



**Pb-free  
HEAT**



# 4364K Series

Single Color Rectangular Shape Type

## Features

Package	2 × 4 Rectangular Shape type, MBG,MPG : Pale Green Clear epoxy MPY,MAY : Pale Yellow Clear epoxy MAA : Pale Orange Clear epoxy MVR,BR,MPR : Pale Red Clear epoxy
Product features	<ul style="list-style-type: none"> <li>• Outer Dimension 2 × 4 Rectangular shape type</li> <li>• Operation temperature range. Storage Temperature : -30 ~ 100 Operating Temperature : -30 ~ 85</li> <li>• No lead package and lead-free soldering compatible</li> </ul>
Dominant wavelength	Green : 558nm (MBG) : 567nm (MPG) Yellow Green : 572nm (MPY) Yellow : 590nm (MAY) Orange : 606nm (MAA) Red : 624nm (MVR) : 647nm (BR) : 630nm (MPR)
Half Intensity Angle	MBG,MPG : $\theta_x=92$ deg. $\theta_y=114$ deg. MPY,MAY,MAA,MVR,MPR : $\theta_x=116$ deg. $\theta_y=114$ deg. BR : $\theta_x=108$ deg. $\theta_y=114$ deg.
Die materials	MBG, MPG, MPY, MPR : GaP MAY, MAA, MVR : GaAsP BR : GaAlAs
Rank grouping parameter	Sorted by luminous intensity per rank taping
Soldering methods	TTW (Through The Wave) soldering and manual soldering
ESD	More than 2kV(HBM)
Packing	Bulk : 200pcs(MIN.)

## 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 $\lambda_d$ (nm)		Luminous Intensity Iv (mcd)		
					TYP.	I <sub>F</sub>	MIN.	TYP.	I <sub>F</sub>
					MBG4364K	GaP	Green	Pale Green	Clear
MPG4364K	GaP	Green	567	20	3	6	20		
MPY4364K	GaP	Yellow Green	Pale Yellow	572	20	5	10	20	
MAY4364K	GaAsP	Yellow		590	20	3	6	20	
MAA4364K	GaAsP	Orange	Pale Orange	606	20	3	6	20	
MVR4364K	GaAsP	Red	Pale Red	624	20	2.5	5.0	20	
BR4364K	GaAlAs	Red		647	20	3	6	20	
MPR4364K	GaP	Red		630	10	1.0	1.5	10	

## Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	Absolute Maximum Ratings								Unit
		MBG	MPG	MPY	MAY	MAA	MVR	BR	MPR	
Power Dissipation	$P_d$	70	70	85	85	70	75	100	75	mW
Forward Current	$I_F$	25	25	30	30	25	30	50	30	mA
Pulse Forward Current ※1	$I_{FRM}$	60	60	75	75	60	75	300	75	mA
Derating (Ta=25°C or higher)	$I_F$	0.33	0.33	0.40	0.40	0.33	0.40	0.67	0.40	mA/
Reverse Voltage	$V_R$	4	4	4	4	4	4	4	4	V
Operating Temperature	$T_{opr}$	-30 ~ +85								
Storage Temperature	$T_{stg}$	-30 ~ +100								

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

## Electro-Optical Characteristics(MBG,MPG,MPY,MAY,MAA,MVR,BR) (Ta=25°C)

Item	Conditions	Symbol	Characteristics								Unit
			MBG	MPG	MPY	MAY	MAA	MVR	BR		
Forward Voltage	I <sub>F</sub> =20mA	V <sub>F</sub>	TYP.	2.1	2.1	2.1	2.2	2.2	2.0	1.7	V
			MAX.	2.8	2.8	2.8	2.8	2.8	2.8	2.0	
Reverse Current	V <sub>R</sub> =4V	I <sub>R</sub>	MAX.	20	20	20	20	20	20	100	μ A
Peak Wavelength	I <sub>F</sub> =20mA	λ <sub>p</sub>	TYP.	555	560	570	580	605	630	660	nm
Dominant Wavelength	I <sub>F</sub> =20mA	λ <sub>d</sub>	TYP.	558	567	572	590	606	624	647	nm
Spectral Line Half Width	I <sub>F</sub> =20mA		TYP.	30	30	30	30	30	30	30	nm
Half Intensity Angle	I <sub>F</sub> =20mA	2θ 1/2	TYP.	92(θx)	92(θx)	116(θx)	116(θx)	116(θx)	116(θx)	108(θx)	deg.
				114(θy)	114(θy)	114(θy)	114(θy)	114(θy)	114(θy)		

## Electro-Optical Characteristics(MPR)

(Ta=25°C)

Item	Conditions	Symbol	Characteristics		Unit
				MPR	
Forward Voltage	I <sub>F</sub> =10mA	V <sub>F</sub>	TYP.	2.1	V
			MAX.	2.8	
Reverse Current	V <sub>R</sub> =4V	I <sub>R</sub>	MAX.	20	μ A
Peak Wavelength	I <sub>F</sub> =10mA	λ <sub>p</sub>	TYP.	700	nm
Dominant Wavelength	I <sub>F</sub> =10mA	λ <sub>d</sub>	TYP.	630	nm
Spectral Line Half Width	I <sub>F</sub> =10mA		TYP.	100	nm
Half Intensity Angle	I <sub>F</sub> =10mA	2θ 1/2	TYP.	116(θx)	deg.
				114(θy)	

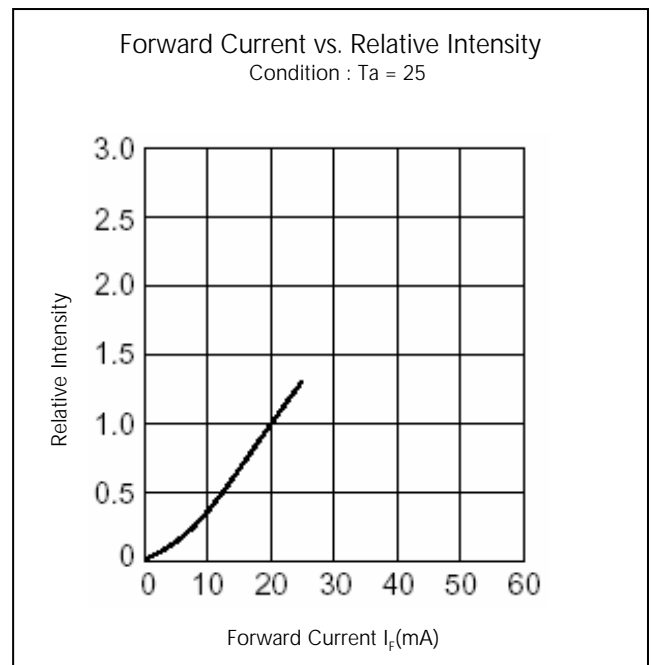
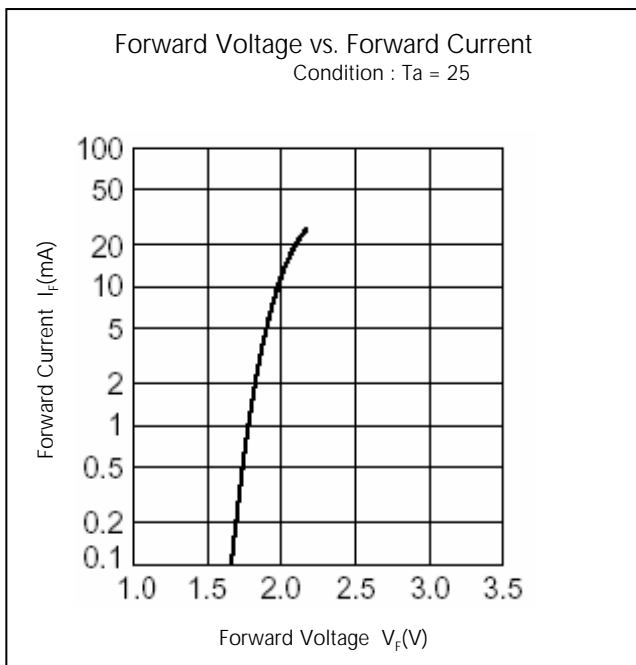
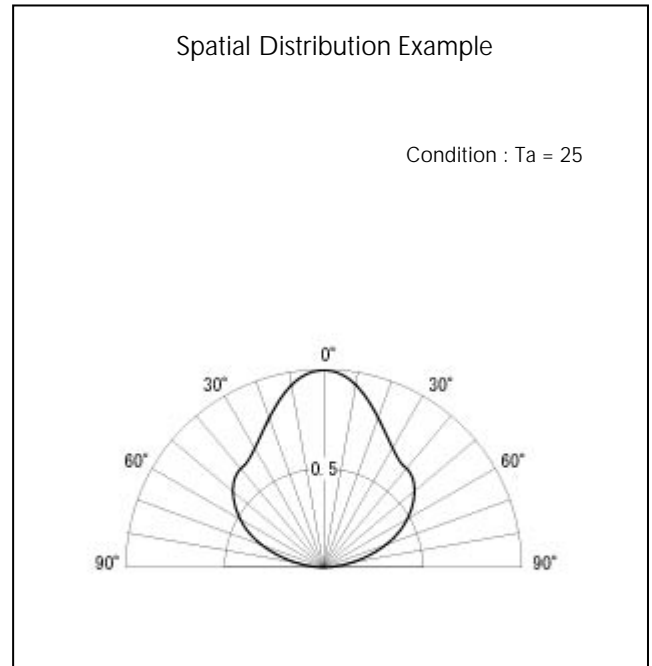
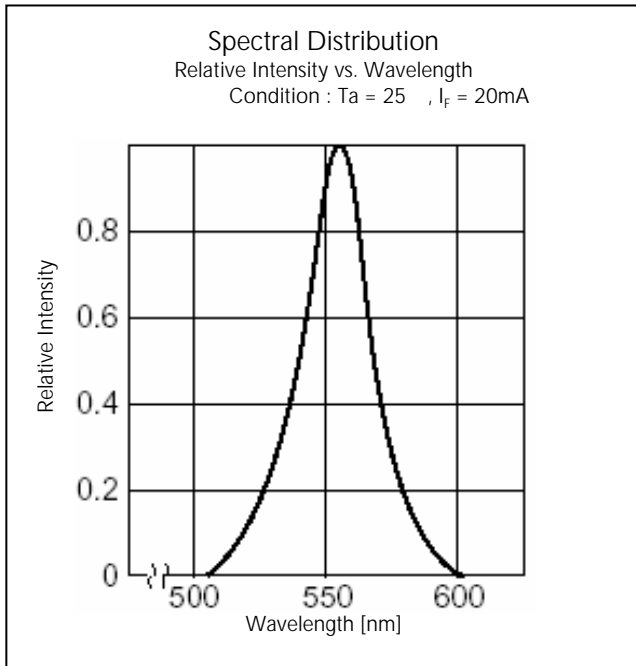
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(Ta=25°C)

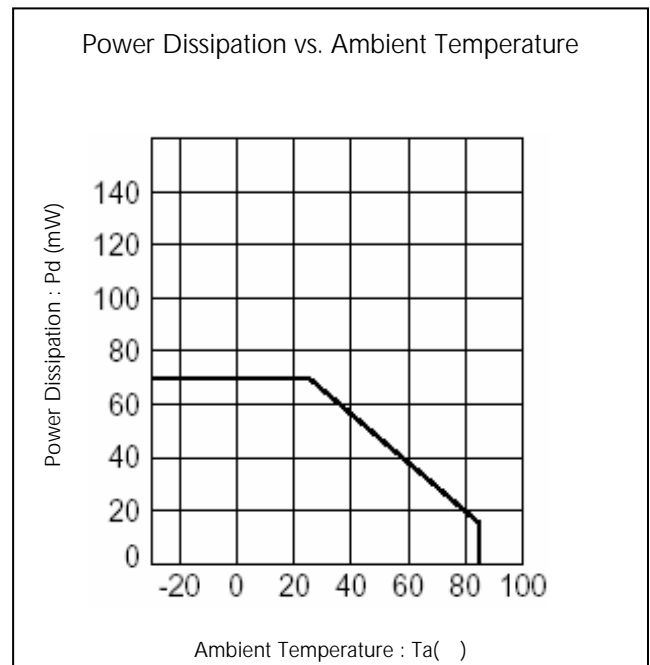
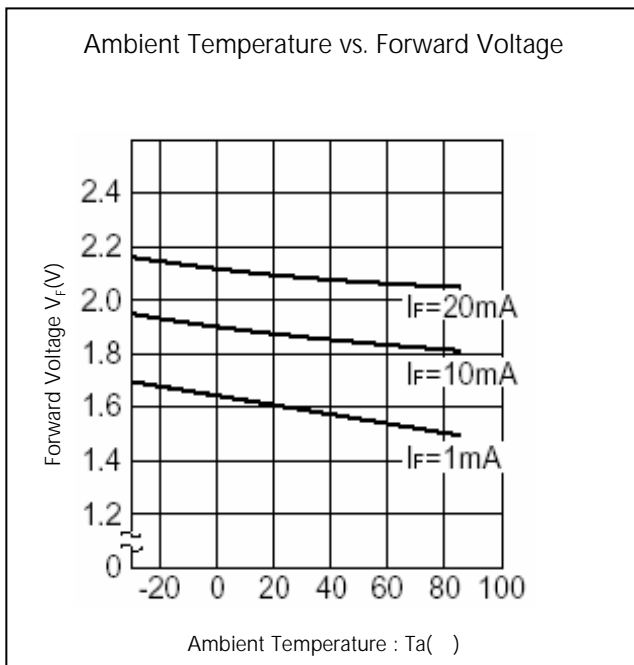
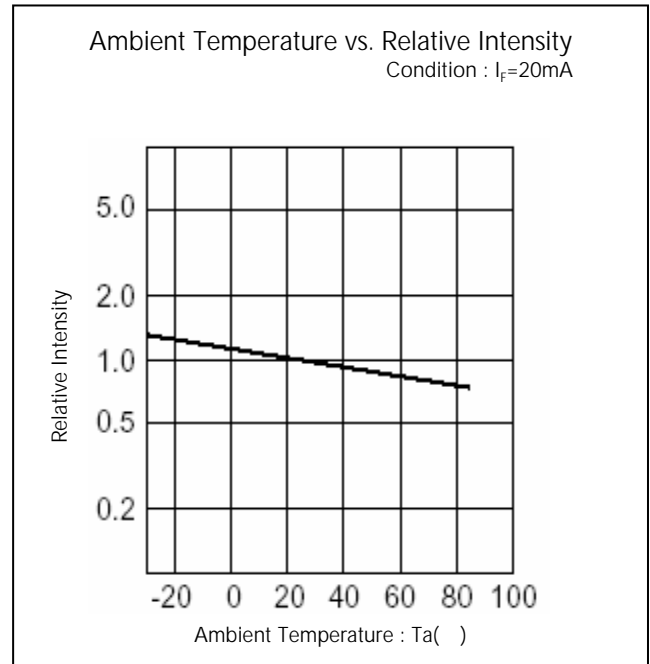
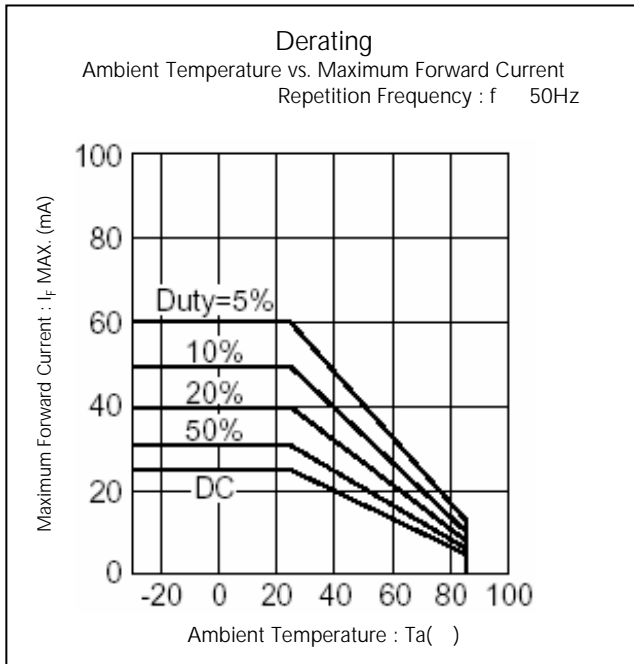
Rank	I <sub>v</sub> (mcd)															
	MBG		MPG		MPY		MAY		MAA		MVR		BR		MPR	
	I <sub>F</sub> =20mA		I <sub>F</sub> =20mA		I <sub>F</sub> =20mA		I <sub>F</sub> =20mA		I <sub>F</sub> =20mA		I <sub>F</sub> =20mA		I <sub>F</sub> =20mA		I <sub>F</sub> =10mA	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
<b>A</b>	1.5	3.0	3.0	6.0	5	10	3.0	6.0	3.0	6.0	2.5	5.0	3.0	6.0	1.0	2.0
<b>B</b>	2.1	4.2	4.2	8.4	7	14	4.2	8.4	4.2	8.4	3.5	7.0	4.2	8.4	1.4	2.8
<b>C</b>	3.0	6.0	6.0	12.0	10	20	6.0	12.0	6.0	12.0	5.0	10.0	6.0	12.0	2.0	4.0
<b>D</b>	4.2	8.4	8.4	16.8	14	28	8.4	16.8	8.4	16.8	7.0	14.0	8.4	16.8	2.8	5.6
<b>E</b>	6.0	-	12.0	-	20	-	12.0	-	12.0	-	10.0	-	12.0	-	4.0	-

Please contact our sales staff concerning rank designation.

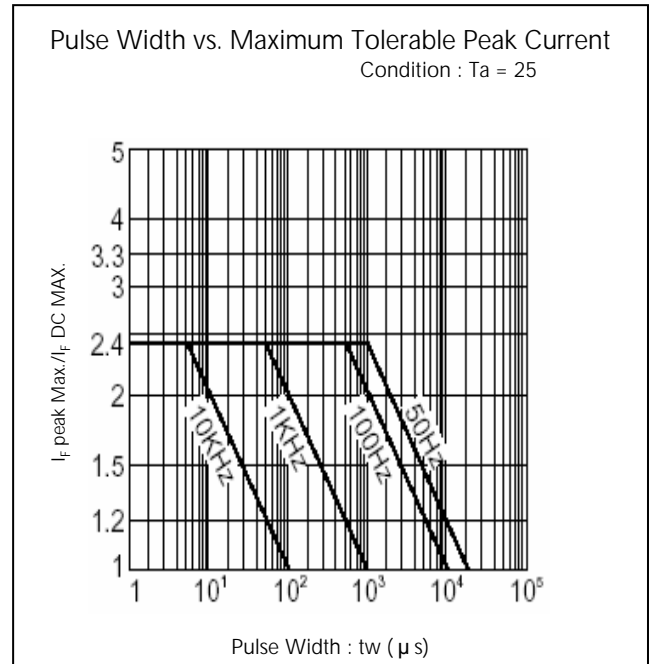
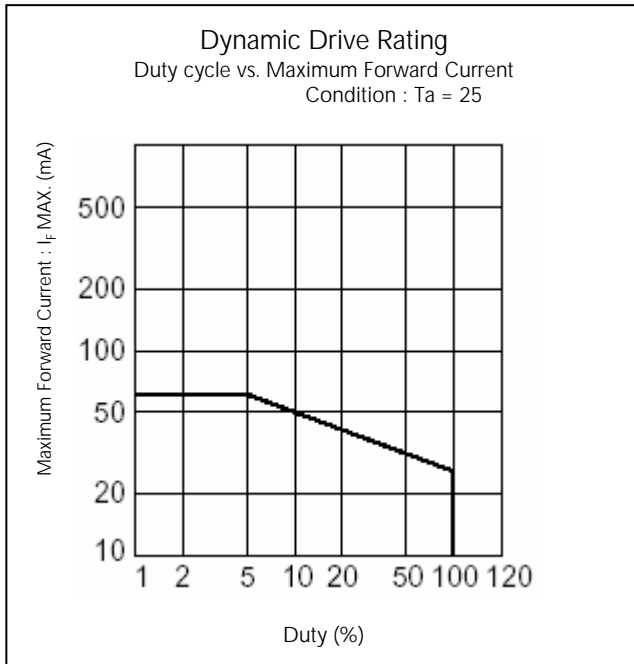
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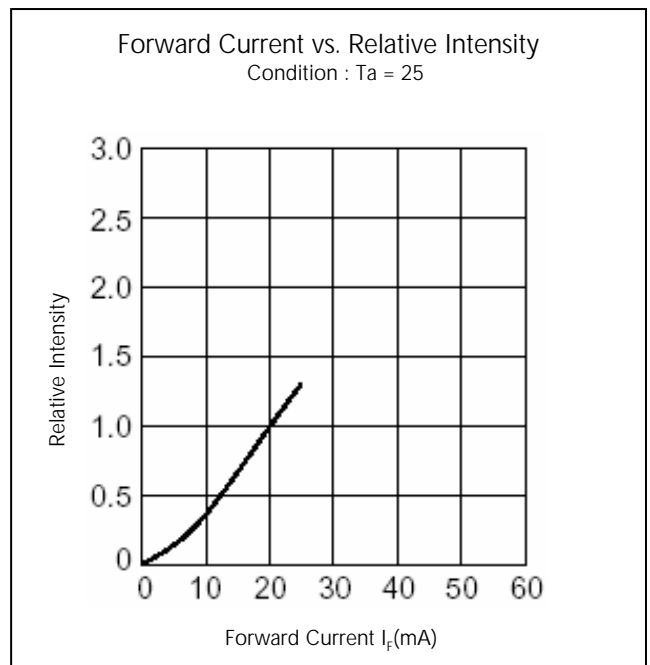
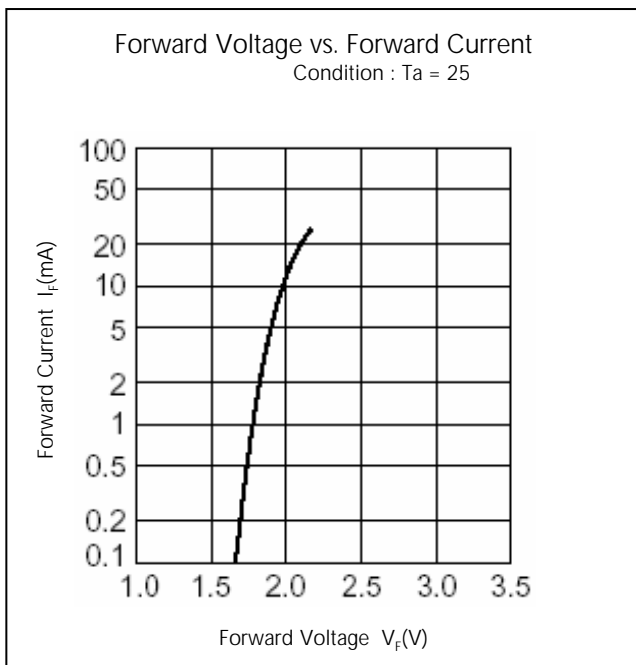
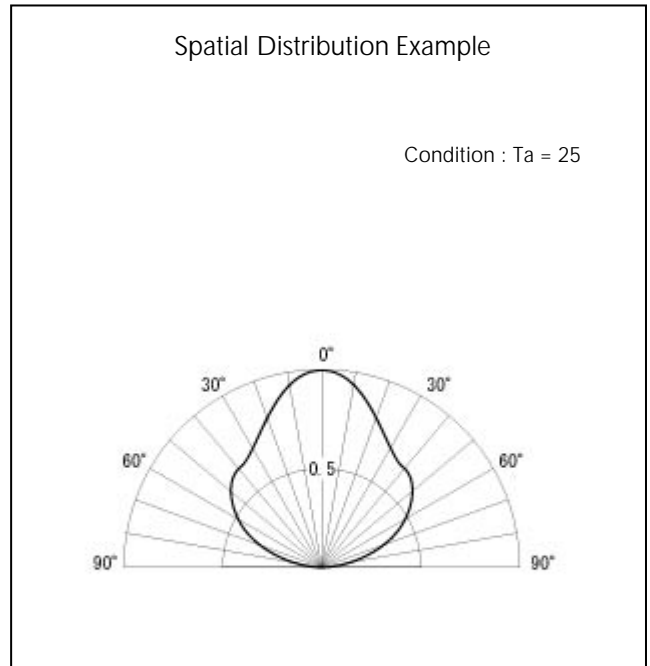
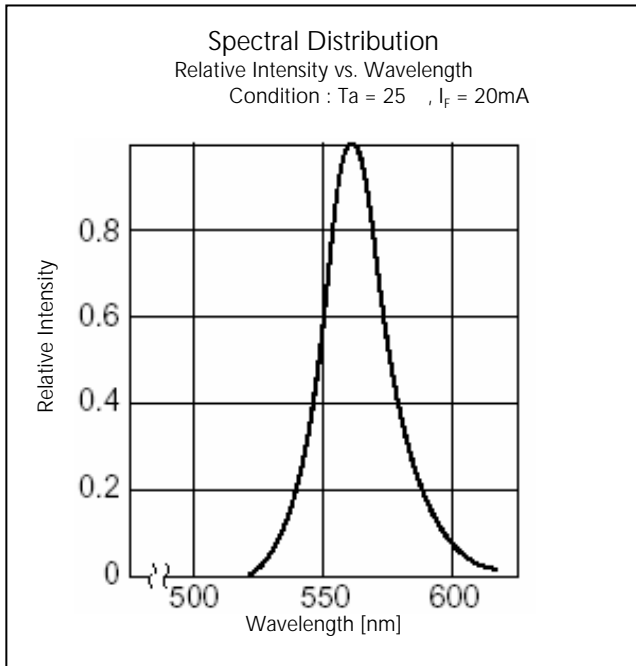


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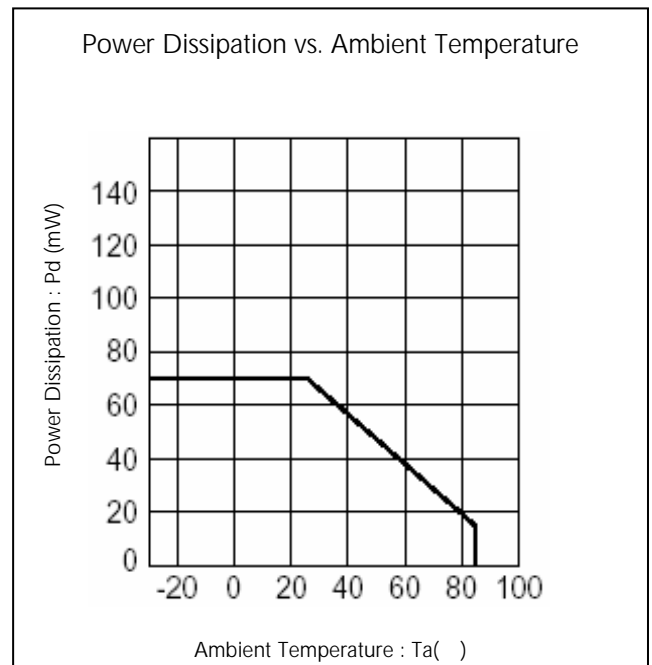
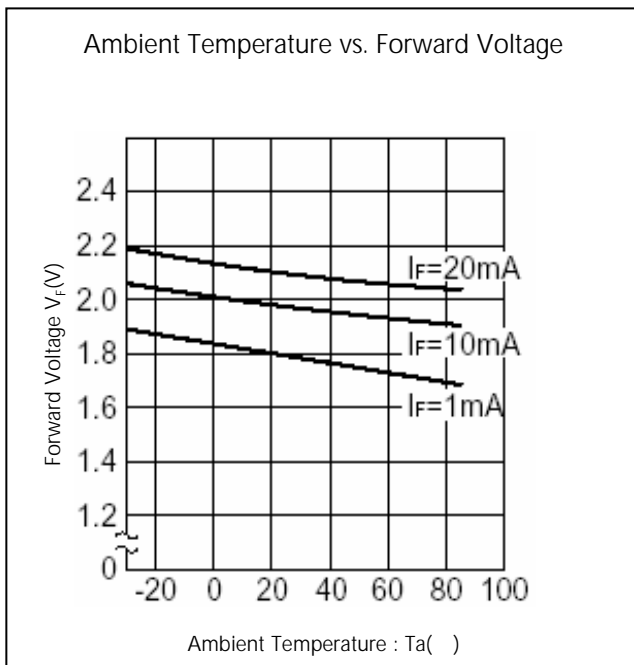
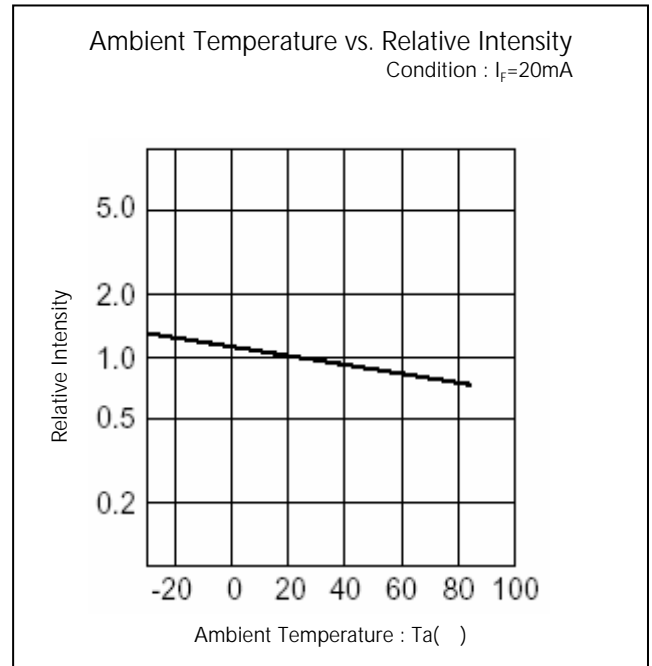
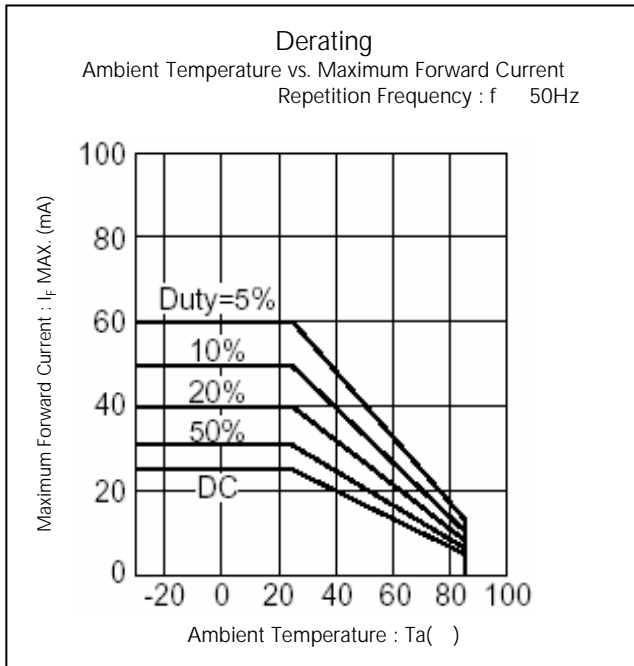




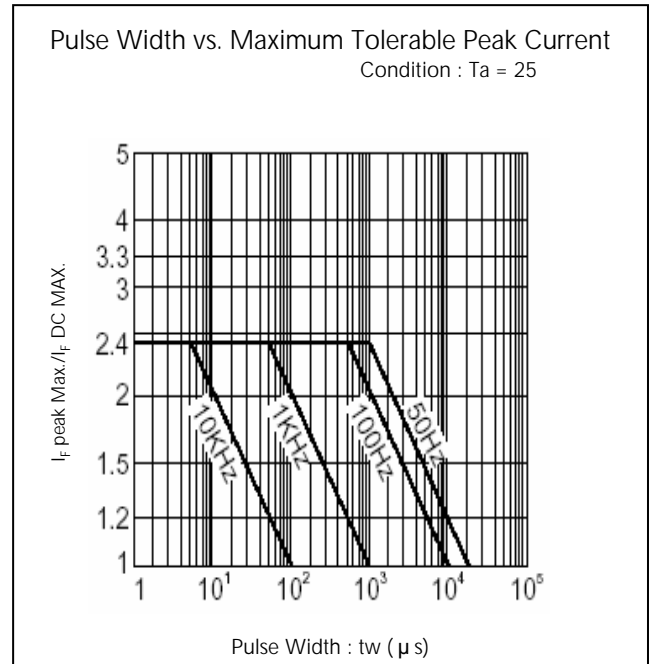
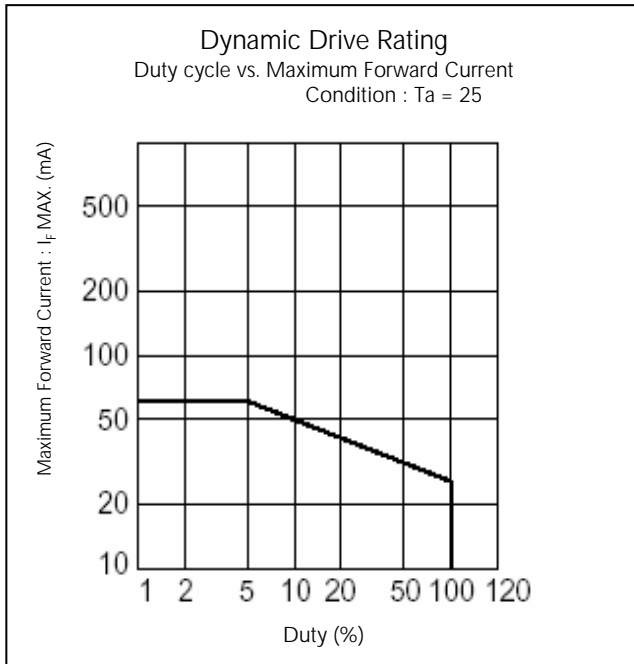
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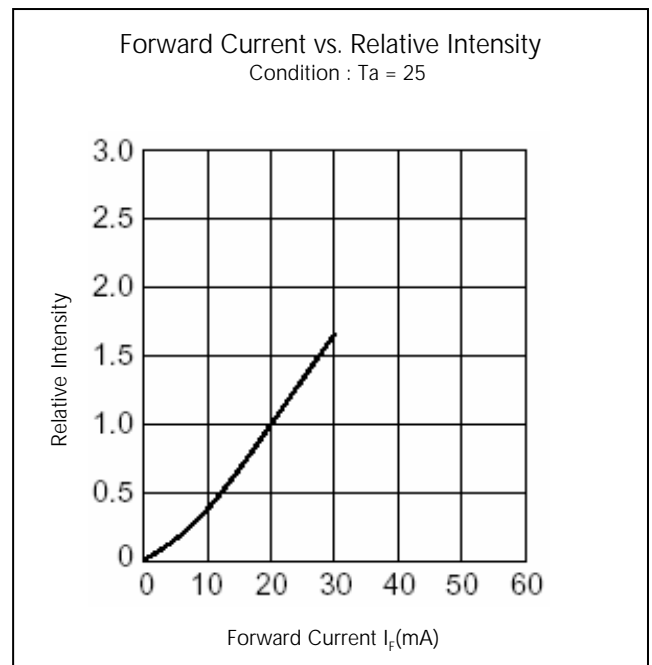
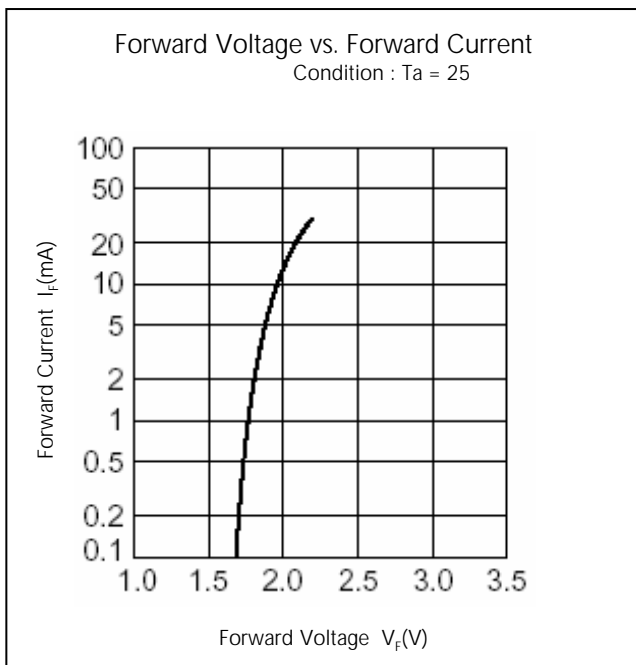
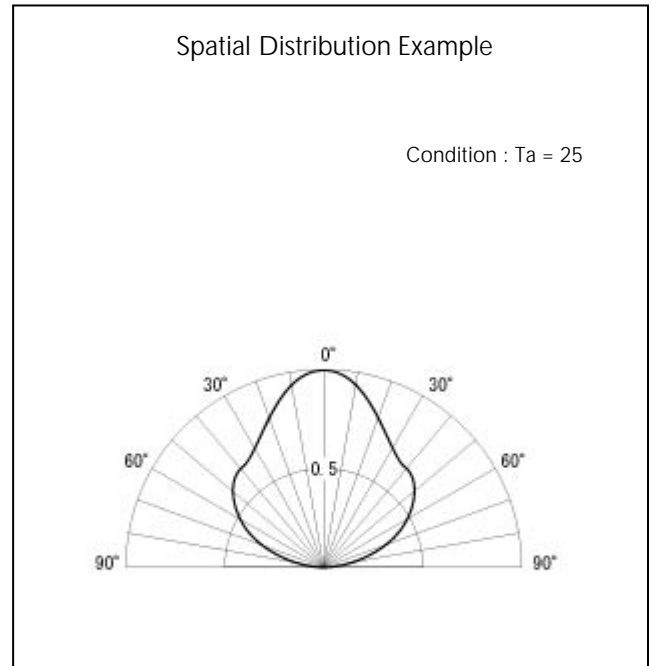
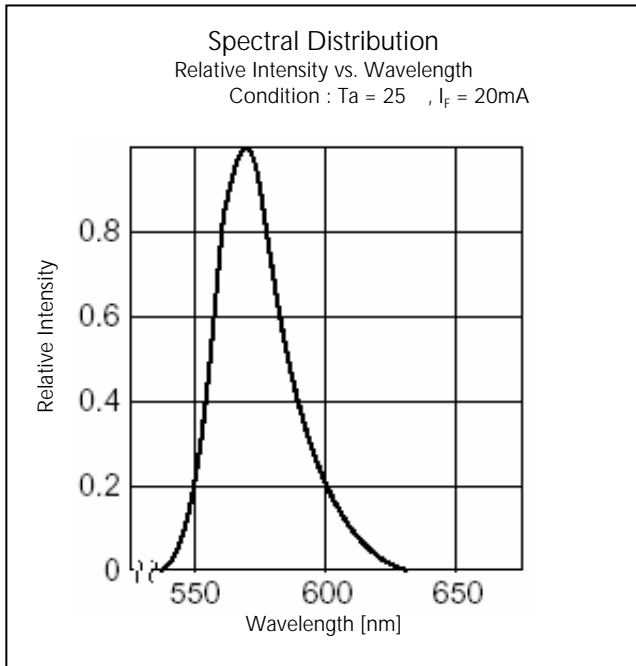
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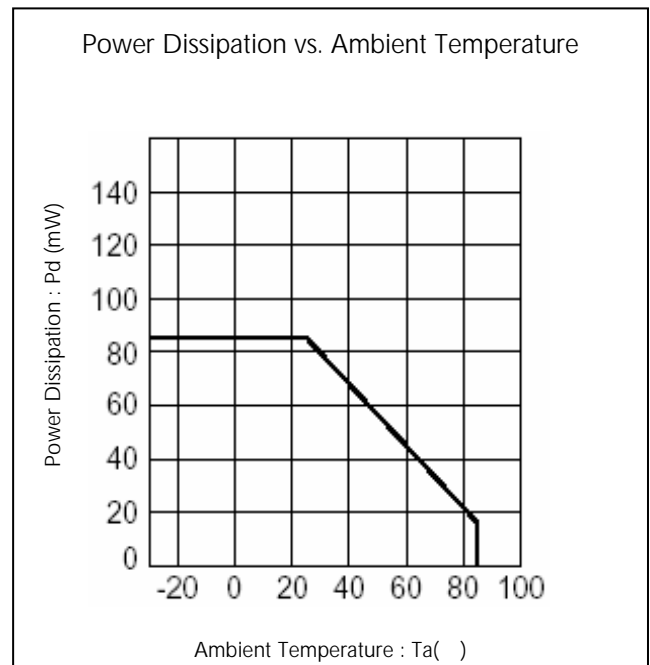
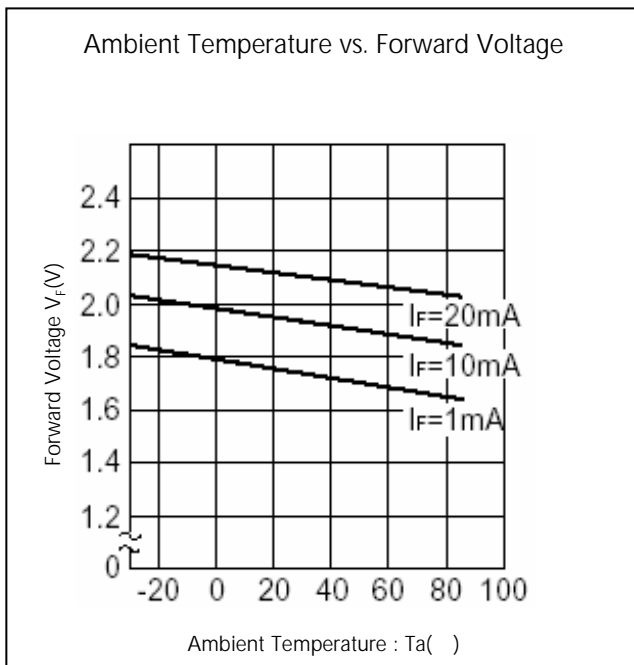
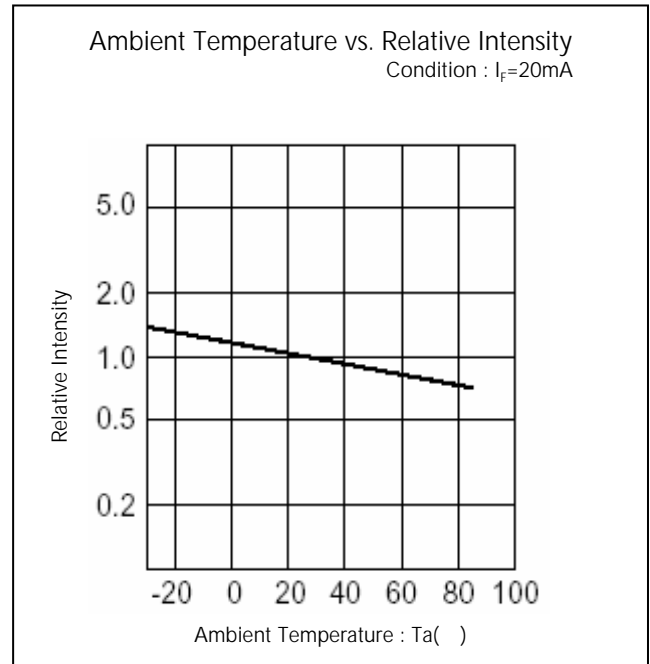
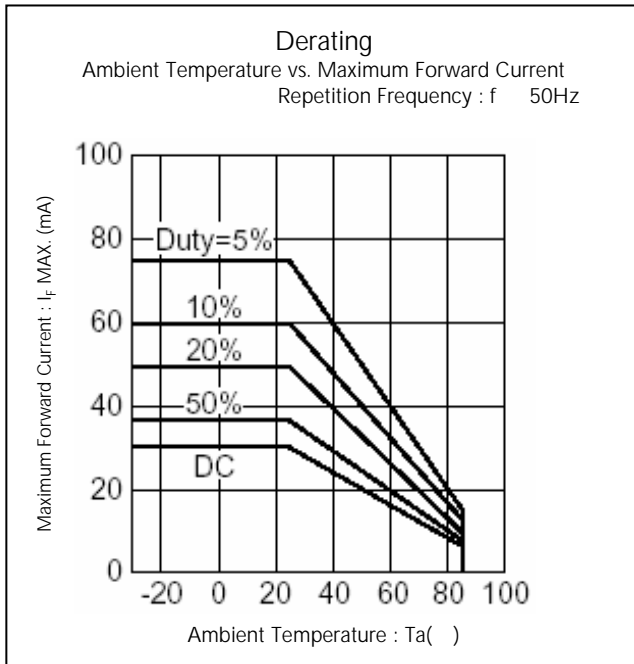
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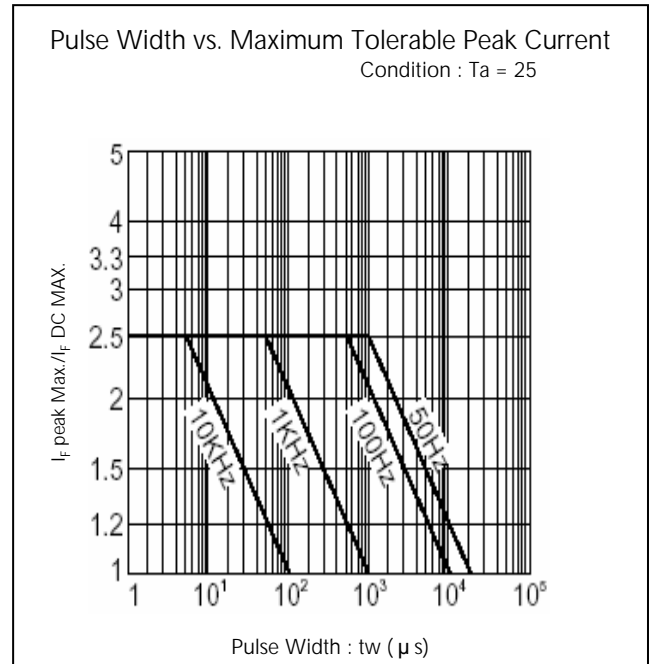
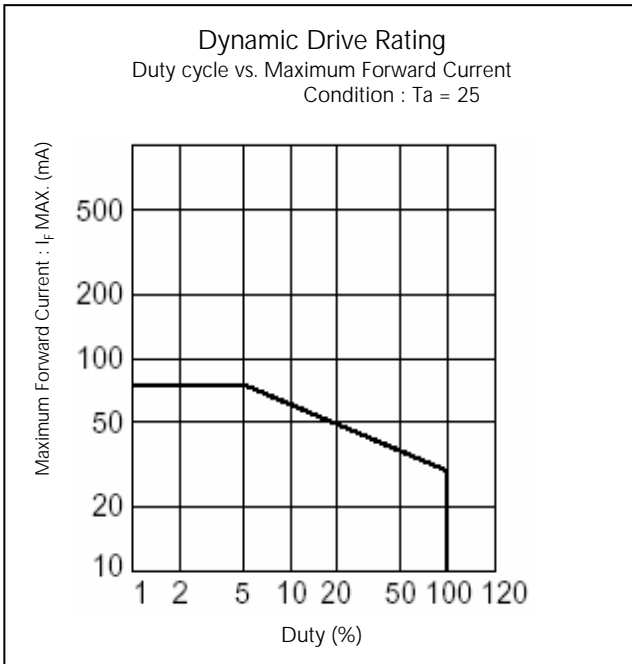
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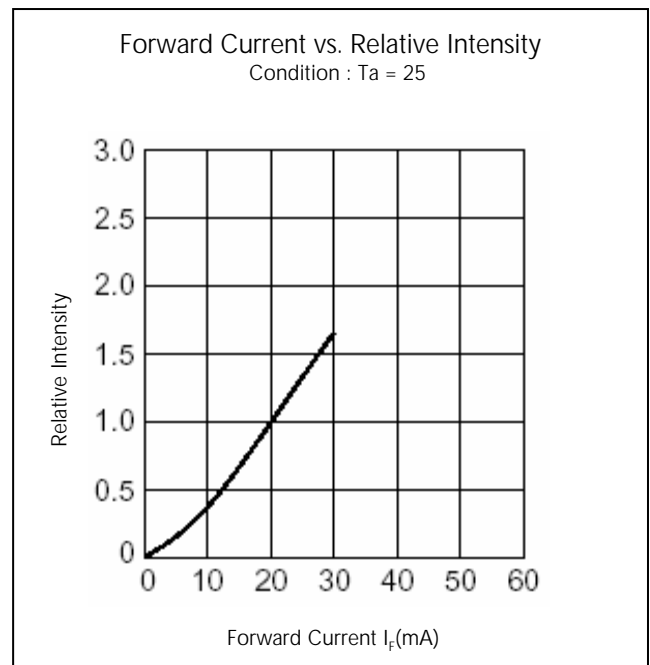
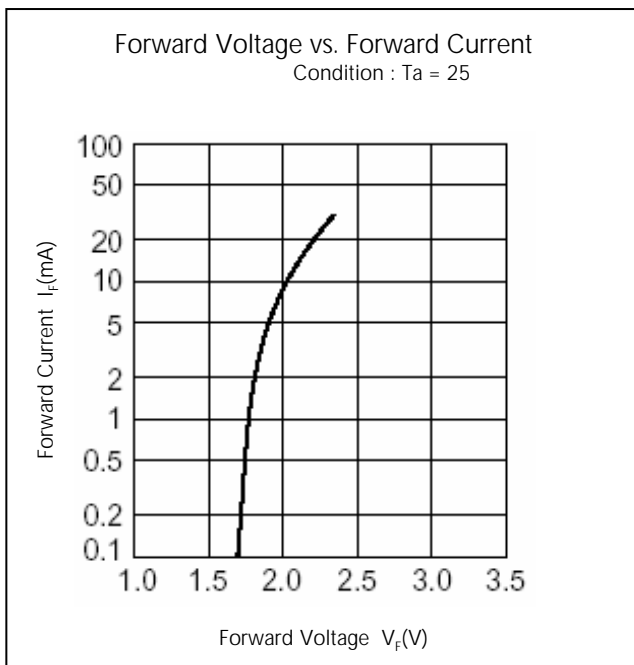
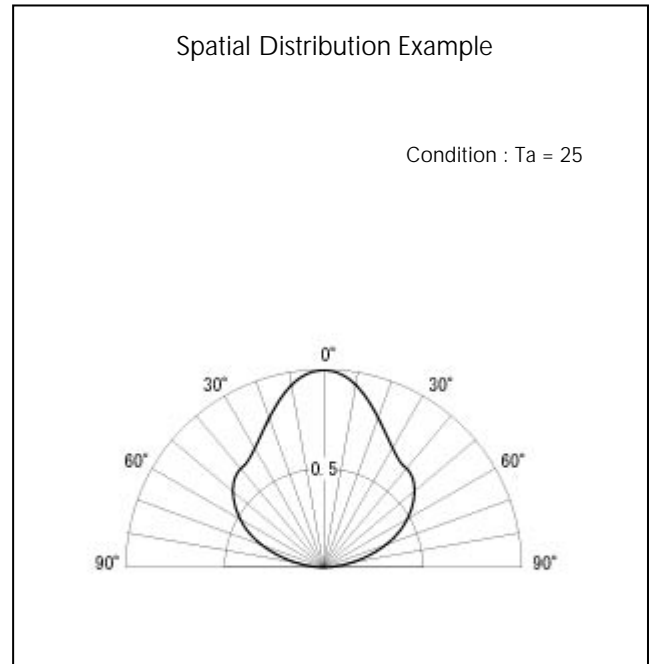
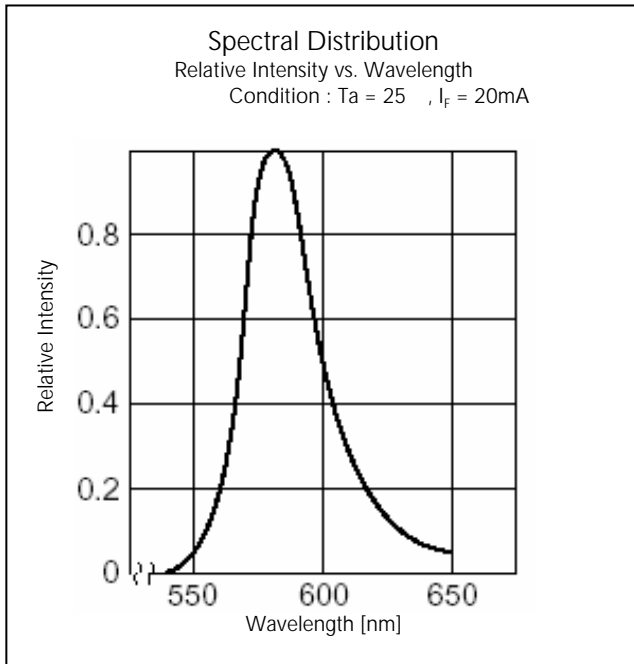
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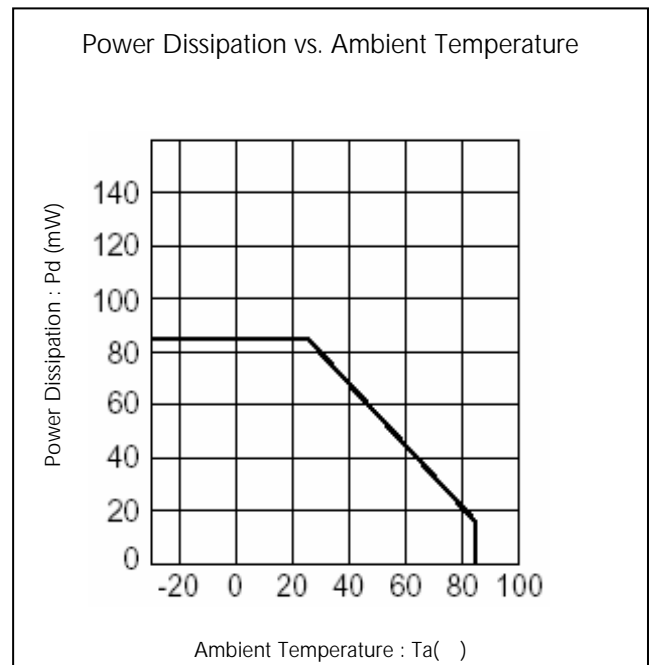
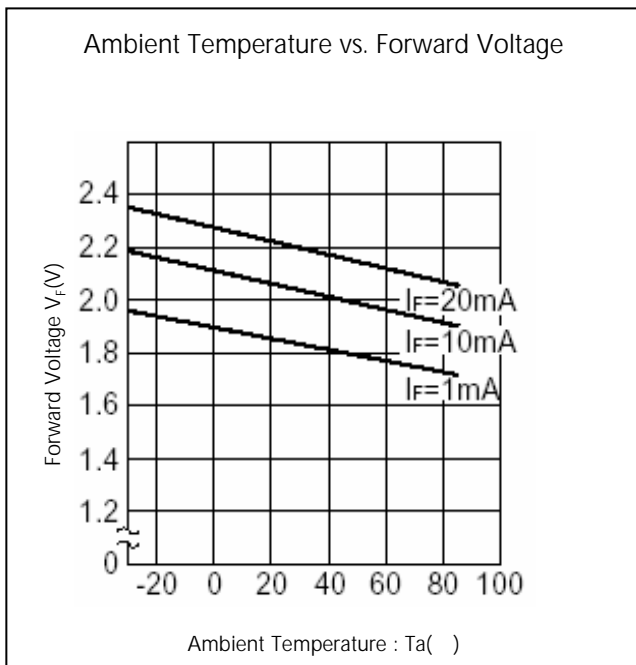
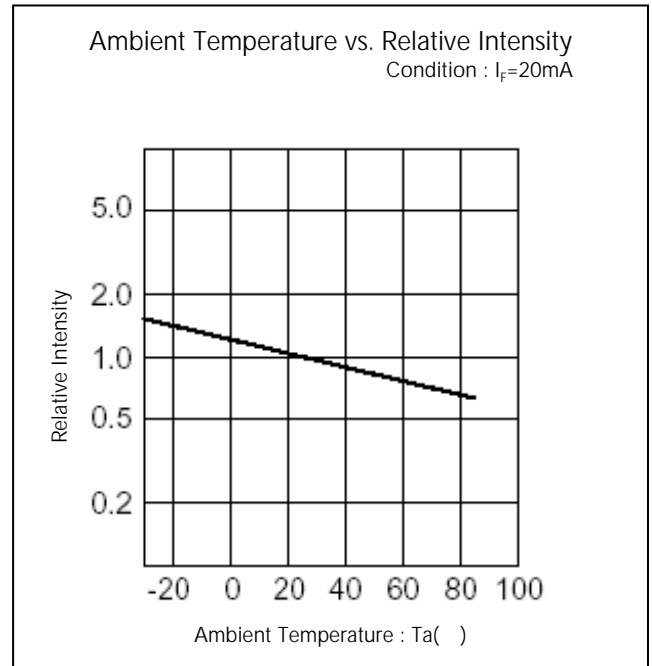
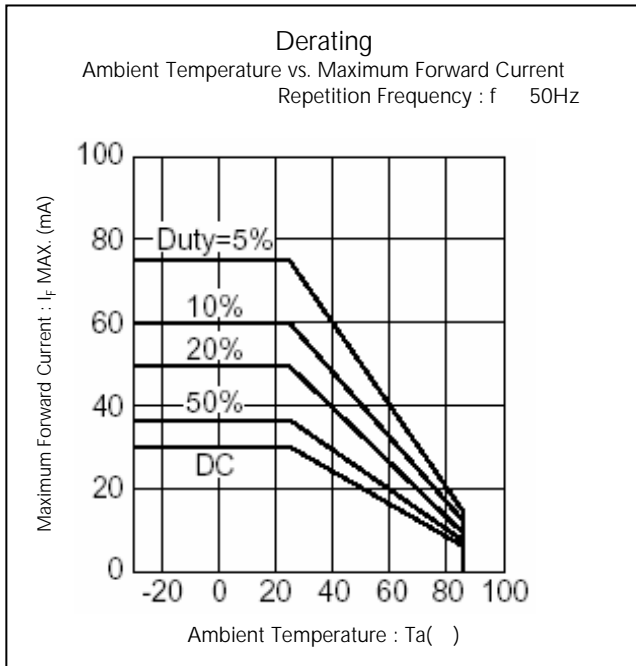
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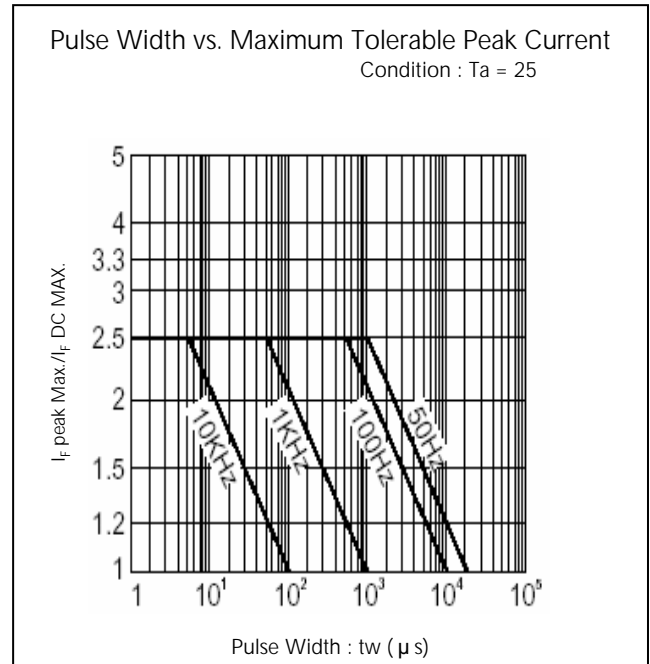
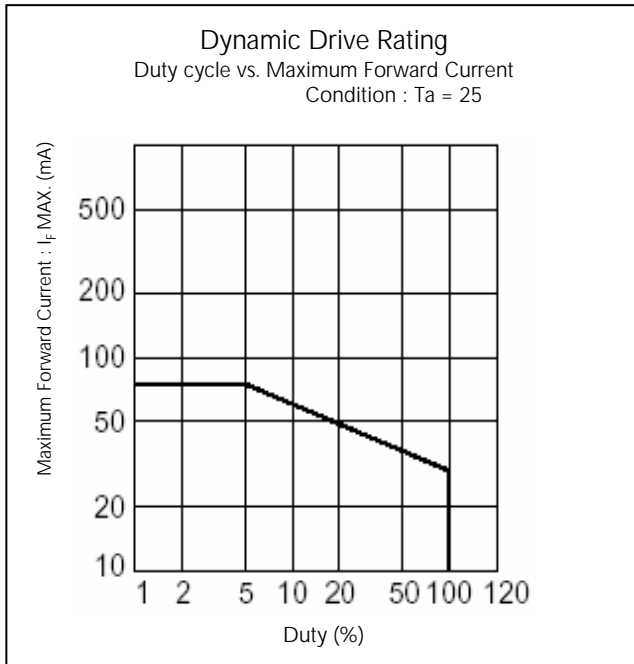


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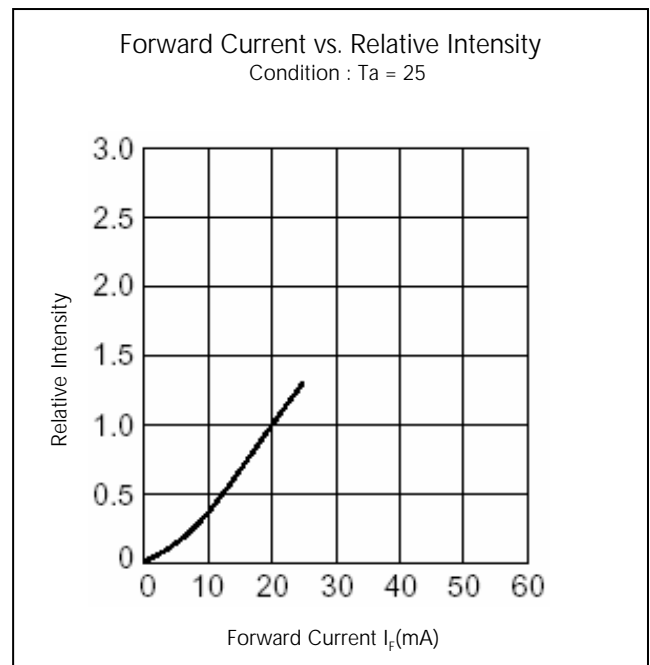
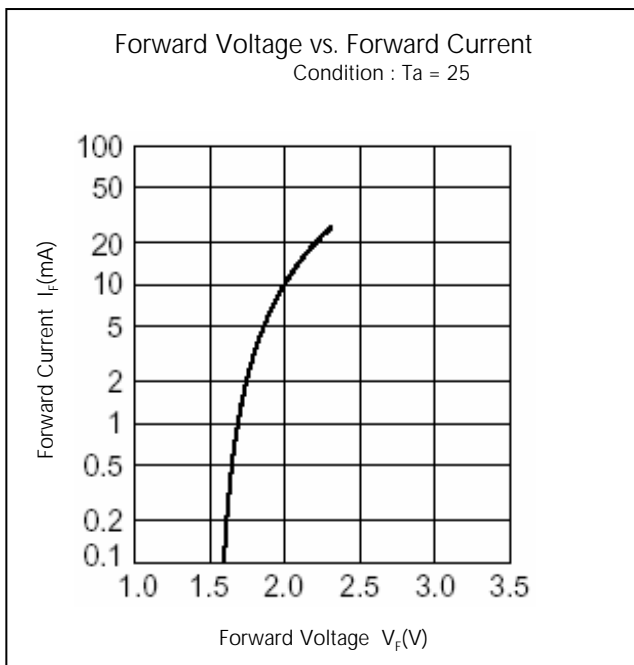
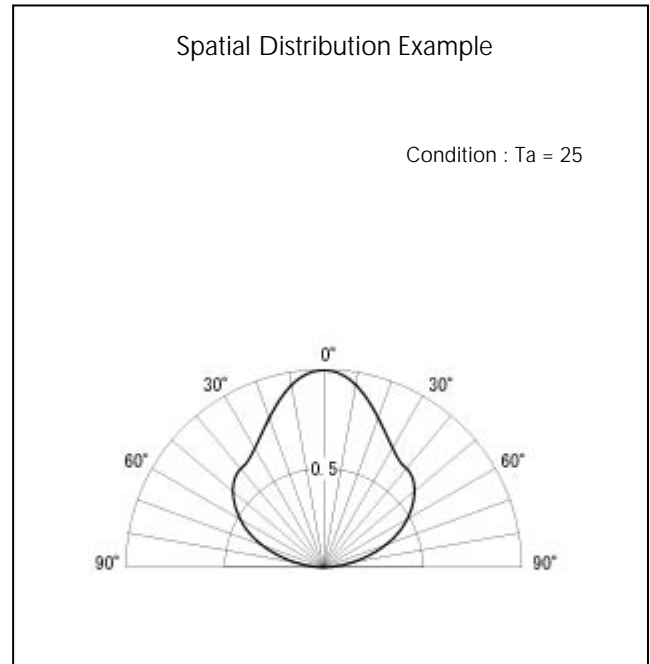
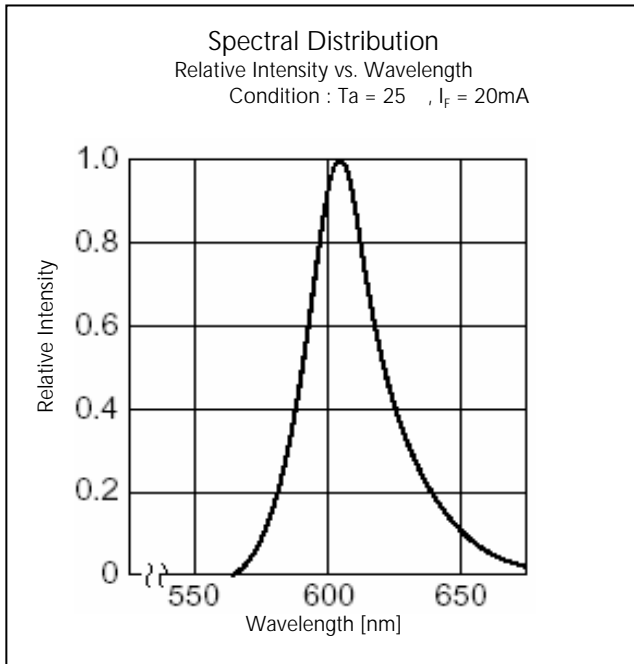




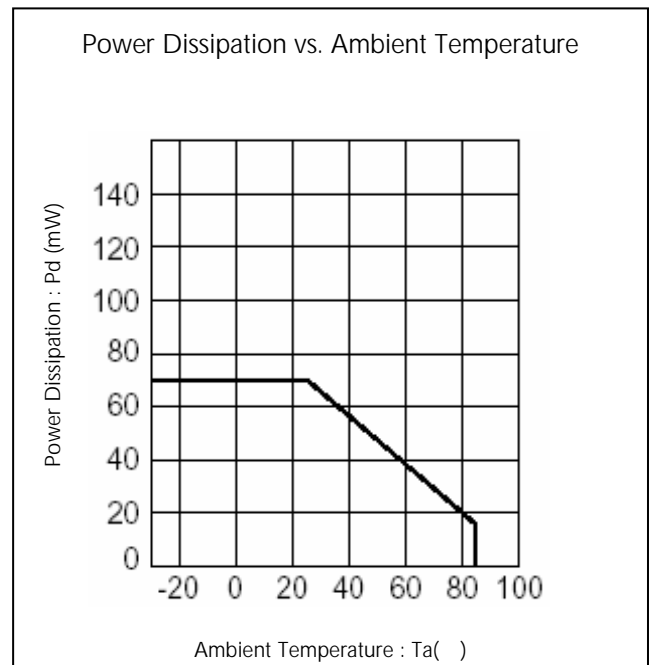
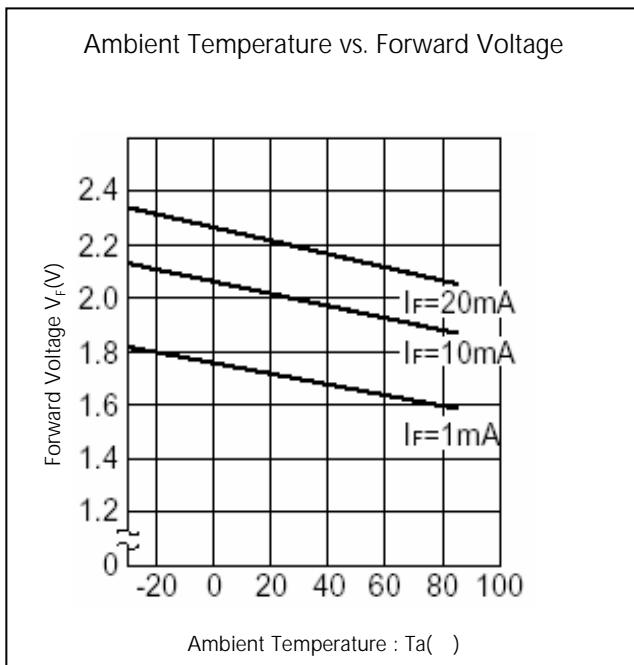
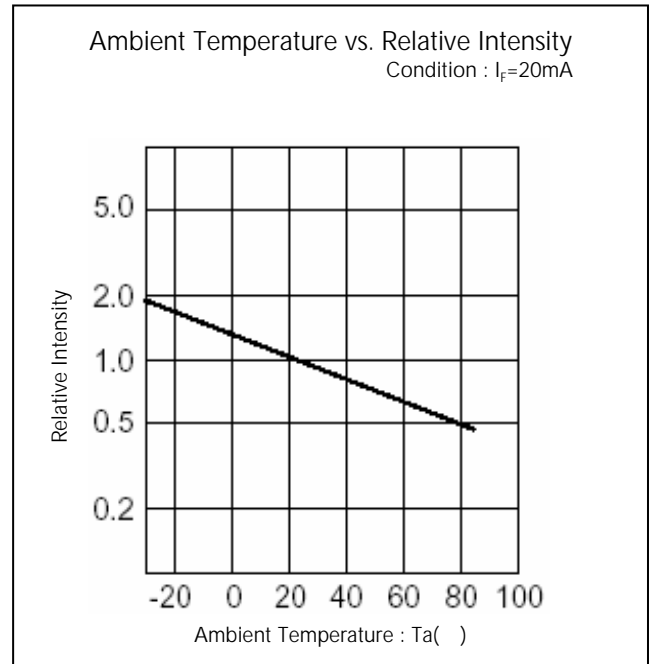
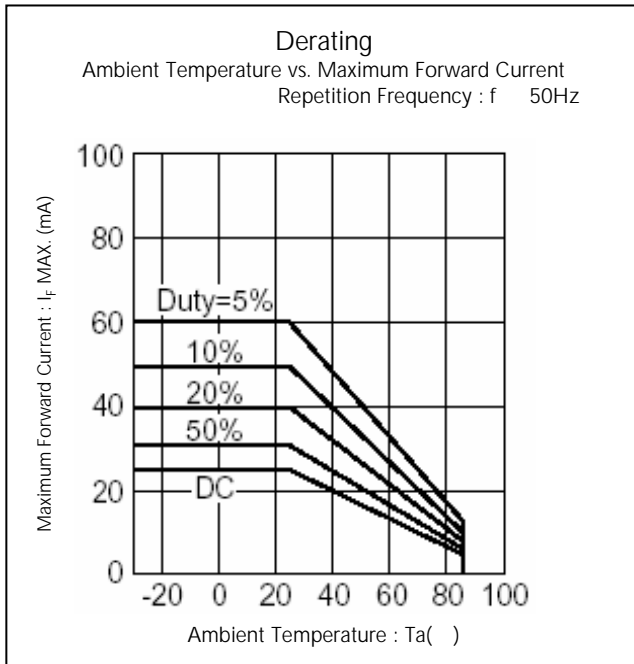
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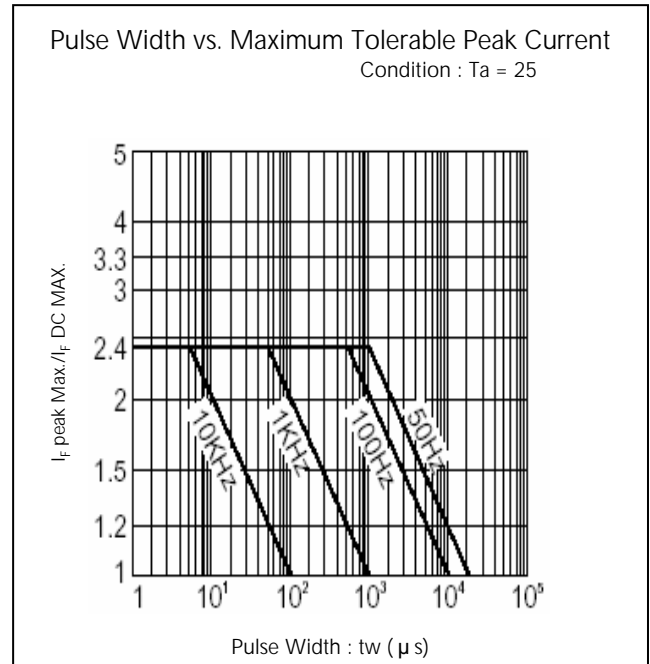
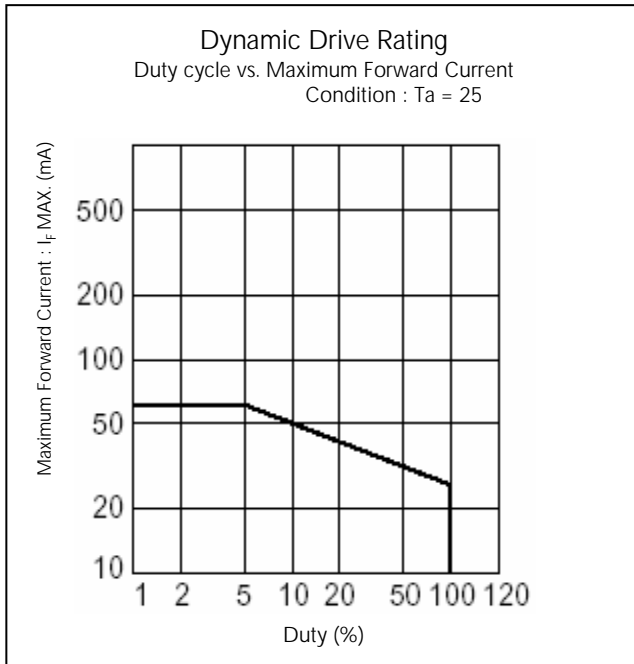
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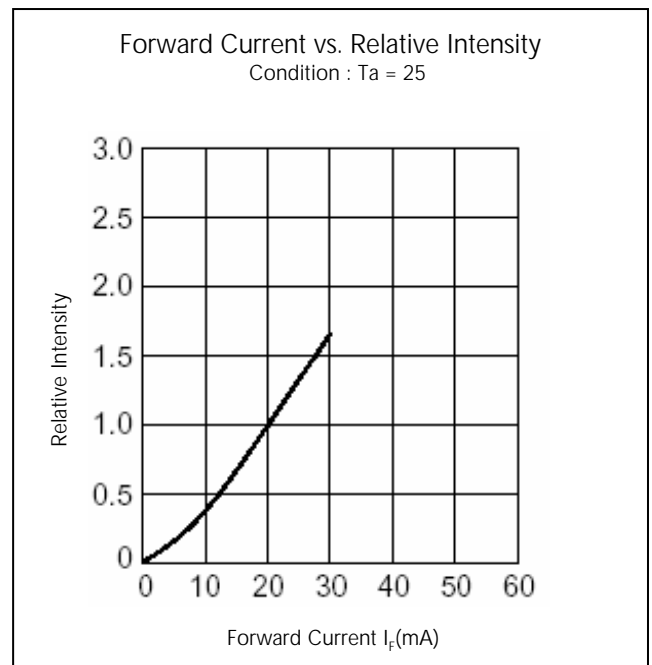
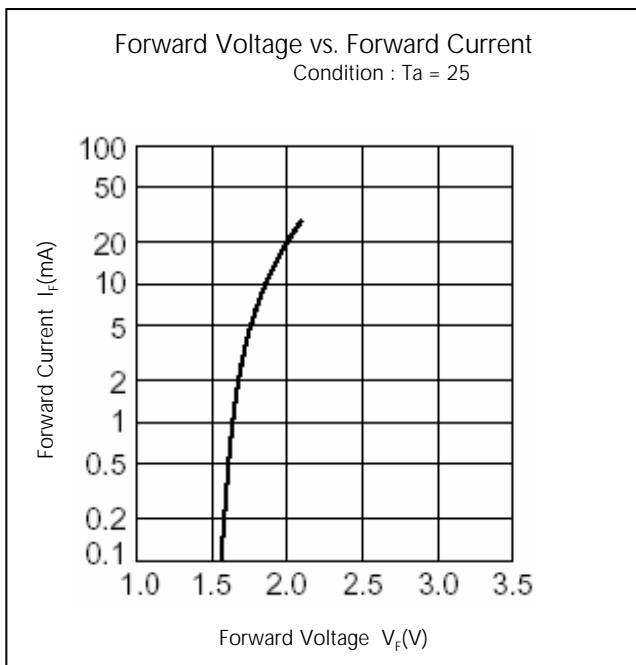
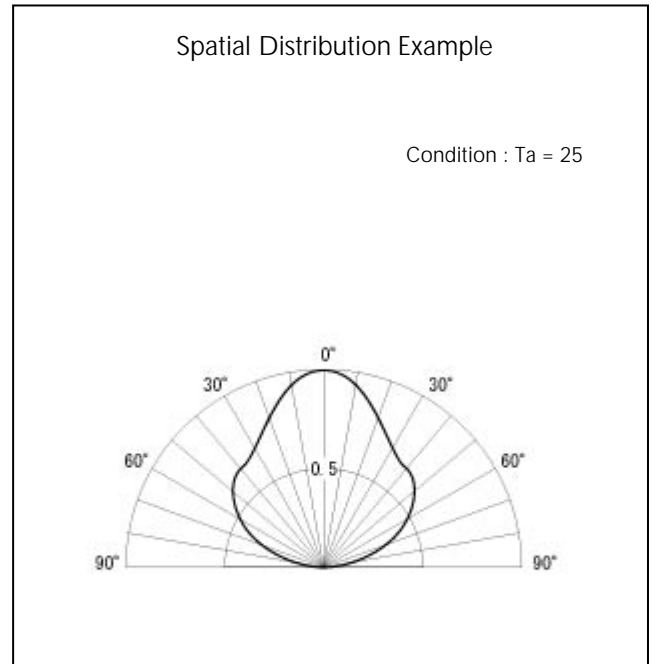
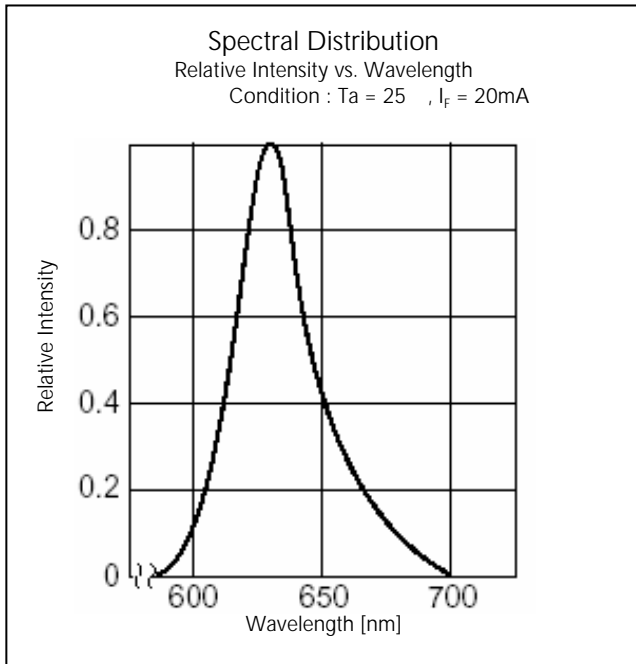
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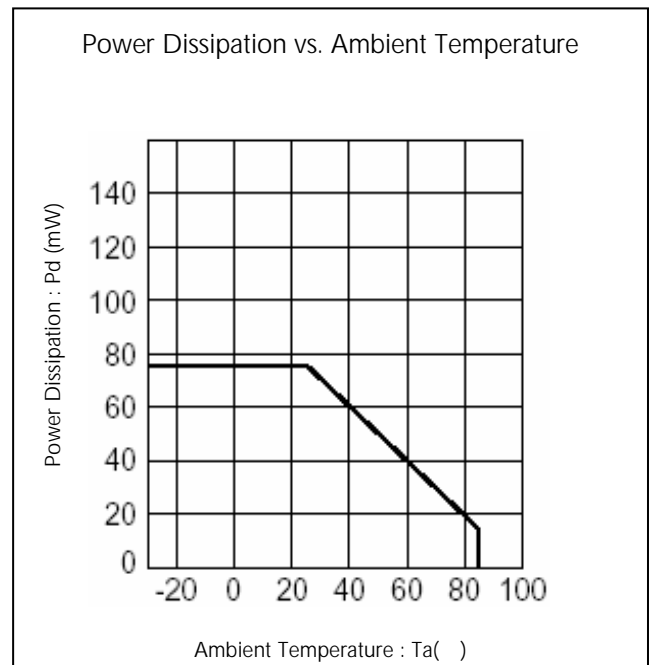
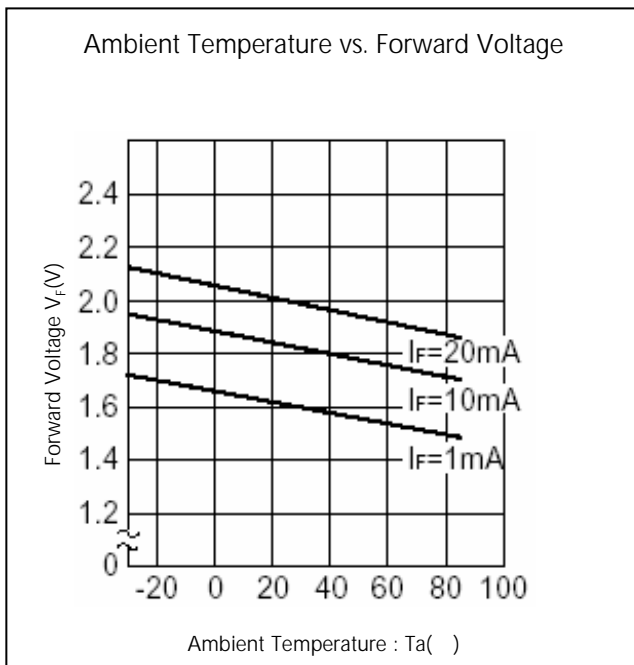
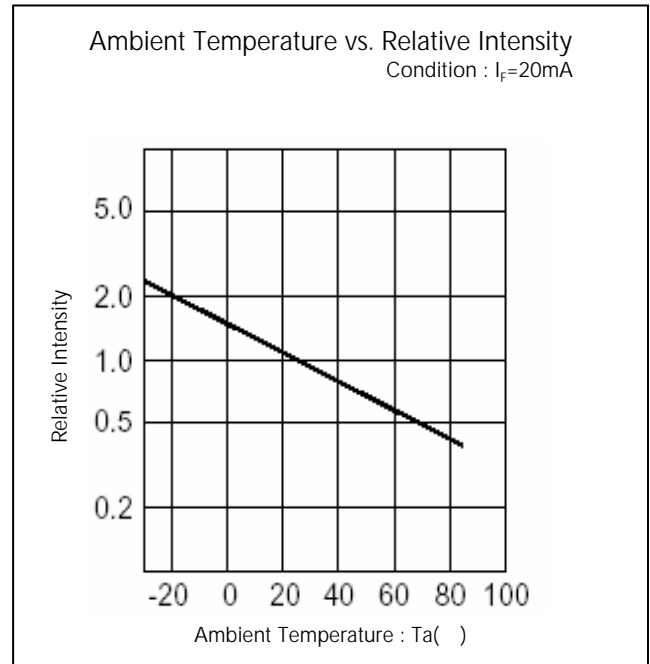
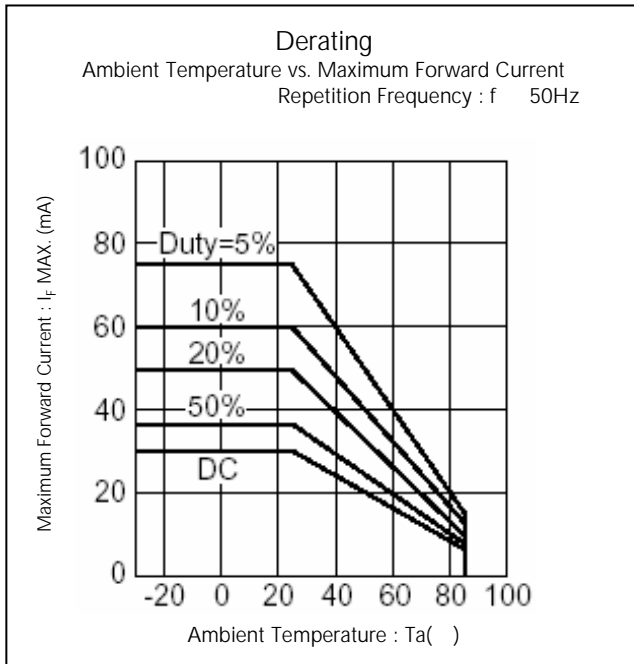
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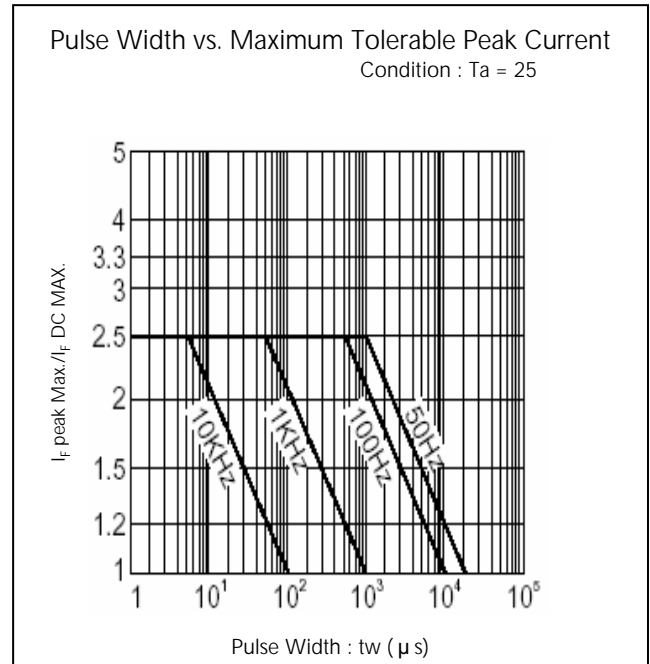
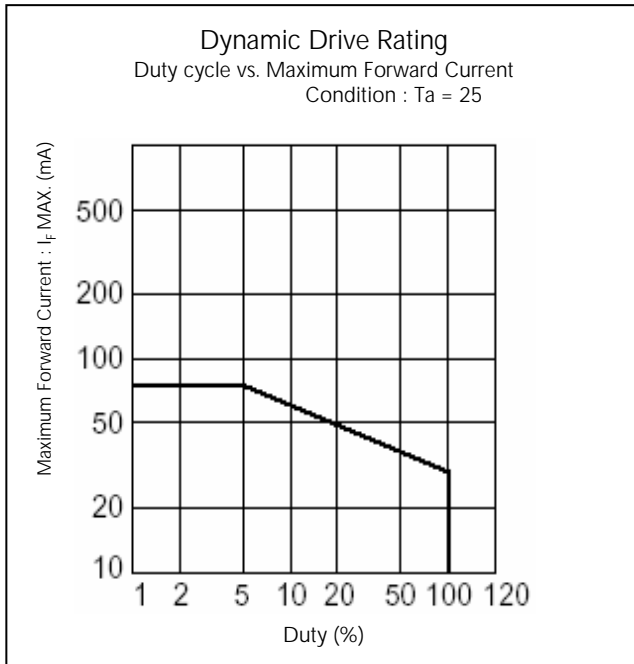
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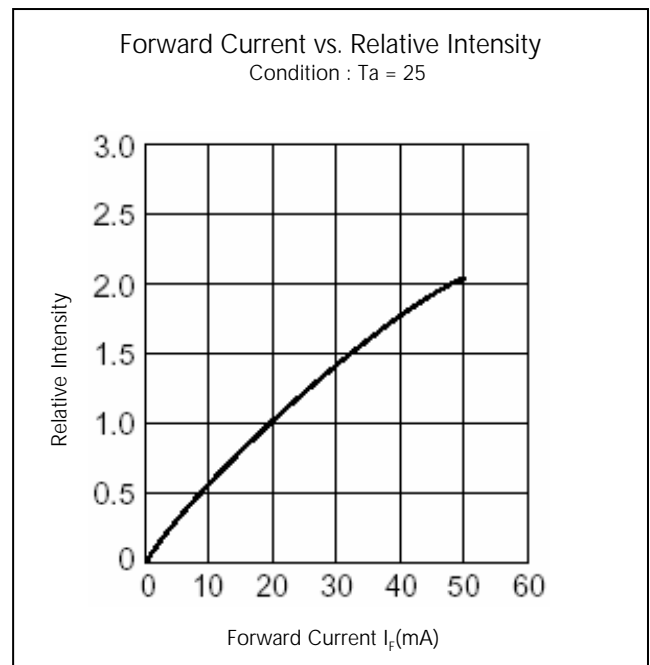
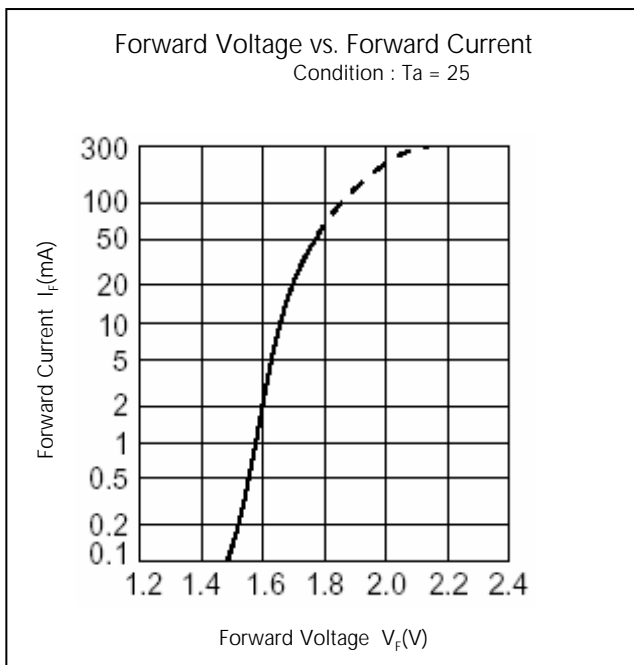
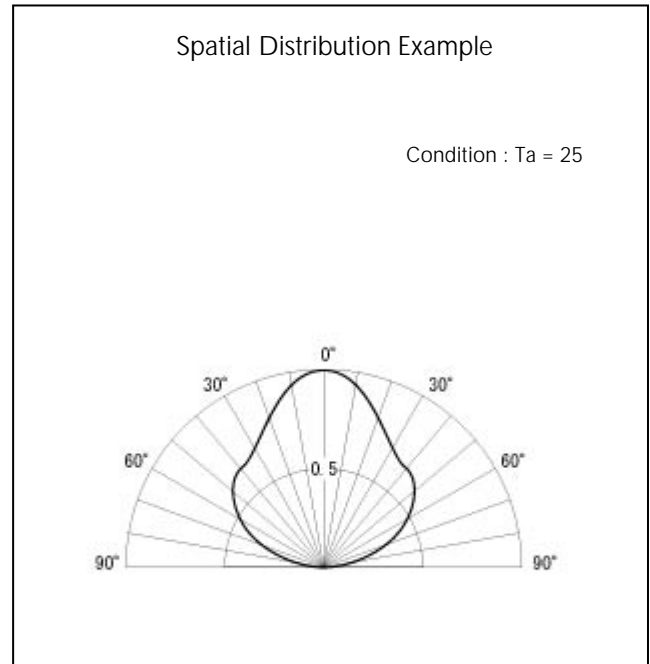
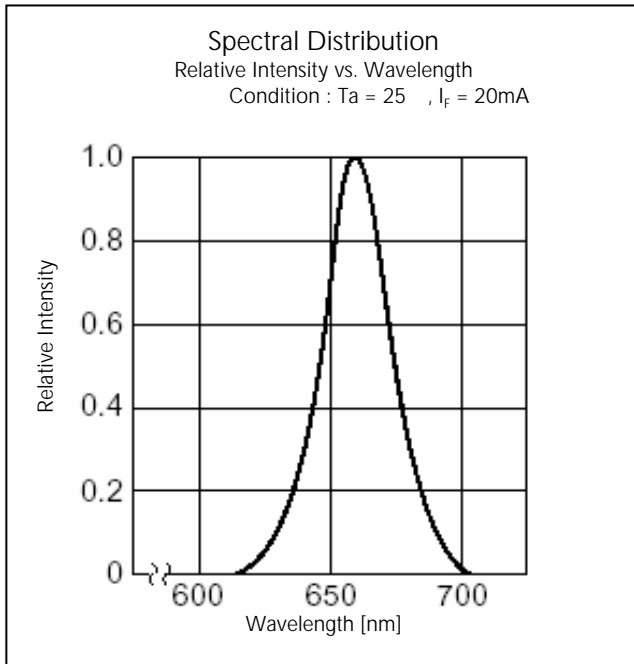
## Technical Data(MVR)



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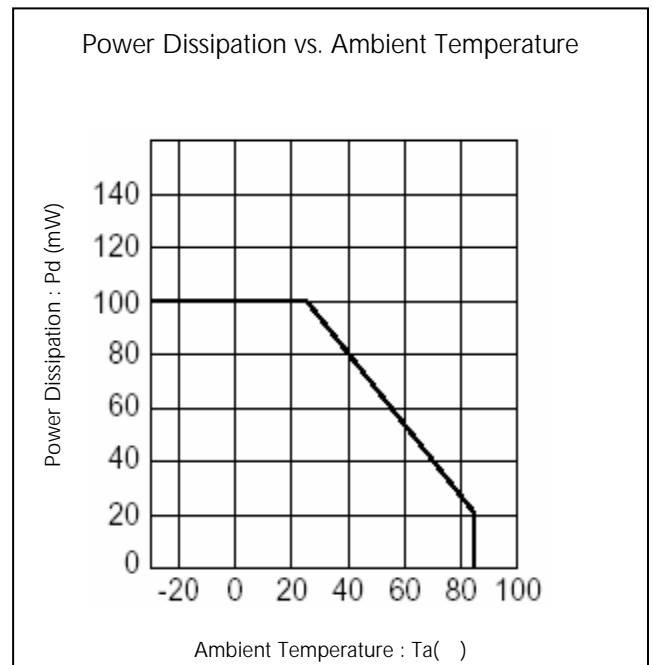
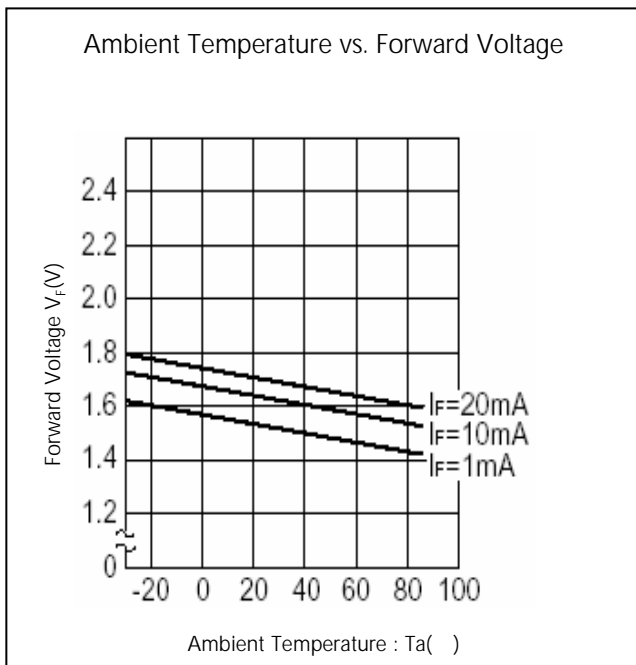
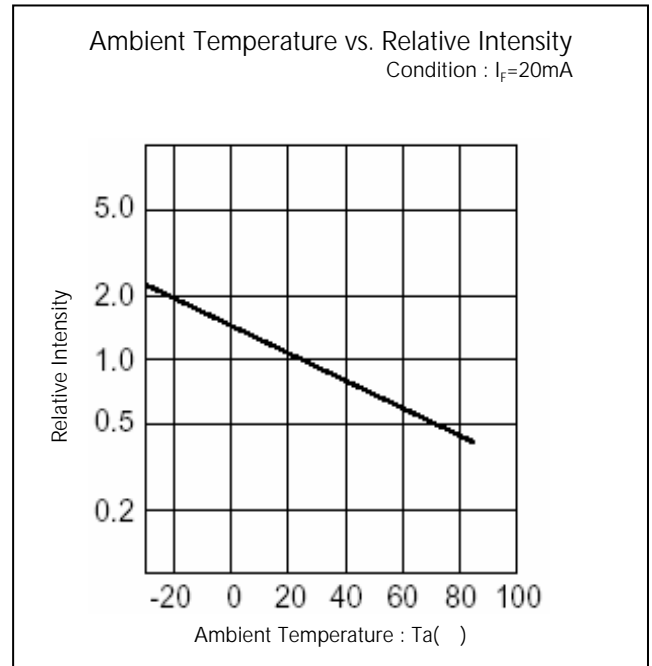
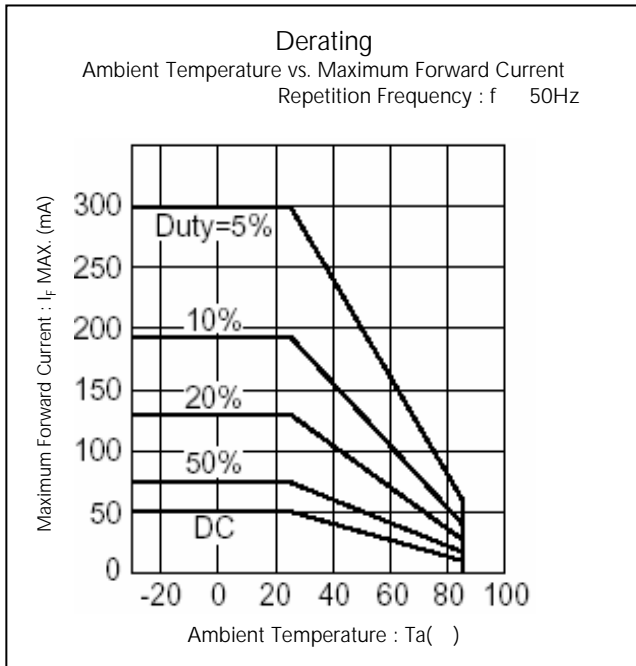


## Technical Data(BR)

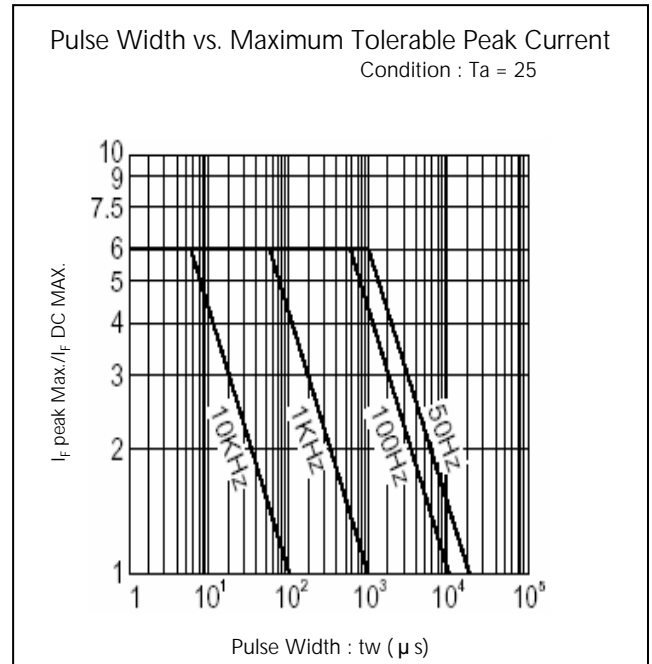
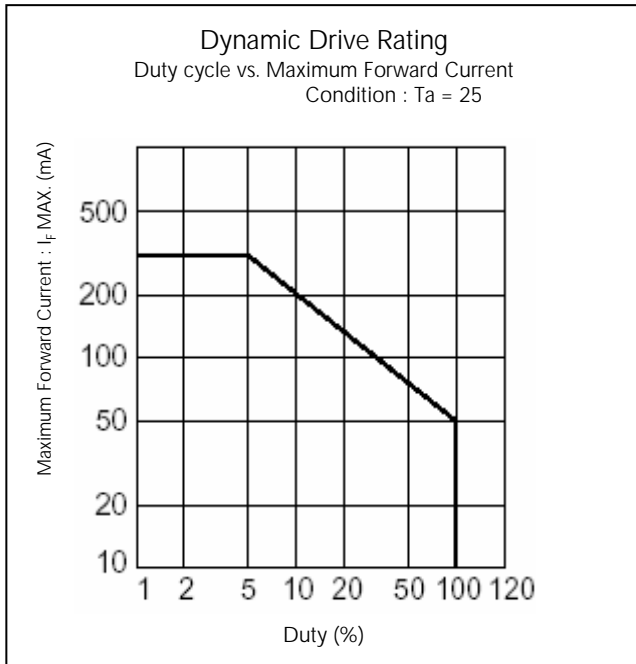




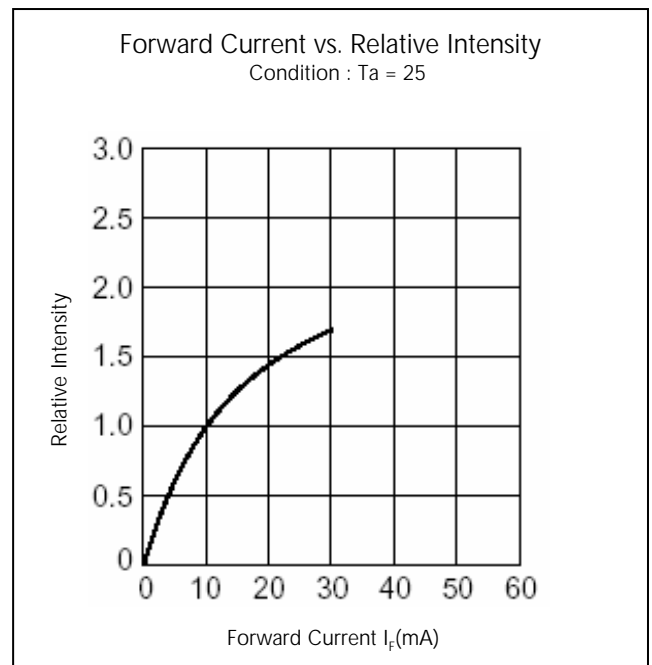
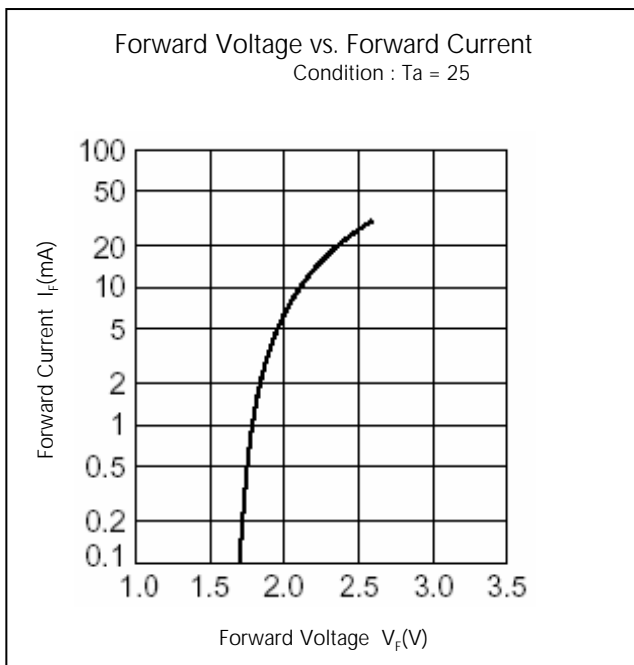
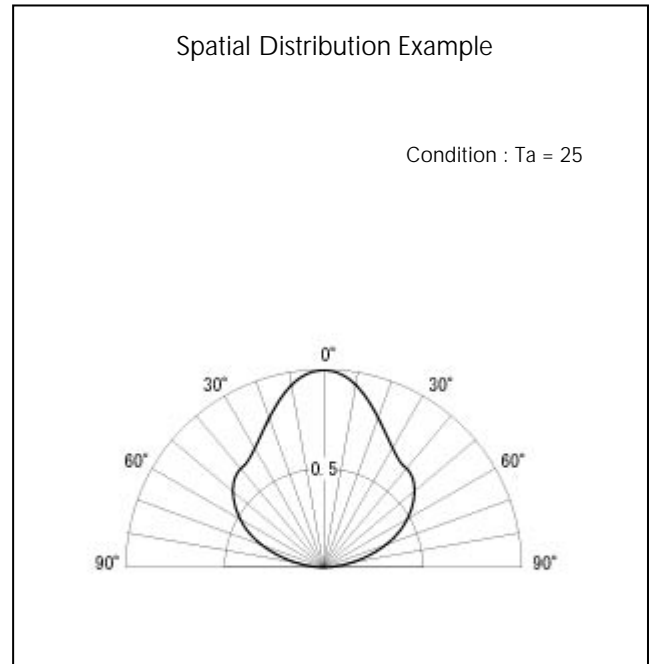
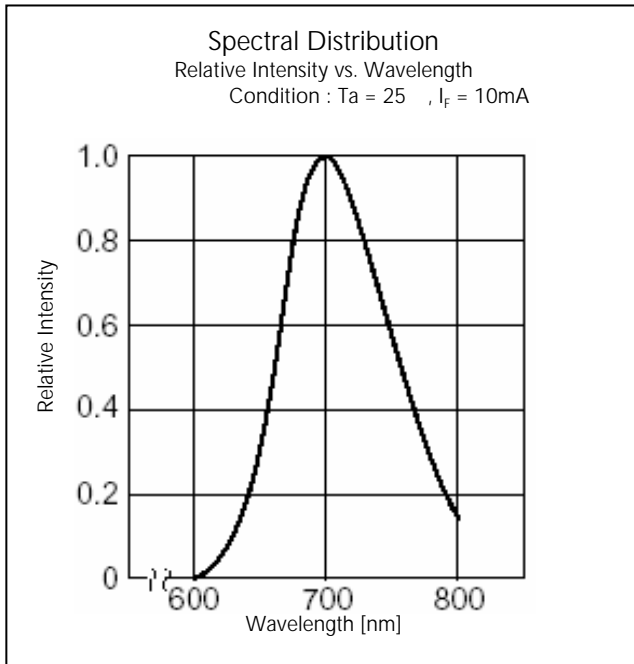
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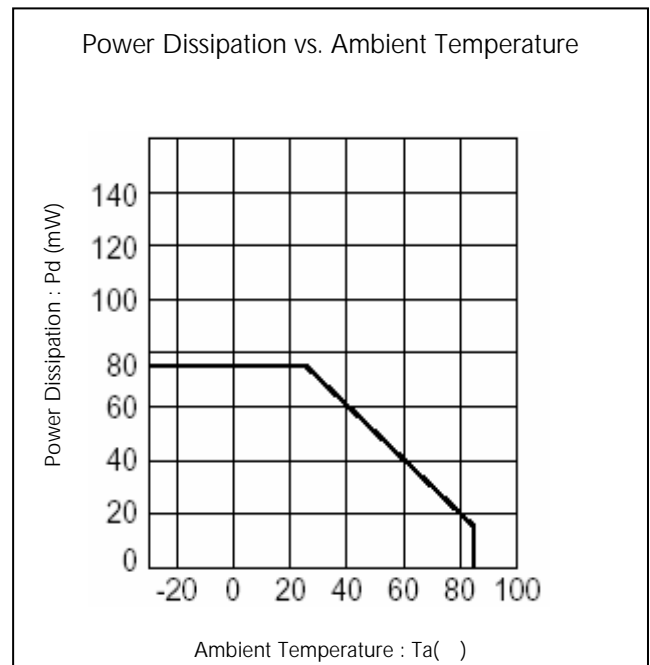
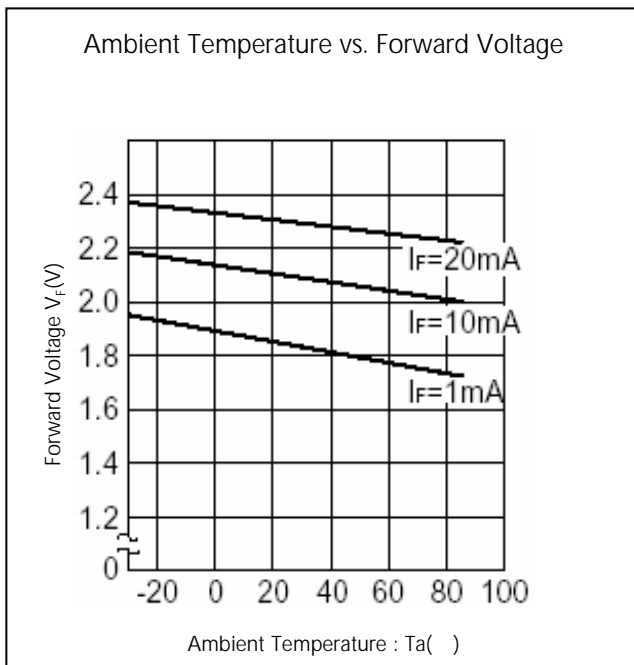
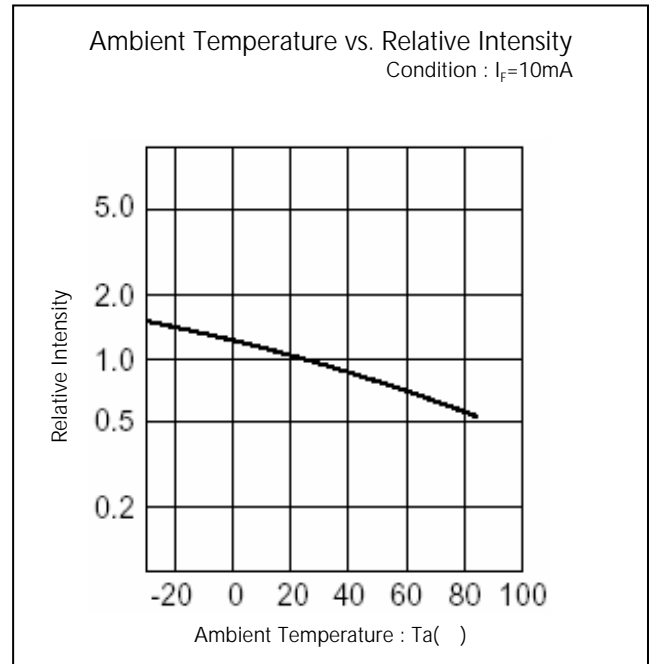
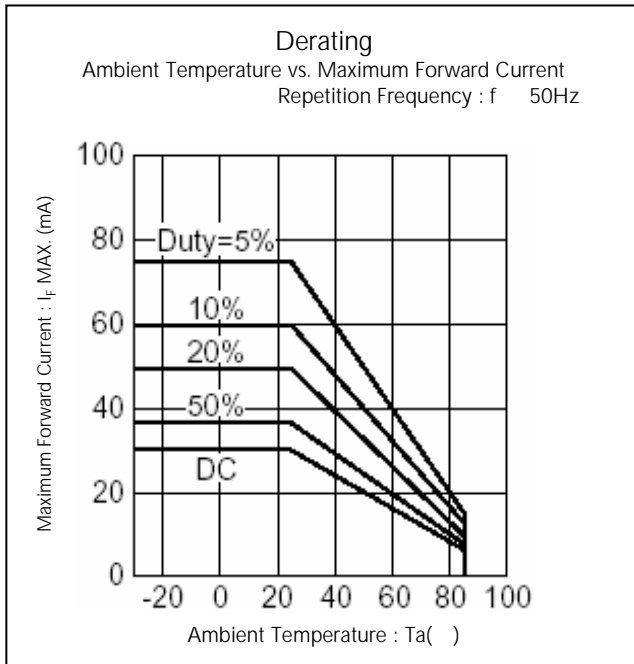
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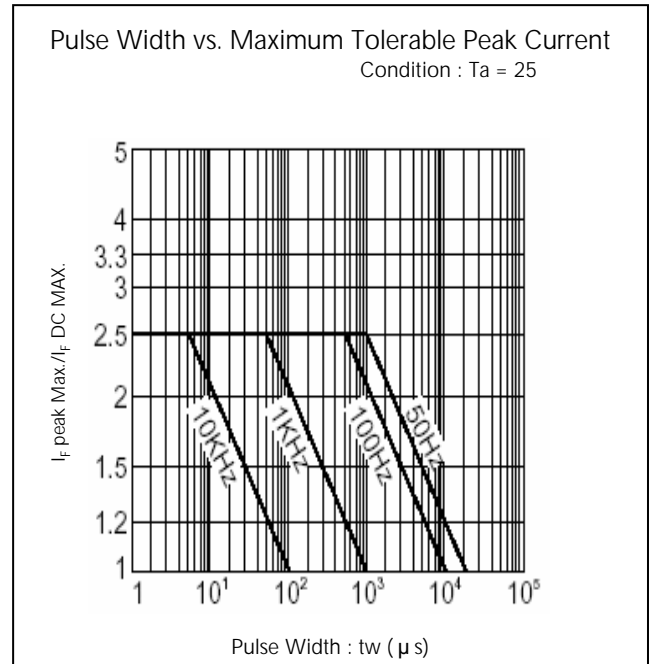
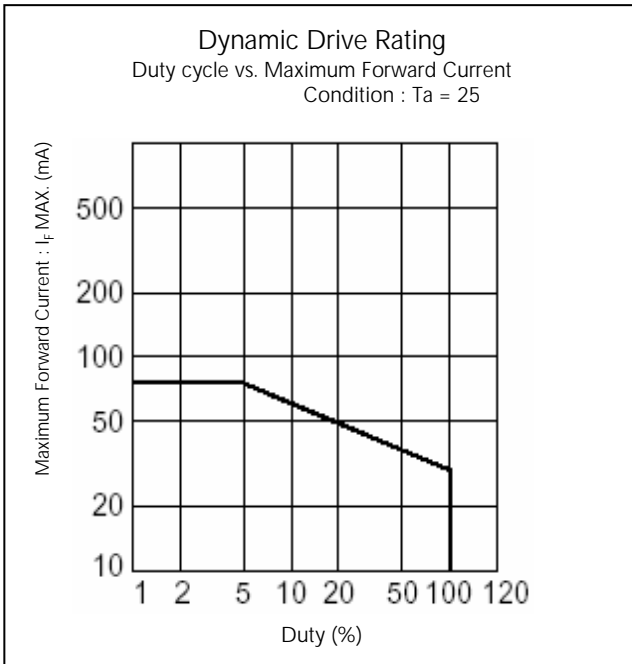
## Technical Data(MPR)



## Technical Data(MPR)

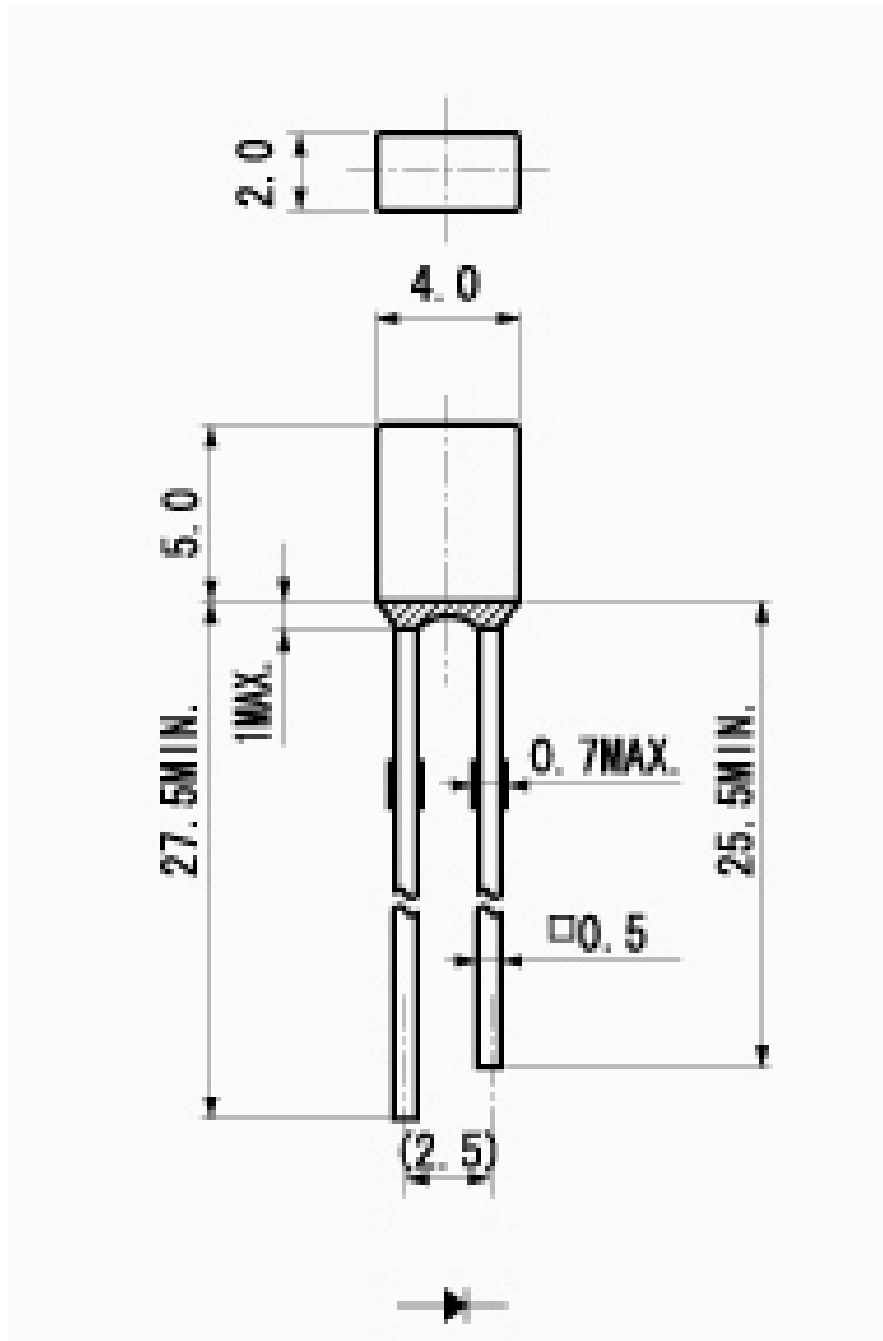


## Technical Data(MPR)



## Package Dimensions

(Unit: mm)



### TTW (Through The Wave) soldering Conditions

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Pre-heating	100 60 s	(MAX.) (MAX.)
Solder Bath Temp.	265	(MAX.)
Dipping Time	5 s	(MAX.)

- 1) The dip soldering process shall be 2 times maximum.
- 2) The product shall be cooled to normal temperature before the second dipping process.

### Manual Soldering Conditions

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Iron tip temp.	400	(MAX.)
Soldering time and frequency	3 s 2 times	(MAX.) (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, If = Maximum Rated Current	1,000 h	0/25
Resistance to Soldering Heat	EIAJ ED-4701/300(302)	260±5°C, 3mm from package base	10sec	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
Lead Tension	EIAJ ED-4701/400(401)	10N, 1time (□0.4 and Flat Package : 5N)	10sec	0/10
Vibration, Variable Frequency	EIAJ ED-4701/400(403)	98.1m/s <sup>2</sup> (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 <sub>F</sub>	If Value of each product Forward Voltage	Testing Max. Value ≥ Spec. Max. Value x 1.2
Reverse Current	I <sub>R</sub>	V <sub>R</sub> = 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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