Pb-free HEAT

U□1105C-0005 Series

Single Color Super Wide Angle Type (h=0.5 mm)

Features

Package	Super Wide Angle Type (h=0.5mm), Water Clear resin
Product features	・Outer Dimension 1.6 x 1.25 x 0.5mm (L x W x H) ・Temperature range Storage Temperature : -40℃～100℃ Operating Temperature : -40℃～ 85℃ ・Lead-free soldering compatible ・RoHS compliant
Dominant wavelength	Blue : 470nm(UB) Green : 527nm(UG)
Spatial distribution	178 deg.
Die materials	InGaN
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: φ180mm
ESD	1kV (HBM)

Recommended Applications

Cellular Phone only

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
UB1105C-0005	InGaN	Blue	Water Clear	470	5	6	16	5
UG1105C-0005	InGaN	Green		527	5	16	40	5

※Note : The luminous intensity(I_V) and dominant wavelength (λd) above are the setup values of the sorting machine.
(Tolerance : I_V...±10%, λd ...±3nm)

Absolute Maximum Ratings

(Ta=25℃)

Item	Symbol	Absolute Maximum Ratings		Unit
		UB	UG	
Power Dissipation	P_d	70	76	mW
Forward Current	I_F	20	20	mA
Pulse Forward Current ※1	I_{FRM}	48	48	mA
Derating (Ta=25℃ or higher)	ΔI_F	0.28	0.28	mA/℃
	ΔI_{FRM}	0.69	0.69	mA/℃
Reverse Voltage	V_R	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
				UB	UG	
Forward Voltage	I_F=5mA	V_F	TYP.	2.9	2.9	V
			MAX.	3.2	3.3	
Reverse Current	V_R=5V	I_R	MAX.	100	100	μA
Peak Wavelength	I_F=5mA	λ_p	TYP.	466	522	nm
Dominant Wavelength	I_F=5mA	λ_d	TYP.	470	527	nm
Spectral Line Half Width	I_F=5mA	$\Delta\lambda$	TYP.	30	35	nm
Half Intensity Angle	I_F=5mA	2θ 1/2	TYP.	178	178	deg.

※Note: The dominant wavelength (λd) above is the setup value of the sorting machine.
(Tolerance: λd ...±3nm)

Luminous Intensity Rank

(Ta=25℃)

Intensity Tolerance each Rank : +/- 10%

Rank	I_V(mcd)			
	UB		UG	
	I_F=5mA		I_F=5mA	
	MIN.	MAX.	MIN.	MAX.
A	6	10	16	25
B	10	16	25	40
C	16	25	40	64
D	25	40	64	100
E	40	-	100	-

※ Please contact our sales staff concerning rank designation.

Color Tone Groups (λ d)

(Ta=25℃)

Tolerance: +/- 3nm

Rank	Dominant Wavelength λ d (nm)			
	UB		UG	
	I_F=5mA		I_F=5mA	
	MIN.	MAX.	MIN.	MAX.
1			515	527
2	465	470	527	540
3	470	475		

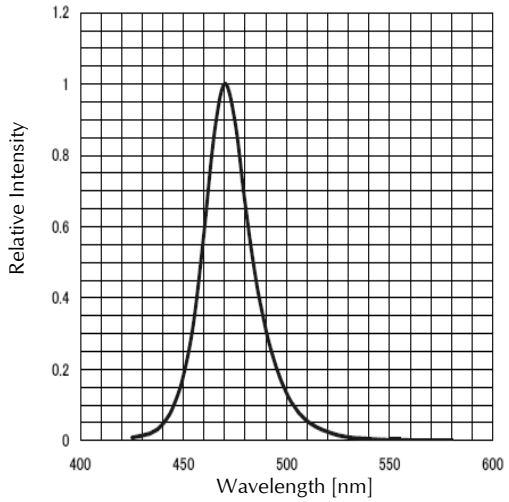
※ Please contact our sales staff concerning rank designation.

Technical Data(**UB**)

Spectral Distribution

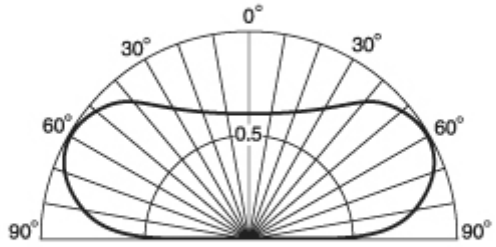
Relative Intensity vs. Wavelength

Condition : Ta = 25℃, I_F = 5mA



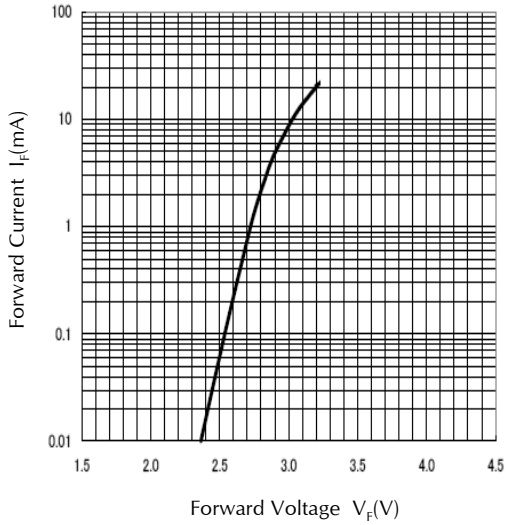
Spatial Distribution Example

Condition : Ta = 25℃



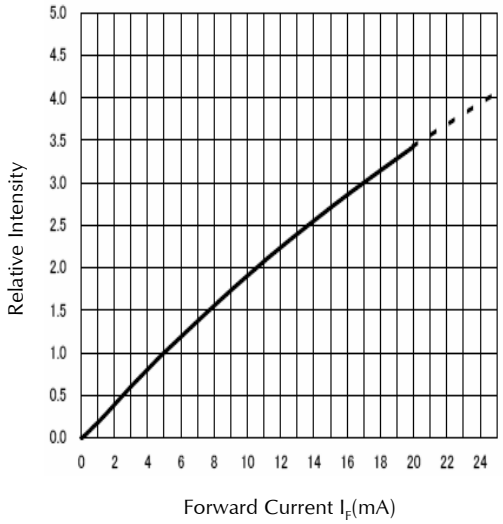
Forward Voltage vs. Forward Current

Condition : Ta = 25℃



Forward Current vs. Relative Intensity

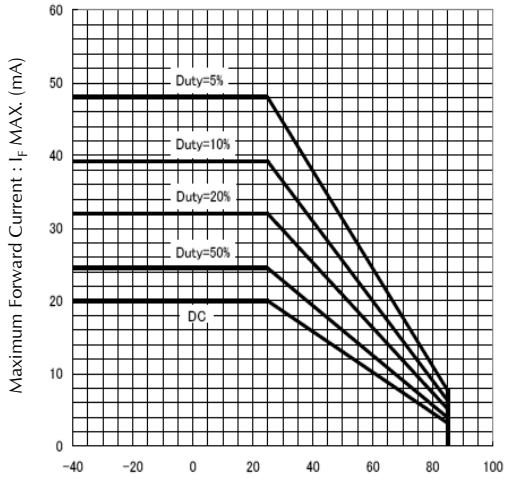
Condition : Ta = 25℃



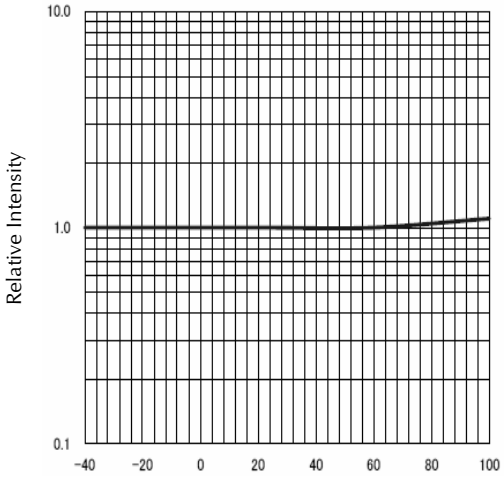
Technical Data(**UB**)

Derating

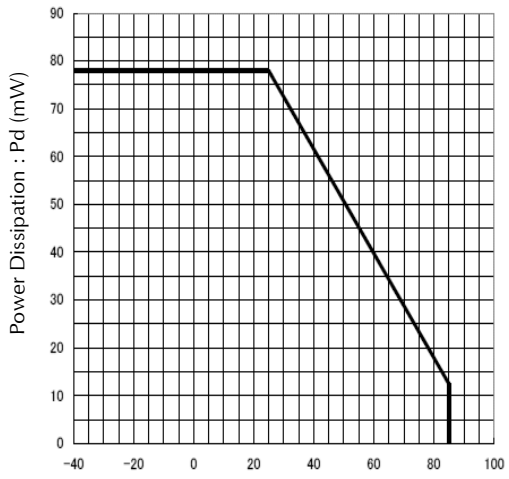
Ambient Temperature vs. Maximum Forward Current
Repetition Frequency : f ≧ 50Hz



Ambient Temperature vs. Relative Intensity

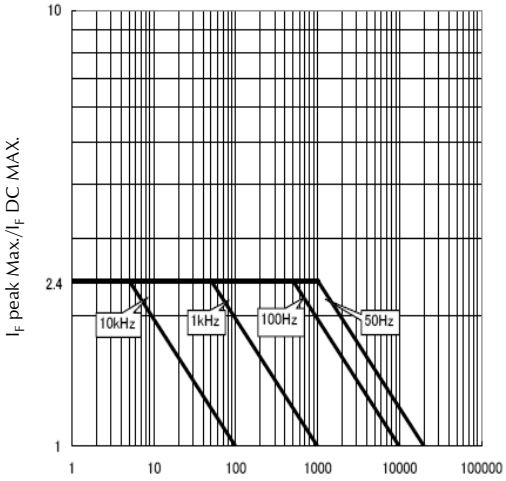


Power Dissipation vs. Ambient Temperature



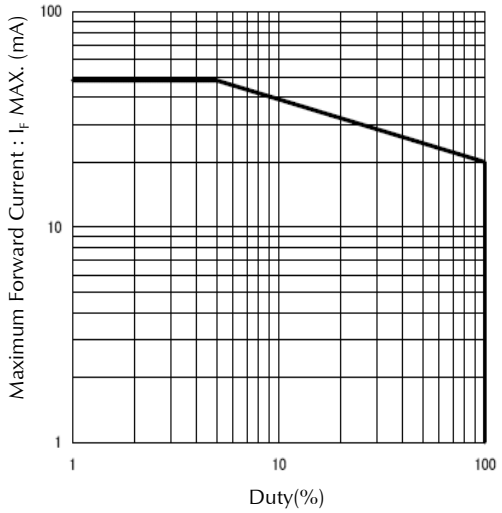
Pulse Width vs. Maximum Tolerable Peak Current

Condition : Ta = 25℃

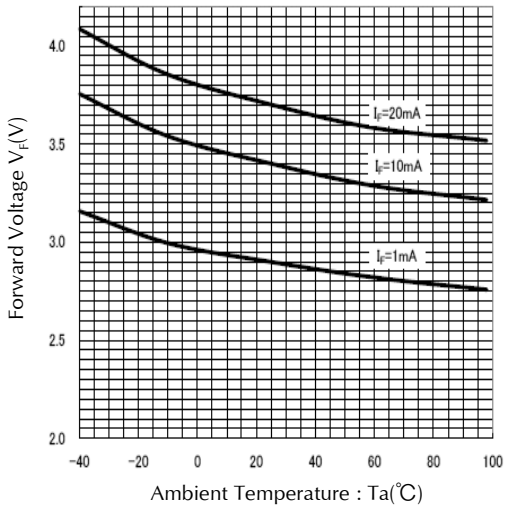


Technical Data(**UB**)

Duty Cycle vs. Maximum Forward Current



Ambient Temperature vs. Forward Voltage

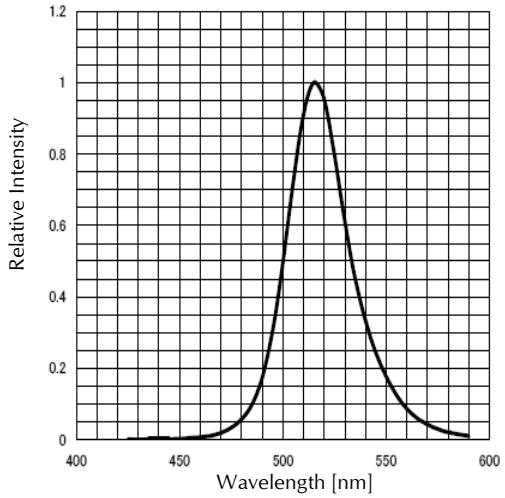


Technical Data(**UG**)

Spectral Distribution

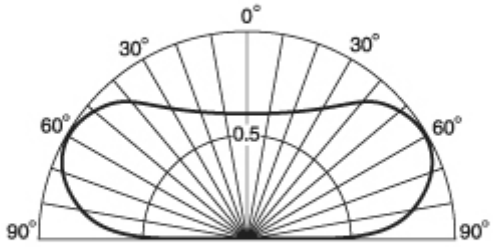
Relative Intensity vs. Wavelength

Condition : Ta = 25℃, I_F = 5mA



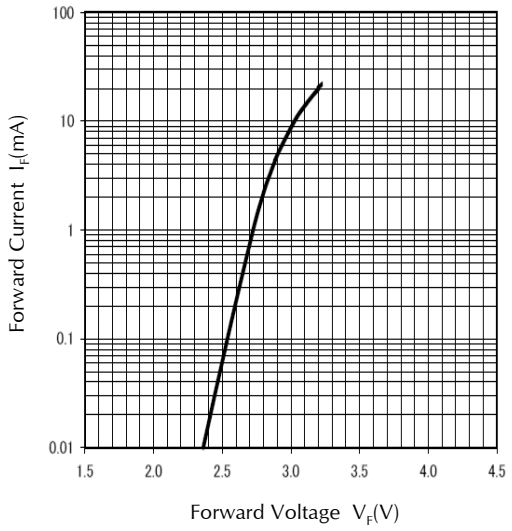
Spatial Distribution Example

Condition : Ta = 25℃



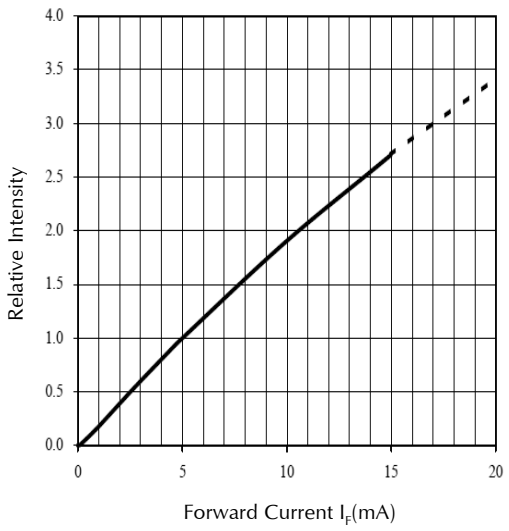
Forward Voltage vs. Forward Current

Condition : Ta = 25℃



Forward Current vs. Relative Intensity

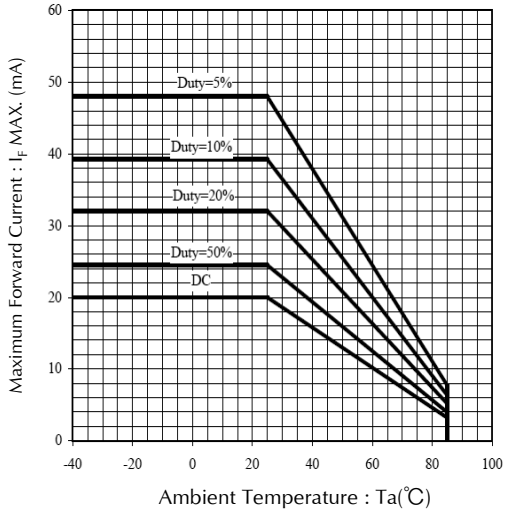
Condition : Ta = 25℃



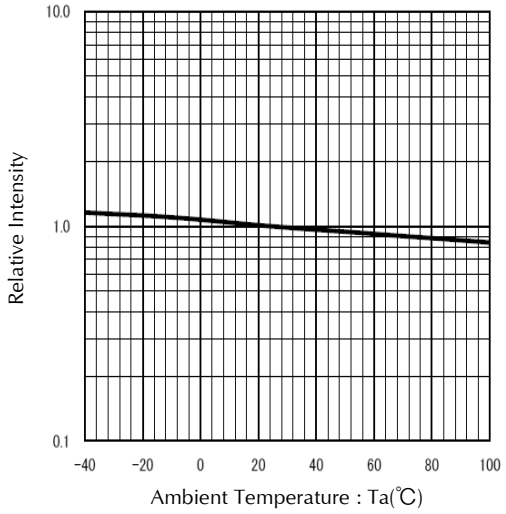
Technical Data(**UG**)

Derating

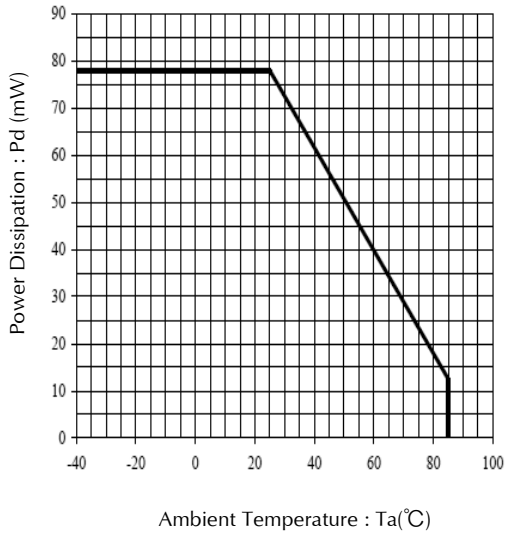
Ambient Temperature vs. Maximum Forward Current
Repetition Frequency : f ≧ 50Hz



Ambient Temperature vs. Relative Intensity

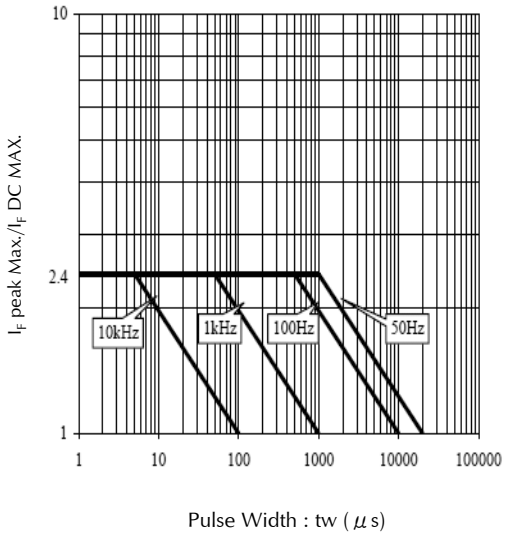


Power Dissipation vs. Ambient Temperature



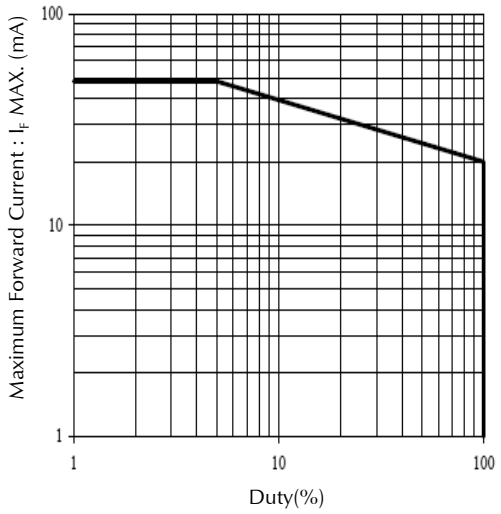
Pulse Width vs. Maximum Tolerable Peak Current

Condition : Ta = 25℃

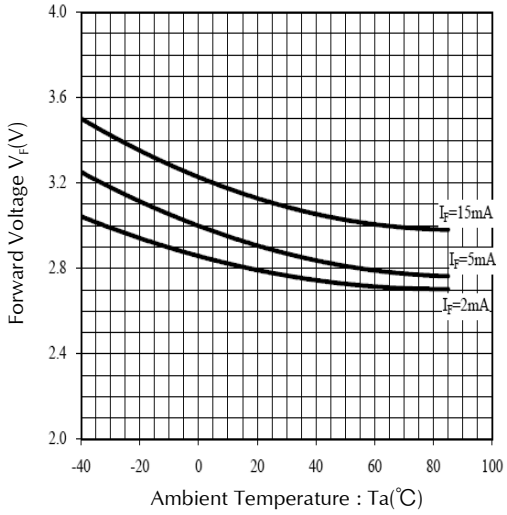


Technical Data(**UG**)

Duty Cycle vs. Maximum Forward Current



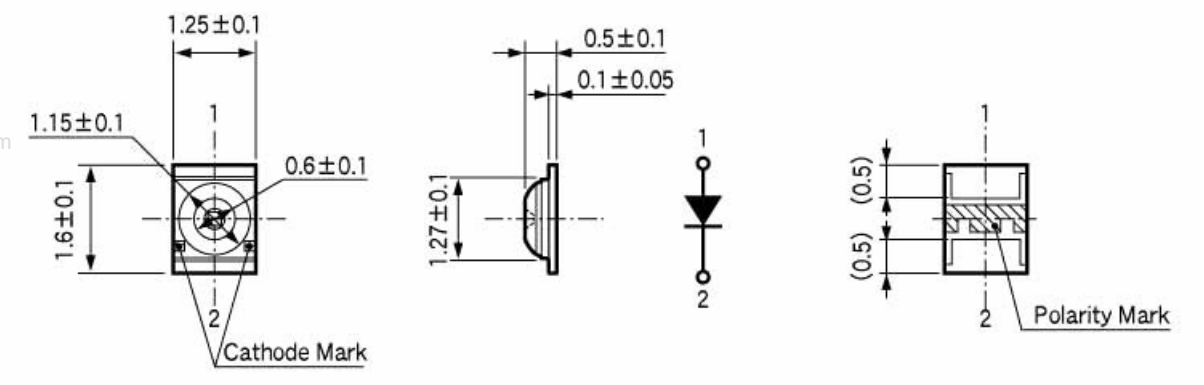
Ambient Temperature vs. Forward Voltage



Package Dimensions

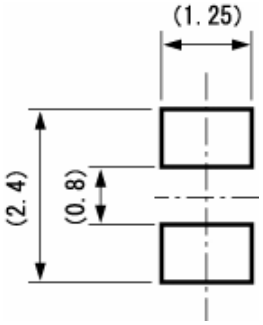
(Unit: mm)

Weight: (1.32)mg



Recommended Soldering Pattern

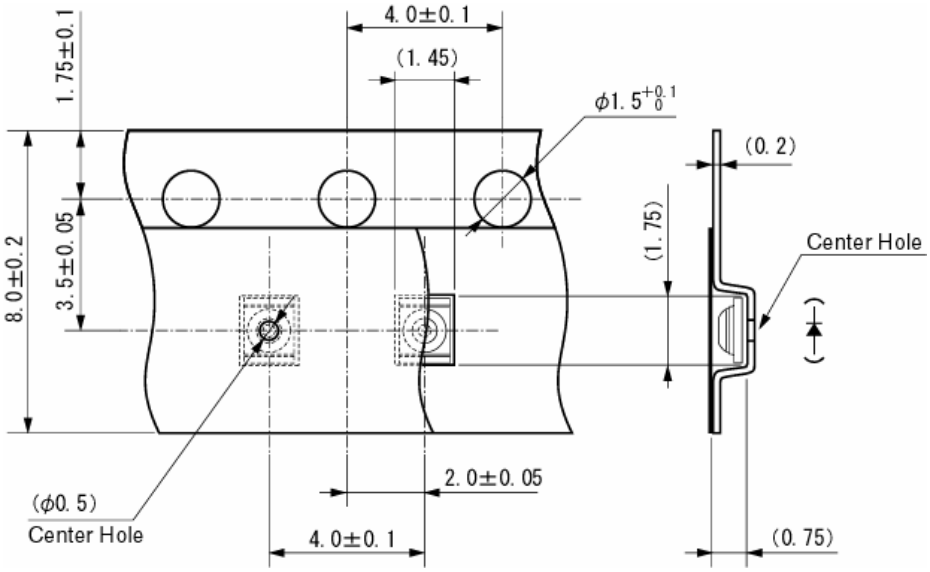
(Unit: mm)



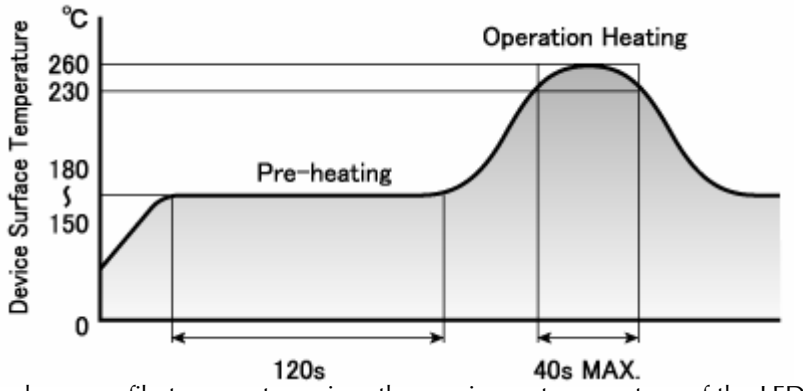
Taping Specification

(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℃ maximum)

Manual Soldering Conditions

Iron tip temp.	350℃	(MAX.)
Soldering time and frequency	3 s 1 time	(MAX.) (MAX.)

Handling

These types are designed chiefly for Cellular phone application, and are setting the thickness of the Product to about 0.4-0.5 mm thinly.To achieve the tin type of the product, making each material thin is aimed at. Because they are inferior to our general LEDs by an external stress, please use these product types after paying attention to the following.

1)Please set the mounting load to Max. 2N.
2)Please do not increase more quantity of the soldering paste than necessary quantity (The thickness of stencil Mask : about 100-120μ), because the terminal area of the product is small.
3)Please avoid the collision of the mounting board etc. after LEDs were mounted on the substrate.
4)When warp of substrate is large after these were mounted on FPC etc, please use these product types after affirming these is no problem.
5)Please use these product types after affirming there is no problem about the mounting position etc. of product from substrate edge, when mounting them on multi-layer and multi-piece PCBs.

Reliability Testing Result

Reliability Testing Result	Applicable Standard	Testing Conditions	Duration	Failure
Room Temp. Operating Life	EIAJ ED-4701/100(101)	Ta = 25℃, I_F = Maxium Rated Current	1,000 h	0/25
Resistance to Soldering Heat	EIAJ ED-4701/300(301)	Pre-heating : 150～180℃ 120s Max. Operation Heating : 230℃ 40s Max. Peak Temperature : 260℃	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℃, 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^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:
http://www.stanley-components.com