



**Pb-free
HEAT**

STANLEY

□ □ **1111C**

Surface Mount IRED/1608 (t = 0.7 mm) Type

Features

Package	1608 (h = 0.7 mm) type, Water clear epoxy
Product features	· Outer Dimension 1.6 x 0.8 x 0.7mm (L x W x H) · Small Size · Total Output Power - DNK : 6.5mW TYP. (I_F=20mA) - TAN : 4.3mW TYP. (I_F=20mA) - AN : 2.0mW TYP. (I_F=20mA) · Lead-free soldering compatible · RoHS compliant
Peak Wavelength	DNK : 865nm TAN : 940nm AN : 950nm
Half Intensity Angle	DNK : θ x = 145 deg., θ y =145 deg. TAN : θ x = 145 deg., θ y = 145 deg. AN : θ x = 125 deg., θ y = 150 deg.
Die materials	GaAlAs (DNK) GaAs (TAN,AN)
Rank grouping parameter	Sorted by radiant intensity per rank taping
Assembly method	Auto pick & place machine (Auto Mounter)
Soldering methods	Reflow soldering Please refer to Soldering Conditions about soldering.
Taping and reel	4,000pcs per reel in a 8mm width tape. (Standard) Reel diameter: φ 180mm
ESD-withstand voltage	2kV (HBM)

Recommended Applications

Car Audio, Electric Household Appliances, OA/FA, PC/Peripheral Equipment, Other General Applications


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Surface Mount IRED/1608 (h = 0.7 mm) Type

Color and Luminous Intensity

(Ta=25)

Part No.	Material	Lens Color	Peak Wavelength λ_p (nm)		Radiant Intensity I_E (mW/sr)		
			TYP.	I_F (mA)	MIN.	TYP.	I_F (mA)
DNK1111C	GaAlAs	Water Clear	865	20	0.7	1.4	20
TAN1111C	GaAs		940	20	0.3	0.6	20
AN1111C	GaAs		950	20	0.2	0.28	20

Absolute Maximum Ratings

(Ta=25)

Item	Symbol	Absolute Maximum Ratings			Unit
		DNK	TAN	AN	
Power Dissipation	P_d	80	70	75	mW
Forward Current	I_F	50	50	50	mA
Pulse Forward Current ¹	I_{FRM}	300	300	300	mA
Derating (Ta=25 or higher)	I_F	0.67	0.67	0.67	mA/
	I_{FRM}	4.00	4.00	4.00	mA/
Reverse Voltage	V_R	5	5	5	V
Operating Temperature	T_{opr}	-30 ~ +85			
Storage Temperature	T_{stg}	-40 ~ +100			

¹ I_{FRM} Measurement condition : Pulse Width 100 μ s, Duty 1/100

Electro-Optical Characteristics

(Ta=25)

Item	Conditions	Symbol	Characteristics				Unit
				DNK	TAN	AN	
Forward Voltage	$I_F=20mA$	V_F	TYP.	1.40	1.20	1.22	V
			MAX.	1.65	1.40	1.40	
Reverse Current	$V_R=5V$	I_R	MAX.	100	10	10	μA
Radiant Intensity	$I_F=20mA$	I_E	MIN.	0.7	0.3	0.2	mW/sr
			TYP.	1.4	0.6	0.28	
Total Output Power	$I_F=20mA$	P_o	TYP.	6.5	4.3	2	mW
Peak Wavelength	$I_F=20mA$	λ_p	TYP.	865	940	950	nm
Spectral Half-width	$I_F=20mA$	λ	TYP.	45	50	45	nm
Half Intensity Angle	$I_F=20mA$	$2\theta_{1/2}$	TYP.	145(θ_x)	145(θ_x)	125(θ_x)	deg.
				145(θ_y)	145(θ_y)	150(θ_y)	
Cut-off Frequency	$I_F=20mA_{DC}\pm 5mA$, -3db from 0.1MHz	f_c	MIN.	-	-	-	MHz
			TYP.	50	-	0.5	
Response Time	$I_F=20mA$	tr/tf	TYP.	7	1000	700	ns

 θ_x : Product long side axis, θ_y : Product short side axis

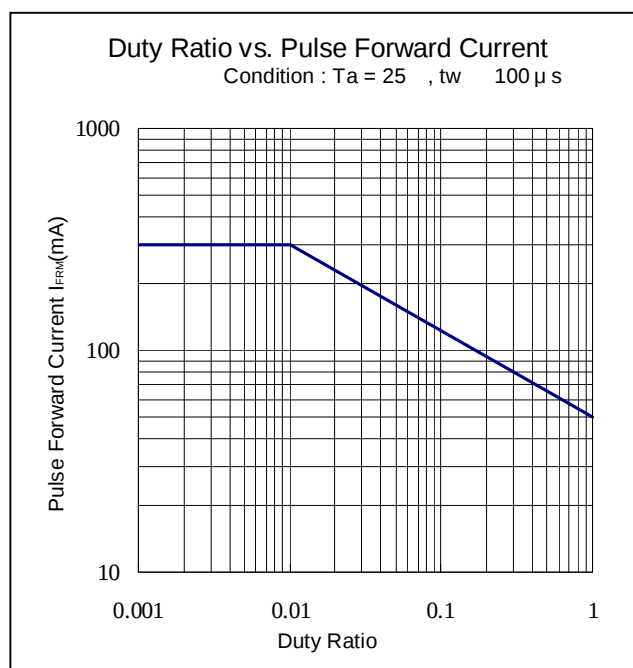
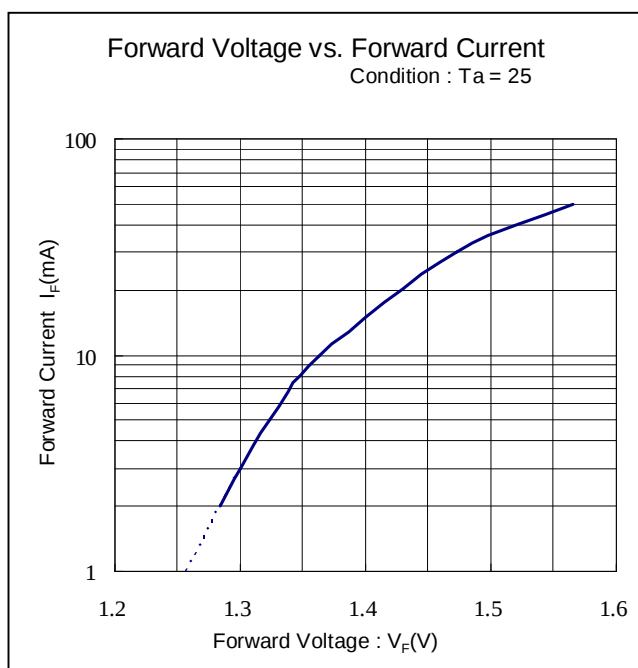
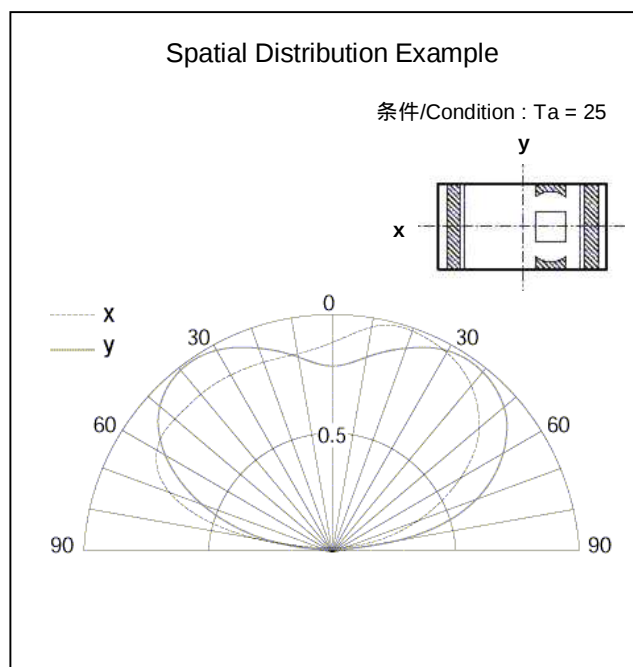
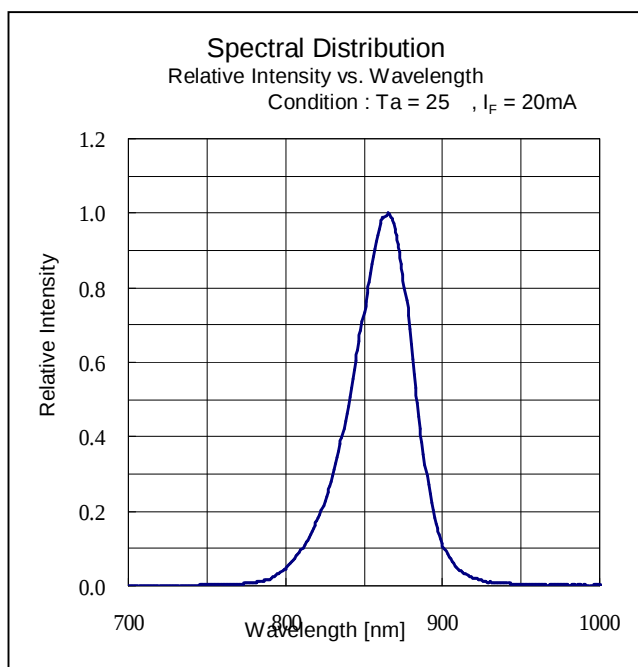
Radiant Intensity Rank

(Ta=25)

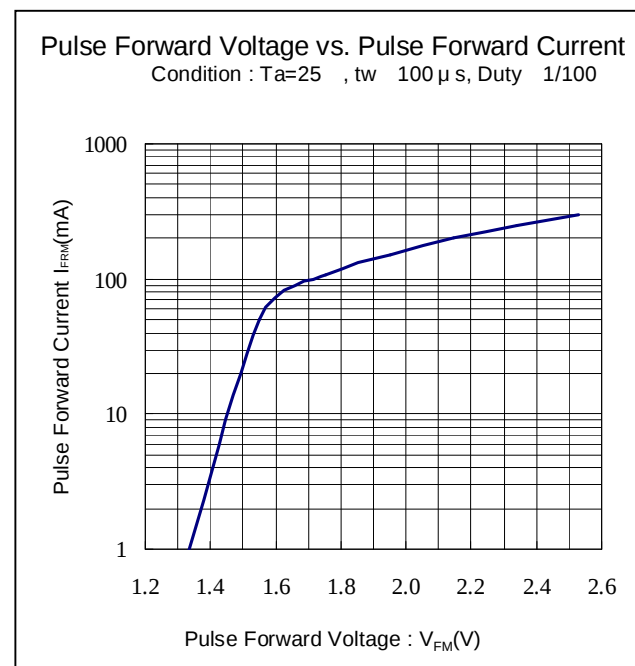
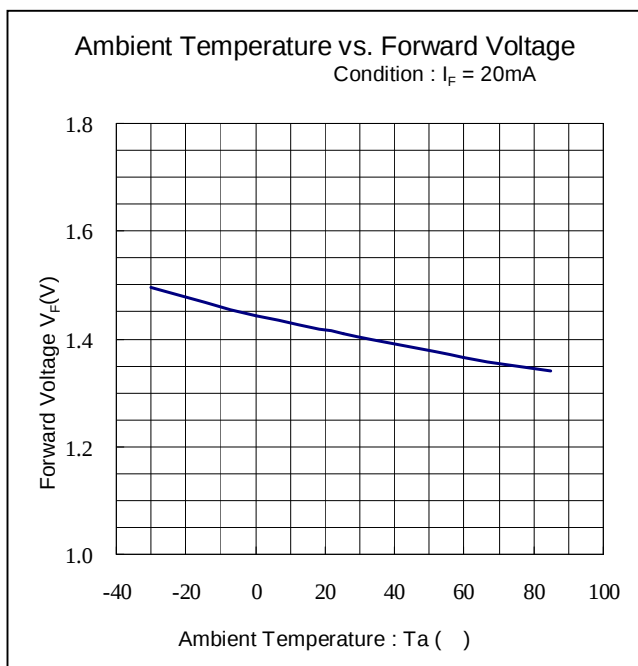
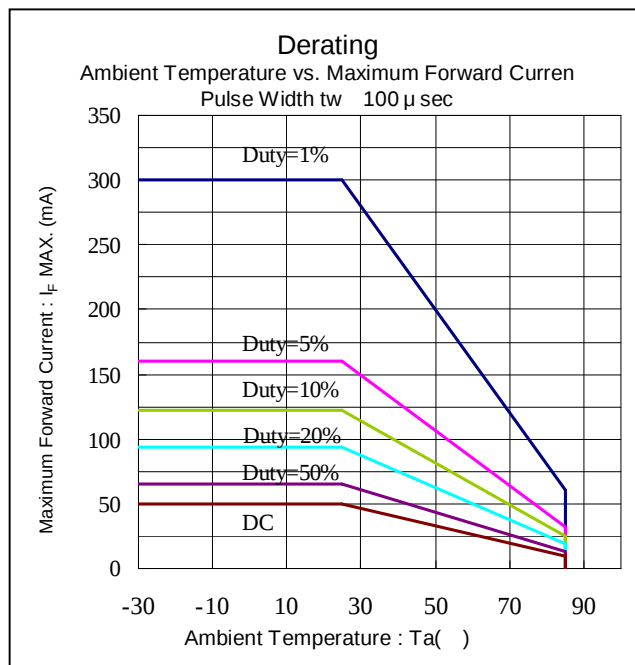
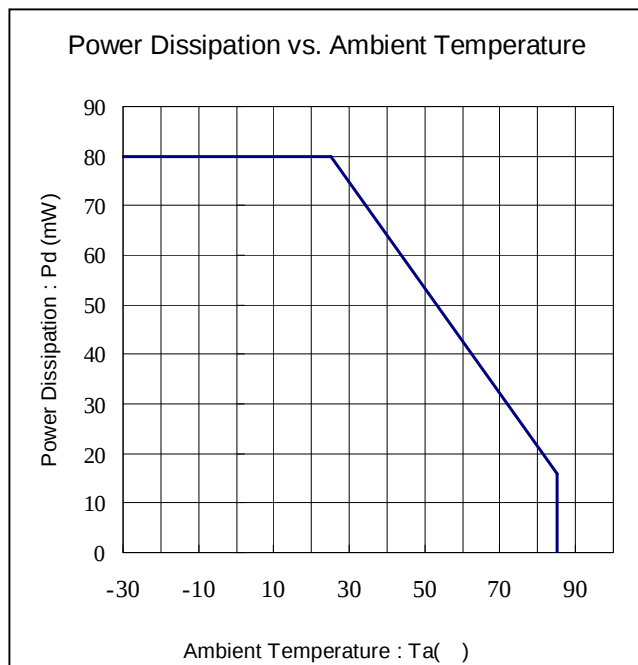
Rank	I _E (mW/sr)					
	DNK		TAN		AN	
	I _F =20mA		I _F =20mA		I _F =20mA	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
A	0.7	1.4	0.3	0.6	0.20	0.40
B	1.0	2.0	0.4	0.8	0.28	0.56
C	1.4	2.8	0.6	1.2	0.40	0.80
D	2.0	4.0	0.8	1.6	-	-
E	2.8	5.6	1.2	2.4	-	-

Please contact our sales staff concerning rank designation.

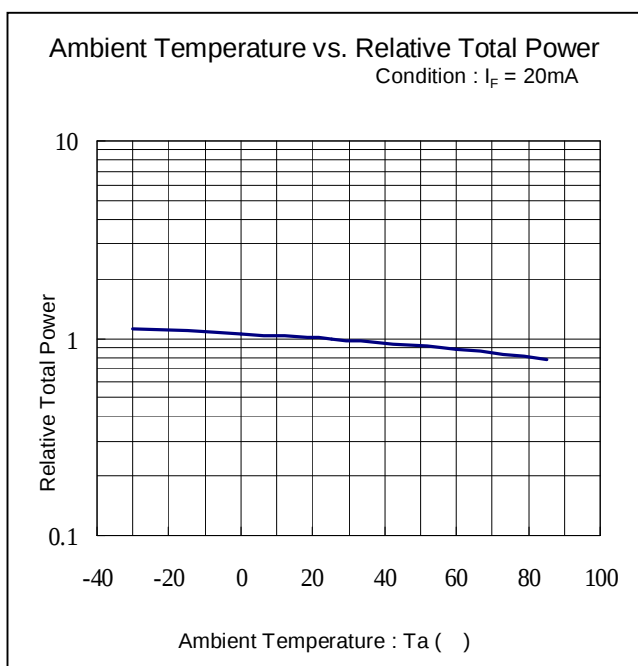
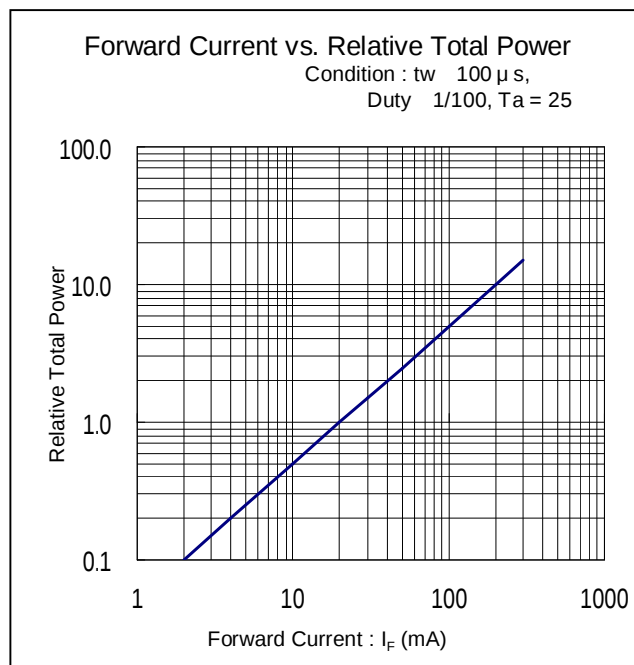
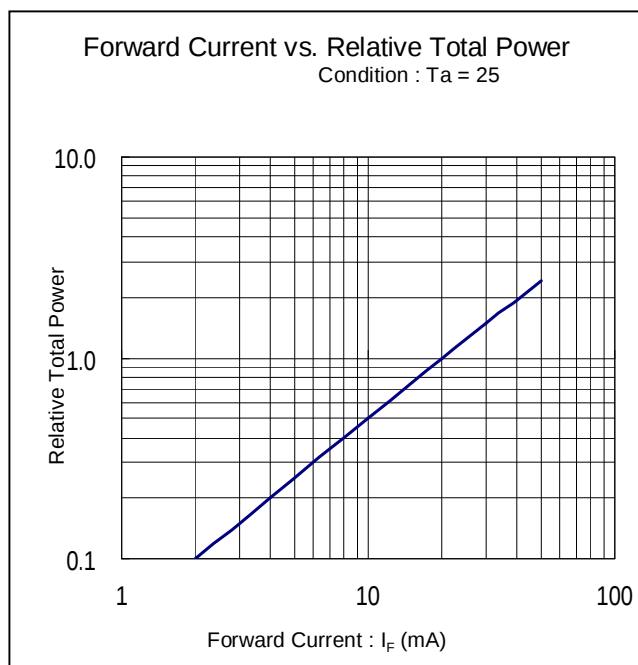
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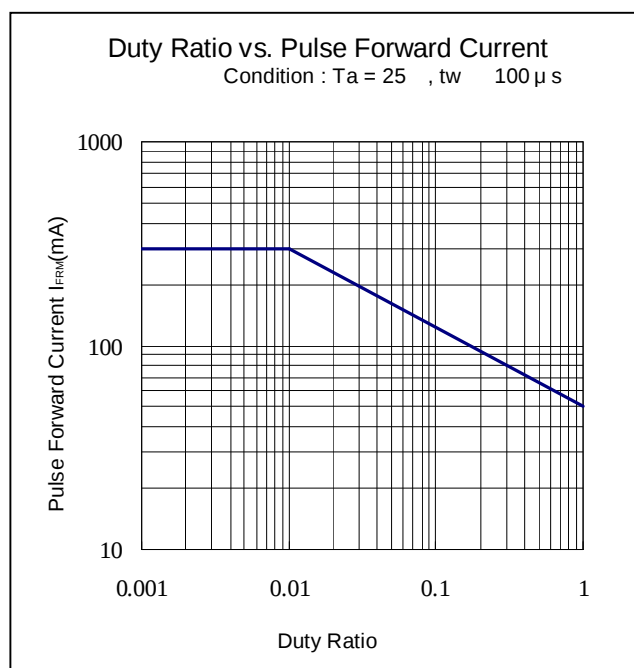
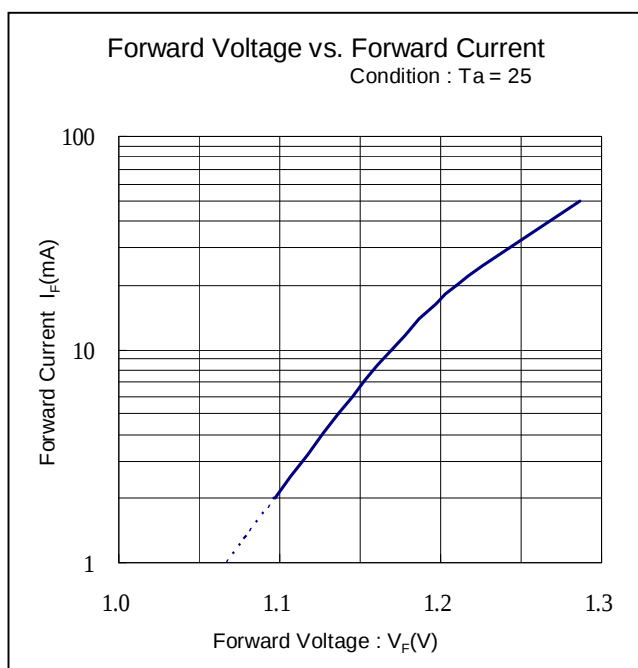
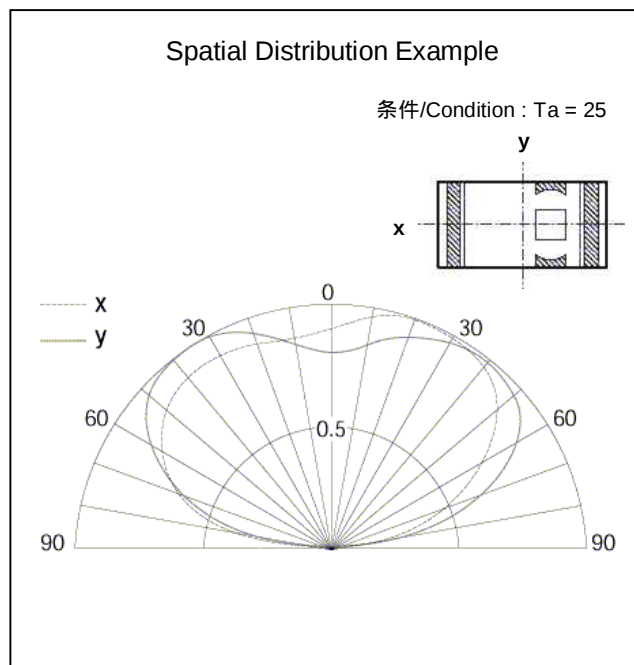
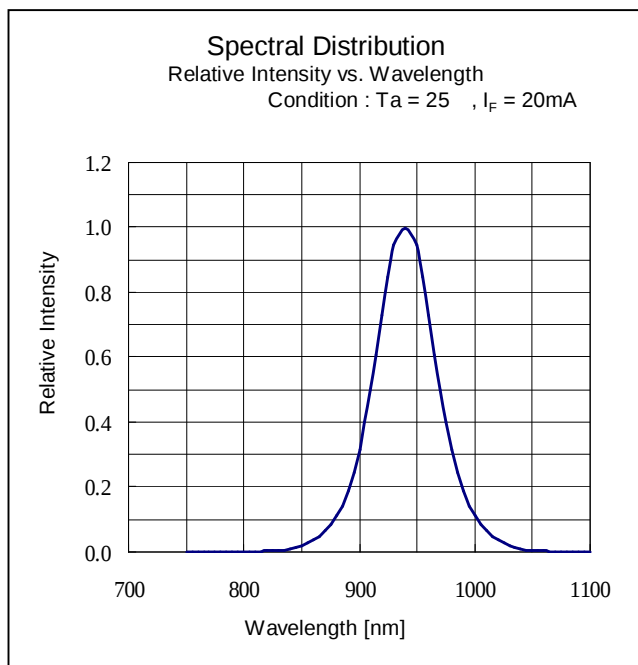
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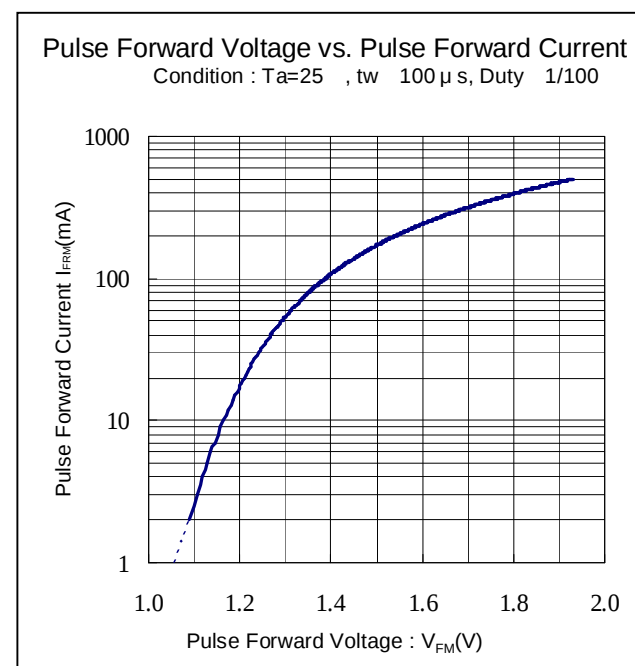
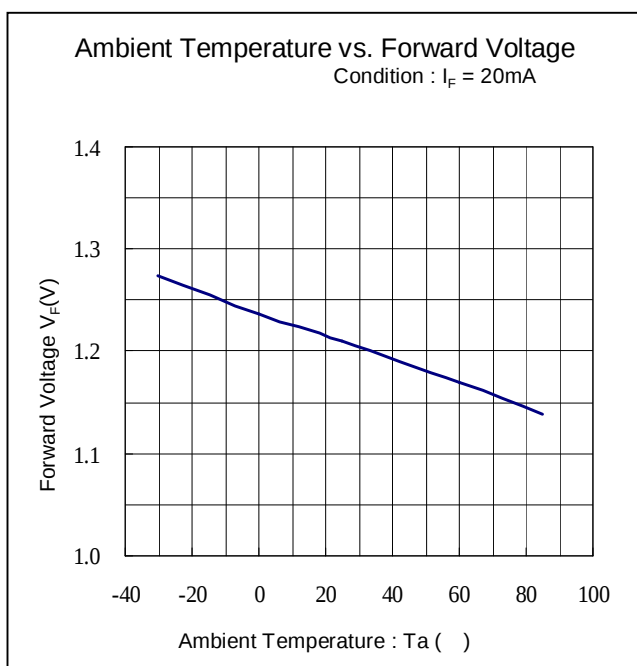
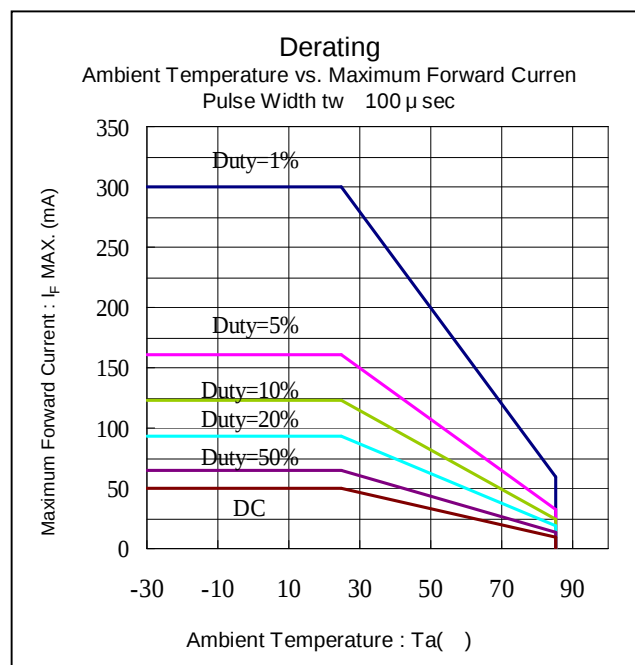
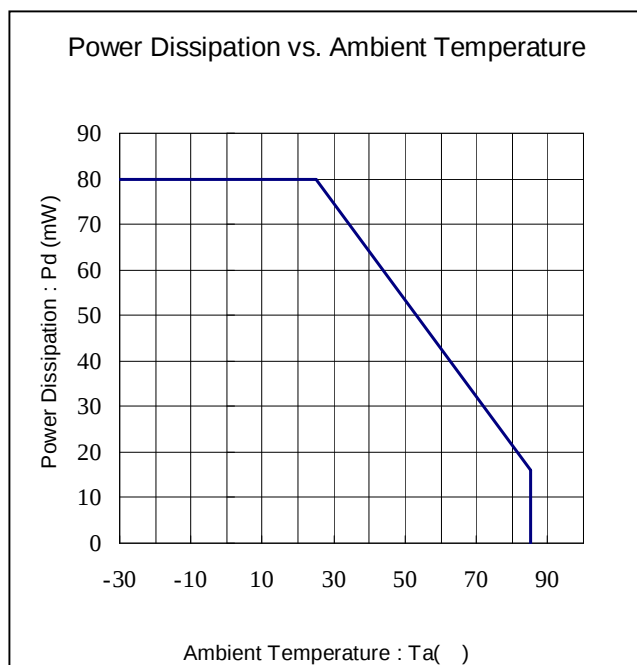
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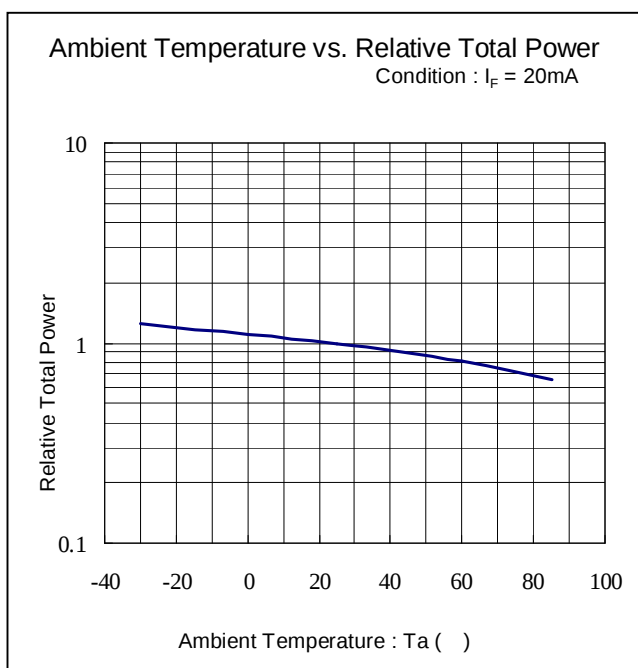
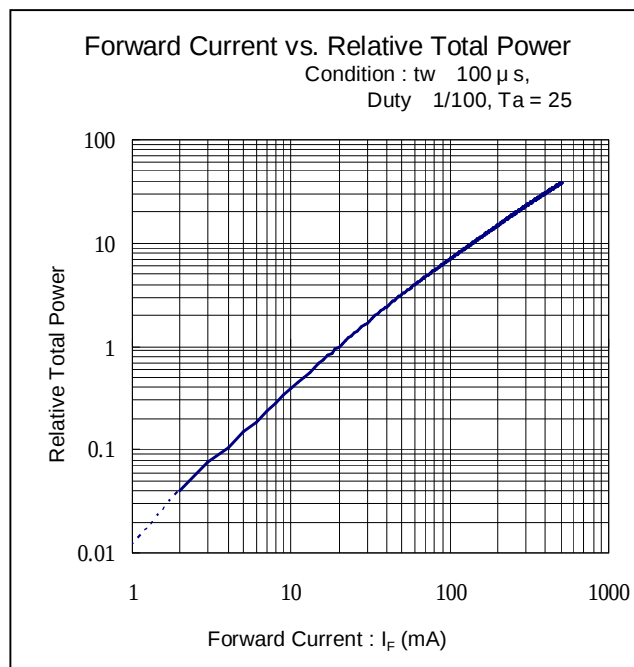
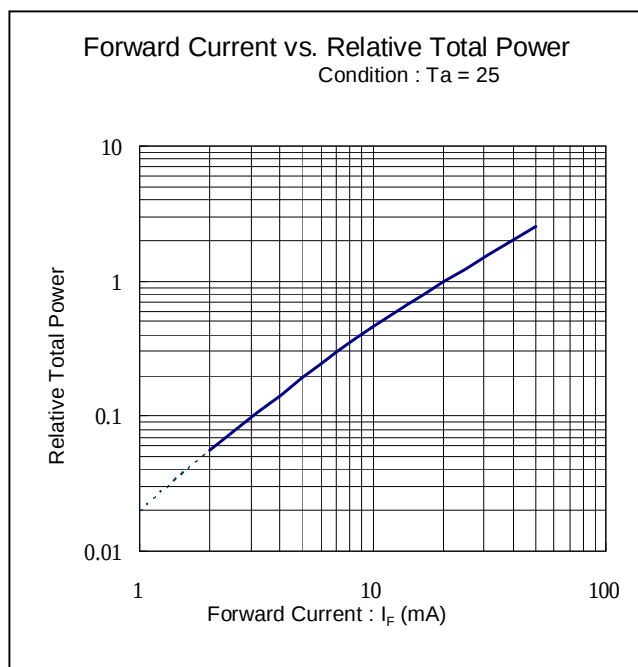
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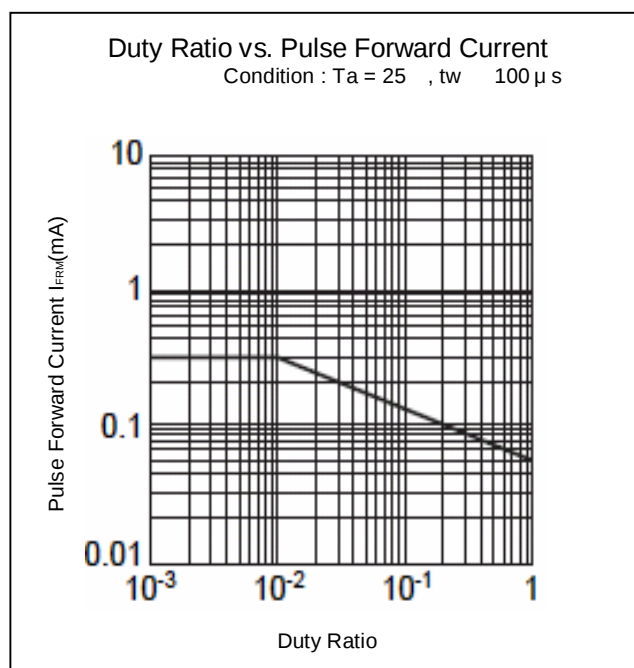
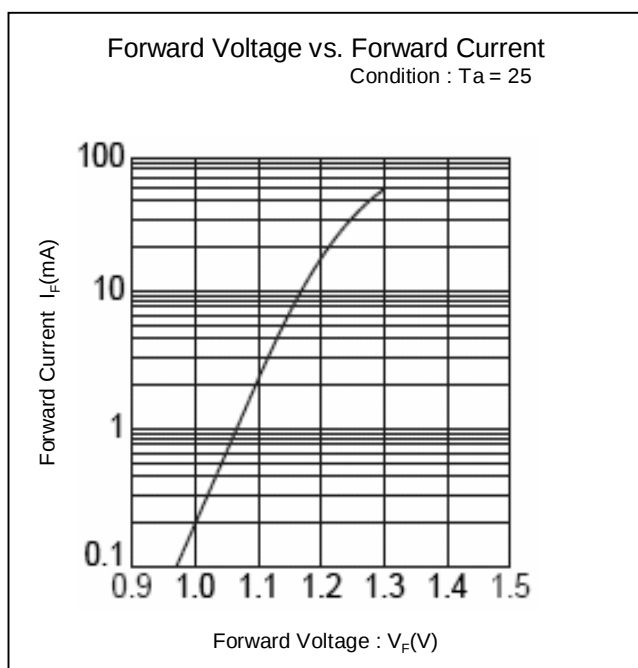
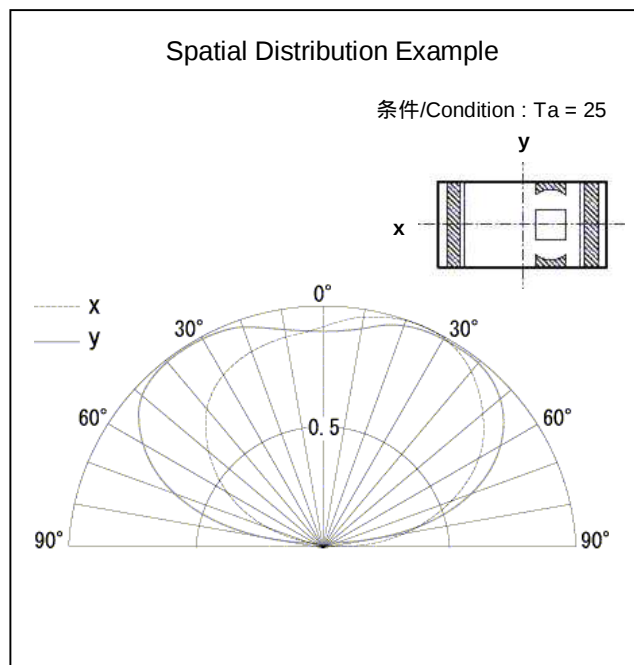
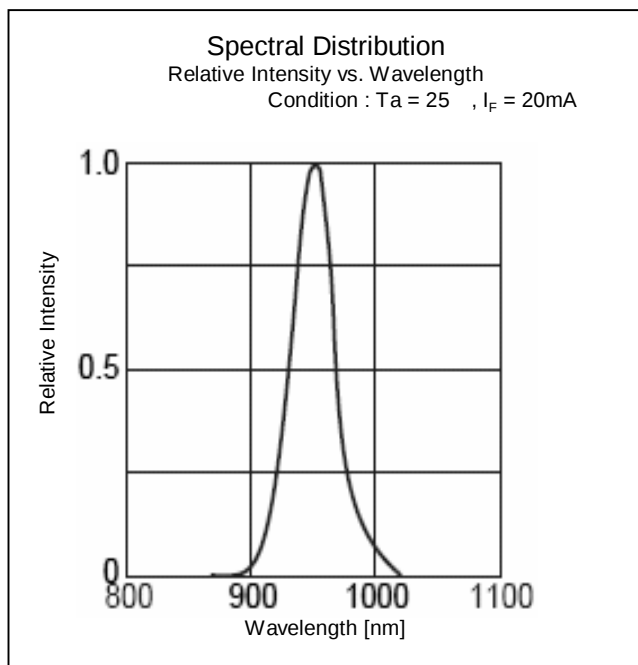
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Technical Data (TAN)

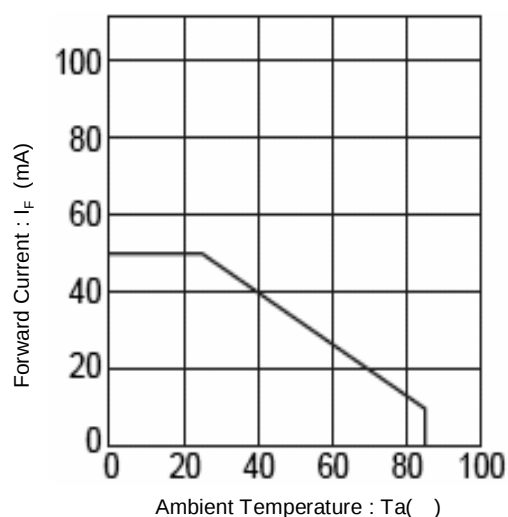


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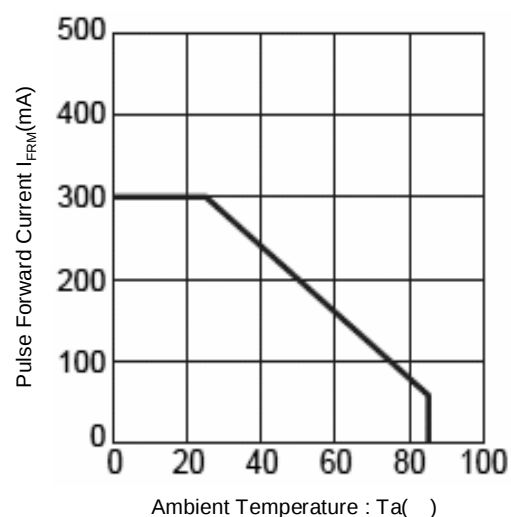


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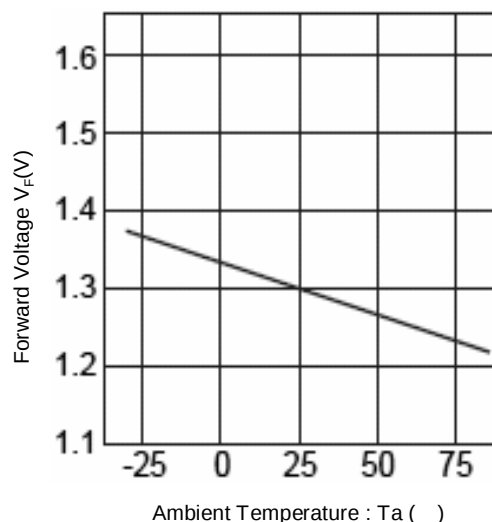
Ambient Temperature vs. Forward Current



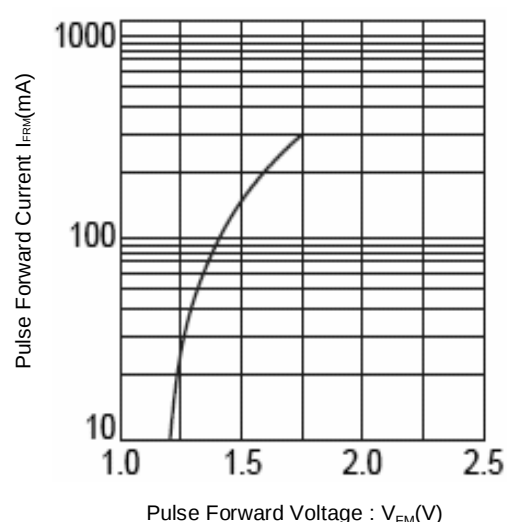
Ambient Temperature vs. Pulse Forward Current
Condition : t_w 100 μ s, Duty 1/100



Ambient Temperature vs. Forward Voltage
Condition : I_F = 20mA



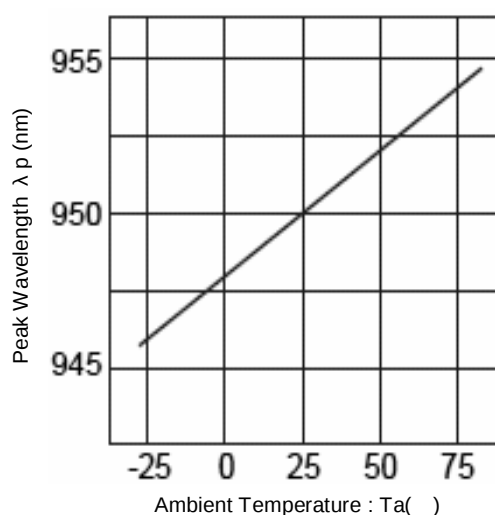
Pulse Forward Voltage vs. Pulse Forward Current
Condition : $T_a=25^{\circ}C$, t_w 100 μ s, Duty 1/100



Technical Data (AN)

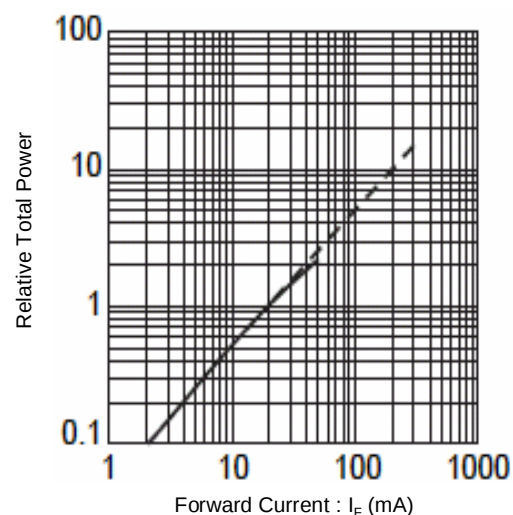
Ambient Temperature vs. Peak Wavelength

Condition : $I_F = 20\text{mA}$



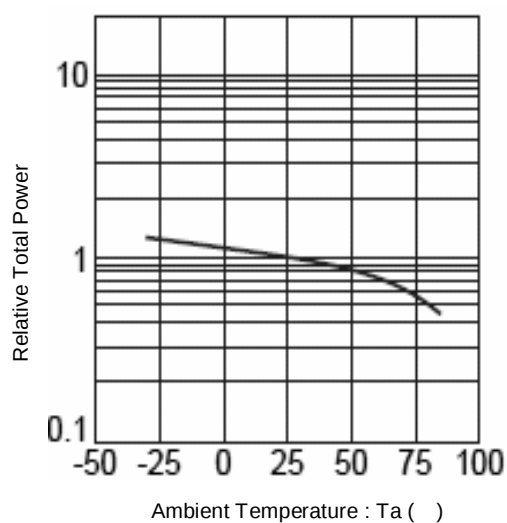
Forward Current vs. Relative Total Power

Condition : - - Pulse, $t_w = 100\mu\text{s}$,
Duty 1/100, $T_a = 25$



Ambient Temperature vs. Relative Total Power

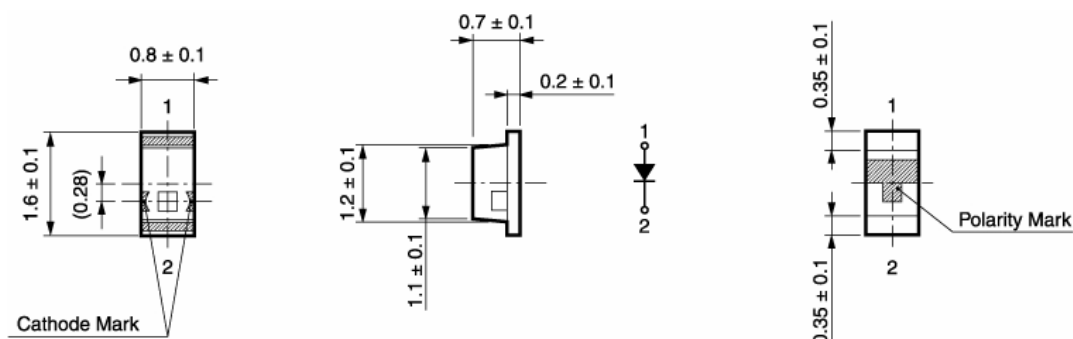
Condition : $I_F = 20\text{mA}$



Package Dimensions

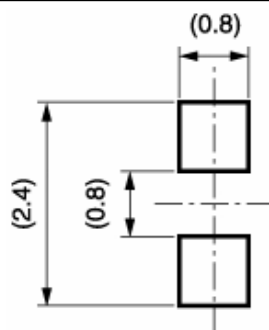
(Unit: mm)

Weight: (1.40)mg



Recommended Soldering Pattern

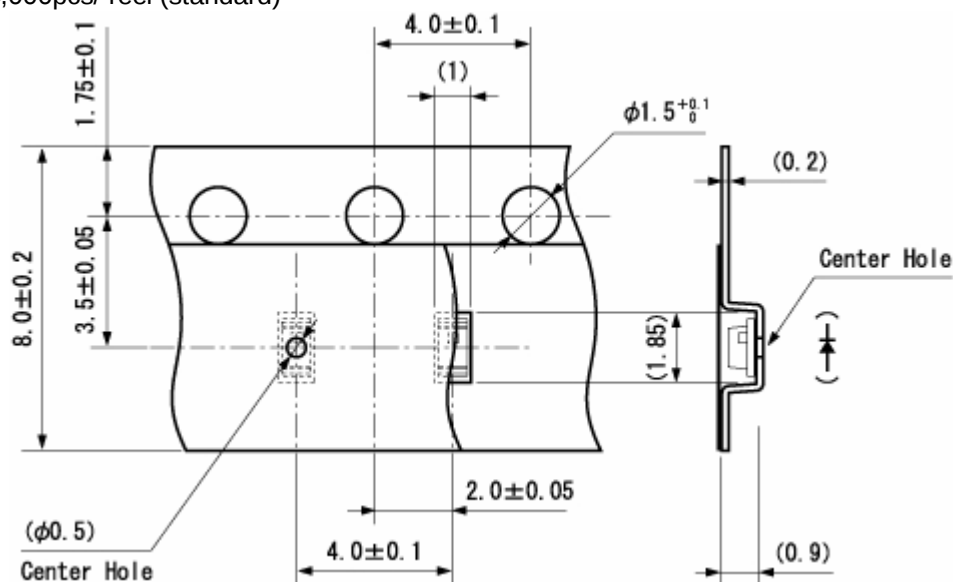
(Unit: mm)



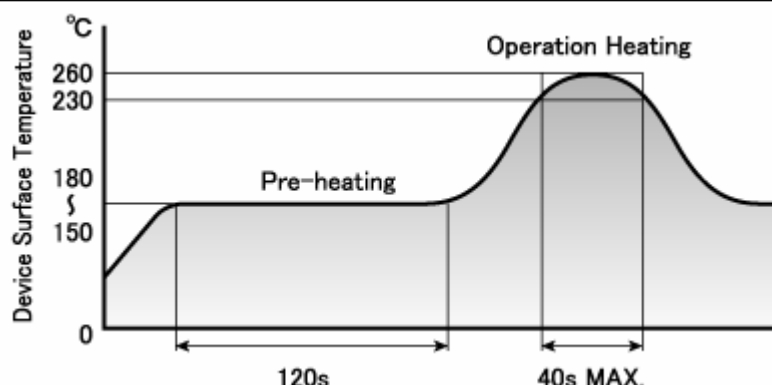
Taping Specification

(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.

Manual Soldering Conditions

Iron tip temp.	350	(MAX.) (30 W 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	BAJED-4701/100(101)	Ta = 25 , If = Maximum Rated Current	1,000 h	0/25
Resistance to Soldering Heat	BAJED-4701/300(301)	(Pretreatment) Individual standard (Reflow Soldering) Pre-heating 150 ~ 180 120s Operating Heating 230 Min. Peak temperature 260	Twice	0/25
Temperature Cycling	BAJED-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	BAJED-4701/100(103)	Ta = 60 ± 2 , RH = 90 ± 5%	1,000 h	0/25
High Temp. Storage Life	BAJED-4701/200(201)	Ta = Maximum Rated Storage Temperature	1,000 h	0/25
Low Temp. Storage Life	BAJED-4701/200(202)	Ta = Minimum Rated Storage Temperature	1,000 h	0/25
Vibration, Variable Frequency	BAJED-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
Radiant Intensity	I _E	If = Value of each product Radiant Intensity	Testing Min. Value < Initial 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	-	-	Occurrence of notable decoloration, deformation and cracking

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