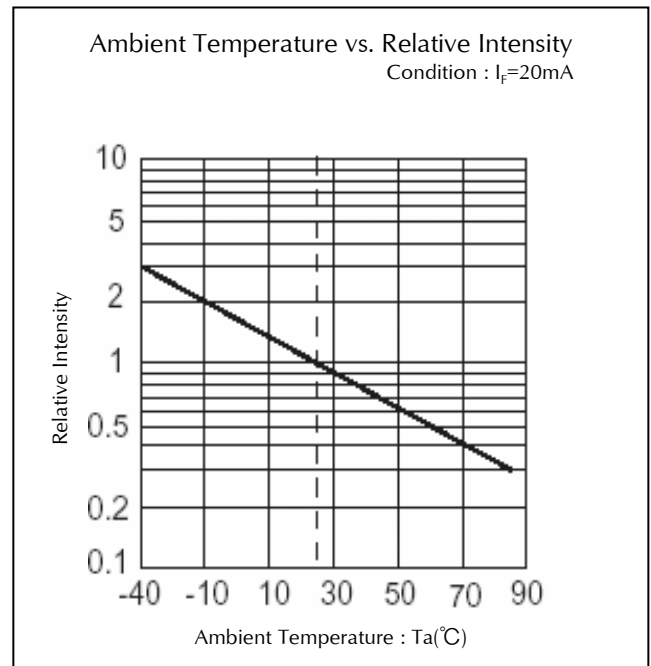
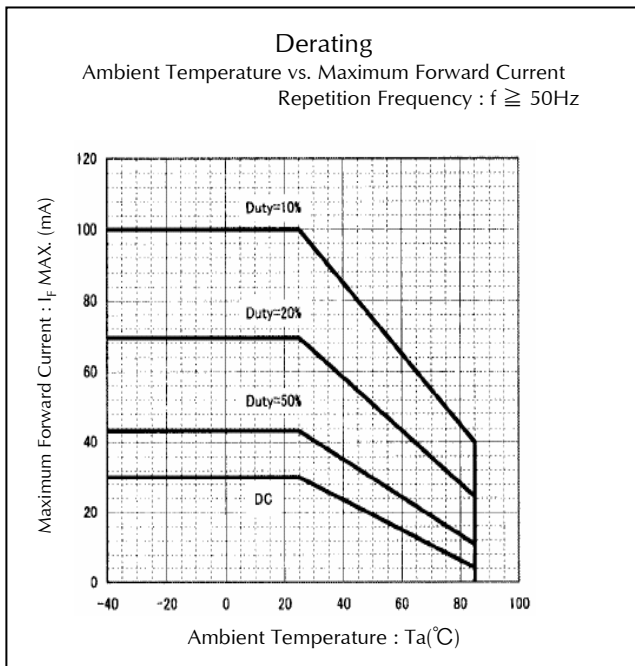
## Technical Data(FA)



## Technical Data(FR)



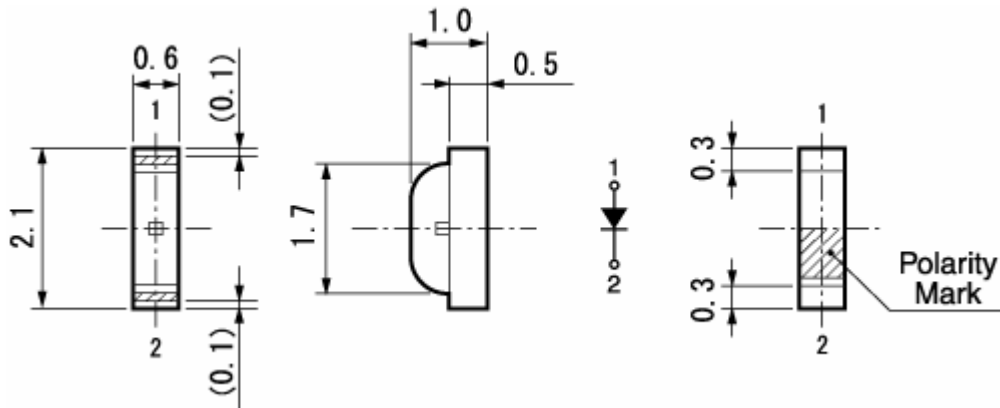
## Technical Data(FR)



## Package Dimensions

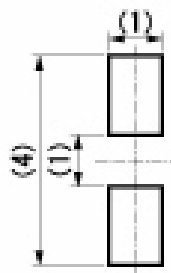
(Unit: mm)

Weight: (2.20)mg



## Recommended Soldering Pattern

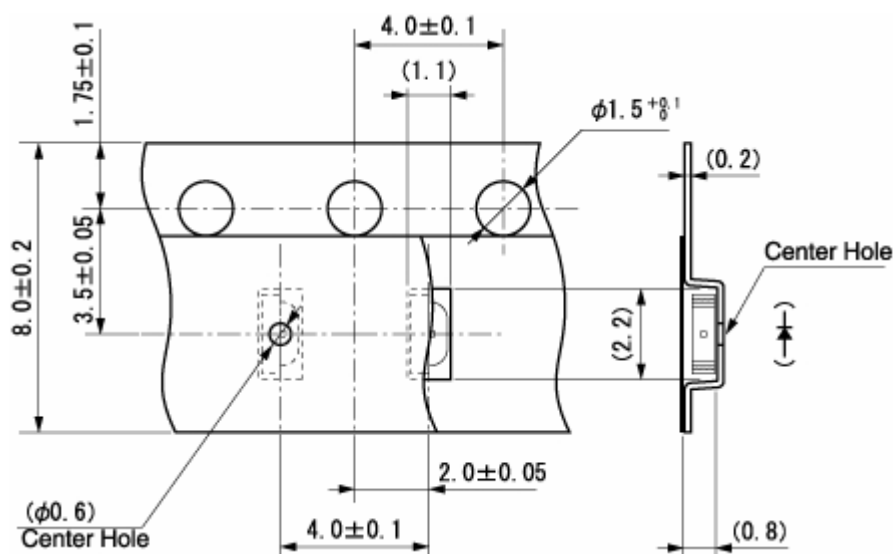
(Unit: mm)



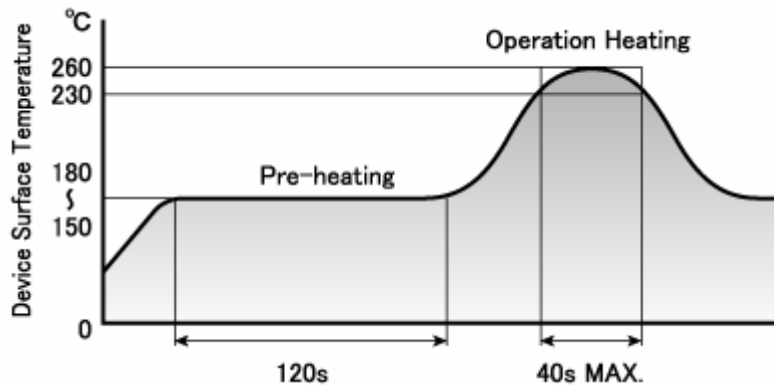
## Taping Specification

(Unit: mm)

Quantity : 4,000pcs/ reel (standard)



## Reflow Soldering Conditions



- 1) The above profile temperature gives the maximum temperature of the LED resin surface. Please set the temperature so as to avoid exceeding this range.
- 2) Total times of reflow soldering process shall be no more than 2 times. When the second reflow soldering process is performed, intervals between the first and second reflow should be short as possible (while allowing some time for the component to return to normal temperature after the first reflow) in order to prevent the LED from absorbing moisture.
- 3) Temperature fluctuation to the LED during the pre-heating process shall be minimized. (6°C maximum)

## Manual Soldering Conditions

Iron tip temp.	350 °C	(MAX.)
Soldering time and frequency	3 s	(MAX.)
	1 time	(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(301)	Pre-heating : 150~180°C 120s Max. Operation Heating : 230°C 40s Max. Peak Temperature : 260°C	Twice	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
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

## Special Notice to Customers Using the Products and Technical Information Shown in This Data Sheet

- 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:  
<http://www.stanley-components.com>

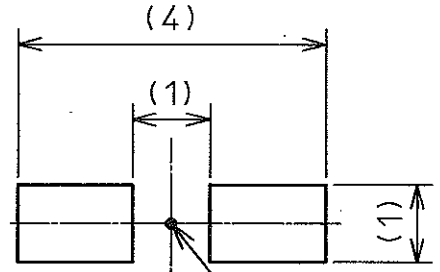
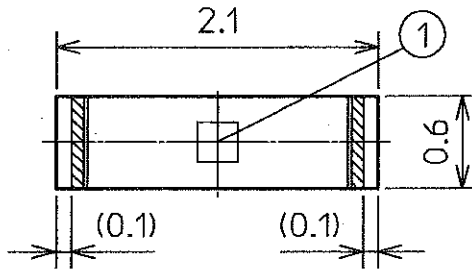


外形寸法  
outline dimensions

記号 SYM.	区 域 ZONE	変 更 事 項 REVISIONS	実訂表示 REV. NO.	連絡番番号 NTF. NO.	日 付 DATE	担当者 REV. BY
		新図発行 / ISSUE OF NEW DWG.	A	ED021379	2004.01.13	花岡
	-	改訂図発行 / ISSUE OF REVISED DWG.	B	ED026906	2005.11.08	高橋

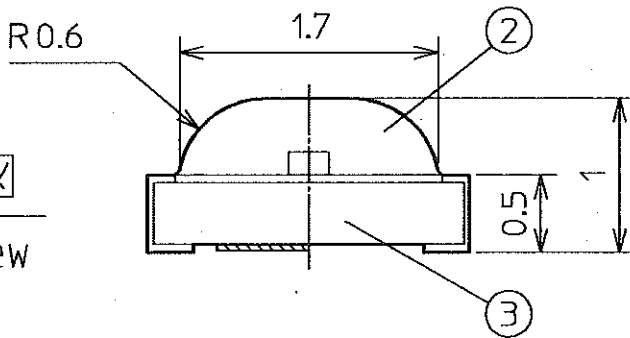
2. 半田付け推奨パターン  
recommended pad

正面図  
Front view



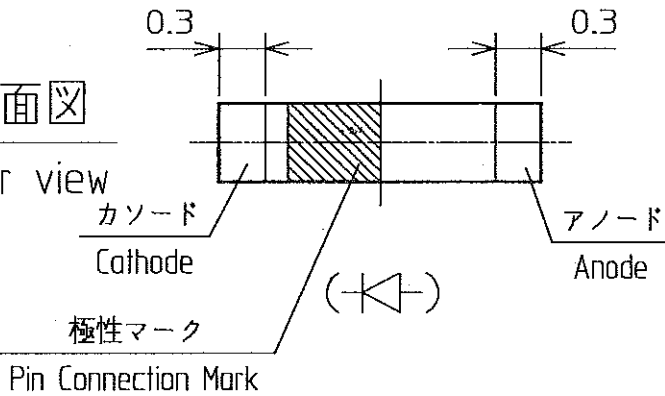
基板中心  
PWB Center

平面図  
Top view

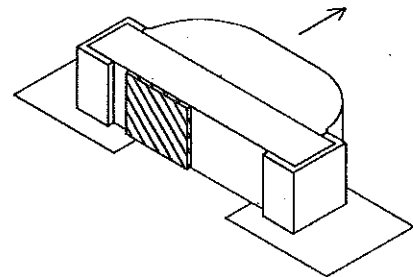


3. 実装例  
example of mounting

背面図  
Rear view



発光方向  
Emitted Direction



一般寸法公差: ±0.1  
Tolerance

③	---	基板 / Substrate	---	---	1	ガラス布基材 / Glass Fabrics
②	---	樹脂 / Plastic	---	---	1	エポキシ樹脂 / Epoxy Resin
①	---	LEDチップ / LED Die	---	---	1	---

記号 SYM.	品名コード PART CODE	部 品 名 PART NAME	品 名 NAME	図 番 DWG. NO.	数 量 QTY.	備 考 REMARKS
材質 MATAL.	設計 DGN. 高橋志穂		検 図 CHK. 真田荘幸	品名コード PART CODE (EC:ED026906) 36258284		
処理 FINISH	制定日 DWG. DATE Nov. 08 2005		承認 APP. 斎藤純	品 名 NAME FY113F-730-TR		
質量 MASS (2.1mg)	尺 度 SCALE		スタンレー電気株式会社 STANLEY ELECTRIC CO., LTD.		図 番 DWG. NO. (P#:D06F5) D100060720B	
単位 UNIT mm.	DO					



記号 SYM.	区 域 ZONE	変 更 事 項 REVISIONS	変訂表示 REV. NO.	連絡書番号 NTF. NO.	日 付 DATE	担当者 REV. BY
		新図発行 / ISSUE OF NEW DWG.	A	ED021379	2004.01.13	花岡
		改訂図発行 / ISSUE OF REVISED DWG.	B	ED026906	2005.11.08	高橋

材 質 MATERIAL : AlGaInP  
 発光色 SOURCE COLOR : 黄色 / YELLOW  
 樹脂色 LENS COLOR : 乳白色 / CLEAR DIFFUSED

**特殊仕様**  
 Special Specification

絶対最大定格 / Absolute Maximum Ratings (Ta=25°C)

項 目 Items	記号 Symbols	最大定格 Maximum Ratings	単位 Units
許容損失 Power Dissipation	Pd	81	mW
順電流 Forward Current	IF	30	mA
パルス順電流 Repetitive Peak Forward Current	IFRM	100	mA
逆電圧 Reverse Voltage	VR	5	V
動作温度 Operating Temperature	Topr	- 40 ~ + 85	°C
保存温度 Storage Temperature	Tstg	- 40 ~ + 100	°C

Ta=25°C以上の電流低減率 / Derate Linearly from 25°C  
 : 0.43mA/°C(DC), 1mA/°C(Pulse)  
 IFRMの条件 / IFRM Conditions : Pulse width ≤ 1ms, Duty ≤ 1/10

電氣的、光学的特性 / Electro-Optical Characteristics (Ta=25°C)

項 目 Items	記号 Symbols	条 件 Conditions	最小値 Min.	標準値 Typ.	最大値 Max.	単位 Units
順電圧 Forward Voltage	VF	IF = 20 mA		1.9	2.4	V
逆電流 Reverse Current	IR	VR = 5 V			100	μA
☆ 発光光度 Luminous Intensity	IV	IF = 20 mA	50		200	mcd
ピーク発光波長 Peak Wavelength	λp	IF = 20 mA		592		nm
ドミナント波長 Dominant Wavelength	λd	IF = 20 mA	581.5	590	597.5	nm
スペクトル半値幅 Spectral Line Half Width	Δλ	IF = 20 mA		15		nm

注記 / Notes :

- 光学的ランク分類については別紙をご参照下さい。  
See optical sorting details in the other sheet.
- ☆の項が特殊仕様となっております。  
☆ ; special specification.

記号 SYM.	品 名 コ ー ド PART CODE	部 品 名 PART NAME	品 名 NAME	図 番 DWG. NO.	数 量 QTY.	備 考 REMARKS
材質 MATAL.	/	設計 DGN. 高橋志穂	検 図 CHK. 真田莊幸	品 名 コ ー ド PART CODE (EC:ED026906)		
処理 FINISH		制定日 DWG. DATE Nov. 08 2005	承認 APP. 斎藤純	品 名 NAME FY113F-730-TR SPEC.1		
質量 MASS	尺 度 SCALE : スタンレー電気株式会社		図 番 DWG. NO. (P#:D06F5)			
単位 UNIT mm.	STANLEY ELECTRIC CO., LTD.		D 0 0 0 6 0 7 2 1 B			



記号 SYM.	区 域 ZONE	変 更 事 項 REVISIONS	変訂表示 REV. NO.	連絡番番号 NTF. NO.	日 付 DATE	担当者 REV. BY
		新図発行 / ISSUE OF NEW DWG.	A	ED021379	2004.01.13	花岡
	-	改訂図発行 / ISSUE OF REVISED DWG.	B	ED026906	2005.11.08	高橋

特殊仕様  
Special Specification

1. 発光光度分類 Sorting For Luminous Intensity

LEDの発光光度分類は次の通りになっております。

LED's shall be sorted out into the following six ranks of Luminous Intensity.

ランク Rank	発光光度 Luminous Intensity Iv(mcd)		条 件 Condition
	MIN.	MAX.	
A	25	50	Ta=25℃ If=20mA
B	35	70	
C	50	100	
D	70	140	
E	100	200	
F	140	-	

2. ドミナント波長分類 Sorting For Dominant Wavelength

LEDのドミナント波長分類は次の通りになっております。

LED's shall be sorted out into the following six ranks of Dominant Wavelength.

ランク Rank	ドミナント波長 Dominant Wavelength $\lambda_d$ (nm)		条 件 Condition
	MIN.	MAX.	
A	581.5	585.0	Ta=25℃ If=20mA
B	584.0	587.5	
C	586.5	590.0	
D	589.0	592.5	
E	591.5	595.0	
F	594.0	597.5	

記号 SYM.	品 名 コード PART CODE	部 品 名 PART NAME	品 名 NAME	図 番 DWG. NO.	数 量 QTY.	備 考 REMARKS
材質 MATAL.	/	設計 DGN. 高橋志穂	検 図 CHK. 真田荘幸	品 名 コード PART CODE (EC:ED026906)		
処理 FINISH		制定日 DWG. DATE Nov. 08 2005	承認 APP. 斎藤純	品 名 NAME FY113F-730-TR SPEC.2		
質量 MASS		スタンレー電気株式会社 STANLEY ELECTRIC CO., LTD.		図 番 DWG. NO. (P#:D06F5) D 0 0 0 6 0 7 2 2 B		
尺 度 SCALE	:					
単 位 UNIT mm.	☉					

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