

**Pb-free
HEAT**



4365S Series

Single Color ϕ 4 Round Shape Type

Features

Package	ϕ 4 Round 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"> • Outer Dimension ϕ 4 Round shape type • Operation temperature range. Storage Temperature : -30°C~100°C Operating Temperature : -30°C~85°C • No lead package and lead-free soldering compatible
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, MPR : 55 deg. MPG,MPY,MAY,MAA,MVR : 60 deg. BR : 74 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		
					λd (nm)		Iv (mcd)		
					TYP.	I _F	MIN.	TYP.	I _F
MBG4365S	GaP	Green	Pale Green	Clear	558	20	5	10	20
MPC4365S	GaP	Green			567	20	10	20	20
MPY4365S	GaP	Yellow Green	Pale Yellow		572	20	15	30	20
MAY4365S	GaAsP	Yellow			590	20	10	20	20
MAA4365S	GaAsP	Orange	Pale Orange		606	20	10	20	20
MVR4365S	GaAsP	Red	Pale Red		624	20	8	16	20
BR4365S	GaAlAs	Red			647	20	10	20	20
MPR4365S	GaP	Red			630	10	1.5	3.0	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 ≤ 1 ms., 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.	55	60	60	60	60	60	74	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.	55	deg.

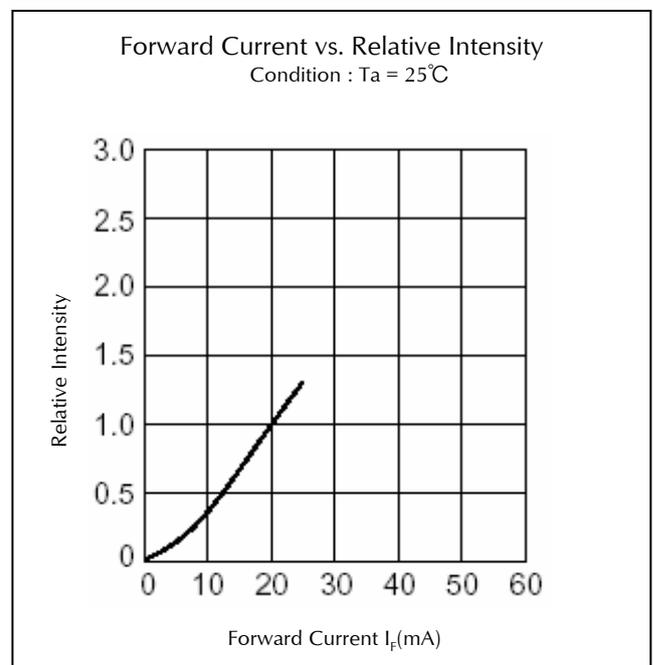
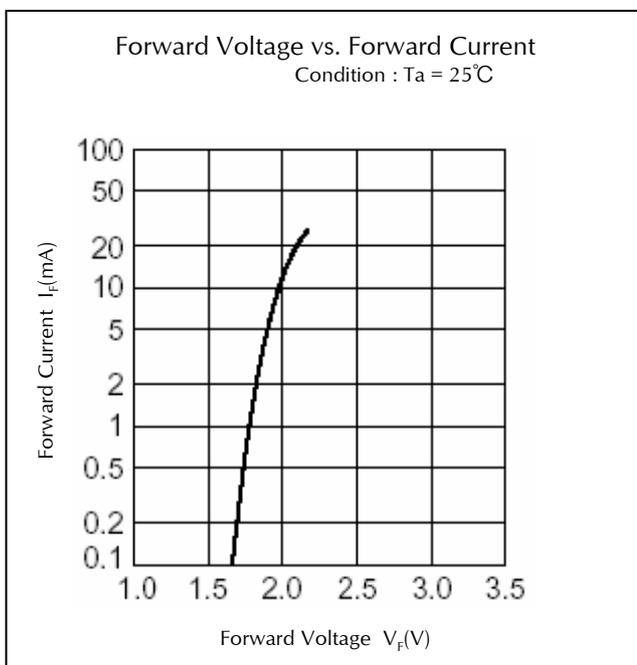
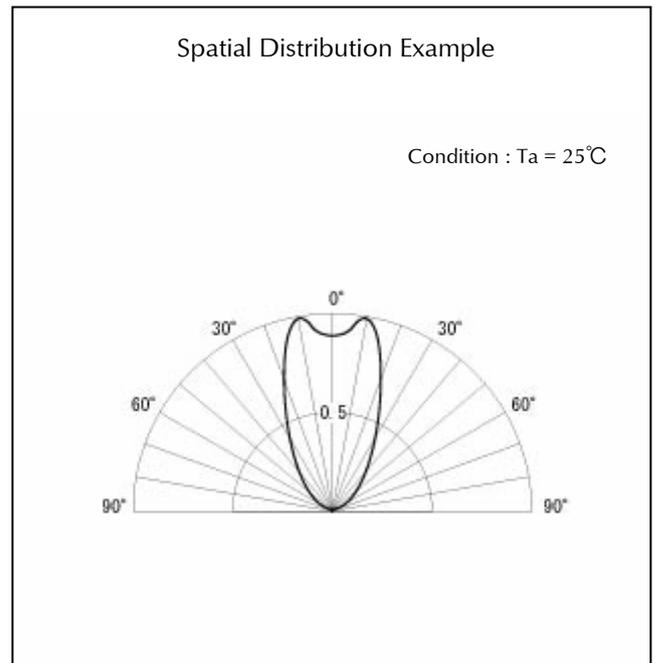
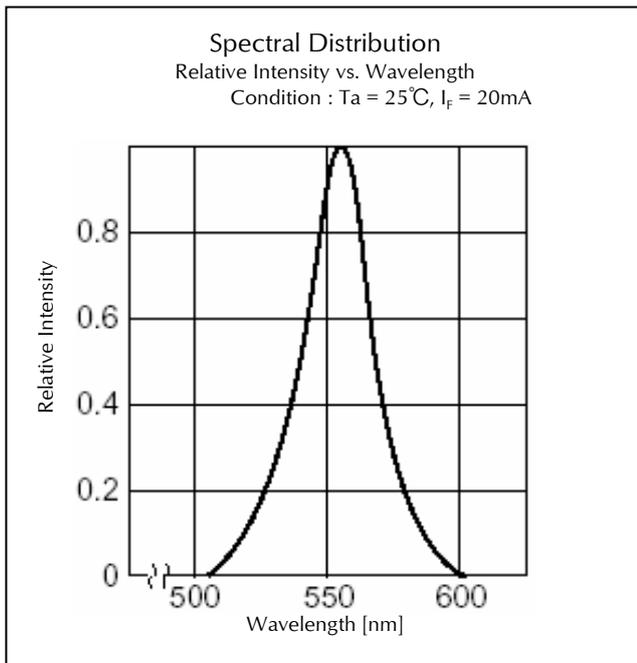
Luminous Intensity Rank

(Ta=25°C)

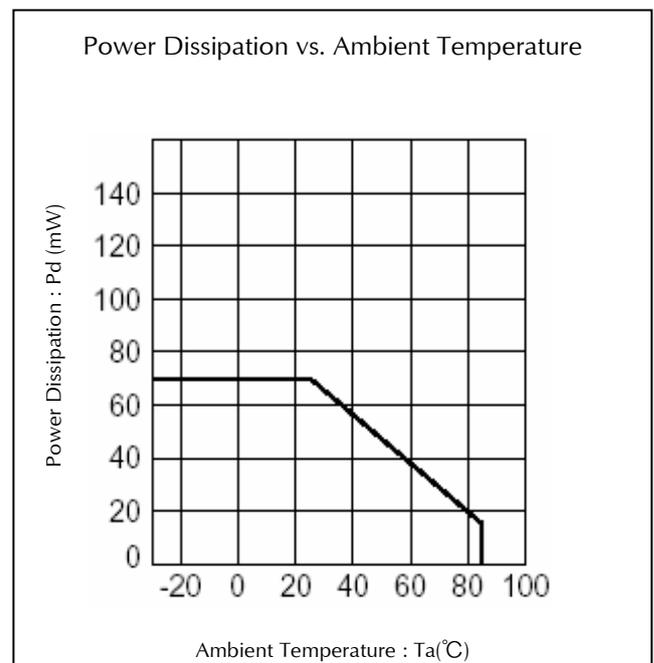
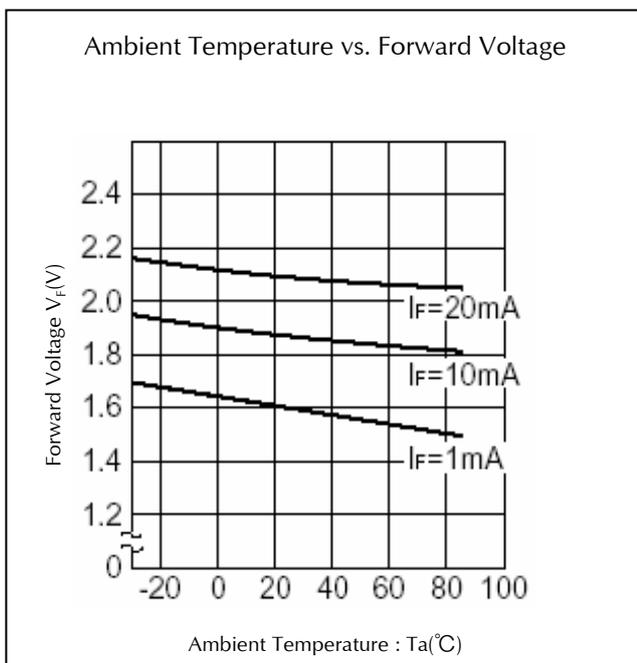
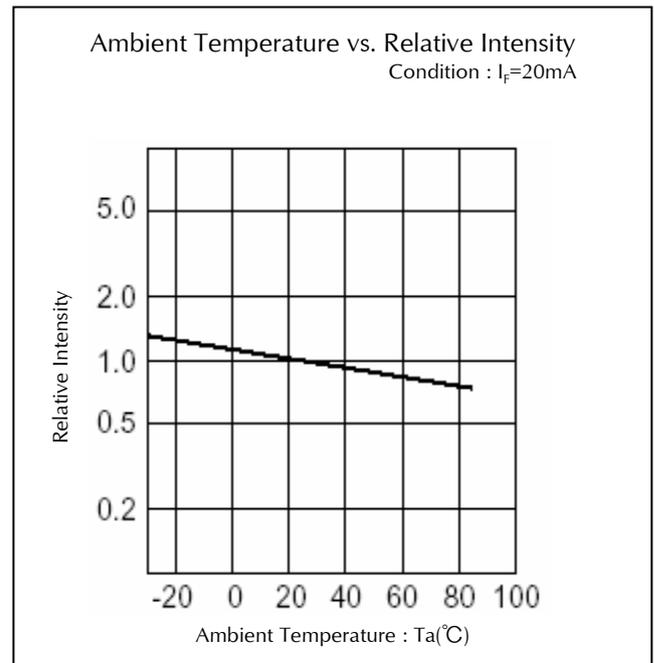
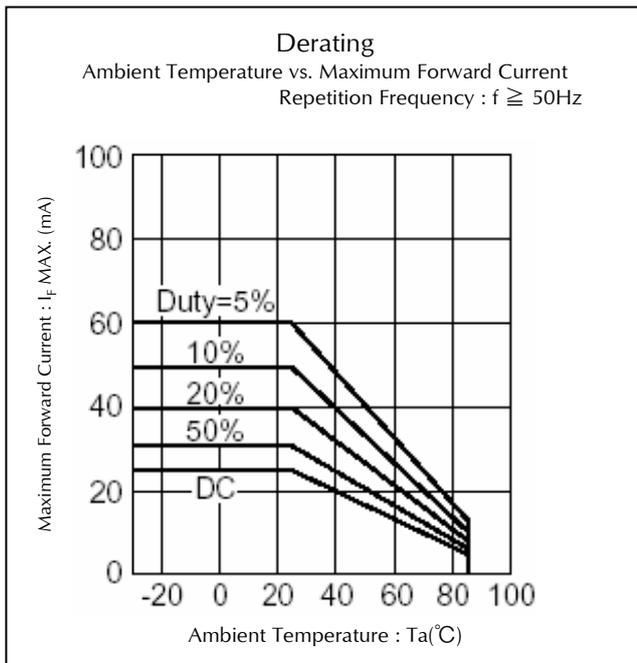
Rank	I _v (mcd)															
	MBG		MPG		MPY		MAY		MAA		MVR		BR		MPR	
	I _f =20mA		I _f =10mA													
	MIN.	MAX.														
A	5	10	10	20	15	30	10	20	10	20	8.0	16.0	10	20	1.5	3.0
B	7	14	14	28	21	42	14	28	14	28	11.2	22.4	14	28	2.1	4.2
C	10	20	20	40	30	60	20	40	20	40	16.0	32.0	20	40	3.0	6.0
D	14	28	28	56	42	84	28	56	28	56	22.4	44.8	28	56	4.2	8.4
E	20	-	40	-	60	-	40	-	40	-	32.0	-	40	-	6.0	-

Please contact our sales staff concerning rank designation.

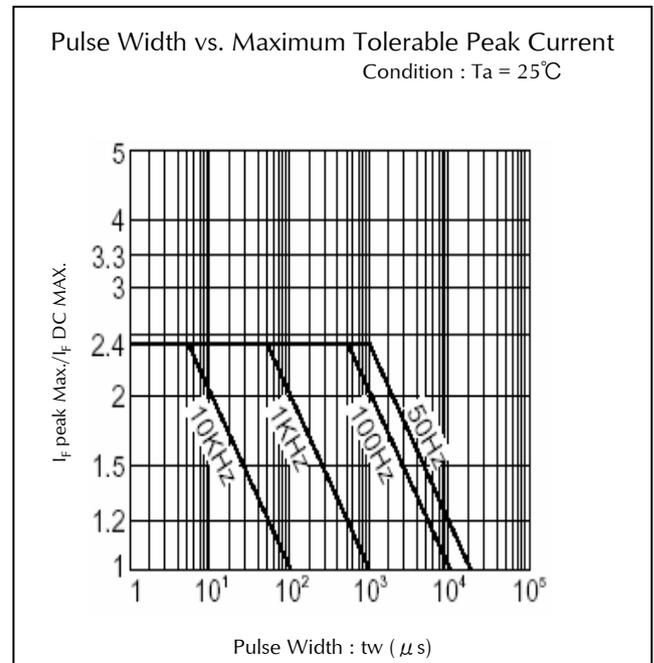
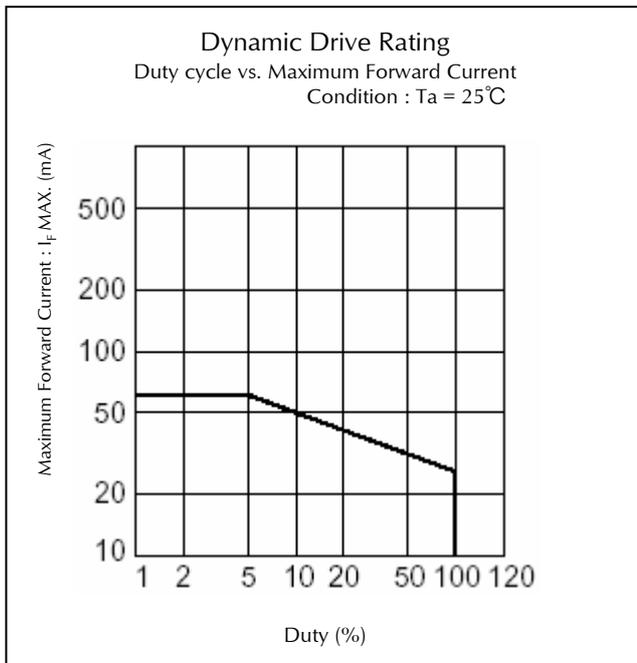
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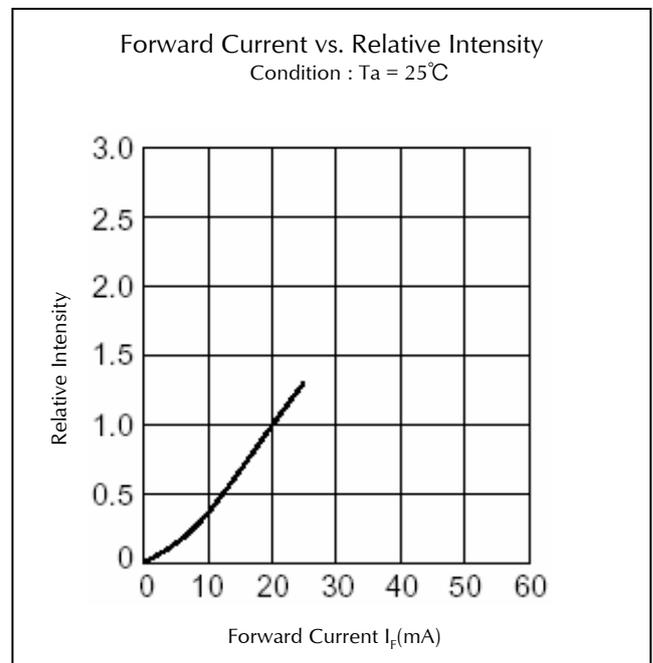
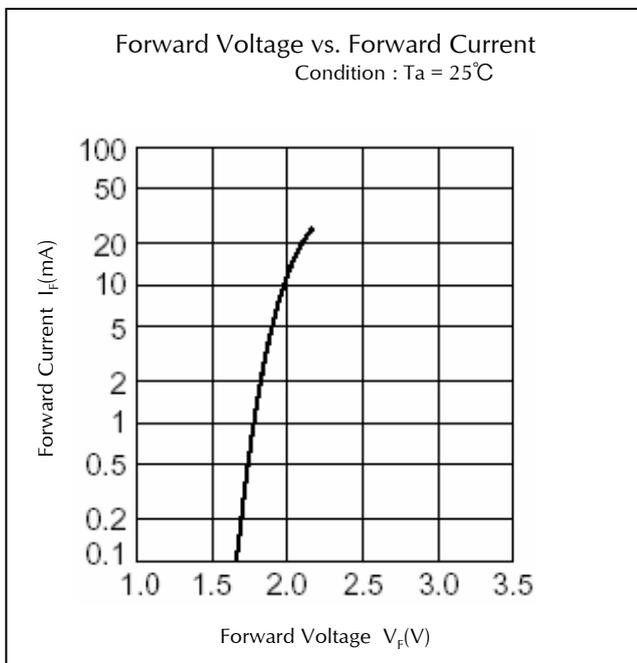
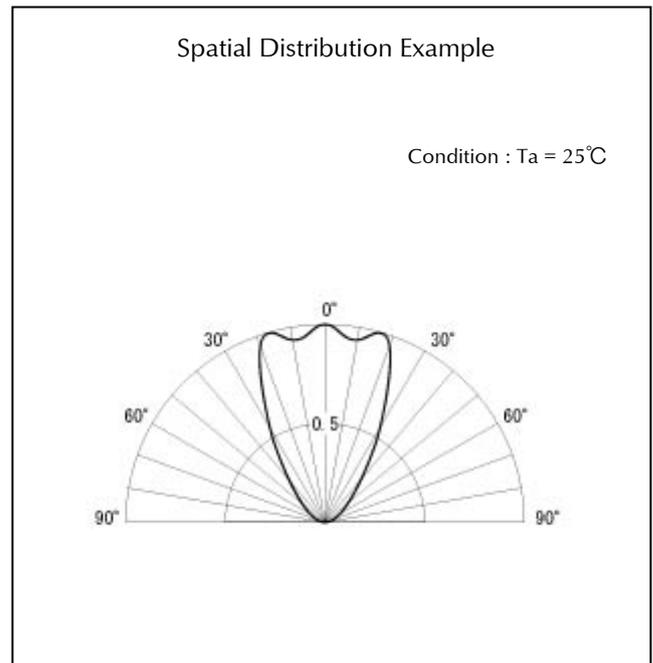
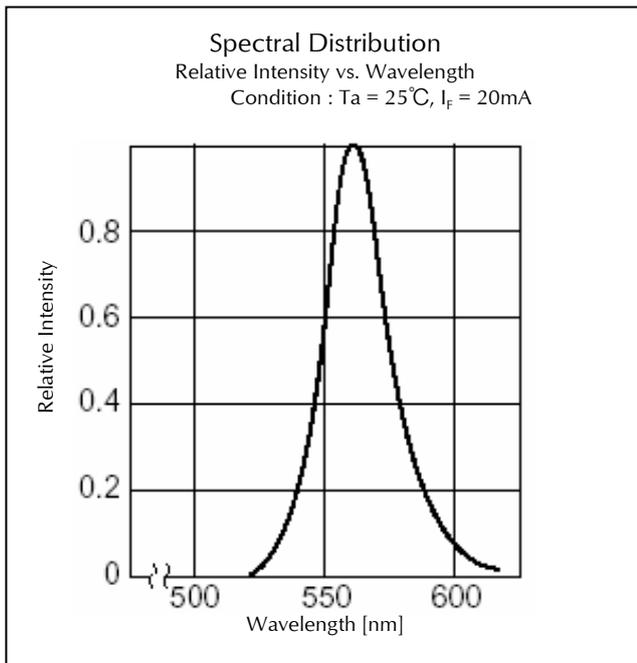
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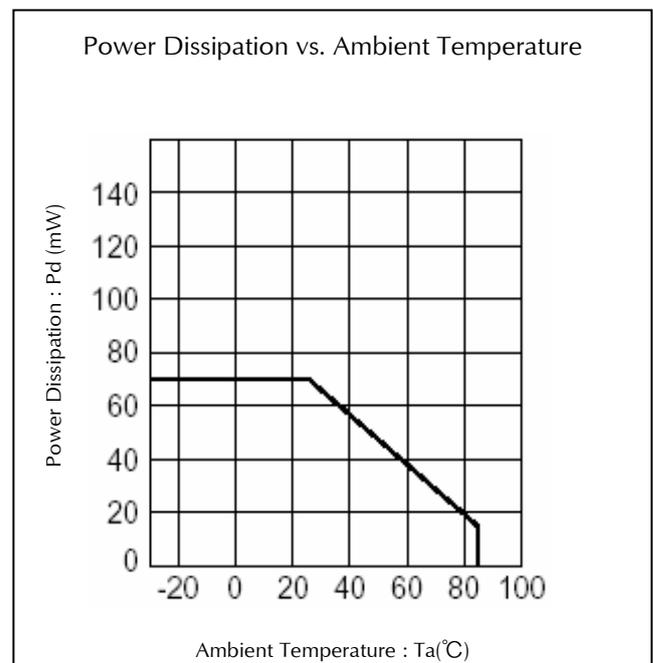
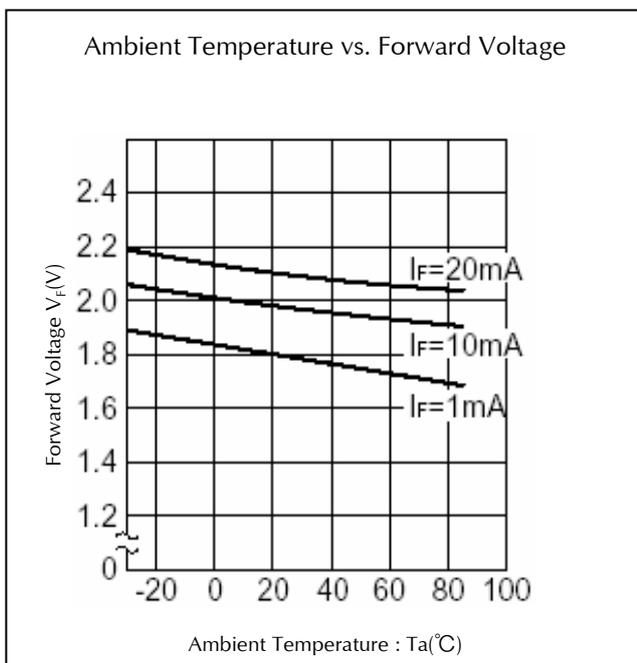
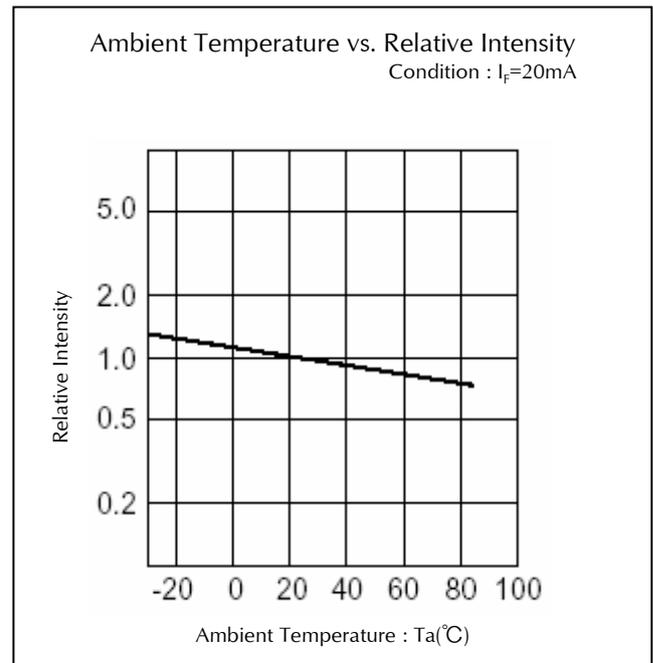
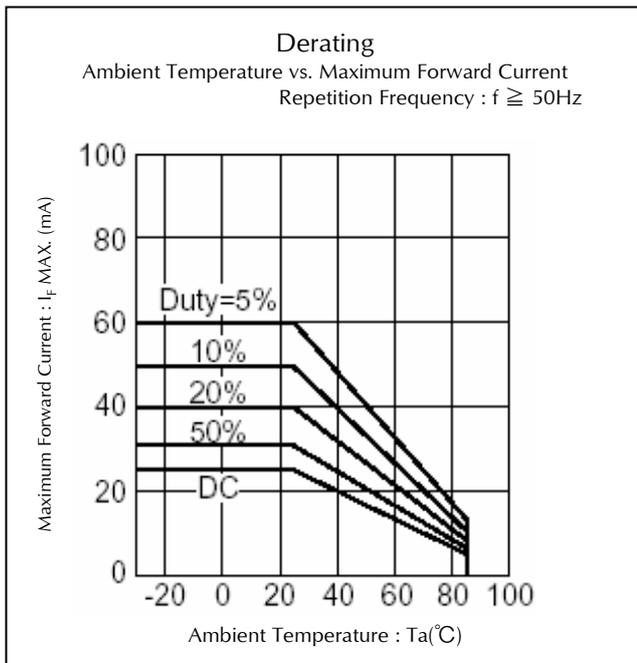
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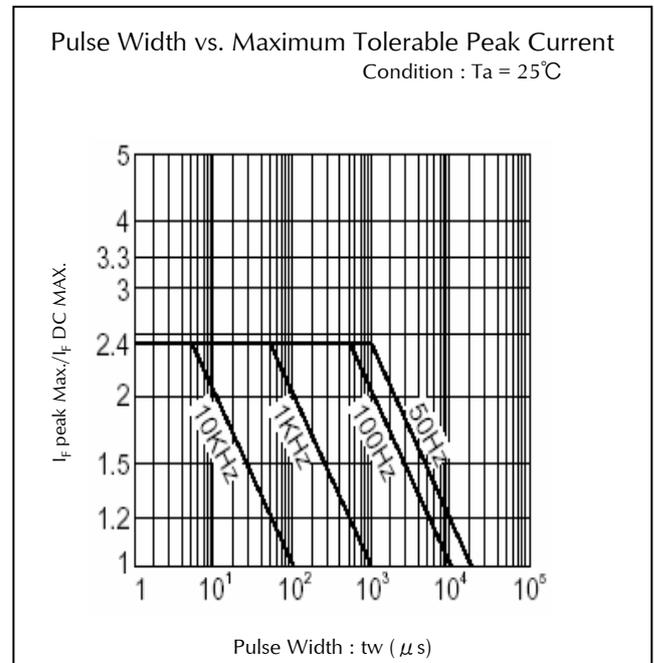
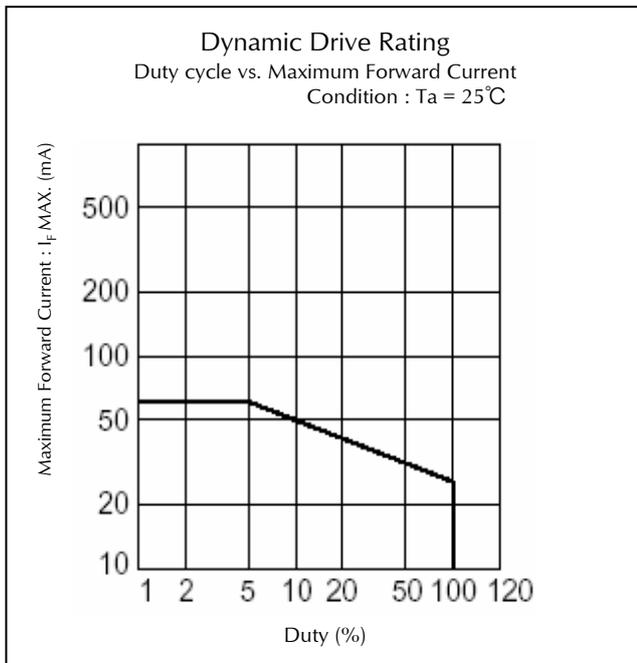
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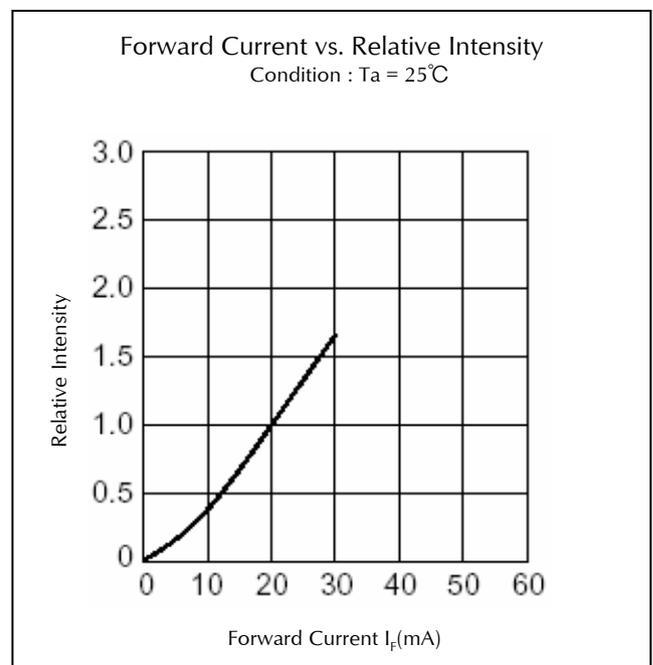
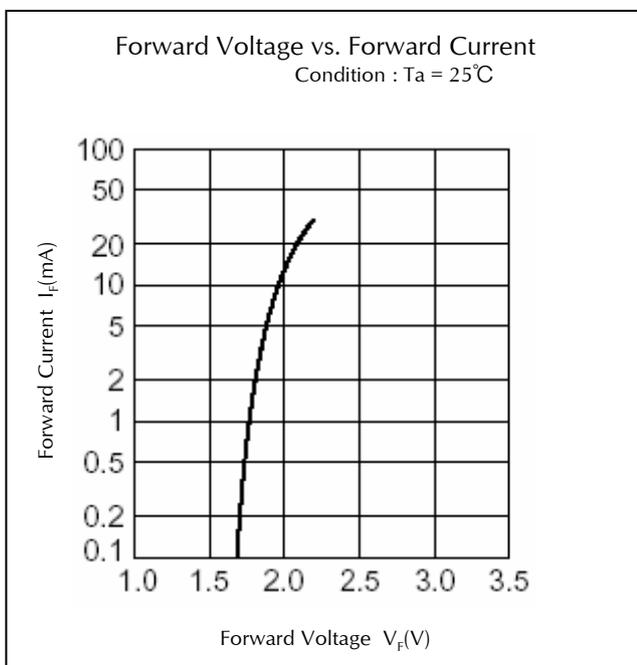
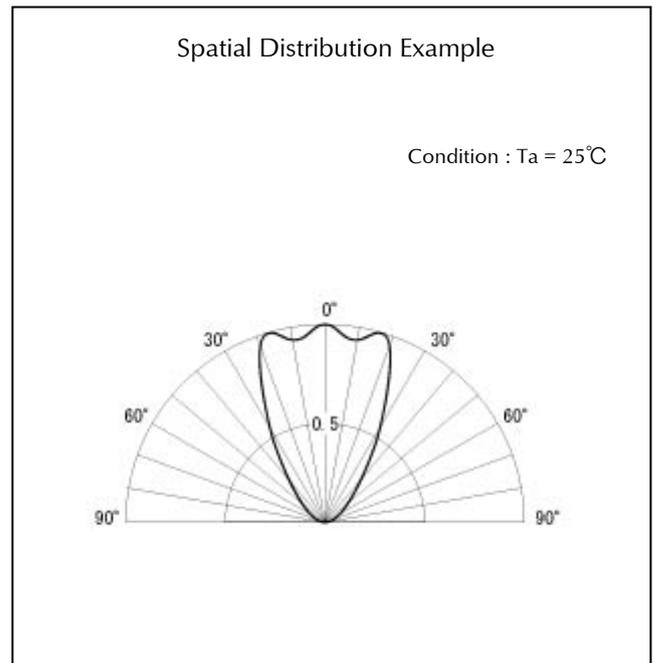
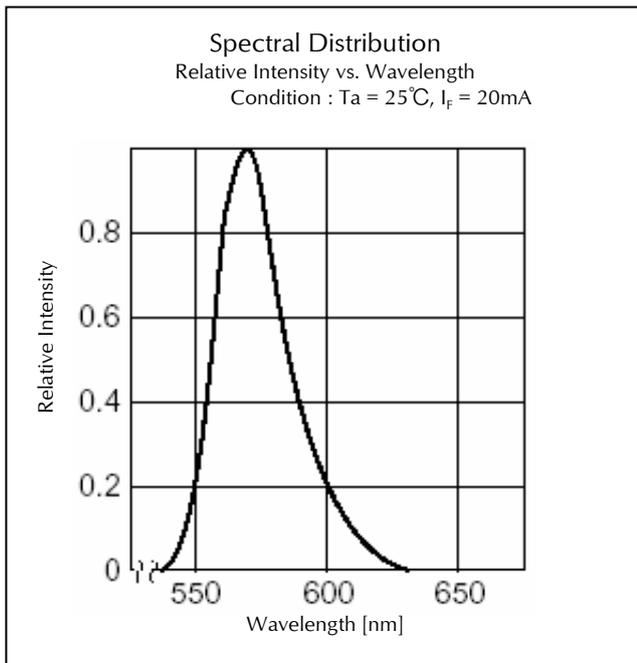
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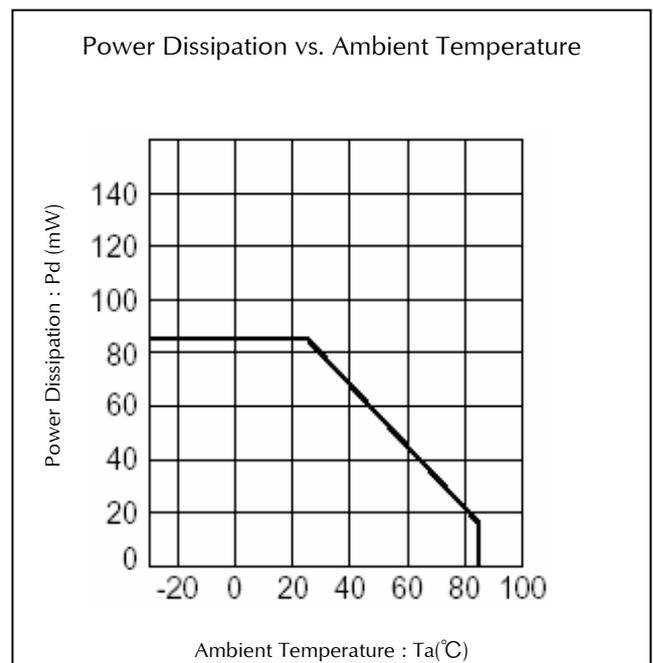
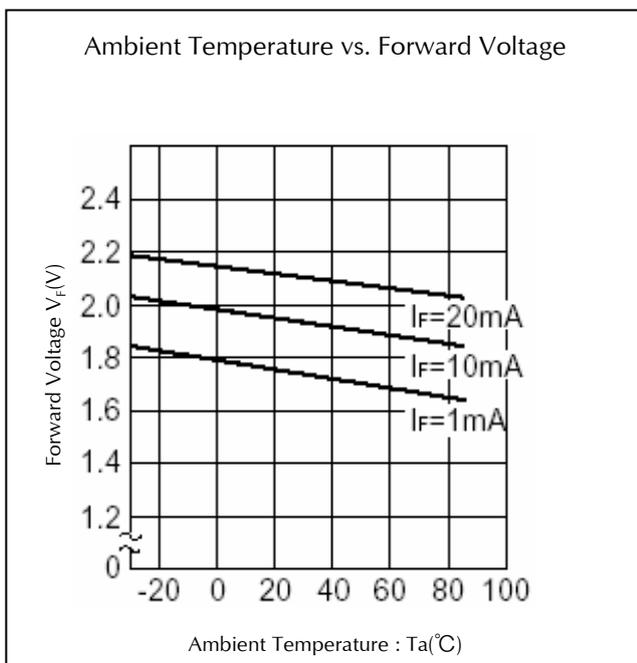
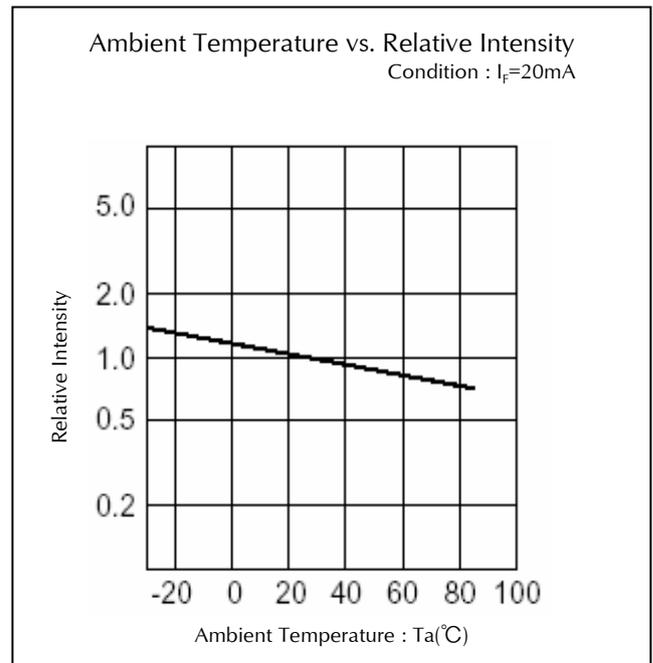
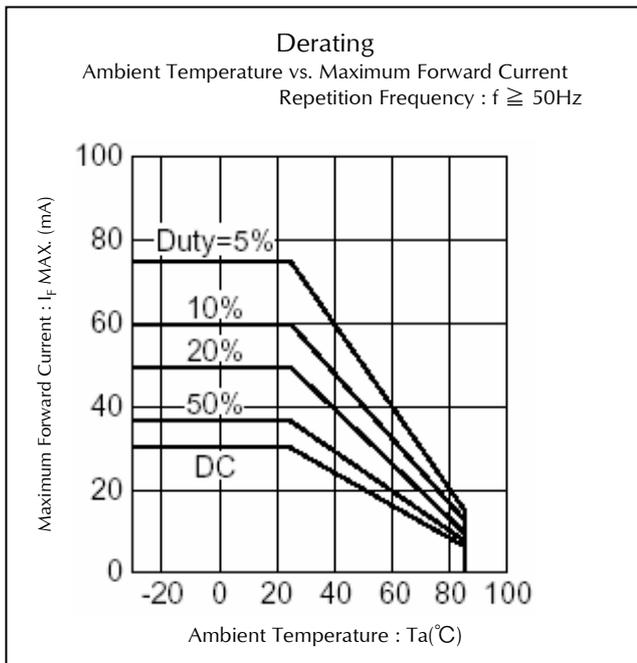
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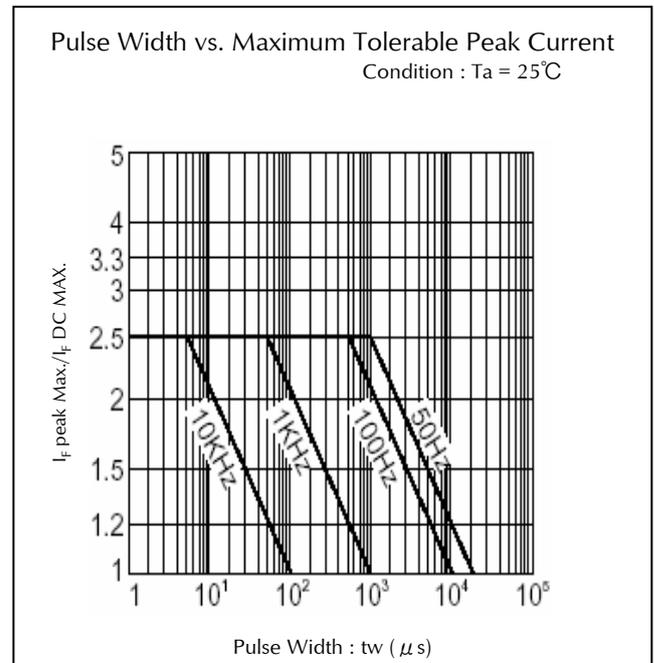
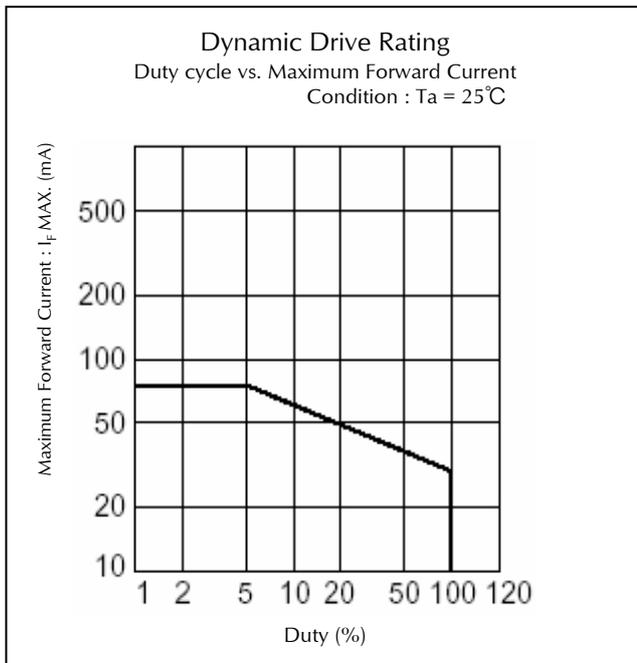
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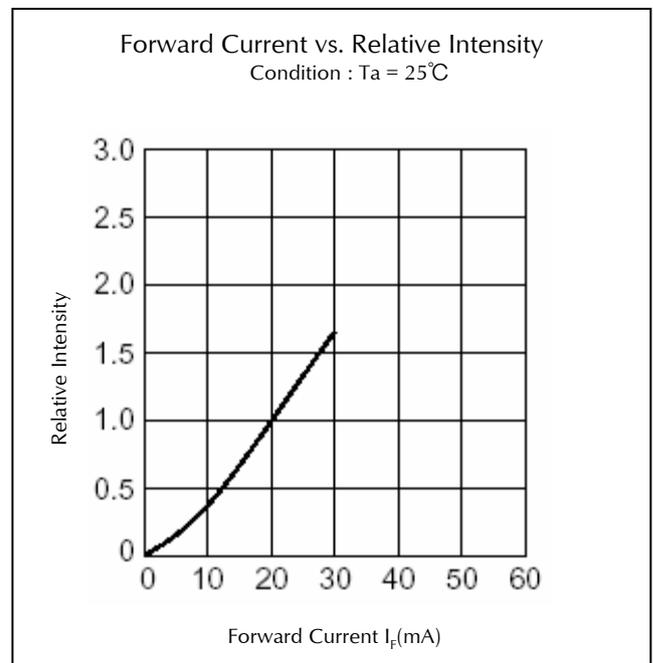
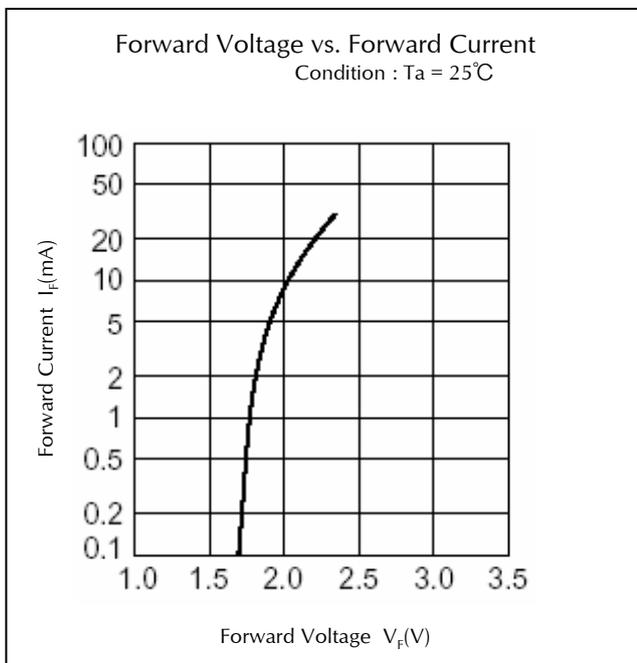
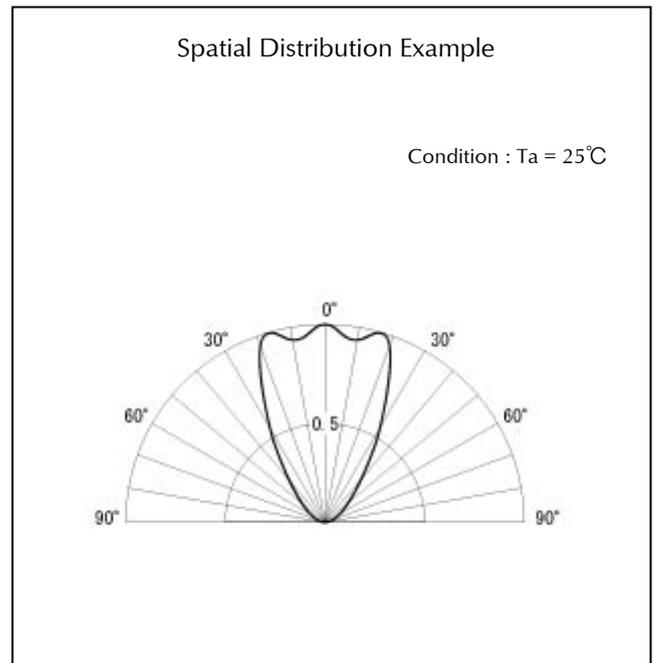
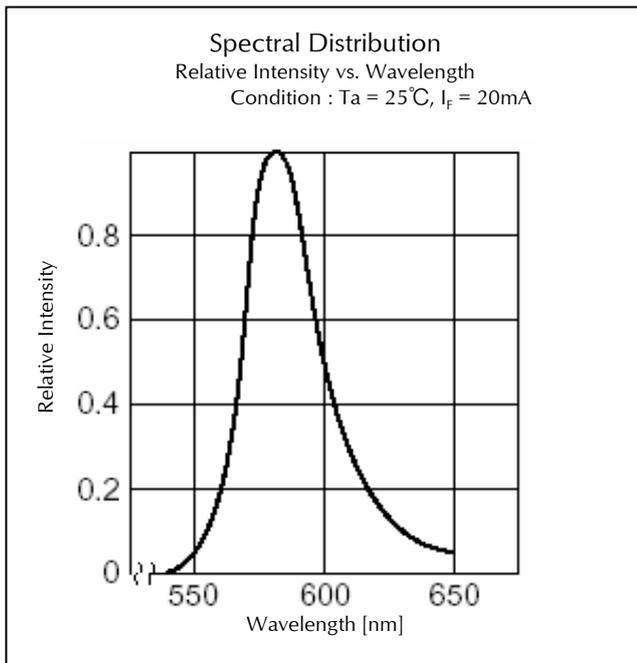
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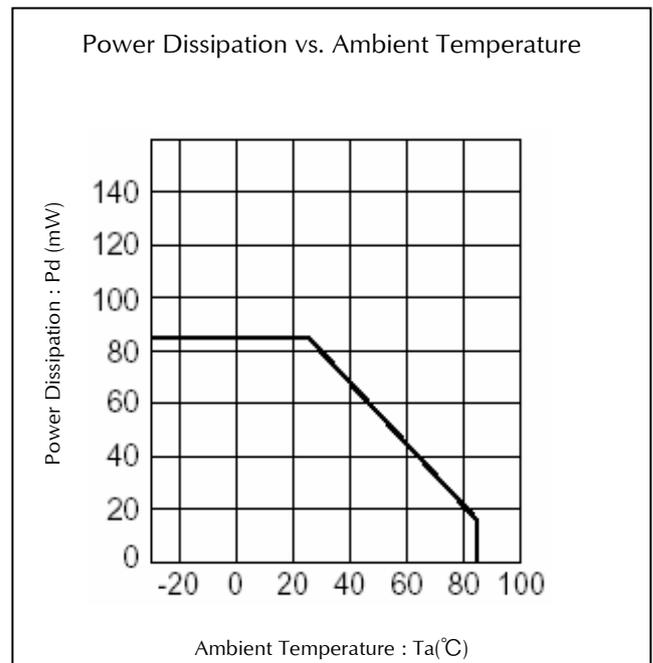
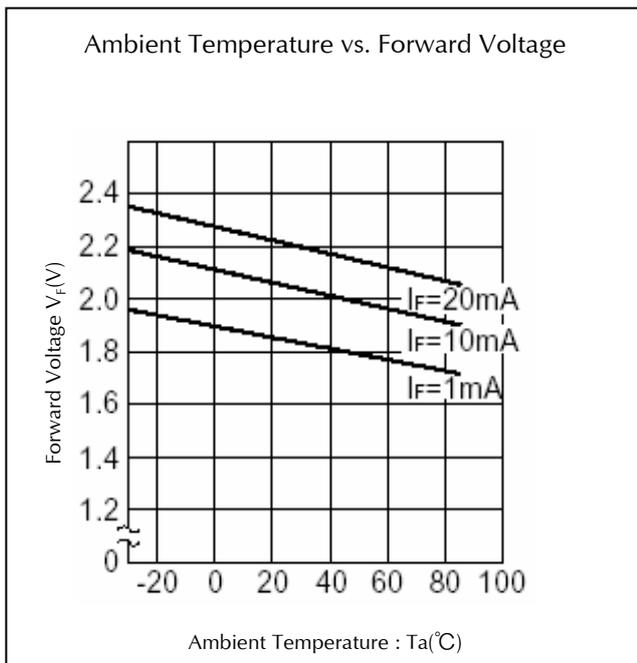
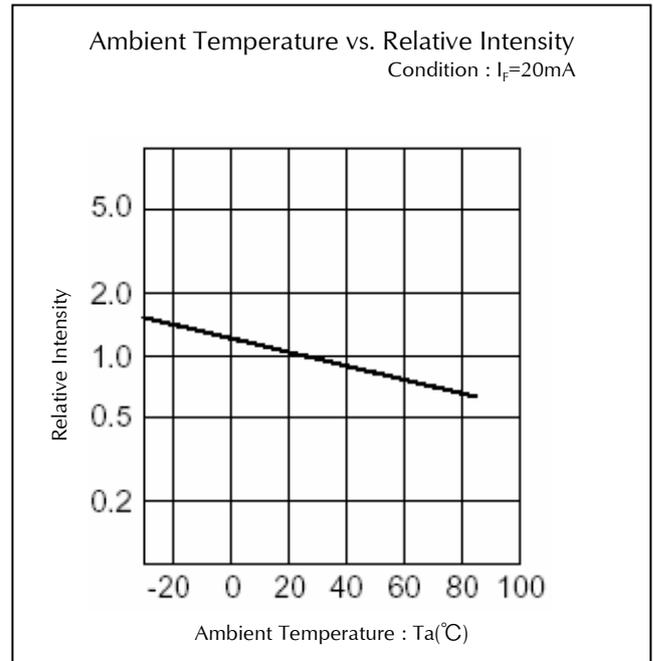
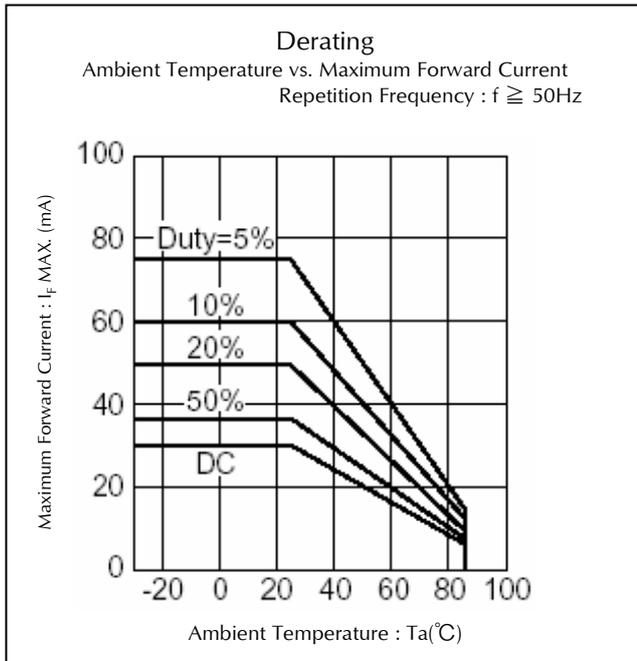
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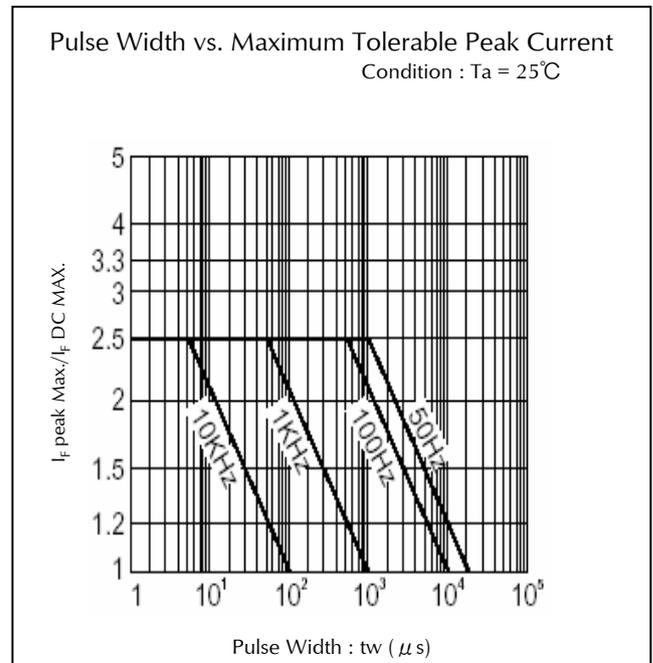
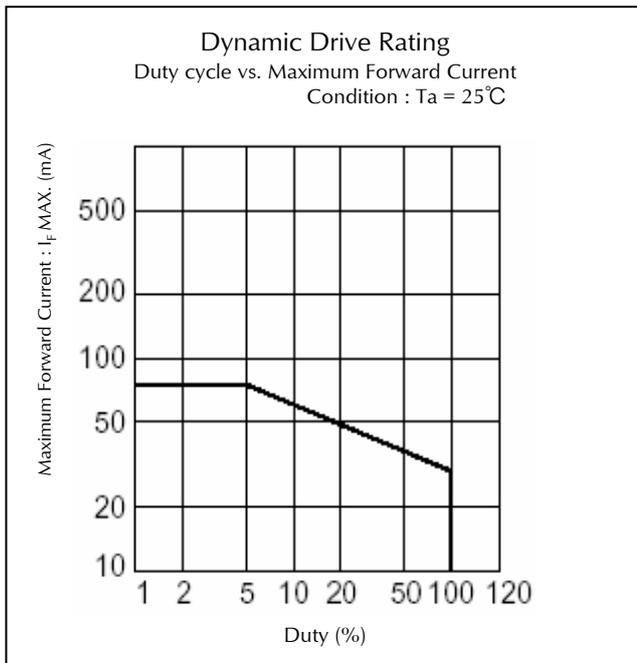
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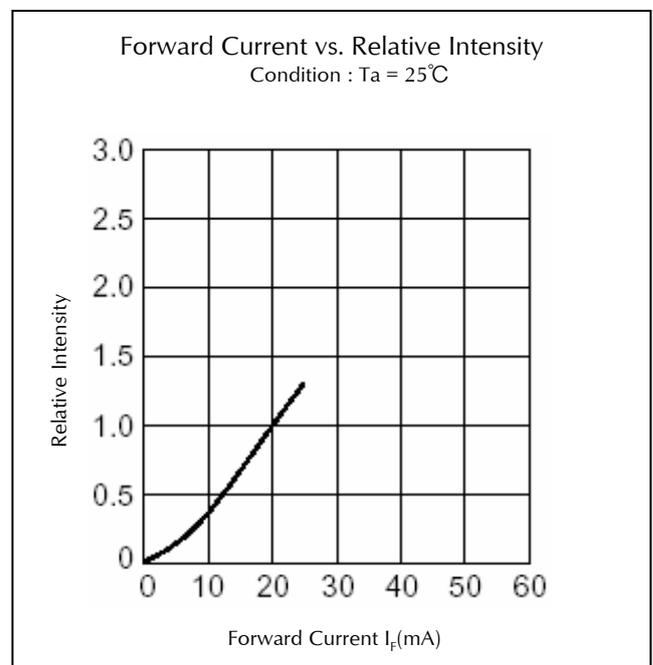
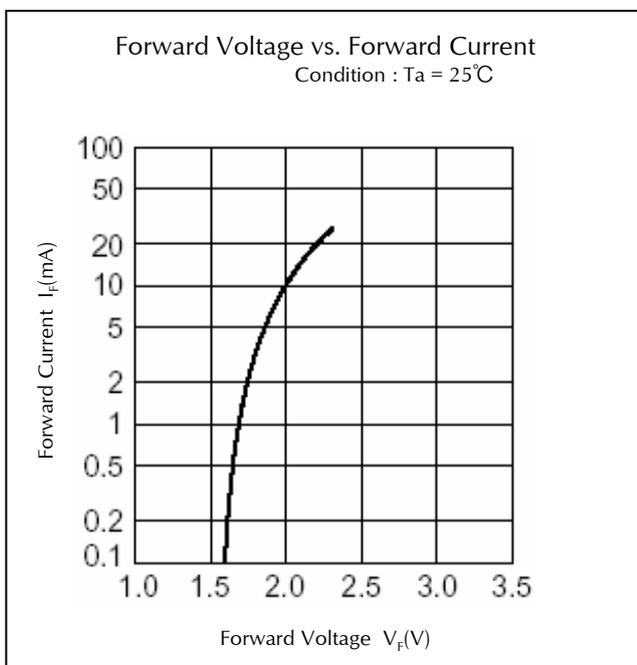
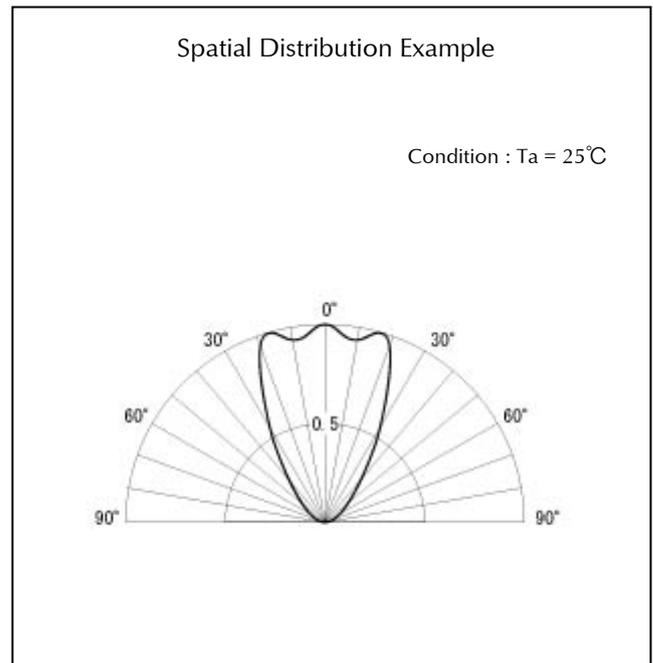
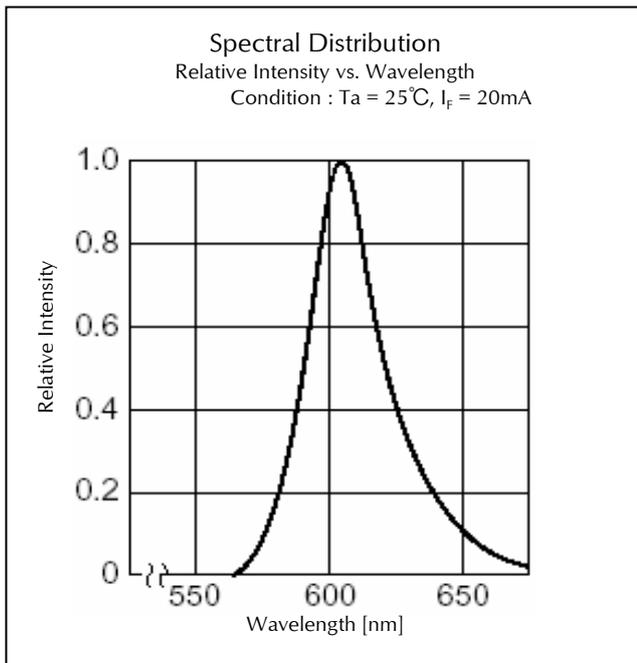
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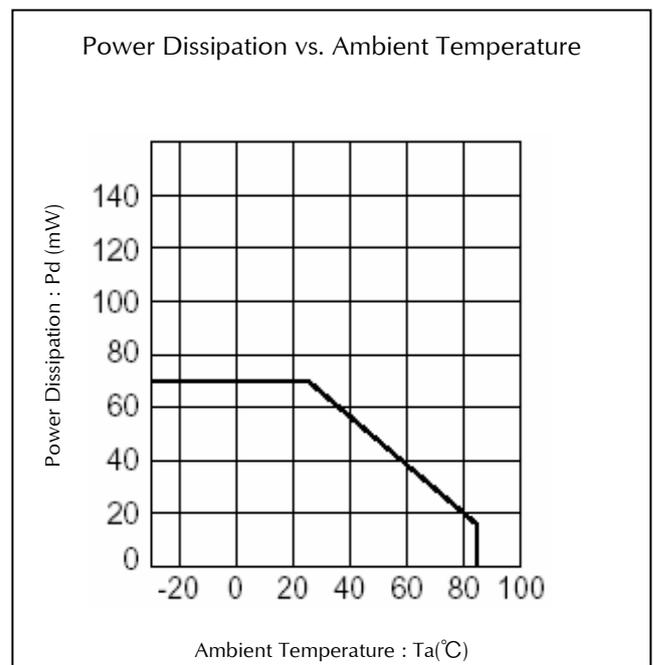
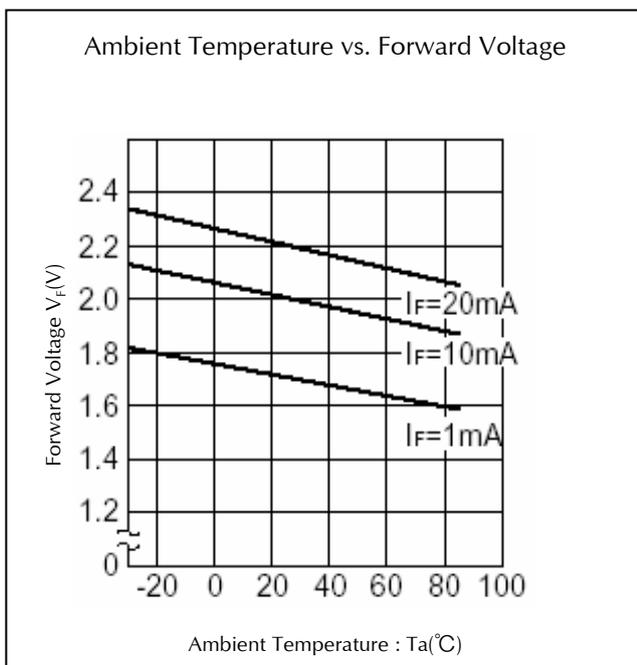
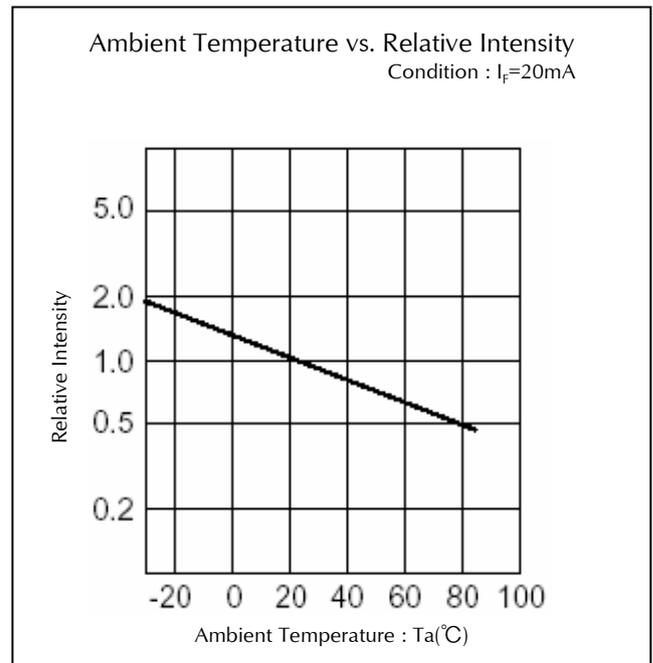
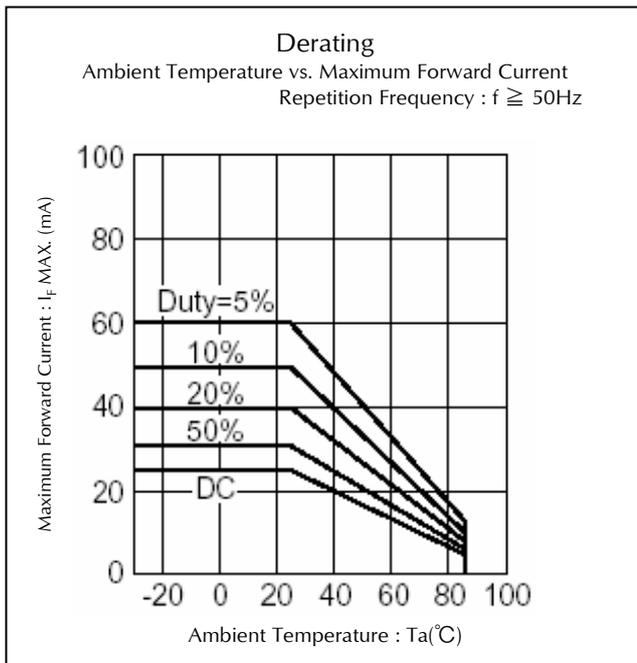
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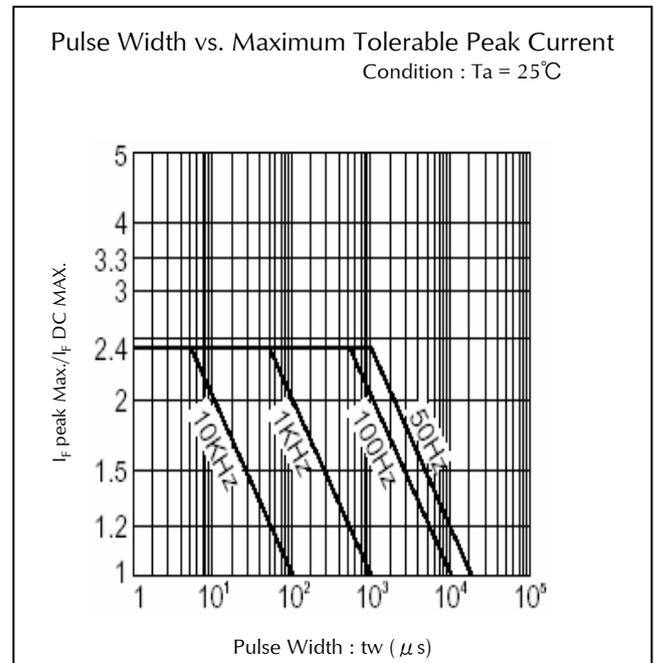
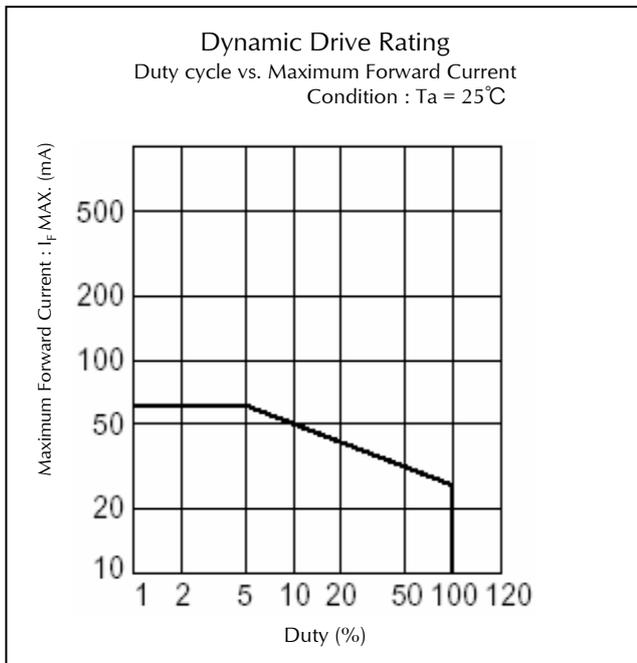
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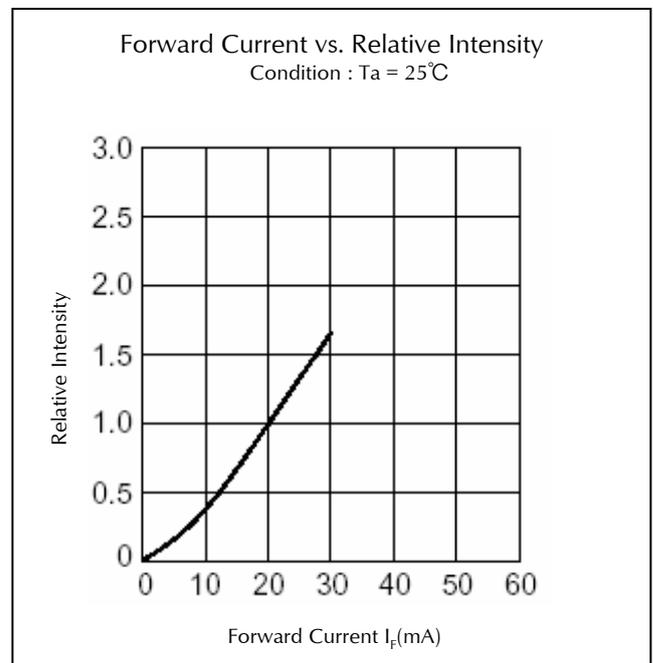
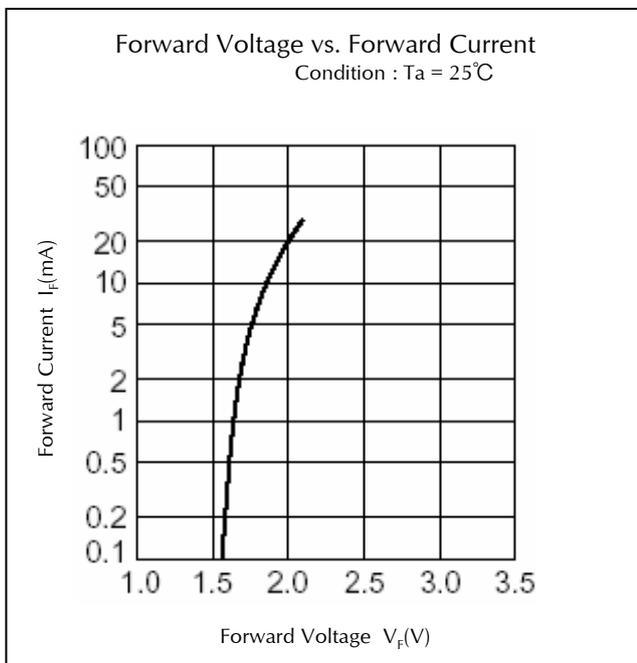
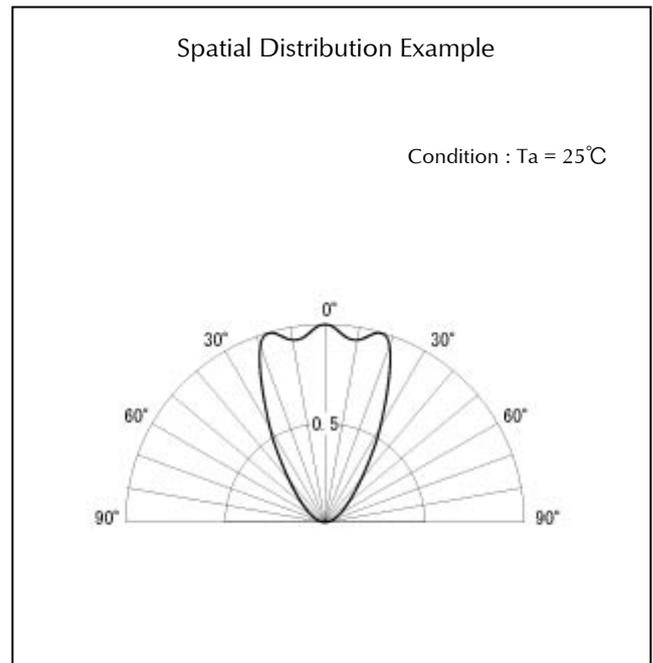
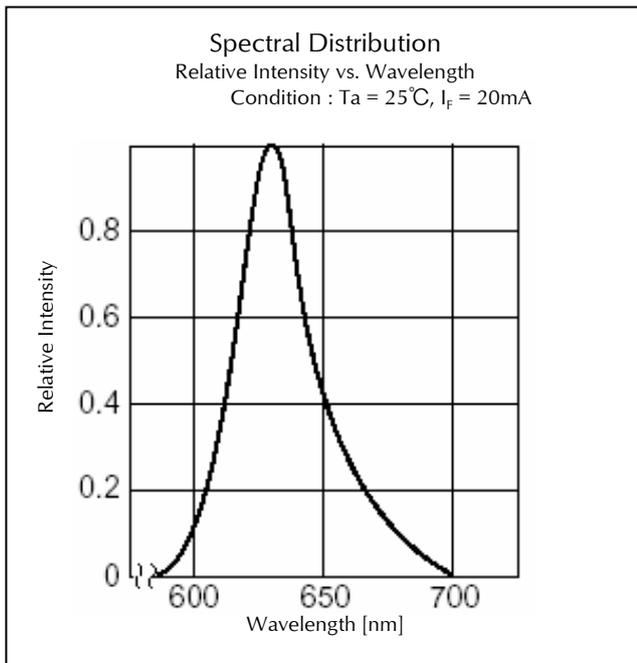
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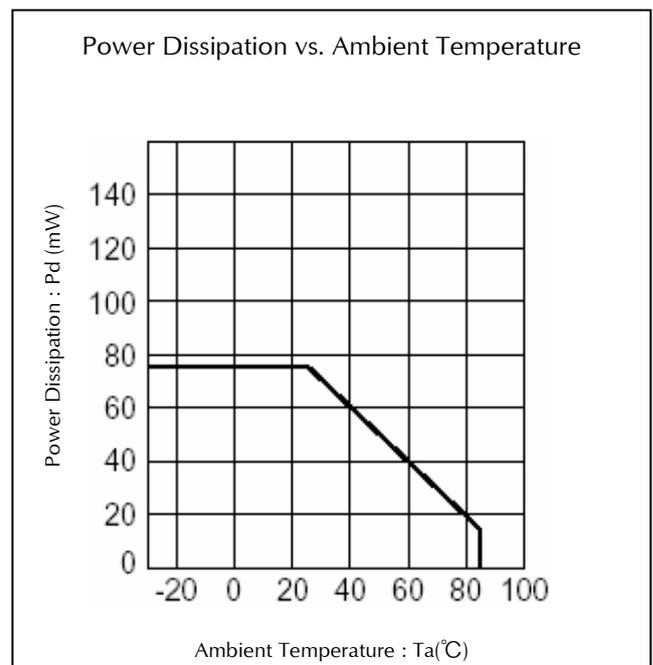
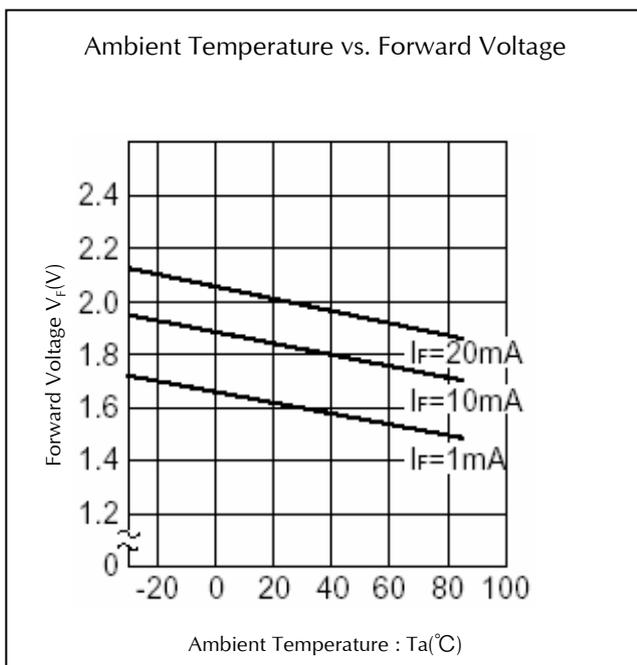
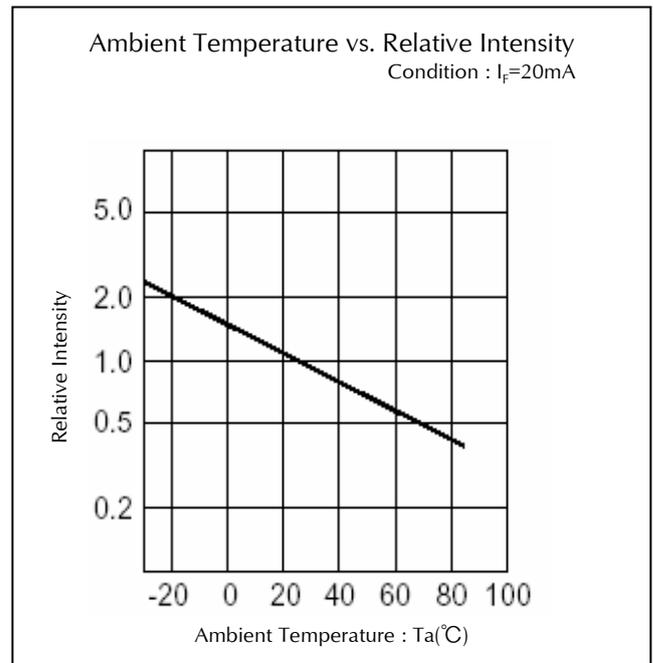
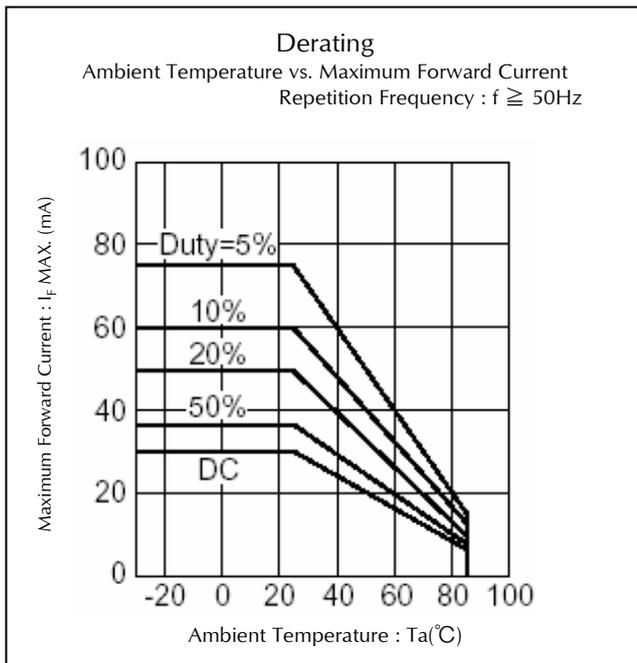
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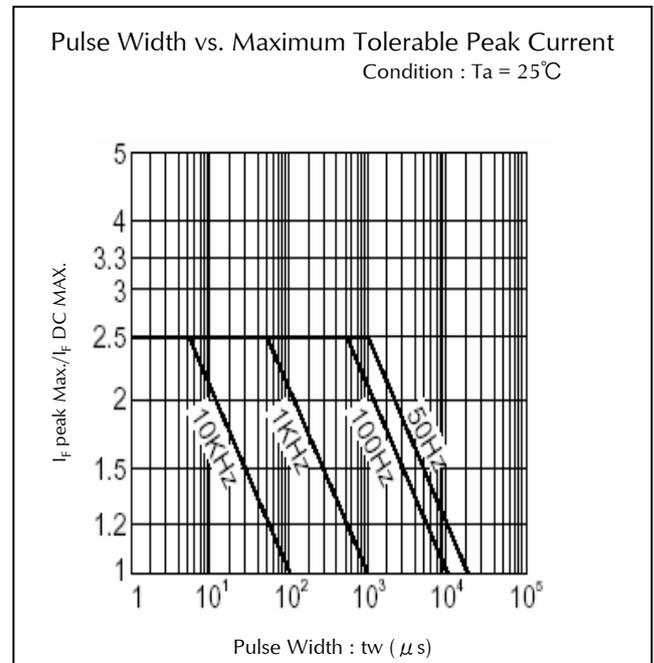
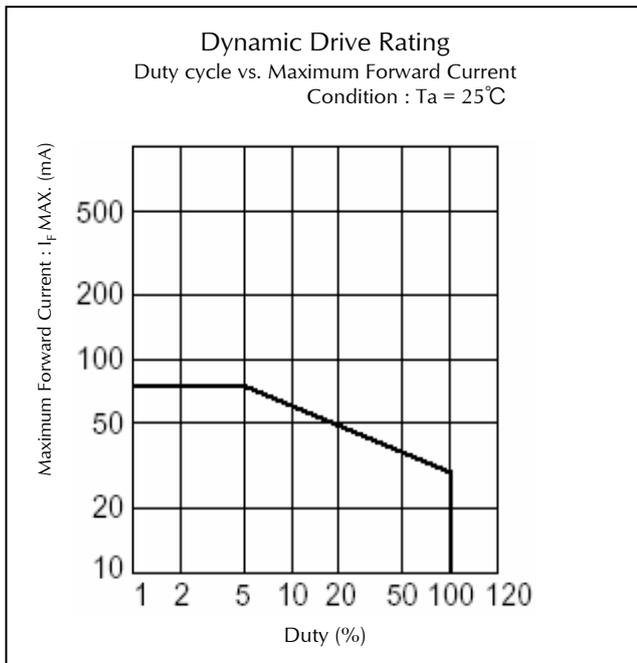
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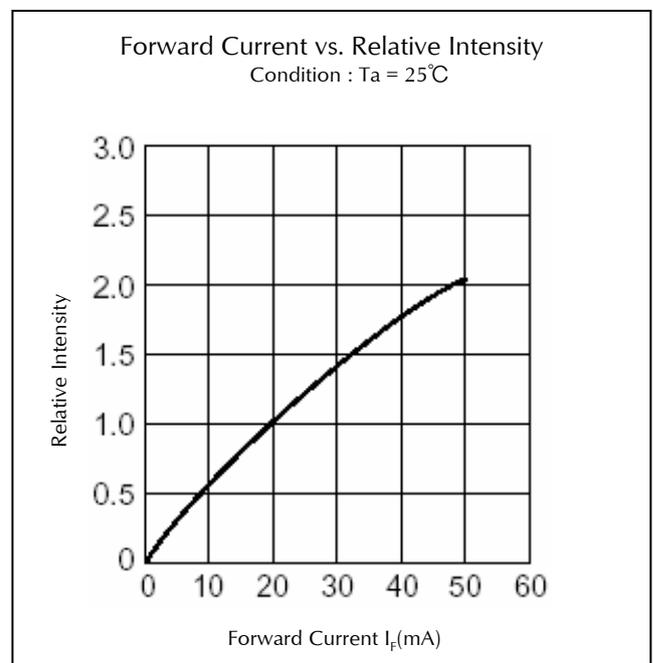
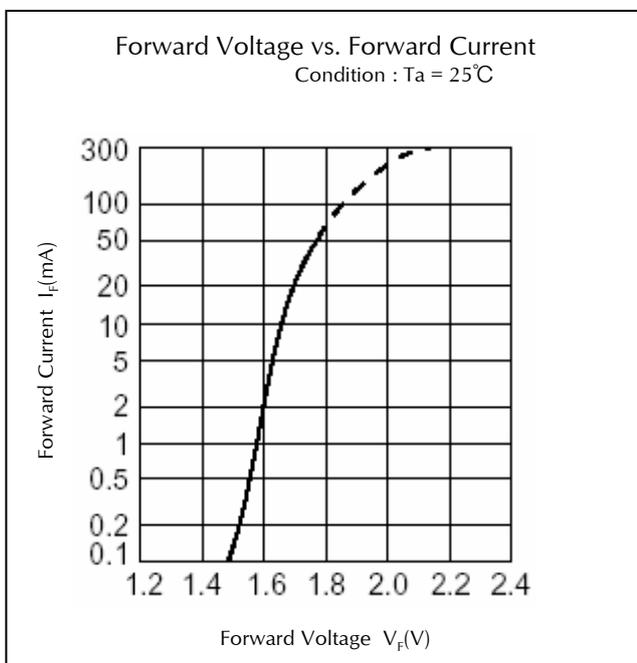
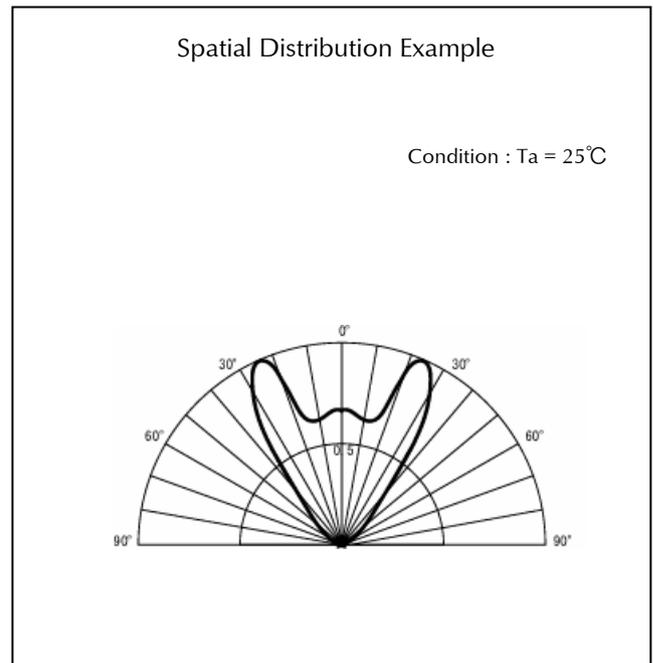
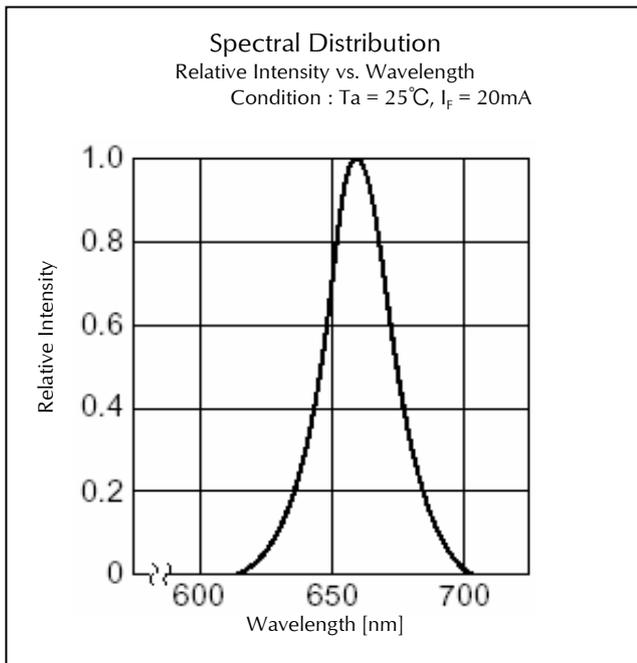
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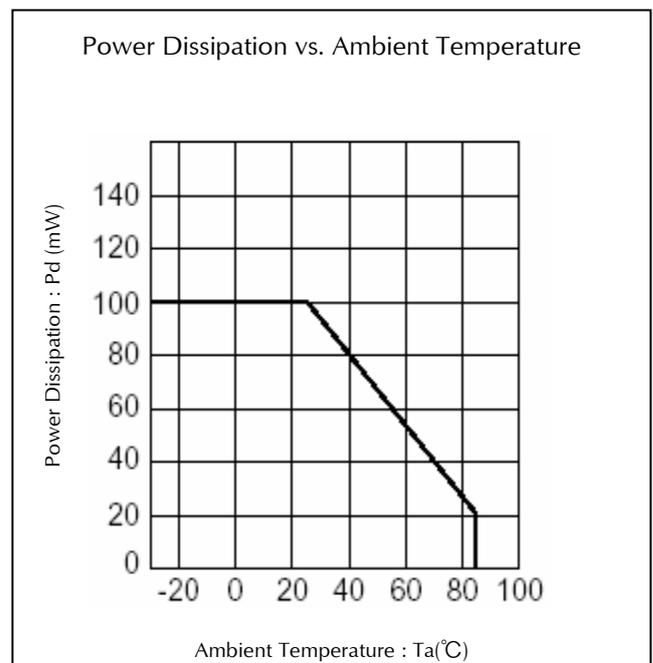
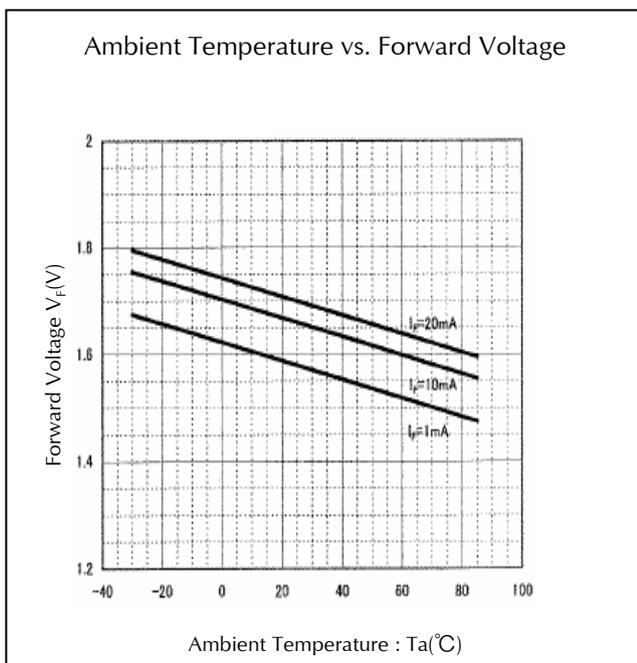
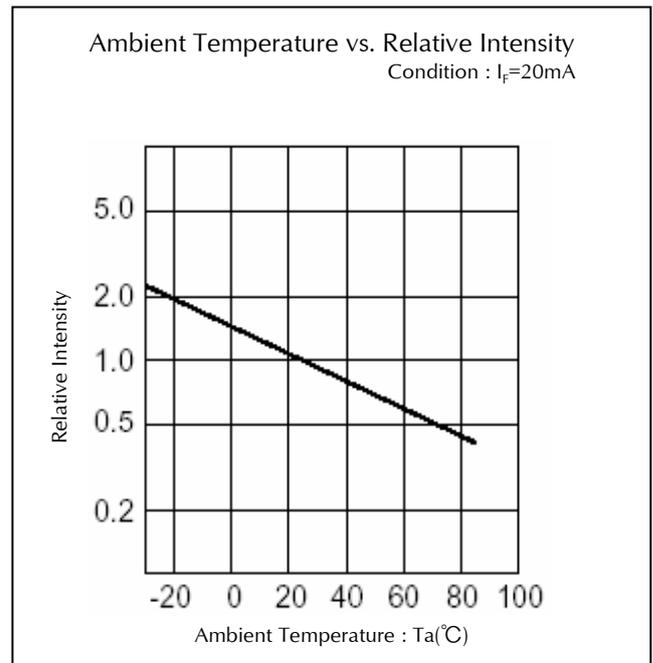
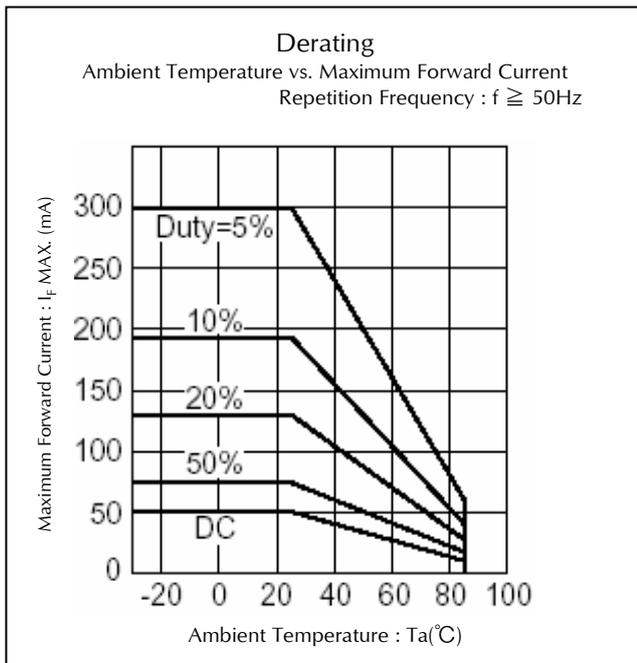
Technical Data(MVR)



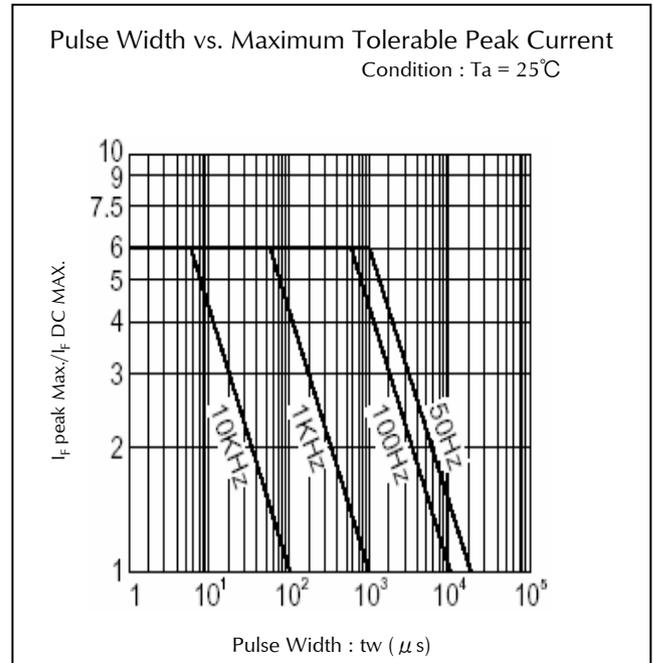
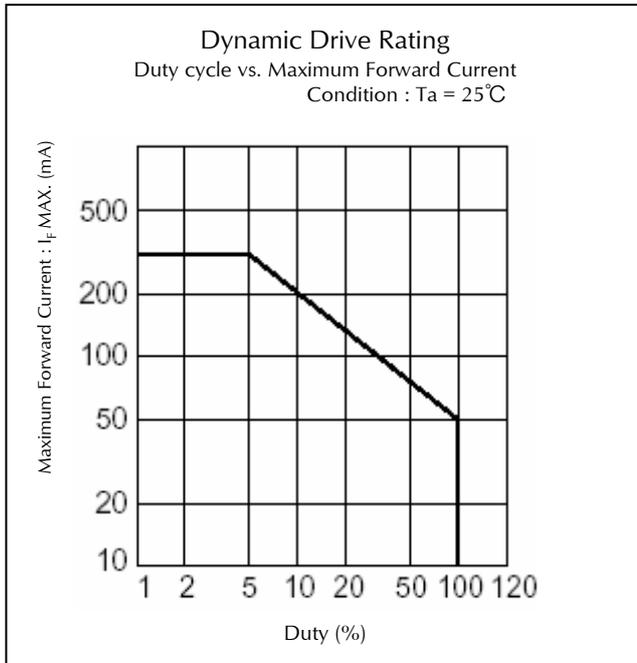
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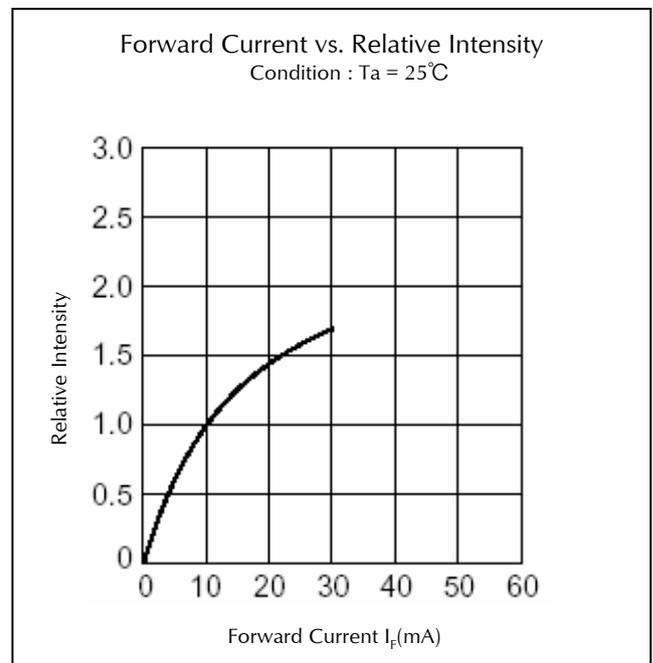
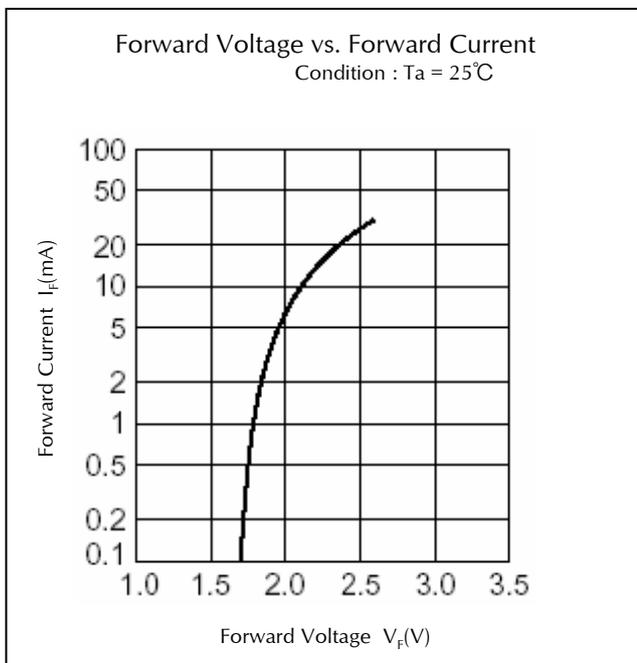
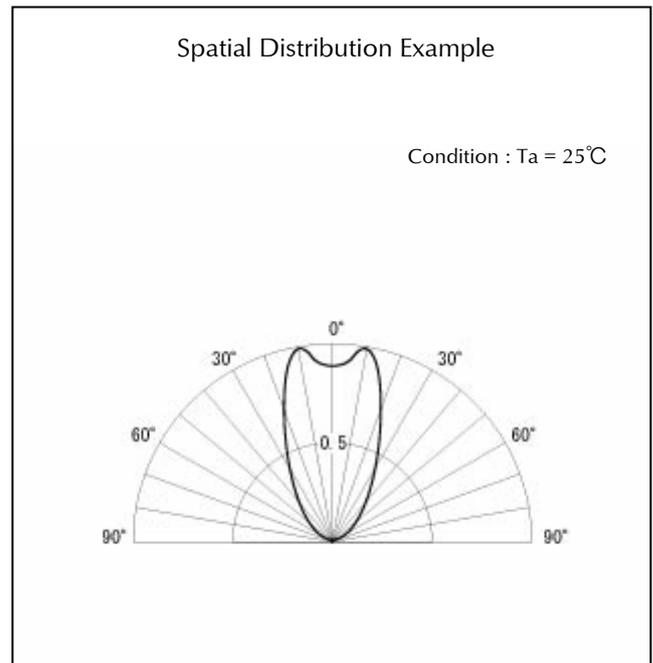
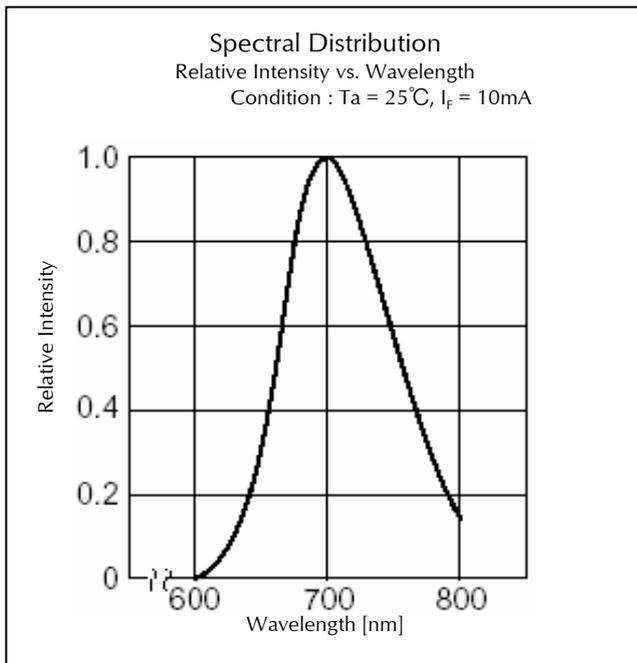
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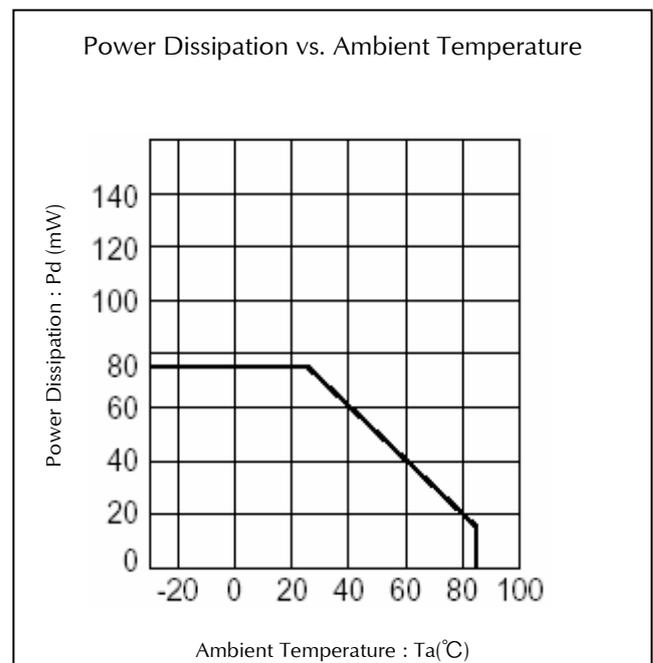
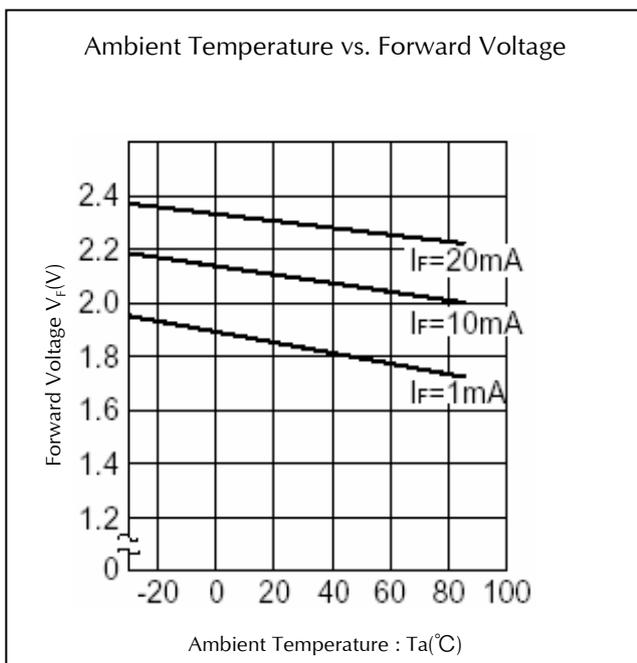
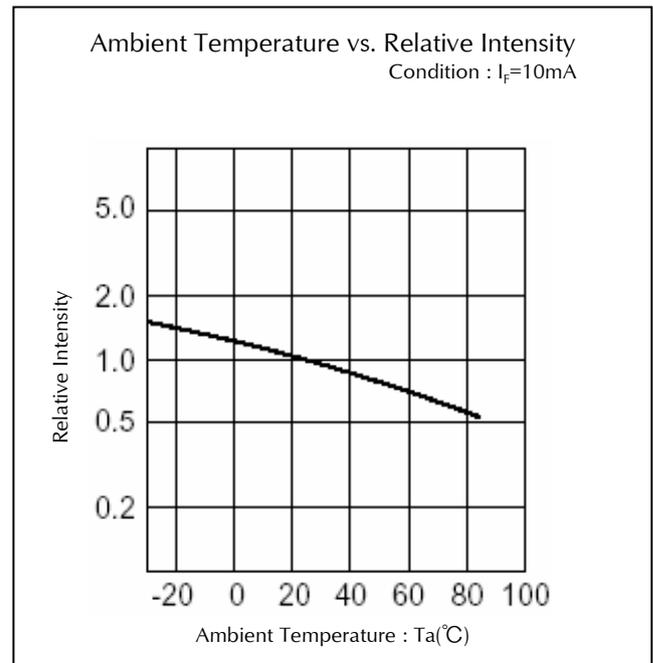
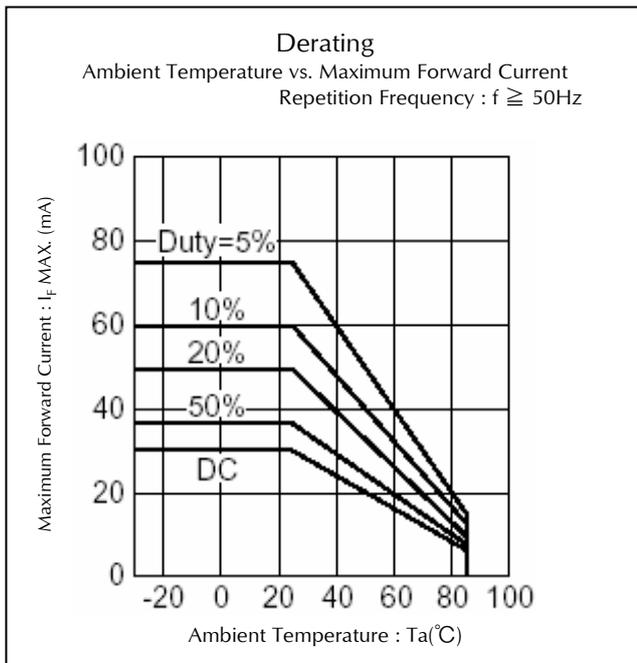
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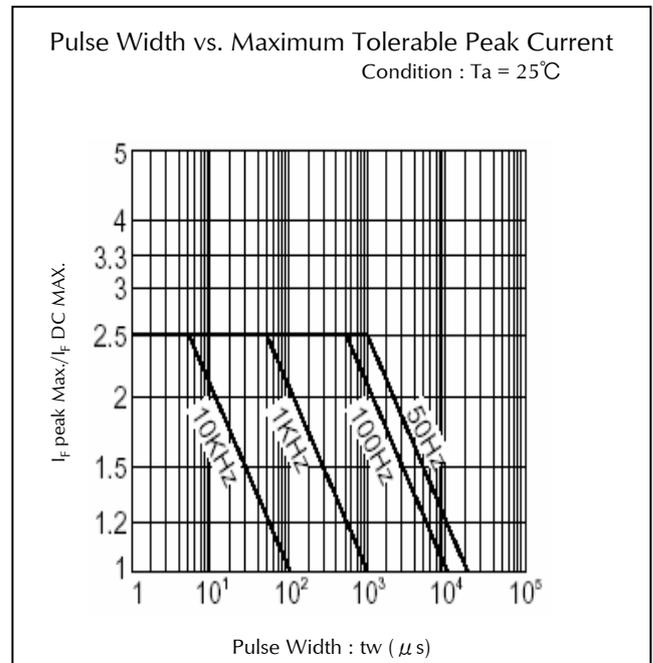
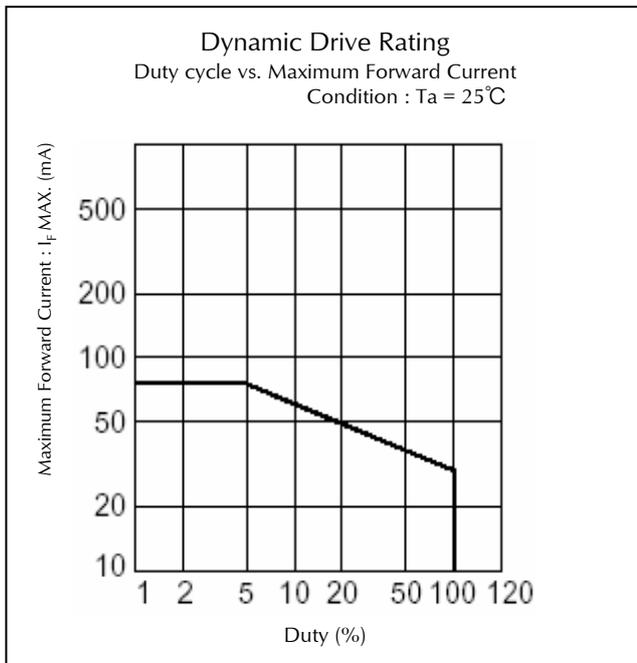
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Technical Data(MPR)

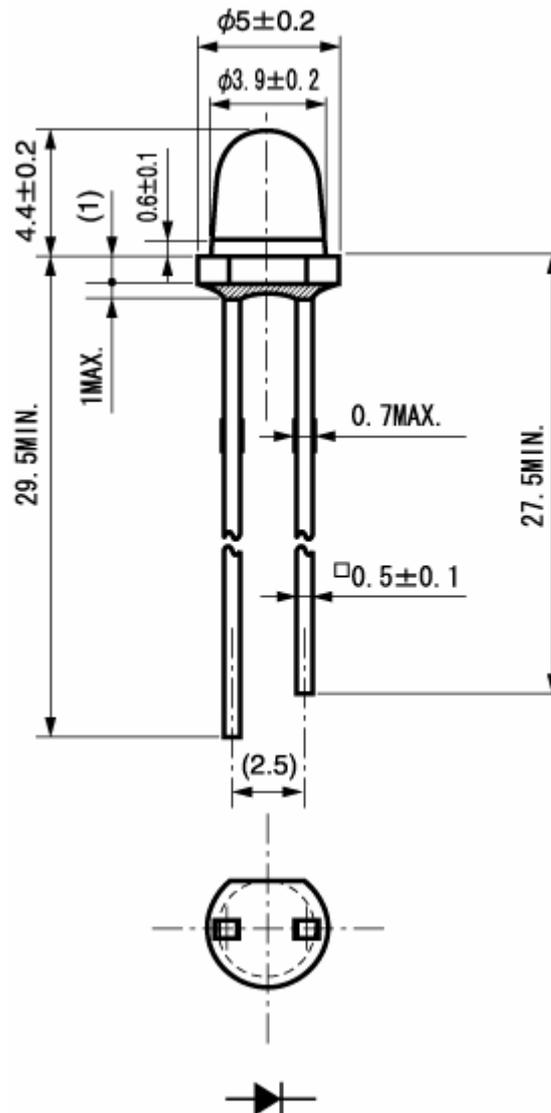


Technical Data(MPR)



Package Dimensions

(Unit: mm)



TTW (Through The Wave) soldering Conditions

Pre-heating	100 °C 60 s	(MAX.) (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 normal temperature before the second dipping process.

Manual Soldering Conditions

Iron tip temp.	400 °C	(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 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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