



**Pb-free
HEAT**



1211C Series

Bi-color Ultra High Brightness Type

Features

Package	Bi-Color Type(1.6 x 1.5mm), Milky White resin
Product features	<ul style="list-style-type: none"> • Outer Dimension 1.6 x 0.8 x 0.4mm (L x W x H) • Temperature range Storage Temperature : -40°C~100°C Operating Temperature : -40°C~85°C • No lead package and lead-free soldering compatible • RoHS compliant
Dominant wavelength	Blue : 470nm(DB) Blue Green : 508nm(DC) Green : 530nm(DG) Yellow : 590nm(FY) Orange : 605nm(FA) Red : 626nm(FR)
Half Intensity Angle	$\theta_x = 150 \text{ deg.}, \theta_y = 140 \text{ deg.}$
Die materials	DB,DC,DG :InGaN FY,FA,FR :AlGaInP
Rank grouping parameter	Sorted by luminous intensity 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: ϕ 180mm
ESD	InGan : Less than 1kV(HBM), AlGaInP : More than 2kV(HBM)

Recommended Applications

Communication Machine, Electric Household Appliances, OA/FA, Other General Applications

Color and Luminous Intensity

(Ta=25°C)

Part No.	Die Name	Material	Emitted Color	Lens Color	Dominant Wavelength		Luminous Intensity		
					λd (nm)		Iv (mcd)		
					TYP.	I _F	MIN.	TYP.	I _F
FYDB1211C	DB	InGaN	Blue	Milky White	470	10	8.5	14	10
	FY	AlGaInP	Yellow		590	10	10	24	10
FADB1211C	DB	InGaN	Blue	Milky White	470	10	8.5	14	10
	FA	AlGaInP	Orange		605	10	14	34	10
FRDB1211C	DB	InGaN	Blue	Milky White	470	10	8.5	14	10
	FR	AlGaInP	Red		626	10	10	24	10
FYDC1211C	DC	InGaN	Blue Green	Milky White	508	10	24	34	10
	FY	AlGaInP	Yellow		590	10	10	24	10
FADC1211C	DC	InGaN	Blue Green	Milky White	508	10	24	34	10
	FA	AlGaInP	Orange		605	10	14	34	10
FRDC1211C	DC	InGaN	Blue Green	Milky White	508	10	24	34	10
	FR	AlGaInP	Red		626	10	10	24	10
FYDG1211C	DG	InGaN	Green	Milky White	530	10	24	40	10
	FY	AlGaInP	Yellow		590	10	10	24	10
FADG1211C	DG	InGaN	Green	Milky White	530	10	24	40	10
	FA	AlGaInP	Orange		605	10	14	34	10
FRDG1211C	DG	InGaN	Green	Milky White	530	10	24	40	10
	FR	AlGaInP	Red		626	10	10	24	10

Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	Absolute Maximum Ratings						Unit
		DB	DC	DG	FY	FA	FR	
Power Dissipation	P_d	76	76	76	81	81	81	mW
Forward Current	I_F	20	20	20	30	30	30	mA
Pulse Forward Current ※1	I_{FRM}	48	48	48	100	100	100	mA
Derating (Ta=25°C or higher)	ΔI_F	0.28	0.28	0.28	0.43	0.43	0.43	mA/°C
	ΔI_{FRM}	0.69	0.69	0.69	1	1	1	mA/°C
Reverse Voltage	V_R	5	5	5	5	5	5	V
Operating Temperature	T_{opr}	-40~+85						°C
Storage Temperature	T_{stg}	-40~+100						°C

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

The ratings specified above is under the condition that only one diode is lit.

50% Max. of each rating shall be applied when two diodes are lit simultaneously.

Electro-Optical Characteristics

(Ta=25°C)

Item	Conditions	Symbol	Characteristics						Unit	
			DB	DC	DG	FY	FA	FR		
Forward Voltage	I _F =10mA	V _F	TYP.	3.3	3.3	3.3	1.85	1.85	1.85	V
			MAX.	3.8	3.8	3.8	2.35	2.35	2.35	
Reverse Current	V _R =5V	I _R	MAX.	100	100	100	100	100	100	μ A
Peak Wavelength	I _F =10mA	λ _p	TYP.	467	502	522	592	609	635	nm
Dominant Wavelength	I _F =10mA	λ _d	TYP.	470	508	530	590	605	626	nm
Spectral Line Half Width	I _F =10mA	Δλ	TYP.	26	30	30	15	15	15	nm
Half Intensity Angle	I _F =10mA	2θ 1/2	TYP.	150(θ x)	150(θ x)	150(θ x)	150(θ x)	150(θ x)	150(θ x)	deg.
				140(θ y)	140(θ y)	140(θ y)	140(θ y)	140(θ y)	140(θ y)	

Luminous Intensity Rank

(Ta=25°C)

Rank	I _v (mcd)																Condition
	FYDB1211C				FADB1211C				FRDB1211C				FYDC1211C				
	DB		FY		DB		FA		DB		FR		DC		FY		
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
AA	8.5	17.0	10.0	20.0	8.5	17.0	14.0	28.0	8.5	17.0	10.0	20.0	24.0	48.0	10.0	20.0	
AB	12.0	24.0	10.0	20.0	12.0	24.0	14.0	28.0	12.0	24.0	10.0	20.0	34.0	68.0	10.0	20.0	
AC	17.0	34.0	10.0	20.0	17.0	34.0	14.0	28.0	17.0	34.0	10.0	20.0	48.0	96.0	10.0	20.0	
BA	8.5	17.0	14.0	28.0	8.5	17.0	20.0	40.0	8.5	17.0	14.0	28.0	24.0	48.0	14.0	28.0	
BB	12.0	24.0	14.0	28.0	12.0	24.0	20.0	40.0	12.0	24.0	14.0	28.0	34.0	68.0	14.0	28.0	
BC	17.0	34.0	14.0	28.0	17.0	34.0	20.0	40.0	17.0	34.0	14.0	28.0	48.0	96.0	14.0	28.0	
CA	8.5	17.0	20.0	40.0	8.5	17.0	28.0	56.0	8.5	17.0	20.0	40.0	24.0	48.0	20.0	40.0	
CB	12.0	24.0	20.0	40.0	12.0	24.0	28.0	56.0	12.0	24.0	20.0	40.0	34.0	68.0	20.0	40.0	
CC	17.0	34.0	20.0	40.0	17.0	34.0	28.0	56.0	17.0	34.0	20.0	40.0	48.0	96.0	20.0	40.0	
DA	8.5	17.0	28.0	56.0	8.5	17.0	40.0	80.0	8.5	17.0	28.0	56.0	24.0	48.0	28.0	56.0	
DB	12.0	24.0	28.0	56.0	12.0	24.0	40.0	80.0	12.0	24.0	28.0	56.0	34.0	68.0	28.0	56.0	
DC	17.0	34.0	28.0	56.0	17.0	34.0	40.0	80.0	17.0	34.0	28.0	56.0	48.0	96.0	28.0	56.0	

Please contact our sales staff concerning rank designation.

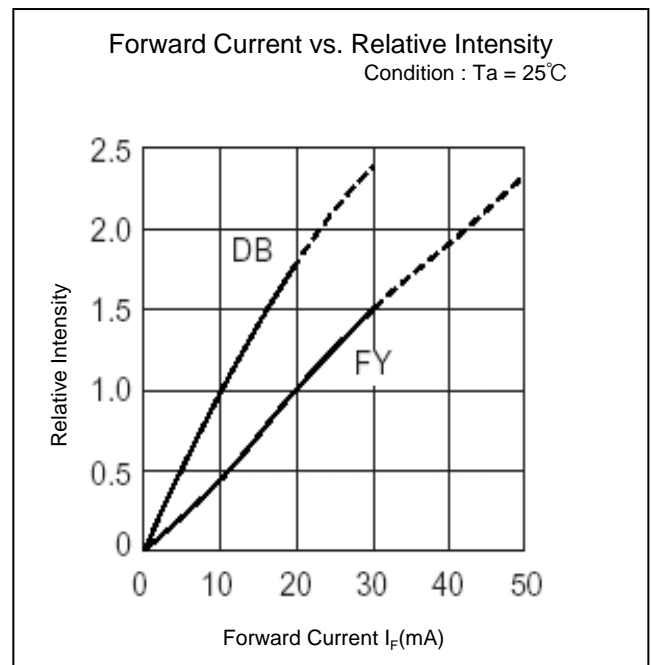
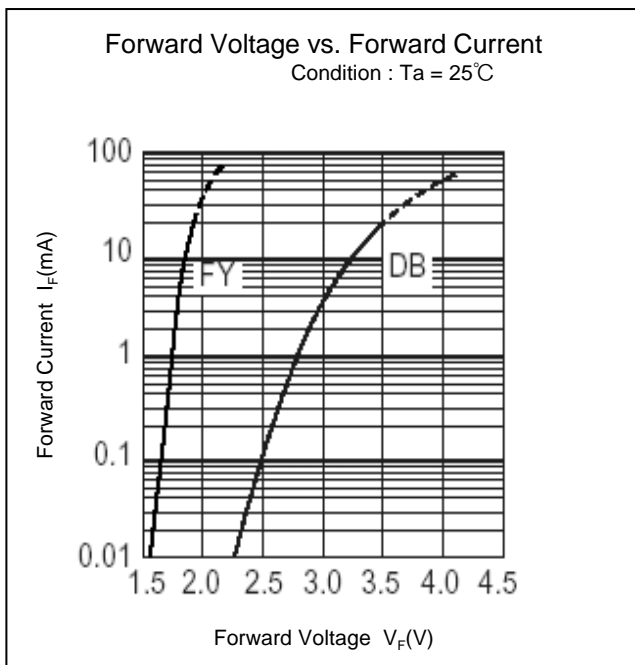
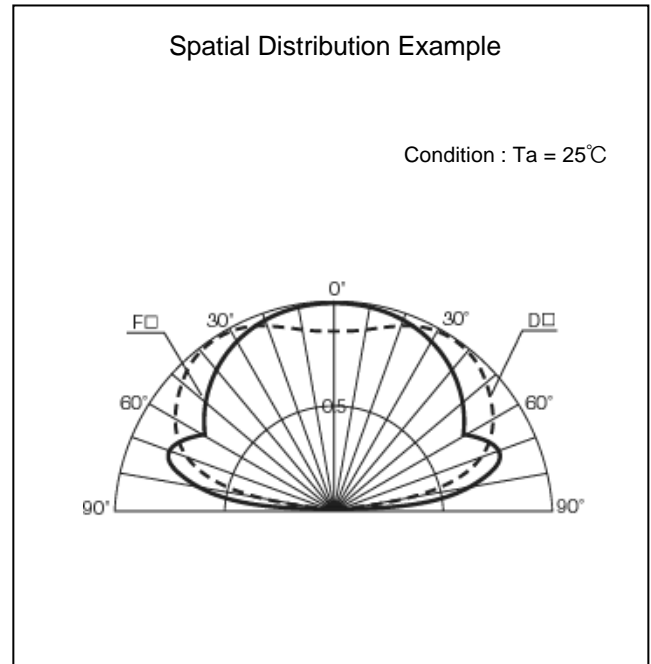
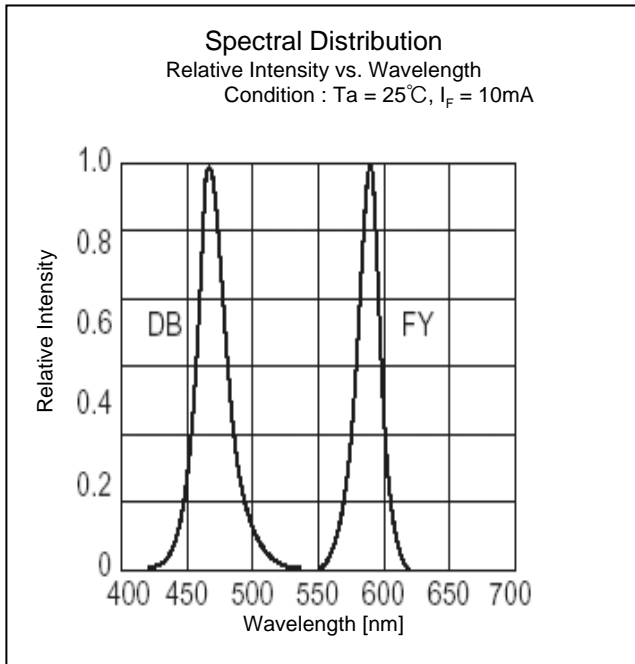
ランク	I _v (mcd)																Condition
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	DC		FA		DC		FR		DG		FY		DG		FA		
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
AA	24.0	48.0	14.0	28.0	24.0	48.0	10.0	20.0	24.0	48.0	10.0	20.0	24.0	48.0	14.0	28.0	
AB	34.0	68.0	14.0	28.0	34.0	68.0	10.0	20.0	34.0	68.0	10.0	20.0	34.0	68.0	14.0	28.0	
AC	48.0	96.0	14.0	28.0	48.0	96.0	10.0	20.0	48.0	96.0	10.0	20.0	48.0	96.0	14.0	28.0	
BA	24.0	48.0	20.0	40.0	24.0	48.0	14.0	28.0	24.0	48.0	14.0	28.0	24.0	48.0	20.0	40.0	
BB	34.0	68.0	20.0	40.0	34.0	68.0	14.0	28.0	34.0	68.0	14.0	28.0	34.0	68.0	20.0	40.0	
BC	48.0	96.0	20.0	40.0	48.0	96.0	14.0	28.0	48.0	96.0	14.0	28.0	48.0	96.0	20.0	40.0	
CA	24.0	48.0	28.0	56.0	24.0	48.0	20.0	40.0	24.0	48.0	20.0	40.0	24.0	48.0	28.0	56.0	
CB	34.0	68.0	28.0	56.0	34.0	68.0	20.0	40.0	34.0	68.0	20.0	40.0	34.0	68.0	28.0	56.0	
CC	48.0	96.0	28.0	56.0	48.0	96.0	20.0	40.0	48.0	96.0	20.0	40.0	48.0	96.0	28.0	56.0	
DA	24.0	48.0	40.0	80.0	24.0	48.0	28.0	56.0	24.0	48.0	28.0	56.0	24.0	48.0	40.0	80.0	
DB	34.0	68.0	40.0	80.0	34.0	68.0	28.0	56.0	34.0	68.0	28.0	56.0	34.0	68.0	40.0	80.0	
DC	48.0	96.0	40.0	80.0	48.0	96.0	28.0	56.0	48.0	96.0	28.0	56.0	48.0	96.0	40.0	80.0	

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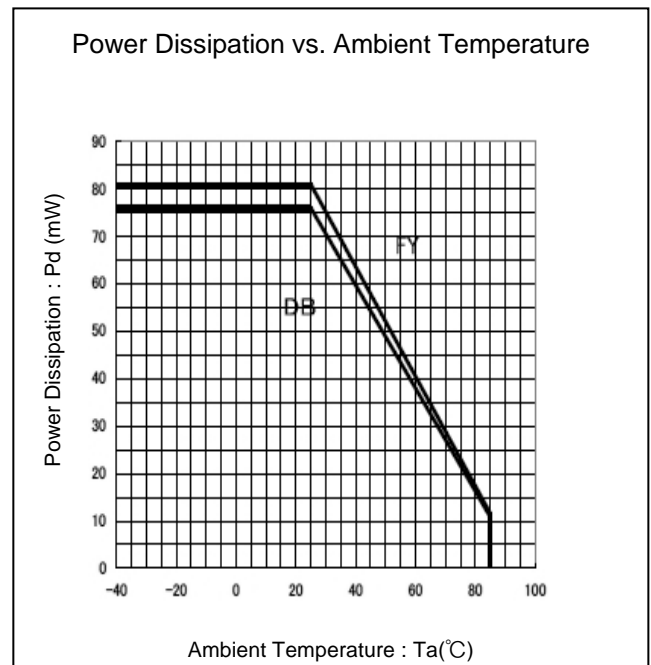
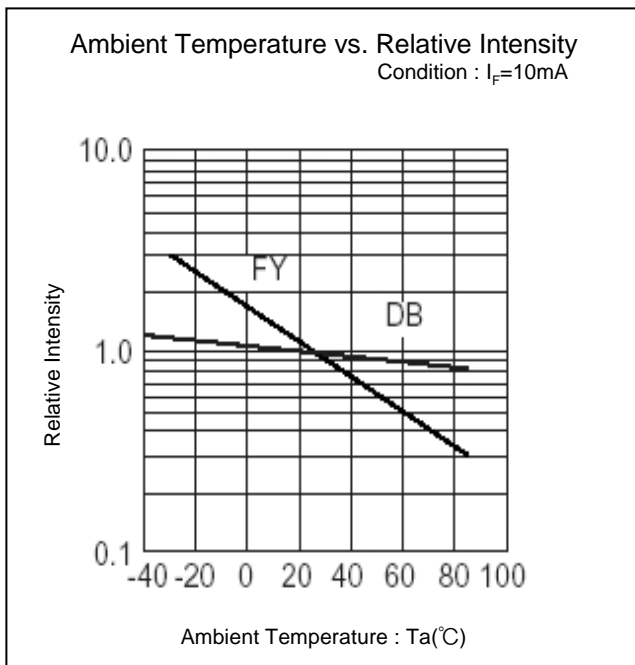
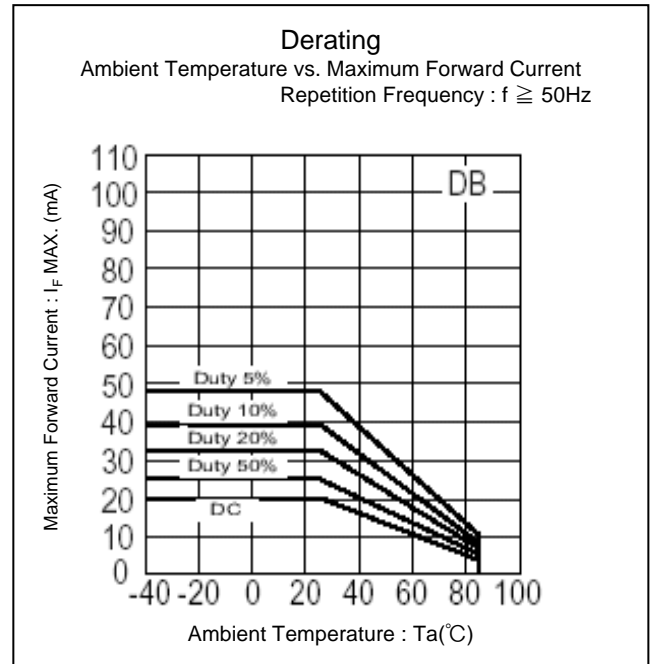
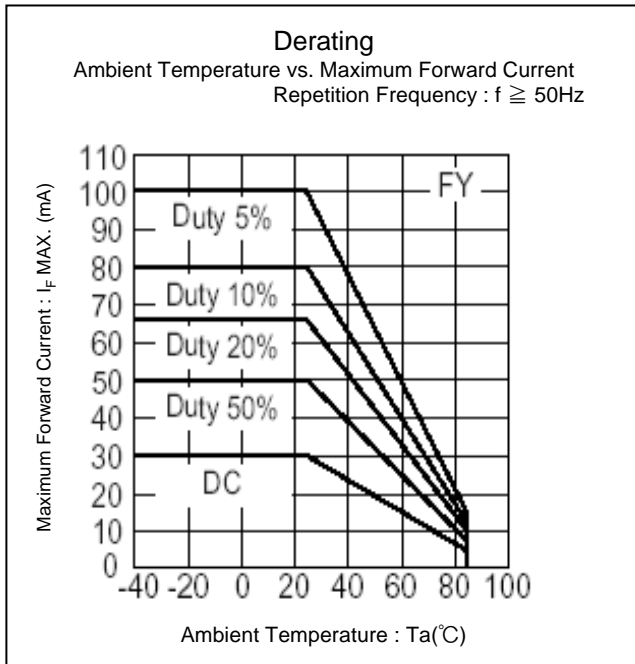
ランク	I _v (mcd)				Condition
	FRDG1211C				
	DG		FR		
	MIN.	MAX.	MIN.	MAX.	
AA	24.0	48.0	10.0	20.0	
AB	34.0	68.0	10.0	20.0	
AC	48.0	96.0	10.0	20.0	
BA	24.0	48.0	14.0	28.0	
BB	34.0	68.0	14.0	28.0	
BC	48.0	96.0	14.0	28.0	
CA	24.0	48.0	20.0	40.0	
CB	34.0	68.0	20.0	40.0	
CC	48.0	96.0	20.0	40.0	
DA	24.0	48.0	28.0	56.0	
DB	34.0	68.0	28.0	56.0	
DC	48.0	96.0	28.0	56.0	

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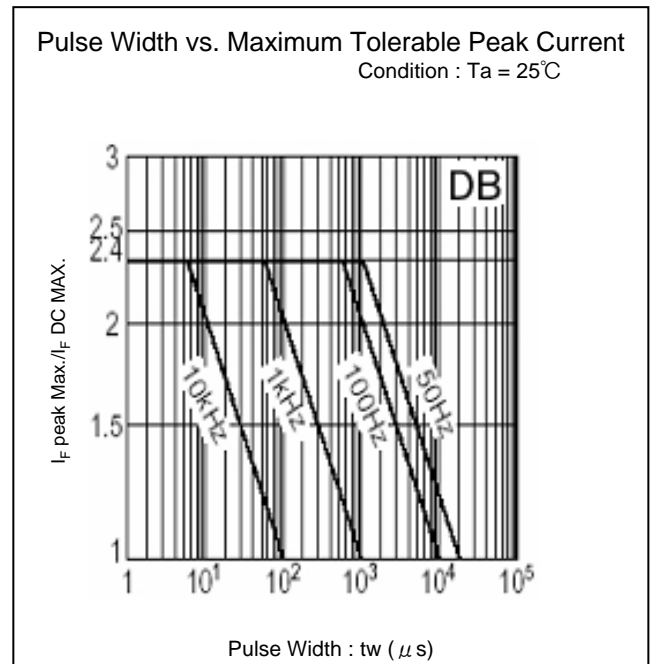
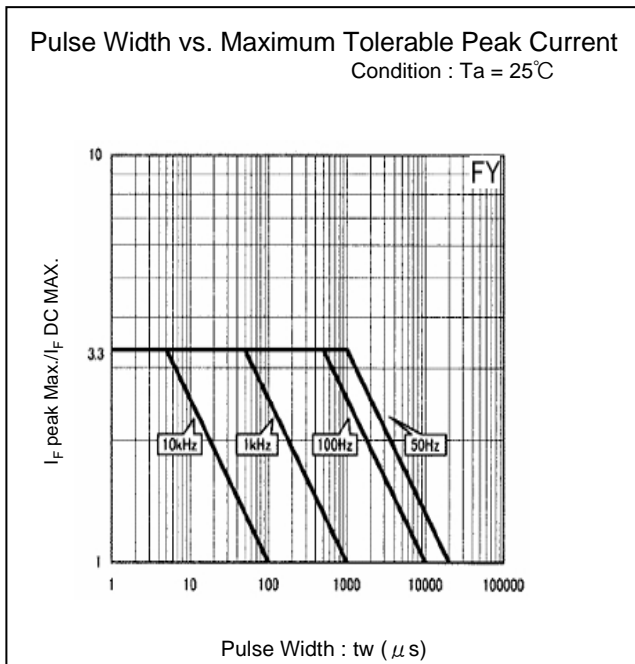
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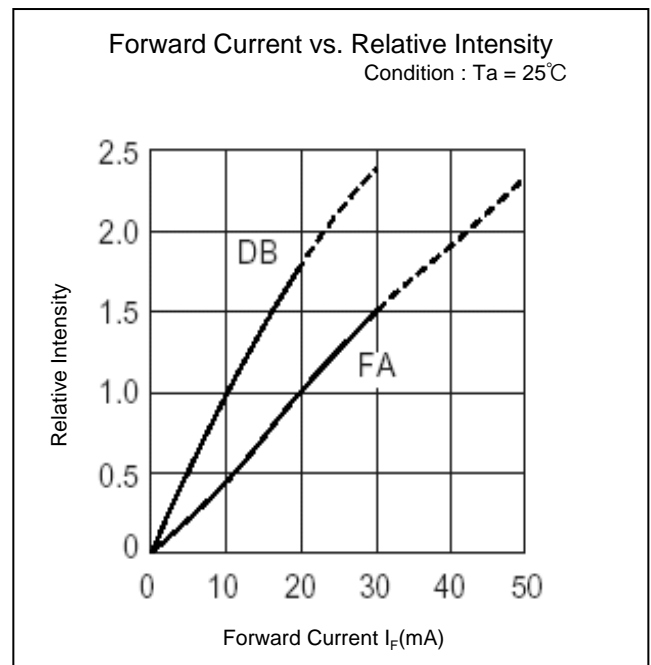
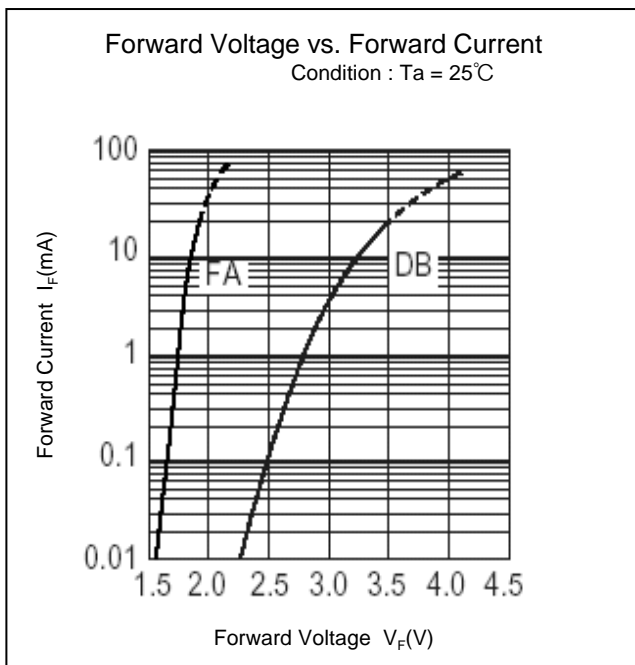
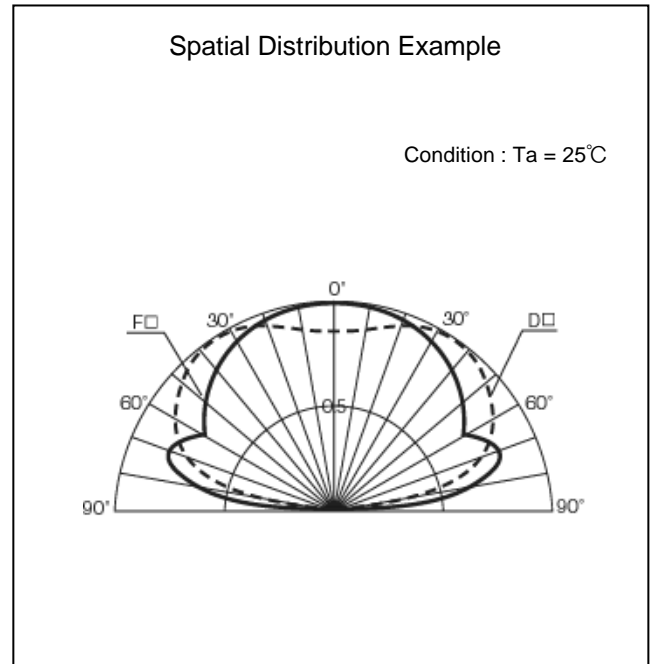
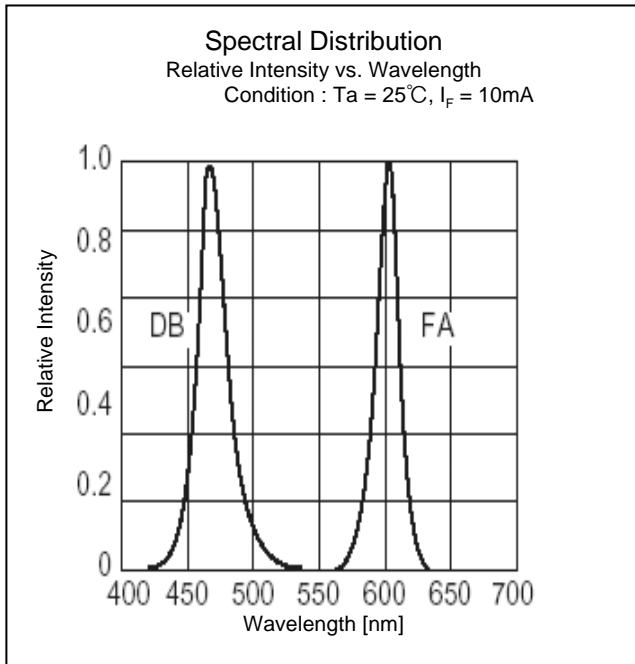
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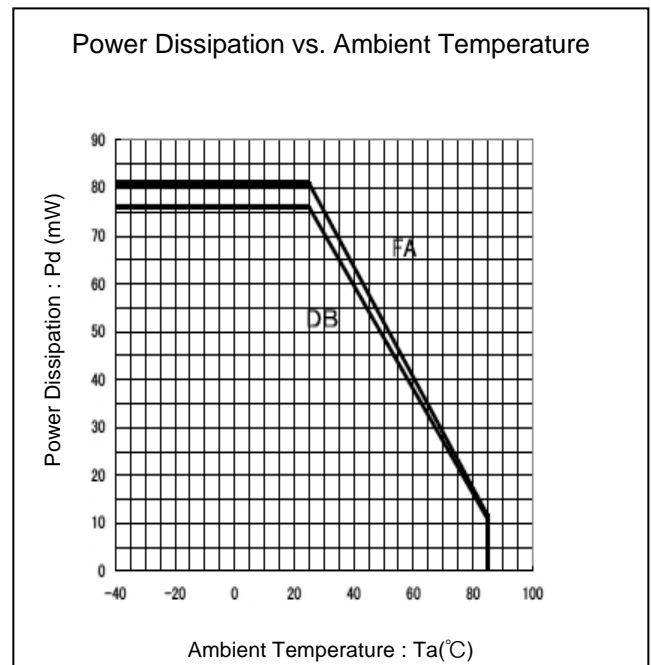
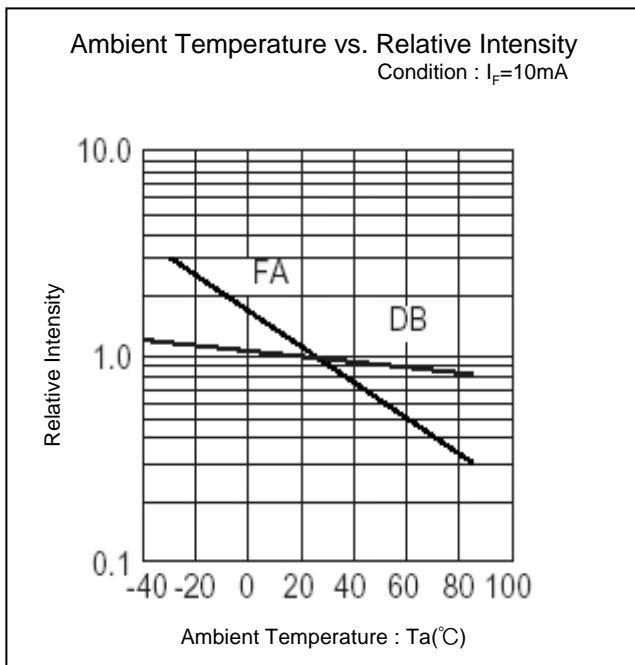
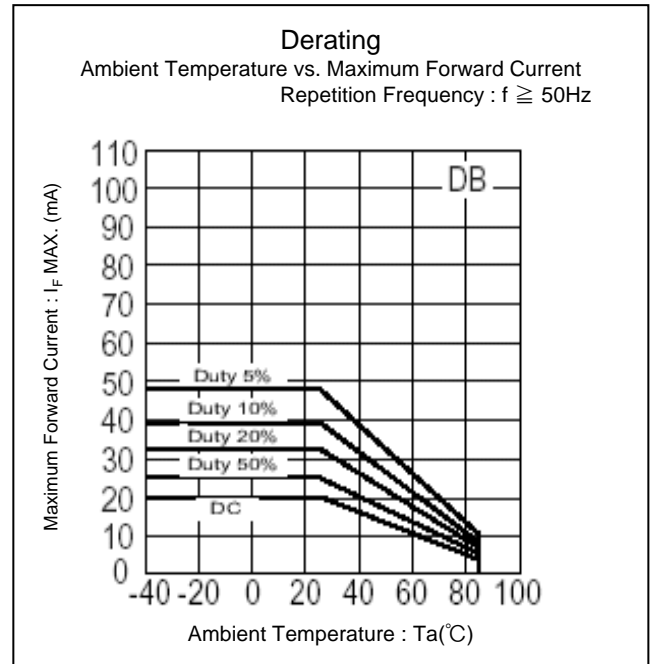
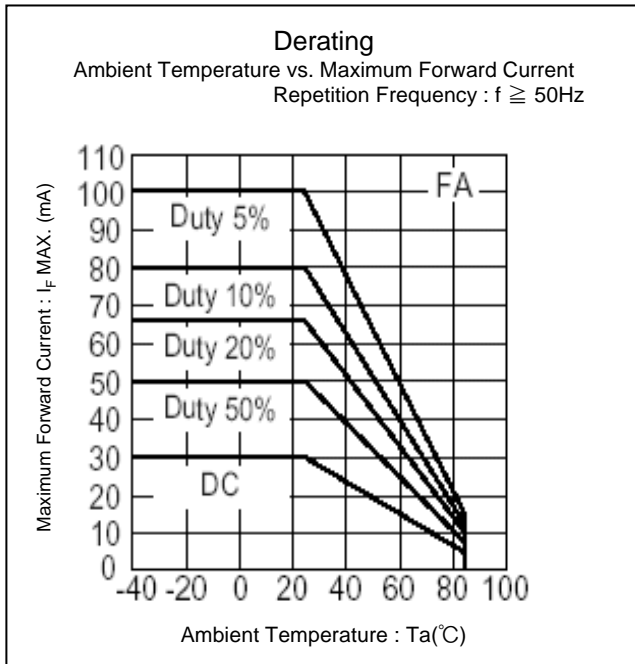
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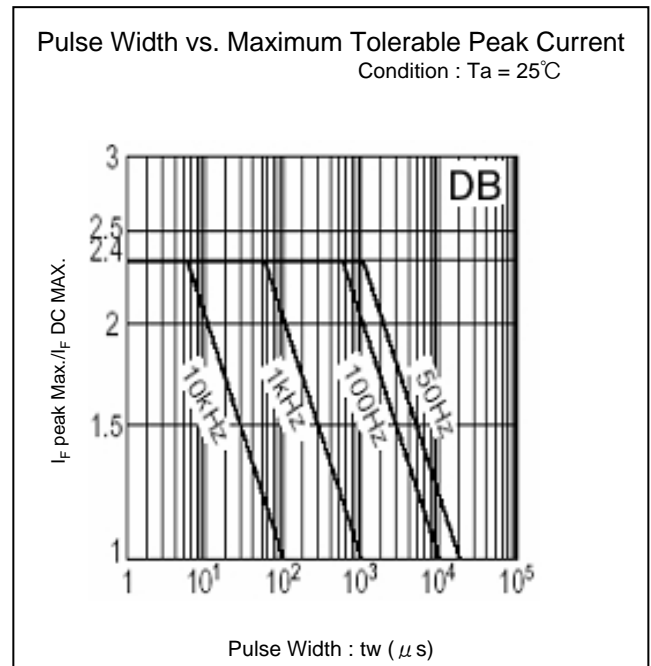
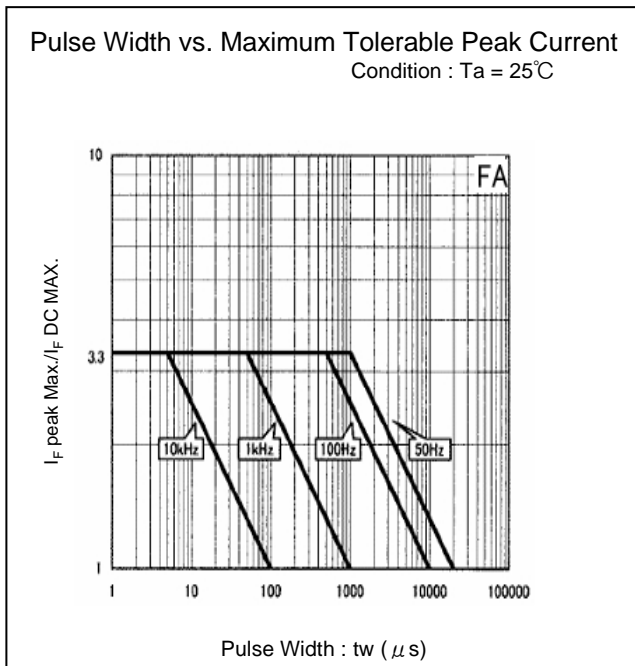
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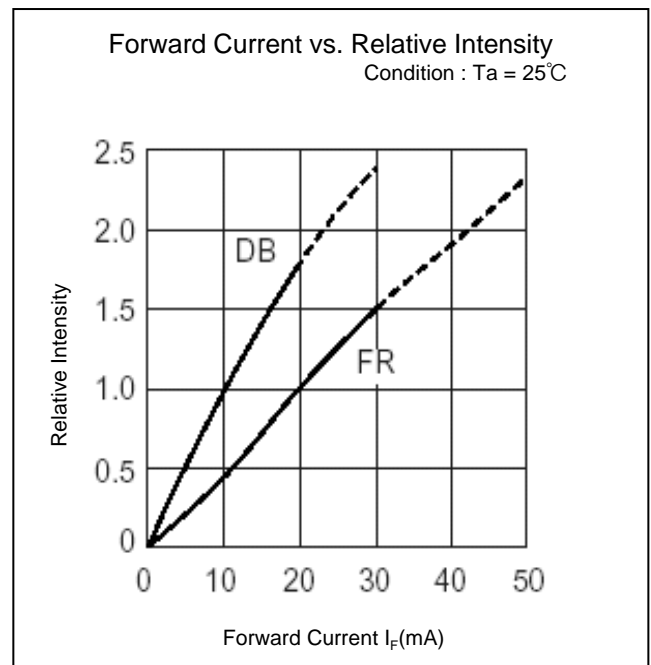
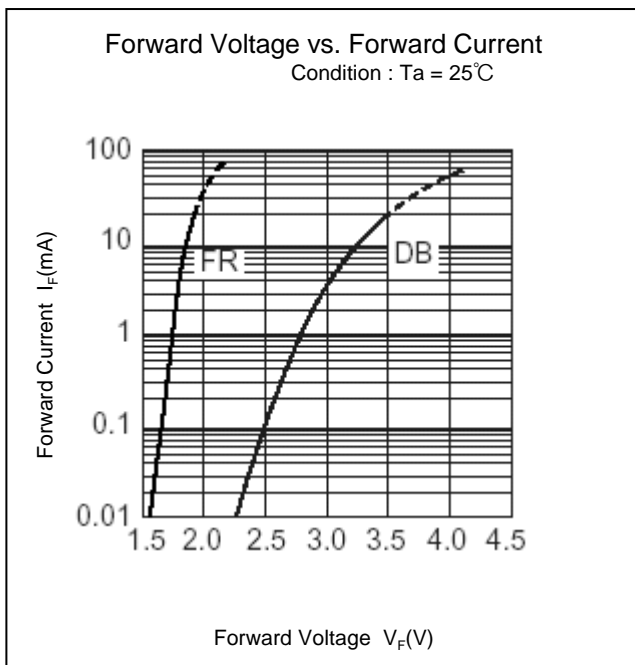
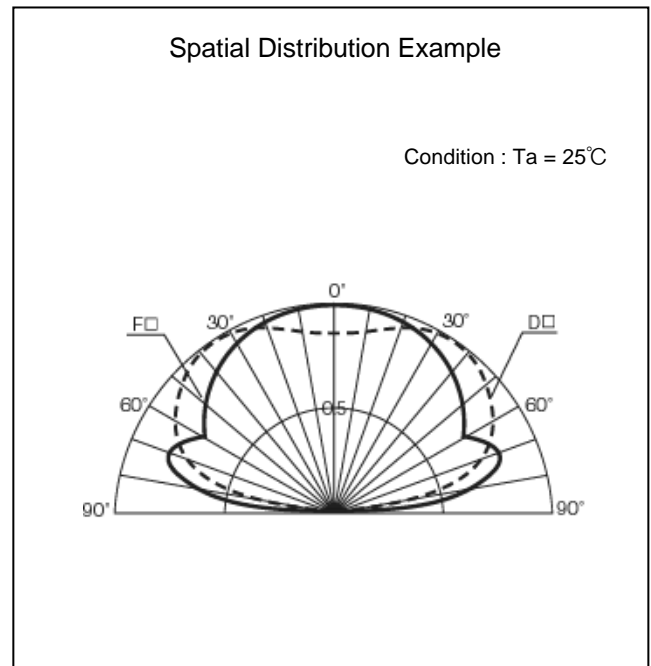
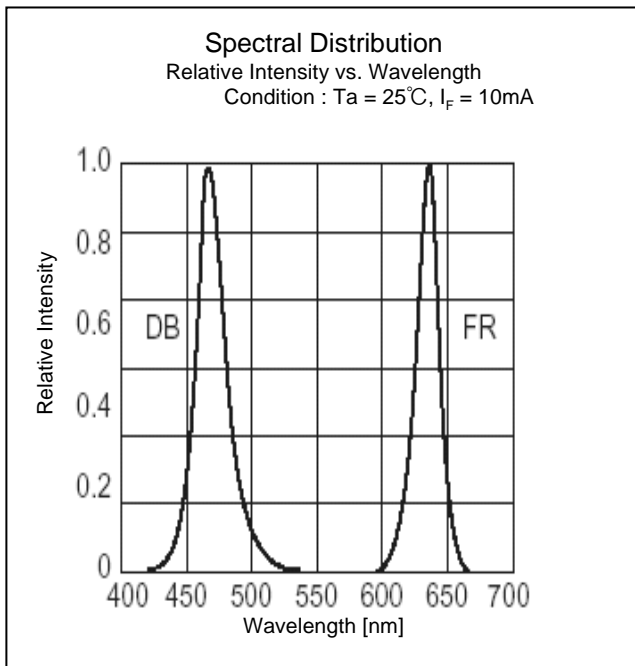
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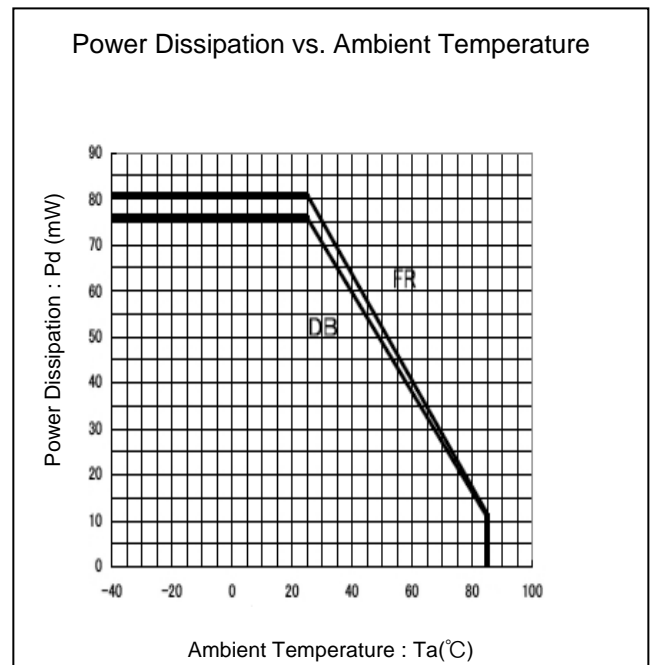
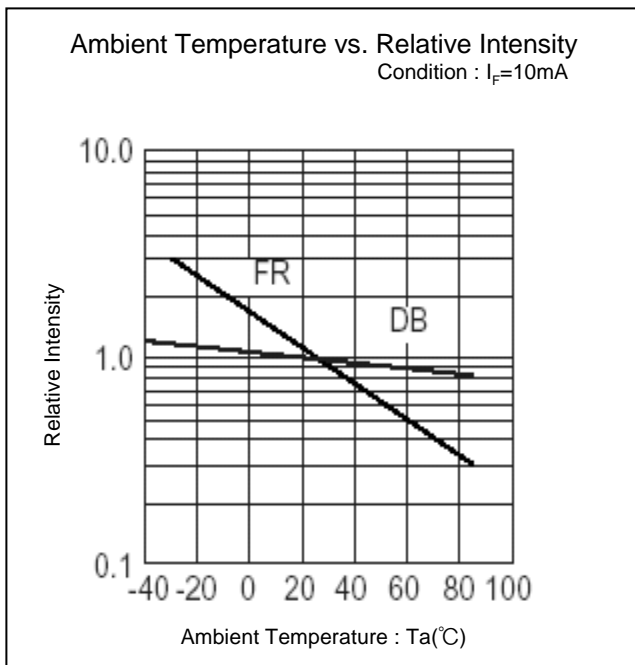
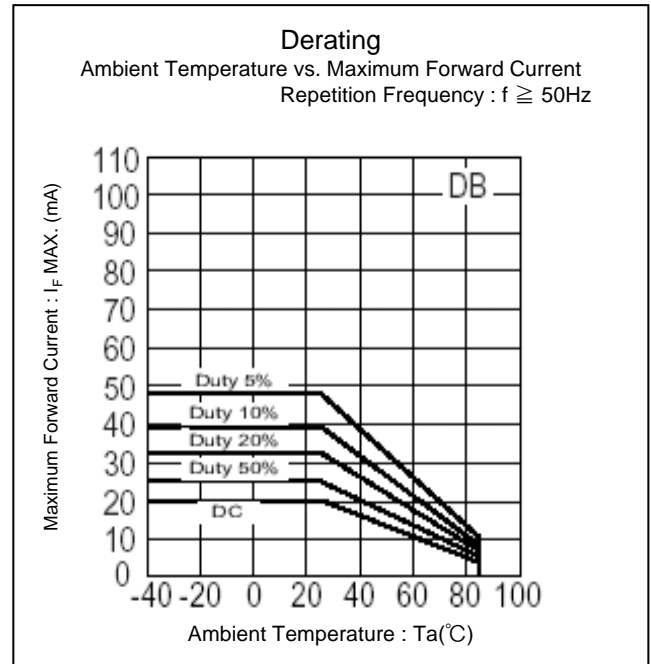
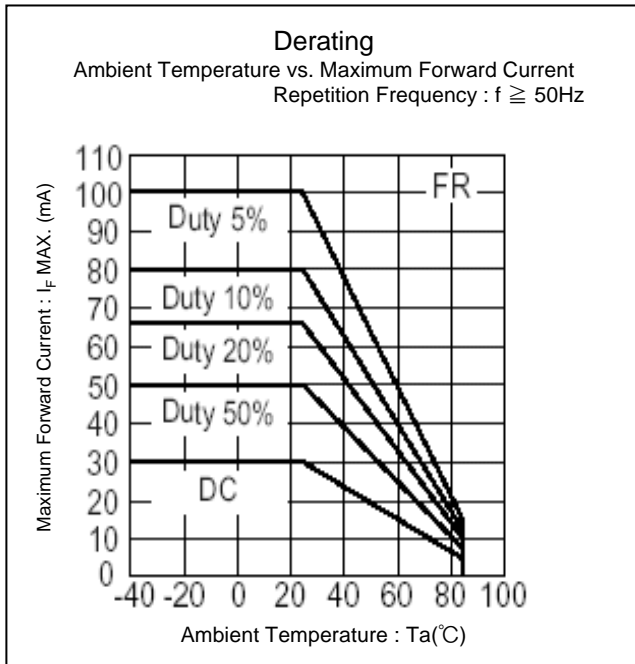
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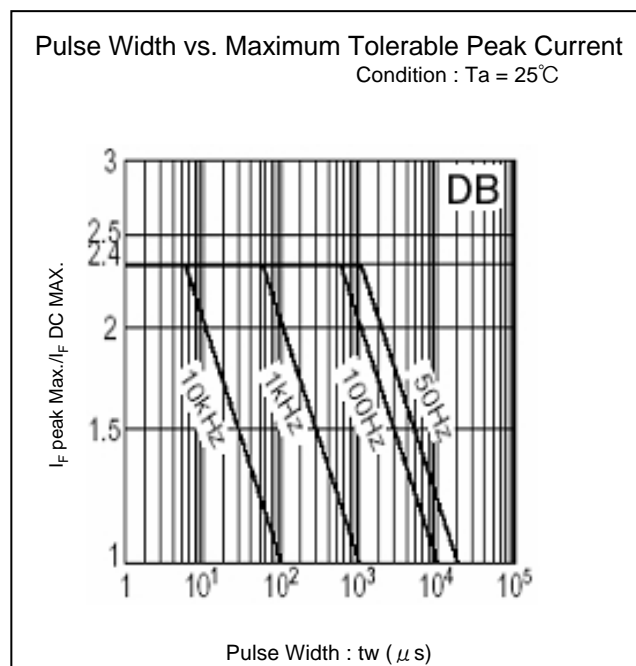
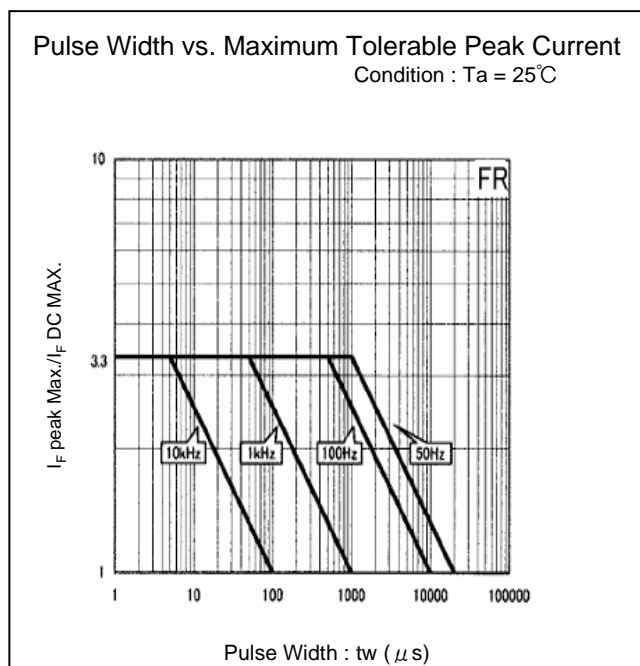
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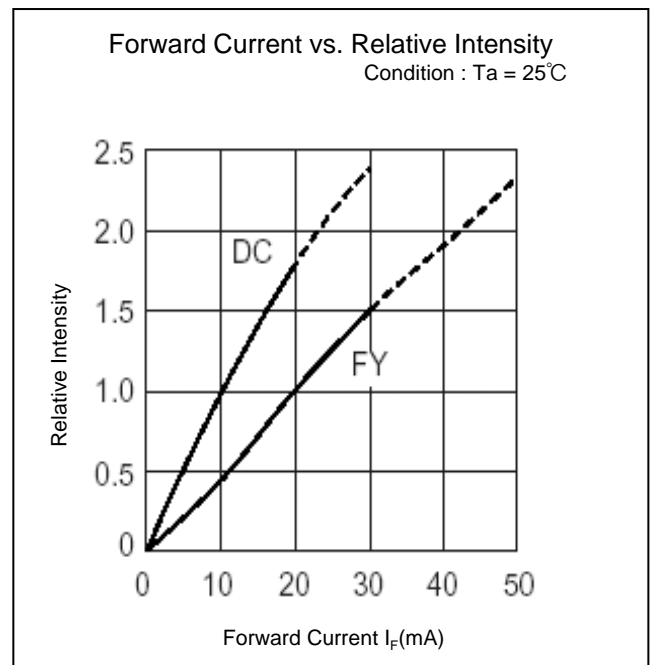
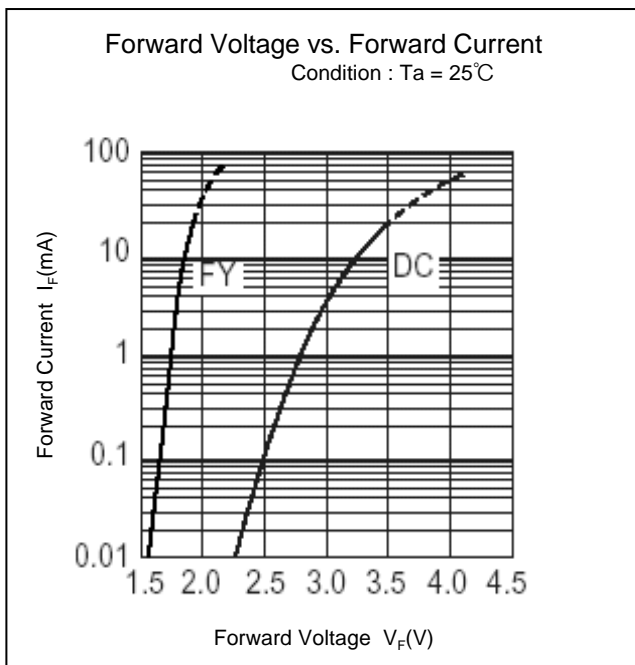
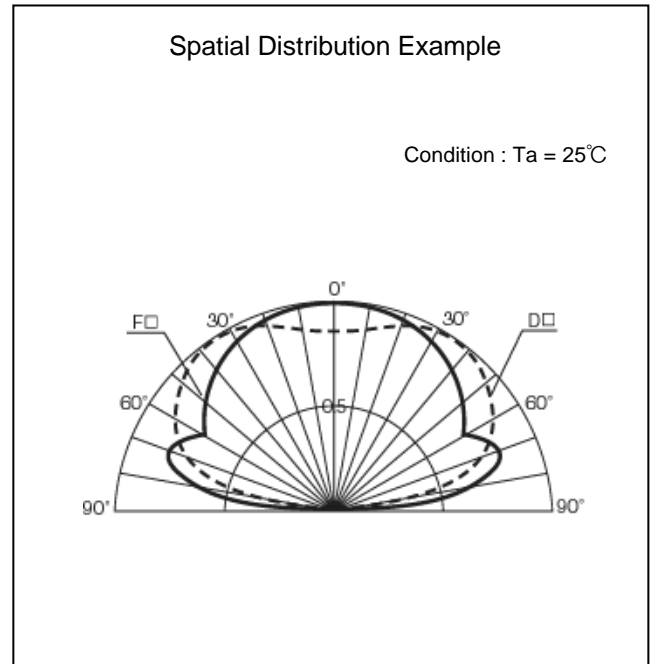
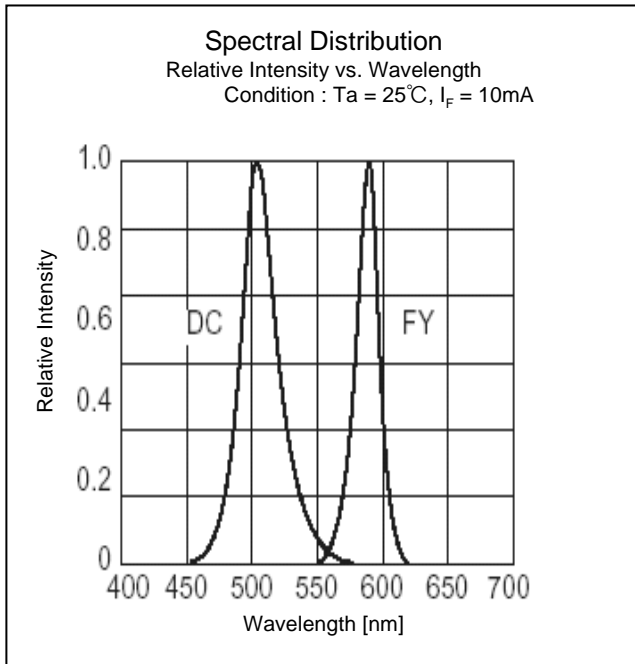
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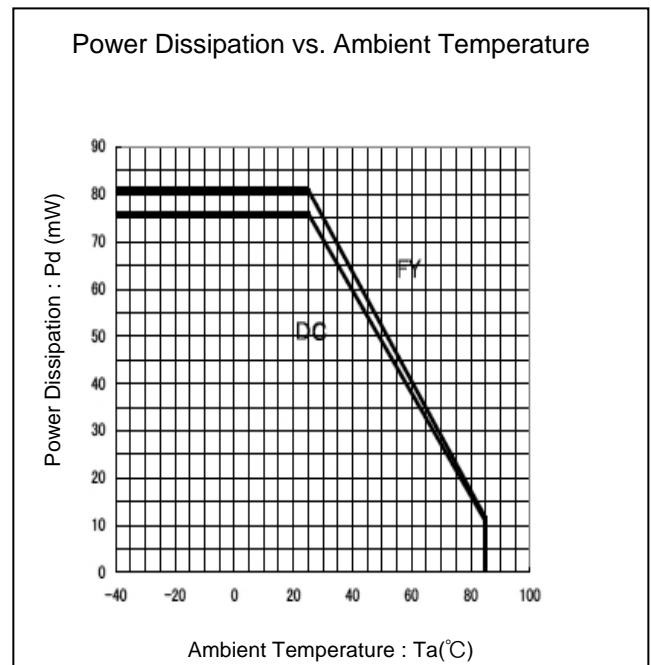
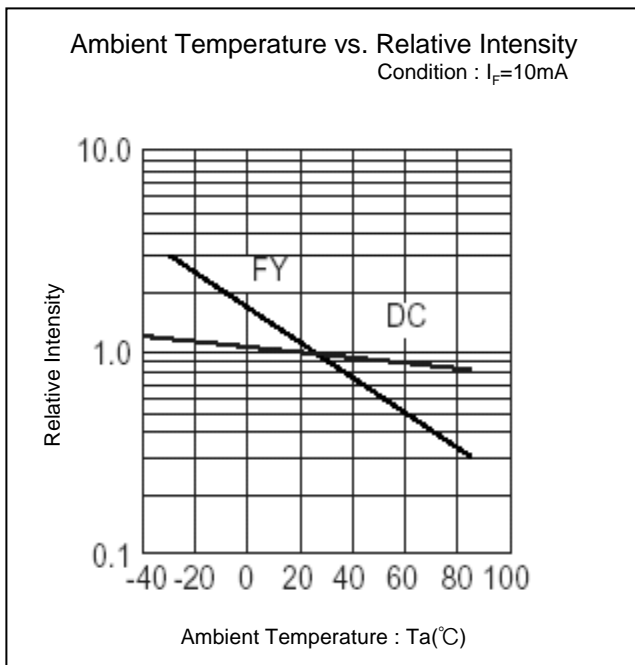
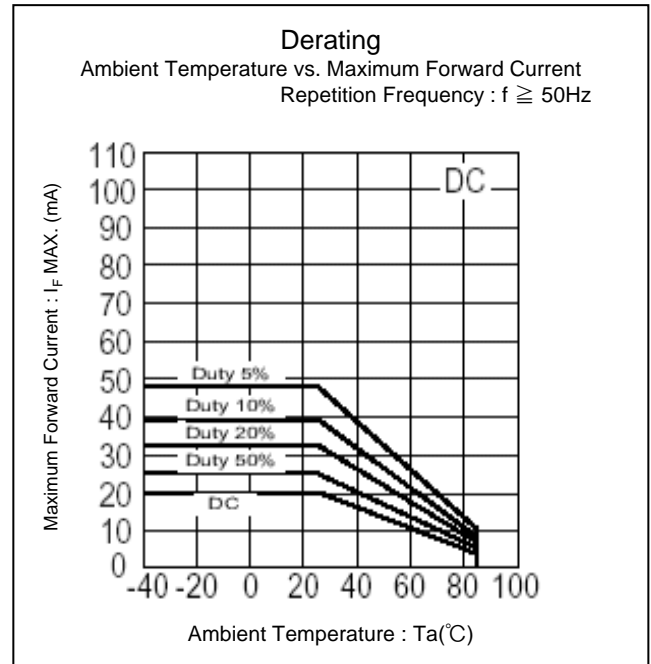
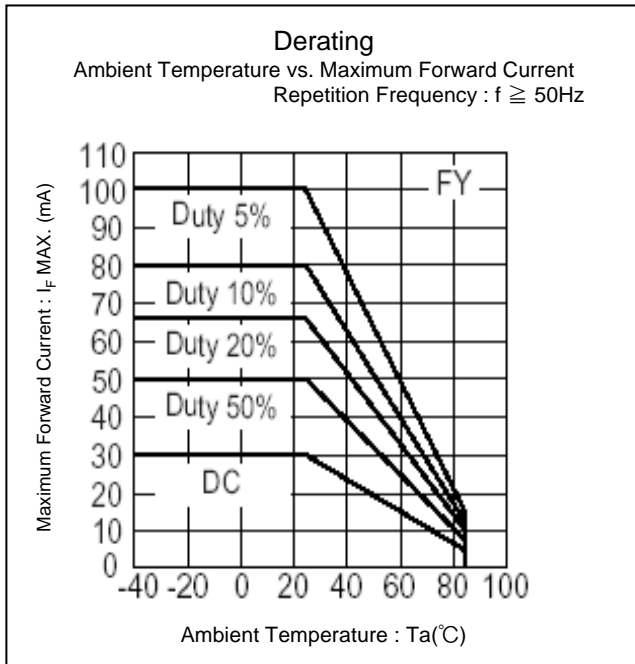
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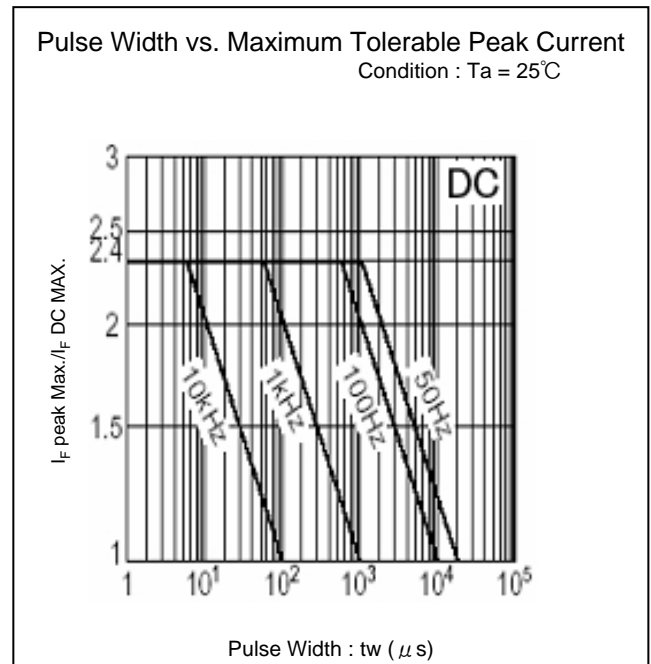
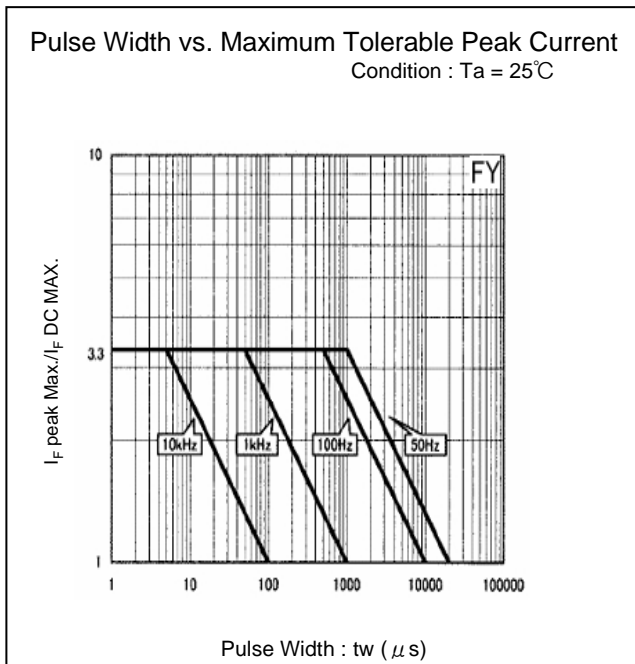
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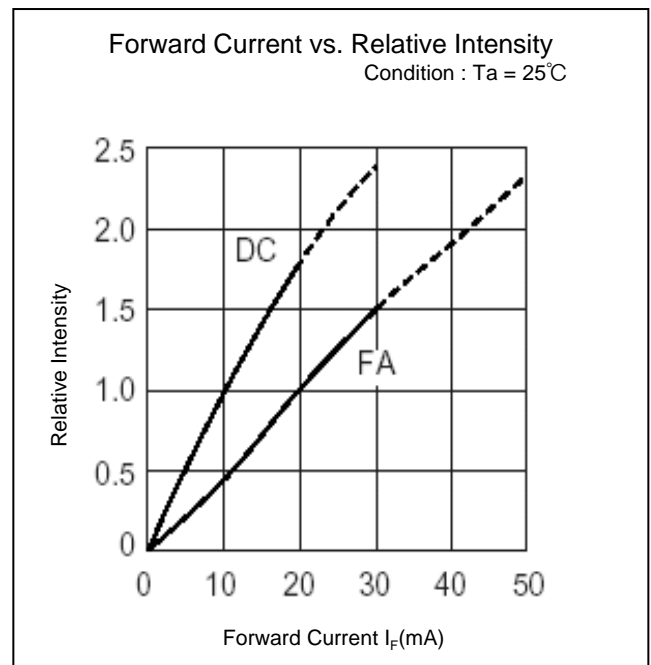
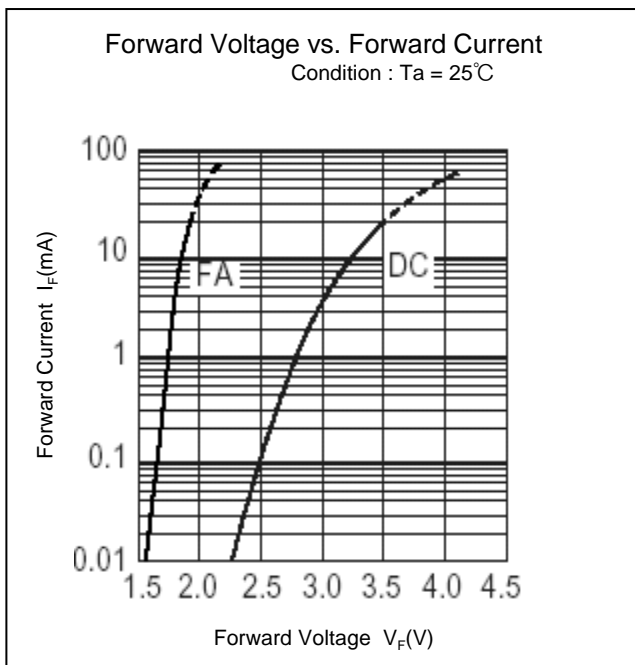
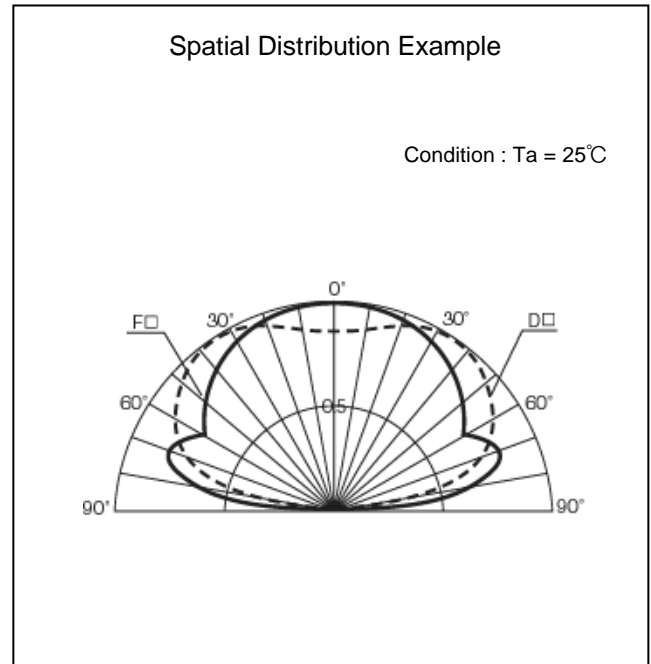
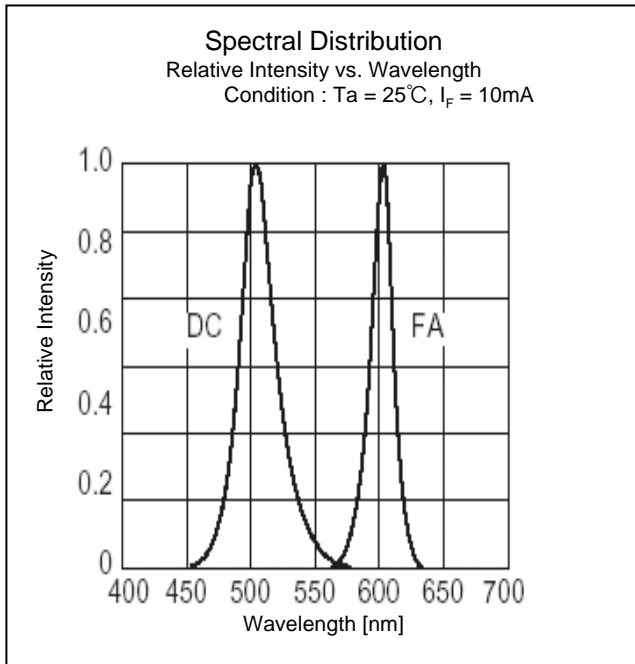
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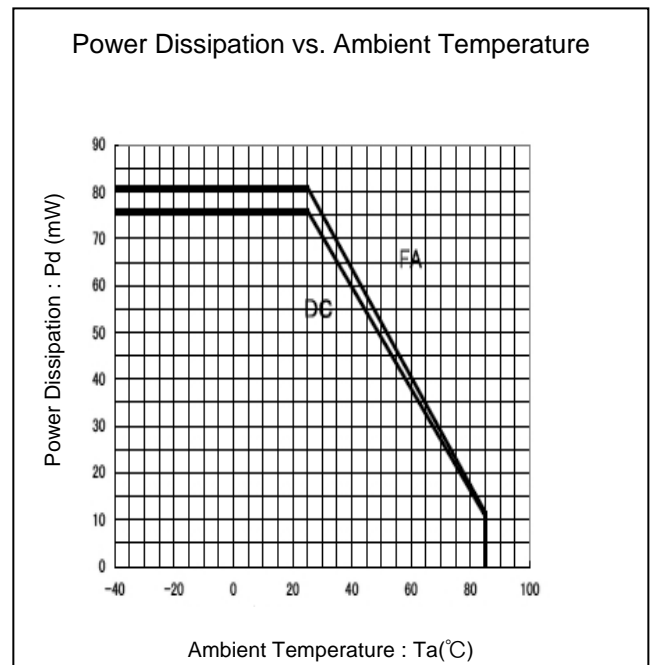
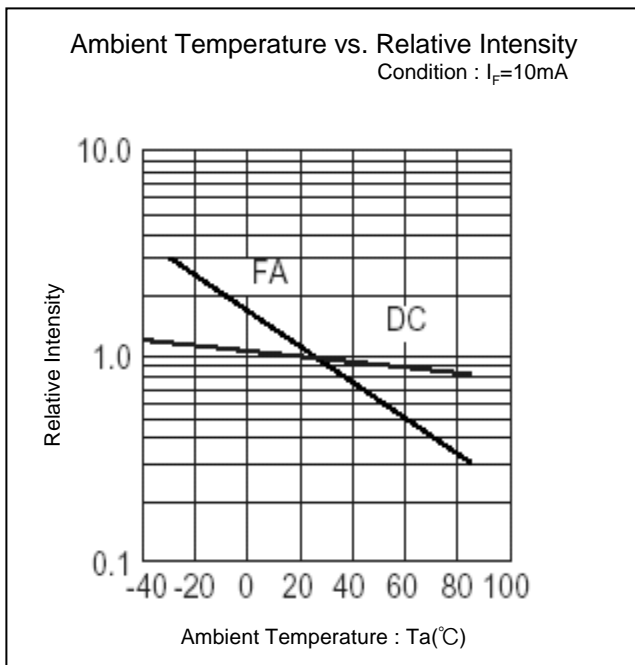
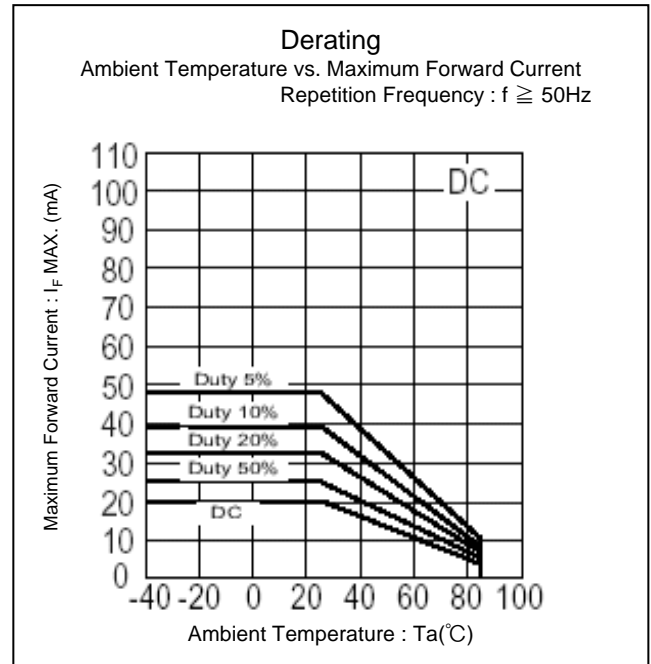
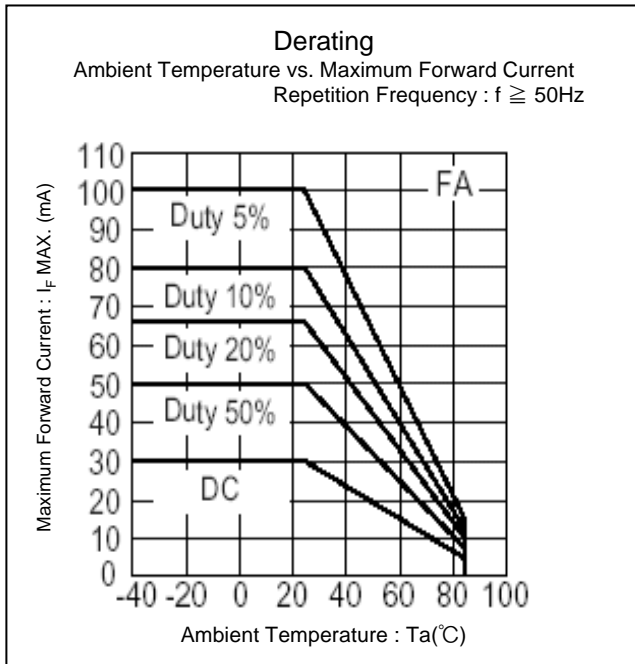
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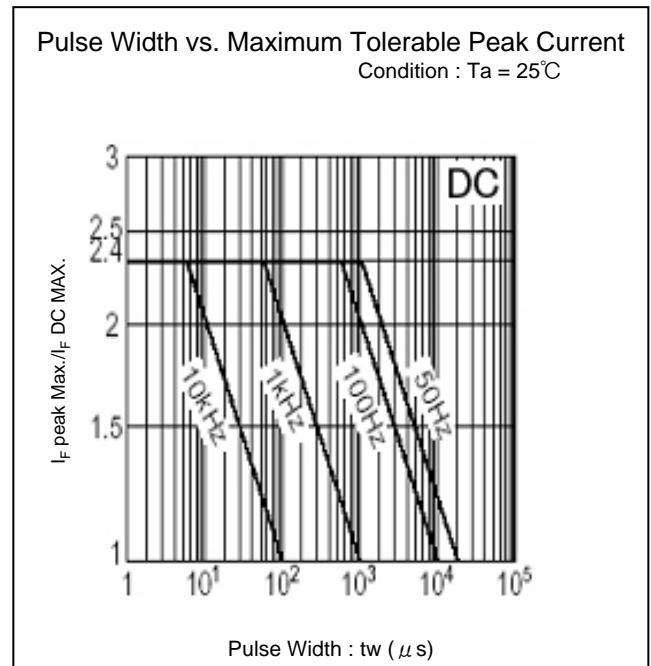
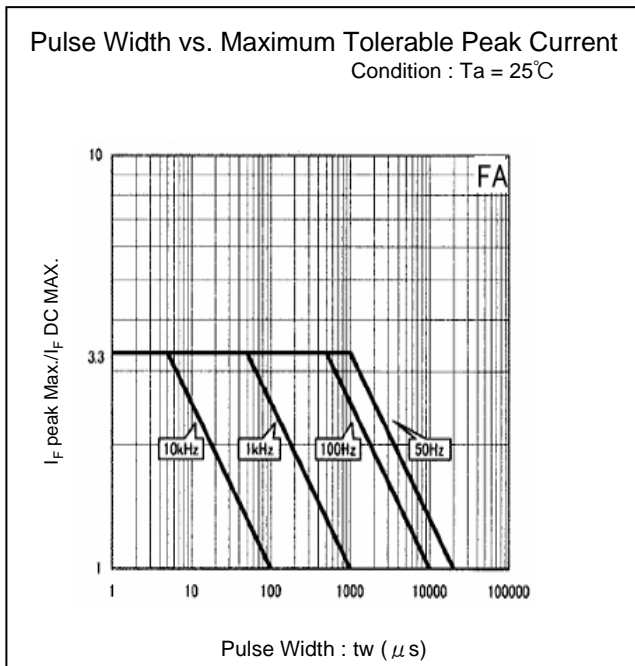
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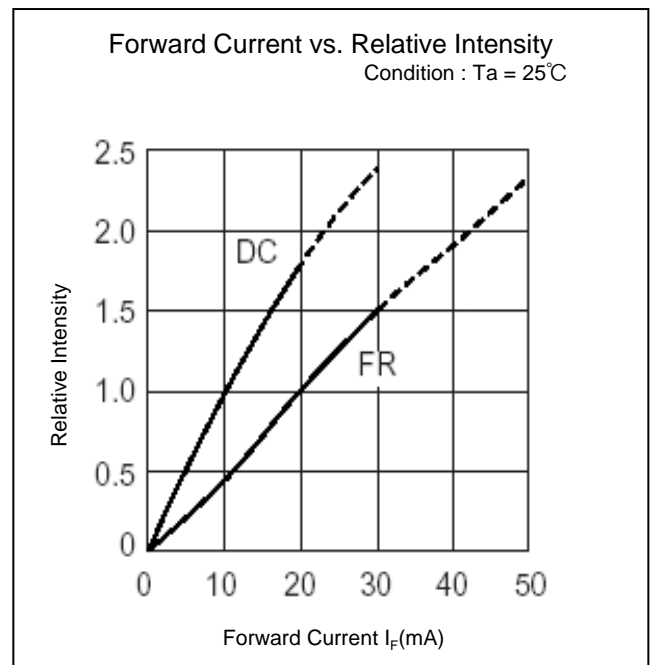
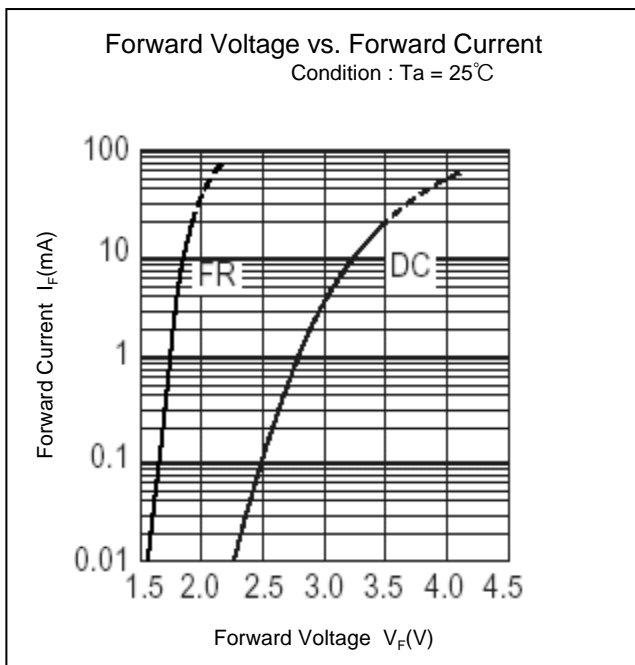
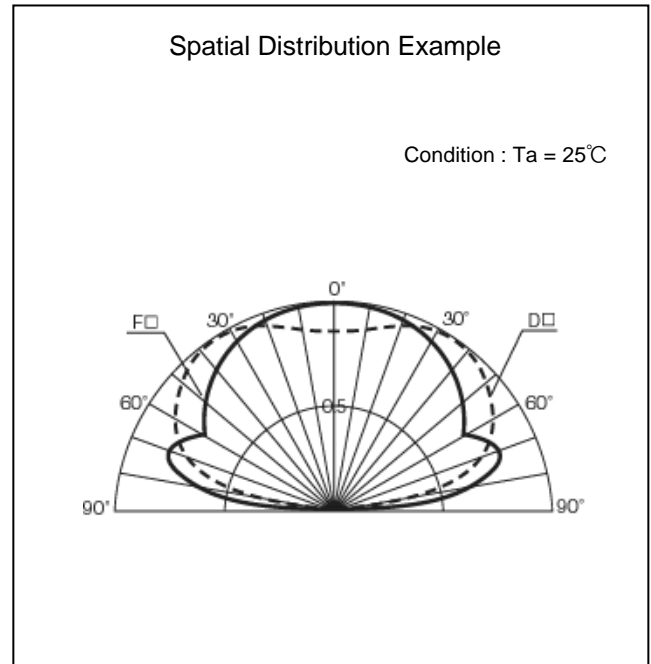
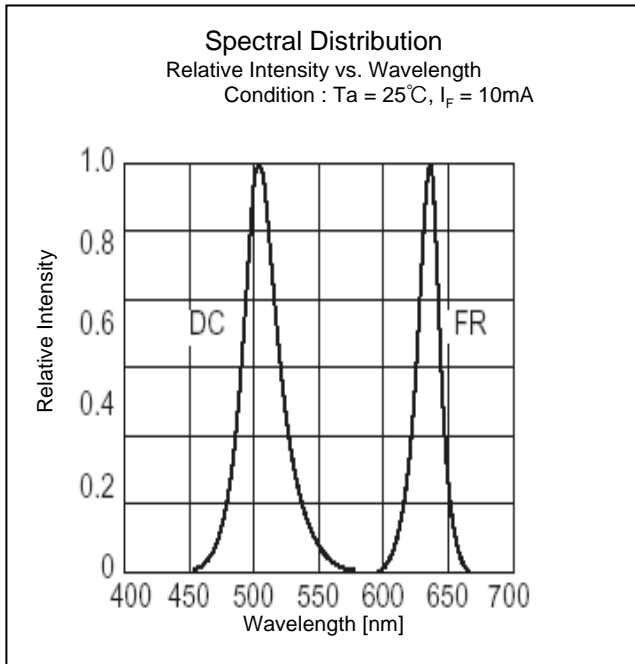
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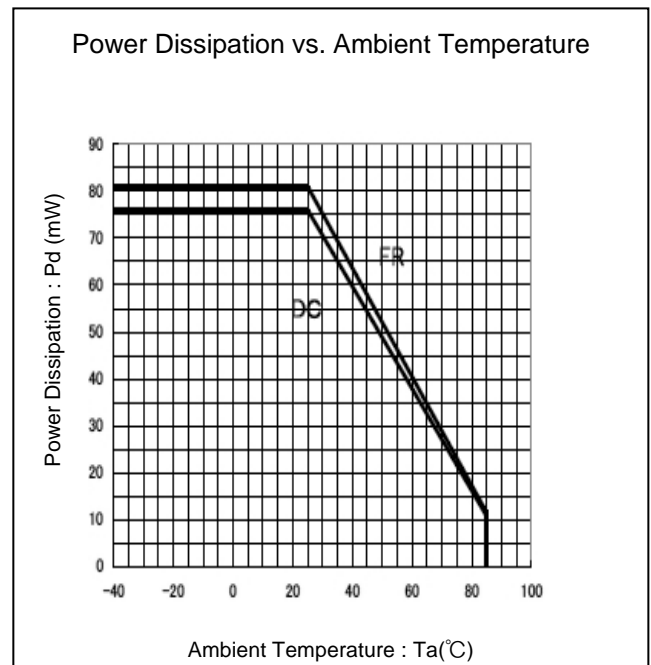
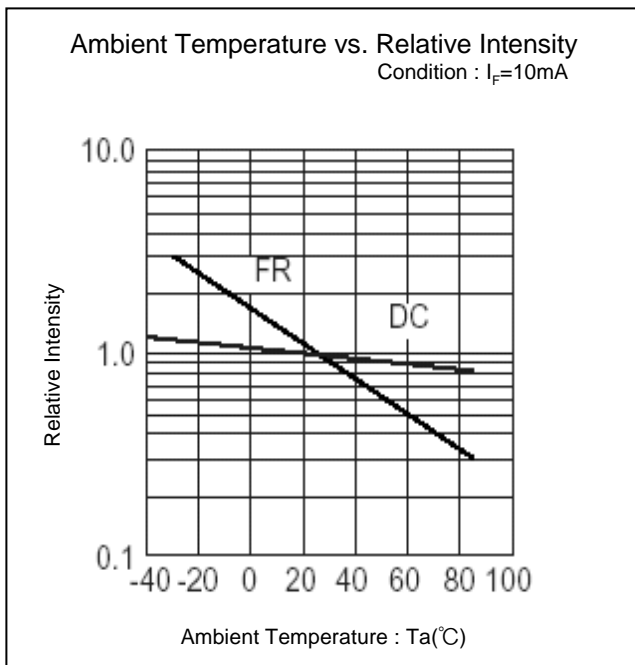
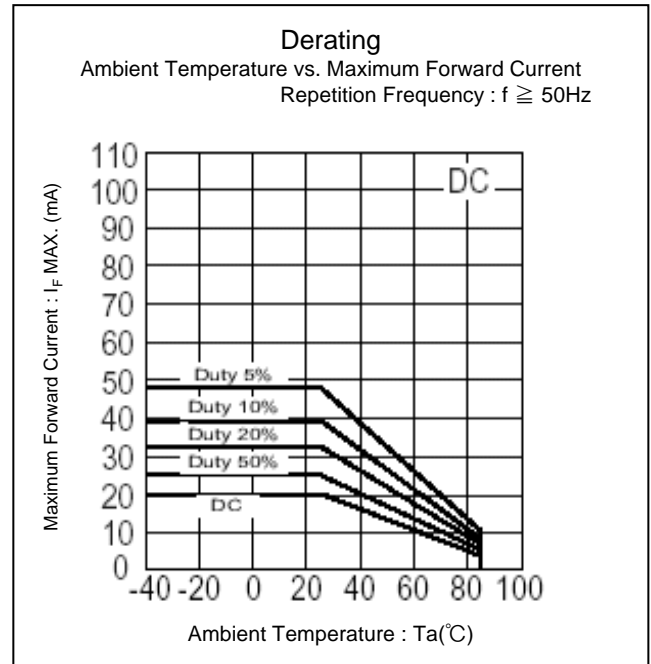
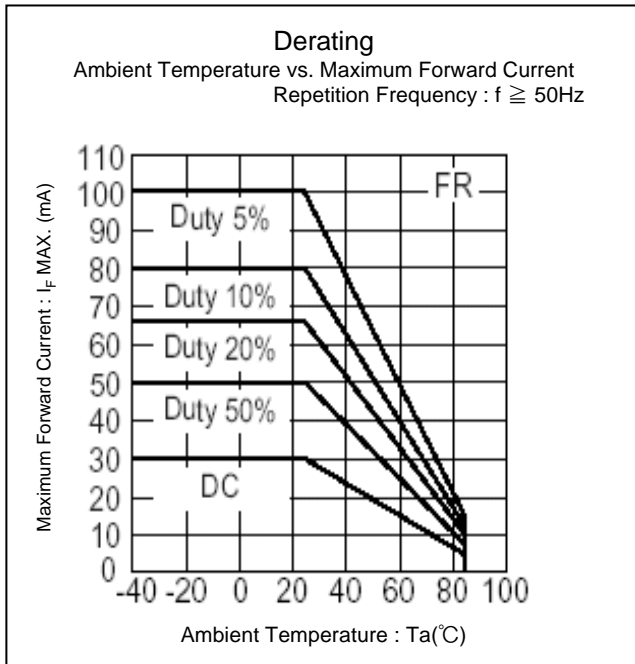
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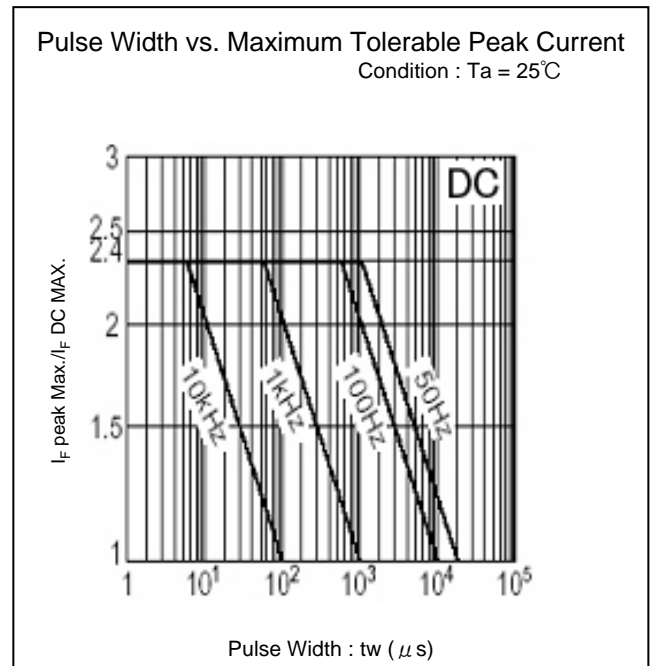
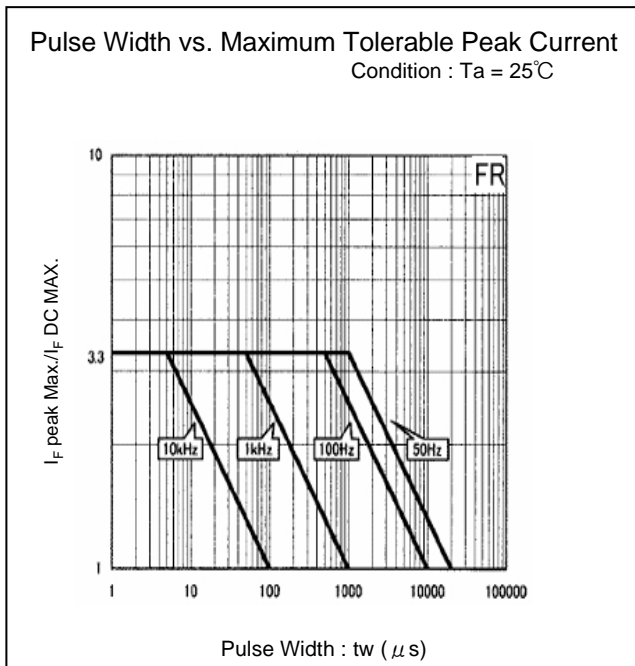
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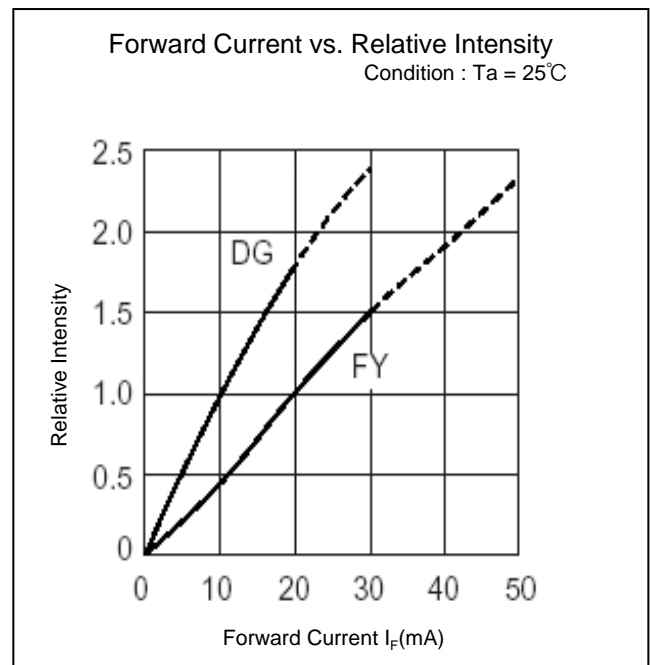
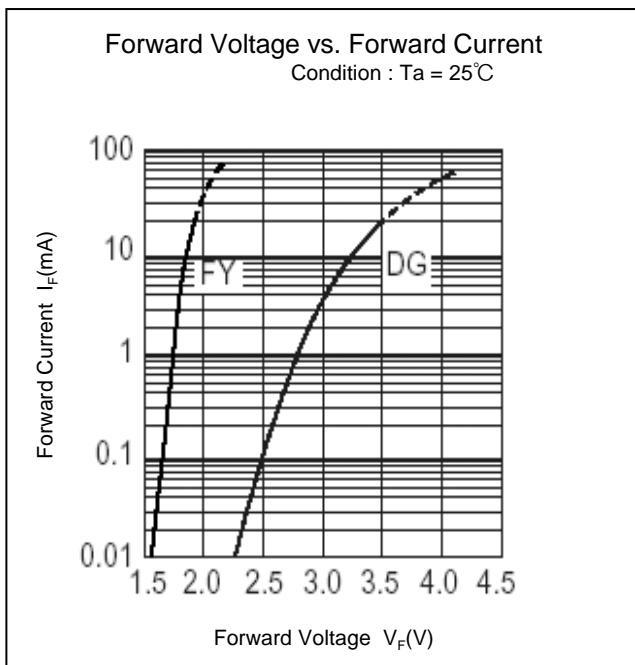
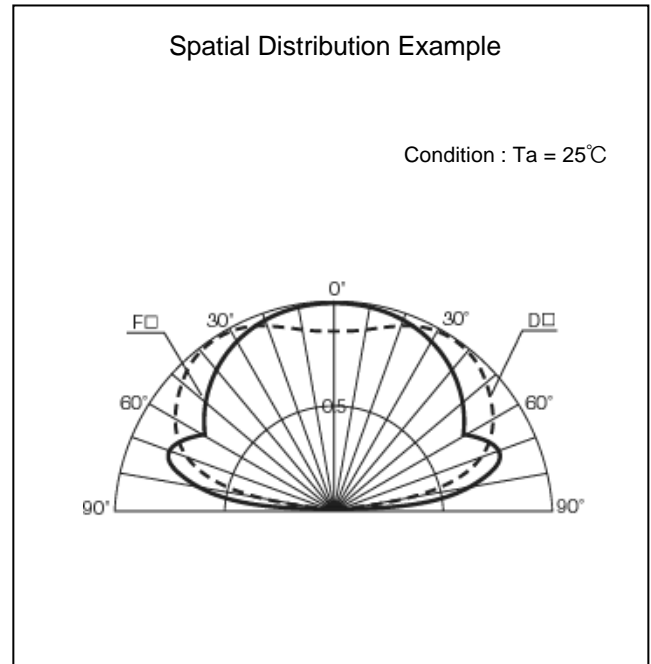
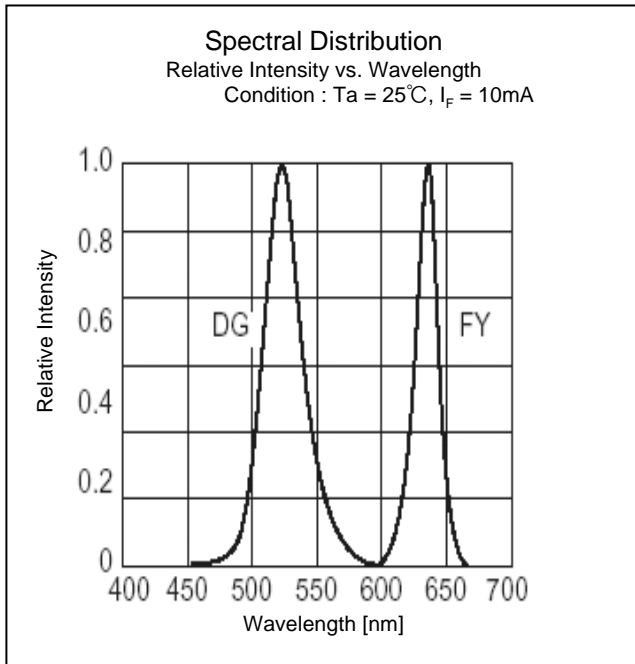
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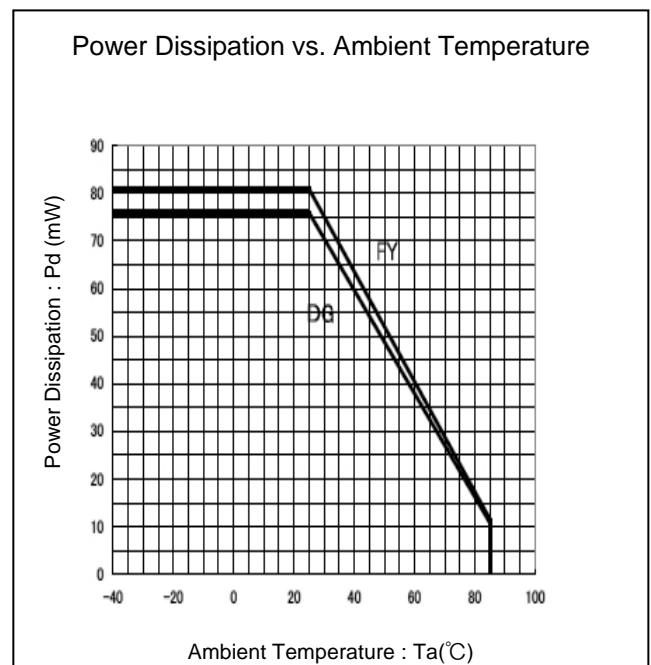
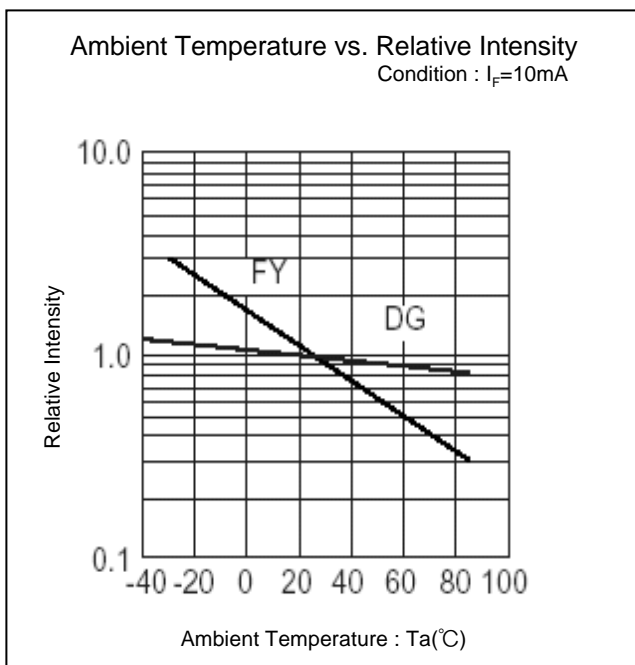
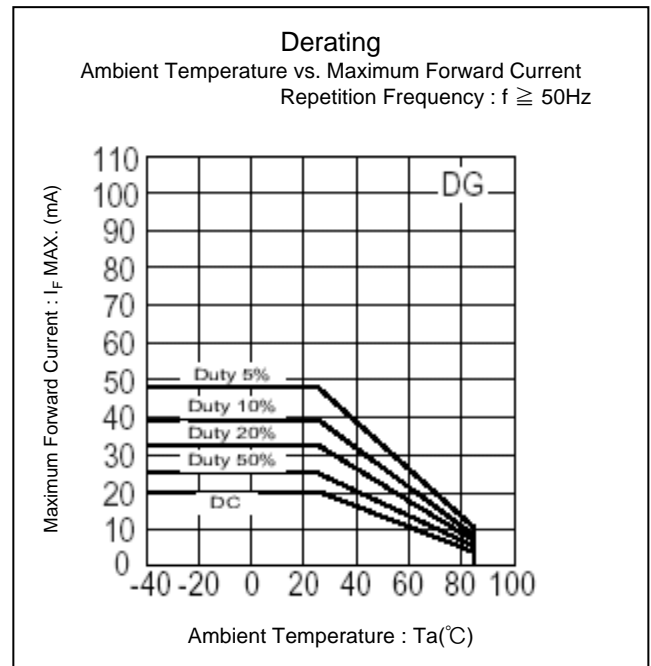
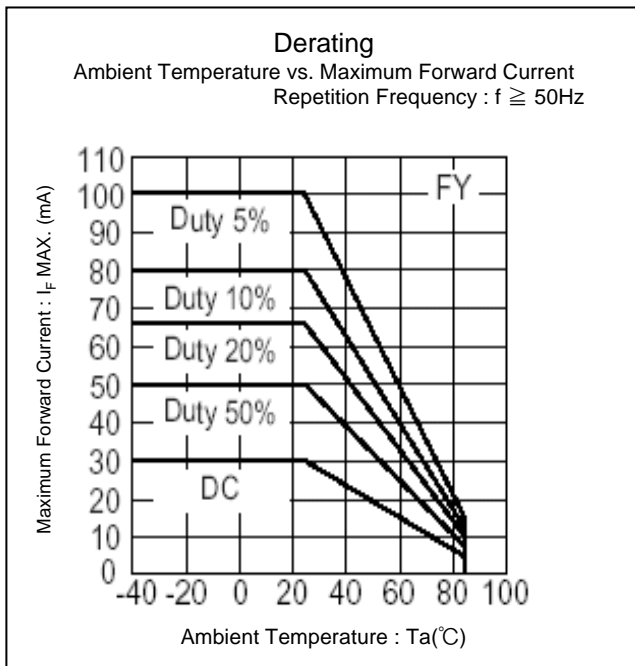
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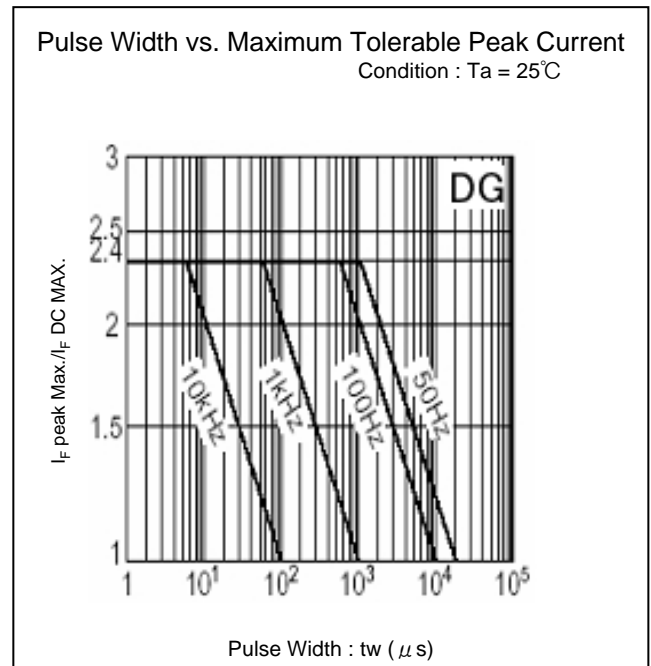
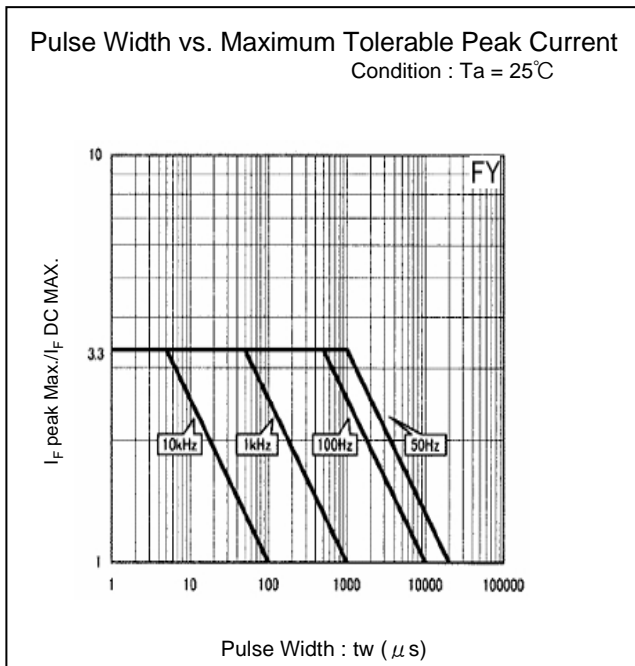
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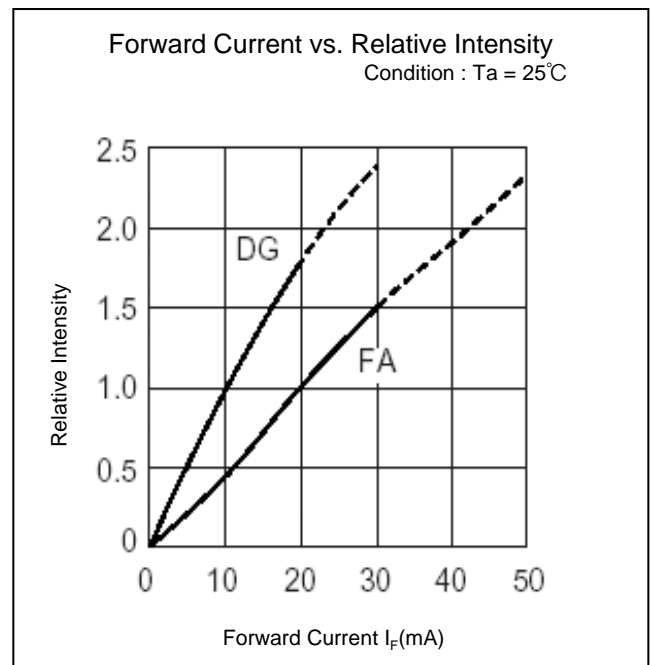
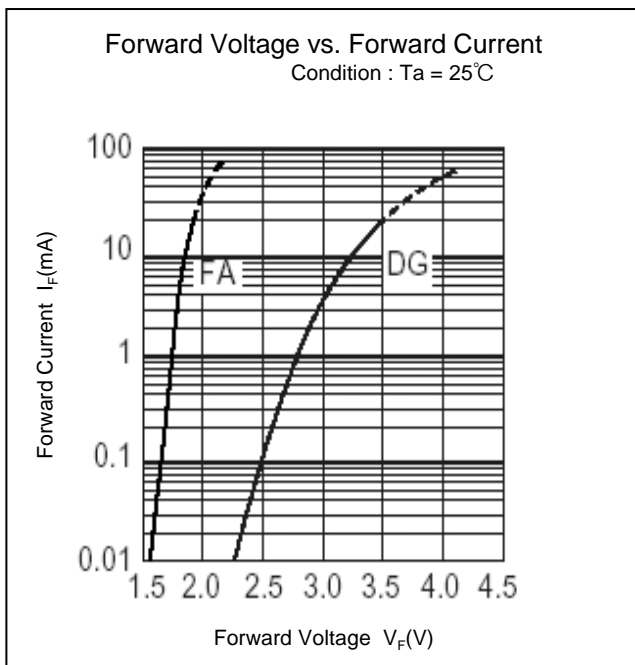
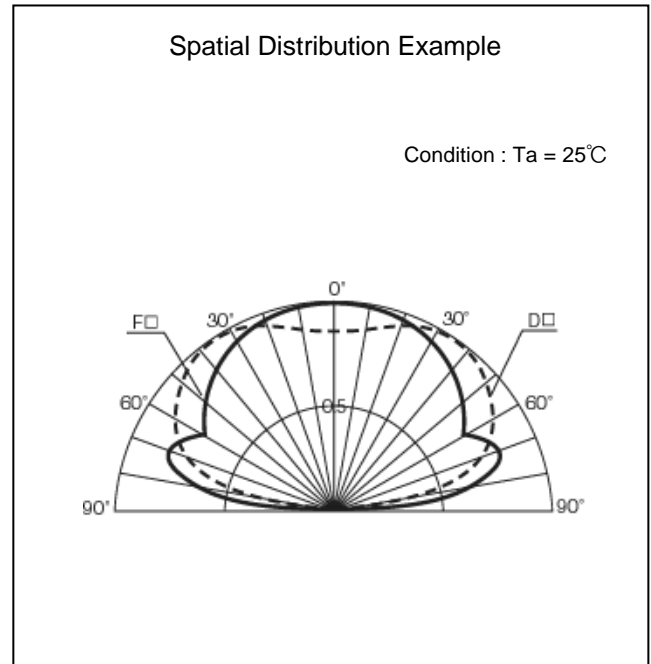
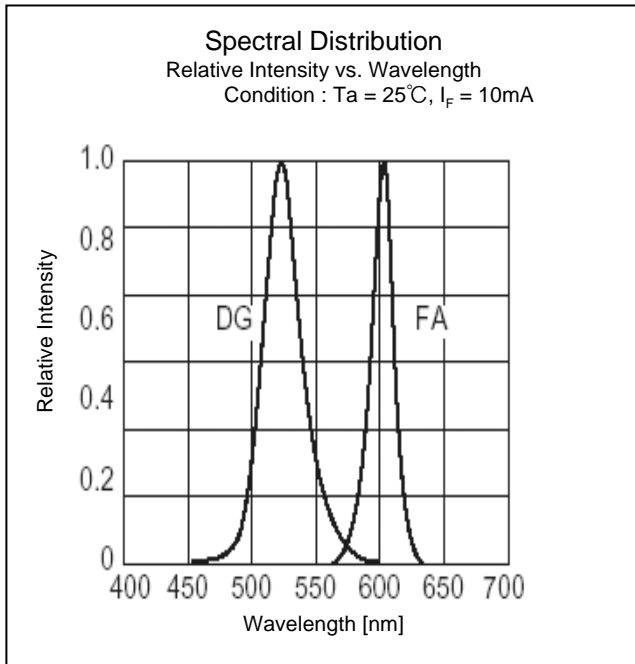
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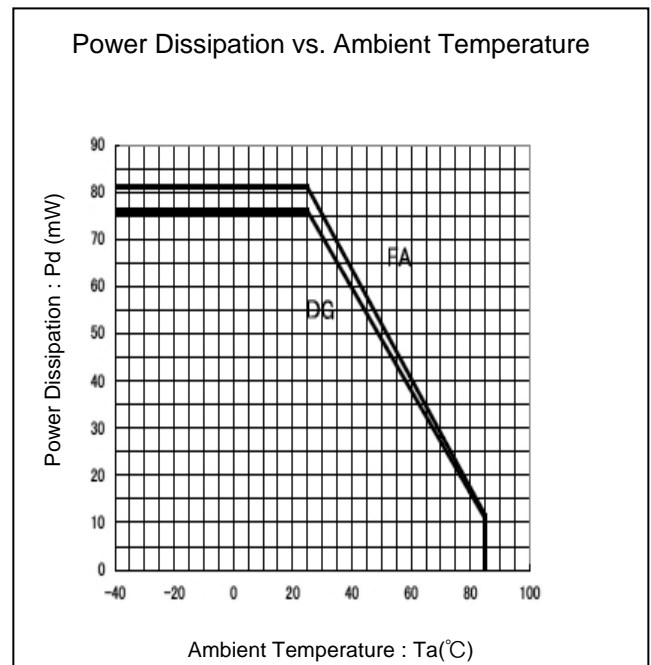
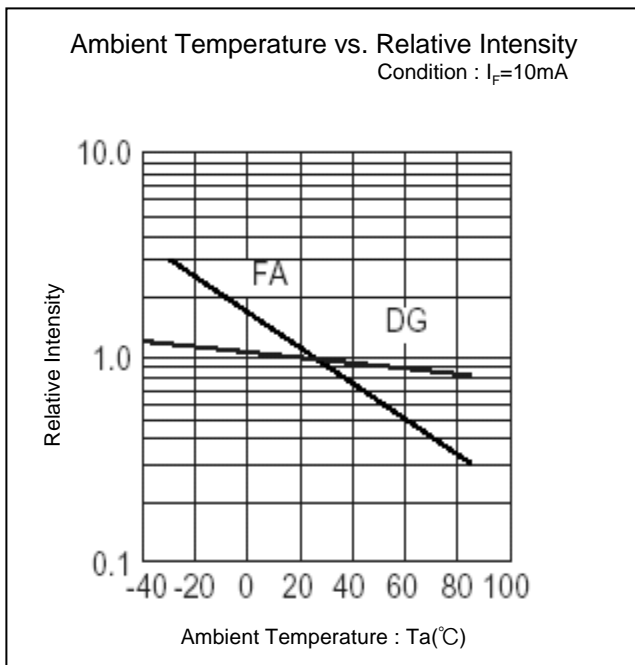
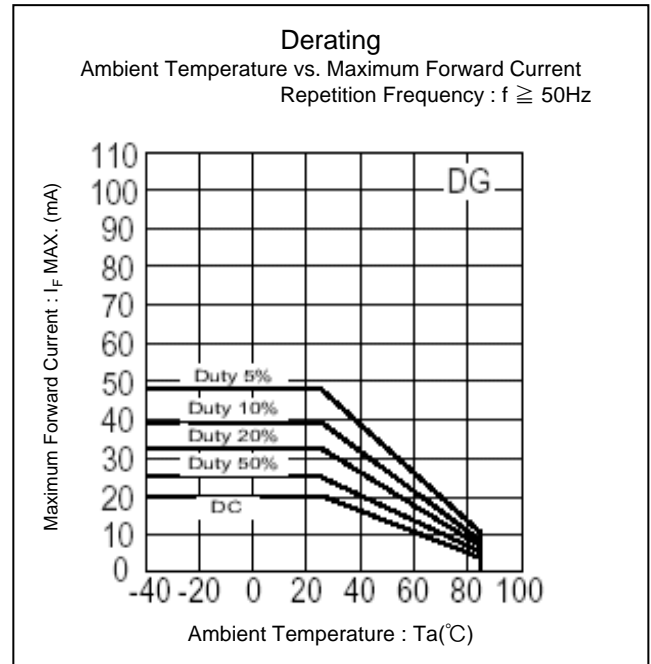
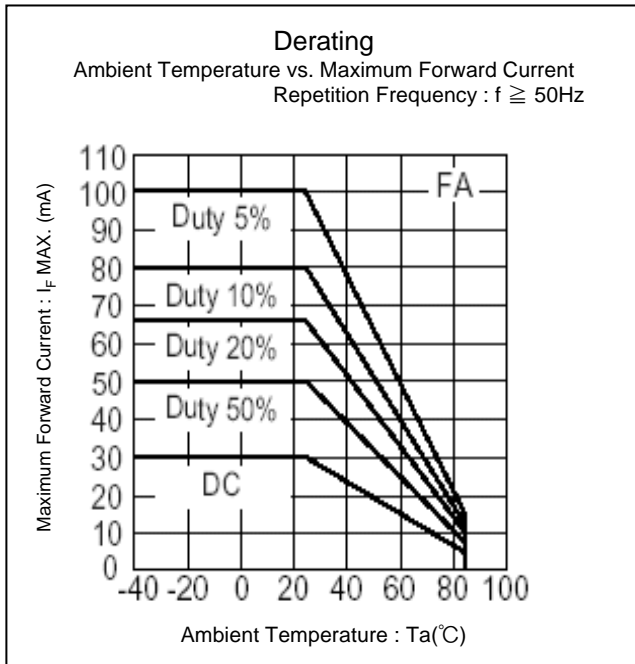
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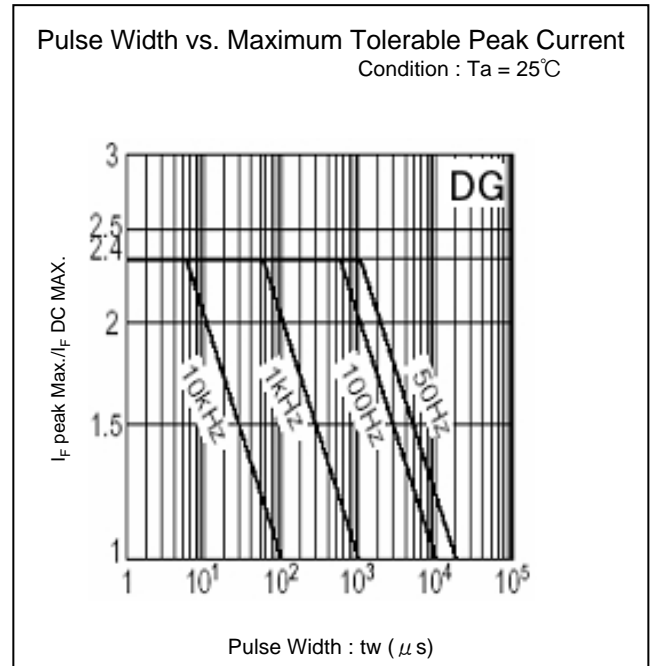
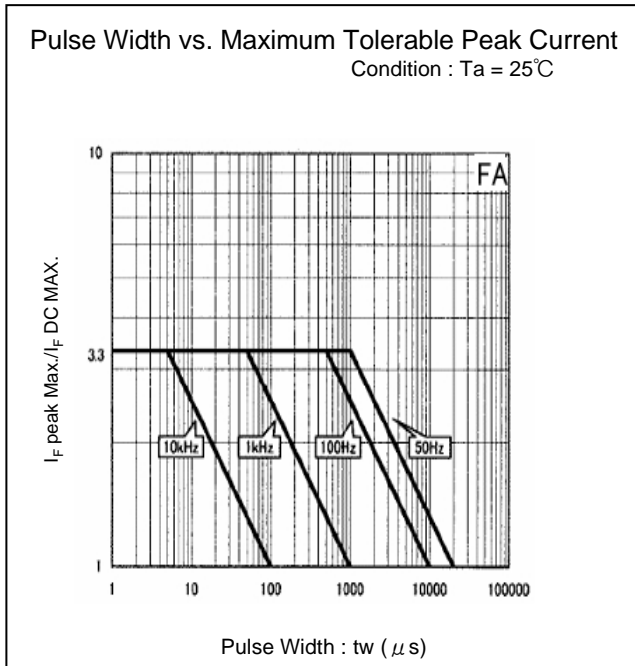
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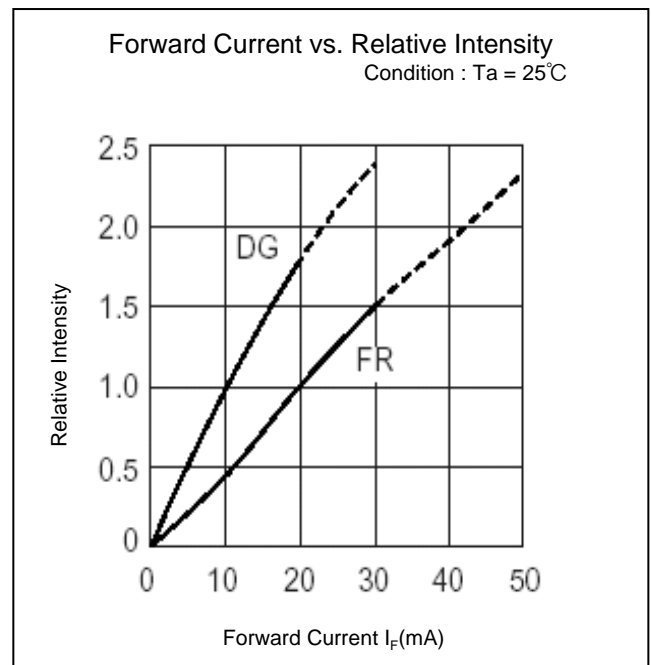
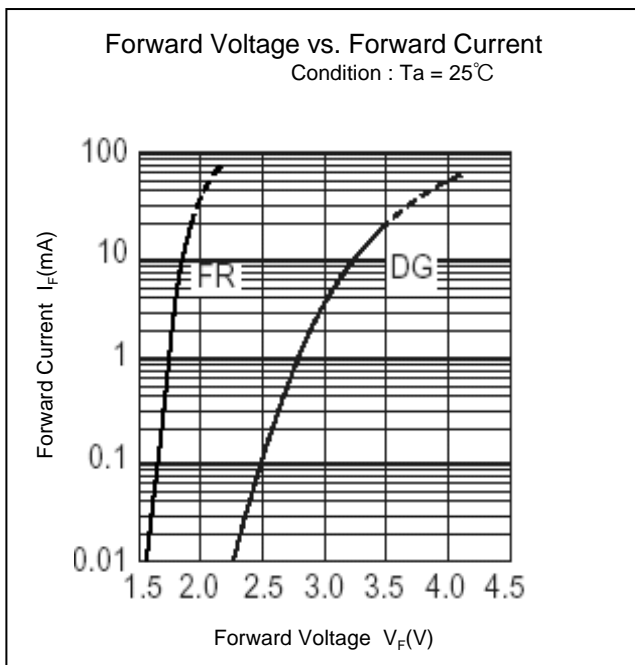
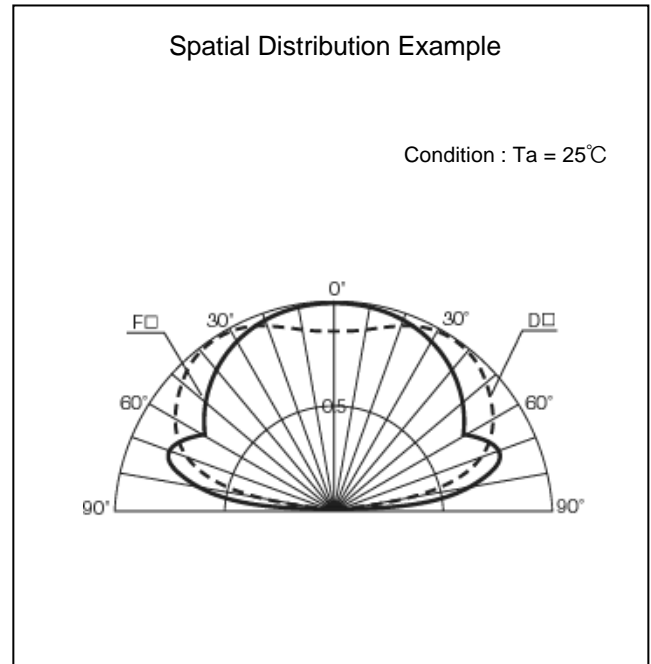
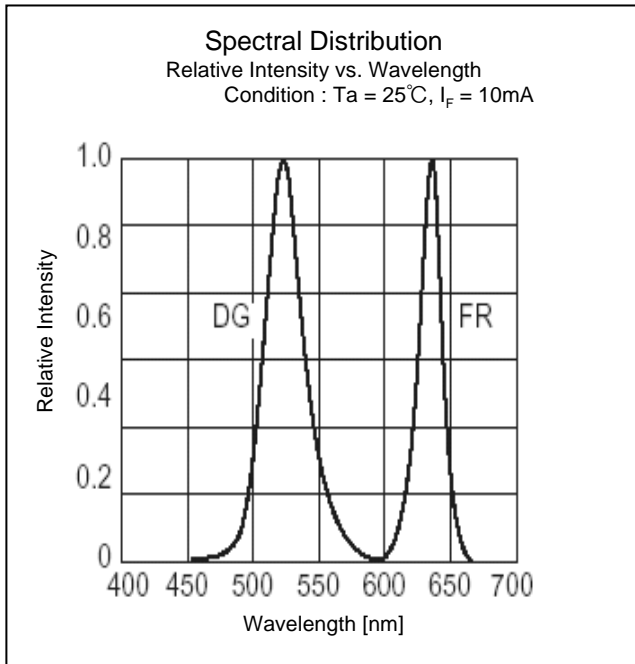
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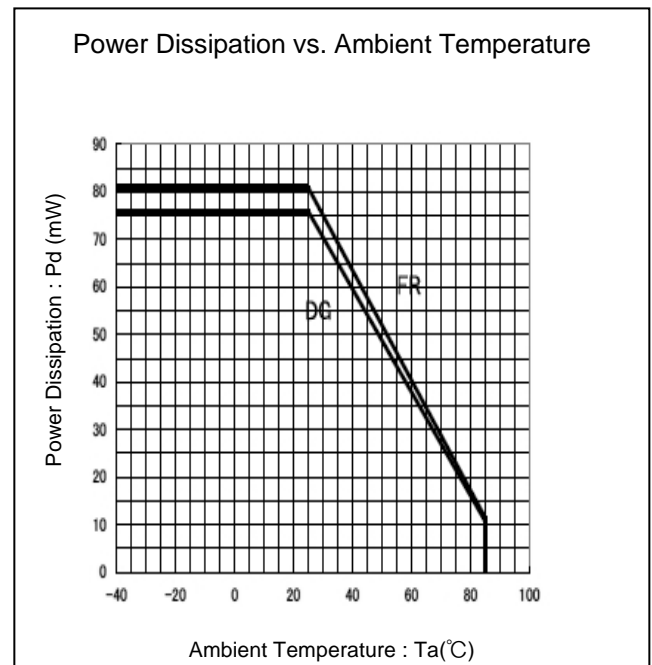
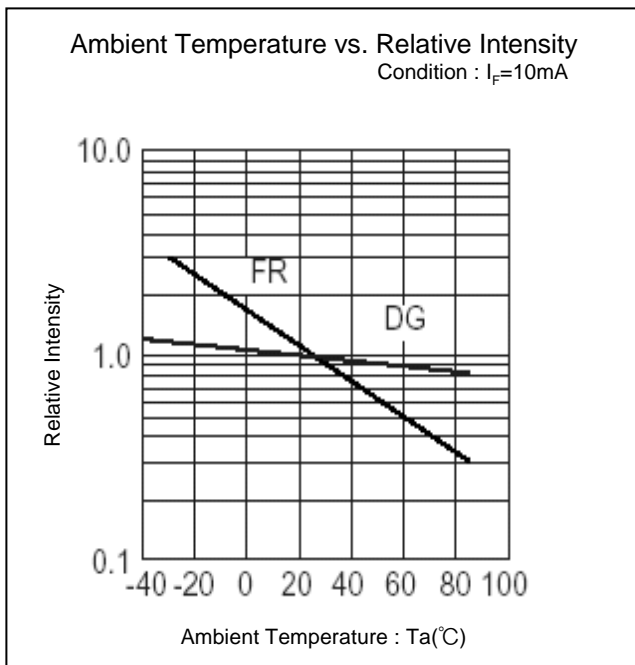
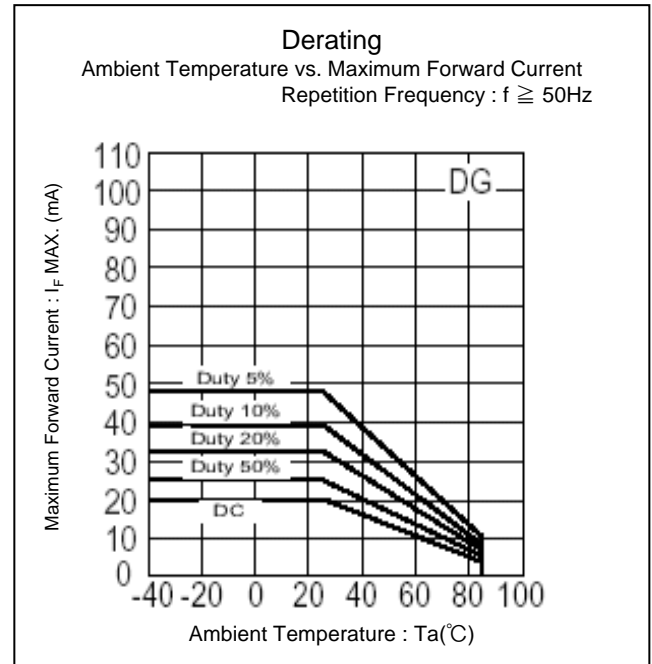
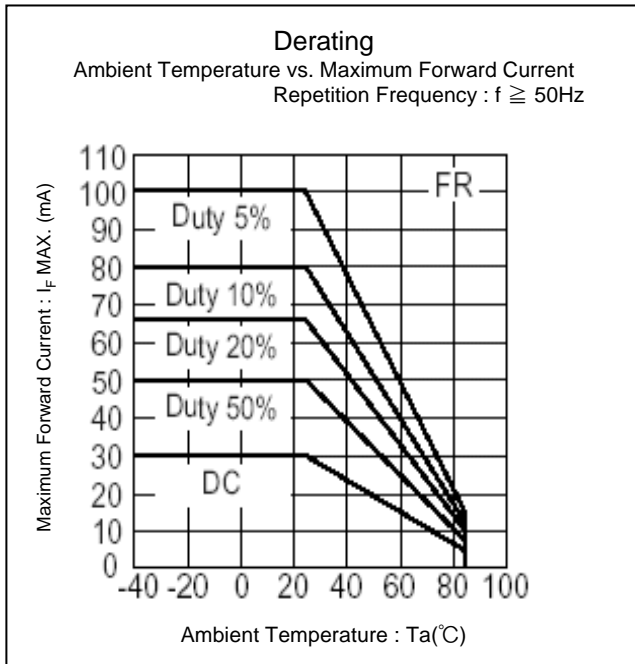
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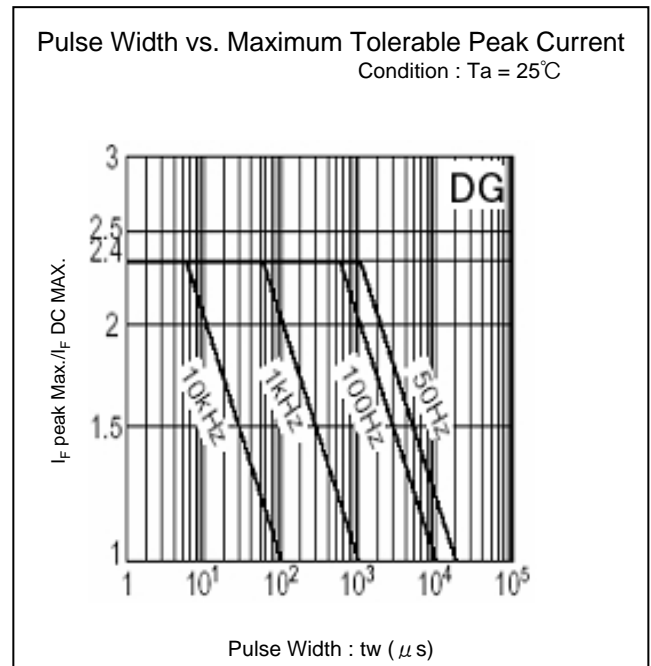
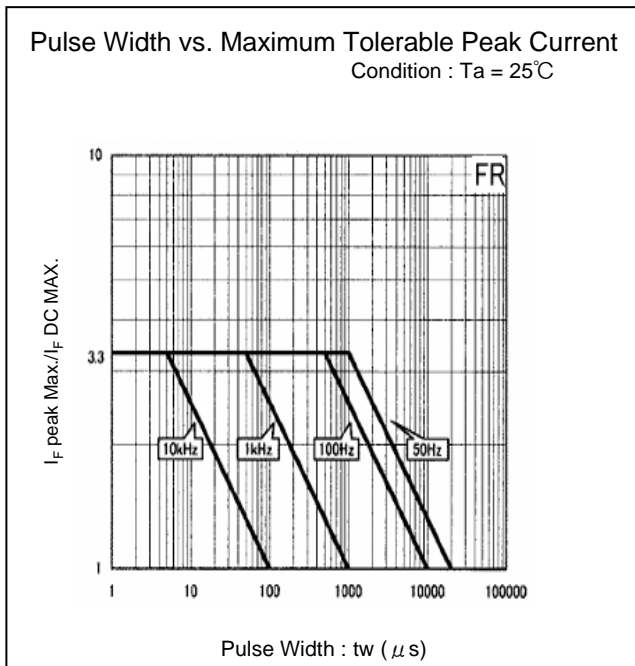
Technical Data(FRDG)



Technical Data(FRDG)



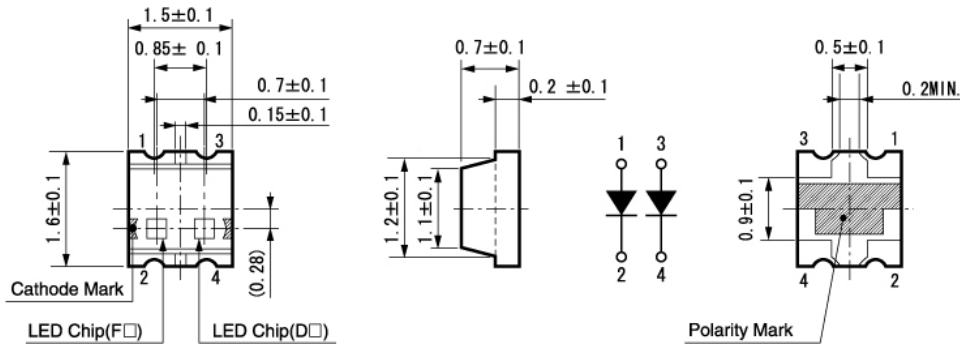
Technical Data(FRDG)



Package Dimensions

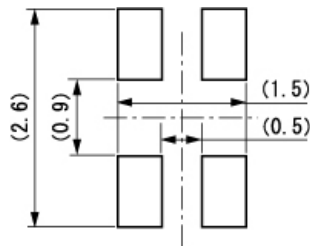
(Unit: mm)

Weight: (3.0)mg



Recommended Soldering Pattern

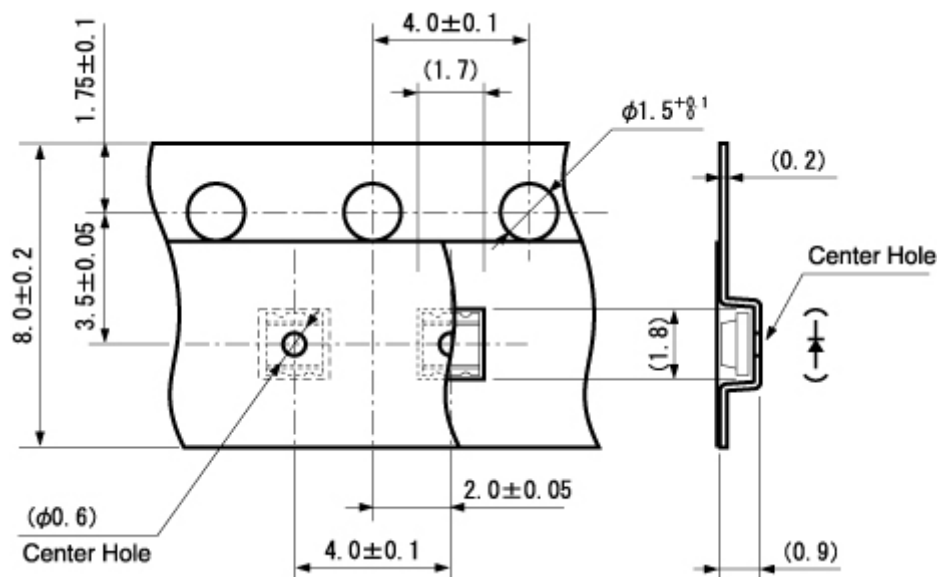
(Unit: mm)



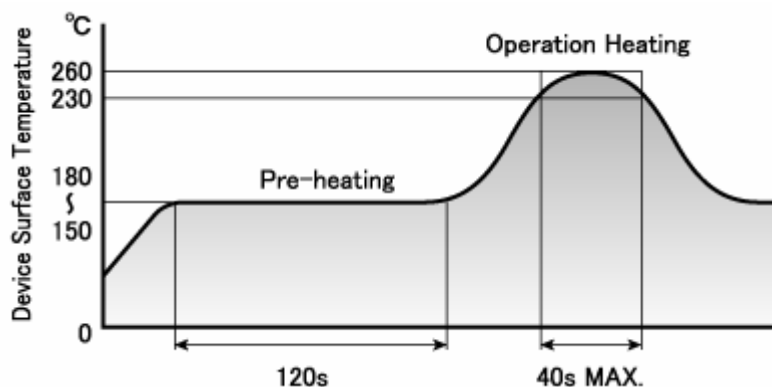
Taping Specification

(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	EAJED-4701/100(101)	Ta = 25°C, If = Maximum Rated Current	1,000 h	0/25
Resistance to Soldering Heat	EAJED-4701/300(302)	260±5°C	5sec	0/25
Temperature Cycling	EAJED-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	EAJED-4701/100(103)	Ta = 60±2°C, RH = 90±5%	1,000 h	0/25
High Temp. Storage Life	EAJED-4701/200(201)	Ta = Maximum Rated Storage Temperature	1,000 h	0/25
Low Temp. Storage Life	EAJED-4701/200(202)	Ta = Minimum Rated Storage Temperature	1,000 h	0/25
Vibration, Variable Frequency	EAJED-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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