



**Pb-free
HEAT**



5353K Series

Single Color Rectangular Shape Type

Features

Package	5 × 5 Rectangular shape type, MBG,MPG : Green Surface Diffused epoxy MPY,MAY : Yellow Surface Diffused epoxy MAA : Orange Surface Diffused epoxy MVR,BR,MPR : Red Surface Diffused epoxy	
Product features	• Outer Dimension 5 × 5 Rectangular shape type • Operation temperature range. Storage Temperature : -30℃~100℃ Operating Temperature : -30℃~85℃ • No lead package and lead-free soldering compatible • RoHS compliant	
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, MVR : 130 deg., MPY : 142 deg., MAA : 136 deg., MPG : 128 deg. MAY : 134 deg. BR,MPR : 140 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		Luminous Intensity		
					λ d (nm)		Iv (mcd)		
					TYP.	I _f	MIN.	TYP.	I _f
MBG5353K	GaP	Green	Green	Surface Diffused	558	20	0.5	1.0	20
MPG5353K	GaP	Green			567	20	1.5	3.0	20
MPY5353K	GaP	Yellow Green	Yellow		572	20	2.0	4.0	20
MAY5353K	GaAsP	Yellow			590	20	1.2	2.4	20
MAA5353K	GaAsP	Orange	Orange		606	20	1.2	2.4	20
MVR5353K	GaAsP	Red	Red		624	20	1.2	2.4	20
BR5353K	GaAlAs	Red			647	20	1.5	3.0	20
MPR5353K	GaP	Red			630	10	0.3	0.5	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)	ΔI_F	0.33	0.33	0.40	0.40	0.33	0.40	0.67	0.40	mA/°C
Reverse Voltage	V_R	4	4	4	4	4	4	4	4	V
Operating Temperature	T_{opr}	-30~+85								°C
Storage Temperature	T_{stg}	-30~+100								°C

※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 _F =20mA	V _F	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 _R =4V	I _R	MAX.	20	20	20	20	20	20	100	μ A
Peak Wavelength	I _F =20mA	λ _p	TYP.	555	560	570	580	605	630	660	nm
Dominant Wavelength	I _F =20mA	λ _d	TYP.	558	567	572	590	606	624	647	nm
Spectral Line Half Width	I _F =20mA	Δλ	TYP.	30	30	30	30	30	30	30	nm
Half Intensity Angle	I _F =20mA	2θ 1/2	TYP.	130	128	142	134	136	130	140	deg.

Electro-Optical Characteristics(MPR)

(Ta=25°C)

Item	Conditions	Symbol	Characteristics		Unit
				MPR	
Forward Voltage	I _F =10mA	V _F	TYP.	2.1	V
			MAX.	2.8	
Reverse Current	V _R =4V	I _R	MAX.	20	μ A
Peak Wavelength	I _F =10mA	λ _p	TYP.	700	nm
Dominant Wavelength	I _F =10mA	λ _d	TYP.	630	nm
Spectral Line Half Width	I _F =10mA	Δλ	TYP.	100	nm
Half Intensity Angle	I _F =10mA	2θ 1/2	TYP.	140	deg.

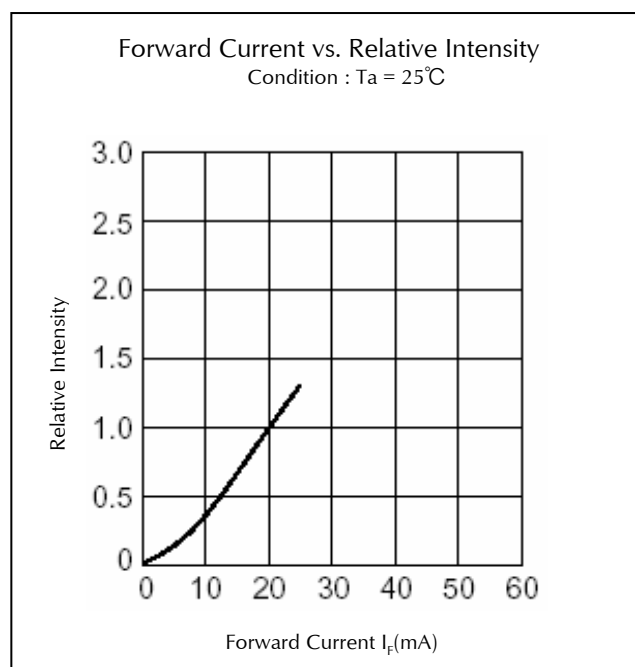
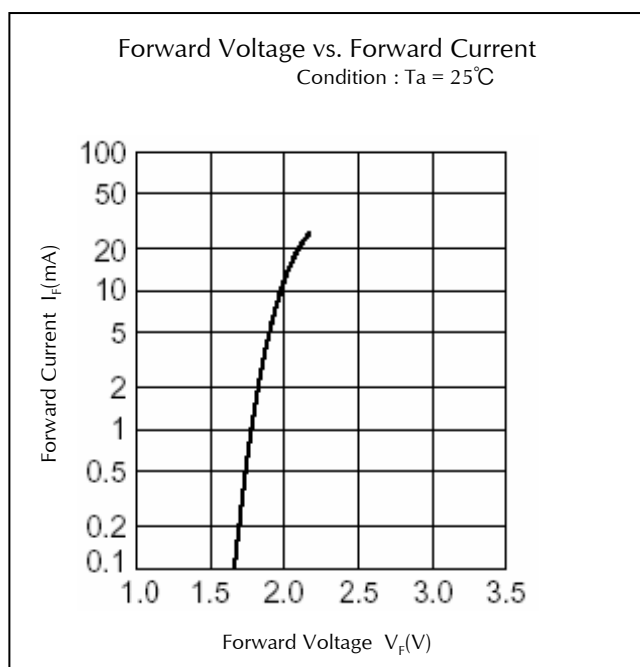
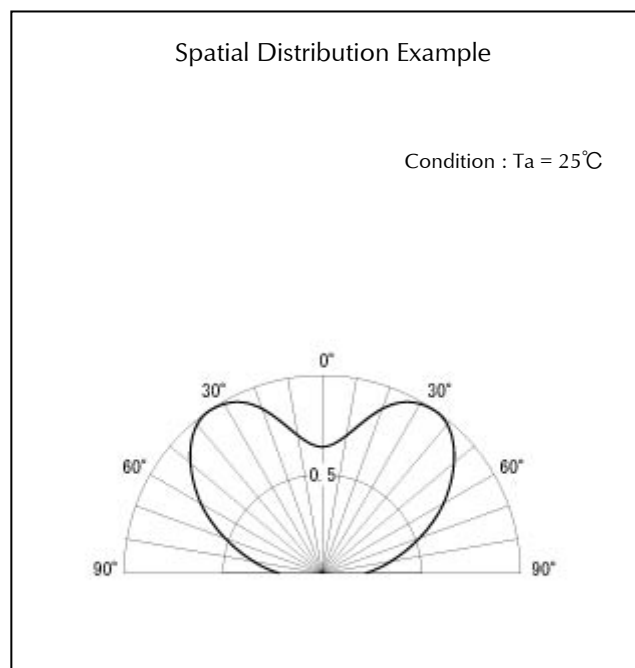
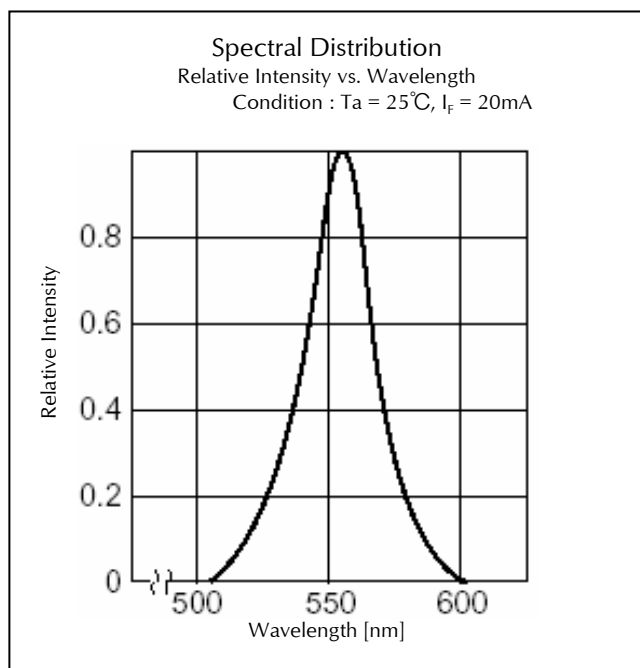
Luminous Intensity Rank

(Ta=25°C)

Rank	I _v (mcd)															
	MBG		MPG		MPY		MAY		MAA		MVR		BR		MPR	
	I _f =20mA		I _f =20mA		I _f =20mA		I _f =20mA		I _f =20mA		I _f =20mA		I _f =20mA		I _f =10mA	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
A	0.5	1.0	1.5	3.0	2.0	4.0	1.2	2.4	1.2	2.4	1.2	2.4	1.5	3.0	0.30	0.60
B	0.7	1.4	2.1	4.2	2.8	5.6	1.6	3.2	1.6	3.2	1.6	3.2	2.1	4.2	0.42	0.84
C	1.0	2.0	3.0	6.0	4.0	8.0	2.4	4.8	2.4	4.8	2.4	4.8	3.0	6.0	0.60	1.20
D	1.4	2.8	4.2	8.4	5.6	11.2	3.2	6.4	3.2	6.4	3.2	6.4	4.2	8.4	0.84	1.68
E	2.0	-	6.0	-	8.0	-	4.8	-	4.8	-	4.8	-	6.0	-	1.20	-

※Please contact our sales staff concerning rank designation.

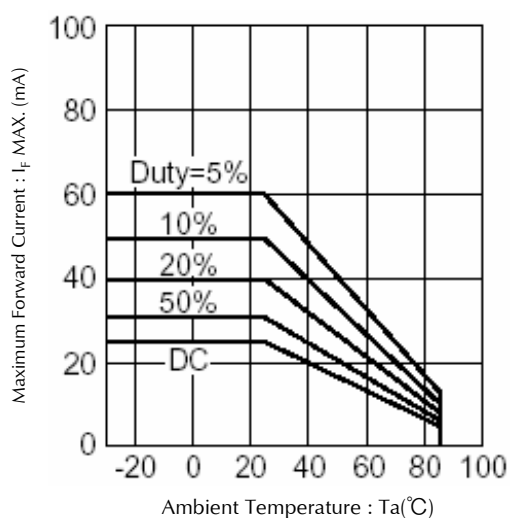
Technical Data(MBG)



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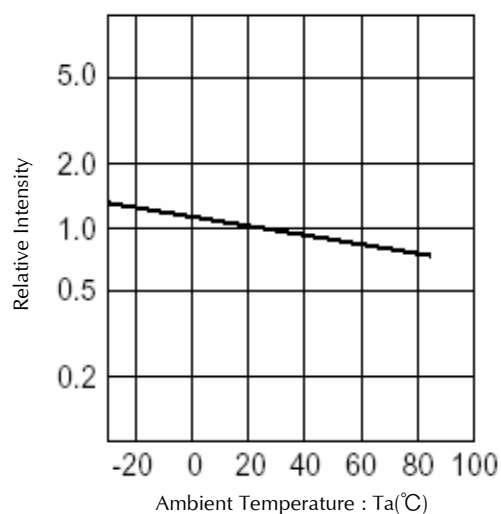
Derating

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

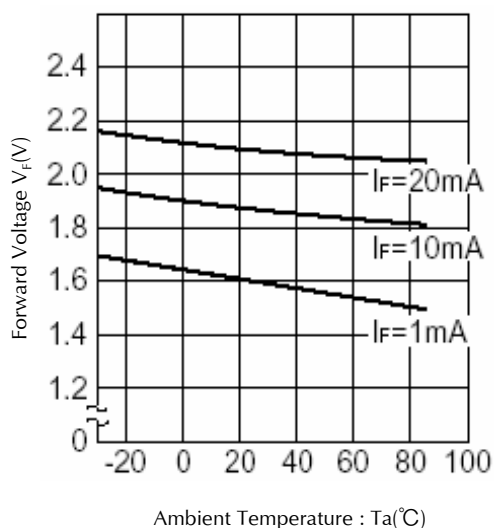


Ambient Temperature vs. Relative Intensity

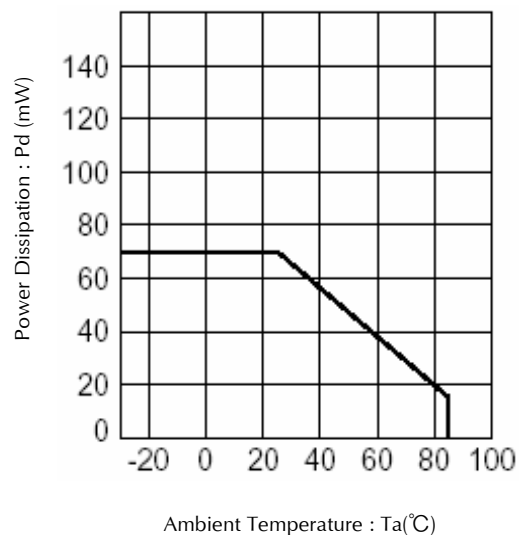
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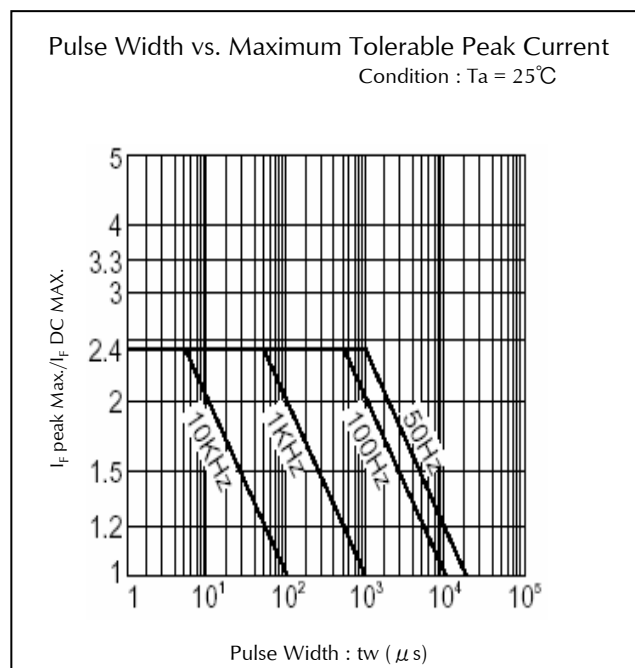
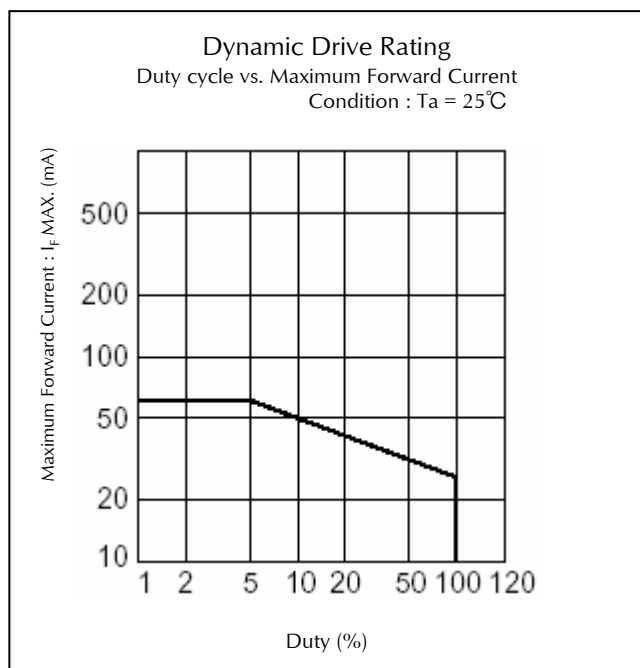
Ambient Temperature vs. Forward Voltage



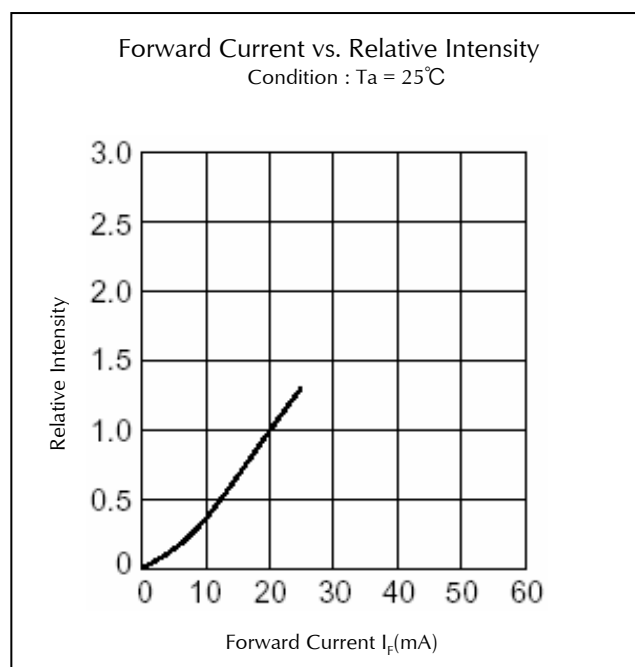
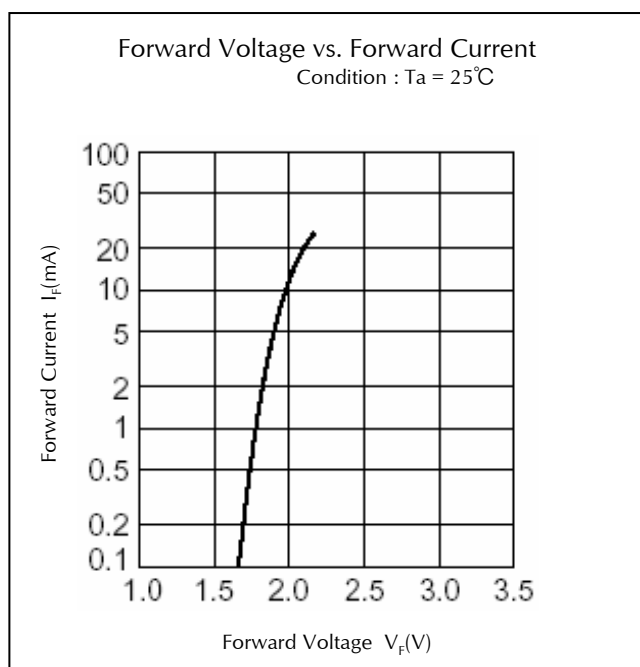
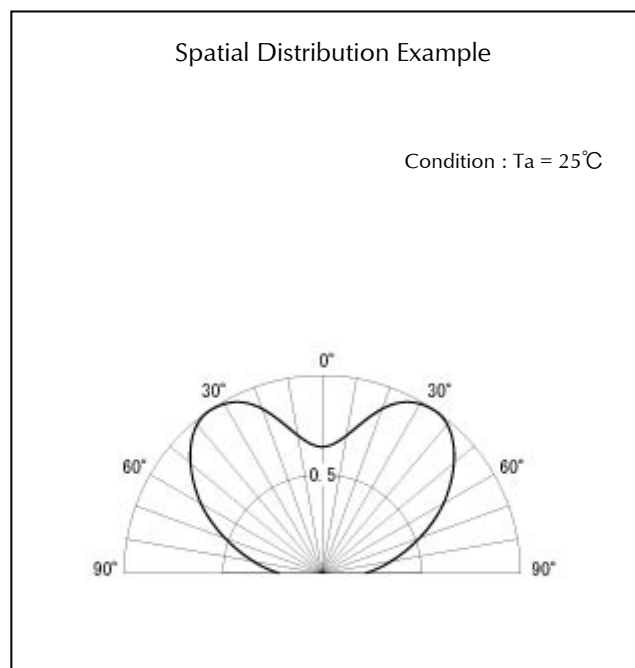
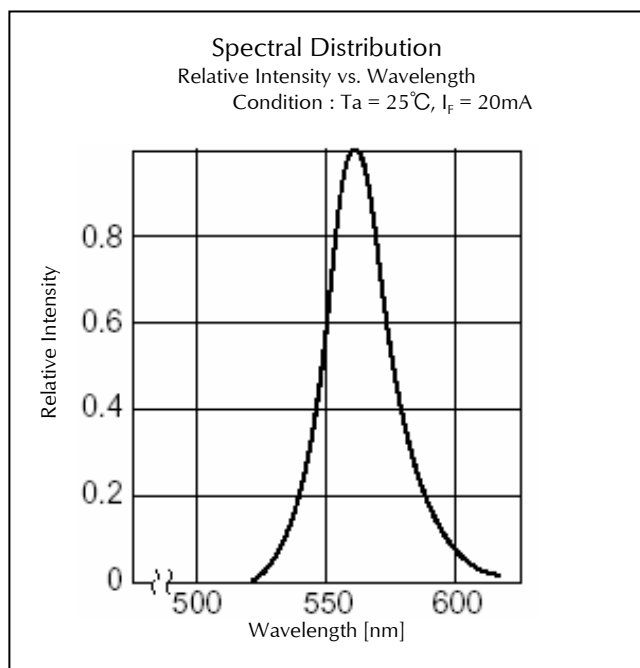
Power Dissipation vs. Ambient Temperature



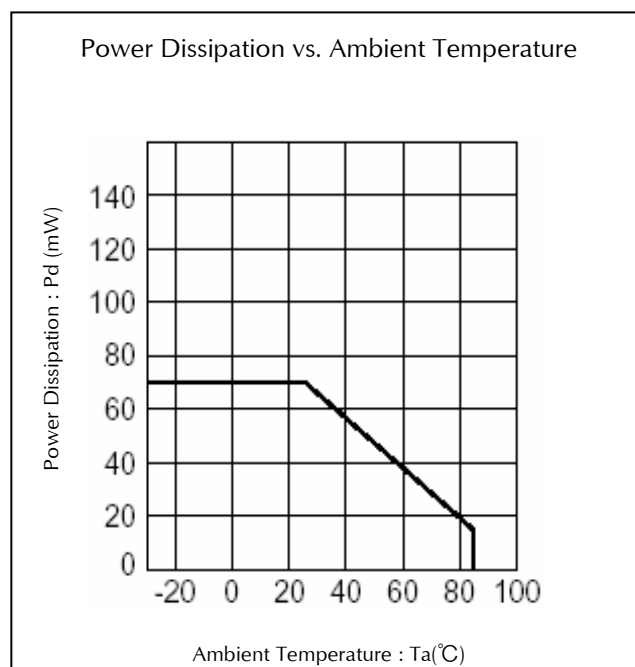
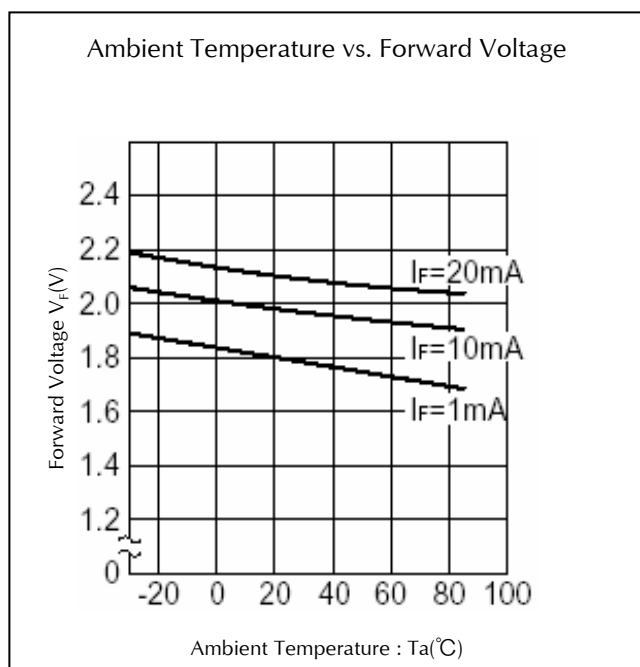
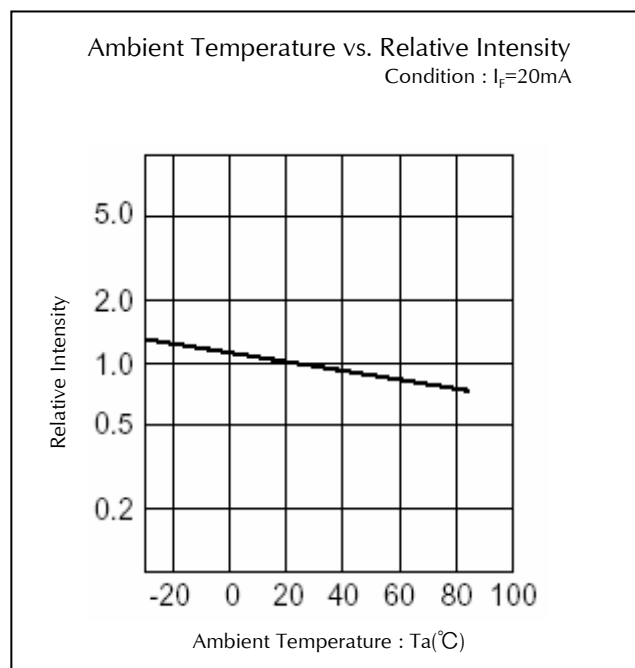
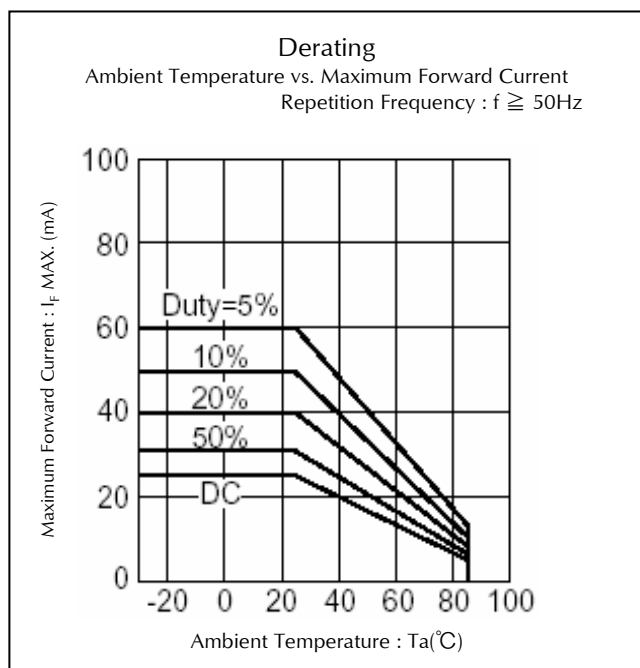
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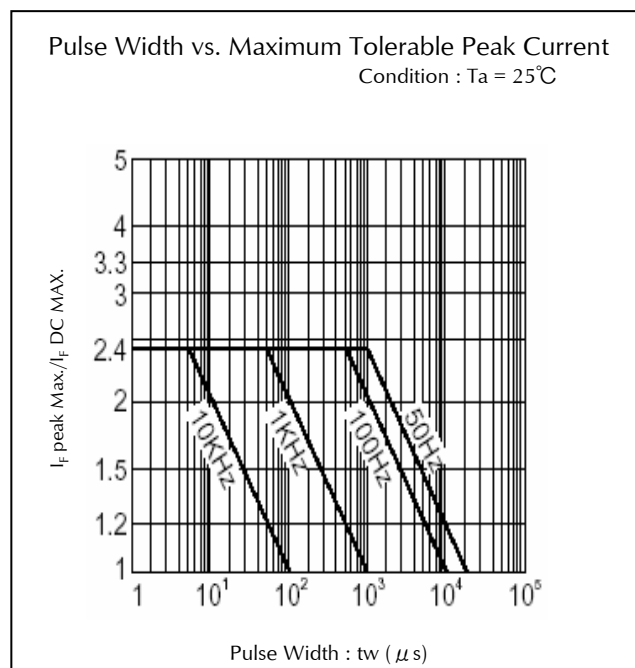
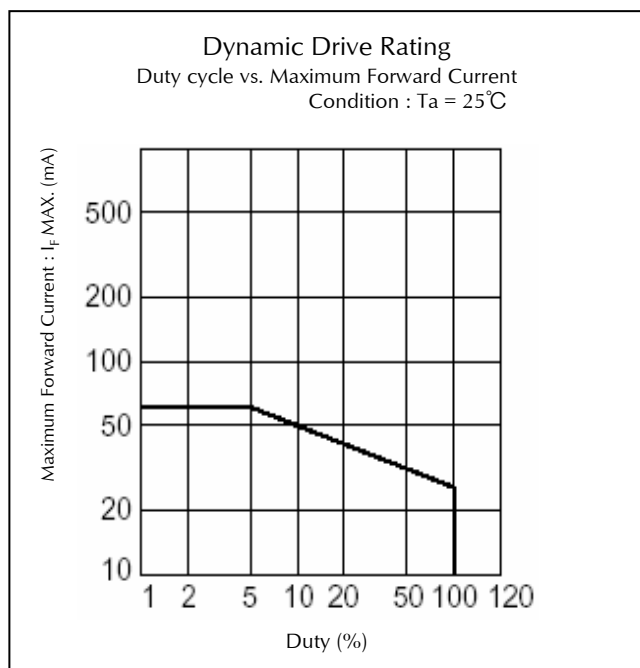
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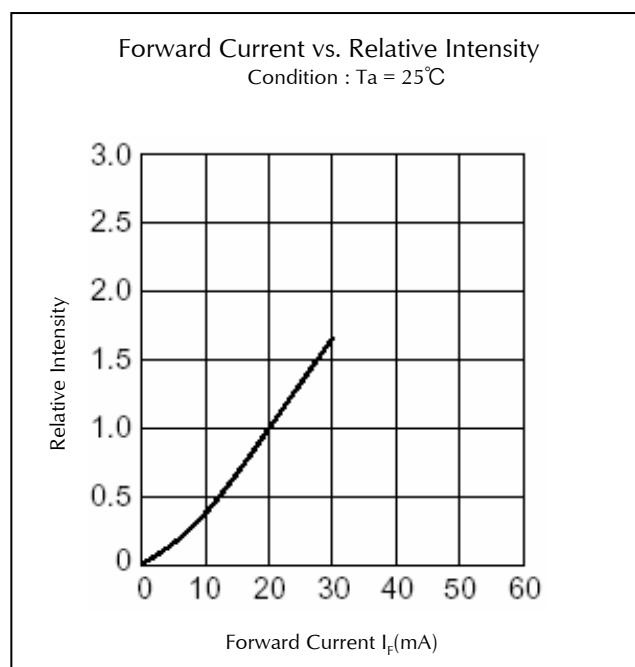
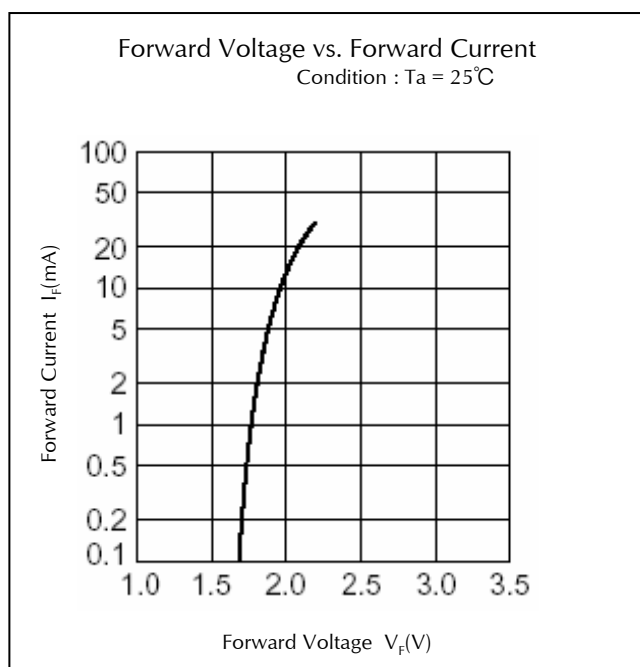
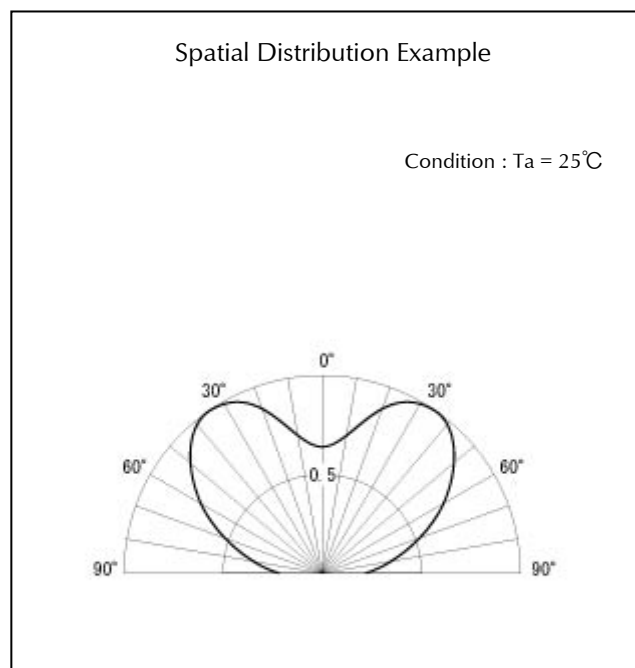
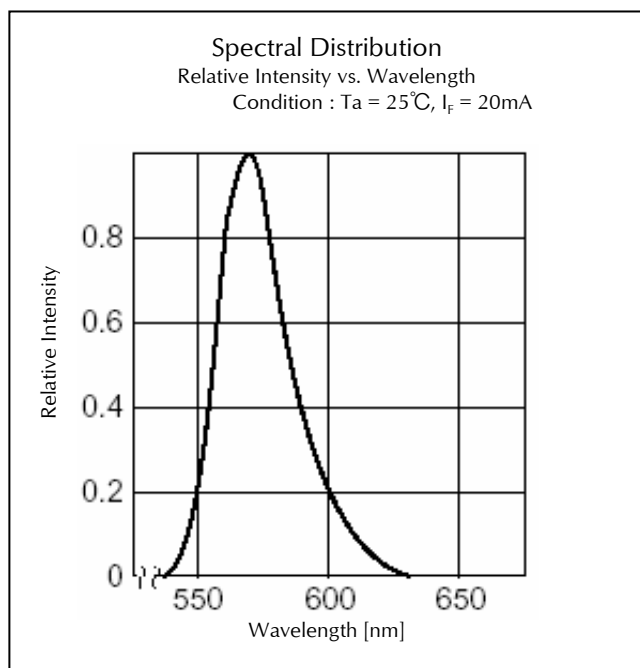
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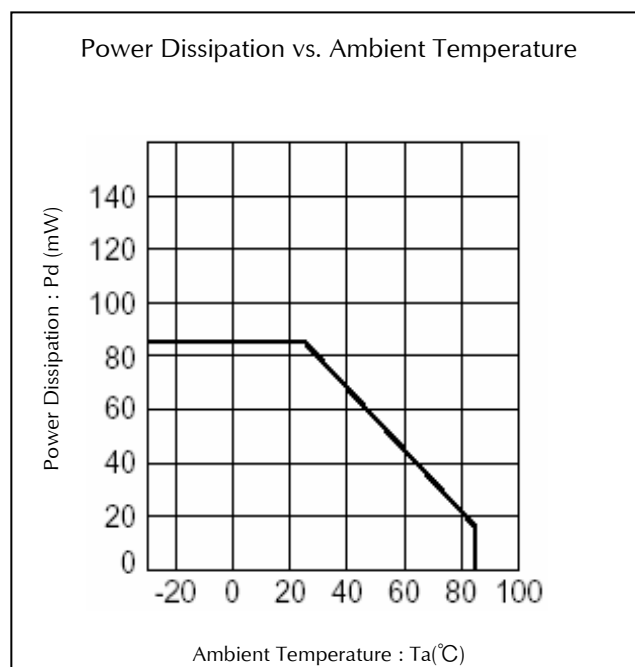
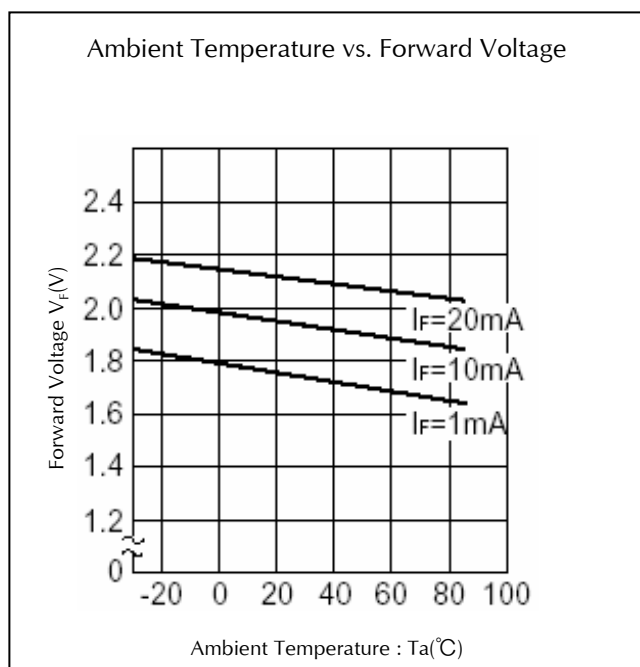
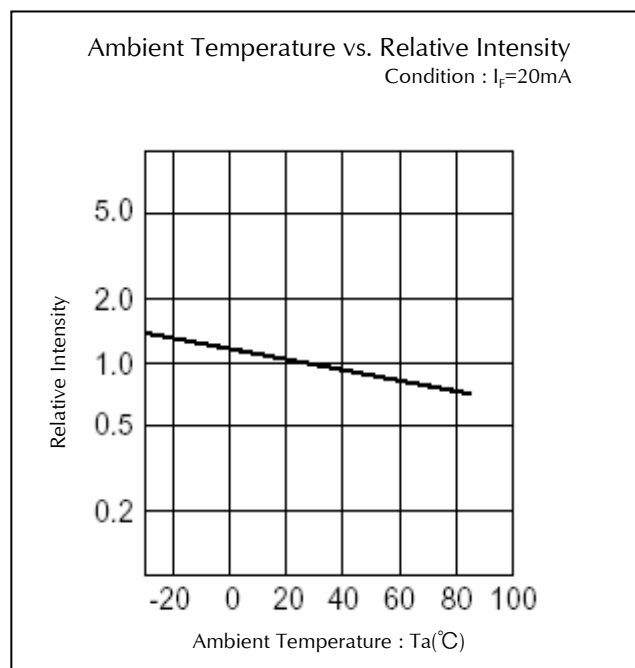
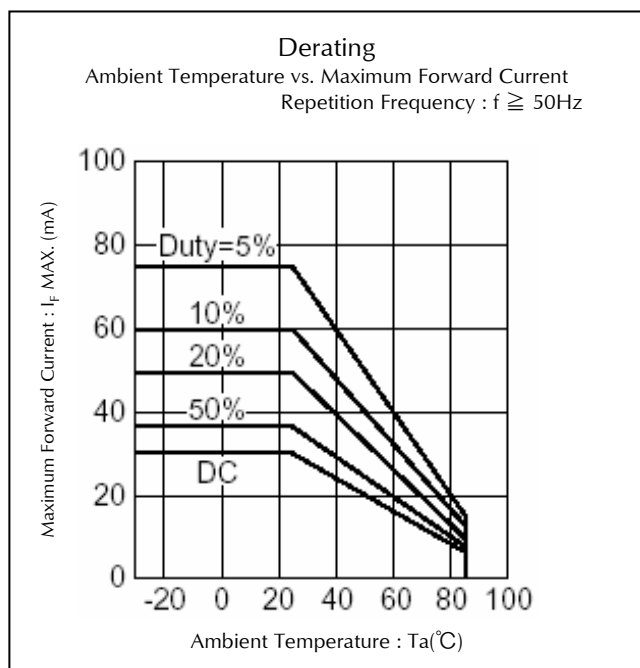
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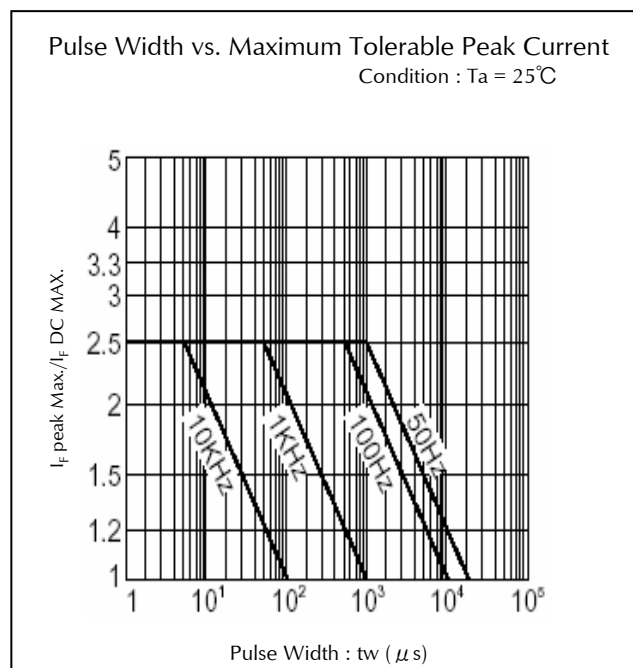
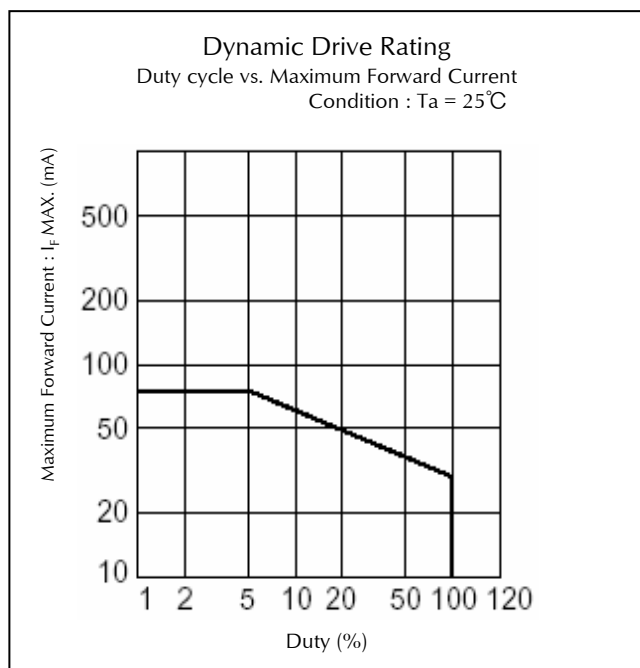
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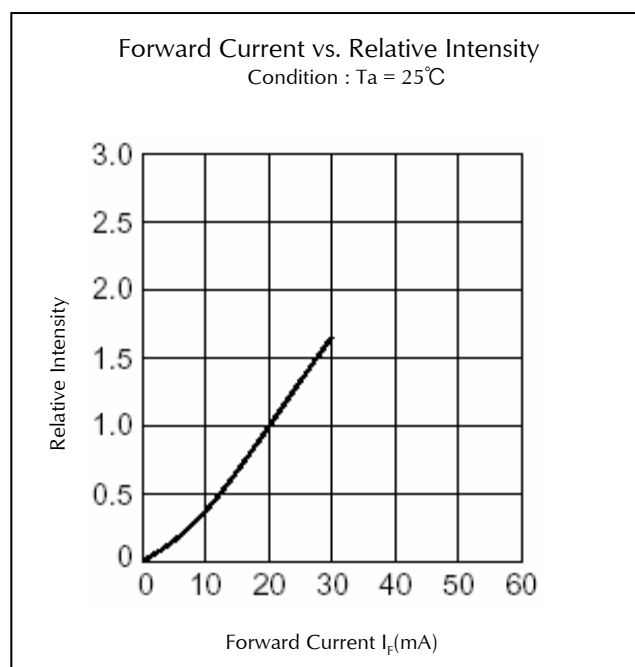
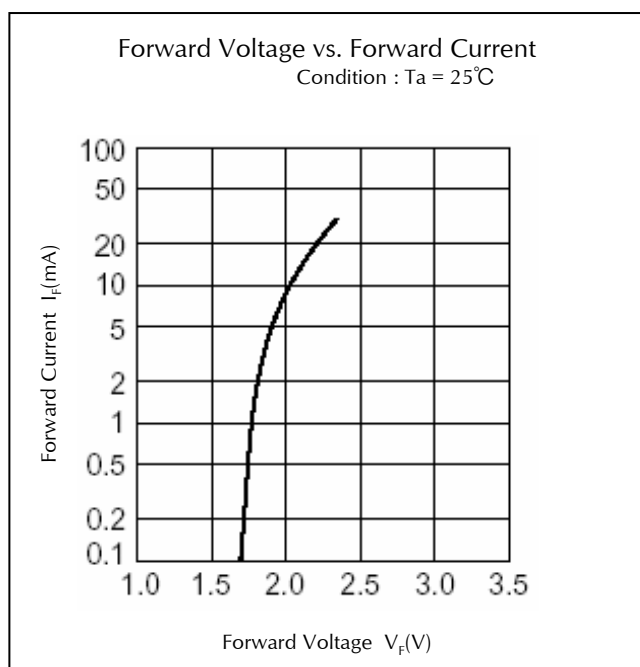
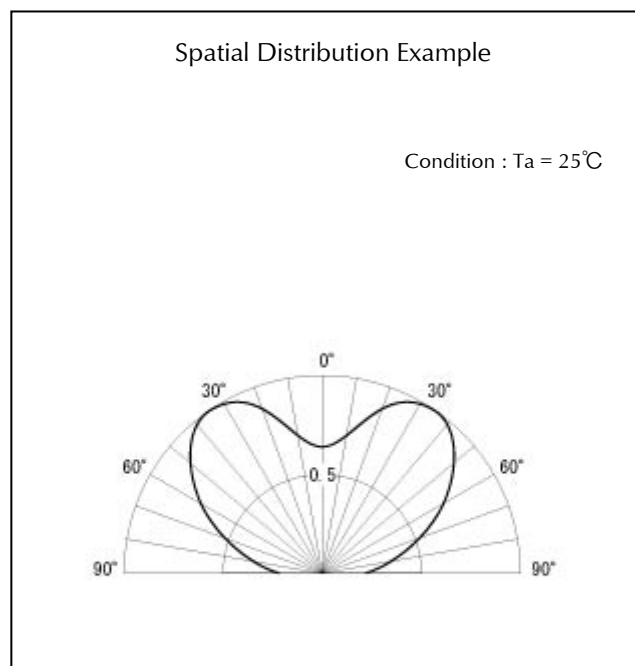
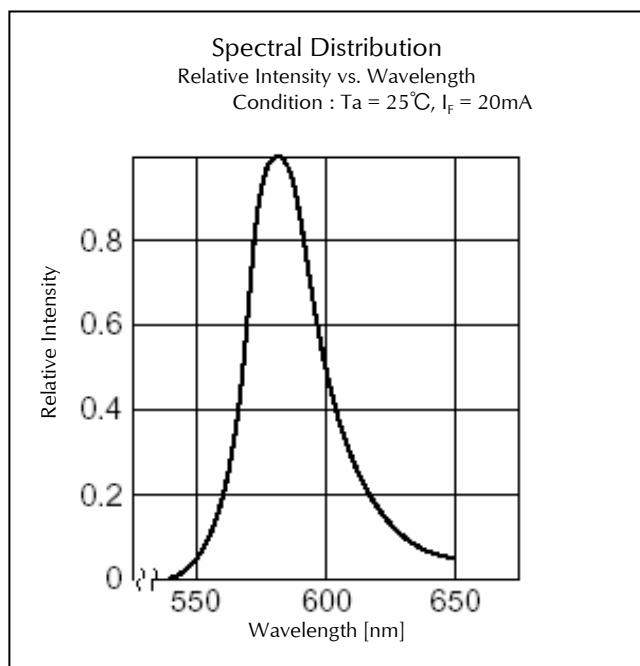
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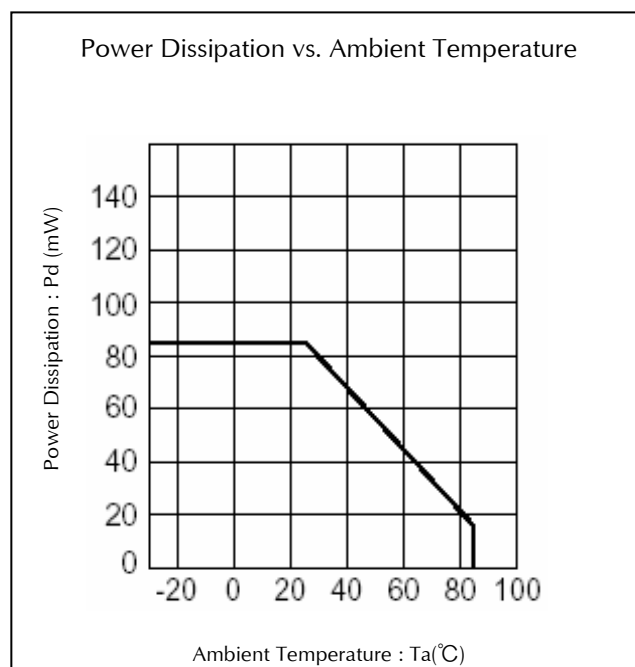
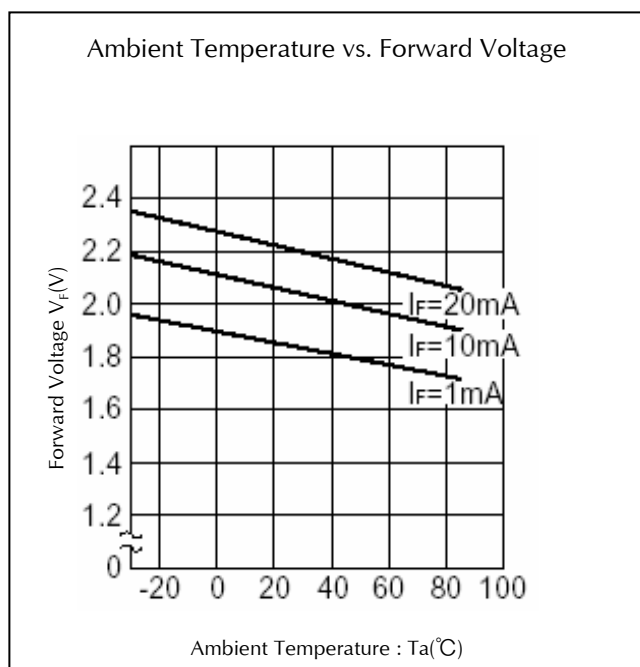
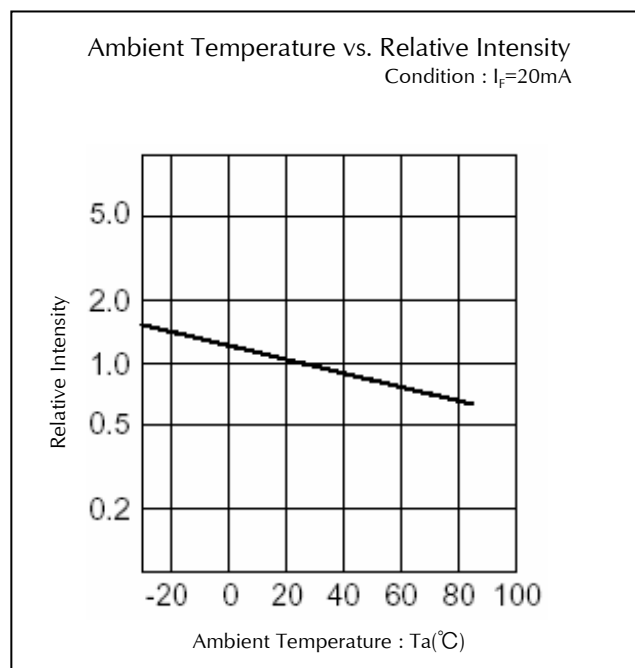
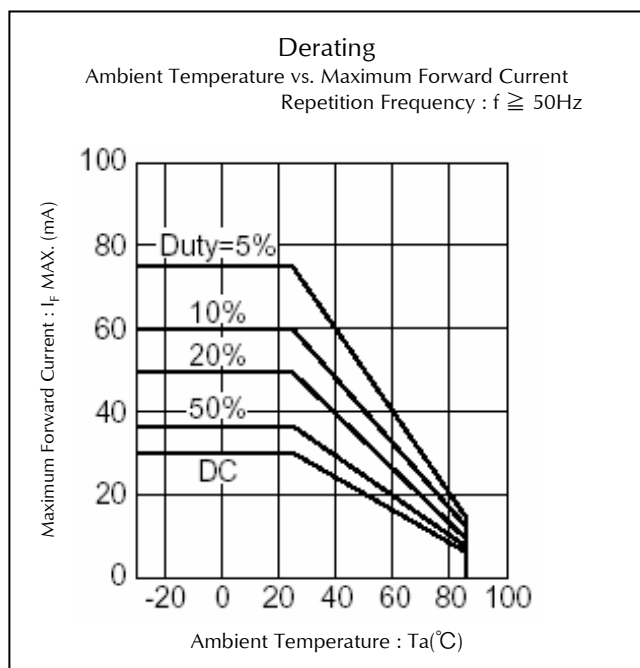
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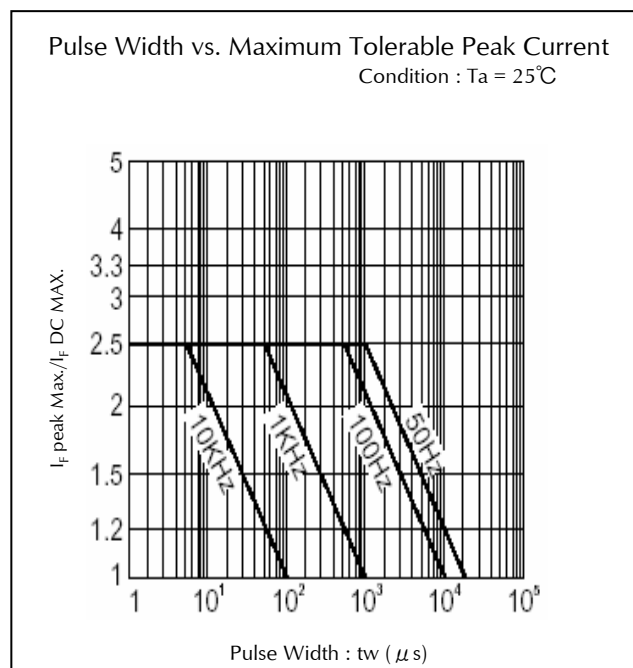
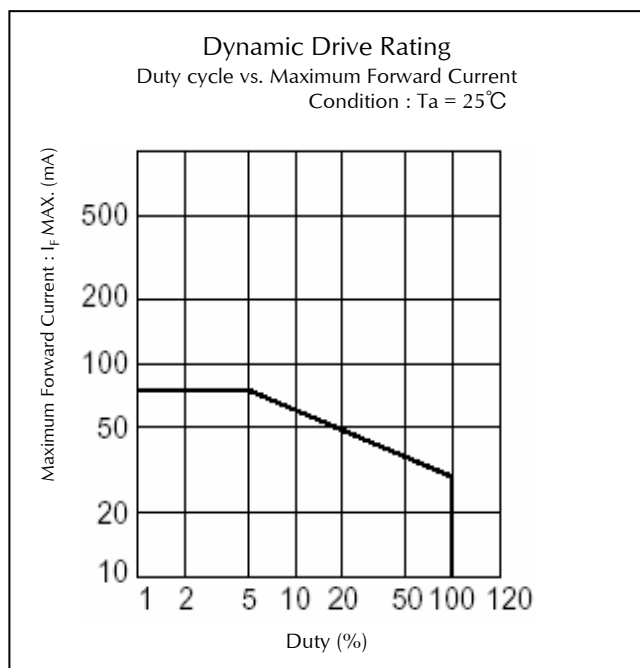
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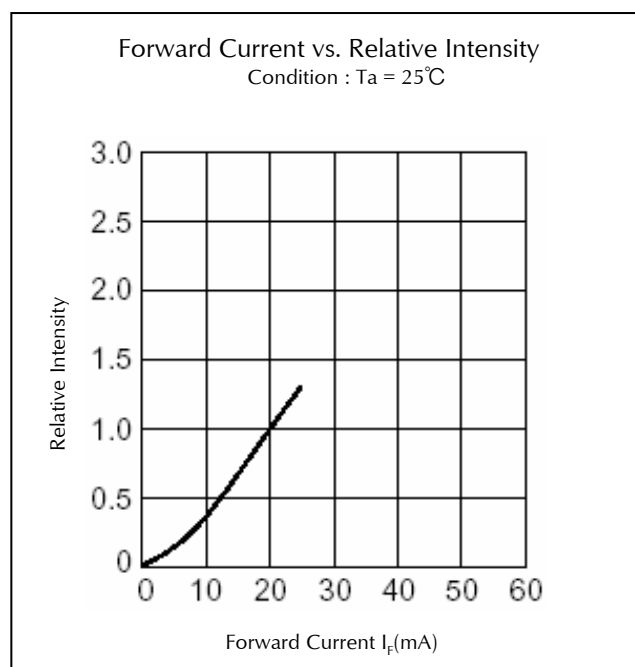
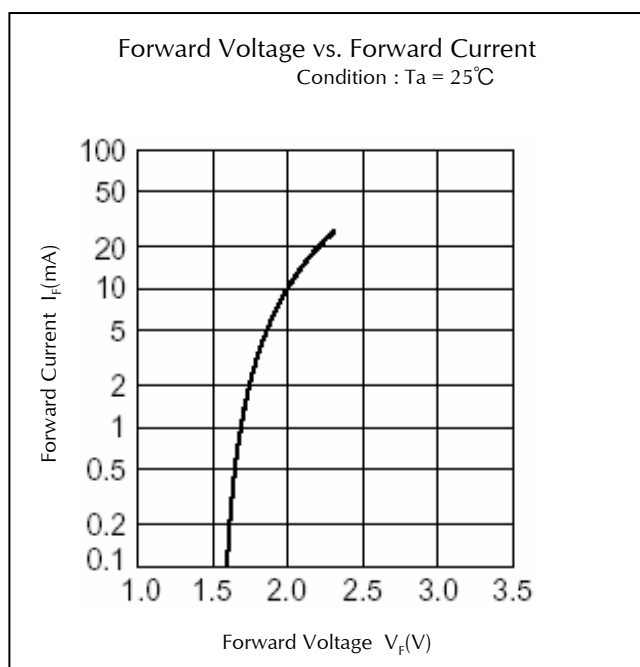
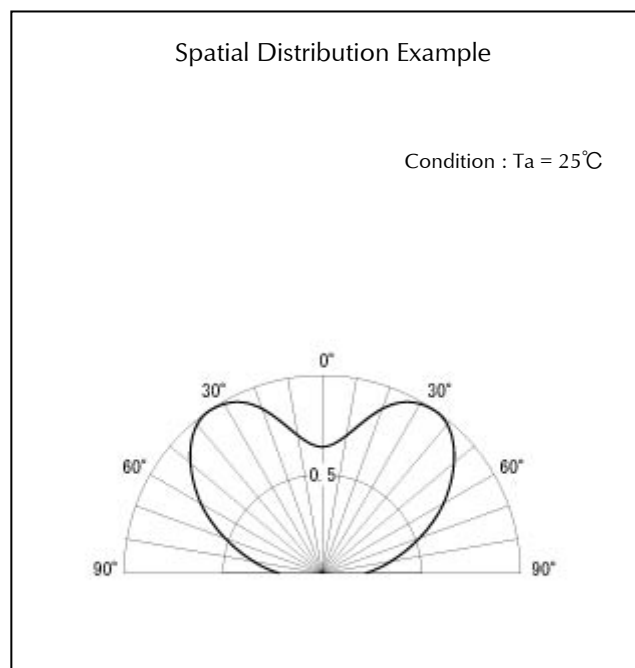
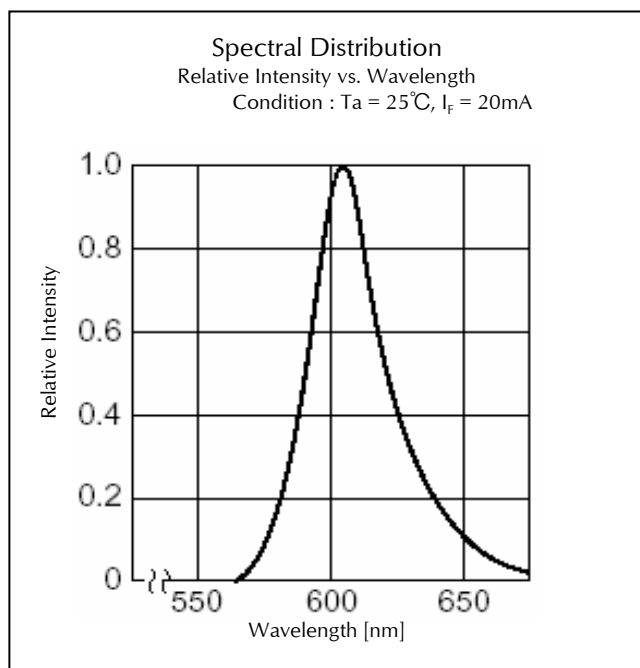
Technical Data(MAY)



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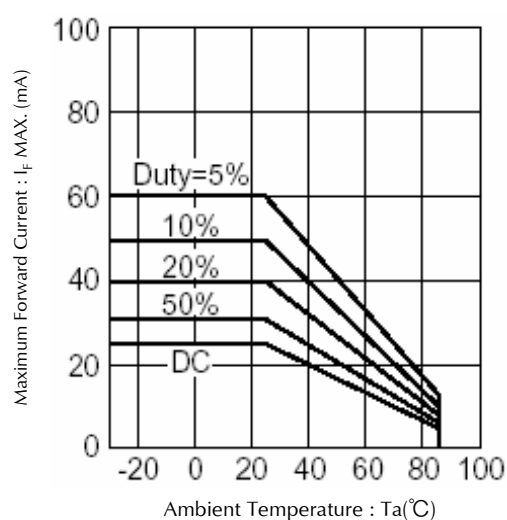
Technical Data(MAA)



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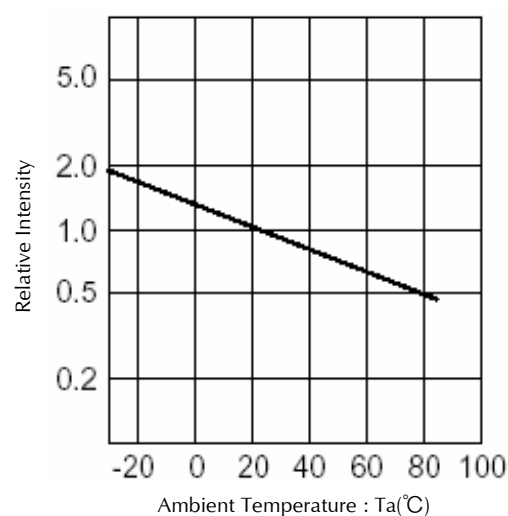
Derating

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

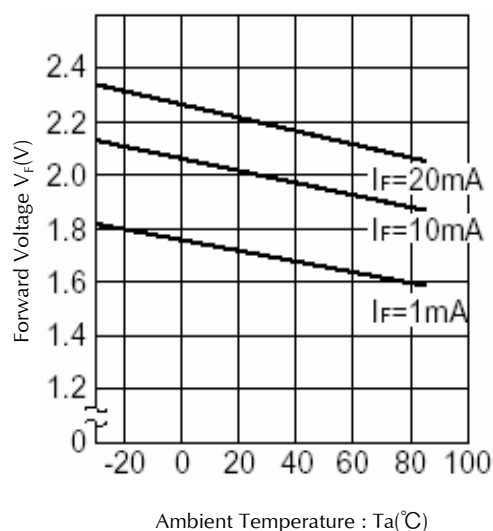


Ambient Temperature vs. Relative Intensity

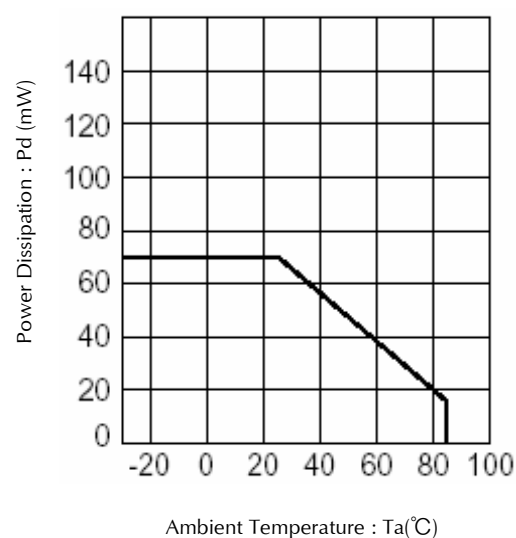
Condition : $I_F=20\text{mA}$



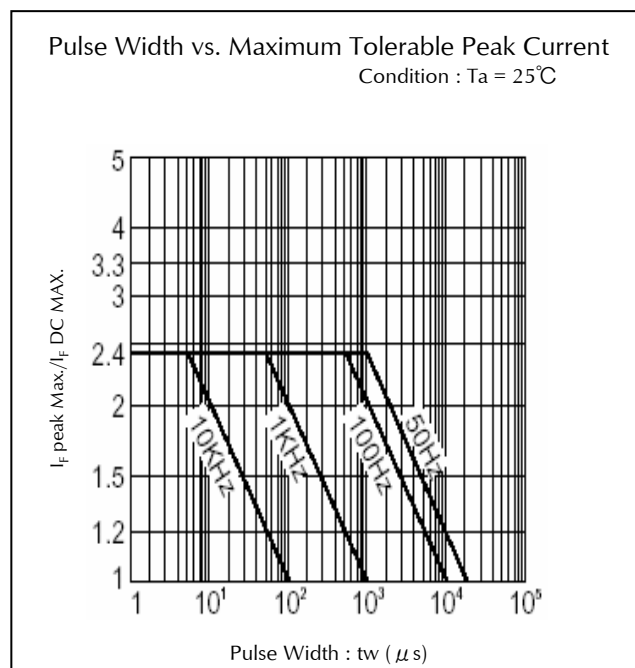
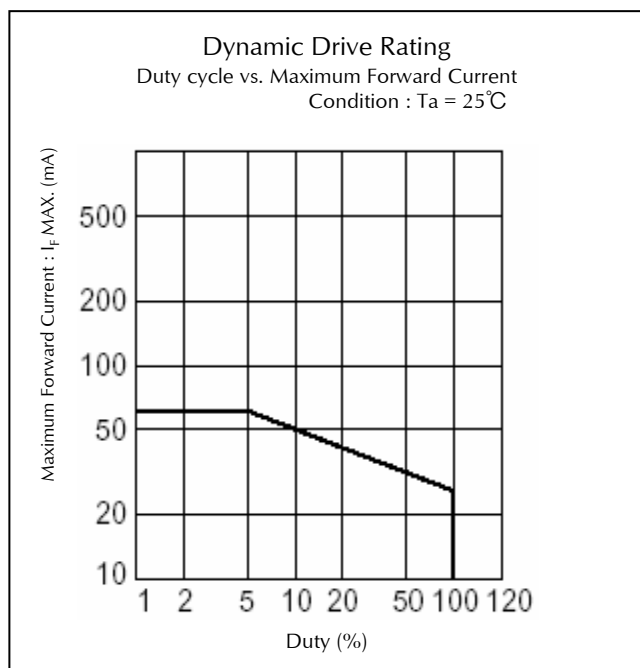
Ambient Temperature vs. Forward Voltage



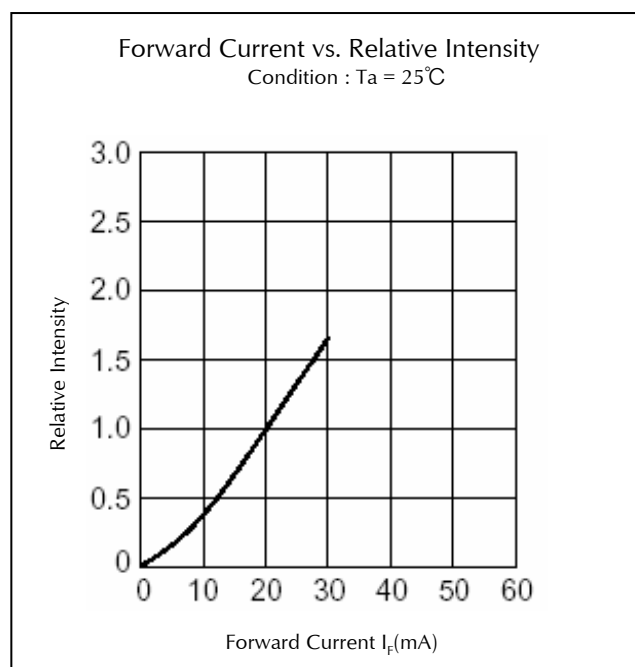
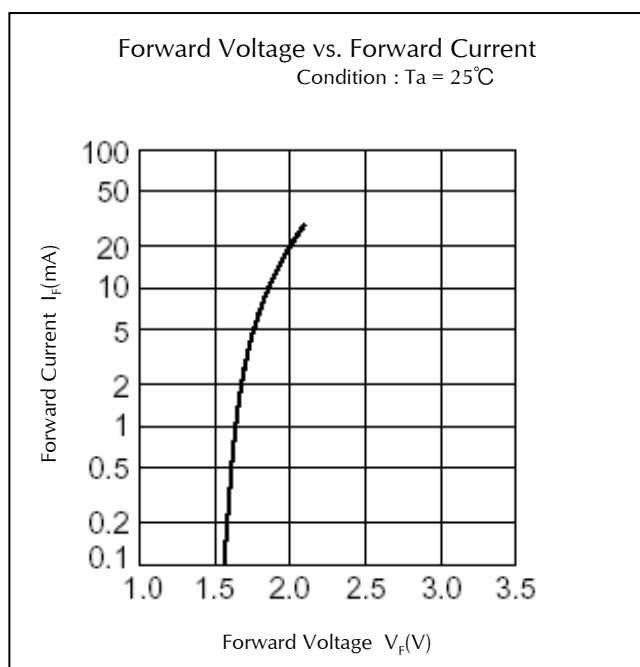
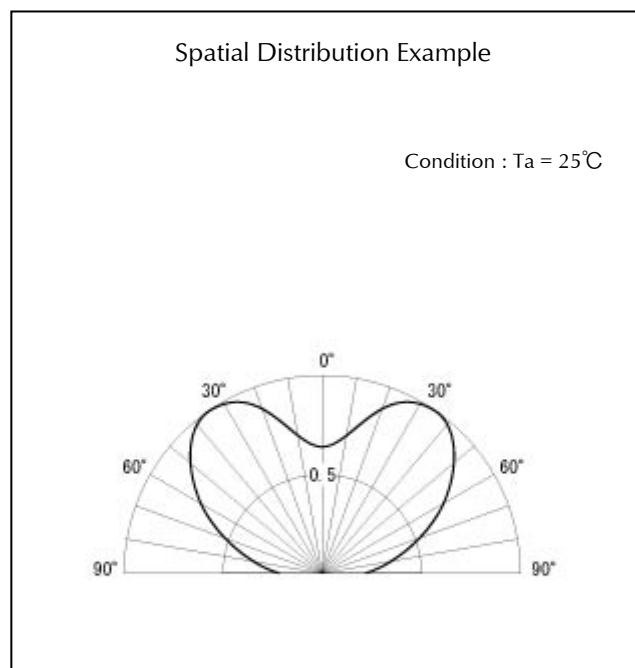
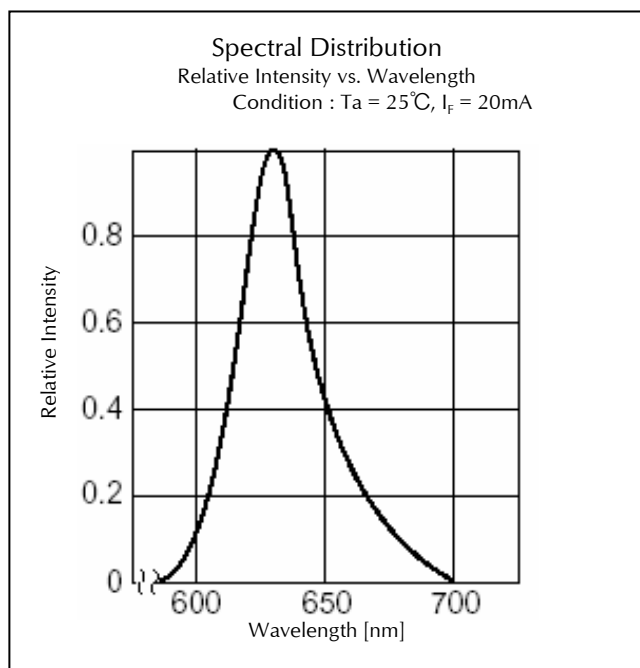
Power Dissipation vs. Ambient Temperature



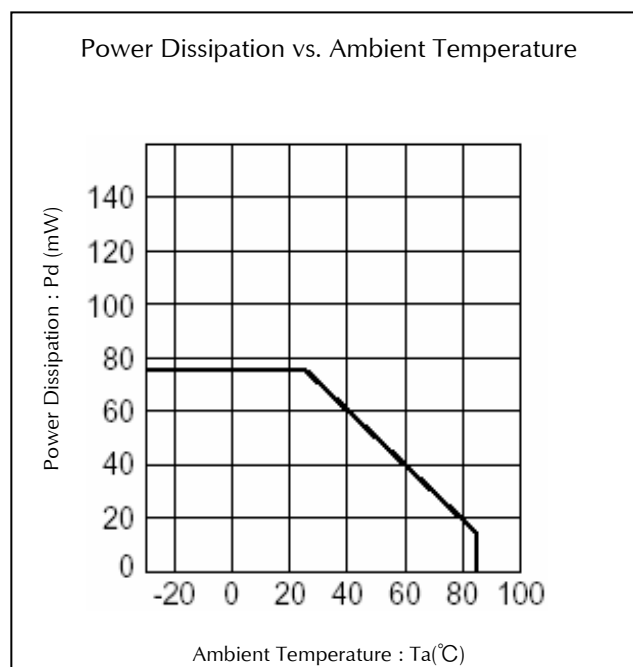
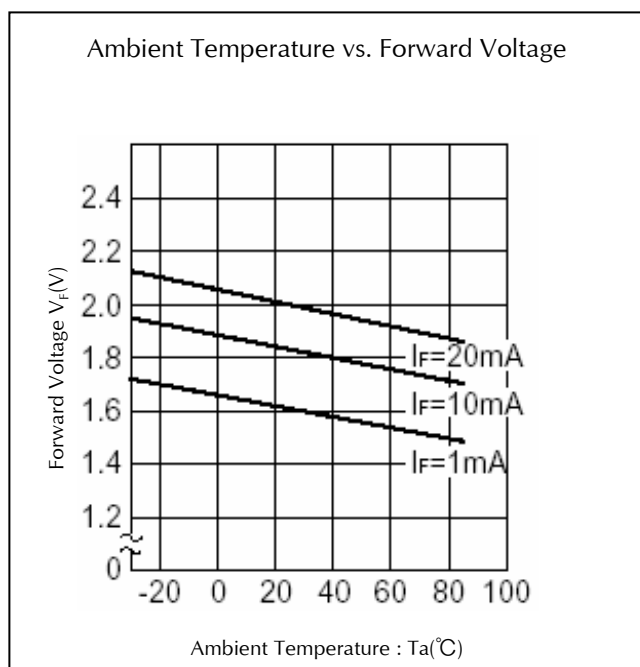
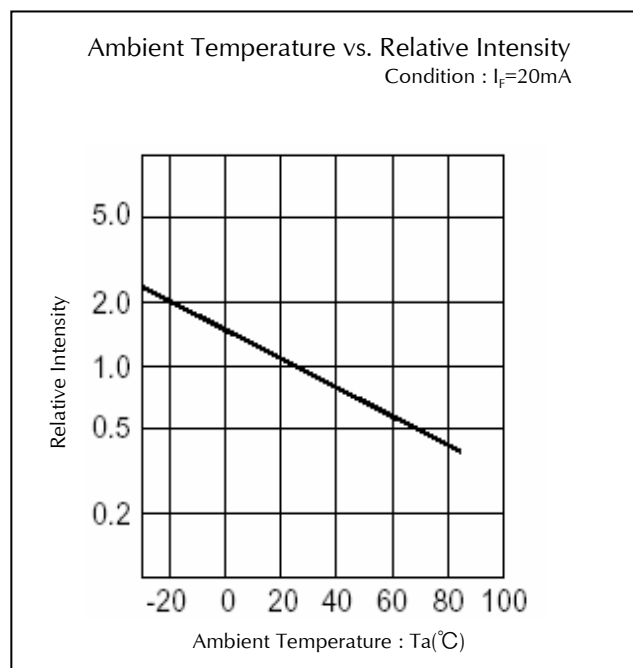
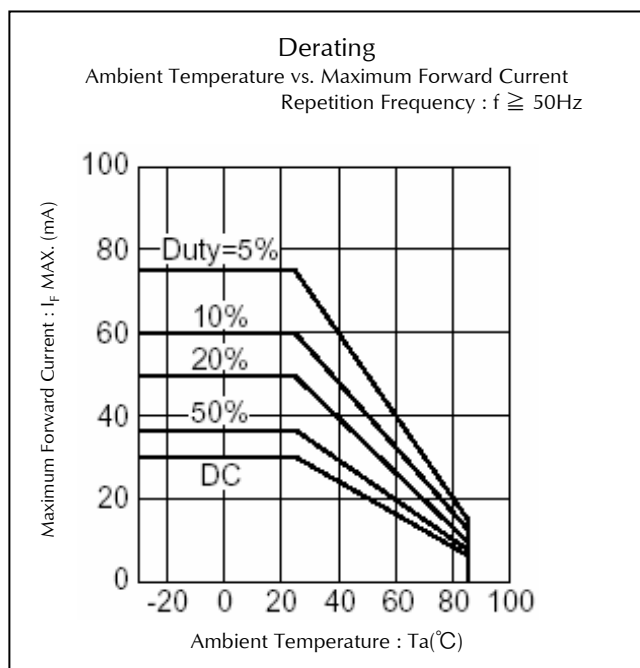
Technical Data(MAA)



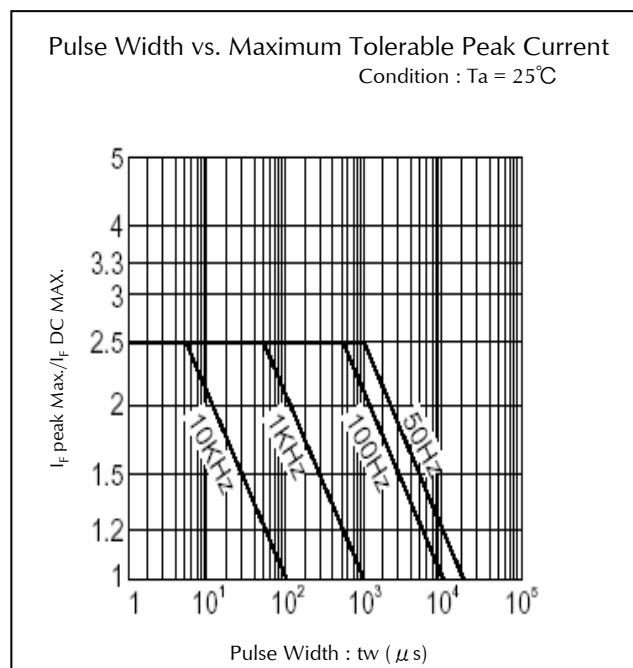
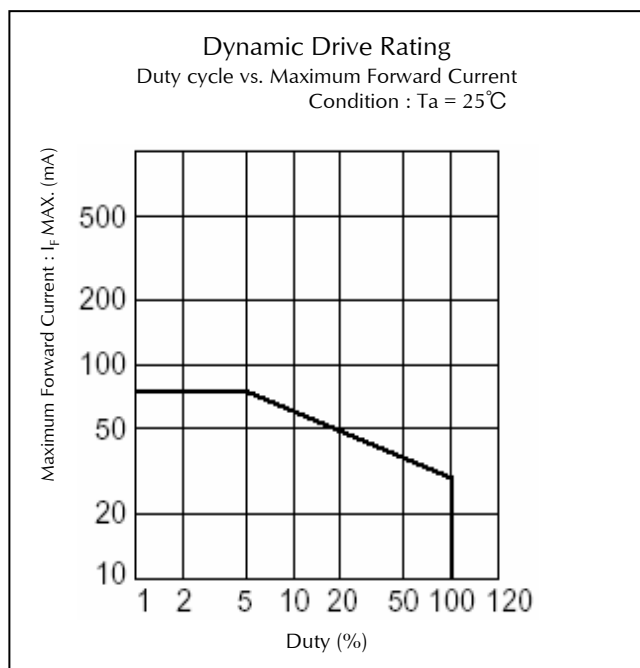
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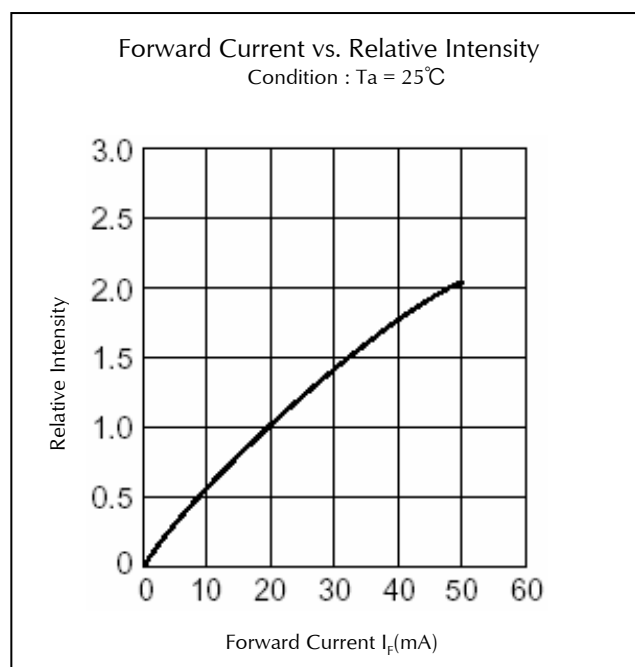
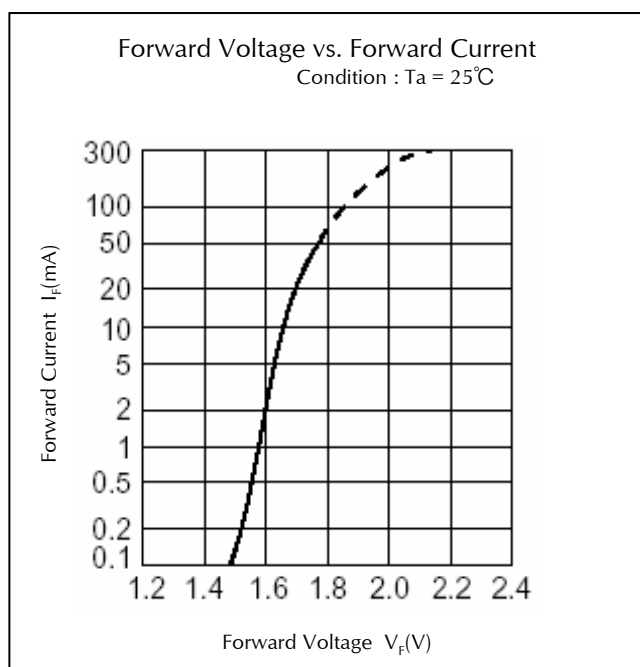
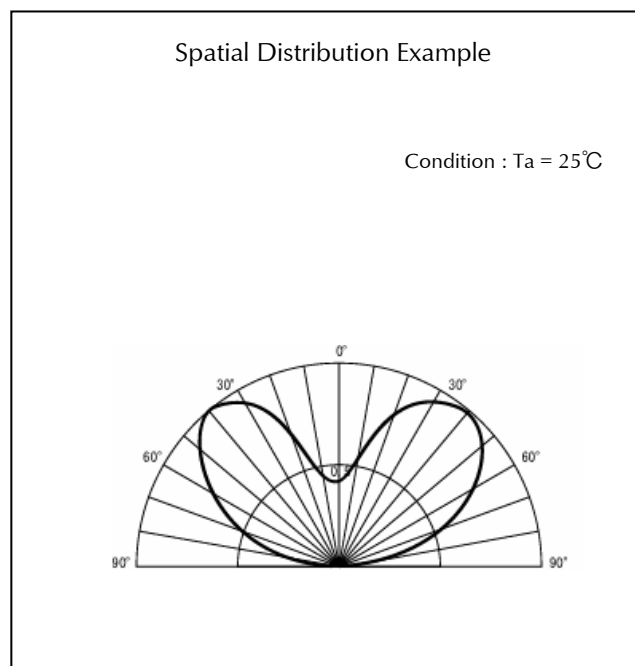
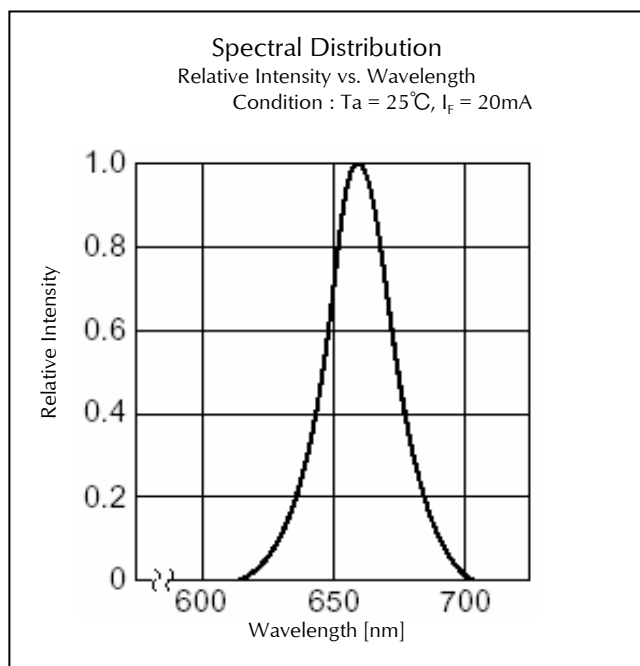
Technical Data(MVR)



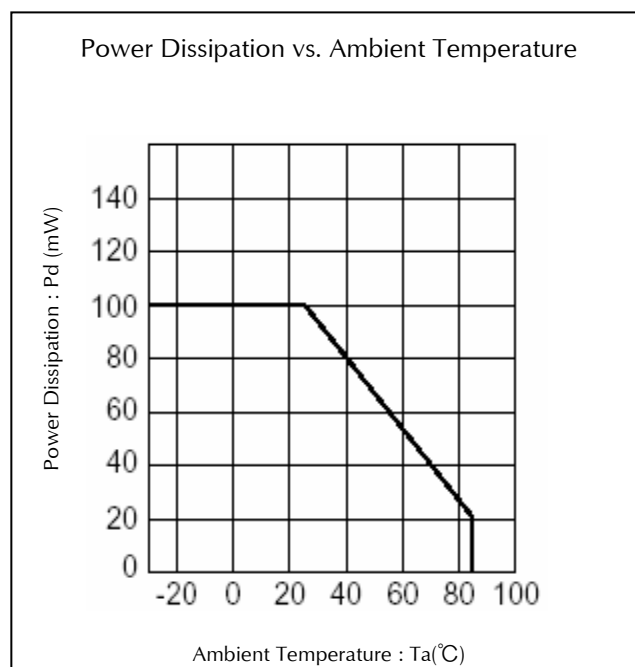
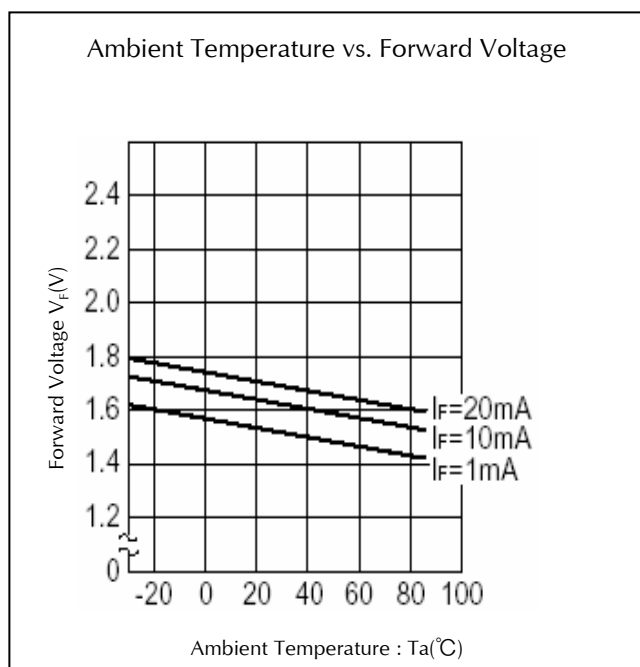
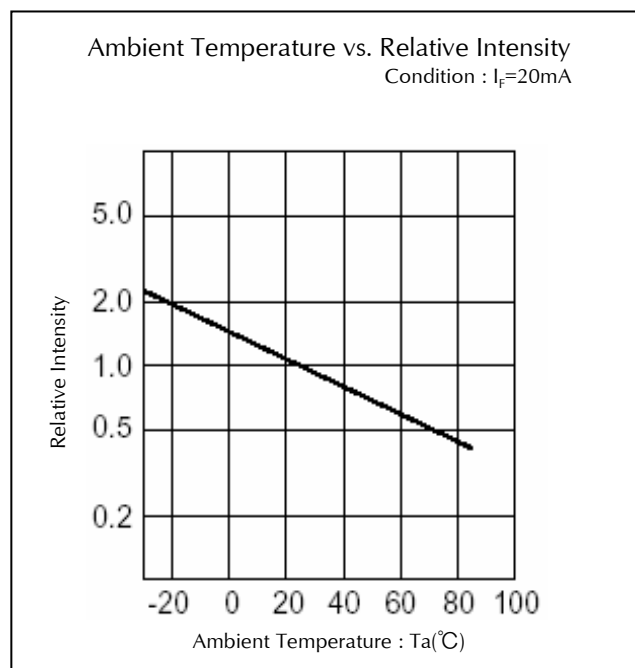
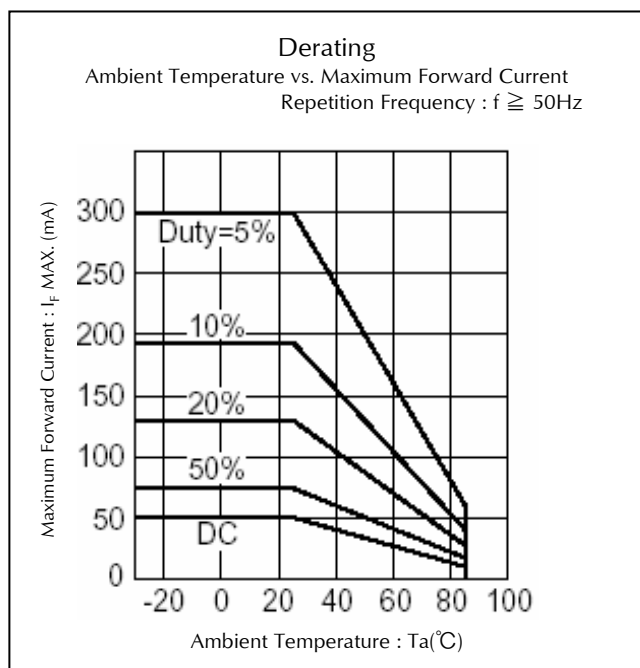
Technical Data(MVR)



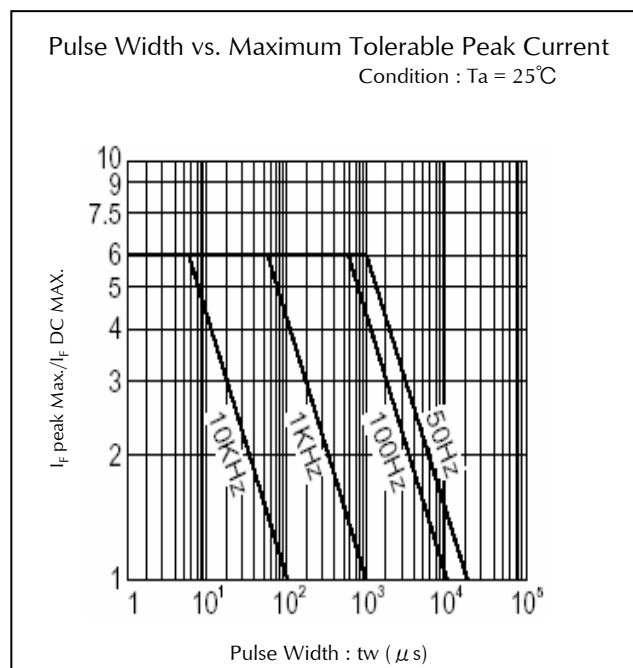
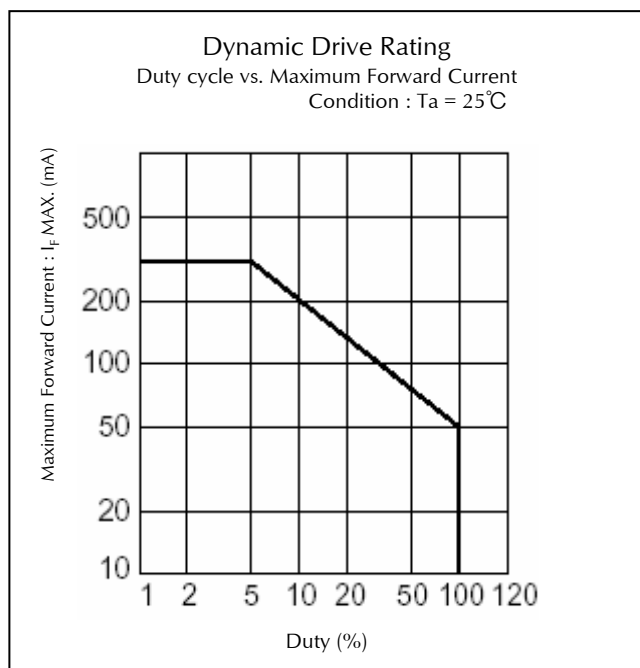
Technical Data(BR)



Technical Data(BR)

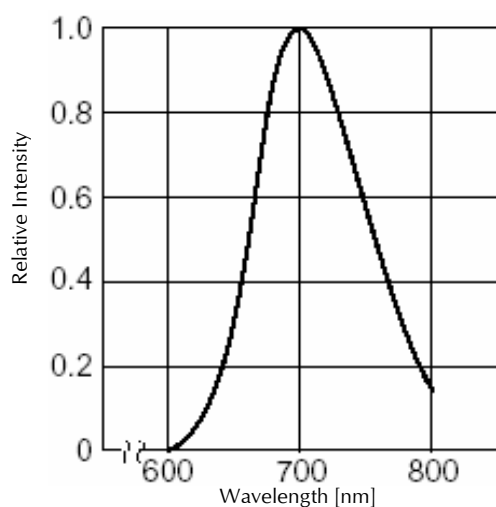


Technical Data(BR)



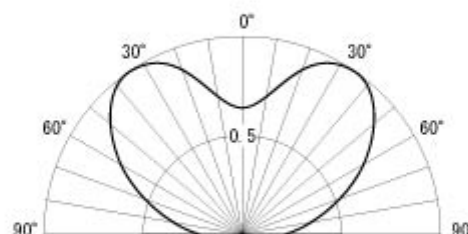
Technical Data(MPR)

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

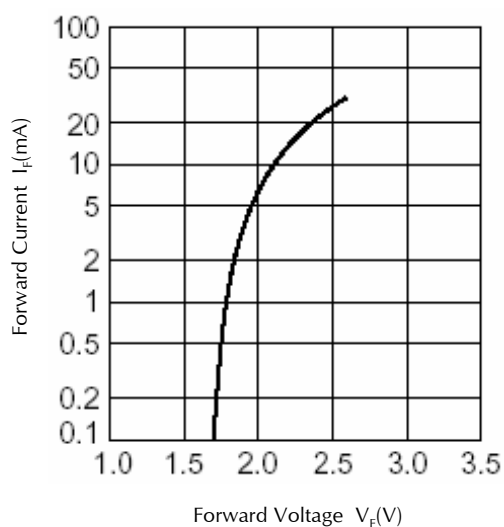


Spatial Distribution Example

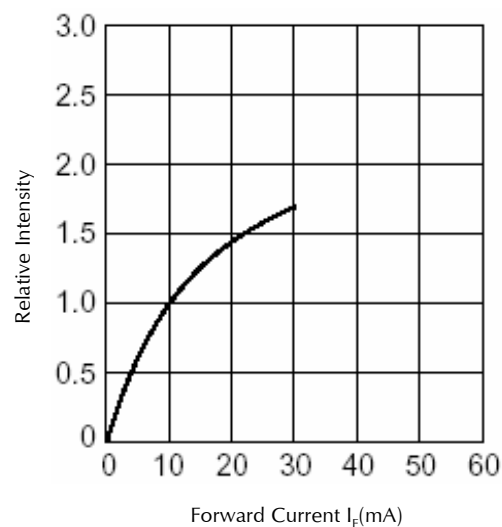
Condition : $T_a = 25^\circ\text{C}$



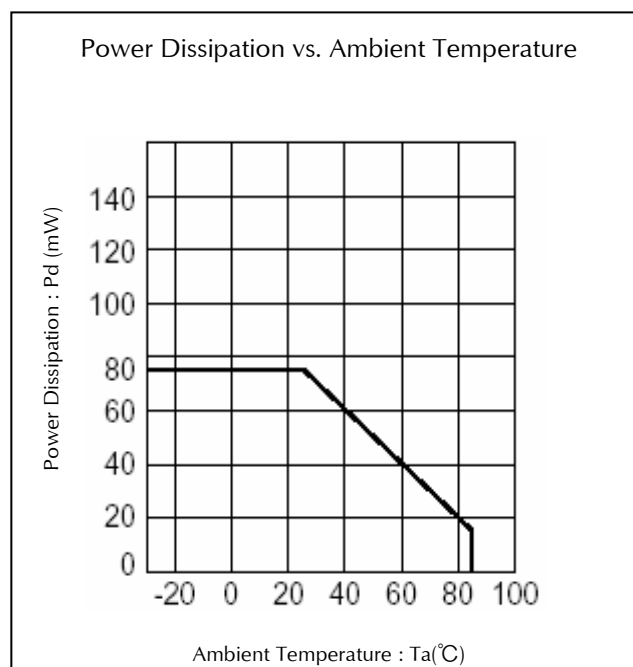
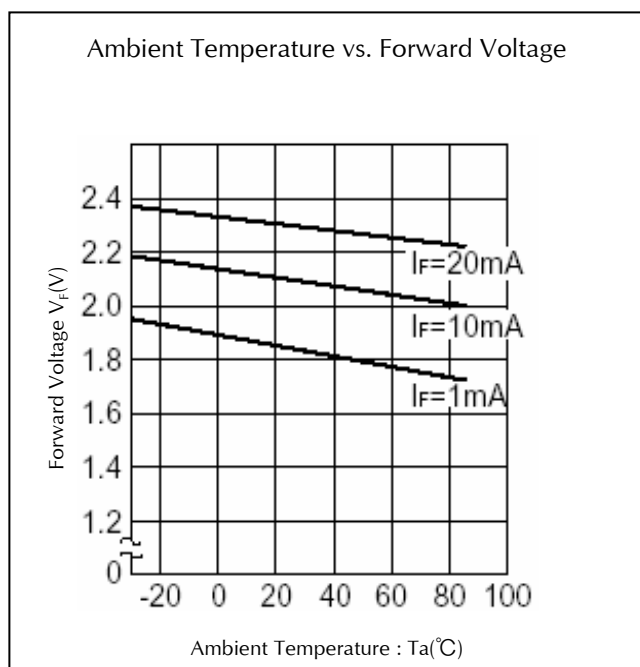
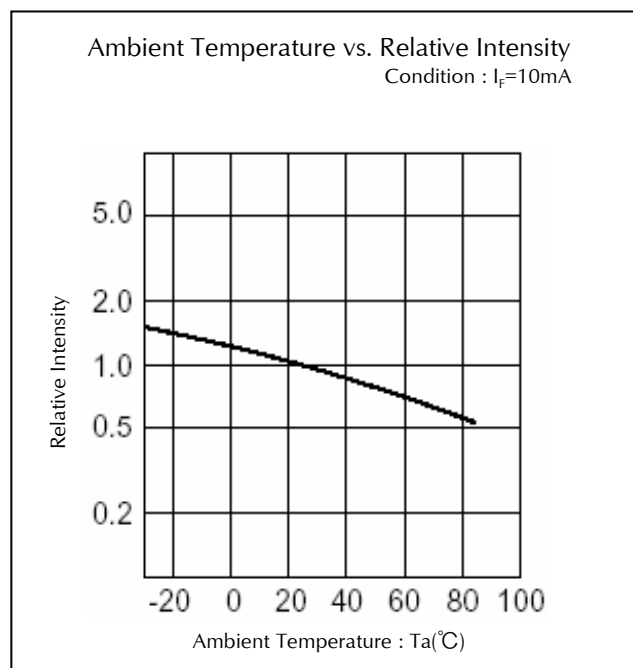
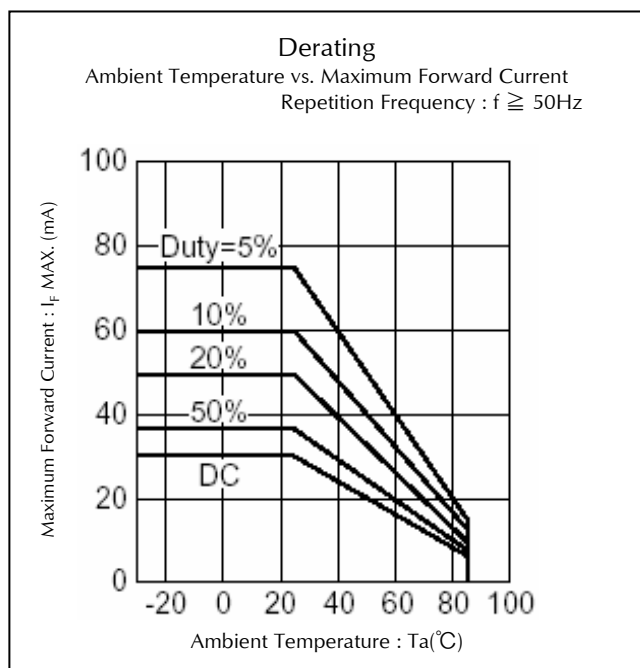
Forward Voltage vs. Forward Current
Condition : $T_a = 25^\circ\text{C}$



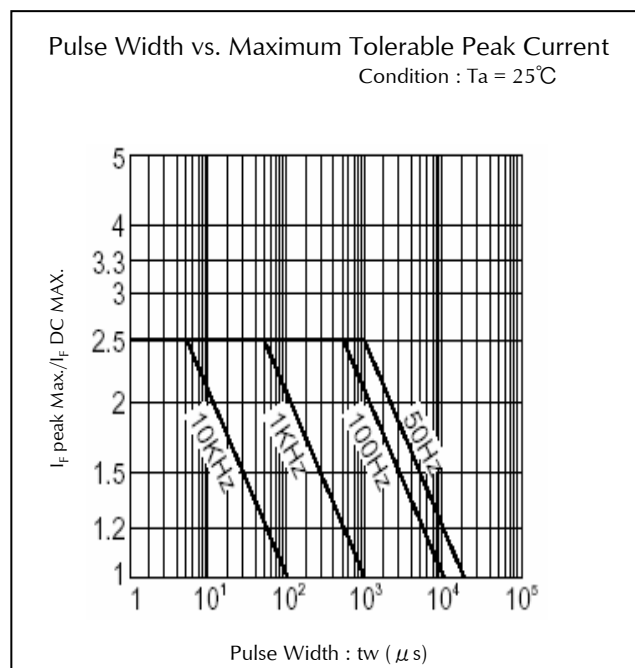
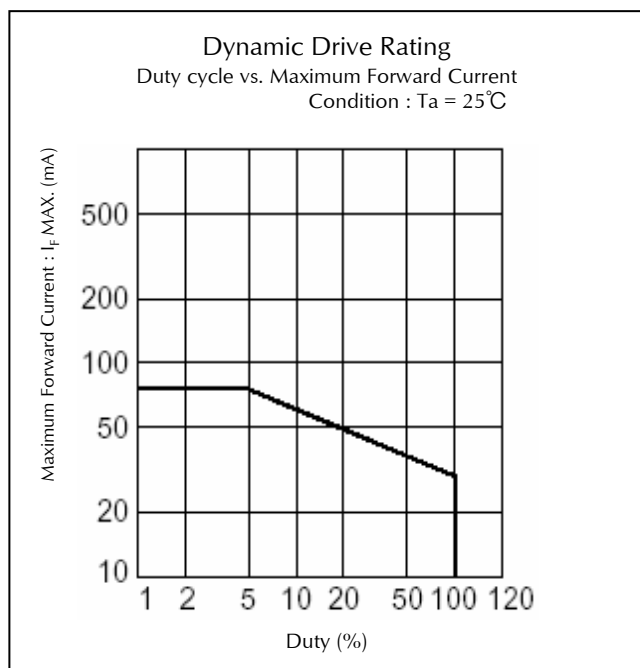
Forward Current vs. Relative Intensity
Condition : $T_a = 25^\circ\text{C}$



Technical Data(MPR)

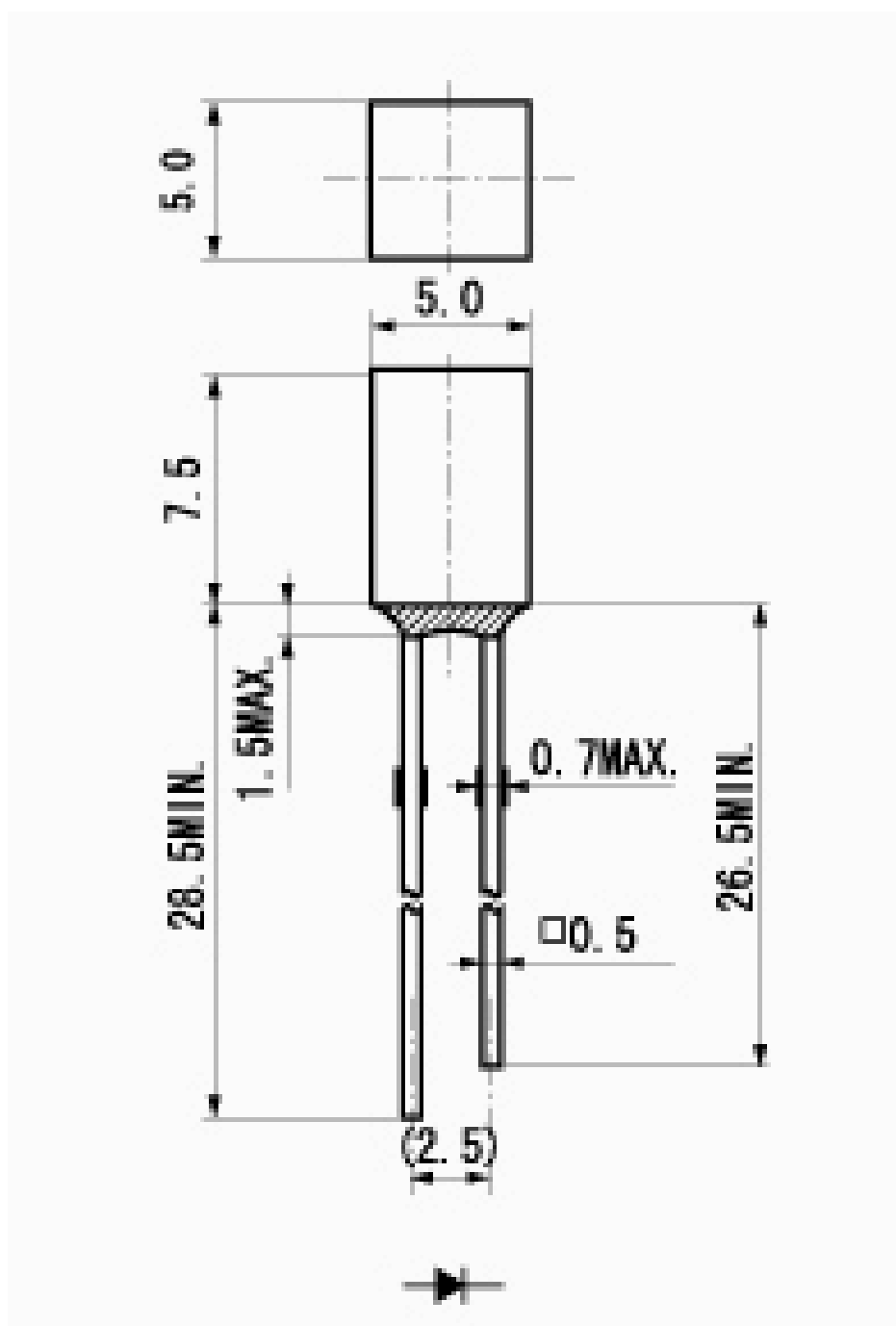


Technical Data(MPR)



Package Dimensions

(Unit: mm)



TTW (Through The Wave) soldering Conditions

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

- 1) The dip soldering process shall be 2 times maximum.
 - 2) The product shall be cooled to room temp. before the second dipping process.
- ※The detail is described to LED and Photodetector handling precautions of home page:
"Mounting through-hole Type Devices" and "Soldering", and use it after the confirmation, please.

Manual Soldering Conditions

Iron tip temp.	400°C	(MAX.)
Soldering time and frequency	3 s	(MAX.)
	2 times	(MAX.)

※The detail is described to LED and Photodetector handling precautions of home page:
"Mounting through-hole Type Devices" and "Soldering", and use it after the confirmation, please.

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 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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