



Pb-free  
HEAT



# XW1146BS

Right Angle Type White LED

## Features

Package	Right Angle Type, Diffused pale yellow resin
Product features	<ul style="list-style-type: none"> <li>• Outer Dimension 2.8 x 1.2 x 1.0mm( L x W x H )</li> <li>• Temperature range Storage Temperature : -40°C~100°C Operating Temperature : -30°C~85°C</li> <li>• Spatial distribution characteristics.(2 <math>\theta</math> 1/2: <math>\theta_x</math> =115 deg., <math>\theta_y</math> =110 deg.)</li> <li>• Lead-free soldering compatible</li> <li>• RoHS compliant</li> </ul>
Chromaticity coordinates	x = 0.31TYP., y = 0.32TYP. (Condition : $I_F$ =20mA)
Spatial distribution	<b><math>\theta_x</math></b> =115 deg., <b><math>\theta_y</math></b> =110 deg.
Die materials	InGaN
Optical efficiency	20 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, and manual soldering
Taping and reel	3,000pcs per reel in a 8mm width tape. (Standard) Reel diameter: $\phi$ 180mm
ESD	1kV (HBM)

## Recommended Applications

Cellular Phone, Mobile Equipment, Electric Household Appliances, Other General Applications



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## Color and Luminous Intensity

(T<sub>a</sub>=25°C)

Part No.	Material	Emitted Color	Lens Color	Luminous Intensity			Luminous Flux	
				I <sub>v</sub> (mcd)			Φ <sub>v</sub> (lm)	
				MIN.	TYP.	I <sub>F</sub>	TYP.	I <sub>F</sub>
XW1146BS	InGaN	White	Pale Yellow	430	550	20	1.5	20

## Absolute Maximum Ratings

**(T<sub>a</sub>=25°C)**

Item	Symbol	Absolute Maximum Ratings	Unit
Power Dissipation	P <sub>d</sub>	120	mW
Forward Current	I <sub>F</sub>	30	mA
Pulse Forward Current ※1	I <sub>FRM</sub>	100	mA
Derating (T <sub>a</sub> =25°C or higher)	ΔI <sub>F</sub>	0.40	mA/°C
	ΔI <sub>FRM</sub>	1.33	mA/°C
Reverse Voltage	V <sub>R</sub>	5	V
Operating Temperature	T <sub>opr</sub>	-30~+85	°C
Storage Temperature	T <sub>stg</sub>	-40~+100	°C

 ※1 I<sub>FRM</sub> Measurement condition : Pulse Width ≦ 1ms., Duty ≦ 1/20.

## Electro-Optical Characteristics

**(T<sub>a</sub>=25°C)**

Item	Condition	Symbol	Characteristics		Unit
Forward Voltage	I <sub>F</sub> =20mA	V <sub>F</sub>	TYP.	3.7	V
			MAX.	3.8	
Reverse Current	V <sub>R</sub> =5V	I <sub>R</sub>	MAX.	50	μ A
Half Intensity Angle	I <sub>F</sub> =20mA	2θ 1/2	TYP.	115(θ <sub>x</sub> )	deg.
				110(θ <sub>y</sub> )	
Chromaticity Coordinates	I <sub>F</sub> =20mA	x	TYP.	0.31	-
		y	TYP.	0.32	-

## Luminous Intensity Rank

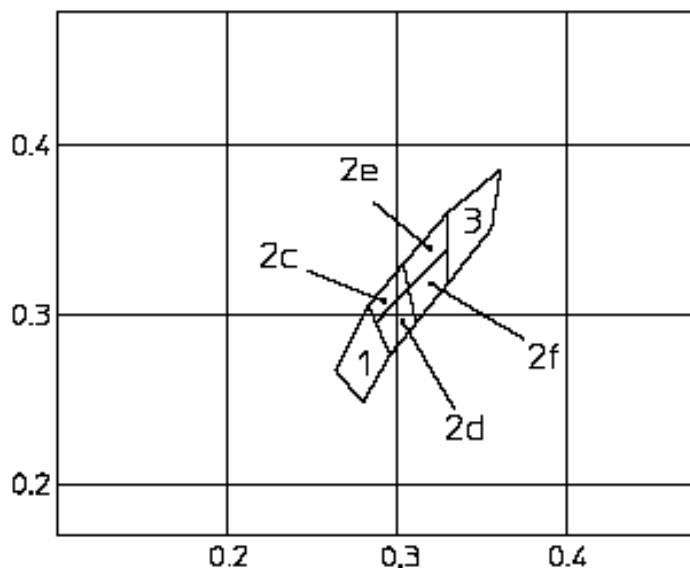
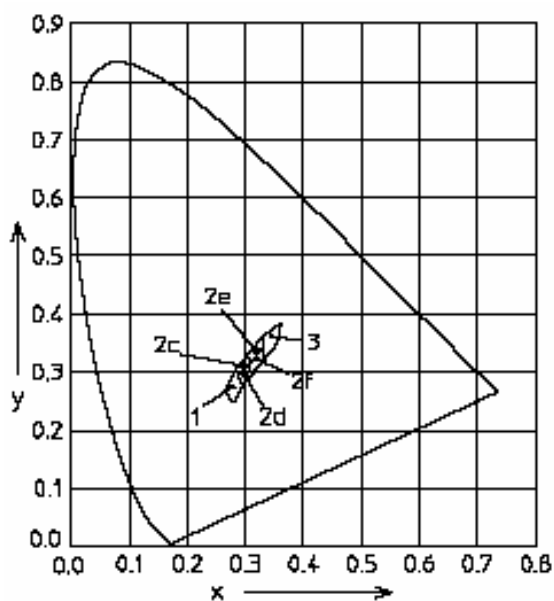
**(T<sub>a</sub>=25°C)**

Intensity Tolerance each Rank : +/-10%

Rank	I <sub>v</sub> (mcd)		Condition
	MIN.	MAX.	
R2	430	500	I <sub>F</sub> =20mA
S1	500	600	
S2	600	720	
T1	720	860	

✳ Please contact our sales staff concerning rank designation.

## Sorting Chart for Chromaticity Coordinates

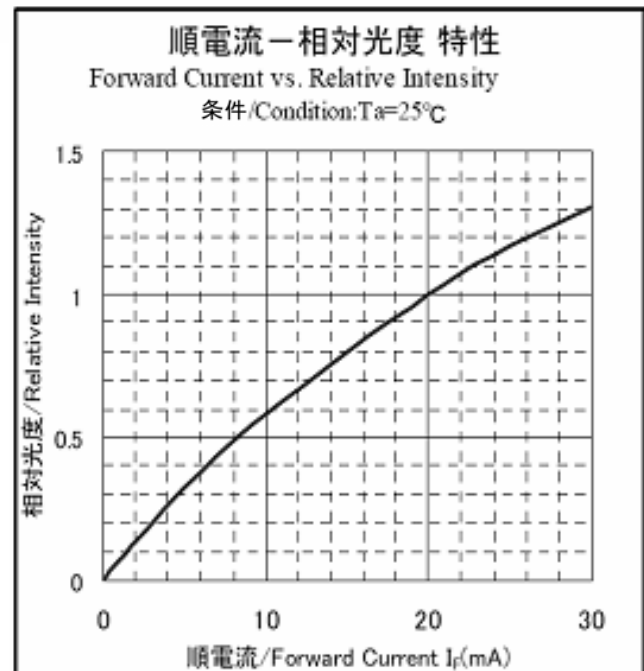
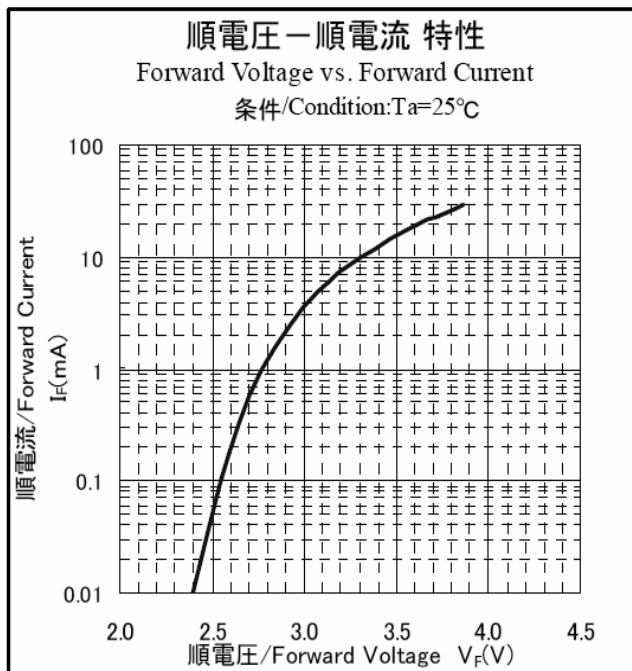
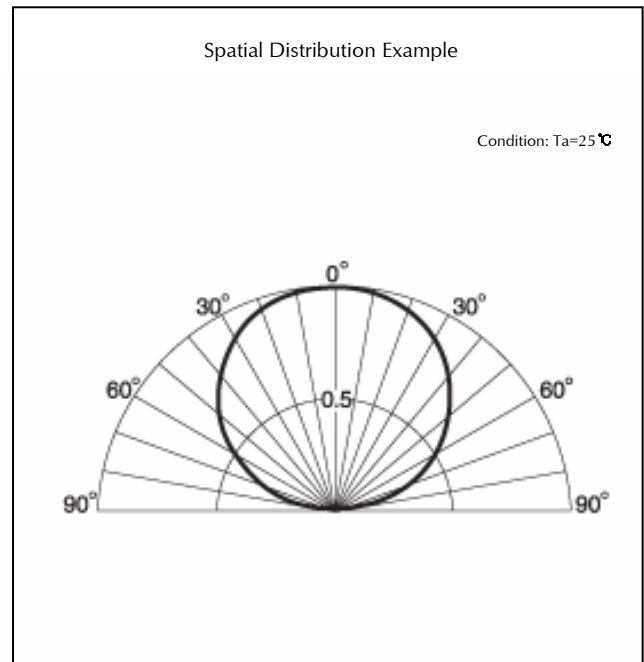
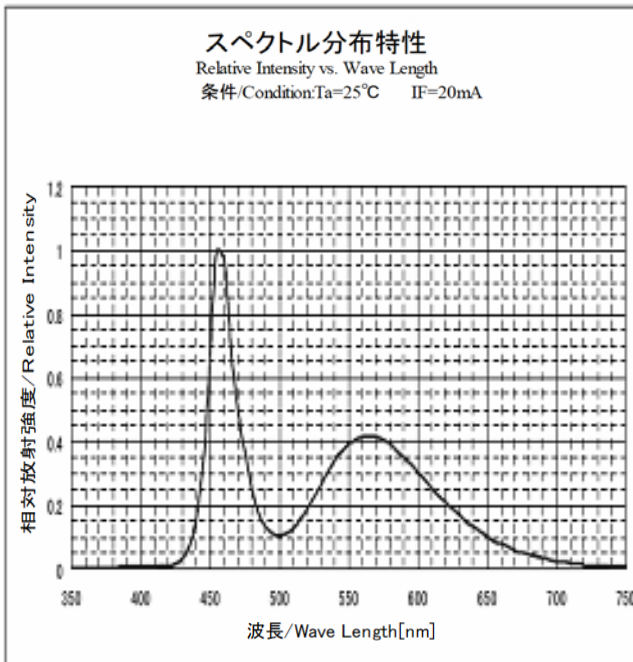


Rank	LEFT DOWN point		LEFT UP point		RIGHT UP point		RIGHT UP point	
	x	y	x	y	x	y	x	y
1	0.280	0.248	0.264	0.267	0.283	0.305	0.296	0.276
2c	0.287	0.295	0.283	0.305	0.304	0.330	0.307	0.315
2d	0.296	0.276	0.287	0.295	0.307	0.315	0.311	0.294
2e	0.307	0.315	0.304	0.330	0.330	0.360	0.330	0.339
2f	0.311	0.294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

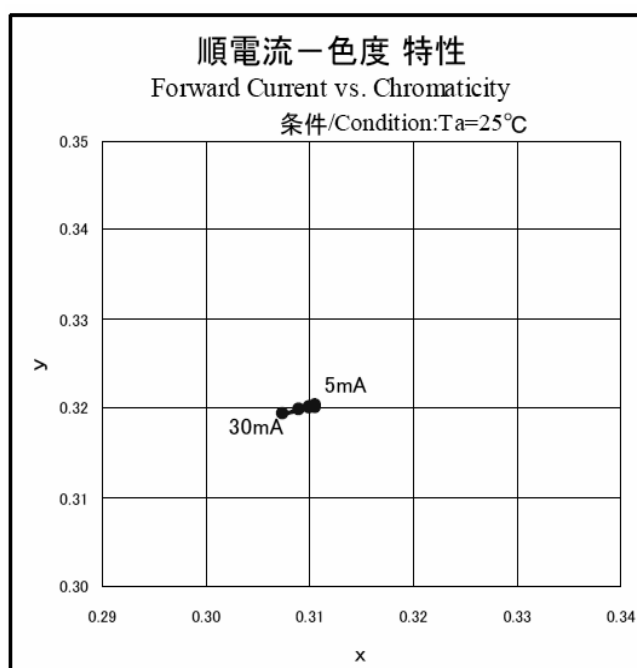
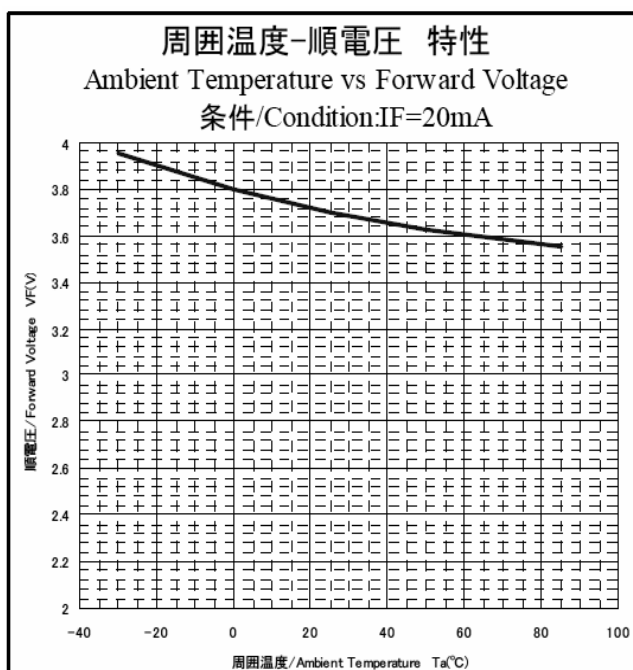
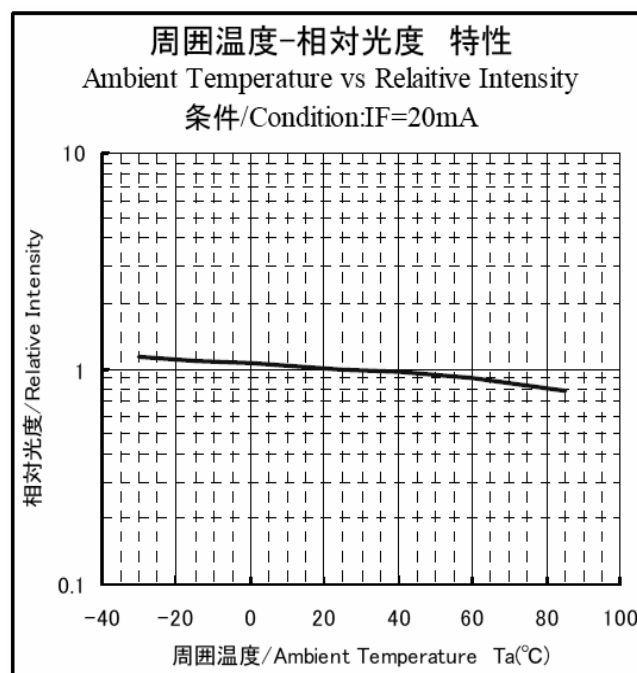
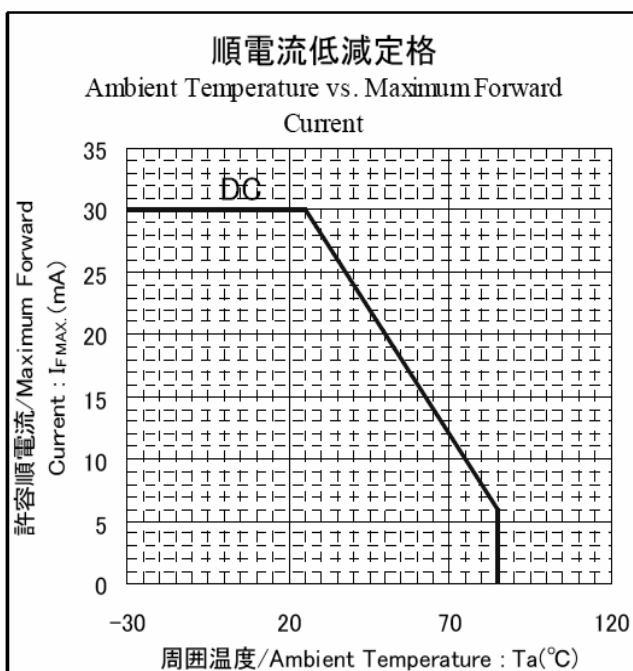
Chromaticity Coordinates Tolerance Each Rank : +/-0.01

✖ Please contact our sales staff concerning rank designation.

## Technical Data

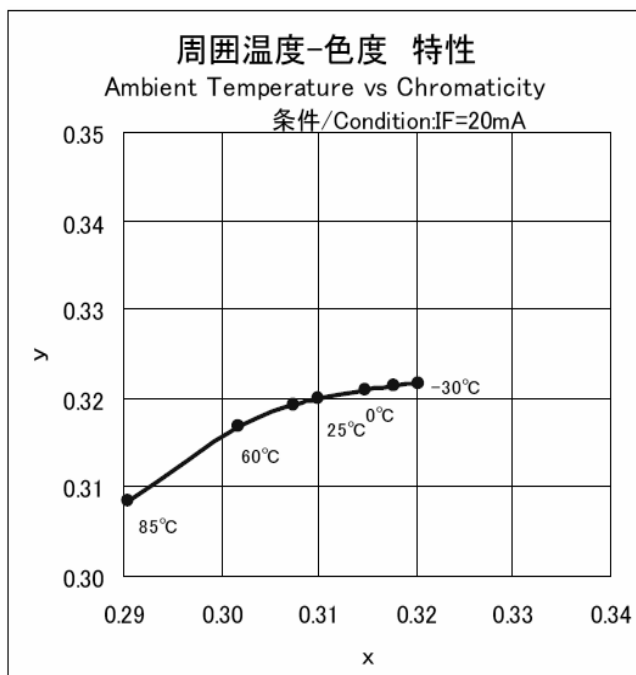


## Technical Data





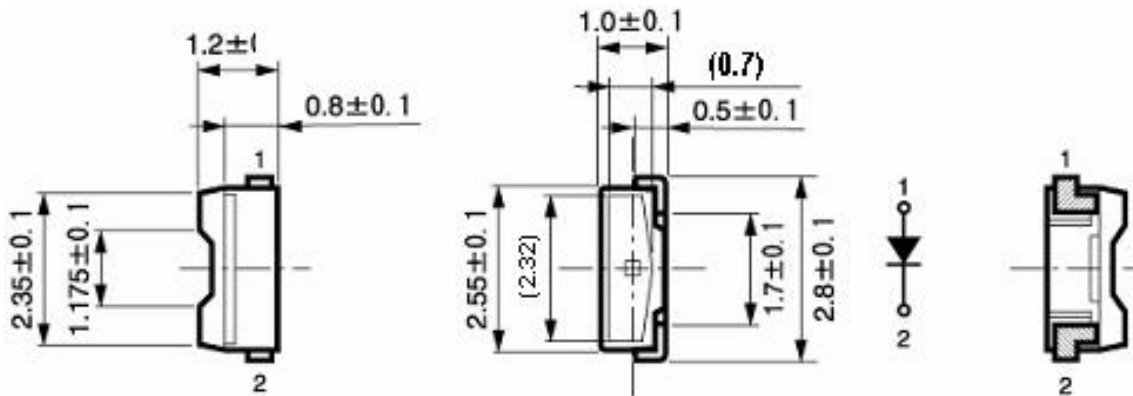
## Technical Data



## Package Dimensions

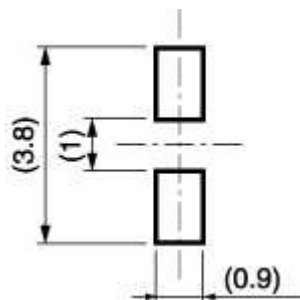
(Unit: mm)

Weight:(6.5)mg



## Recommended Soldering Pattern

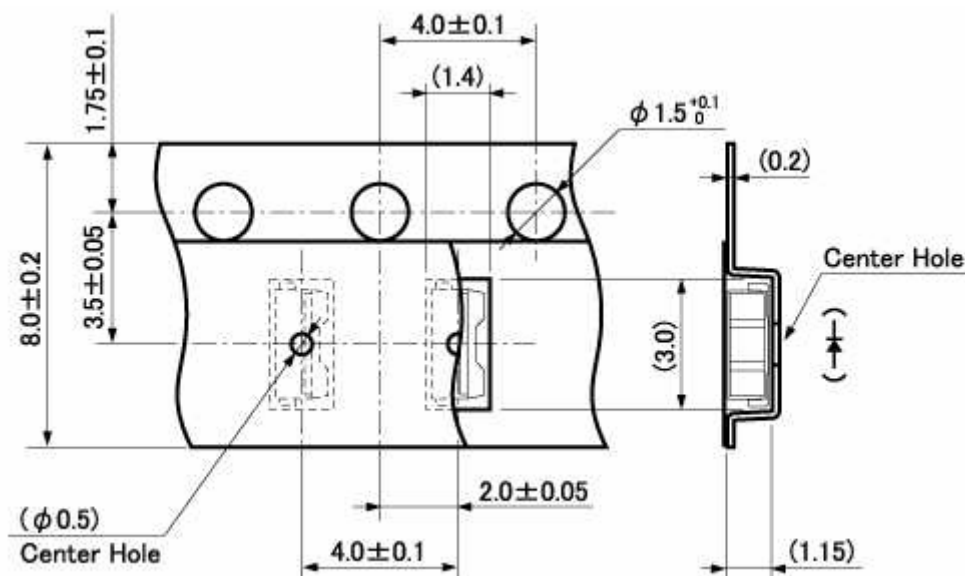
(Unit: mm)



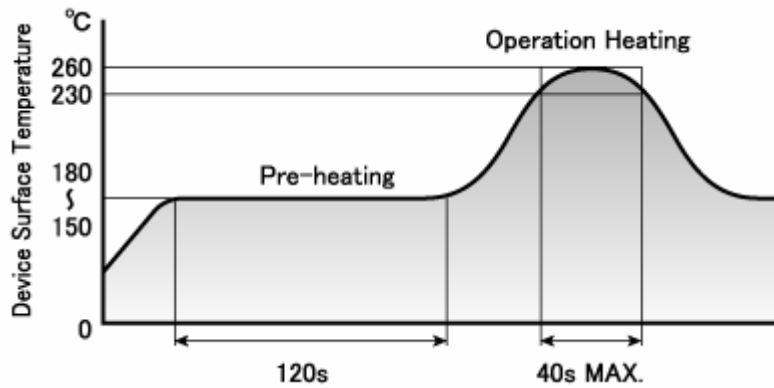
## Taping Specification

(Unit: mm)

Quantity: 3,000pcs/ reel (standard)



## Reflow Soldering Conditions



- 1) The above profile temperature gives the maximum temperature of the LED 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 resin from absorbing moisture.

## 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℃, If = 30mA	1,000 h	0/20
High Temp. Operating Life	EIAJ ED-4701/100(101)	Ta = 85℃, If = 6mA	1,000 h	0/20
Low Temp. Operating Life	EIAJ ED-4701/100(101)	Ta = -30℃, If = 30mA	1,000 h	0/20
Wet High Temp. Operating Life	EIAJ ED-4701/100(102)	Ta = 60℃, 90%, If = 16mA	1,000 h	0/20
Wet High Temp. Storage Life	EIAJ ED-4701/100(103)	Ta = 60℃, 90%	1,000 h	0/20
Thermal Shock	EIAJ ED-4701/100(105)	Ta = -40℃ ~ 100℃ (each 15min.)	200 cycles	0/20
High Temp. Storage Life	EIAJ ED-4701/200(201)	Ta = 100℃	1,000 h	0/20
Low Temp. Storage Life	EIAJ ED-4701/200(202)	Ta = -40℃	1,000 h	0/20
Cycled Temp. Humidity Life	EIAJ ED-4701/200(203)	Ta = -10℃ ~ 65℃, 95%, 24h/cycle	10 cycles	0/20
Resistance to Reflow Soldering	EIAJ ED-4701/300(301)	Preheat : 150℃ ~ 180℃ (120s Max.) Soldering Temp. : 260℃ (5s) Moisture Soak : 30℃, 70%, 72h	Twice	0/20
Electric Static Discharge (ESD)	EIAJ ED-4701/300(304)	C = 100pF, R2 = 1.5KΩ, ±1,000V	once each polarity	0/20
Vibration, Variable Frequency	EIAJ ED-4701/400(403)	98.1m/s <sup>2</sup> (10G), 100 ~ 2KHz, 20min. XYZ each direction	2 h	0/20

## Failure Criteria

Items	Symbols	Conditions	Failure criteria
Luminous Intensity	Iv	If=20mA	Testing Min. Value < Spec. Min. Value x 0.7
Forward Voltage	V <sub>F</sub>	If=20mA	Testing Max. Value > Spec. Max. Value x 1.2
Reverse Current	I <sub>R</sub>	V <sub>R</sub> =5V	Testing Max. Value > Spec. Max. Value x 2.5
Cosmetic Appearance	-	-	Occurrence of notable decoloration, deformation and cracking

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