



**Pb-free
HEAT**

STANLEY

1102W Series

Single Color 3216 Type

Features

Package	3216 Type, Water Clear resin
Product features	<ul style="list-style-type: none"> • Outer Dimension 3.0 x 1.5 x 1.5mm (L x W x H) • Temperature range Storage Temperature : -40°C~100°C Operating Temperature : -30°C~85°C • No lead package and lead-free soldering compatible • RoHS compliant
Dominant wavelength	Green : 558nm(BG),567nm(PG) Yellow Green : 572nm(PY) Yellow : 590nm(AY) Orange : 606nm(AA) Red : 647nm(BR)
Half Intensity Angle	BG : $\theta x = 56 \text{ deg.}, \theta y = 71 \text{ deg.}$ PG : $\theta x = 69 \text{ deg.}, \theta y = 85 \text{ deg.}$ PY : $\theta x = 61 \text{ deg.}, \theta y = 71 \text{ deg.}$ AY : $\theta x = 70 \text{ deg.}, \theta y = 89 \text{ deg.}$ AA : $\theta x = 77 \text{ deg.}, \theta y = 87 \text{ deg.}$ BR : $\theta x = 70 \text{ deg.}, \theta y = 82 \text{ deg.}$
Die materials	BG,PG,PY : GaP AY,AA : GaAsP BR : GaAlAs
Rank grouping parameter	Sorted by luminous intensity per rank taping
Assembly method	Auto pick & place machine (Auto Mounter)
Soldering methods	Reflow soldering, TTW (Through The Wave) soldering and manual soldering
Taping and reel	2,500pcs per reel in a 8mm width tape. (Standard) Reel diameter: $\phi 180\text{mm}$
ESD	More than 2kV(HBM)

Recommended Applications

Communication Machine, Electric Household Appliances, OA/FA, Amusement Equipment, Other General Applications

Color and Luminous Intensity

(Ta=25°C)

Part No.	Material	Emitted Color	Lens Color	Dominant Wavelength λ_d (nm)		Luminous Intensity I_v (mcd)		
				TYP.	I_F	MIN.	TYP.	I_F
BG1102W	Gap	Green	Water Clear	558	20	1.8	4.8	20
PG1102W	Gap	Green		567	20	6	12	20
PY1102W	Gap	Yellow Green		572	20	12	24	20
AY1102W	GaAsP	Yellow		590	20	3	6	20
AA1102W	GaAsP	Orange		606	20	5	9	20
BR1102W	GaAlAs	Red		647	20	12	33.6	20

Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	Absolute Maximum Ratings						Unit
		BG	PG	PY	AY	AA	BR	
Power Dissipation	P_d	75	75	75	75	75	60	mW
Forward Current	I_F	30	30	30	30	30	30	mA
Pulse Forward Current ※1	I_{FRM}	70	70	70	70	70	70	mA
Derating (Ta=25°C or higher)	ΔI_F	0.42	0.42	0.42	0.42	0.42	0.42	mA/°C
	ΔI_{FRM}	0.93	0.93	0.93	0.93	0.93	0.93	mA/°C
Reverse Voltage	V_R	4	4	4	4	4	4	V
Operating Temperature	T_{opr}	-30~+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
				BG	PG	PY	AY	AA	BR	
Forward Voltage	$I_F=20\text{mA}$	V_F	TYP.	2.1	2.1	2.1	2.2	2.2	1.7	V
			MAX.	2.5	2.5	2.5	2.5	2.5	2.0	
Reverse Current	$V_R=4\text{V}$	I_R	MAX.	100	100	100	100	100	100	μA
Peak Wavelength	$I_F=20\text{mA}$	λ_p	TYP.	555	560	570	580	605	660	nm
Dominant Wavelength	$I_F=20\text{mA}$	λ_d	TYP.	558	567	572	590	606	647	nm
Spectral Line Half Width	$I_F=20\text{mA}$	$\Delta\lambda$	TYP.	30	30	30	30	30	30	nm
Half Intensity Angle	$I_F=20\text{mA}$	$2\theta_{1/2}$	TYP.	56(θ x)	69(θ x)	61(θ x)	70(θ x)	77(θ x)	70(θ x)	deg.
				71(θ y)	85(θ y)	71(θ y)	89(θ y)	87(θ y)	82(θ y)	

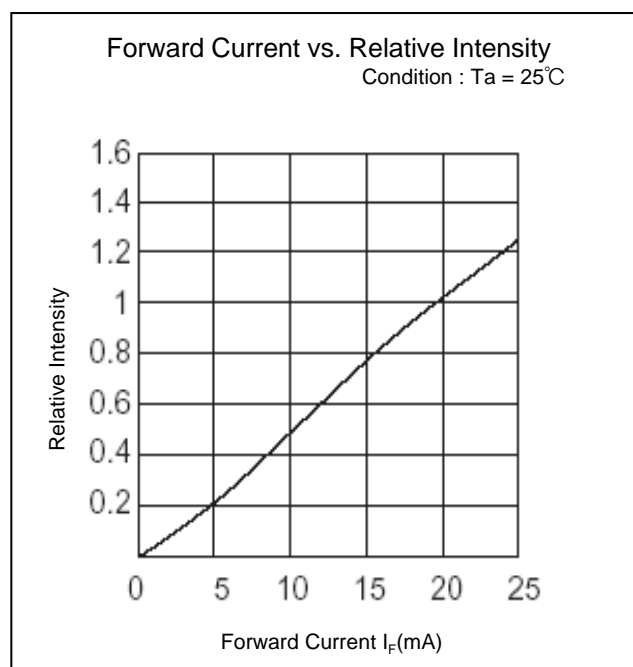
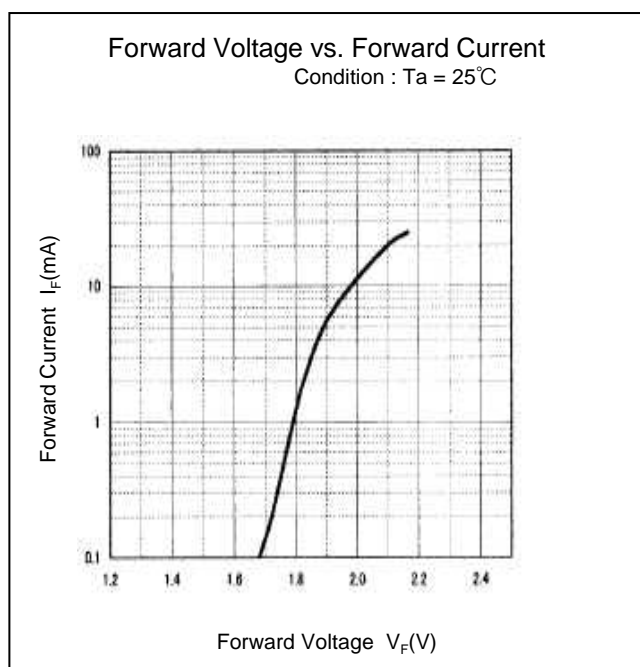
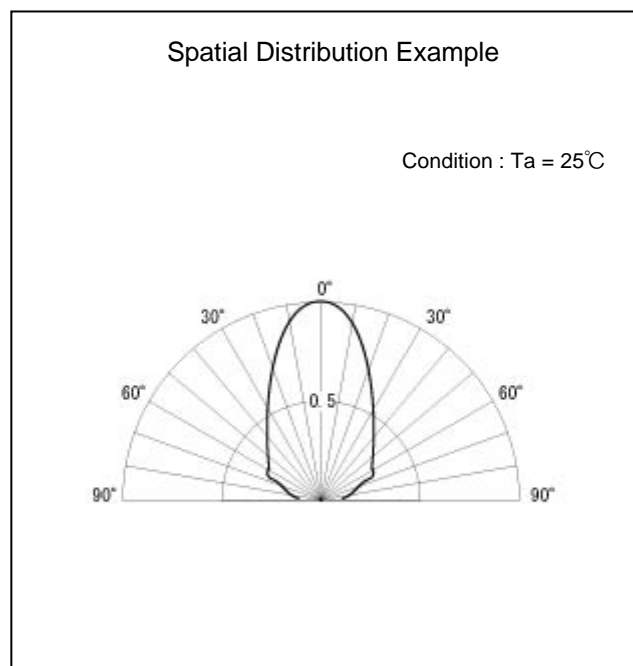
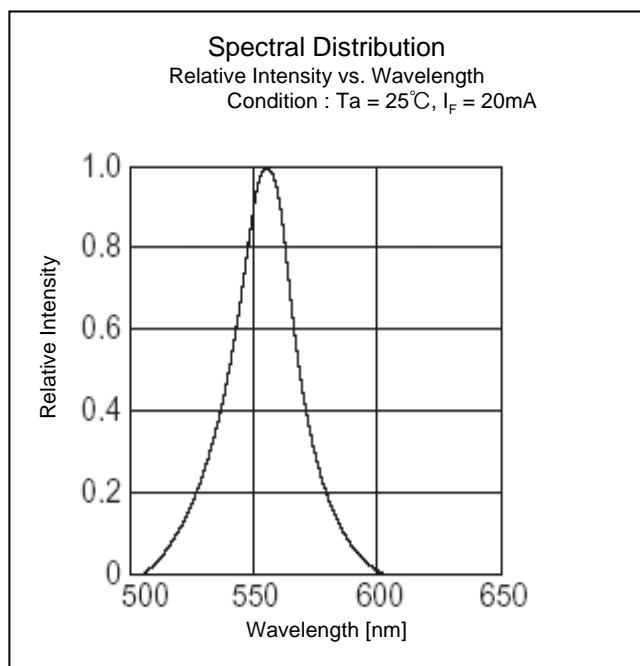
Luminous Intensity Rank

(Ta=25°C)

Rank	I_v (mcd)											
	BG		PG		PY		AY		AA		BR	
	$I_F=20mA$		$I_F=20mA$		$I_F=20mA$		$I_F=20mA$		$I_F=20mA$		$I_F=20mA$	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
A							3.0	6.0	5.0	10.0		
B							4.2	8.4	7.0	14.0		
C	1.8	3.6	6.0	12.0	12.0	24.0	6.0	12.0	10.0	20.0	12.0	24.0
D	2.4	4.8	8.5	17.0	16.8	33.6	8.4	16.8	14.0	28.0	16.8	33.6
E	3.6	7.2	12.0	24.0	24.0	48.0	12.0	-	20.0	-	24.0	48.0
F	4.8	9.6	17.0	34.0	33.6	67.2					33.6	67.2
G	7.2	-	24.0	-	48.0	-					48.0	-

Please contact our sales staff concerning rank designation.

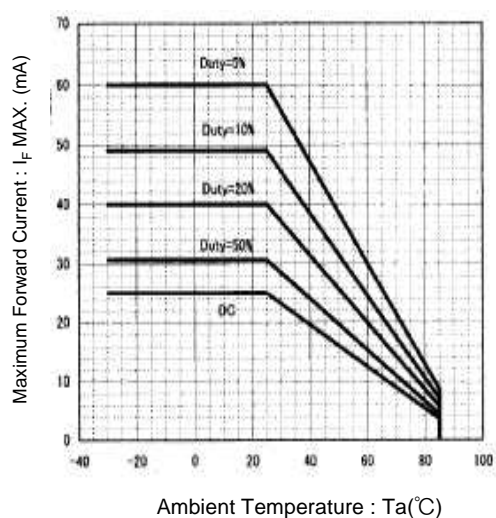
Technical Data(BG)



Technical Data(BG)

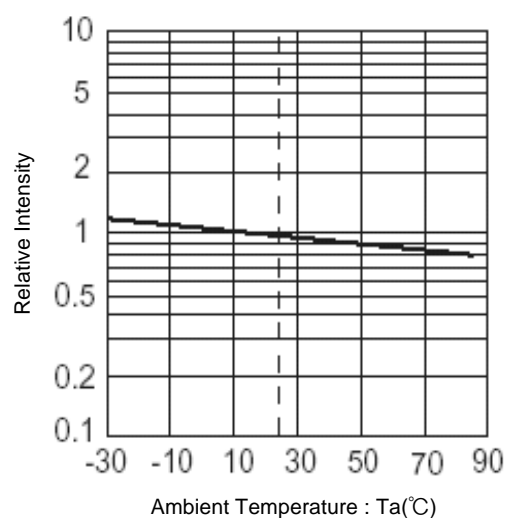
Derating

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

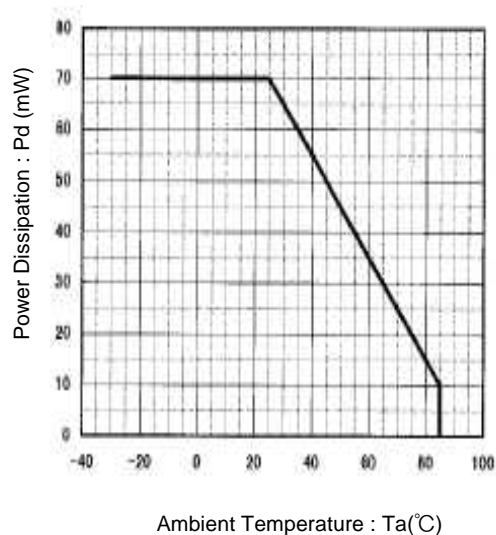


Ambient Temperature vs. Relative Intensity

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

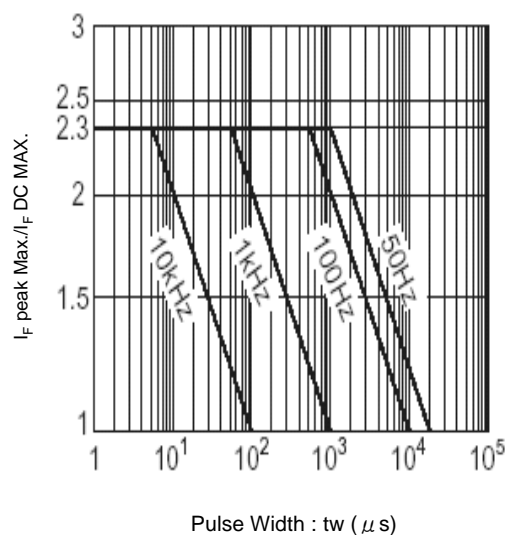


Power Dissipation vs. Ambient Temperature



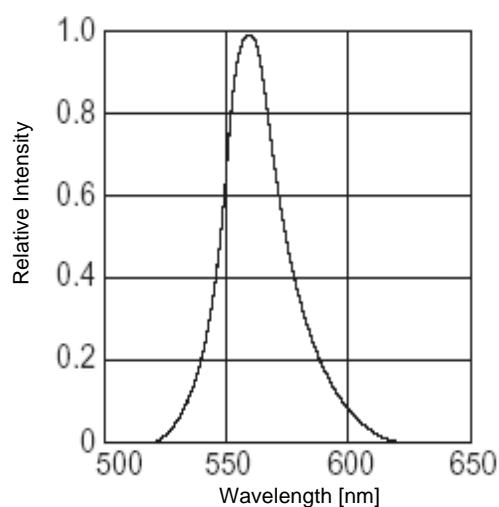
Pulse Width vs. Maximum Tolerable Peak Current

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



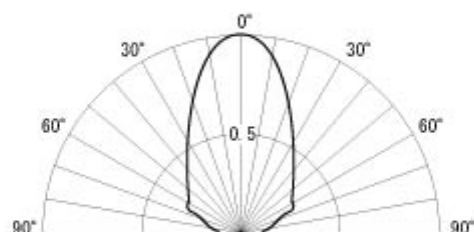
Technical Data(PG)

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

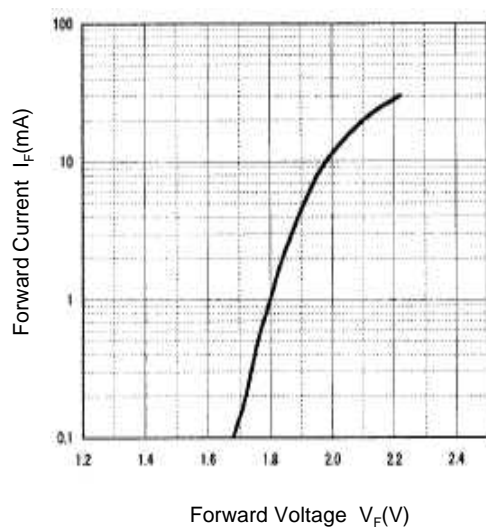


Spatial Distribution Example

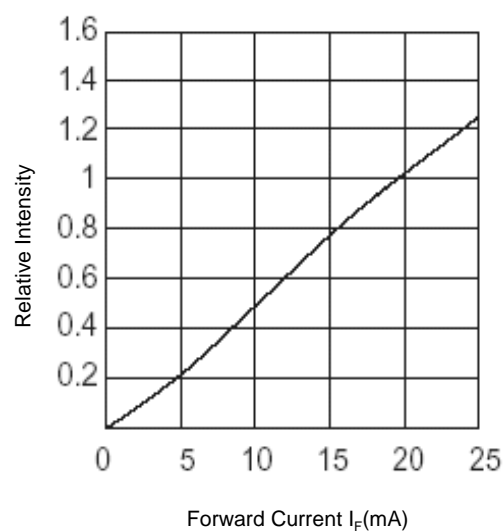
Condition : $T_a = 25^\circ\text{C}$



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



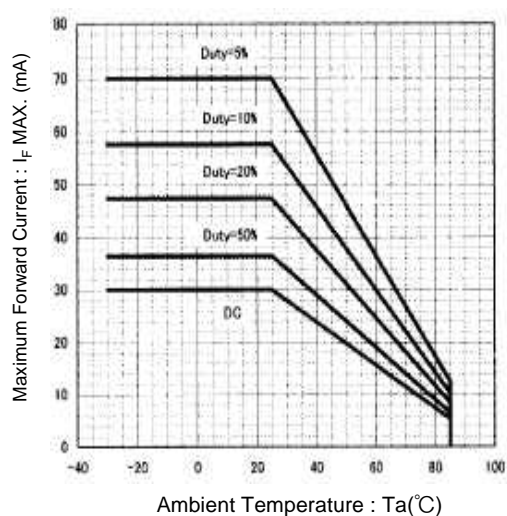
Forward Current vs. Relative Intensity
Condition : $T_a = 25^\circ\text{C}$



Technical Data(PG)

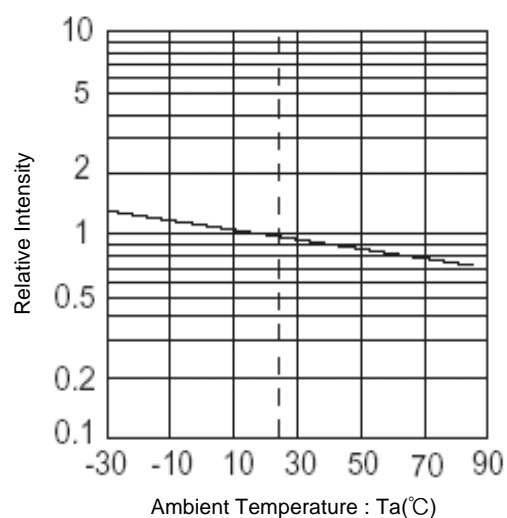
Derating

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

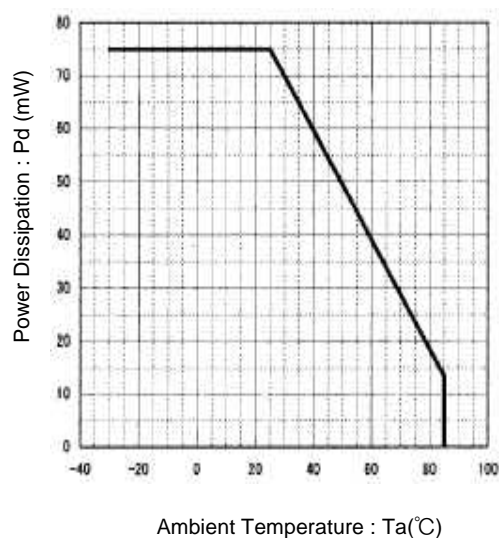


Ambient Temperature vs. Relative Intensity

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

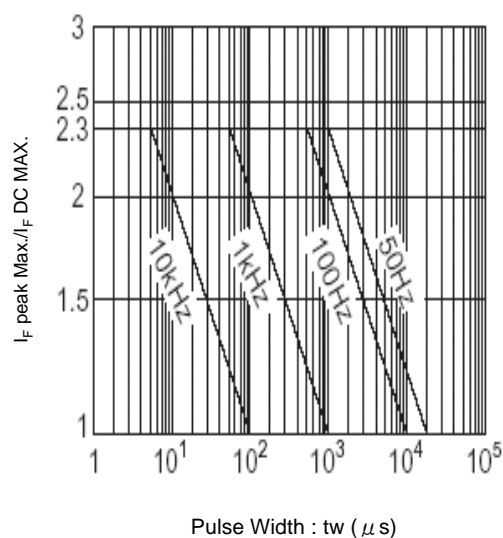


Power Dissipation vs. Ambient Temperature



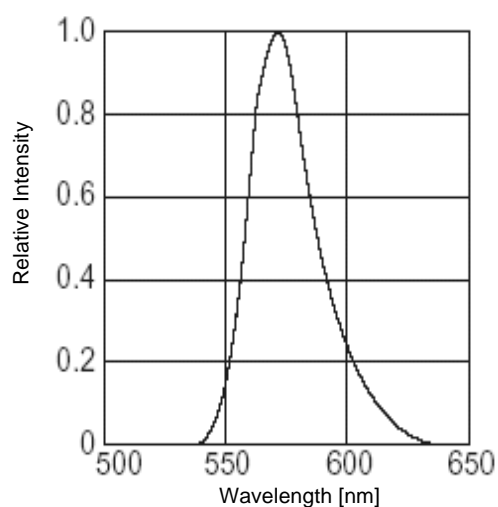
Pulse Width vs. Maximum Tolerable Peak Current

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



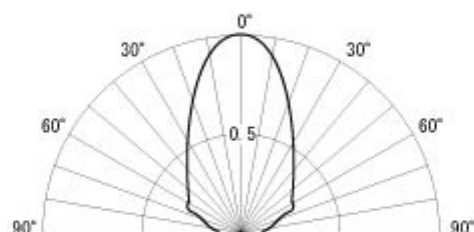
Technical Data(PY)

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

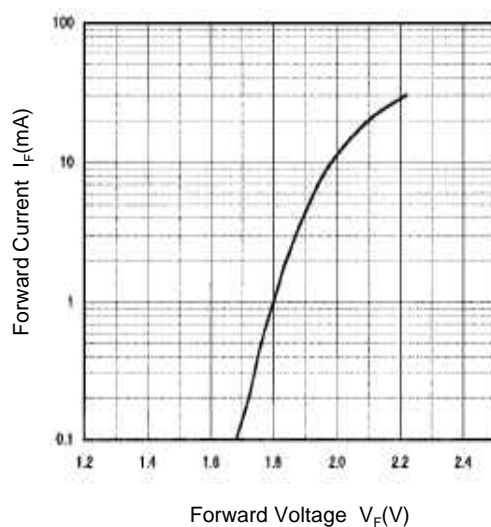


Spatial Distribution Example

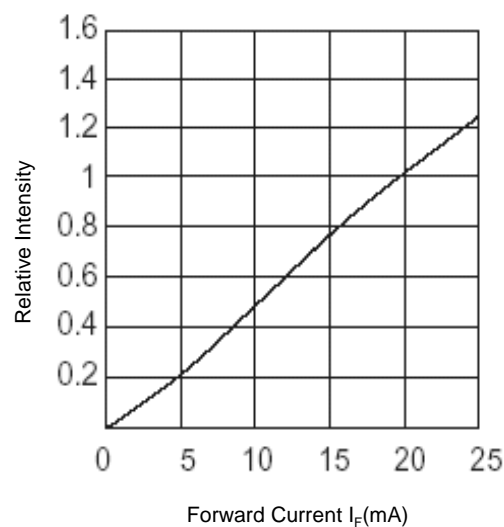
Condition : $T_a = 25^\circ\text{C}$



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



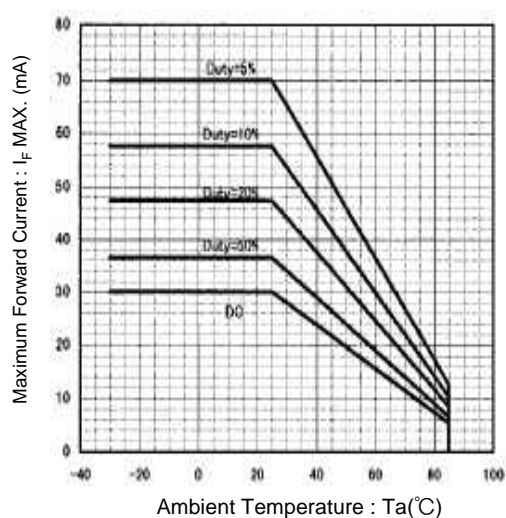
Forward Current vs. Relative Intensity
Condition : $T_a = 25^\circ\text{C}$



Technical Data(PY)

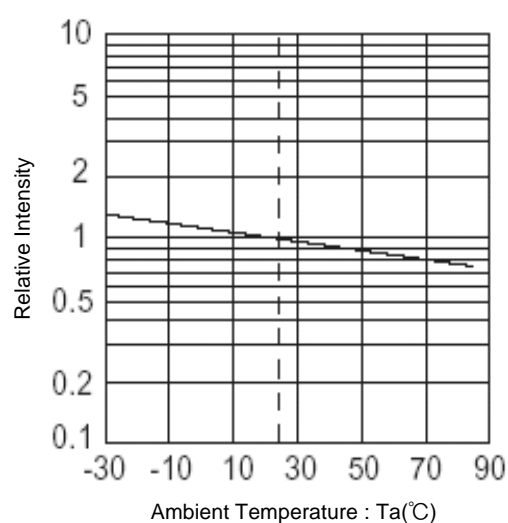
Derating

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

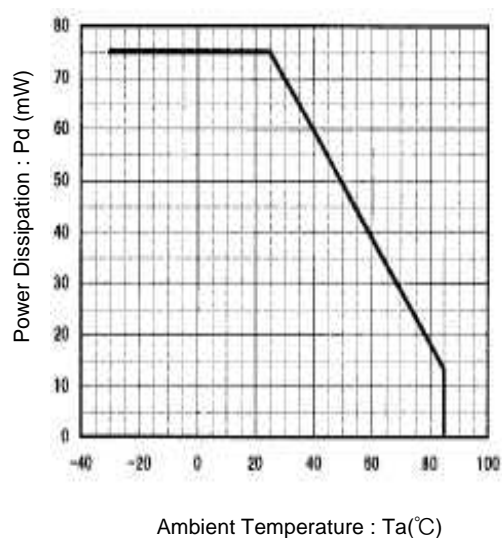


Ambient Temperature vs. Relative Intensity

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

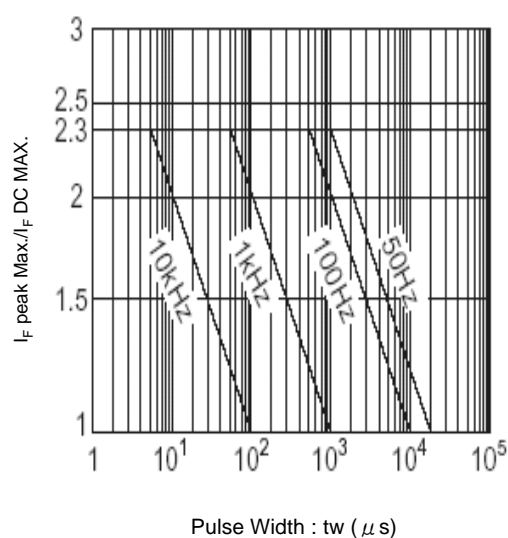


Power Dissipation vs. Ambient Temperature

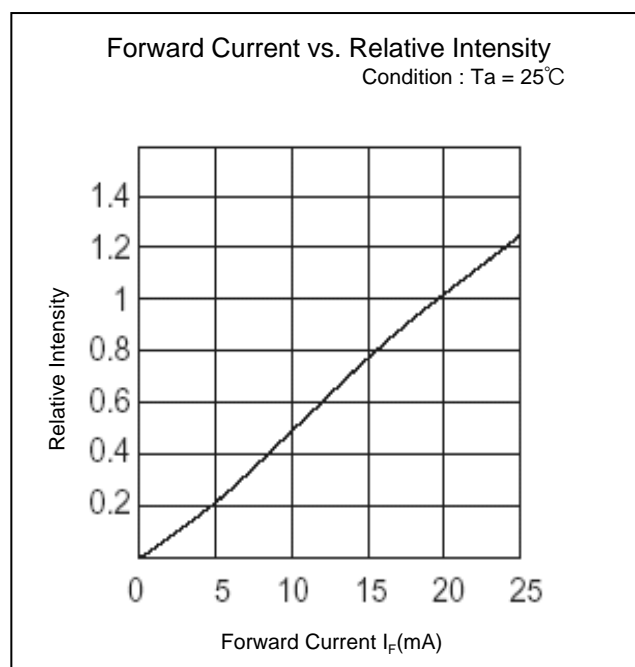
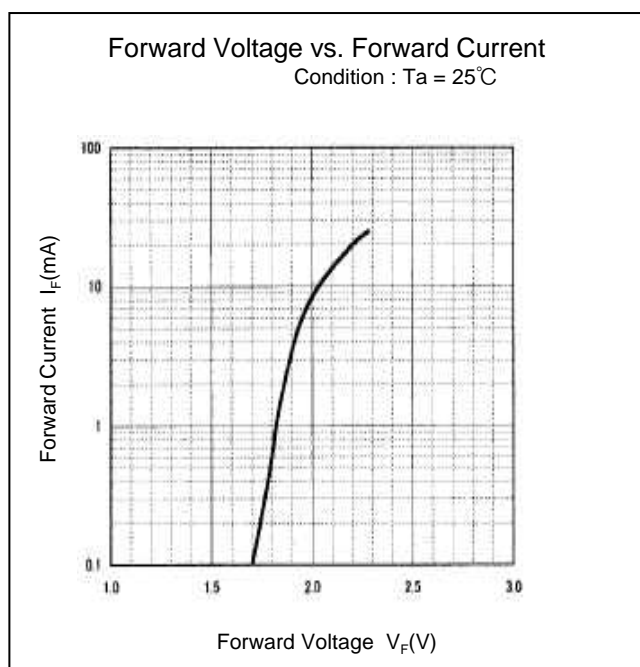
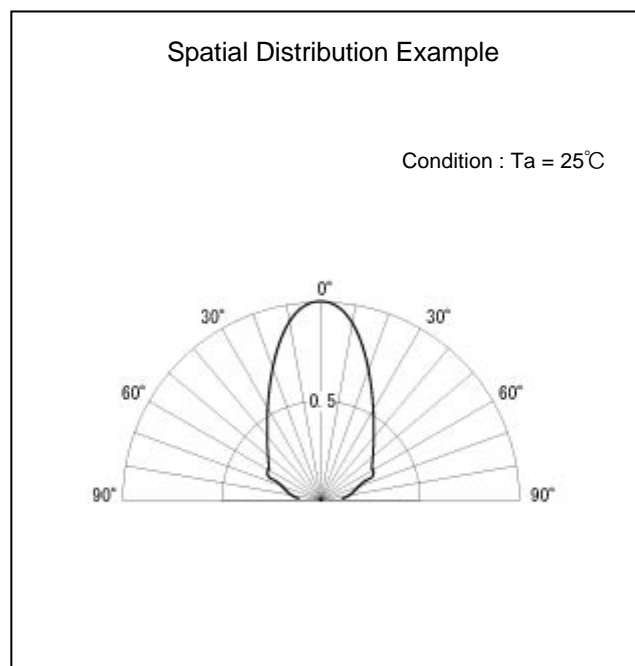
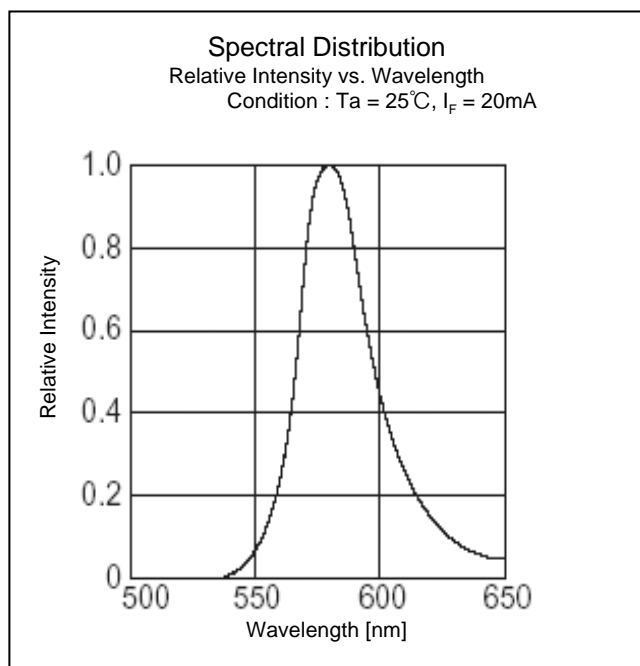


Pulse Width vs. Maximum Tolerable Peak Current

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



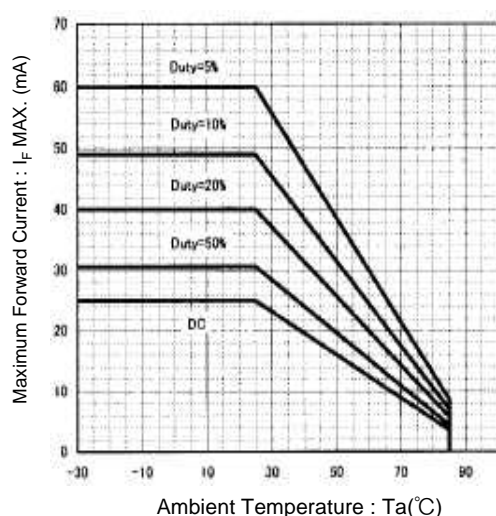
Technical Data(AY)



Technical Data(AY)

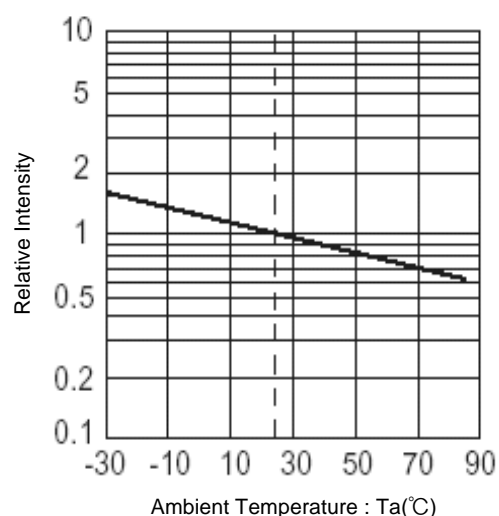
Derating

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

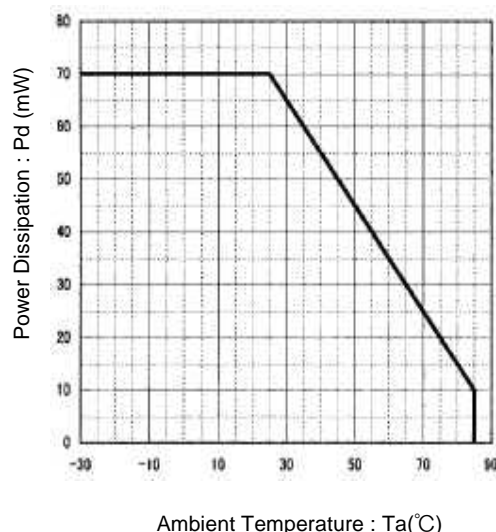


Ambient Temperature vs. Relative Intensity

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

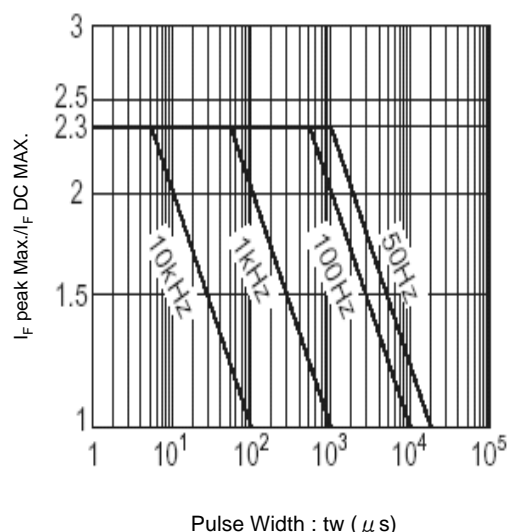


Power Dissipation vs. Ambient Temperature

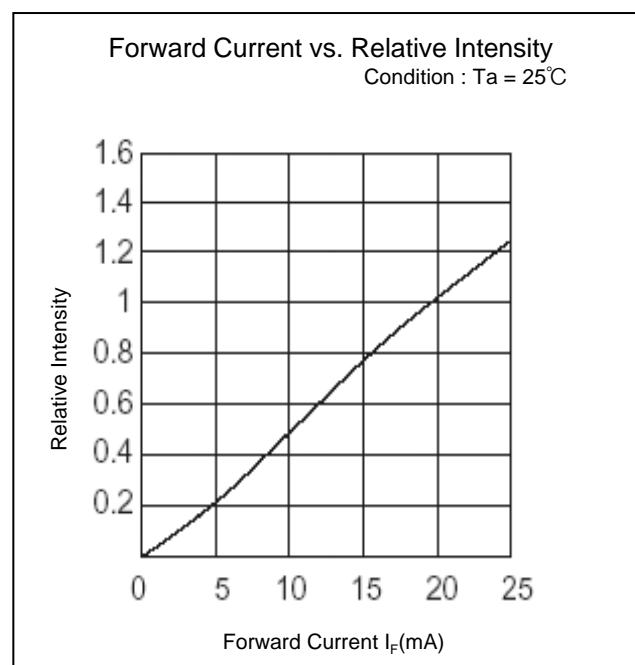
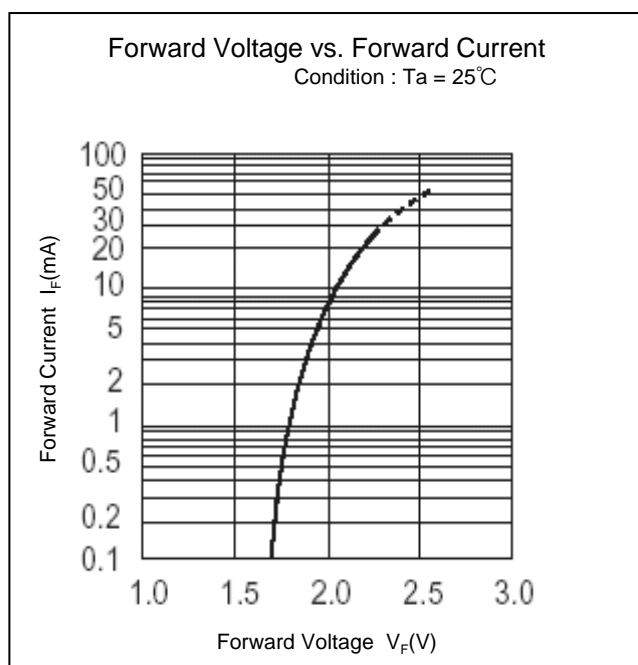
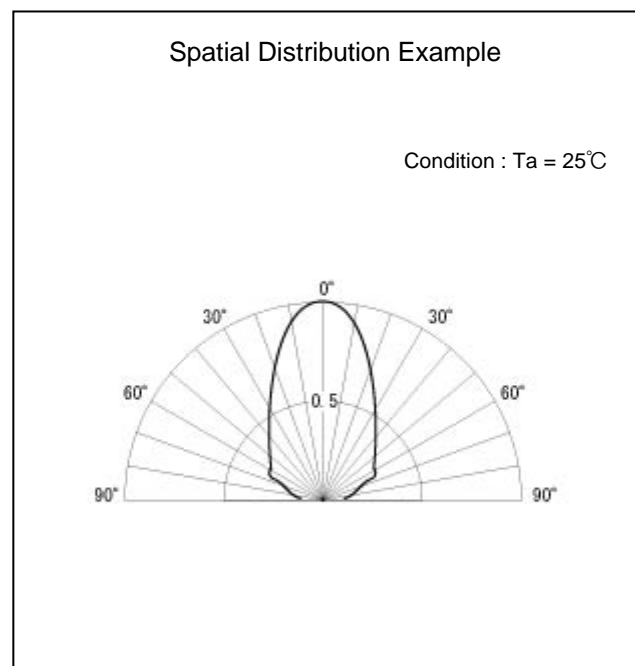
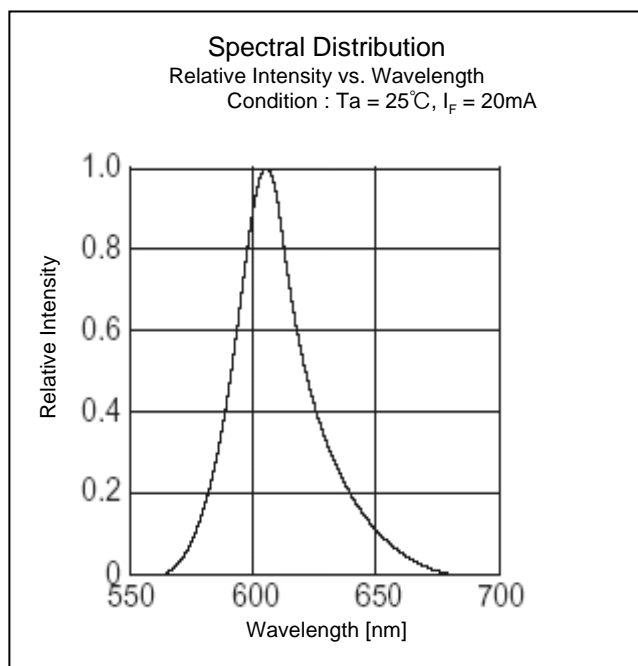


Pulse Width vs. Maximum Tolerable Peak Current

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



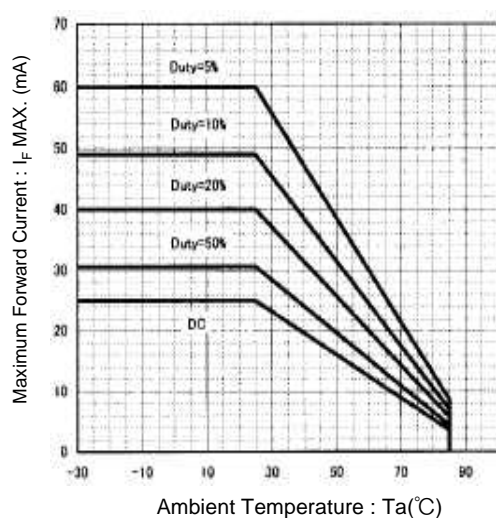
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Technical Data(AA)

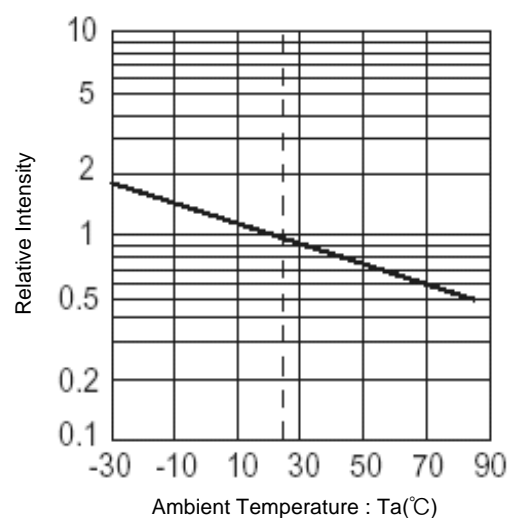
Derating

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

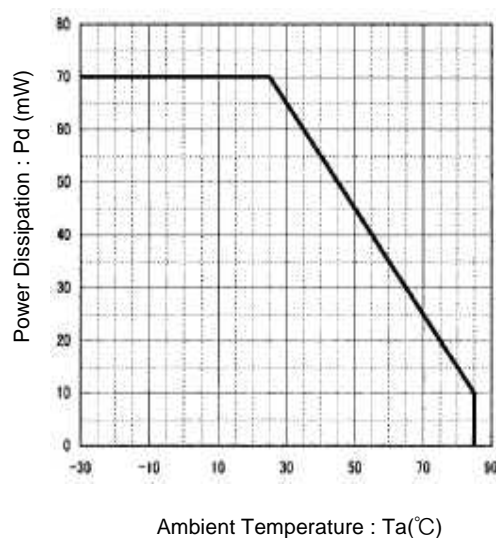


Ambient Temperature vs. Relative Intensity

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

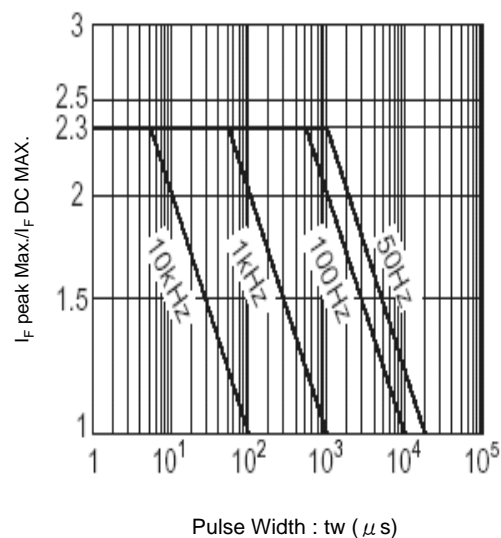


Power Dissipation vs. Ambient Temperature

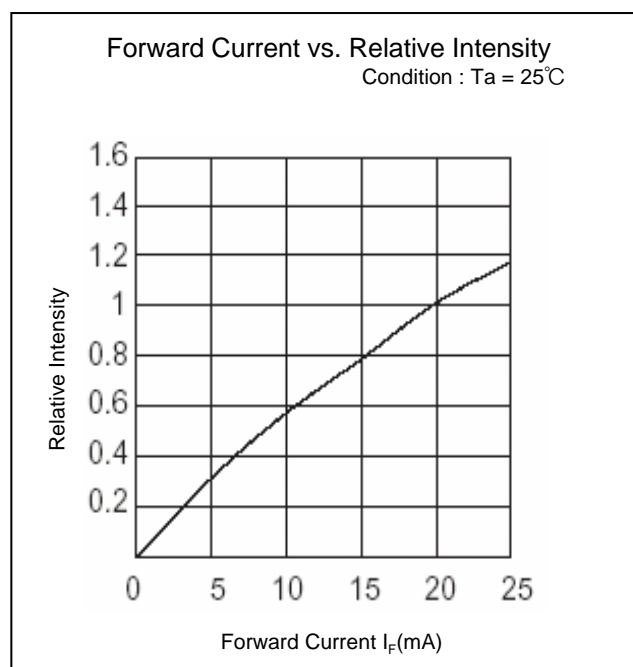
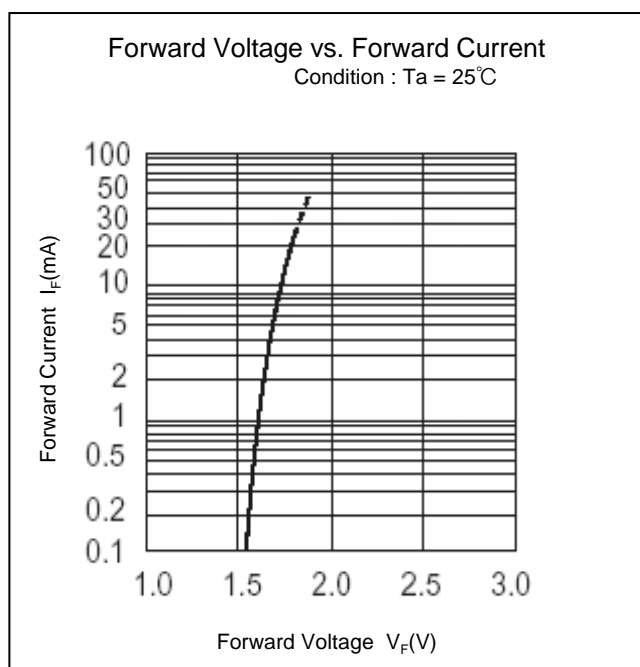
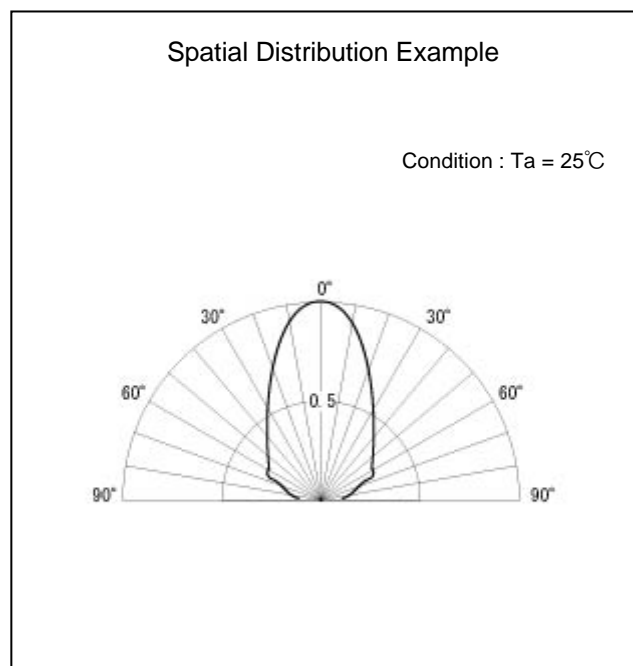
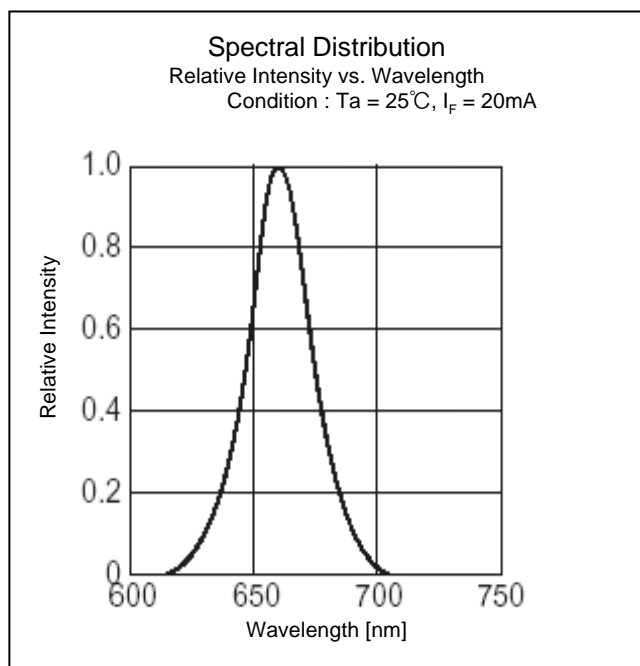


Pulse Width vs. Maximum Tolerable Peak Current

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



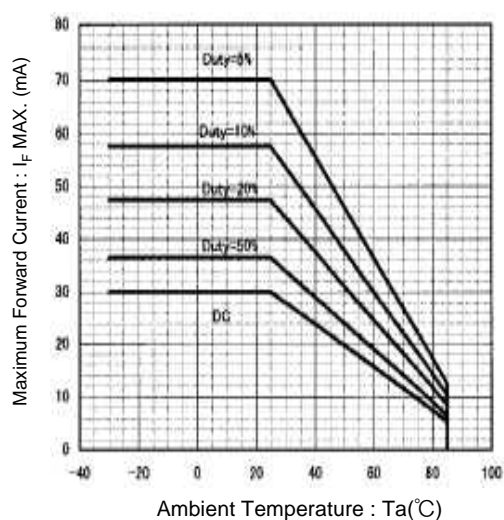
Technical Data(BR)



Technical Data(BR)

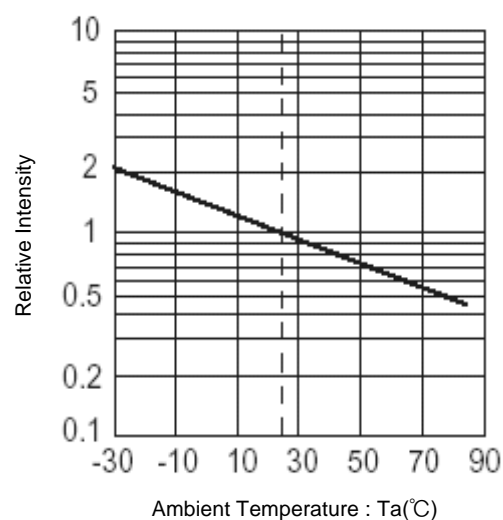
Derating

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

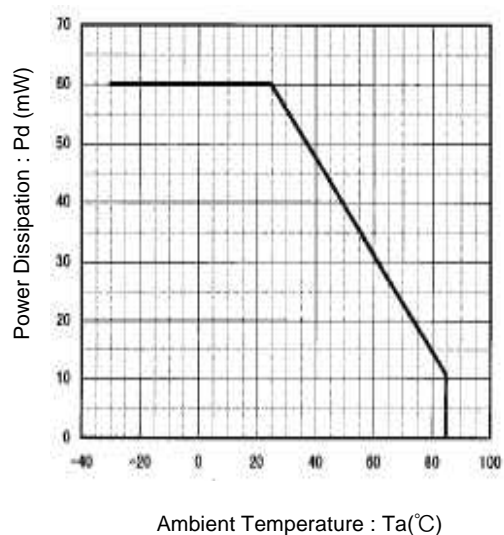


Ambient Temperature vs. Relative Intensity

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

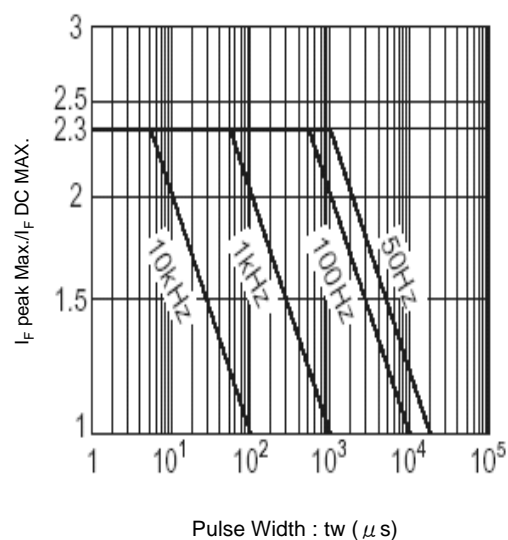


Power Dissipation vs. Ambient Temperature



Pulse Width vs. Maximum Tolerable Peak Current

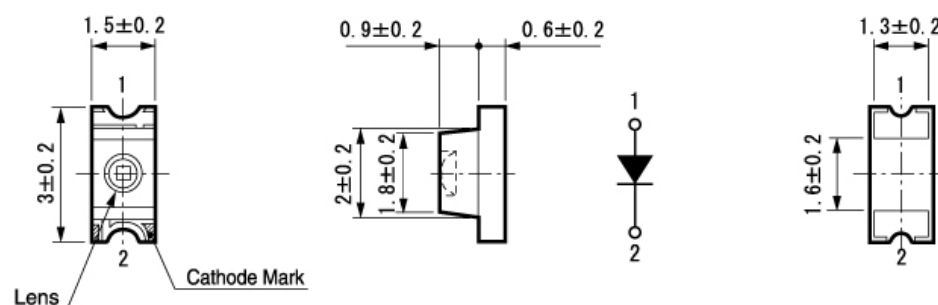
Condition : $T_a = 25^{\circ}\text{C}$



Package Dimensions

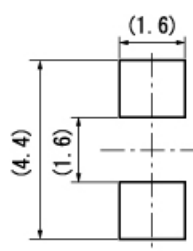
(Unit: mm)

Weight: (7.80)mg



Recommended Soldering Pattern

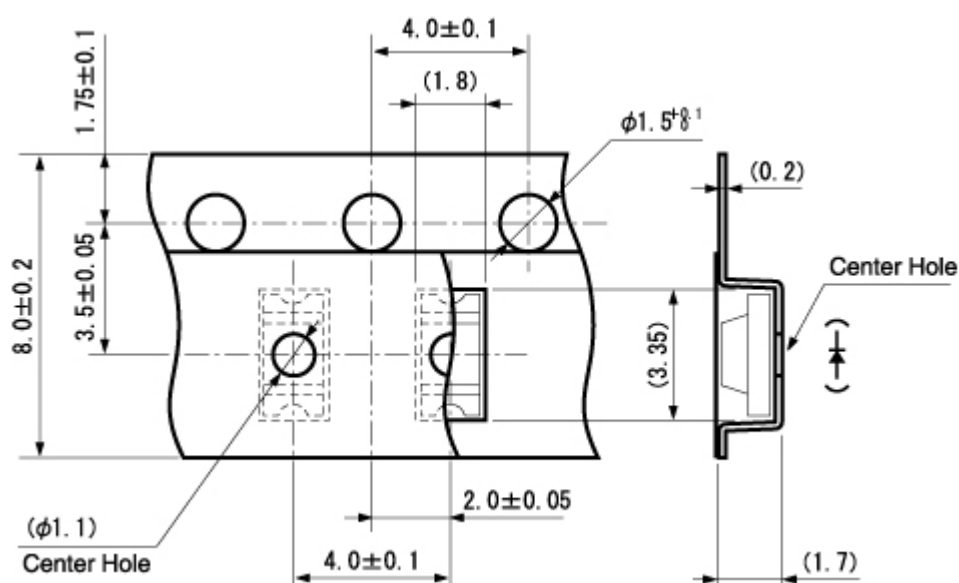
(Unit: mm)



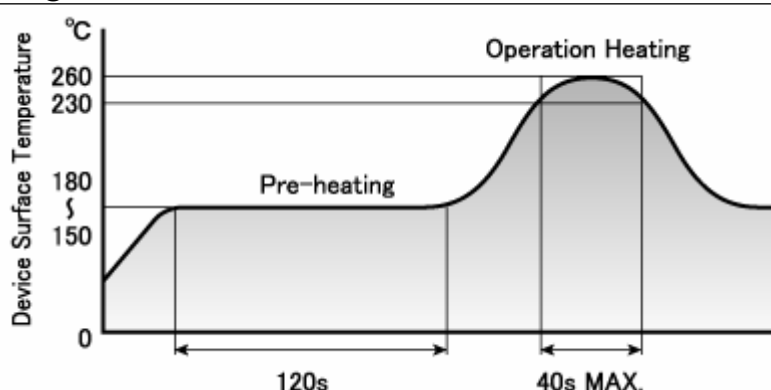
Taping Specification

(Unit: mm)

Quantity : 2,500pcs/ 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)

TTW (Through The Wave) soldering Conditions

Pre-heating	120 °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.	350 °C	(MAX.)
Soldering time and frequency	3 s 1 time	(MAX.) (MAX.)

Reliability Testing Result

Reliability Testing Result	Applicable Standard	Testing Conditions	Duration	Failure
Room Temp. Operating Life	BAJED-4701/100(101)	Ta = 25°C, If = Maximum Rated Current	1,000 h	0/25
Resistance to Soldering Heat	BAJED-4701/300(302)	260±5°C	5sec	0/25
Temperature Cycling	BAJED-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	BAJED-4701/100(103)	Ta = 60±2°C, RH = 90±5%	1,000 h	0/25
High Temp. Storage Life	BAJED-4701/200(201)	Ta = Maximum Rated Storage Temperature	1,000 h	0/25
Low Temp. Storage Life	BAJED-4701/200(202)	Ta = Minimum Rated Storage Temperature	1,000 h	0/25
Vibration, Variable Frequency	BAJED-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

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