Pb-free HEAT

SW1142P

1608 (h=0.20mm) Type White LED

Features

Package	1608 (h=0.20 mm) Type, Pale yellow resin
Product features	・Outer Dimension 1.6 x 0.8 x 0.20mm(L x W x H) ・Temperature range Storage Temperature : -40℃～100℃ Operating Temperature : -40℃～ 85℃ ・Lead–free soldering compatible ・RoHS compliant
Chromaticity coordinates	x = 0.27TYP., y = 0.26TYP. (Condition : I_F=1mA)
Half Intensity Angle	θx = 120 deg., θy =120 deg.
Die materials	InGaN
Rank grouping parameter	Sorted by luminous intensity and chromaticity 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	Luminous Intensity Iv (mcd)		
				MIN.	TYP.	I_F
SW1142P	**InGaN**	White	Diffused Pale Yellow	**10**	**25**	**1**

Absolute Maximum Ratings

(Ta=25℃)

Item	Symbol	Absolute Maximum Ratings	Unit
Power Dissipation	P_d	14	mW
Forward Current	I_F	4	mA
Pulse Forward Current ※1	I_{FRM}	8	mA
Derating (Ta=25℃ or higher)	ΔI_F	0.046	mA/℃
	ΔI_{FRM}	0.092	mA/℃
Reverse Voltage	V_R	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
Forward Voltage※1	I_F=1mA	V_F	TYP.	2.8	V
			MAX.	3.1	
Reverse Current	V_R=5V	I_R	MAX.	100	μA
Half Intensity Angle	I_F=1mA	2θ1/2	TYP.	120(θx)	deg.
				120(θy)	
Chromaticity Coordinates	I_F=1mA	x	TYP.	0.27	-
		y	TYP.	0.26	-

※1 Forward Voltage Tolerance Range : ±0.1V

Luminous Intensity Rank (Unit : mcd)

(Ta=25℃)

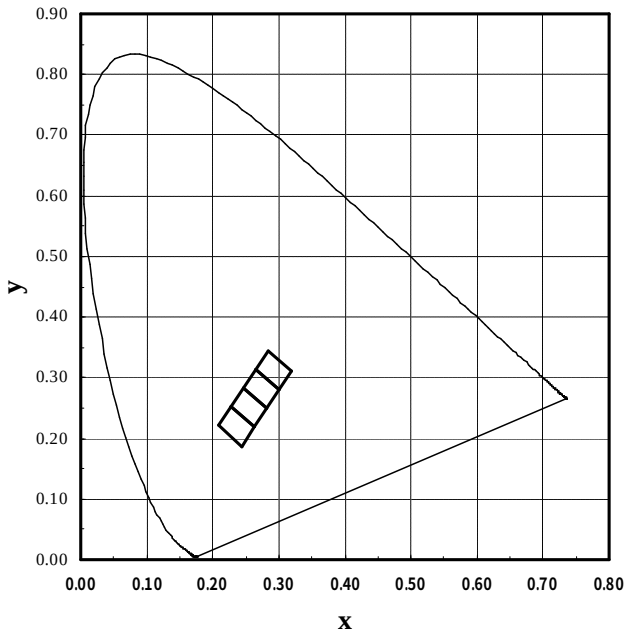
Rank	I_V (mcd)		Condition
	MIN.	MAX.	
A	10	16	I_F=1mA
B	16	25	
C	25	40	
D	40	64	
E	64	-	

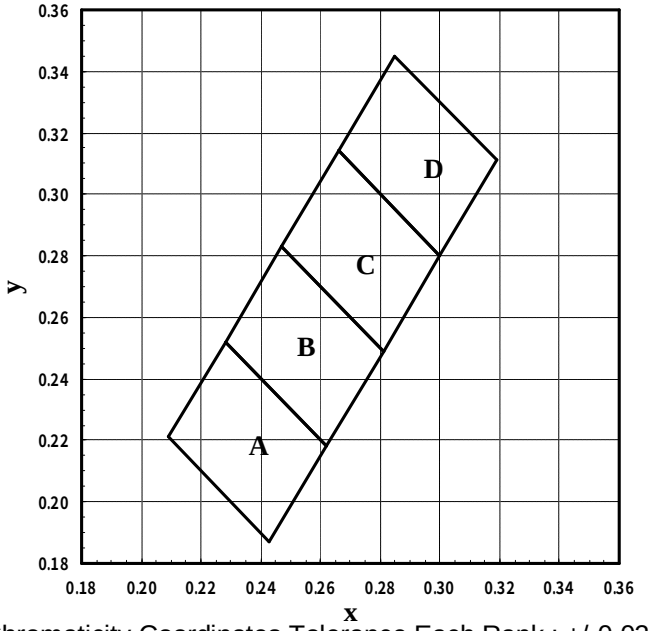
Intensity Tolerance each Rank : +/-10%

※ Please contact our sales staff concerning rank designation.

Sorting Chart for Chromaticity Coordinates

(Ta=25℃)





Chromaticity Coordinates Tolerance Each Rank : +/-0.02

	Lefr Down Point		Left Uppser Point		Right Upper Point		Right Down Point	
Rank	x	y	x	y	x	y	x	y
A	0.243	0.187	0.209	0.221	0.228	0.252	0.262	0.218
B	0.262	0.218	0.228	0.252	0.247	0.283	0.281	0.249
C	0.281	0.249	0.247	0.283	0.267	0.314	0.300	0.280
D	0.300	0.288	0.266	0.314	0.285	0.345	0.319	0.311

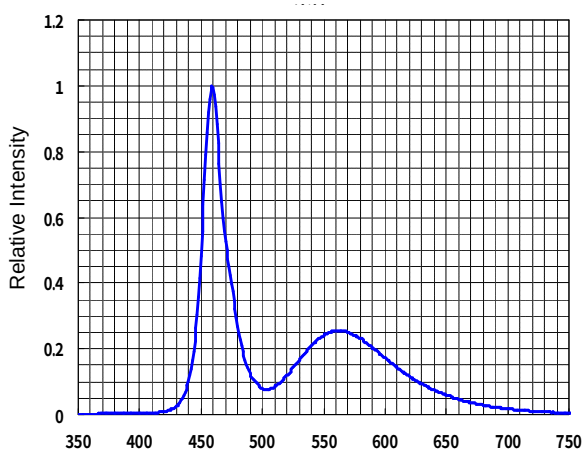
※ Please contact our sales staff concerning rank designation.

Technical Data

Spectral Distribution

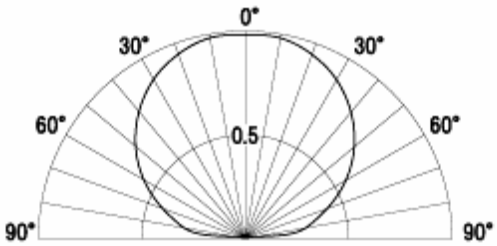
Relative Intensity vs. Wavelength

Condition : Ta = 25℃, I_F = 1mA



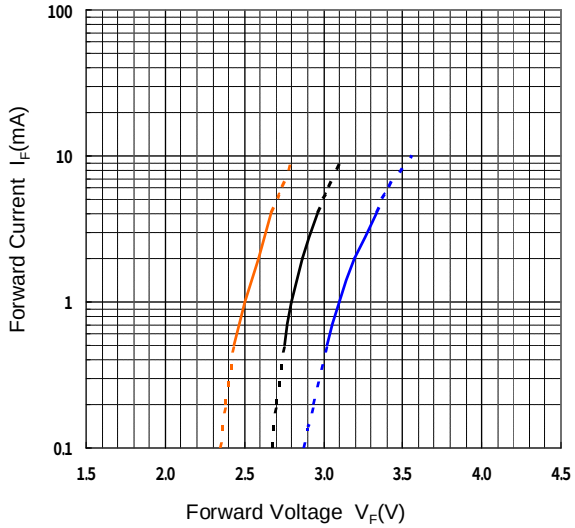
Spatial Distribution Example

Condition : Ta = 25℃



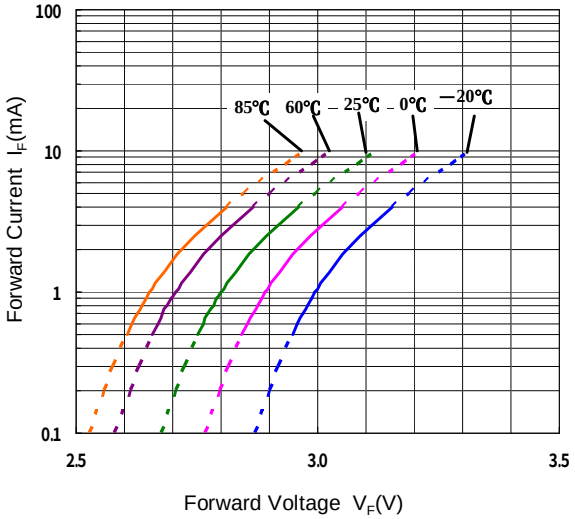
Forward Voltage vs. Forward Current

Condition : Ta = 25℃

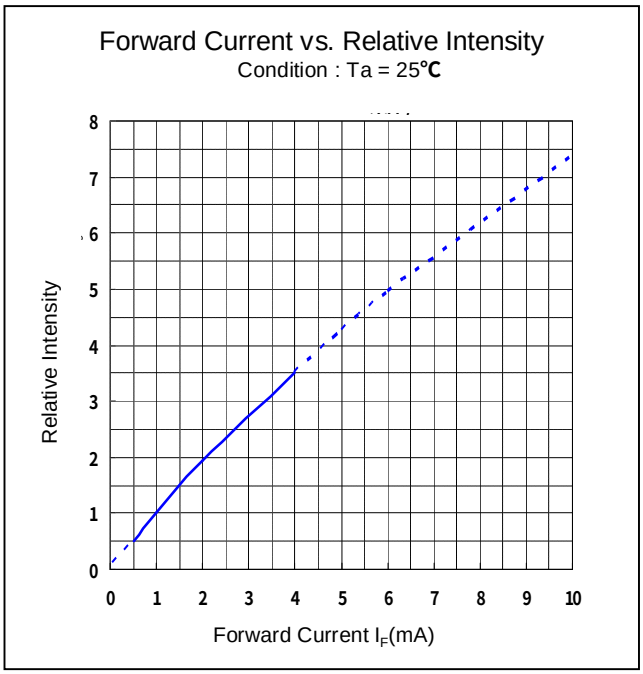


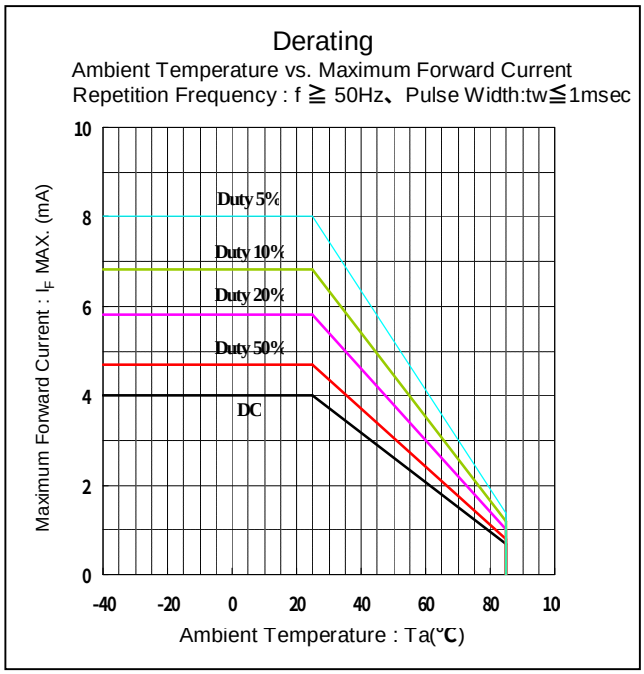
Forward Voltage vs. Forward Current

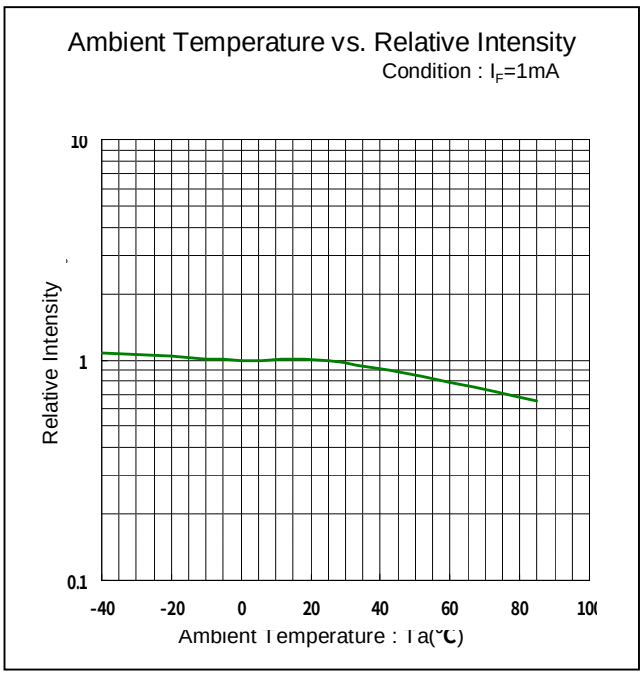
Condition : Ta = -20℃～85℃

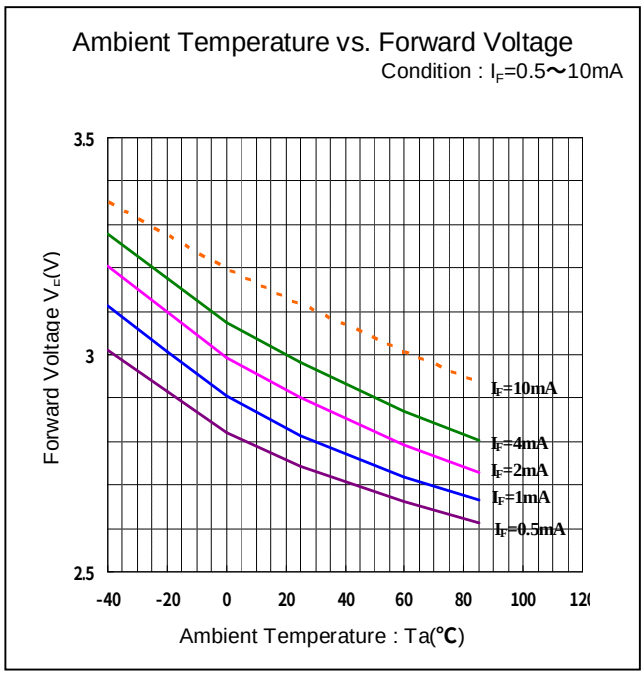


Technical Data







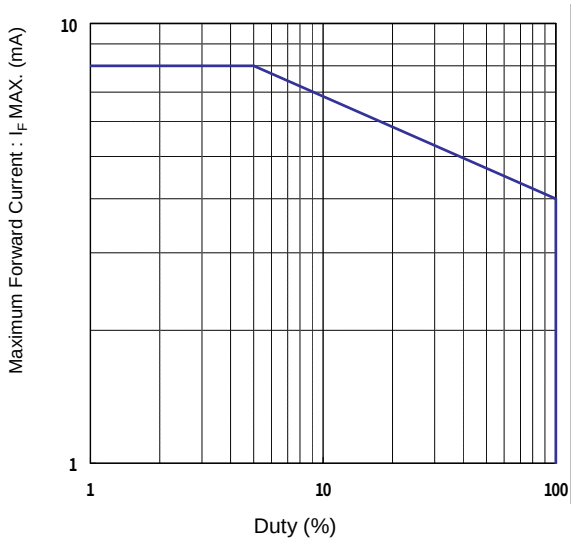


Technical Data

Dynamic Drive Rating

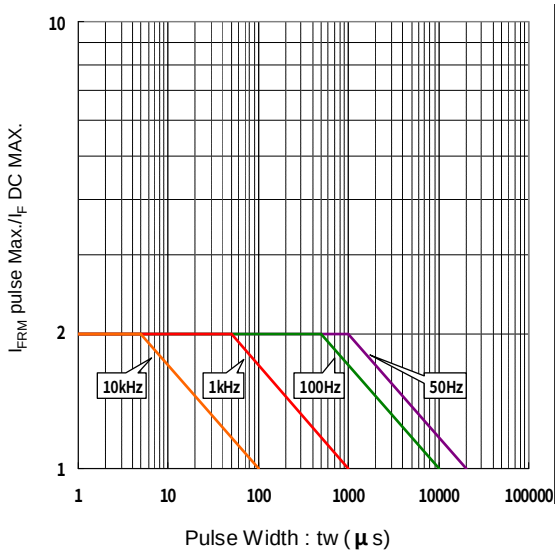
Duty cycle vs. Maximum Forward Current

Condition : Ta = 25℃



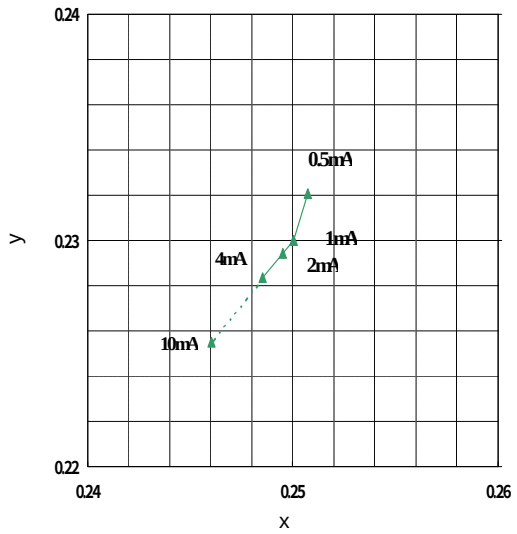
Pulse Width vs. Maximum Tolerable Current Ratio

Condition : Ta = 25℃



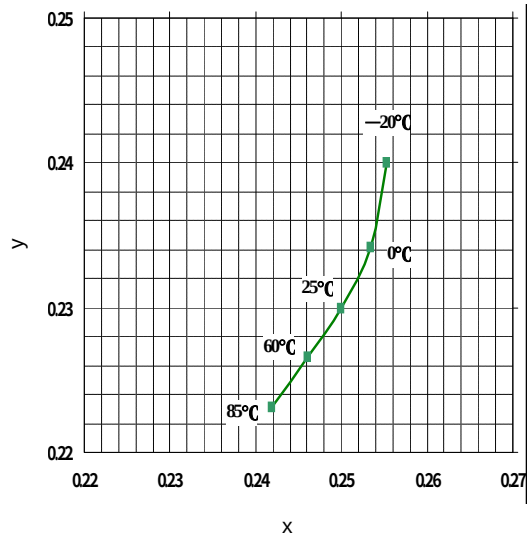
Forward Current vs. Chromaticity

Condition : Ta = 25℃



Ambient Temperature vs. Chromaticity

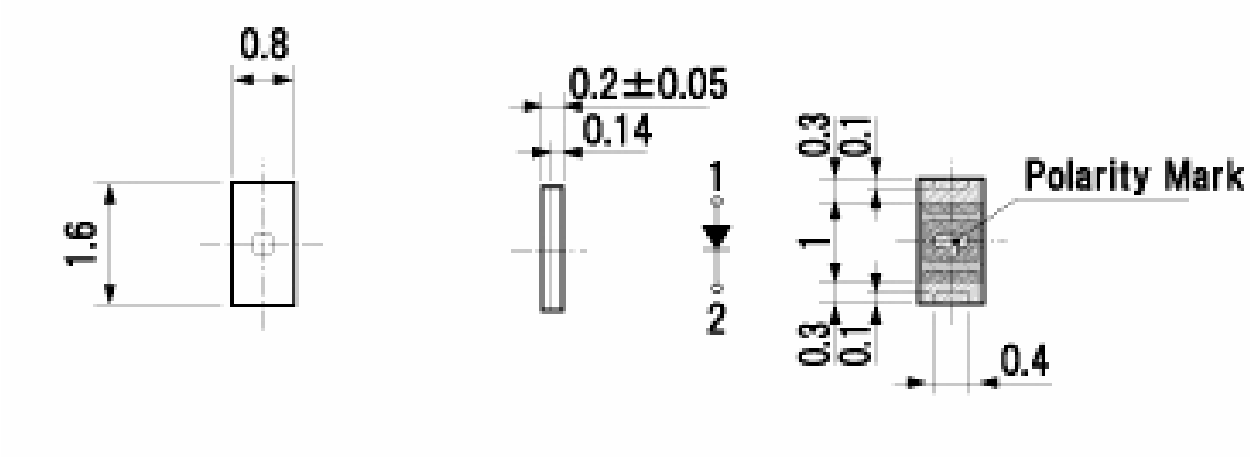
Condition : I_F = 1mA



Package Dimensions

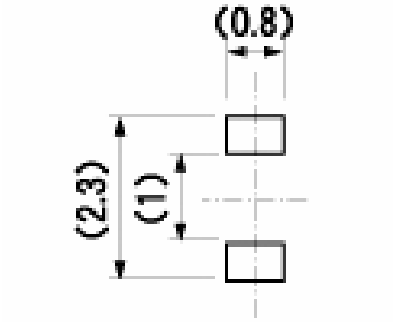
(Unit: mm)

Weight: (0.90)mg



Recommended Soldering Pattern

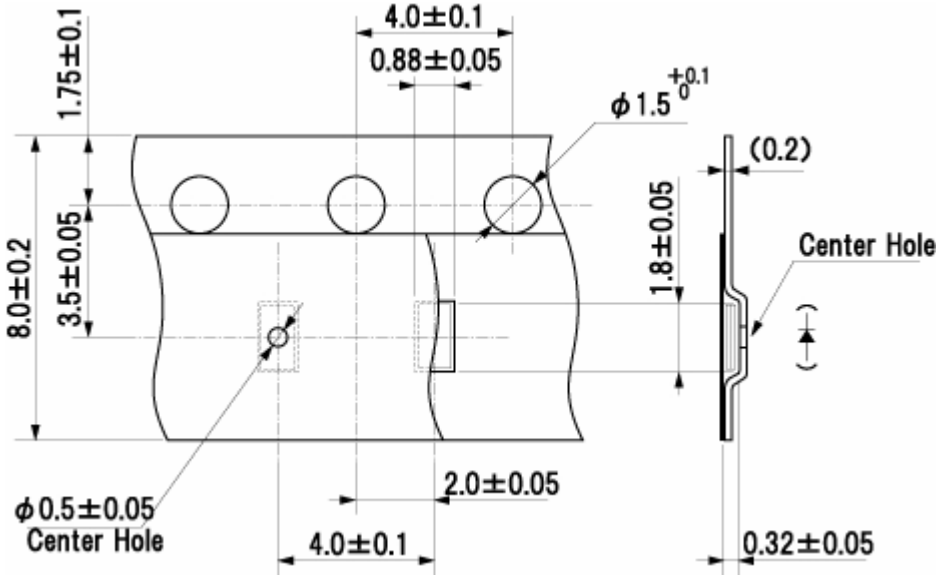
(Unit: mm)



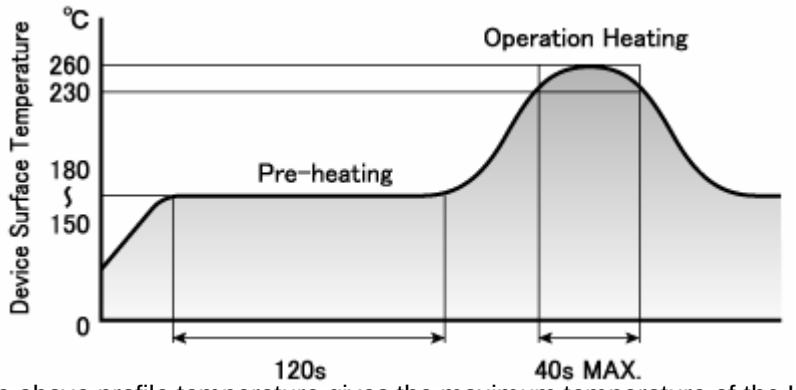
Taping Specification

(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 MAX.0.25mm or less 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	EIAJED-4701/100(101)	Ta = 25℃, I_F = Maxium Rated Current	1,000 h	0/25
Resistance to Soldering Heat	EIAJED-4701/300(301)	Pre-heating : 150～180℃ 120s Max. Operation Heating : 230℃ 40s Max. Peak Temperature : 260℃	Twice	0/25
Temperature Cycling	EIAJED-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	EIAJED-4701/100(103)	Ta = 60±2℃, RH = 90±5%	1,000 h	0/25
High Temp. Storage Life	EIAJED-4701/200(201)	Ta = Maximum Rated Storage Temperature	1,000 h	0/25
Low Temp. Storage Life	EIAJED-4701/200(202)	Ta = Minimum Rated Storage Temperature	1,000 h	0/25
Vibration, Variable Frequency	EIAJED-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.

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