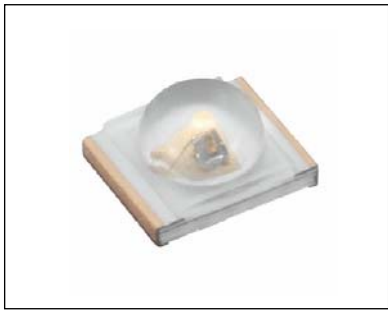




Pb-free
HEAT



1106W Series

Single Color Super Wide Angle Type (h=1.3 mm)

Features

Package	Super Wide Angle Type (h=1.3 mm), Water Clear resin
Product features	• Outer Dimension 2.5 x 2.0 x 1.3mm (L x W x H) • Temperature range Storage Temperature : -40°C ~ 120°C Operating Temperature : -40°C ~ 100°C • Lead-free soldering compatible • RoHS compliant
Dominant wavelength	Yellow Green : 573nm(YPY) Yellow : 589nm(FY) Red : 626nm(FR)
Half Intensity Angle	YPY : 140 deg. FY : 140 deg. FR : 140 deg.
Die materials	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	2,500pcs per reel in a 8mm width tape. (Standard) Reel diameter: ϕ 180mm
ESD	More than 2kV(HBM)

Recommended Applications

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



1106W Series

Single Color Super Wide Angle Type (h=1.3 mm)

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
YPY1106W	AlGaInP	Yellow Green	Water Clear	573	20	15	35	20
FY1106W	AlGaInP	Yellow	Water Clear	589	20	33	70	20
FR1106W	AlGaInP	Red	Water Clear	626	20	33	70	20

Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	Absolute Maximum Ratings			Unit
		YPY	FY	FR	
Power Dissipation	P_d	78	78	78	mW
Forward Current	I_F	30	30	30	mA
Pulse Forward Current ※1	I_{FRM}	100	100	100	mA
Derating (Ta=85°C or higher)	ΔI_F	1.0	1.0	1.0	mA/°C
	ΔI_{FRM}	3.33	3.33	3.33	mA/°C
Reverse Voltage	V_R	5	5	5	V
Operating Temperature	T_{opr}	-40~+100			°C
Storage Temperature	T_{stg}	-40~+120			°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
				YPY	FY	FR	
Forward Voltage	I _F =20mA	V _F	TYP.	2.0	1.9	1.9	V
			MAX.	2.4	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	594	636	nm
Dominant Wavelength	I _F =20mA	λ _d	TYP.	573	589	626	nm
Spectral Line Half Width	I _F =20mA	Δ λ	TYP.	15	15	15	nm
Half Intensity Angle	I _F =20mA	2 θ 1/2	TYP.	140	140	140	deg.

Luminous Intensity Rank

(Ta=25°C)

Intensity Tolerance each Rank : +/- 10%

ランク	IV (mcd)					
	YPY		FY		FR	
	I _F =20mA		I _F =20mA		I _F =20mA	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
BB	15	22				
BC	22	33				
BD	33	47	33	47	33	47
BE	47	68	47	68	47	68
BF	68	100	68	100	68	100
CA			100	150	100	150
CB			150	220	150	220

※ Please contact our sales staff concerning rank designation.

Color Tone Groups (λ_d)

(Ta=25°C)

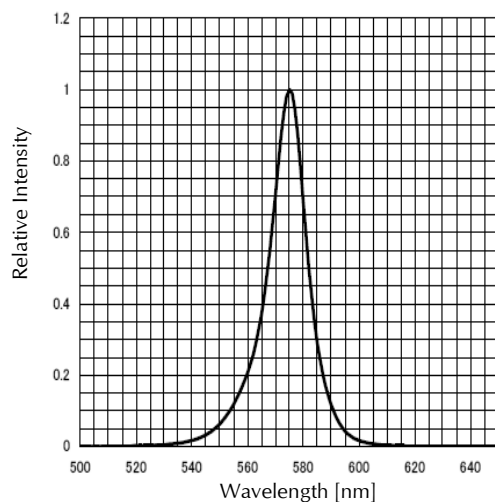
Tolerance: +/- 1nm

Rank	Dominant Wavelength λ_d (nm)					
	YPY		FY		FR	
	I _F =20mA		I _F =20mA		I _F =20mA	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
A	567	570			620	626
B	570	573			626	632
C	573	576	583	586		
D	576	579	586	589		
E			589	592		
F			592	595		

※ Please contact our sales staff concerning rank designation.

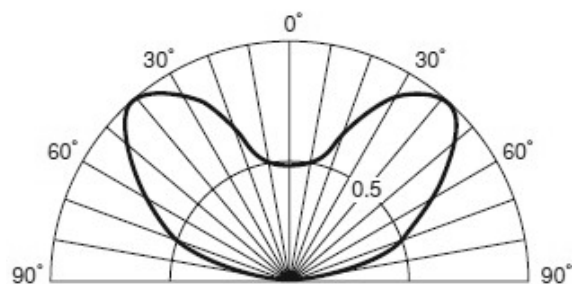
Technical Data(YPY)

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

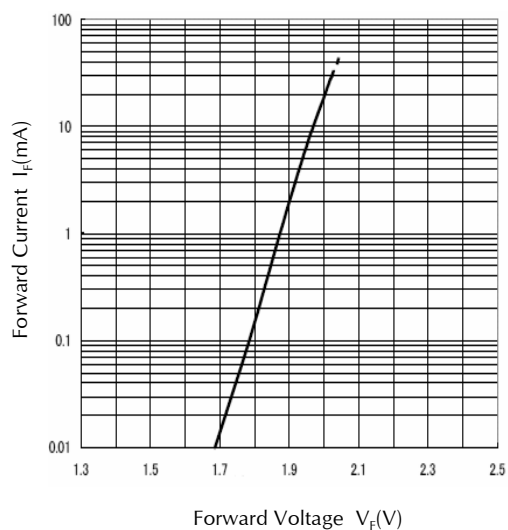


Spatial Distribution Example

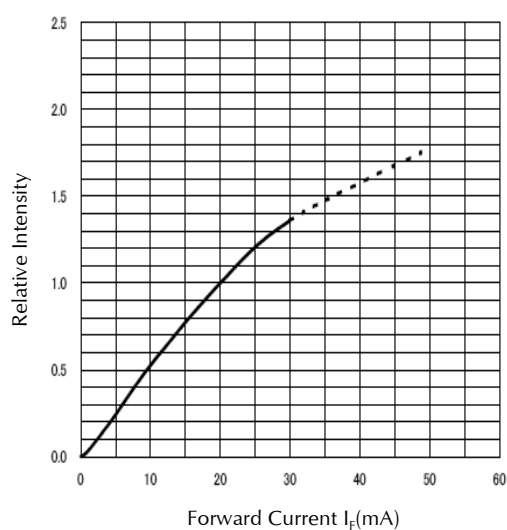
Condition : $T_a = 25^\circ\text{C}$



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



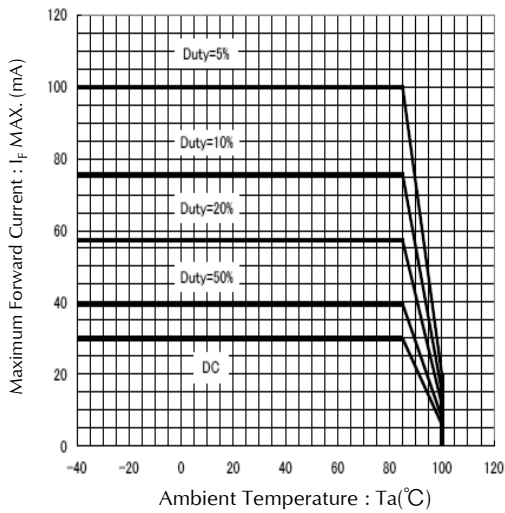
Forward Current vs. Relative Intensity
Condition : $T_a = 25^\circ\text{C}$



Technical Data(YPY)

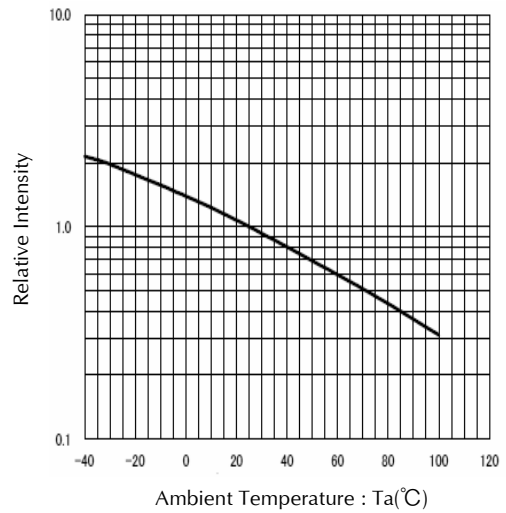
Derating

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

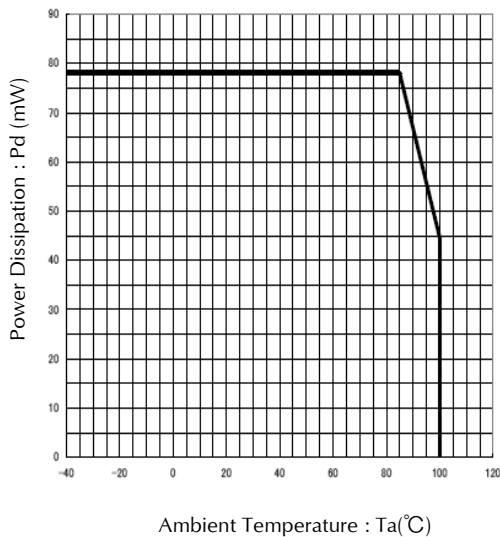


Ambient Temperature vs. Relative Intensity

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

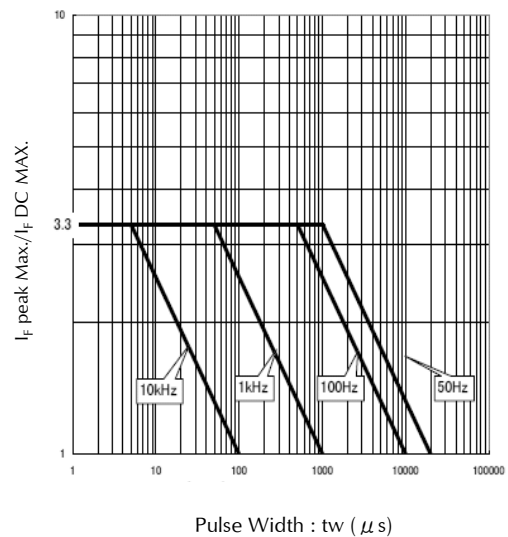


Power Dissipation vs. Ambient Temperature



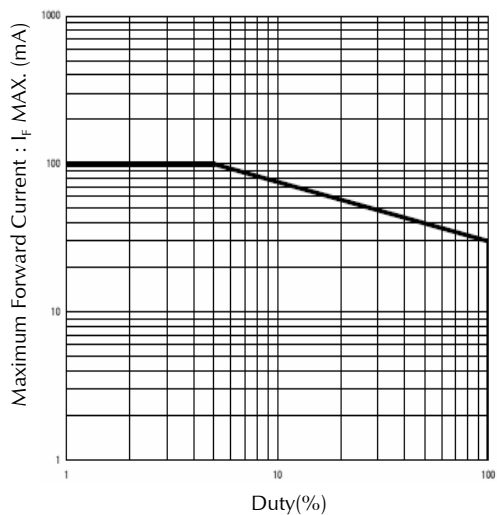
Pulse Width vs. Maximum Tolerable Peak Current

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

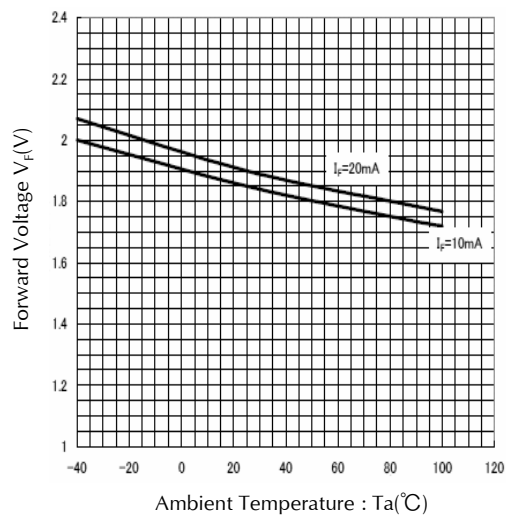


Technical Data(YPY)

Duty Cycle vs. Maximum Forward Current

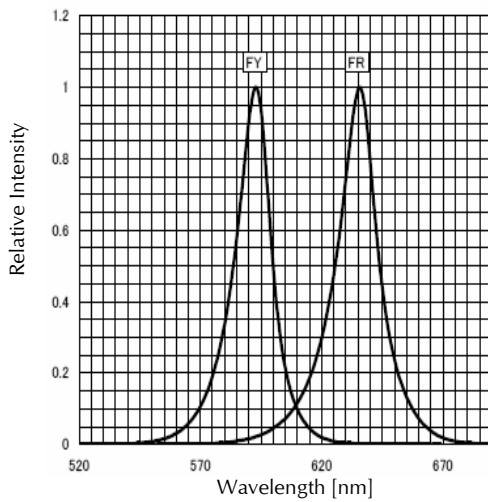


Ambient Temperature vs. Forward Voltage



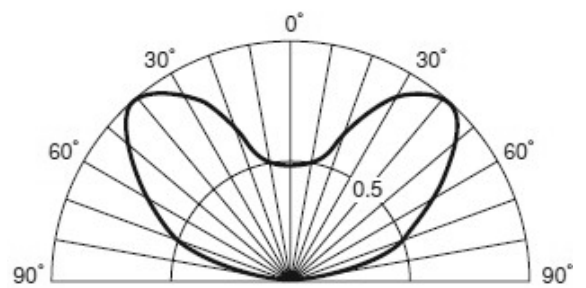
Technical Data(FY,FR)

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

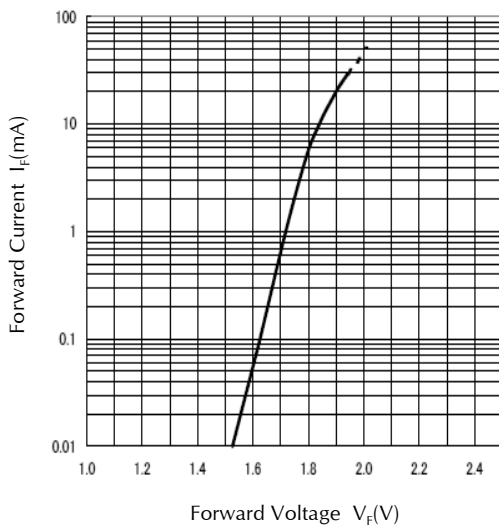


Spatial Distribution Example

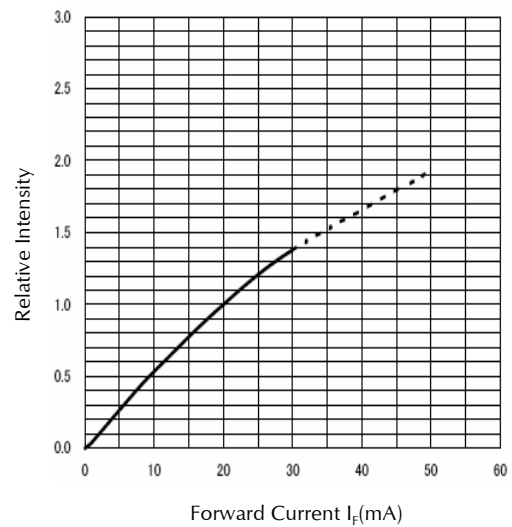
Condition : $T_a = 25^\circ\text{C}$



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



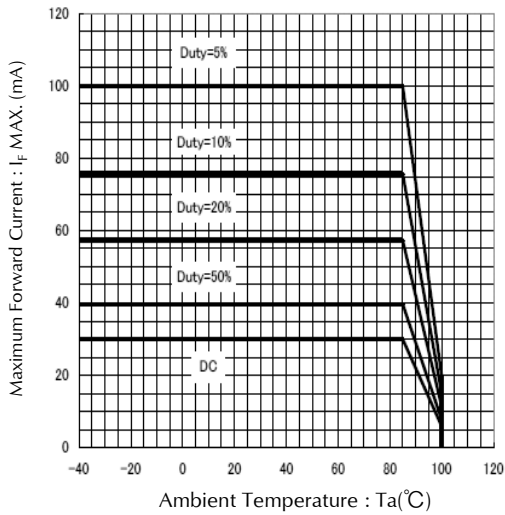
Forward Current vs. Relative Intensity
Condition : $T_a = 25^\circ\text{C}$



Technical Data(FY,FR)

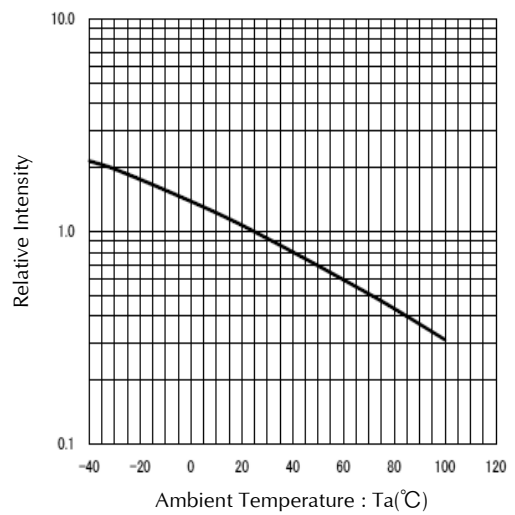
Derating

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

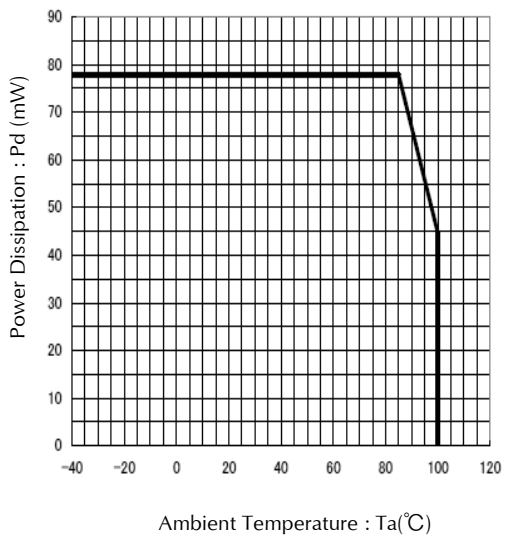


Ambient Temperature vs. Relative Intensity

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

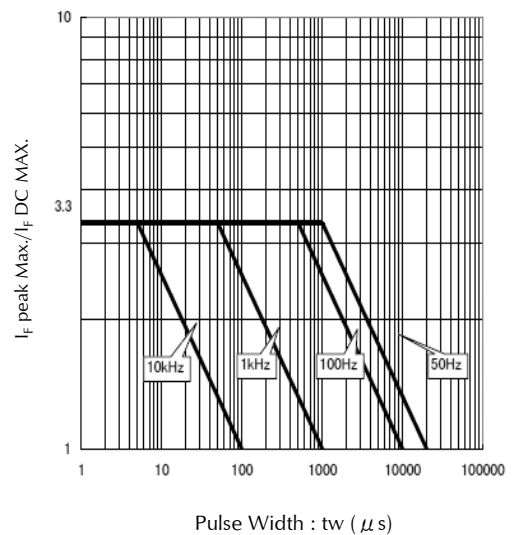


Power Dissipation vs. Ambient Temperature



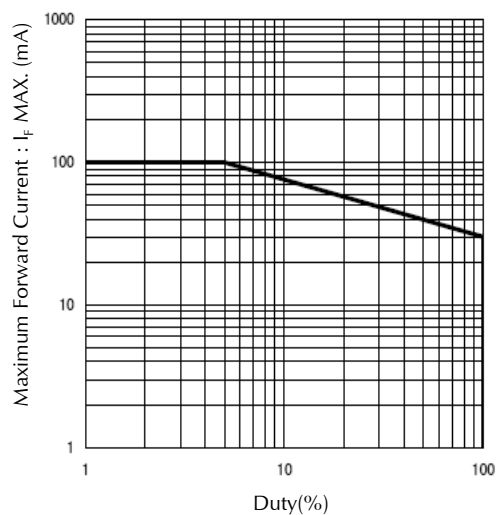
Pulse Width vs. Maximum Tolerable Peak Current

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

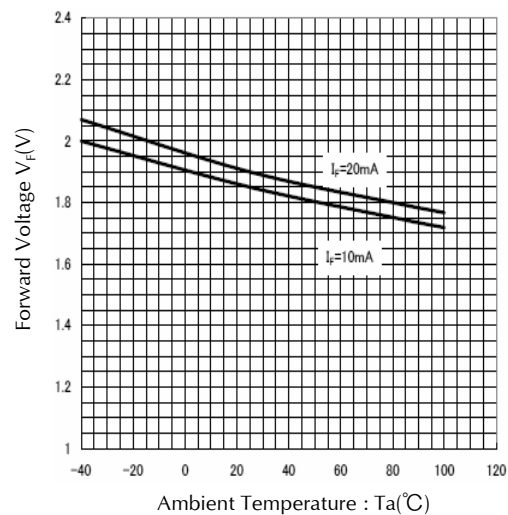


Technical Data(FY,FR)

Duty Cycle vs. Maximum Forward Current



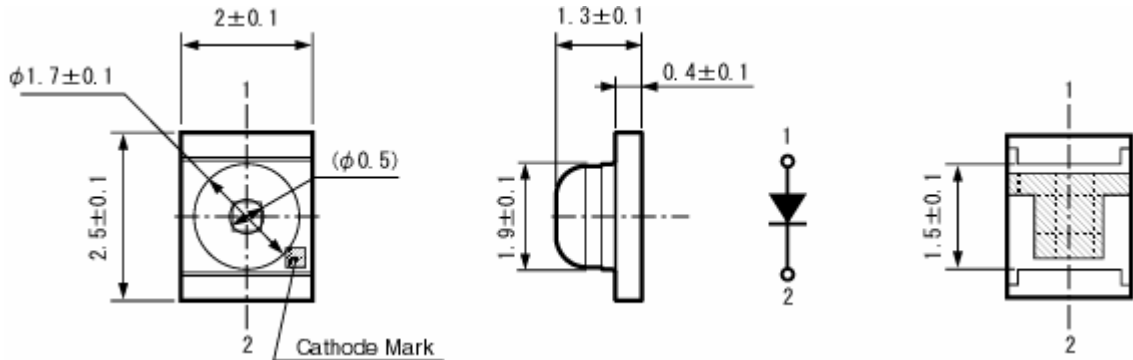
Ambient Temperature vs. Forward Voltage



Package Dimensions

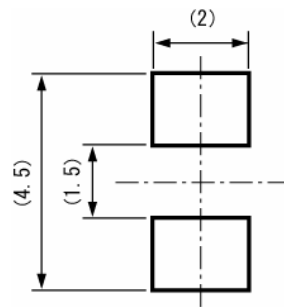
(Unit: mm)

Weight: (8.0)mg



Recommended Soldering Pattern

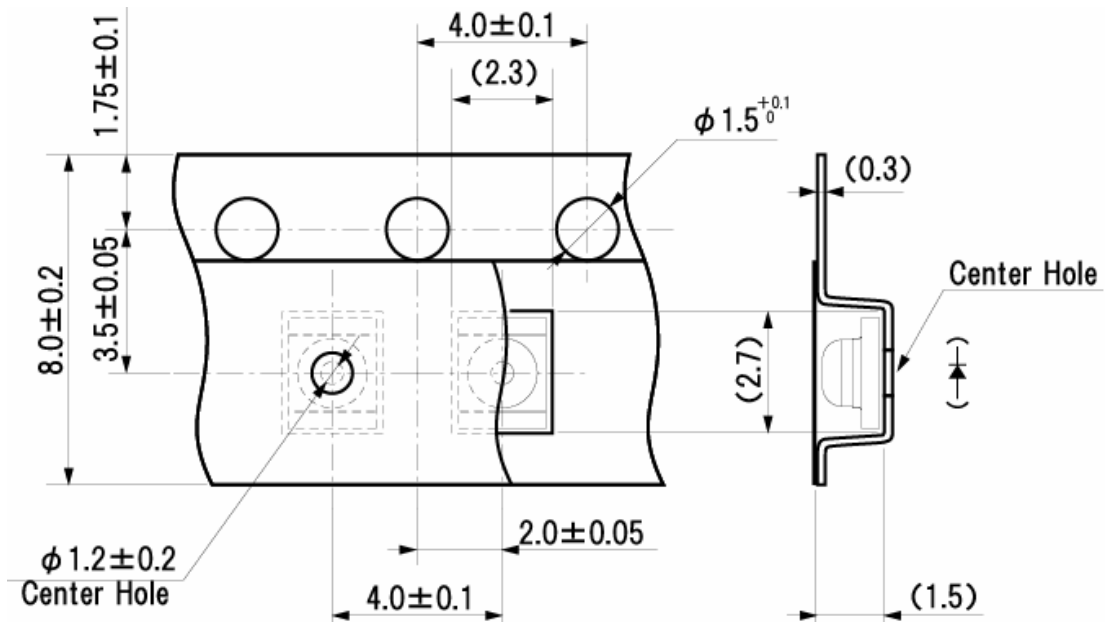
(Unit: mm)



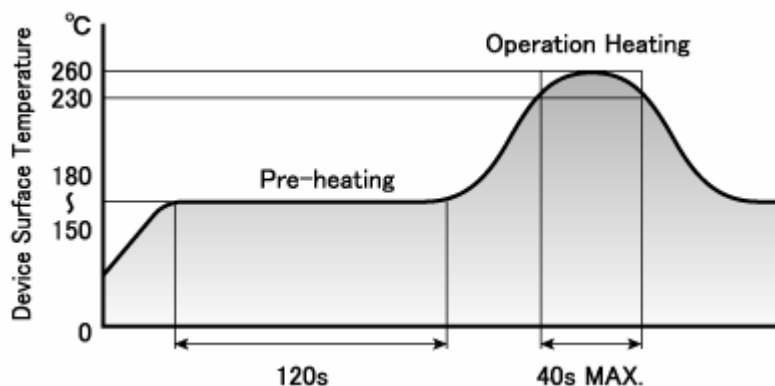
Taping Specification

(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.

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, I _F = Maxium 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)	200 cycles	0/25
High Temp. Operating Life	EIAJ ED- 4701/100(101)	Ta = 100°C, I _F = 15mA	1,000 h	0/25
Humidity Temp. Operating Life	EIAJ ED- 4701/100(102)	Ta = 60±2°C, RH = 90±5%, I _F = Maxium Rated Current	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 ² (10G), 100 ~ 2KHz sweep for 20min, XYZ each direction	2 h	0/10

Failure Criteria

Items	Symbols	Conditions	Failure criteria
Luminous Intensity	I _V	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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