



**Pb-free
HEAT**



LW1148L

PLCC-2 Type White LED

Features

Package	PLCC-2 Type, Diffused pale yellow resin
Product features	<ul style="list-style-type: none"> • Outer Dimension 2.17 x 1.4 x 1.3mm (L x W x H) • Temperature range Storage Temperature : -40°C~110°C Operating Temperature : -40°C~100°C • No lead package • Lead-free soldering compatible • RoHS compliant
Chromaticity coordinates	x = 0.31TYP., y = 0.32TYP. (Condition : I _F =10mA)
Spatial distribution	120 deg.
Die materials	InGaN
Optical efficiency	10.6 lm/W
Rank grouping parameter	Sorted by luminous intensity and chromaticity 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	3,000pcs per reel in a 8mm width tape. (Standard) Reel diameter: φ 180mm
ESD	1kV (HBM)

Recommended Applications

SW lighting for car indicators, meter panel, car audio and heater control, etc...

Color and Luminous Intensity

(Ta=25°C)

Part No.	Material	Emitted Color	Lens Color	Luminous Intensity			Luminous Flux	
				I _v (mcd)			φ _v (lm)	
				MIN.	TYP.	I _f	TYP.	I _f
LW1148L	InGaN	White	Pale Yellow	68	120	10	0.33	10

※Note : The above luminous intensity(I_v) is the setup values of the sorting machine.
 (Tolerance : I_v...±10%)

Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	Absolute Maximum Ratings	Unit
Power Dissipation	P_d	78	mW
Forward Current	I_F	20	mA
Pulse Forward Current ※1	I_{FRM}	100	mA
Derating (Ta=60°C or higher)	ΔI_F	0.4	mA/°C
	ΔI_{FRM}	2.0	mA/°C
Reverse Voltage	V_R	5	V
Operating Temperature	T_{opr}	-40~+100	°C
Storage Temperature	T_{stg}	-40~+110	°C

 ※1 I_{FRM} Measurement condition : Pulse Width \leq 10ms, Duty \leq 1/10

Electro-Optical Characteristics

(Ta=25°C)

Item	Condition	Symbol	Characteristics		Unit
			TYP.	MAX.	
Forward Voltage	I _F =10mA	V _F	TYP.	3.1	V
			MAX.	3.7	
Reverse Current	V _R =5V	I _R	MAX.	10	μ A
Half Intensity Angle	I _F =10mA	2θ 1/2	TYP.	120	deg.
Chromaticity Coordinates	I _F =10mA	x	TYP.	0.31	-
		y	TYP.	0.32	-

Luminous Intensity Rank

(Ta=25°C)

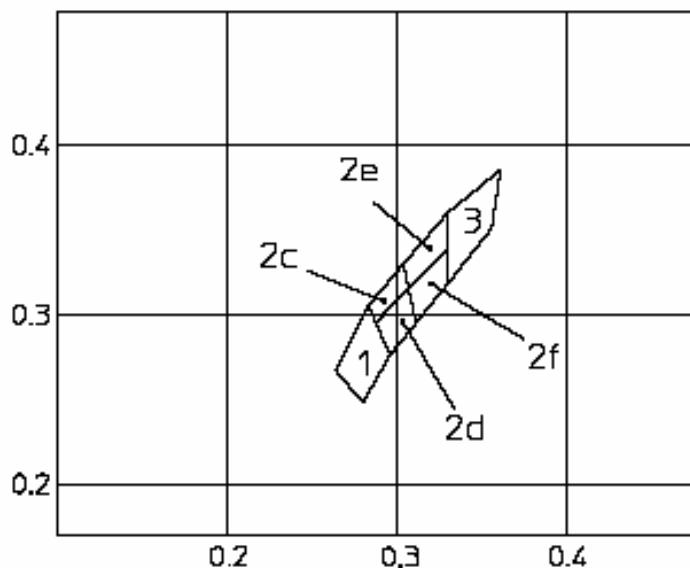
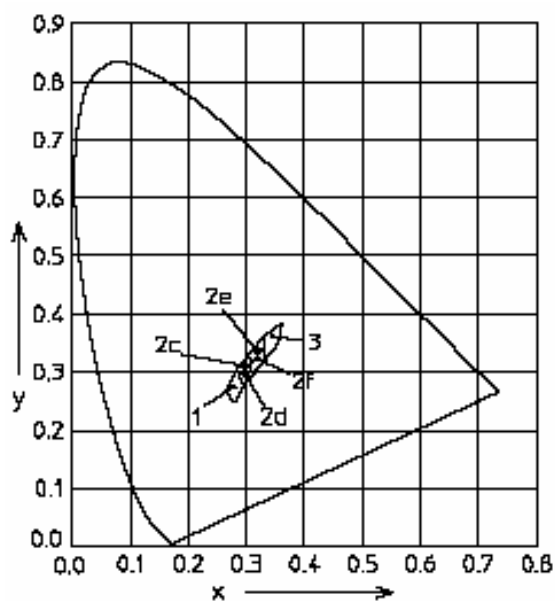
Intensity Tolerance each Rank : +/-10%

Rank	I _v (mcd)		Condition
	MIN.	MAX.	
BY	68	82	I_F=10mA
BZ	82	100	
C1	100	120	
C2	120	150	
C3	150	180	
C4	180	220	
C5	220	270	

Please contact our sales staff concerning rank designation.

Sorting Chart for Chromaticity Coordinates

(Ta=25°C)

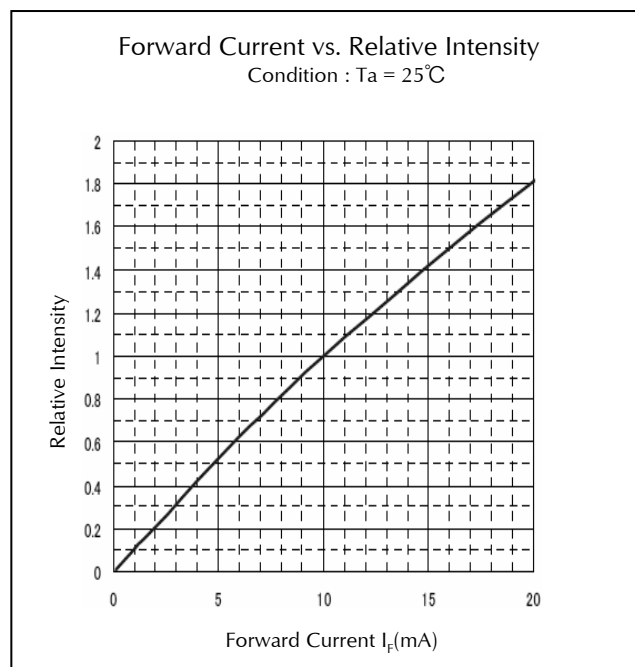
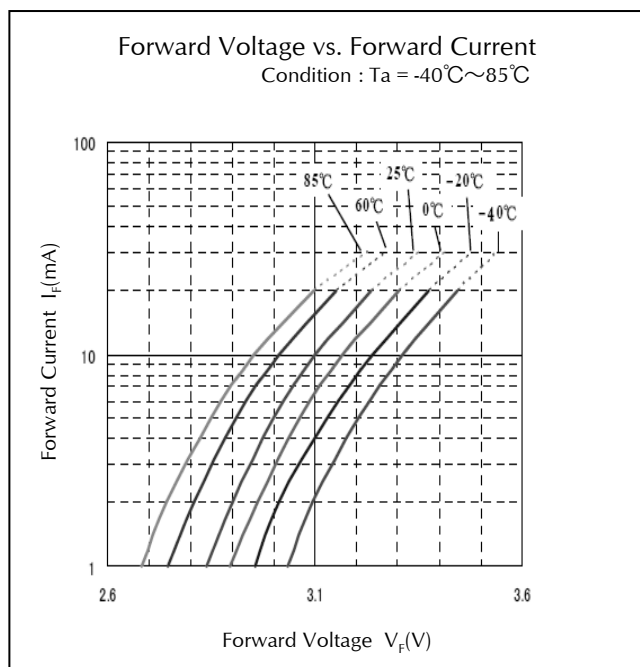
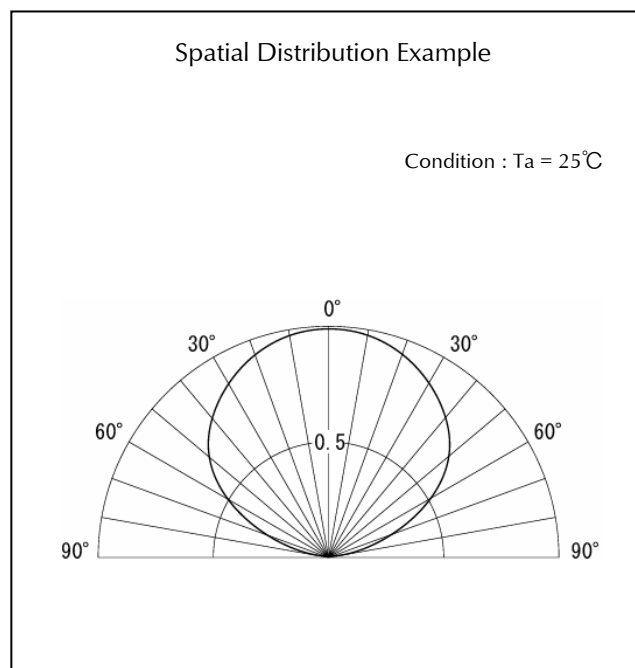
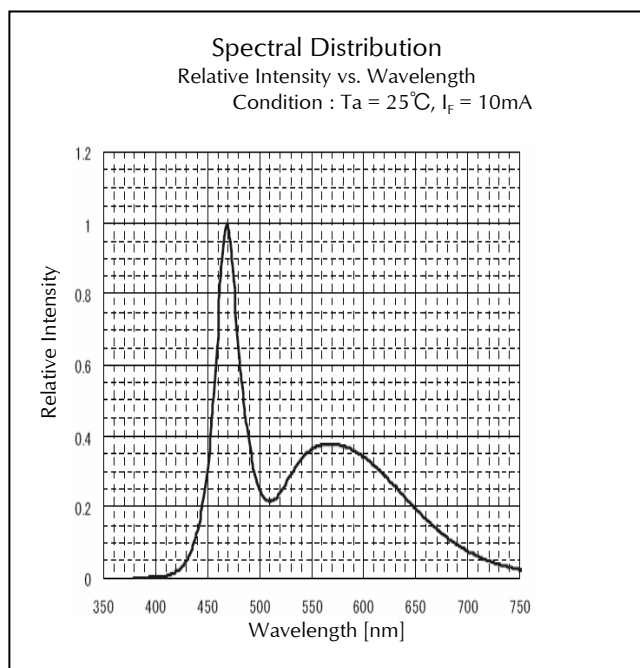


Chromaticity Coordinates Tolerance Each Rank : +/-0.01

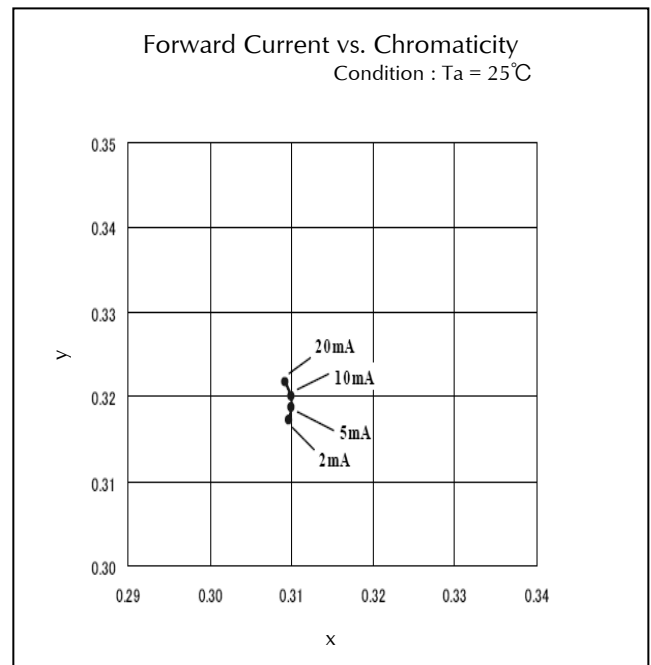
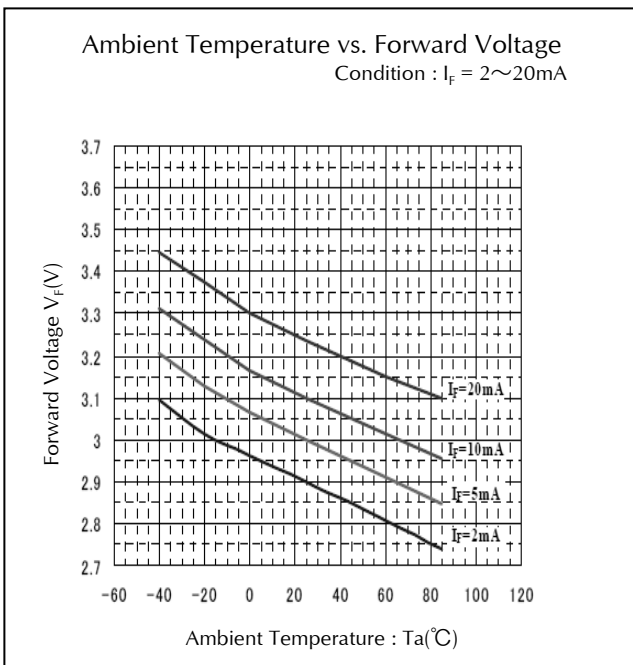
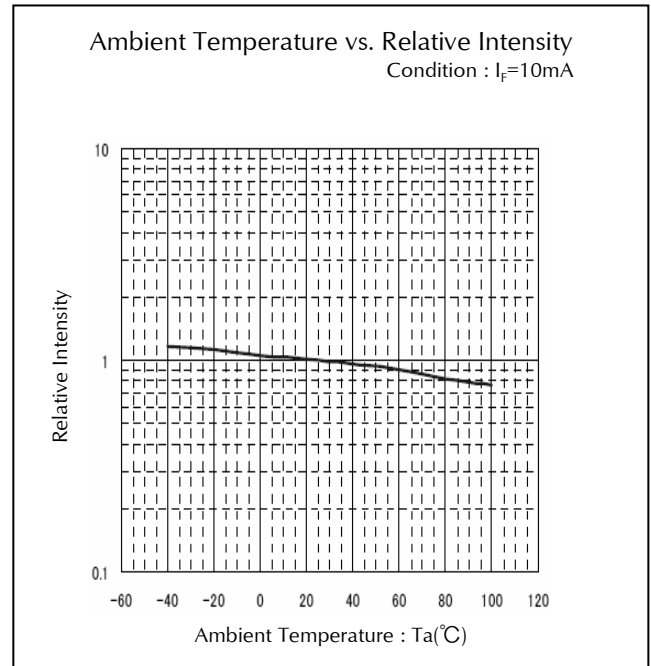
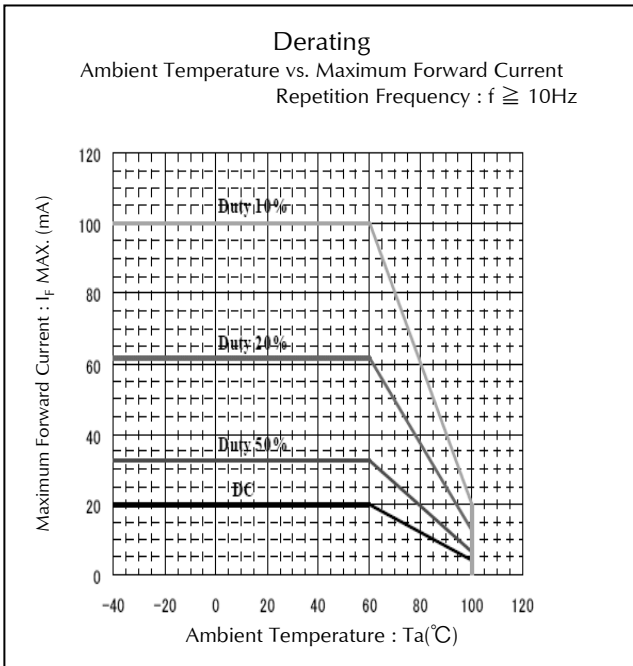
Rank	LEFT DOWN point		LEFT UP point		RIGHT UP point		RIGHT UP point	
	x	y	x	y	x	y	x	y
1	0.280	0.248	0.264	0.267	0.283	0.305	0.296	0.276
2c	0.287	0.295	0.283	0.305	0.304	0.330	0.307	0.315
2d	0.296	0.276	0.287	0.295	0.307	0.315	0.311	0.294
2e	0.307	0.315	0.304	0.330	0.330	0.360	0.330	0.339
2f	0.311	0.294	0.307	0.315	0.330	0.339	0.330	0.318
3	0.330	0.318	0.330	0.360	0.361	0.385	0.356	0.351

Please contact our sales staff concerning rank designation.

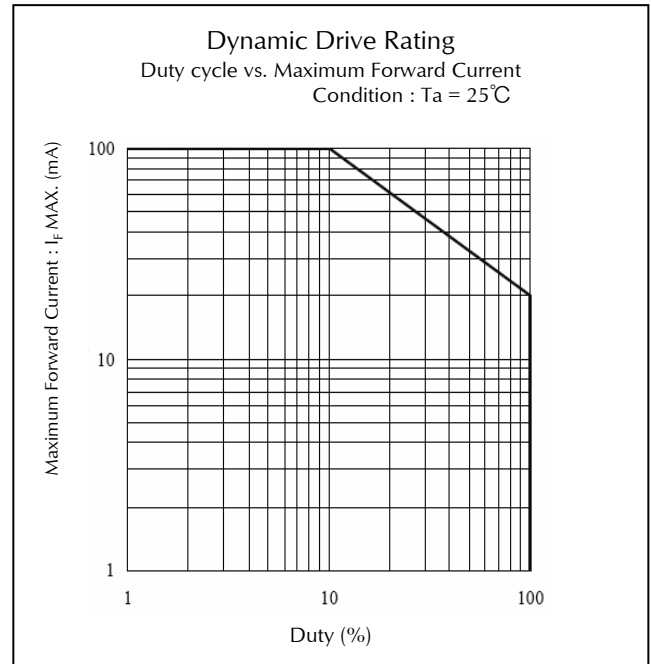
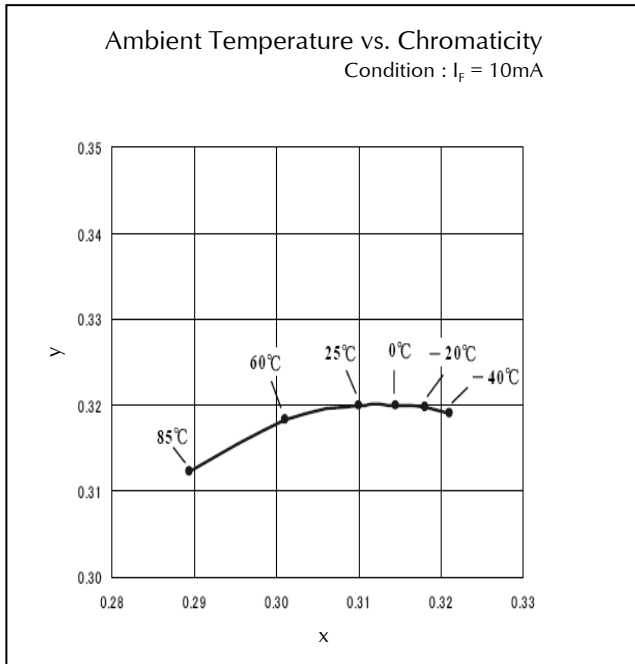
Technical Data



Technical Data

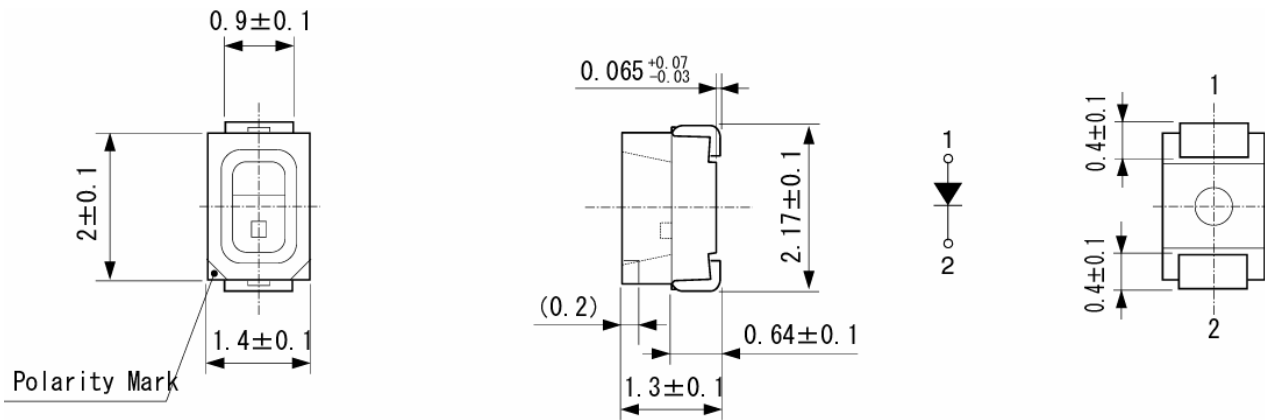


Technical Data



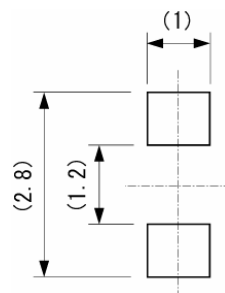
Package Dimensions

(Unit: mm)



Recommended Soldering Pattern

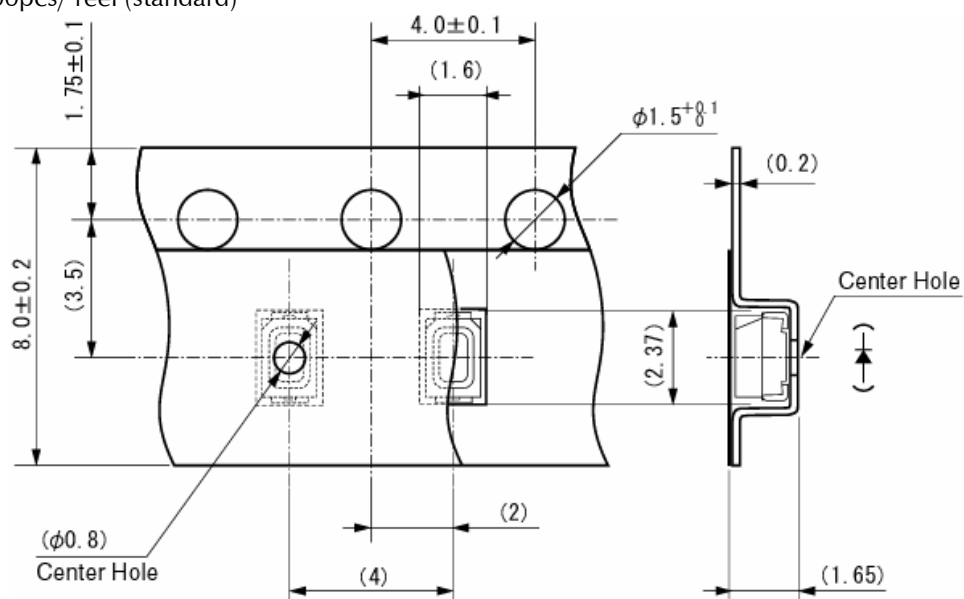
(Unit: mm)



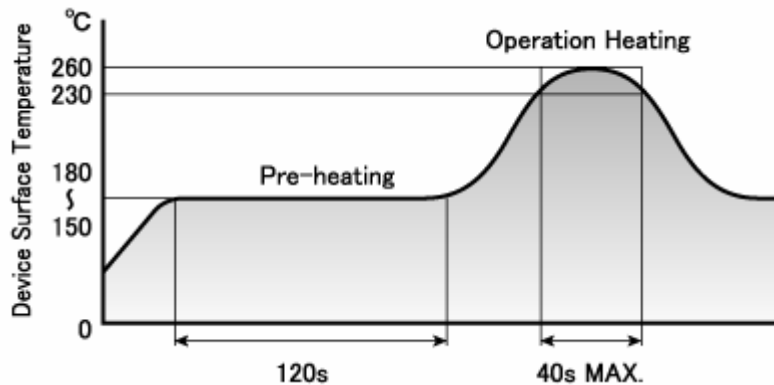
Taping Specification

(Unit: mm)

•Quantity: 3,000pcs/ 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°C maximum)

TTW (Through The Wave) soldering Conditions

Pre-heating	120 °C (MAX.) 60 s (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 (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, If = 20mA	1,000 h	0/20
High Temp. Operating Life	EIAJ ED-4701/100(101)	Ta = 85°C, If = 10mA	1,000 h	0/20
Low Temp. Operating Life	EIAJ ED-4701/100(101)	Ta = -40°C, If = 20mA	1,000 h	0/20
Wet High Temp. Operating Life	EIAJ ED-4701/100(102)	Ta = 60°C, 90%, If = 20mA	1,000 h	0/20
Wet High Temp. Storage Life	EIAJ ED-4701/100(103)	Ta = 60°C, 90%	1,000 h	0/20
Thermal Shock	EIAJ ED-4701/100(105)	Ta = -40°C ~ 110°C (each 15min.)	1,000 cycles	0/20
Thermal Shock Operating	EIAJ ED-4701/100(105)	Ta = -40°C(off) ~ 85°C (If = 10mA on), (each 15min.)	1,000 cycles	0/20
High Temp. Storage Life	EIAJ ED-4701/200(201)	Ta = 110°C	1,000 h	0/20
Low Temp. Storage Life	EIAJ ED-4701/200(202)	Ta = -40°C	1,000 h	0/20
Cycled Temp. Humidity Life	EIAJ ED-4701/200(203)	Ta = -30°C(2h) ~ 80°C, 95%(2h), 8h/cycle, If = 10mA, 5min on-off	30 cycles	0/20
Resistance to Reflow Soldering	EIAJ ED-4701/300(301)	Preheat : 150 ~ 180°C(120s Max.) Soldering Temp. : 260°C(5s) Moisture Soak : 30°C, 70%, 72h	2 times	0/20
Resistance to Dip Soldering	EIAJ ED-4701/300(301)	Preheat : 120 ~ 150°C(120s Max.) Soldering Temp. : 265°C(5s) Moisture Soak : 30°C, 70%, 72h	2 times	0/20
Electric Static Discharge (ESD) ^{※1}	EIAJ ED-4701/300(304)	C = 100pF, R2 = 1.5KΩ, ±2,000V	once each polarity	0/20
Vibration, Variable Frequency	EIAJ ED-4701/400(403)	98.1m/s ² (10G), 100 ~ 2KHz, 20min, XYZ each direction	2 h	0/20

※1 Reference test

Failure Criteria

Items	Symbols	Conditions	Failure criteria
Luminous Intensity	Iv	If=10mA	Testing Min. Value < Spec. Min. Value x 0.5
Forward Voltage	Vf	If=10mA	Testing Max. Value ≥ Spec. Max. Value x 1.2
Reverse Current	Ir	Vr=5V	Testing Max. Value ≥ Spec. Max. Value x 2.5
Cosmetic Appearance	-	-	No notable, decoloration, deformation and cracking

Special Notice to Customers Using the Products and Technical Information Shown in This Data Sheet

- 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 described in the data sheets are made to be used in standard electronic applications such as office automation appliances, communication devices, audio visual, home appliances, and measuring instruments.
- 5) If the products in the data sheets are to be used for purposes other than the above which requires high level reliability and safety where failure and or malfunction of the product may cause death or other serious effects on the human body such as airplane, space activity, transportation, medical, nuclear), please contact our sales personnel.
- 6) 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.
- 7) No part of this data sheet may be reprinted or reproduced without prior written permission from Stanley Electric Co., Ltd.
- 8) The most updated edition of this data sheet can be obtained from the address below:
<http://www.stanley-components.com>