Color and Luminous Intensity

(Ta=25℃)

Part No.	Die Name	Material	Emitted Color	Lens Color	Dominant Wavelength λ d (nm)		Luminous Intensity Iv (mcd)		
					TYP.	I_F	MIN.	TYP.	I_F
BRBG1201W	BG	GaP	Green	Water Clear	558	20	0.7	2	20
	BR	GaAlAs	Red		647	20	1.6	12.8	20
BRPG1201W	PG	GaP	Green	Water Clear	567	20	1.2	4.8	20
	BR	GaAlAs	Red		647	20	1.6	12.8	20
BRPY1201W	PY	GaP	Yellow Green	Water Clear	572	20	1.4	8	20
	BR	GaAlAs	Red		647	20	1.6	12.8	20

Absolute Maximum Ratings

(Ta=25℃)

Item	Symbol	Absolute Maximum Ratings				Unit
		BG	PG	PY	BR	
Power Dissipation	P_d	75	75	75	75	mW
Forward Current	I_F	30	30	30	30	mA
Pulse Forward Current ※1	I_{FRM}	70	70	70	70	mA
Derating (Ta=25℃ or higher)	ΔI_F	0.42	0.42	0.42	0.42	mA/℃
	ΔI_{FRM}	0.93	0.93	0.93	0.93	mA/℃
Reverse Voltage	V_R	4	4	4	4	V
Operating Temperature	T_{opr}	-30～+85				℃
Storage Temperature	T_{stg}	-40～+100				℃

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

※ The ratings specified above are under the condition that only one diode is lit.
50% Max. of each rating shall be applied when two diodes are lit simultaneously.

Electro-Optical Characteristics

(Ta=25℃)

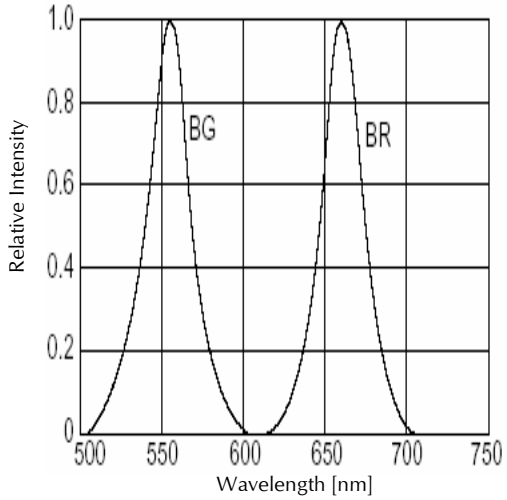
Item	Conditions	Symbol		Characteristics				Unit
				BG	PG	PY	BR	
Forward Voltage	I_F=20mA	V_F	TYP.	2.1	2.1	2.1	1.7	V
			MAX.	2.5	2.5	2.5	2.0	
Reverse Current	V_R=4V	I_R	MAX.	100	100	100	100	μA
Peak Wavelength	I_F=20mA	λ_p	TYP.	555	560	570	660	nm
Dominant Wavelength	I_F=20mA	λ_d	TYP.	558	567	572	647	nm
Spectral Line Half Width	I_F=20mA	$\Delta\lambda$	TYP.	30	30	30	30	nm
Half Intensity Angle	I_F=20mA	2θ 1/2	TYP.	156(θ x)	156(θ x)	156(θ x)	160(θ x)	deg.
				149(θ y)	149(θ y)	149(θ y)	150(θ y)	

Technical Data(**BRBG**)

Spectral Distribution

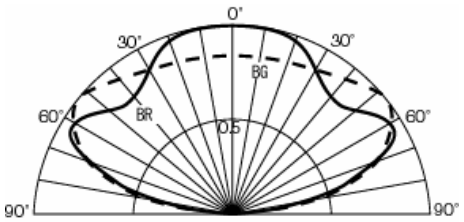
Relative Intensity vs. Wavelength

Condition : Ta = 25℃, I_F = 20mA



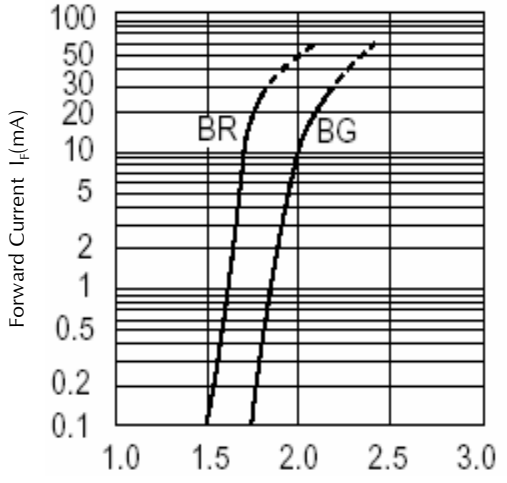
Spatial Distribution Example

Condition : Ta = 25℃



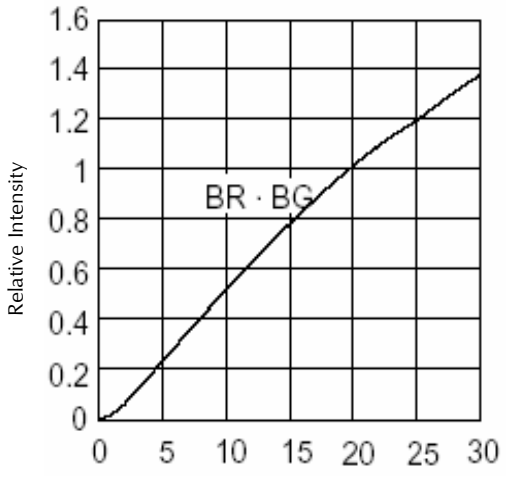
Forward Voltage vs. Forward Current

Condition : Ta = 25℃



Forward Current vs. Relative Intensity

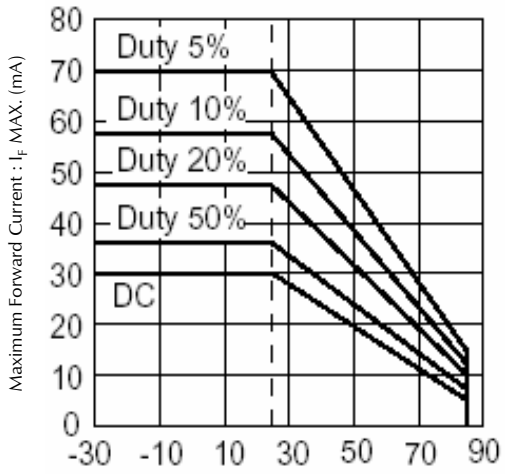
Condition : Ta = 25℃



Technical Data(**BRBG**)

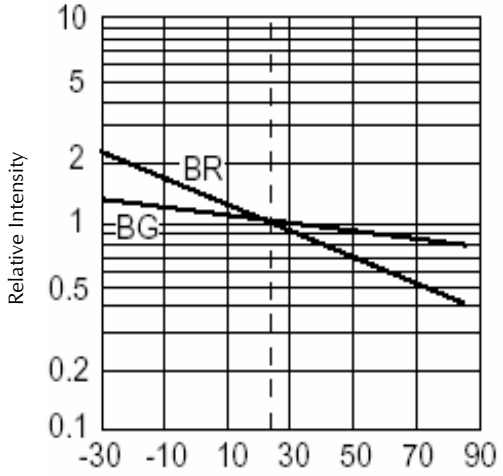
Derating

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

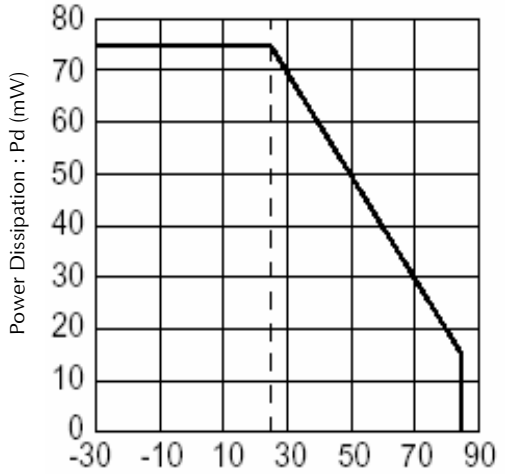


Ambient Temperature vs. Relative Intensity

Condition : I_F=20mA

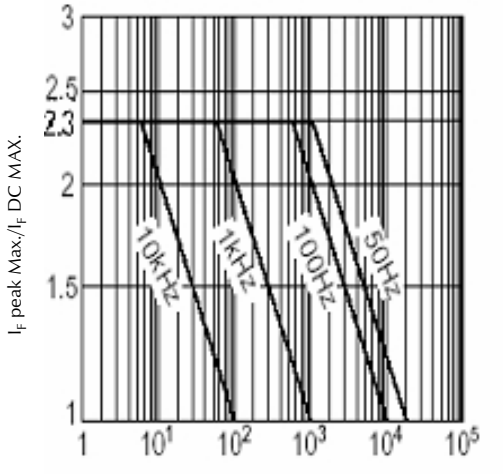


Power Dissipation vs. Ambient Temperature



Pulse Width vs. Maximum Tolerable Peak Current

Condition : Ta = 25℃

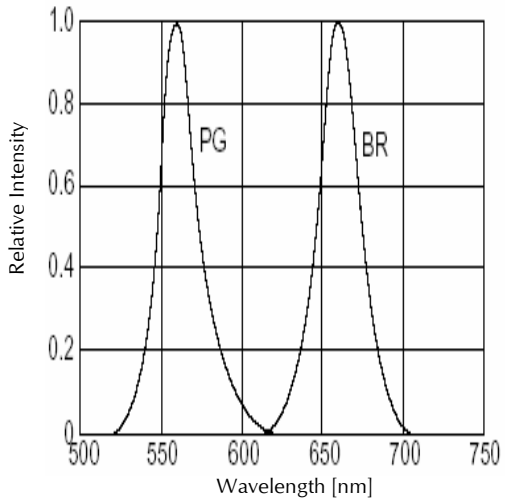


Technical Data(**BRPG**)

Spectral Distribution

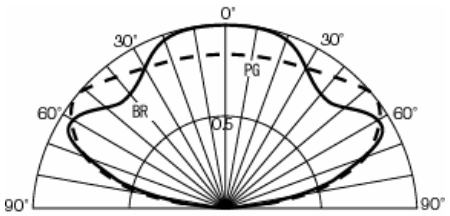
Relative Intensity vs. Wavelength

Condition : Ta = 25℃, I_F = 20mA



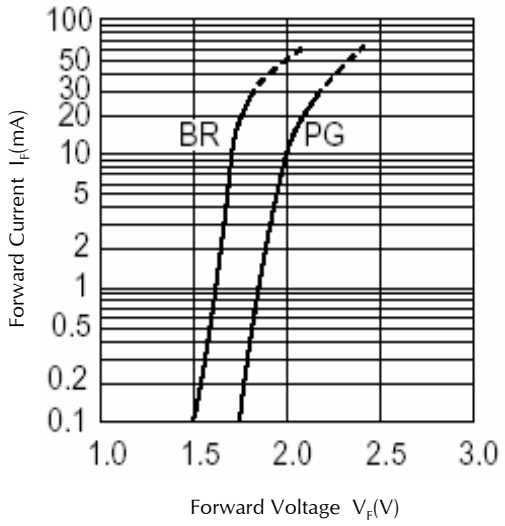
Spatial Distribution Example

Condition : Ta = 25℃



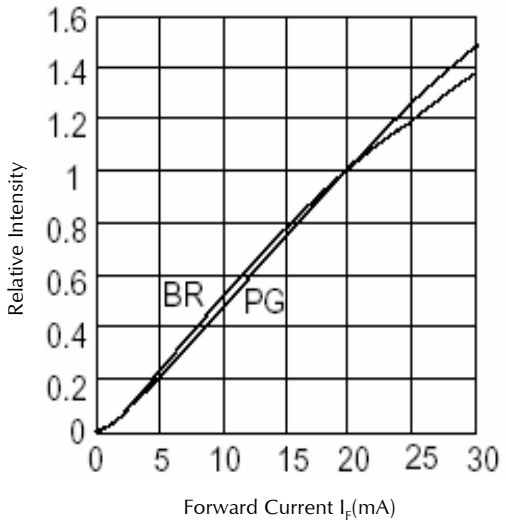
Forward Voltage vs. Forward Current

Condition : Ta = 25℃



Forward Current vs. Relative Intensity

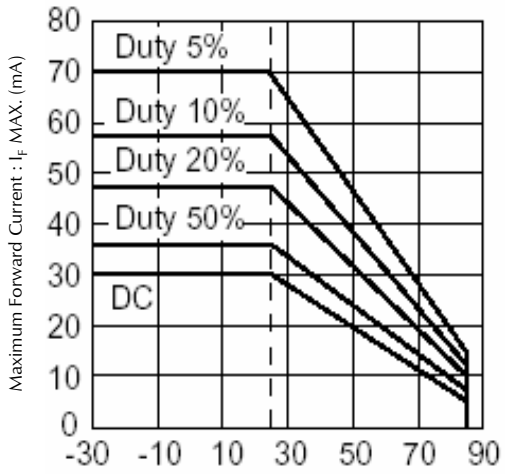
Condition : Ta = 25℃



Technical Data(**BRPG**)

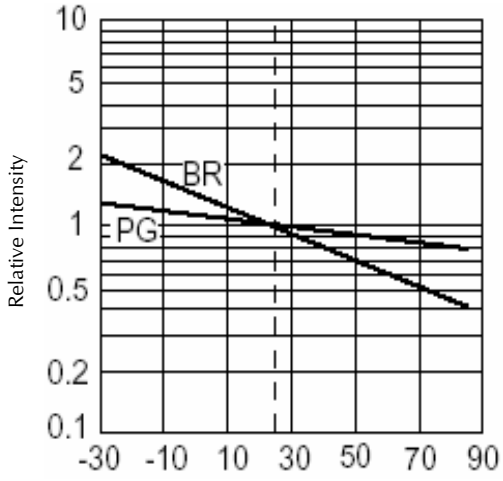
Derating

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

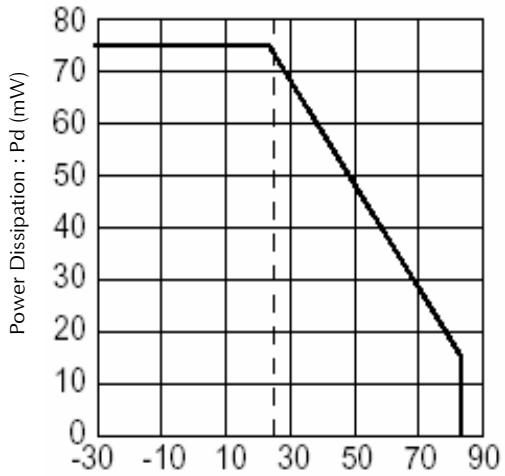


Ambient Temperature vs. Relative Intensity

Condition : I_F=20mA

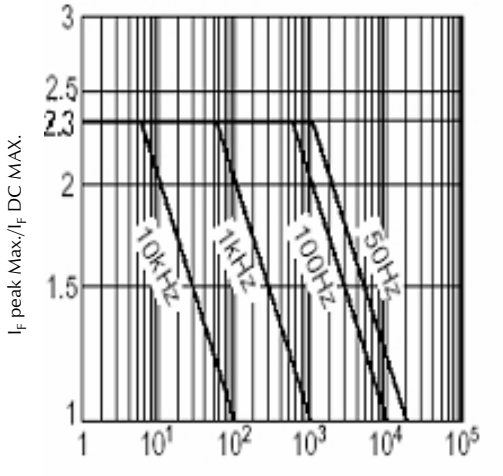


Power Dissipation vs. Ambient Temperature



Pulse Width vs. Maximum Tolerable Peak Current

Condition : Ta = 25℃

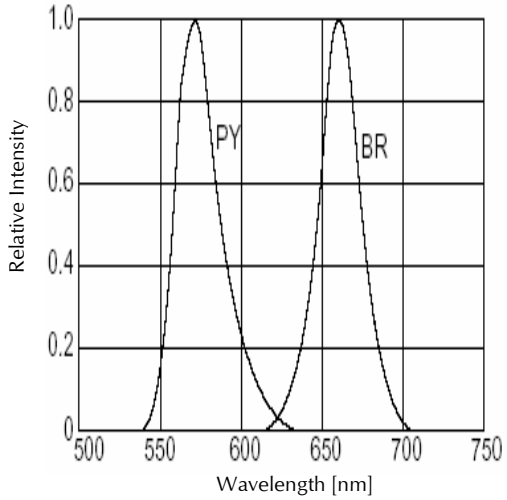


Technical Data(**BRPY**)

Spectral Distribution

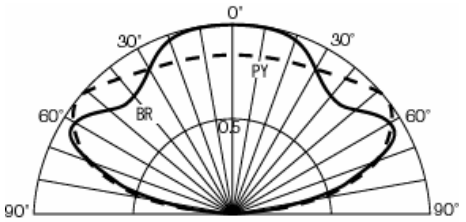
Relative Intensity vs. Wavelength

Condition : Ta = 25℃, I_F = 20mA



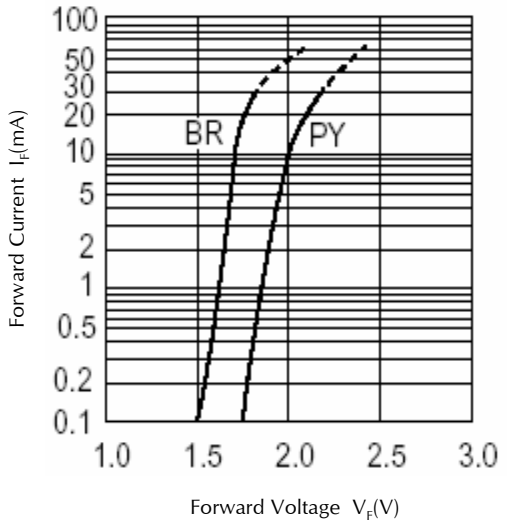
Spatial Distribution Example

Condition : Ta = 25℃



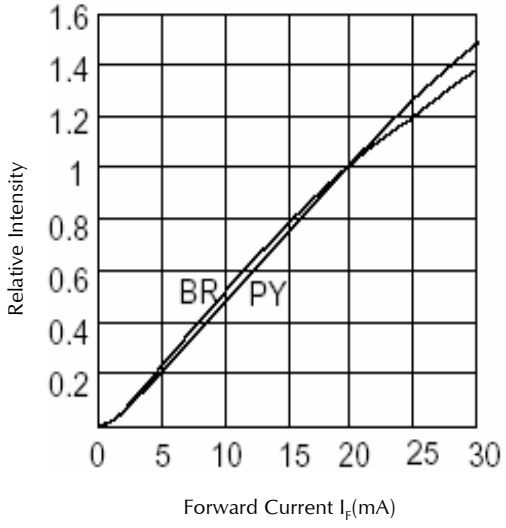
Forward Voltage vs. Forward Current

Condition : Ta = 25℃



Forward Current vs. Relative Intensity

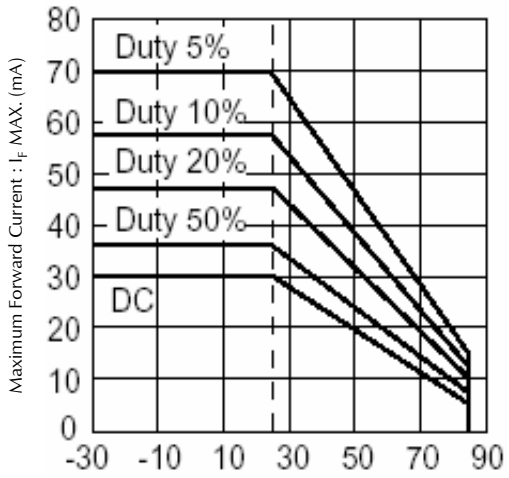
Condition : Ta = 25℃



Technical Data(**BRPY**)

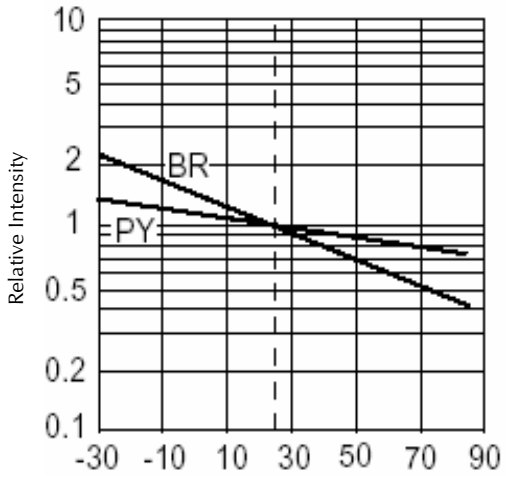
Derating

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

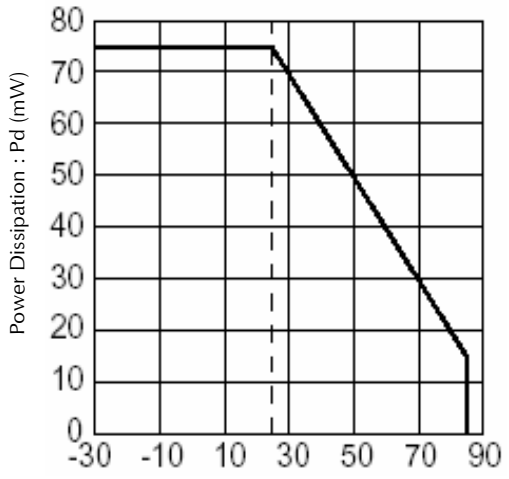


Ambient Temperature vs. Relative Intensity

Condition : I_F=20mA

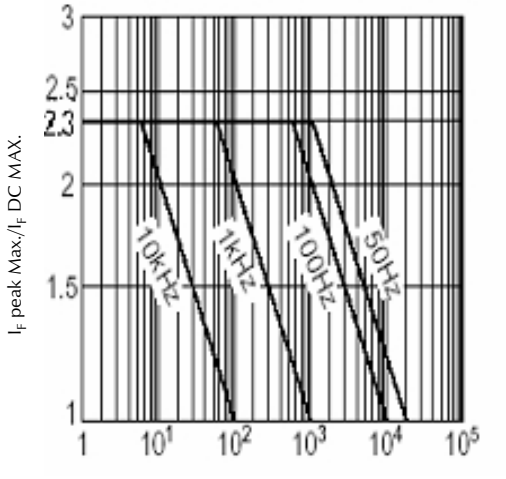


Power Dissipation vs. Ambient Temperature



Pulse Width vs. Maximum Tolerable Peak Current

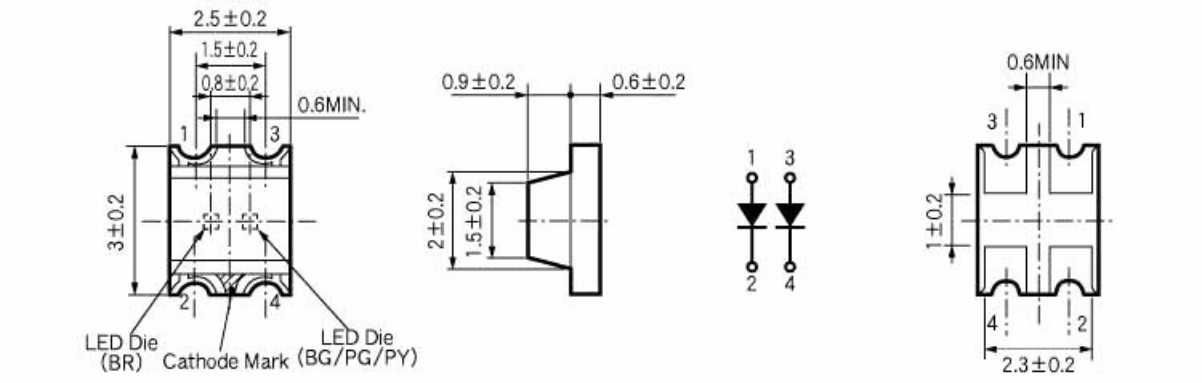
Condition : Ta = 25℃



Package Dimensions

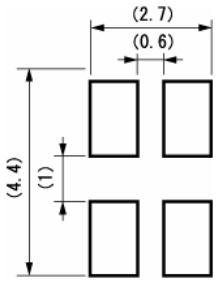
(Unit: mm)

Weight: (13.0)mg



Recommended Soldering Pattern

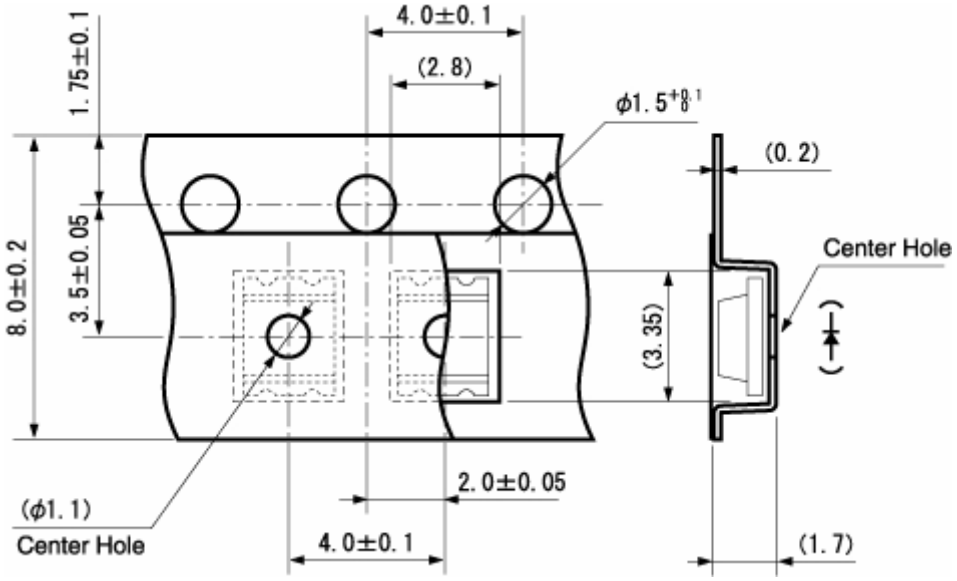
(Unit: mm)



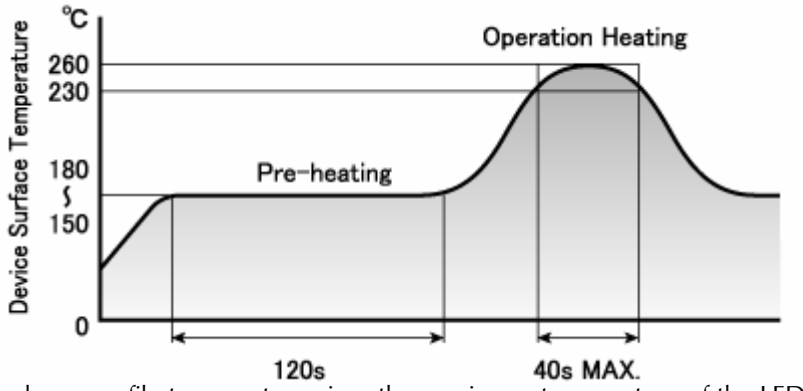
Taping Specification

(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 ℃	(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	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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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).
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