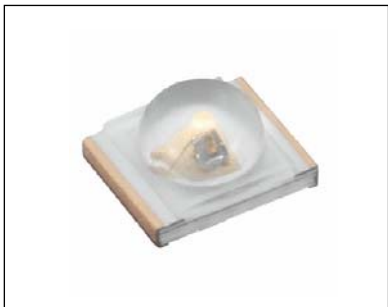




U□1106W Series

Single Color Super Wide Angle Type (h=1.3 mm)

Features

Package	Super Wide Angle Type (h=1.3 mm), Water Clear resin
Product features	• Outer Dimension 2.5 x 2.0 x 1.3mm (L x W x H) • Temperature range Storage Temperature : -40°C ~ 120°C Operating Temperature : -40°C ~ 100°C • Lead-free soldering compatible • RoHS compliant
Dominant wavelength	Blue : 470nm(UB) Green : 525nm(UG) Red : 630nm(UR)
Half Intensity Angle	UB, UG : 128 deg. UR : 140 deg.
Die materials	UB, UG : InGaN, UR : AlGaInP
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	2,500pcs per reel in a 8mm width tape. (Standard) Reel diameter: ϕ 180mm
ESD	InGaN : 1kV(HBM), AlGaInP : More than 2kV(HBM)

Recommended Applications

Amusement Equipment, Electric Household Appliances, OA/FA, Other General Applications

Color and Luminous Intensity

(Ta=25°C)

Part No.	Material	Emitted Color	Lens Color	Dominant Wavelength λ_d (nm)		Luminous Intensity I_v (mcd)		
				TYP.	I_F	MIN.	TYP.	I_F
UB1106W	InGaN	Blue	Water Clear	470	10	10	33	10
UG1106W	InGaN	Green		525	10	33	100	10
UR1106W	AlGaInP	Red		630	20	47	100	20

Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	Absolute Maximum Ratings			Unit
		UB	UG	UR	
Power Dissipation	P_d	84	84	87	mW
Forward Current	I_F	20	20	30	mA
Pulse Forward Current ※1	I_{FRM}	100	100	100	mA
Derating (Ta=60°C or higher)	ΔI_F	0.45	0.45	1.00※2	mA/°C
	ΔI_{FRM}	2.22	2.22	3.33※2	mA/°C
Reverse Voltage	V_R	5	5	5	V
Operating Temperature	T_{opr}	-40~+100			°C
Storage Temperature	T_{stg}	-40~+120			°C

※1 I_{FRM} Measurement condition : Pulse Width ≤ 1 ms., Duty $\leq 1/20$.

※2 Temperature Condition : Ta=85°C or higher.

Electro-Optical Characteristics(UB,UG)

(Ta=25°C)

Item	Conditions	Symbol	Characteristics			Unit
				UB	UG	
Forward Voltage	I _F =10mA	V _F	TYP.	3.3	3.3	V
			MAX.	3.8	3.8	
Reverse Current	V _R =5V	I _R	MAX.	100	100	μ A
Peak Wavelength	I _F =10mA	λ _p	TYP.	465	522	nm
Dominant Wavelength	I _F =10mA	λ _d	TYP.	470	525	nm
Spectral Line Half Width	I _F =10mA	Δλ	TYP.	26	35	nm
Half Intensity Angle	I _F =10mA	2θ 1/2	TYP.	128	128	deg.

Electro-Optical Characteristics(UR)

(Ta=25°C)

Item	Conditions	Symbol	Characteristics		Unit
				UR	
Forward Voltage	I _F =20mA	V _F	TYP.	2.2	V
			MAX.	2.8	
Reverse Current	V _R =5V	I _R	MAX.	100	μ A
Peak Wavelength	I _F =20mA	λ _p	TYP.	636	nm
Dominant Wavelength	I _F =20mA	λ _d	TYP.	630	nm
Spectral Line Half Width	I _F =20mA	Δλ	TYP.	15	nm
Half Intensity Angle	I _F =20mA	2θ 1/2	TYP.	140	deg.

Luminous Intensity Rank

(Ta=25°C)

Intensity Tolerance each Rank : +/- 10%

Rank	I _v (mcd)					
	UB		UG		UR	
	I _F =10mA		I _F =10mA		I _F =20mA	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
BA	10	15				
BB	15	22				
BC	22	33				
BD	33	47	33	47		
BE	47	68	47	68	47	68
BF			68	100	68	100
CA			100	150	100	150
CB			150	220	150	220
CC			220	330	220	330
CD					330	470

Please contact our sales staff concerning rank designation.

Color Tone Groups (λ_d)

(Ta=25°C)

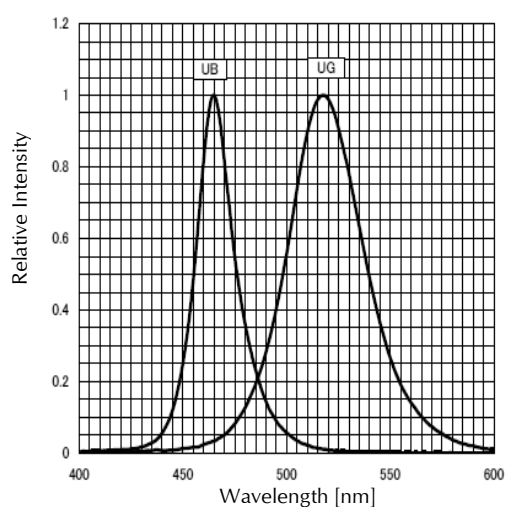
Tolerance: +/- 1nm

Rank	Dominant Wavelength λ_d (nm)			
	UG		UR	
	I _F =10mA		I _F =20mA	
	MIN.	MAX.	MIN.	MAX.
A	515	520	620	626
B	520	525	626	632
C	525	530	632	638
D	530	535		

Please contact our sales staff concerning rank designation.

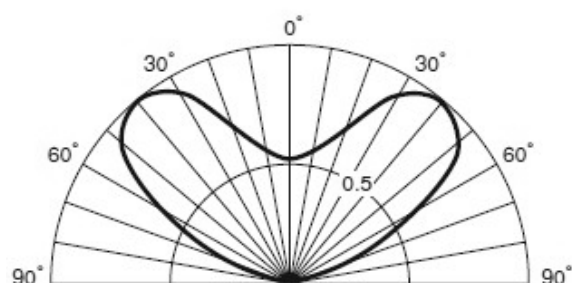
Technical Data(UB,UG)

Spectral Distribution
Relative Intensity vs. Wavelength
Condition : $T_a = 25^\circ\text{C}$, $I_F = 10\text{mA}$

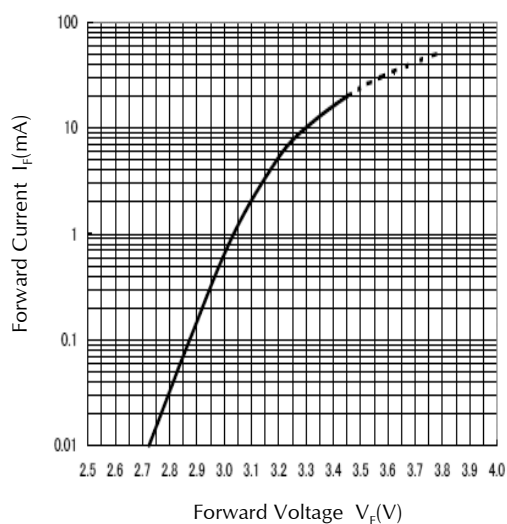


Spatial Distribution Example

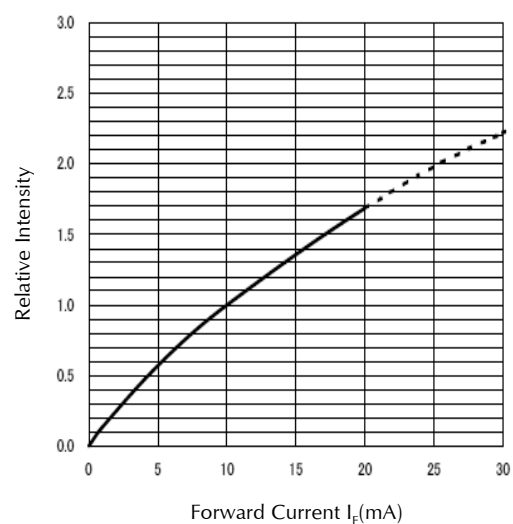
Condition : $T_a = 25^\circ\text{C}$



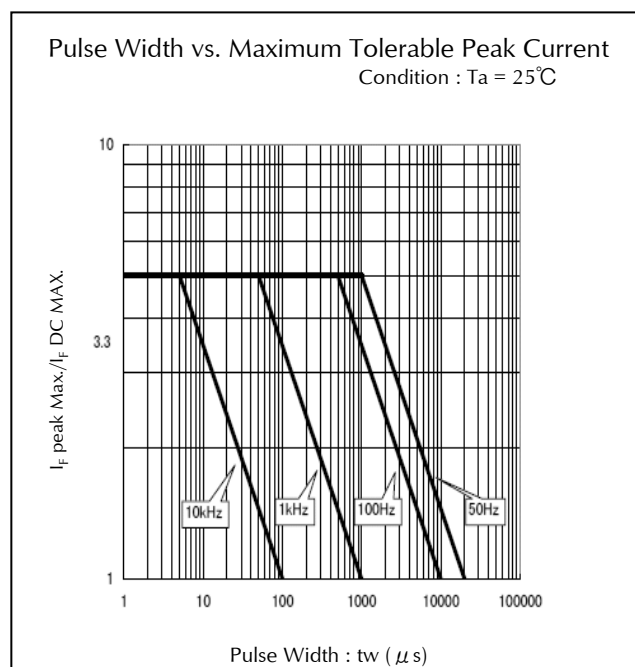
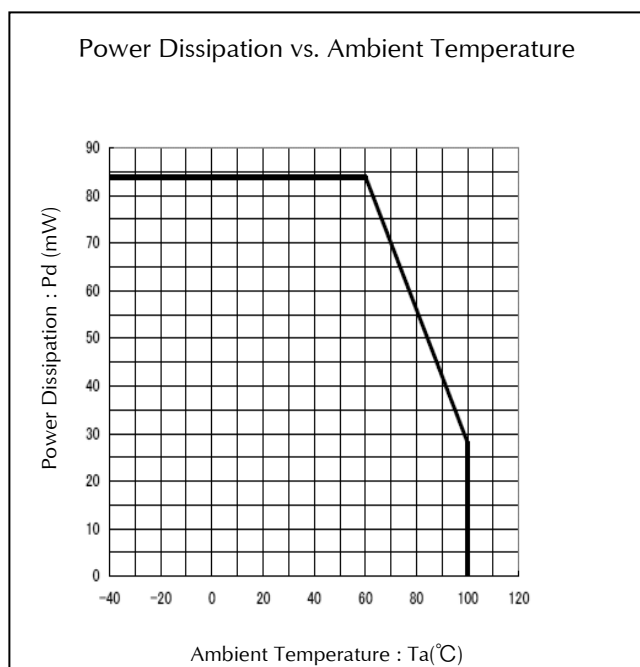
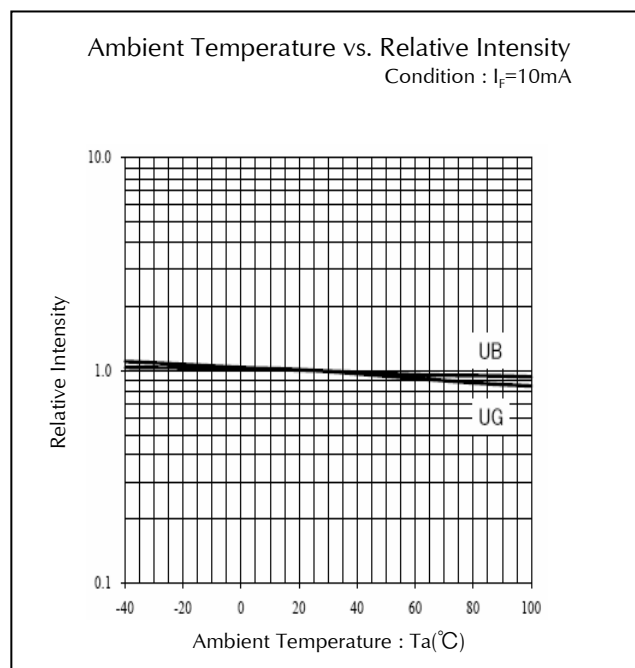
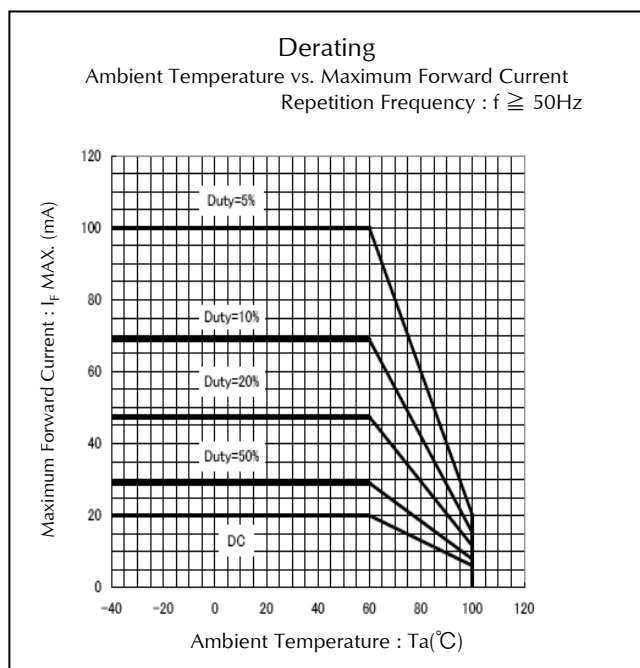
Forward Voltage vs. Forward Current
Condition : $T_a = 25^\circ\text{C}$



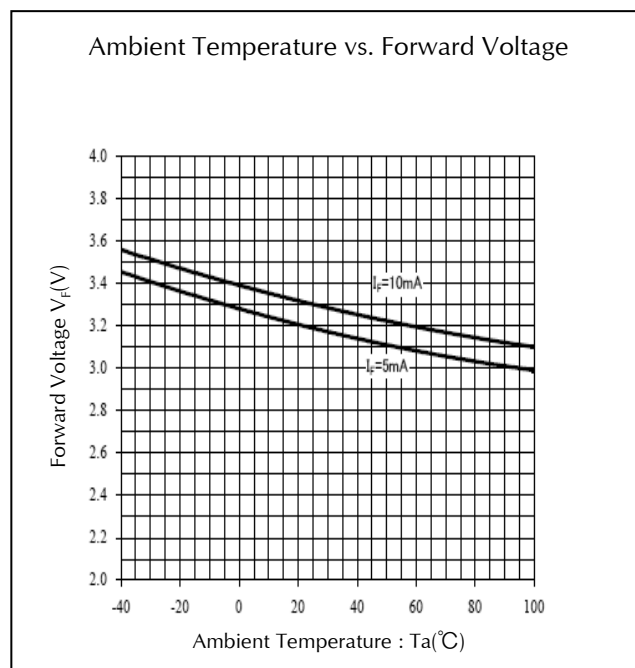
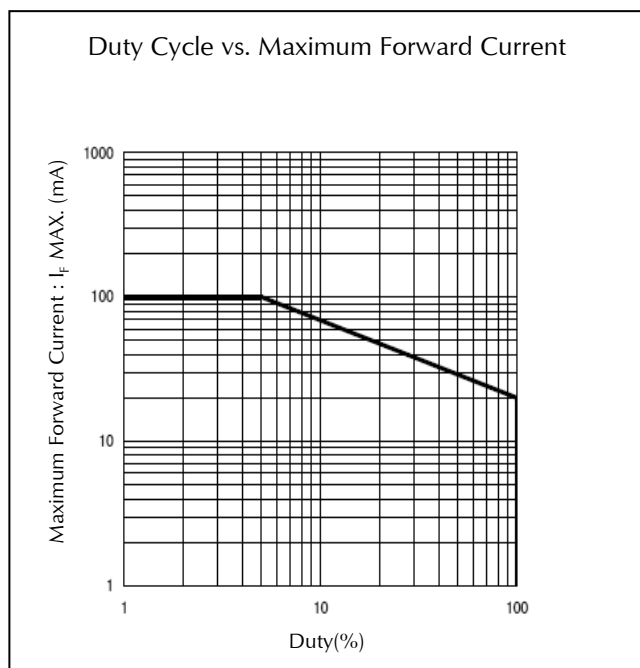
Forward Current vs. Relative Intensity
Condition : $T_a = 25^\circ\text{C}$



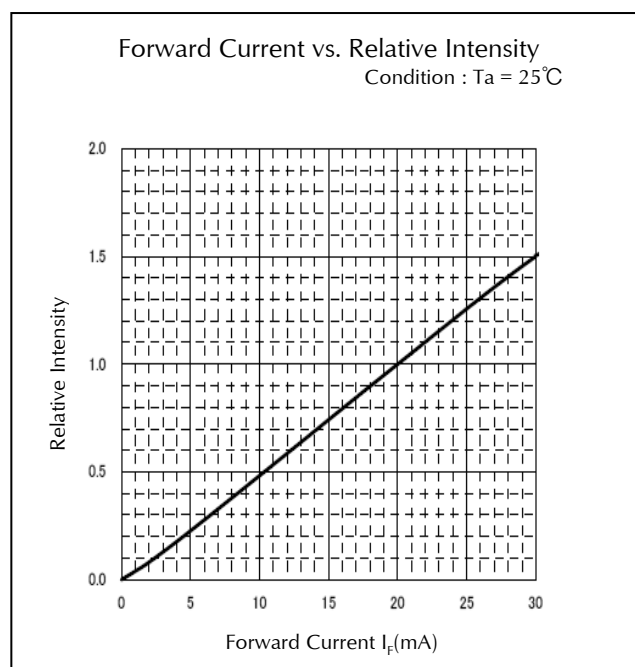
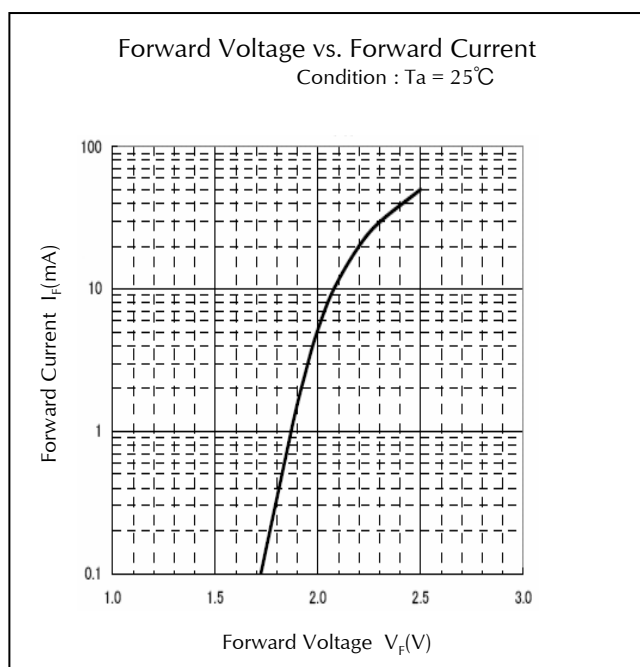
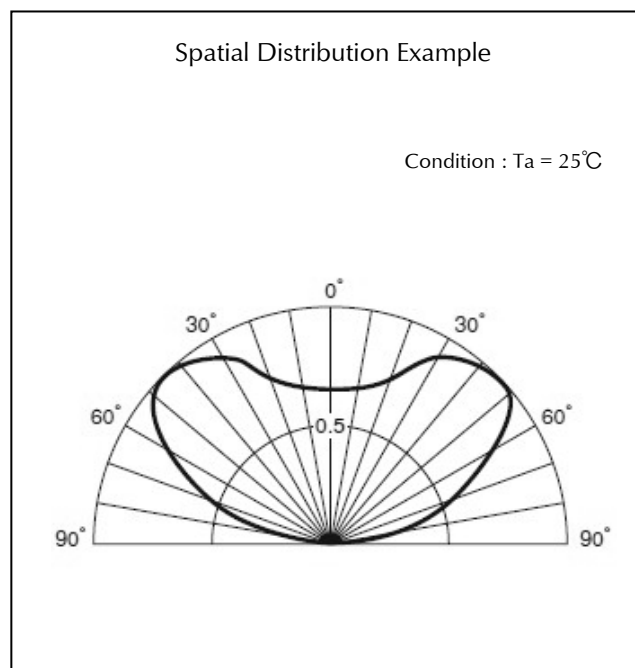
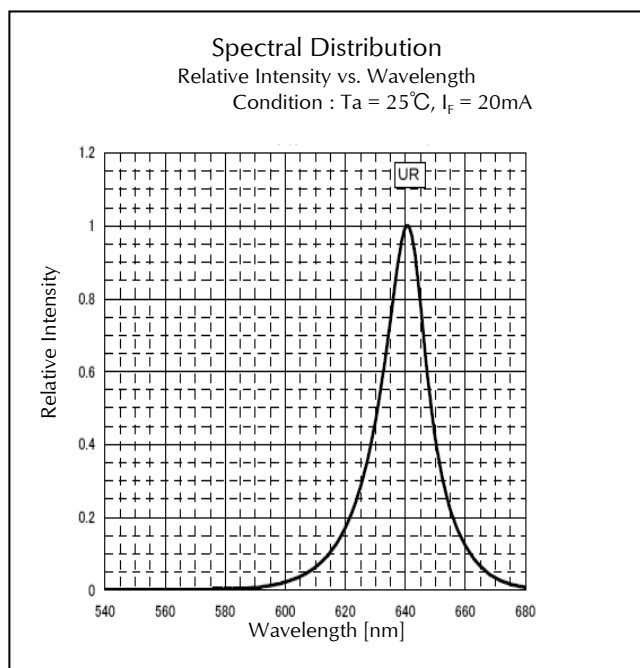
Technical Data(UB,UG)



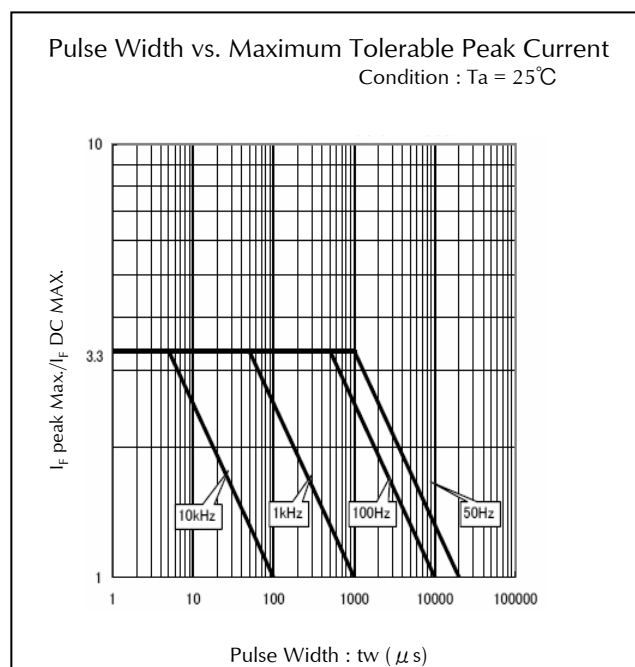
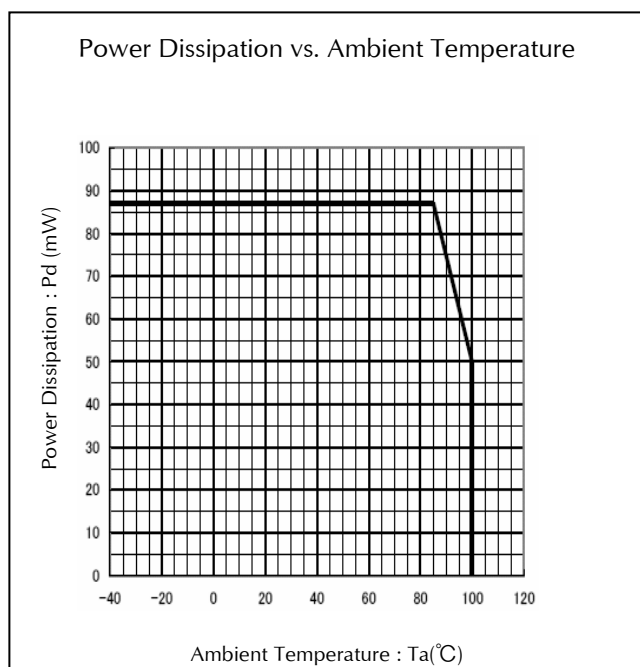
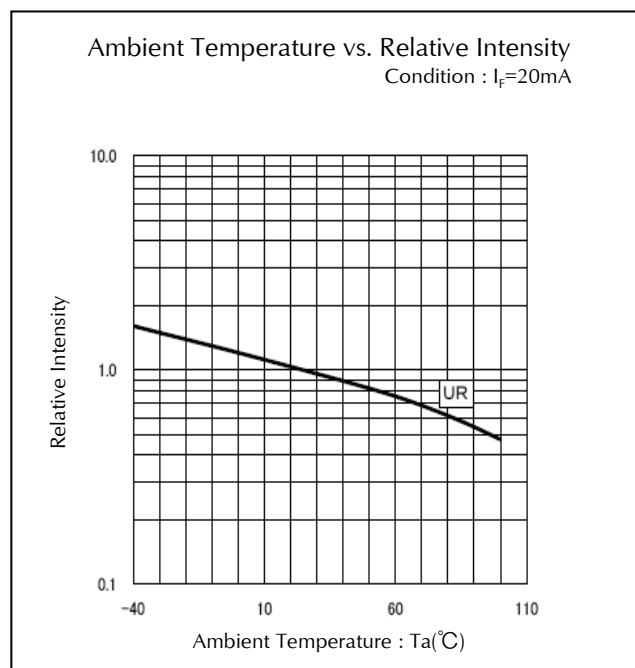
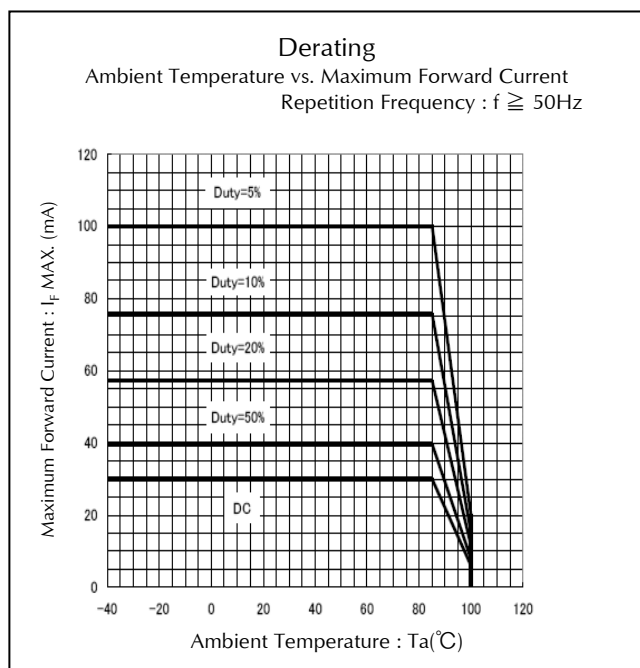
Technical Data(UB,UG)



Technical Data(UR)

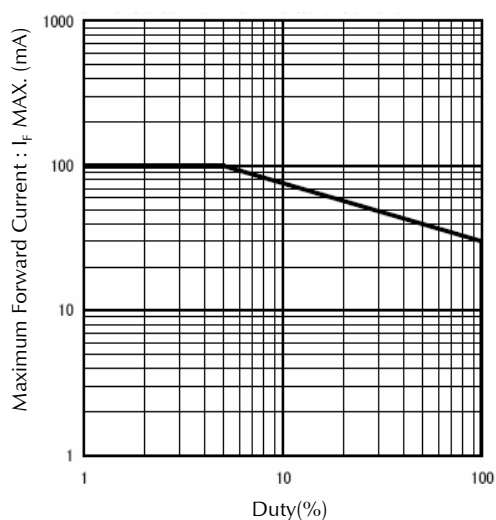


Technical Data(UR)

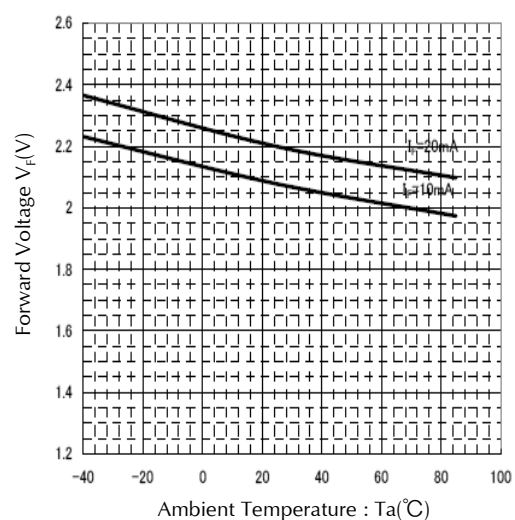


Technical Data(UR)

Duty Cycle vs. Maximum Forward Current



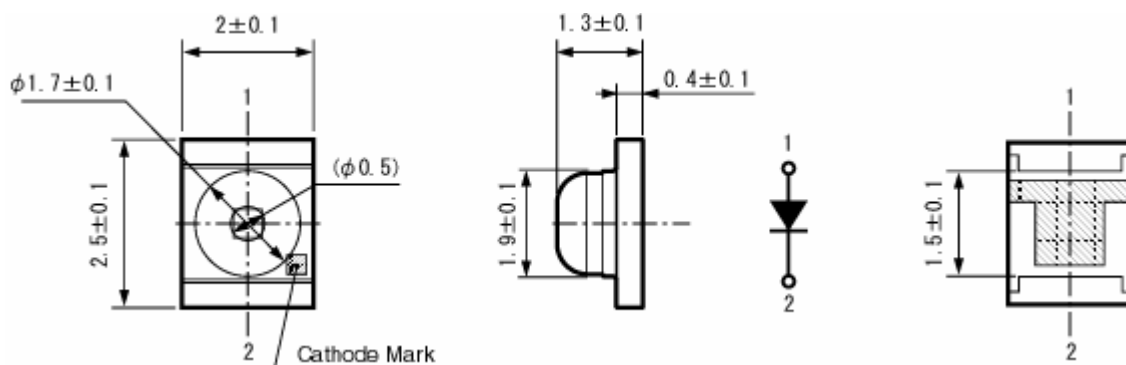
Ambient Temperature vs. Forward Voltage



Package Dimensions

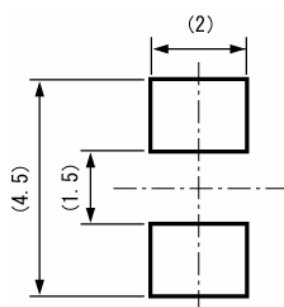
(Unit: mm)

Weight: (8.0)mg



Recommended Soldering Pattern

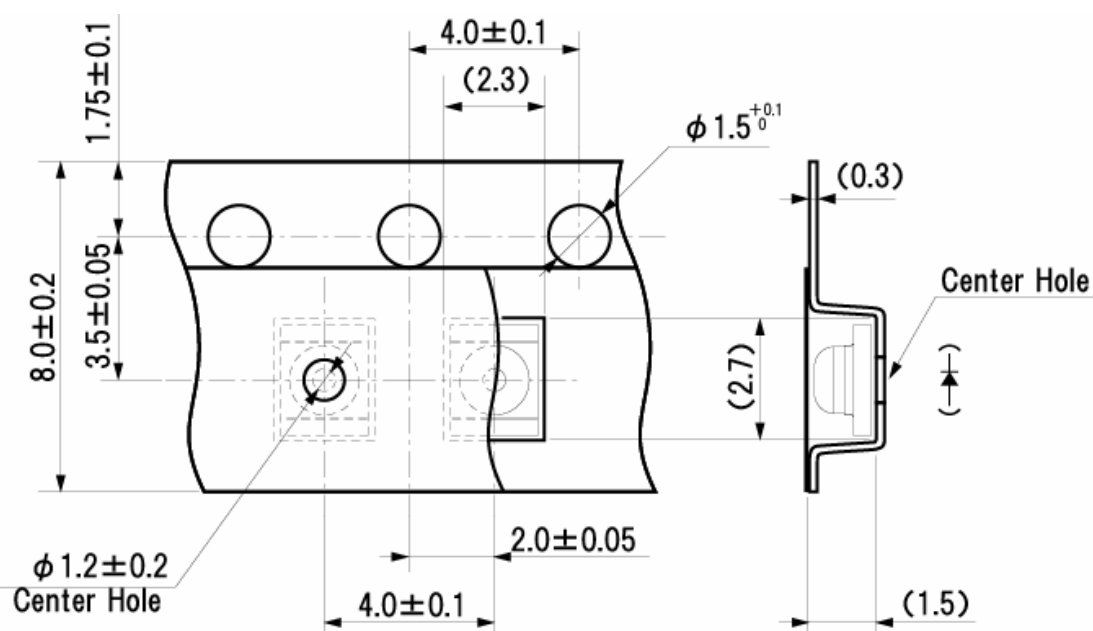
(Unit: mm)



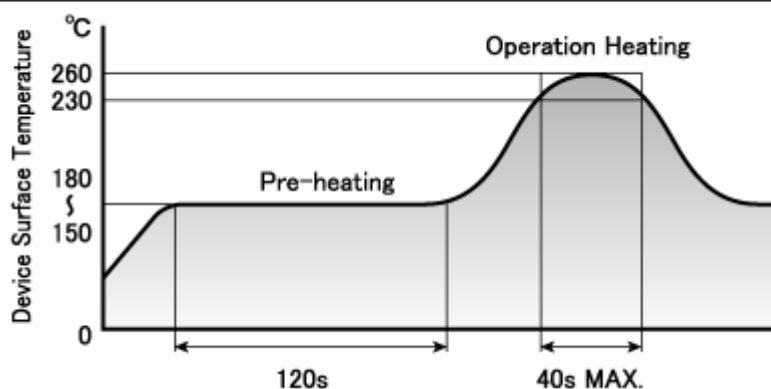
Taping Specification

(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. (6°C maximum)

Manual Soldering Conditions

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

Reliability Testing Result(UB,UG)

Reliability Testing Result	Applicable Standard	Testing Conditions	Duration	Failure
Room Temp. Operating Life	EIAJ ED-4701/100(101)	Ta = 25°C, I _F = Maxium Rated Current	1,000 h	0/25
Resistance to Soldering Heat	EIAJ ED-4701/300(301)	Pre-heating : 150~180°C 120s Max. Operation Heating : 230°C 40s Max. Peak Temperature : 260°C	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)	200 cycles	0/25
High Temp. Operating Life	EIAJ ED-4701/100(101)	Ta = 85°C, I _F = 9mA	1,000 h	0/25
Humidity Temp. Operating Life	EIAJ ED-4701/100(102)	Ta = 60±2°C, RH = 90±5%, I _F = Maxium Rated Current	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

Reliability Testing Result(UR)

Reliability Testing Result	Applicable Standard	Testing Conditions	Duration	Failure
Room Temp. Operating Life	EIAJ ED-4701/100(101)	Ta = 25°C, I _F = Maxium Rated Current	1,000 h	0/25
Resistance to Soldering Heat	EIAJ ED-4701/300(301)	Pre-heating : 150~180°C 120s Max. Operation Heating : 230°C 40s Max. Peak Temperature : 260°C	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)	200 cycles	0/25
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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	I _V	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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