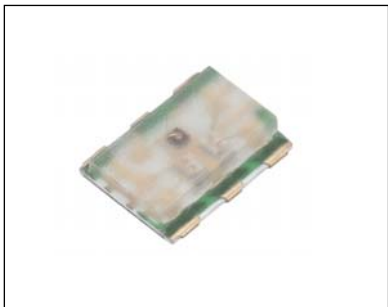




Pb-free
HEAT

STANLEY

1315C Series

Top View Type Tri-color

Features

Package	Top View Type, Milky White Resin								
Product features	• Outer Dimension 1.65 x 2.1 x 0.4 mm(L x W x H) • Temperature range. Storage Temperature : -40°C~100°C Operating Temperature : -40°C~ 85°C • Lead-free soldering compatible • RoHS compliant								
Dominant wavelength	<table><tr><td>Blue</td><td>: 470nm (KB)</td></tr><tr><td>Green</td><td>: 533nm (KG)</td></tr><tr><td>Orange</td><td>: 605nm (FA)</td></tr><tr><td>Red</td><td>: 626nm (FR)</td></tr></table>	Blue	: 470nm (KB)	Green	: 533nm (KG)	Orange	: 605nm (FA)	Red	: 626nm (FR)
Blue	: 470nm (KB)								
Green	: 533nm (KG)								
Orange	: 605nm (FA)								
Red	: 626nm (FR)								
Half Intensity Angle	<table><tr><td>KB/KG</td><td>: $\theta_x = 120 \text{ deg.}, \theta_y = 135 \text{ deg.}$</td></tr><tr><td>FA/FR</td><td>: $\theta_x = 110 \text{ deg.}, \theta_y = 125 \text{ deg.}$</td></tr></table>	KB/KG	: $\theta_x = 120 \text{ deg.}, \theta_y = 135 \text{ deg.}$	FA/FR	: $\theta_x = 110 \text{ deg.}, \theta_y = 125 \text{ deg.}$				
KB/KG	: $\theta_x = 120 \text{ deg.}, \theta_y = 135 \text{ deg.}$								
FA/FR	: $\theta_x = 110 \text{ deg.}, \theta_y = 125 \text{ deg.}$								
Die materials	KB,KG : InGaN, FA,FR : 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	4,000pcs per reel in a 8mm width tape. (Standard) Reel diameter: $\phi 180\text{mm}$								
ESD	1kV (HBM)								

Recommended Applications

Cellular Phone, Mobile Equipment

Color Variations and Luminous Intensity

(Ta=25°C)

Part No.	Die Name	Material	Emitted Color	Lens Color	Dominant Wavelength λd (nm)		Luminous Intensity I_v (mcd)		
					TYP.	I _F	MIN.	TYP.	I _F
FAGB1315C	KB	InGaN	Blue	Milky White	470	10	22	43	10
	KG	InGaN	Green		533	10	105	156	10
	FA	AlGaInP	Orange		605	10	30	60	10
FRGB1315C	KB	InGaN	Blue	Milky White	470	10	22	43	10
	KG	InGaN	Green		533	10	105	156	10
	FR	AlGaInP	Red		626	10	26	52	10

※Note : The luminous intensity(I_v) and dominant wavelength(λd) above are the setup values of the sorting machine.

(Tolerance : $I_v \dots \pm 10\%$, $\lambda d \dots \pm 2\text{nm}$)

Absolute Maximum Ratings

(Ta=25°C)

Item		Symbol	Absolute Maximum Ratings				Unit
			KB	KG	FA	FR	
Power Dissipation		P_d	98	98	81	81	mW
Total Value of Power Dissipation		P_d	150 ^{※1}				mW
Forward Current (One diode lighted.)		I_F	25	25	30	30	mA
Forward Current (All diodes lighted.)		I_F	15	15	15	15	mA
Pulse Forward Current ^{※2}		I_{FRM}	100	100	100	100	mA
Derating (Ta=25°C or higher)	DC(One diode lighted.)	ΔI_F	0.33	0.33	0.40	0.40	mA/°C
	DC(All diodes lighted.)		0.20	0.20	0.20	0.20	mA/°C
	Pulse	ΔI_{FRM}	1.00	1.00	1.00	1.00	mA/°C
Reverse Voltage		V_R	5	5	5	5	V
Operating Temperature		T_{opr}	-40~+85				°C
Storage Temperature		T_{stg}	-40~+100				°C

※1 The maximum power dissipation at the time of Simultaneous three diodes lighting

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

Electro-Optical Characteristics

(Ta=25°C)

Item		Symbol	Characteristics					Unit
	Conditions			KB	KG	FA	FR	
Forward Voltage	I _F =10mA	V _F	TYP.	3.2	3.2	2.0	2.0	V
			MAX.	3.7	3.7	2.5	2.5	
Reverse Current	V _R =5V	I _R	MAX.	100	100	100	100	μ A
Peak Wavelength	I _F =10mA	λ _p	TYP.	465	520	609	635	nm
Dominant Wavelength	I _F =10mA	λ _d	TYP.	470	533	605	626	nm
Spectral Line Half Width	I _F =10mA	Δ λ	TYP.	25	35	15	15	nm
Half Intensity Angle	I _F =10mA	2 θ 1/2	TYP.	120(θ x)	120(θ x)	110(θ x)	110(θ x)	deg.
				135(θ y)	135(θ y)	125(θ y)	125(θ y)	

Note: The dominant wavelength (λ_d) above is the setup value of the sorting machine.

(Tolerance: λ_d ...±2nm)

Luminous Intensity Rank

(Ta=25°C)

Intensity Tolerance each Rank : +/- 10%

Rank	I _V (mcd)											
	FAGB1315C						FRGB1315C					
	KB		KG		FA		KB		KG		FR	
	I _F =10mA						I _F =10mA					
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
A	22	38	105	182	30	60	22	38	105	182	26	45
B	38						38					
C	22	38	182				22	38	182			
D	38			38								
E	22	38	105	182	60		22	38	105	182	45	
F	38						38					
G	22	38	182				22	38	182			
H	38			38								

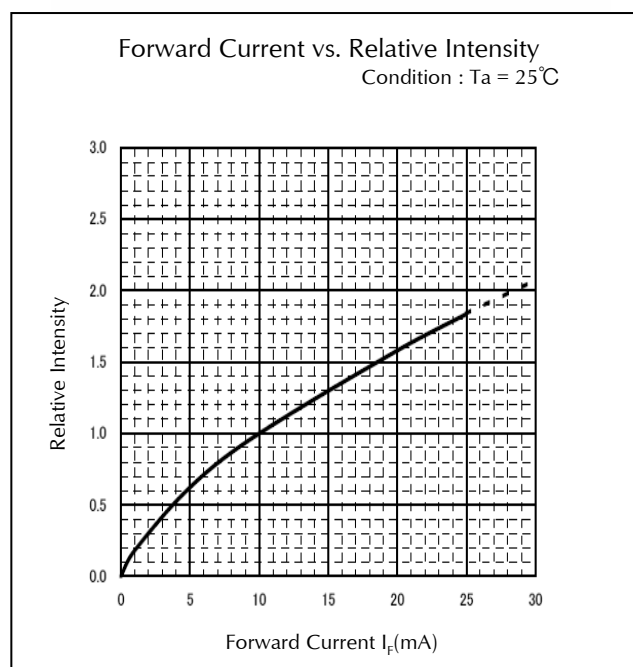
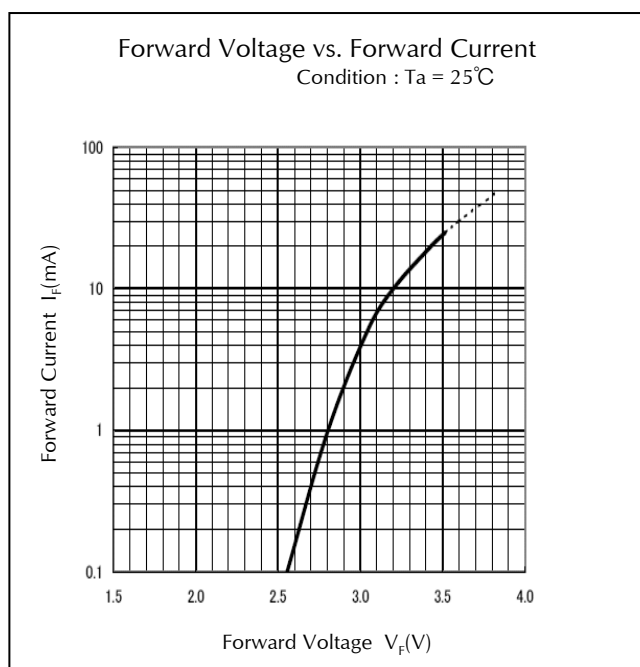
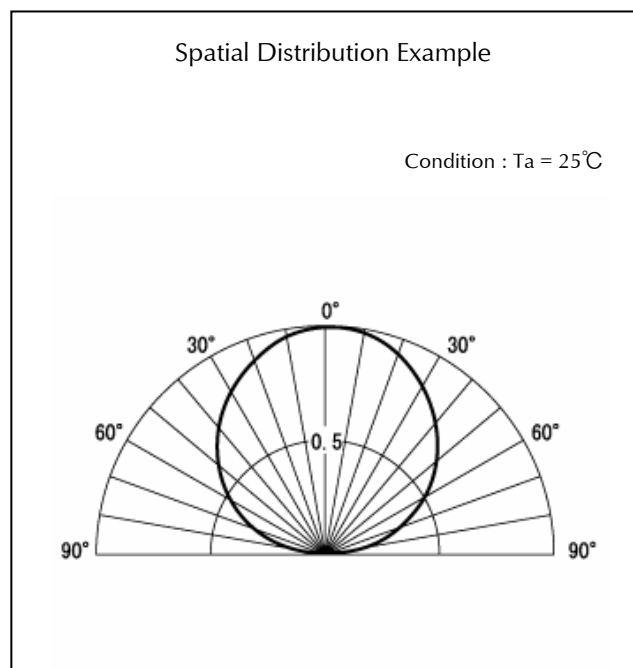
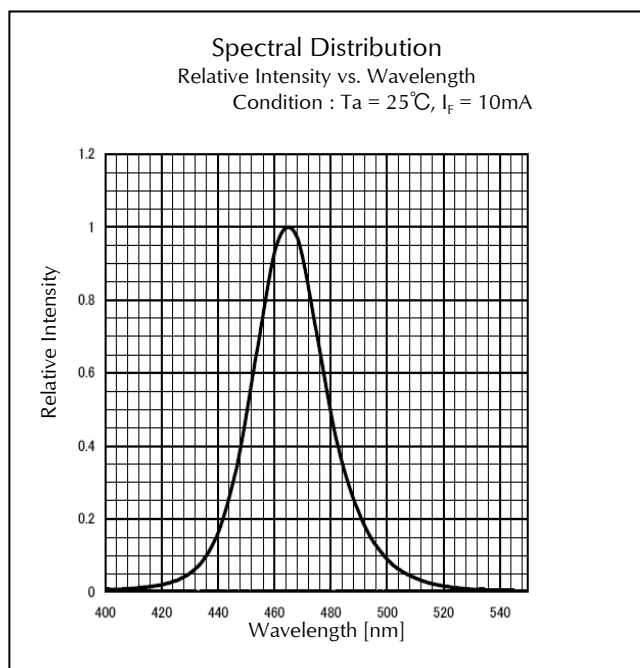
Color Tone Groups (λ_d)

(Ta=25°C)

Tolerance: +/- 2nm

Rank	Dominant Wave Length λ d(nm)											
	FAGB1315C						FRGB1315C					
	KB		KG		FA		KB		KG		FR	
	I _F =10mA						I _F =10mA					
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
A	460	470	515	550	595	613	460	470	515	550	615	635
B	470	480					470	480				

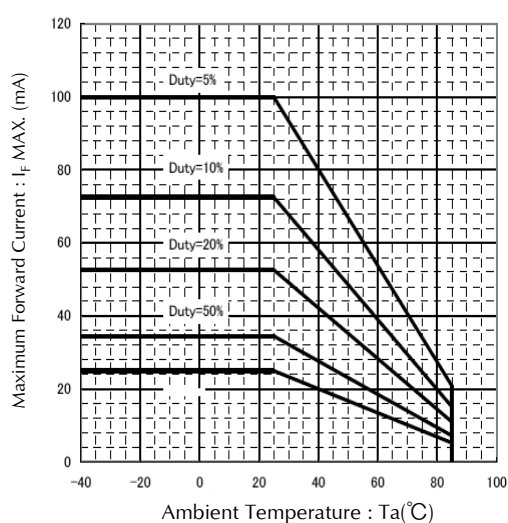
Technical Data(KB)



Technical Data(KB)

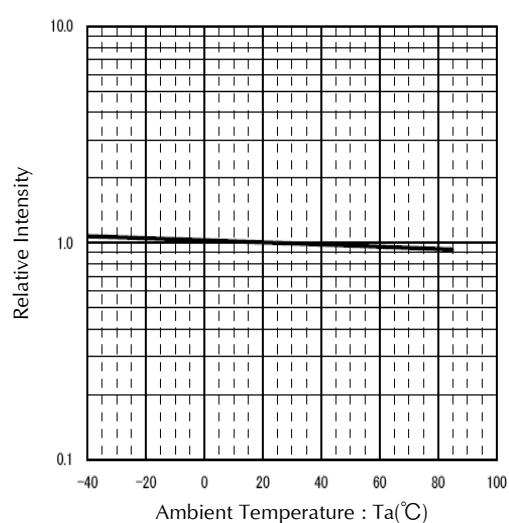
Derating

Ambient Temperature vs. Maximum Forward Current
Repetition Frequency : $f \geq 50\text{Hz}$

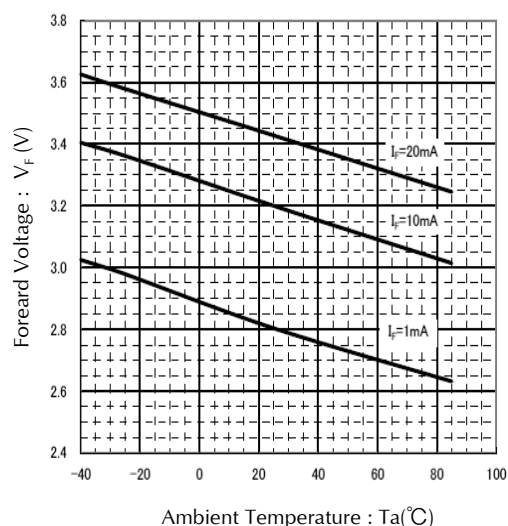


Ambient Temperature vs. Relative Intensity

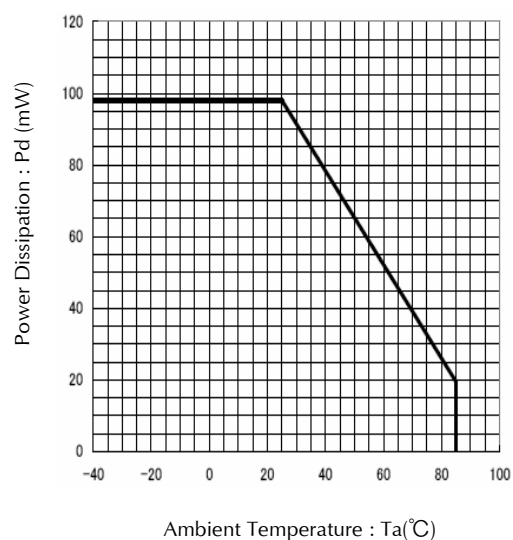
Condition : $I_F=10\text{mA}$



Ambient Temperature vs. Forward Voltage

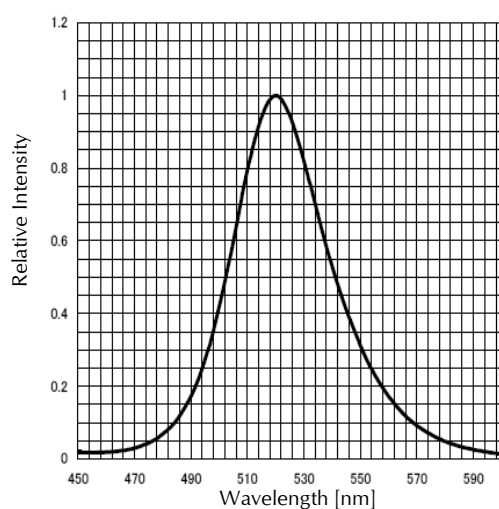


Power Dissipation vs. Ambient Temperature



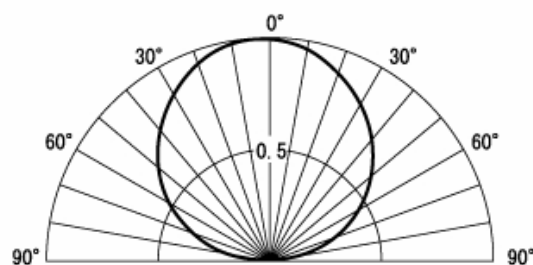
Technical Data(KG)

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

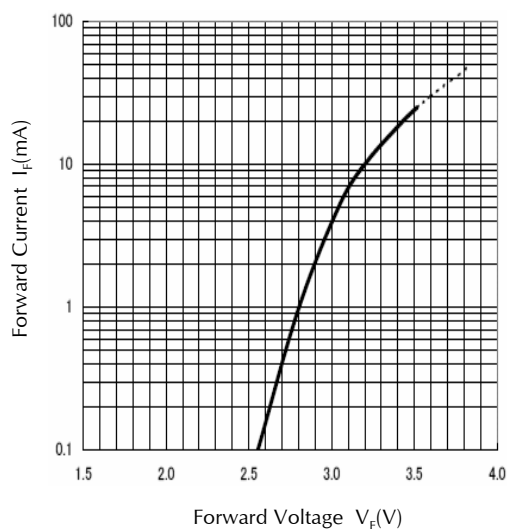


Spatial Distribution Example

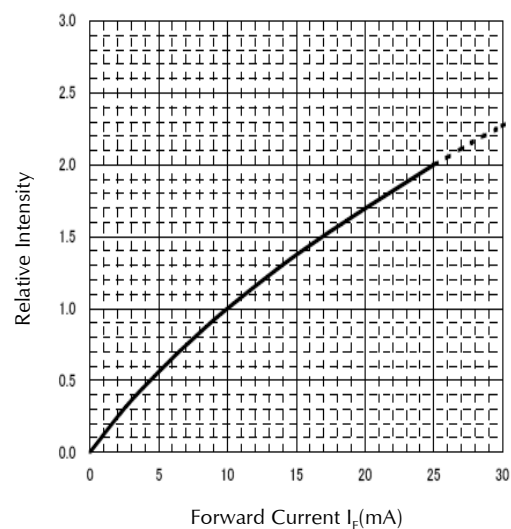
Condition : $T_a = 25^\circ\text{C}$



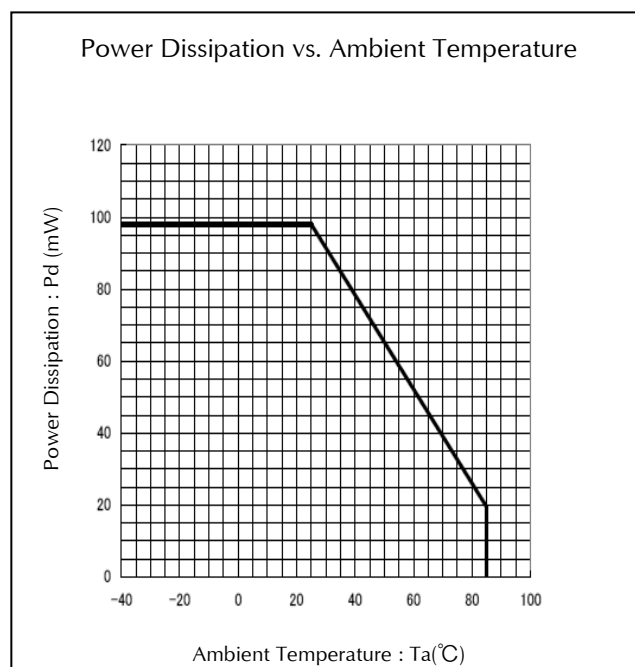
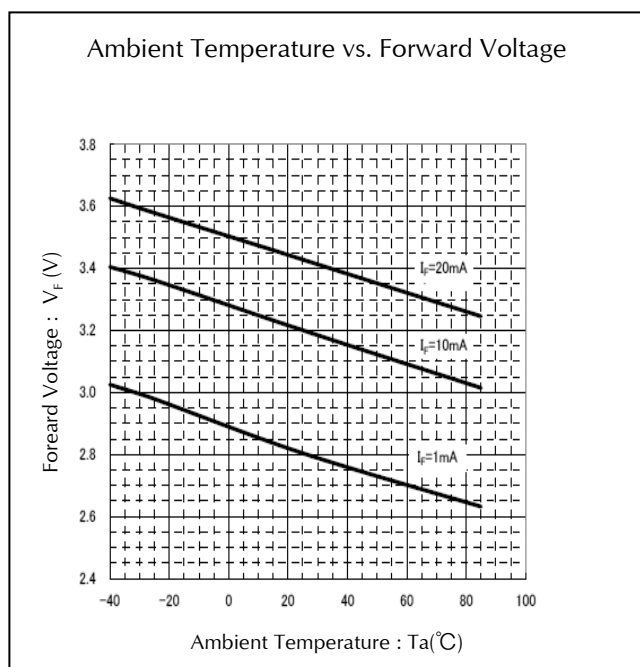
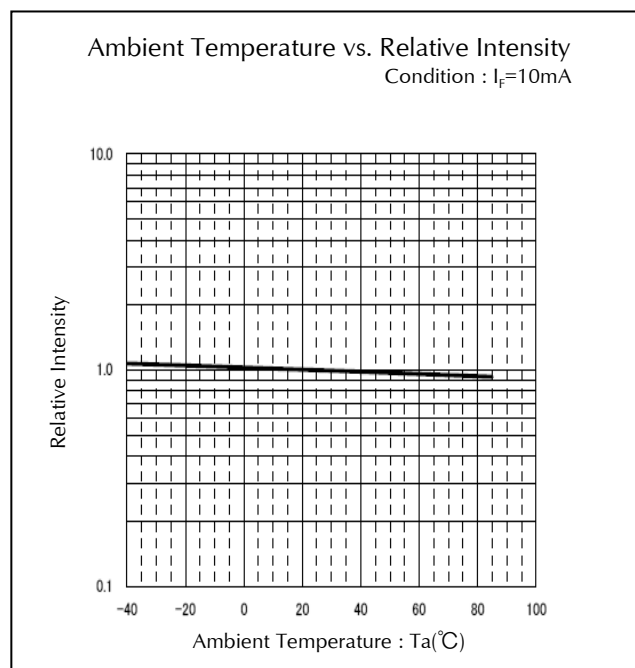
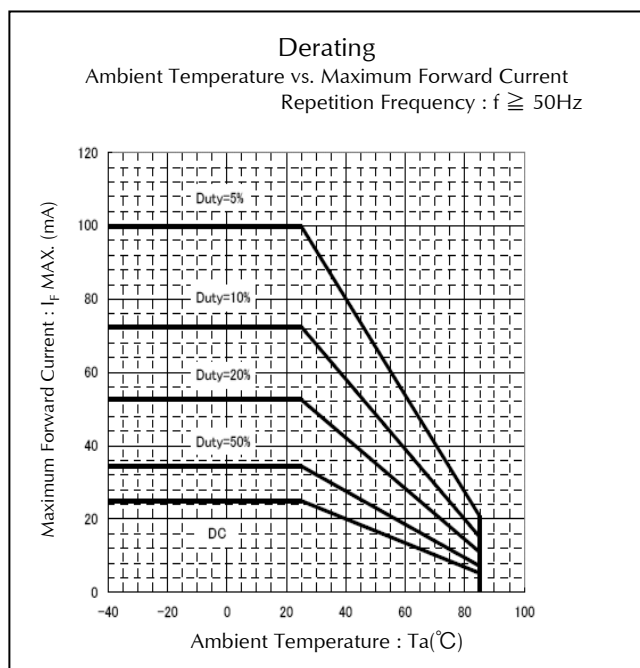
Forward Voltage vs. Forward Current
Condition : $T_a = 25^\circ\text{C}$



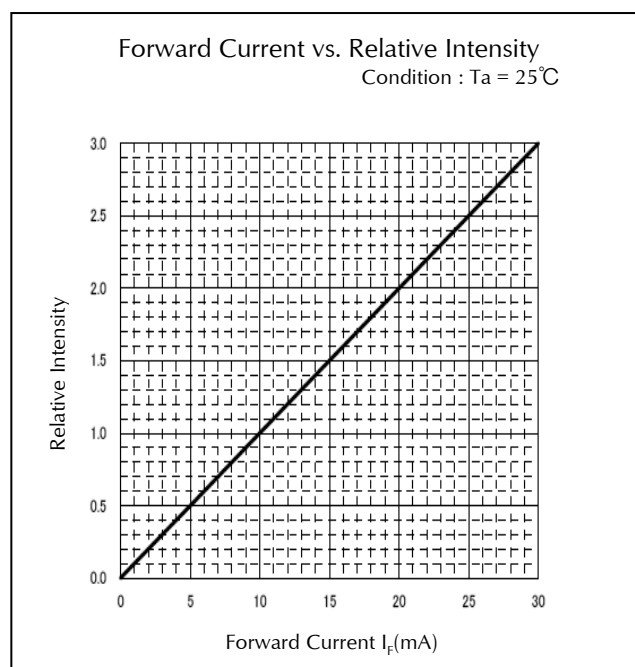
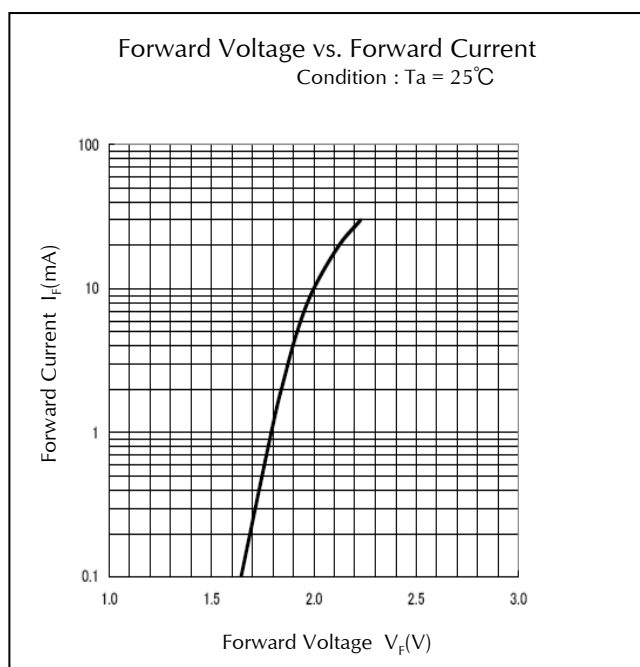
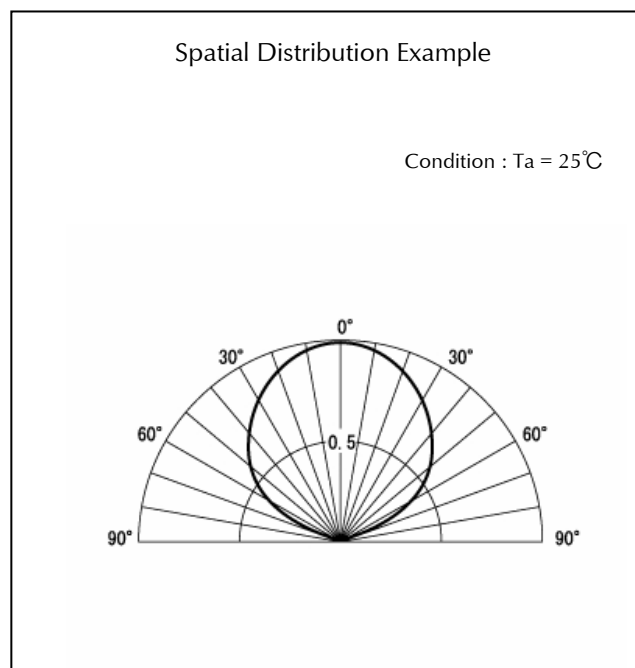
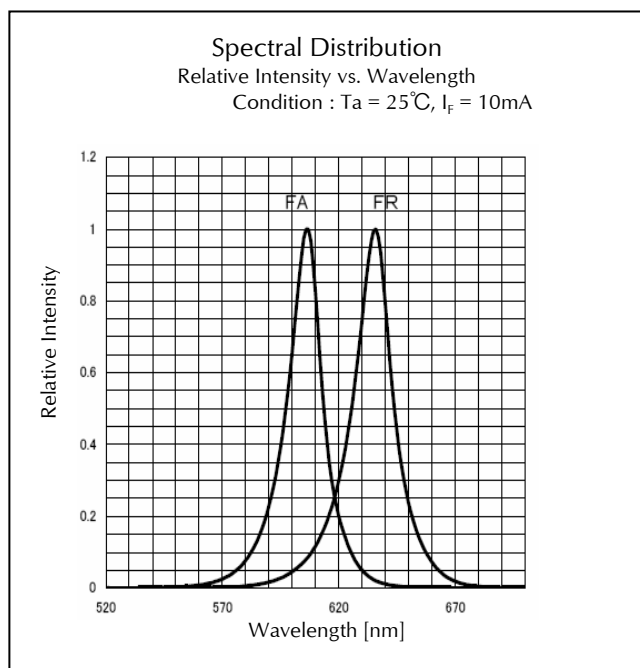
Forward Current vs. Relative Intensity
Condition : $T_a = 25^\circ\text{C}$



Technical Data(KG)



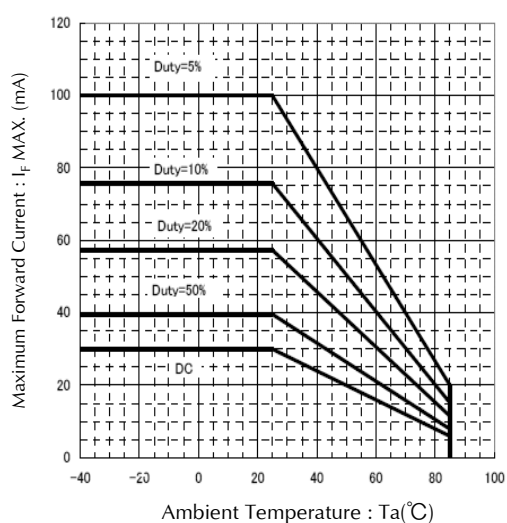
Technical Data(FA/FR)



Technical Data(FA/FR)

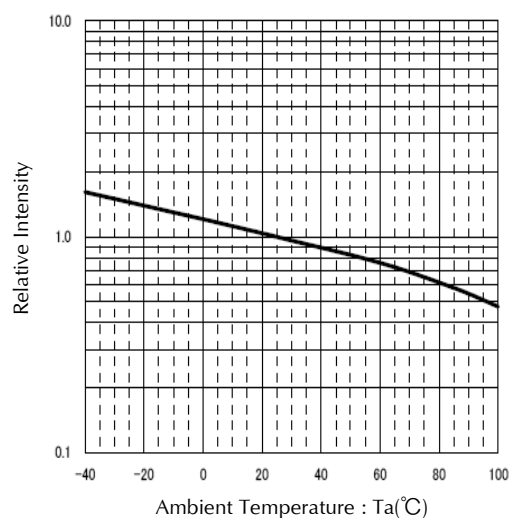
Derating

Ambient Temperature vs. Maximum Forward Current
Repetition Frequency : $f \geq 50\text{Hz}$

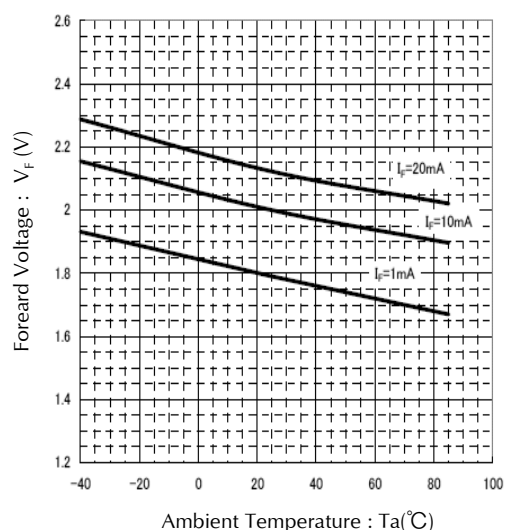


Ambient Temperature vs. Relative Intensity

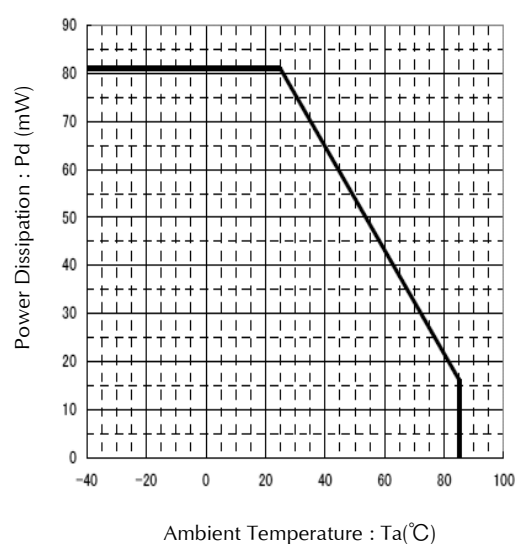
Condition : $I_F=10\text{mA}$



Ambient Temperature vs. Forward Voltage



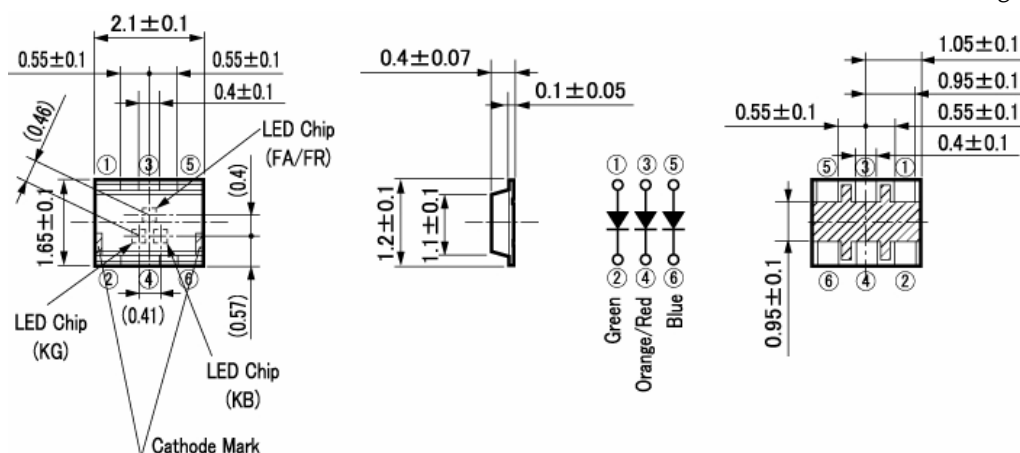
Power Dissipation vs. Ambient Temperature



Package Dimensions

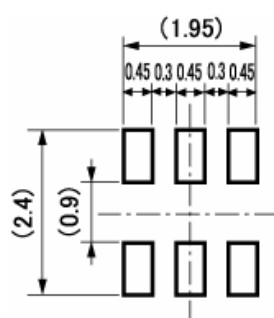
(Unit: mm)

Weight:(2.4)mg



Recommended Soldering Pattern

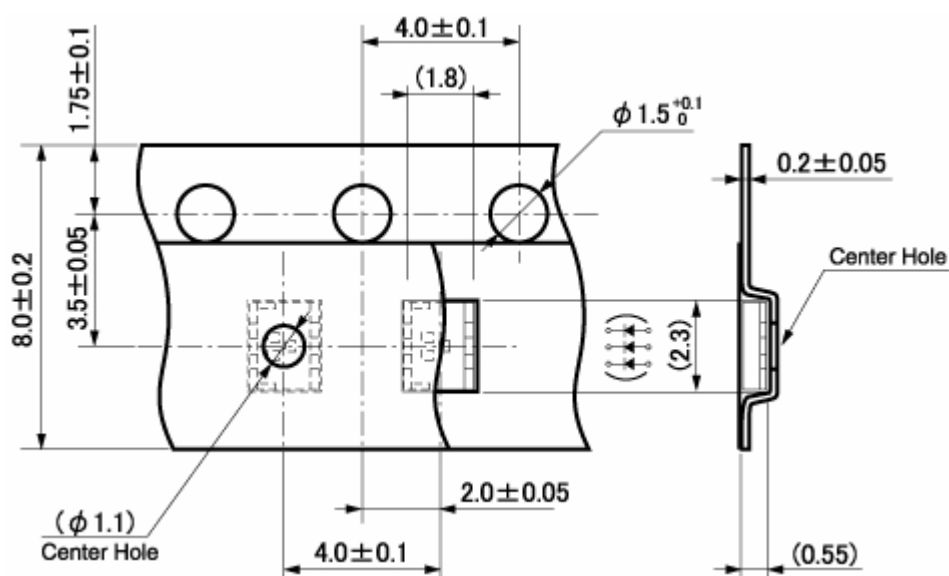
(Unit: mm)



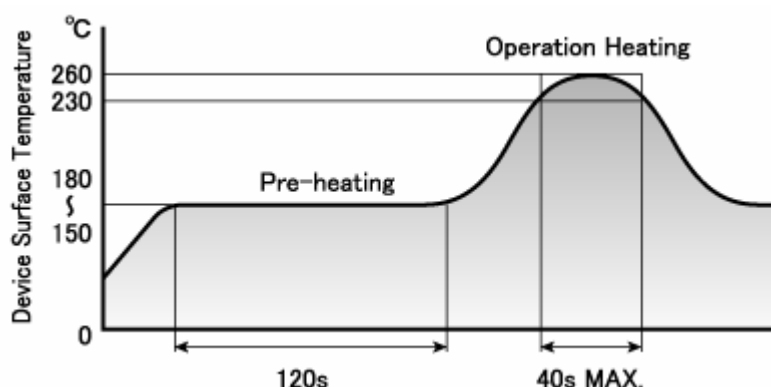
Taping Specification

(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°C maximum)

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, All diode lighted : If = 15mA/chip	1,000 h	0/25
Resistance to Soldering Heat	EIAJ ED-4701/300(302)	260±5°C	5sec	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°C, 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	If Value of each product Luminous Intensity	Testing Min. Value < Spec. Min. Value x 0.5
Forward Voltage	V _F	If 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	-	-	No notable, decoloration, deformation and cracking

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