



Pb-free
HEAT

STANLEY

5305S Series

Single Color ϕ 5 Round Shape Type

Features

Package	ϕ 5 Round shape type Water Clear epoxy
Product features	- Outer Dimension ϕ 5 Round shape type - Operation temperature range. Storage Temperature : -30°C~100°C Operating Temperature : -30°C~85°C - Lead-free soldering compatible - RoHS compliant
Dominant wavelength	Green : 558nm (EBG/BG) : 567nm (EPG/PG) Yellow Green : 572nm (EPY/PY) Yellow : 590nm (EAY/AY) Orange : 606nm (EAA/AA) Red : 624nm (EVR/VR) : 647nm (EBR/BR) : 630nm (PR)
Half Intensity Angle	EBG/BG,EPG/PG : 30 deg. EAY/AY,EAA/AA,EVR/VR,PR : 35 deg. EPY/ PY : 39 deg. EBR/BR : 50 deg
Die materials	EBG/BG,EPG/PG,EPY/PY,PR : GaP EAY/AY,EAA/AA,EVR/VR : GaAsP EBR : 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 λ d (nm)		Luminous Intensity Iv (mcd)		
					TYP.	I _F	MIN.	TYP.	I _F
EBG/BG5305S	GaP	Green	Water Clear	Clear	558	20	12/6	18/12	20
EPG/PG5305S	GaP				567	20	40/20	60/40	20
EPY/PY5305S	GaP	Yellow Green			572	20	50/25	70/50	20
EAY/AY5305S	GaAsP	Yellow			590	20	30/15	45/30	20
EAA/AA5305S	GaAsP	Orange			606	20	30/15	45/30	20
EVR/VR5305S	GaAsP	Red			624	20	20/10	30/20	20
EBR/BR5305S	GaAlAs				647	20	20/10	30/20	20
PR5305S	GaP				630	10	4.0	8.0	10

Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	Absolute Maximum Ratings								Unit
		EBG/BG	EPG/PG	EPY/PY	EAY/AY	EAA/AA	EVR/VR	EBR/BR	PR	
Power Dissipation	P_d	125	125	125	125	125	75	100	75	mW
Forward Current	I_F	50	50	50	50	50	30	50	30	mA
Pulse Forward Current ※1	I_{FRM}	100	100	100	100	100	100	300	100	mA
Derating (Ta=25°C or higher)	ΔI_F	0.67	0.67	0.67	0.67	0.67	0.33	0.67	0.33	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(EBC/BG,EPG/PG,EPY/PY,EAY/AY,EAA/AA,EVR/VR,EBR/BR) (Ta=25°C)

Item	Conditions	Symbol	Characteristics								Unit
				EBC/BG	EPG/PG	EPY/PY	EAY/AY	EAA/AA	EVR/VR	EBR/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.	2.5	2.5	2.5	2.5	2.5	2.5	2.0	
Reverse Current	V _R =4V	I _R	MAX.	100	100	100	100	100	100	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	$\Delta \lambda$	TYP.	30	30	30	30	30	30	30	nm
Half Intensity Angle	I _F =20mA	2 θ 1/2	TYP.	30	30	39	35	35	35	50	deg.

Electro-Optical Characteristics(PR) (Ta=25°C)

Item	Conditions	Symbol	Characteristics		Unit
				PR	
Forward Voltage	I _F =10mA	V _F	TYP.	2.1	V
			MAX.	2.5	
Reverse Current	V _R =4V	I _R	MAX.	100	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	$\Delta \lambda$	TYP.	100	nm
Half Intensity Angle	I _F =10mA	2 θ 1/2	TYP.	35	deg.

Luminous Intensity Rank

(Ta=25°C)

Rank	I _v (mcd)															
	BG		PG		PY		AY		AA		VR		BR		PR	
	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	6.0	12.0	20.0	40.0	25.0	50.0	15.0	30.0	15.0	30.0	10.0	20.0	10.0	20.0	4.0	8.0
B	8.4	16.8	28.0	56.0	35.0	70.0	21.0	42.0	21.0	42.0	14.0	28.0	14.0	28.0	5.6	11.2
C	12.0	24.0	40.0	80.0	50.0	100.0	30.0	60.0	30.0	60.0	20.0	40.0	20.0	40.0	8.0	16.0
D	16.8	33.6	56.0	112.0	70.0	140.0	42.0	84.0	42.0	84.0	28.0	56.0	28.0	56.0	11.2	22.4
E	24.0	-	80.0	-	100.0	-	60.0	-	60.0	-	40.0	-	40.0	-	16.0	-

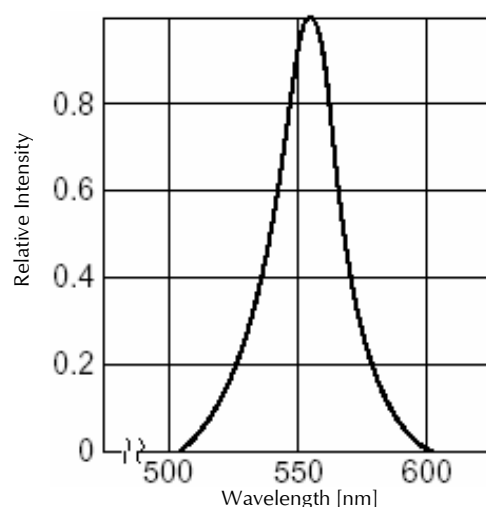
Please contact our sales staff concerning rank designation.

Rank	I _v (mcd)													
	EBG		EPG		EPY		EAY		EAA		EVR		EBR	
	I _F =20mA		I _F =20mA		I _F =20mA		I _F =20mA		I _F =20mA		I _F =20mA		I _F =20mA	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
C	12.0	24.0	40.0	80.0	50.0	100.0	30.0	60.0	30.0	60.0	20.0	40.0	20.0	40.0
D	16.8	33.6	56.0	112.0	70.0	140.0	42.0	84.0	42.0	84.0	28.0	56.0	28.0	56.0
E	24.0	-	80.0	-	100.0	-	60.0	-	60.0	-	40.0	-	40.0	-

Please contact our sales staff concerning rank designation.

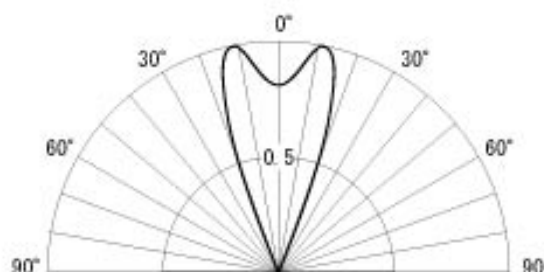
Technical Data(EBG/BG)

Spectral Distribution
Relative Intensity vs. Wavelength
Condition : $T_a = 25^\circ\text{C}$, $I_f = 20\text{mA}$

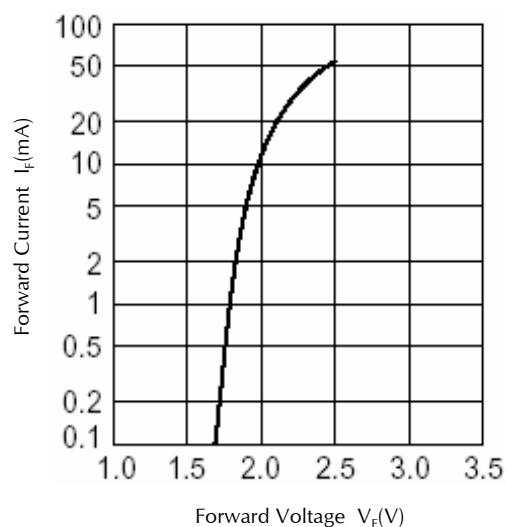


Spatial Distribution Example

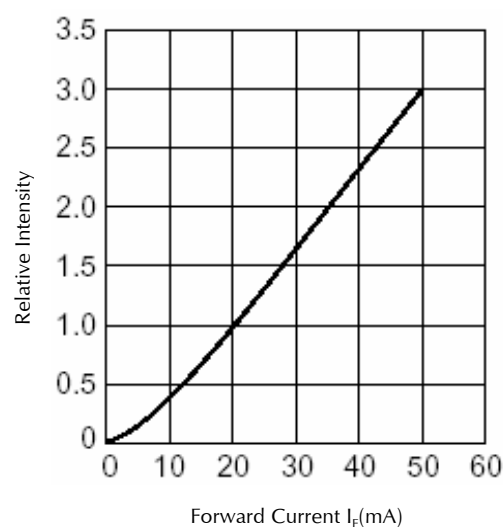
Condition : $T_a = 25^\circ\text{C}$



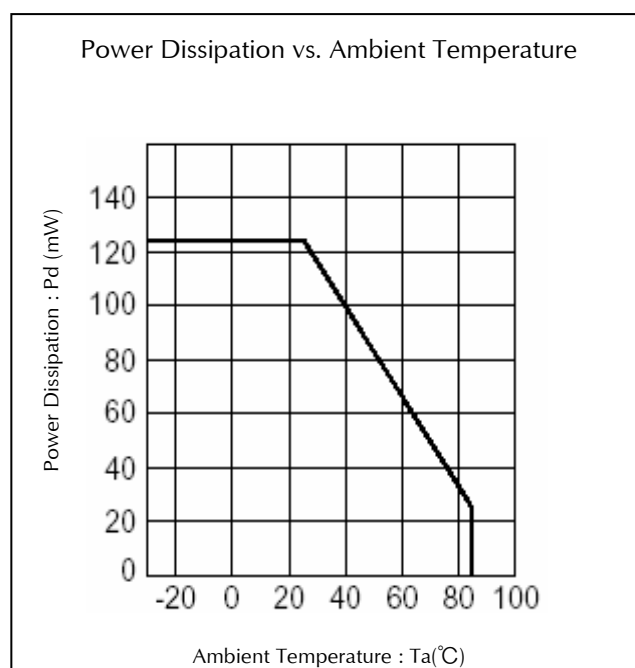
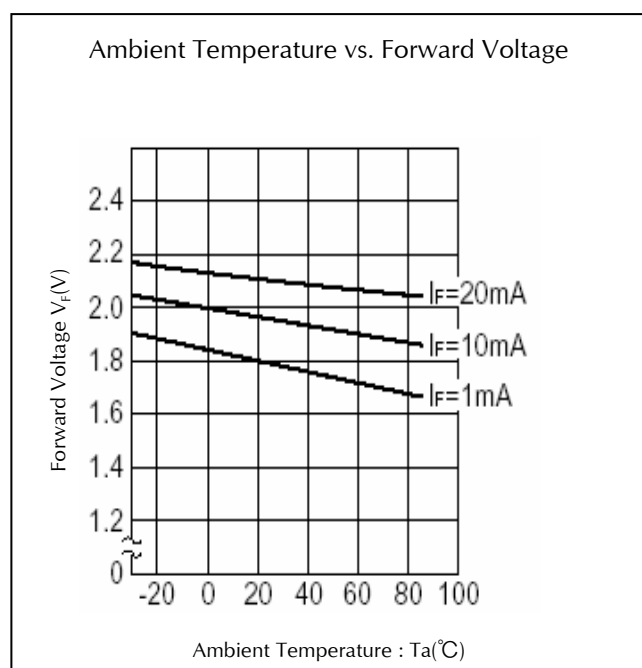
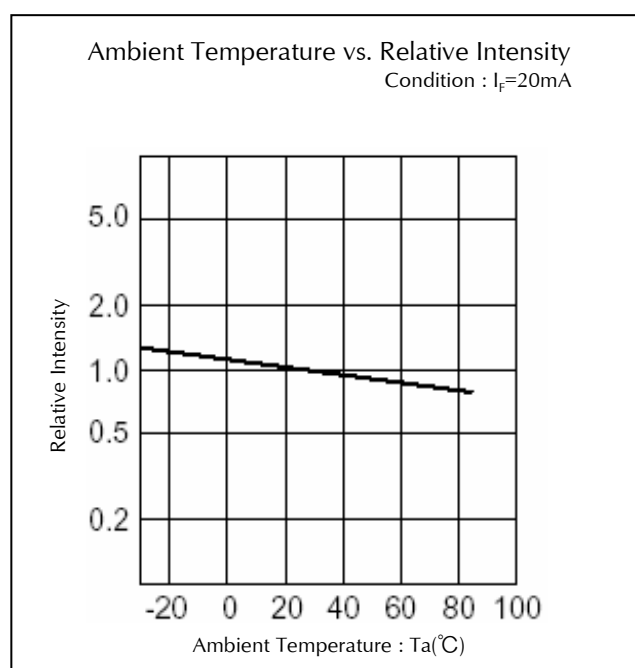
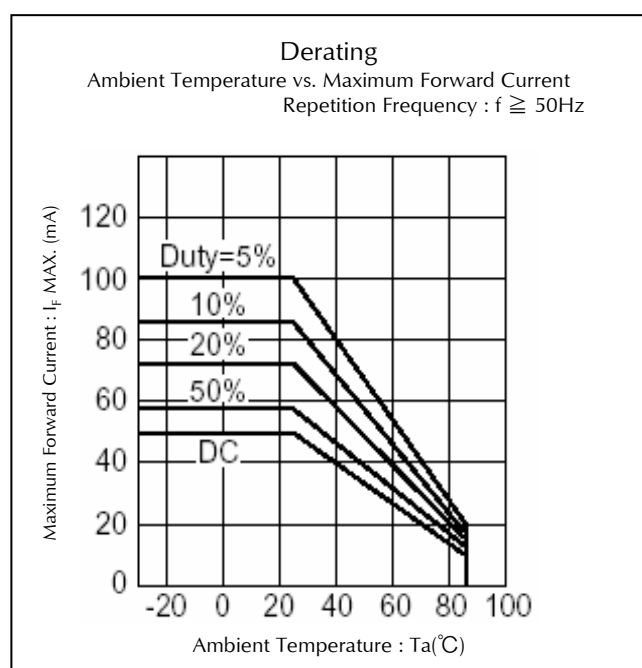
Forward Voltage vs. Forward Current
Condition : $T_a = 25^\circ\text{C}$



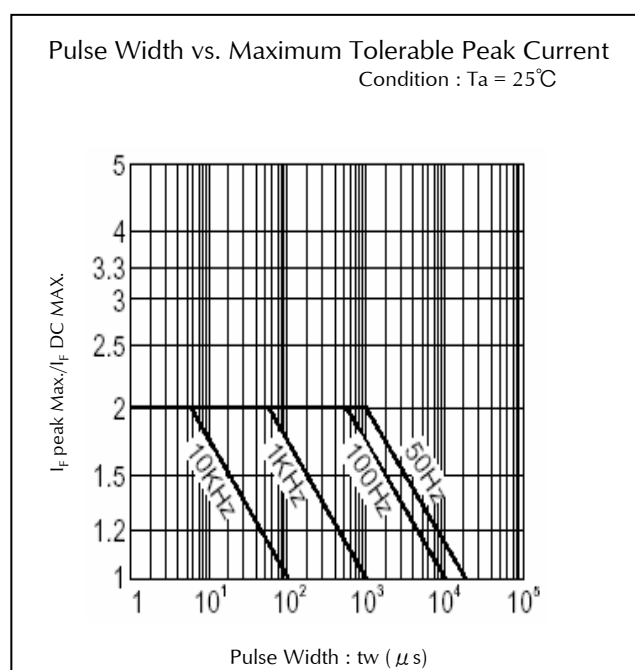
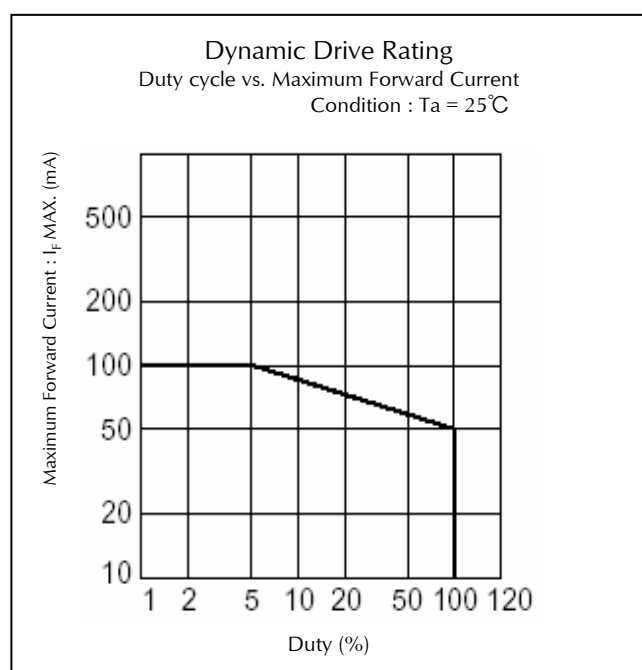
Forward Current vs. Relative Intensity
Condition : $T_a = 25^\circ\text{C}$



Technical Data(EBG/BG)

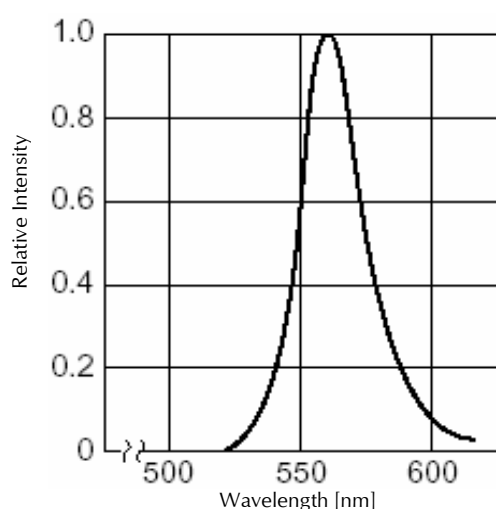


Technical Data(EBG/BG)



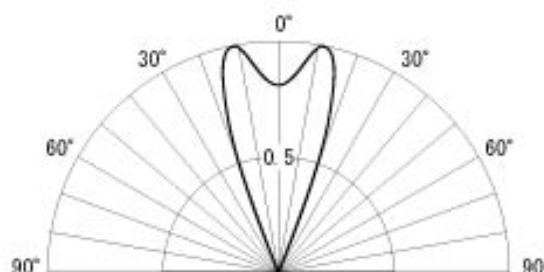
Technical Data(EPG/PG)

Spectral Distribution
Relative Intensity vs. Wavelength
Condition : $T_a = 25^\circ\text{C}$, $I_f = 20\text{mA}$

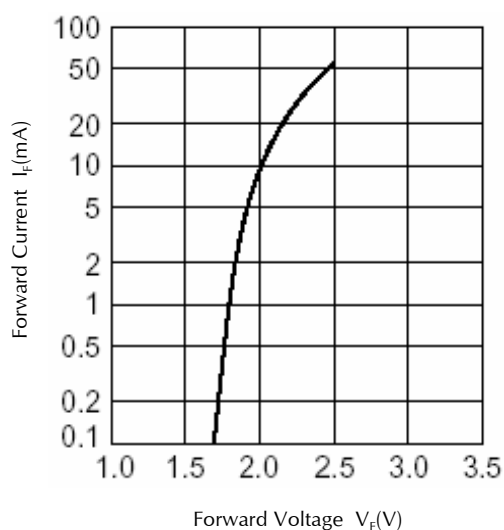


Spatial Distribution Example

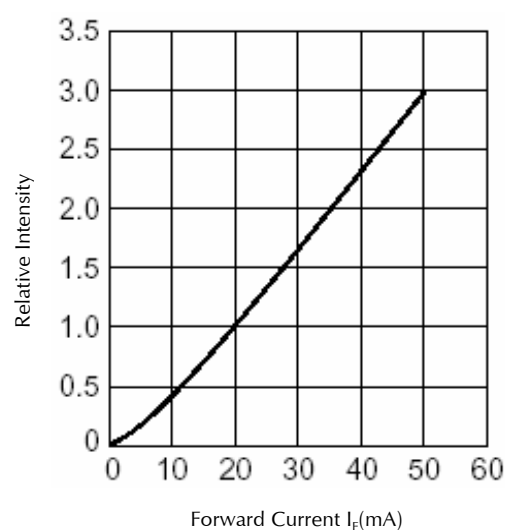
Condition : $T_a = 25^\circ\text{C}$



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



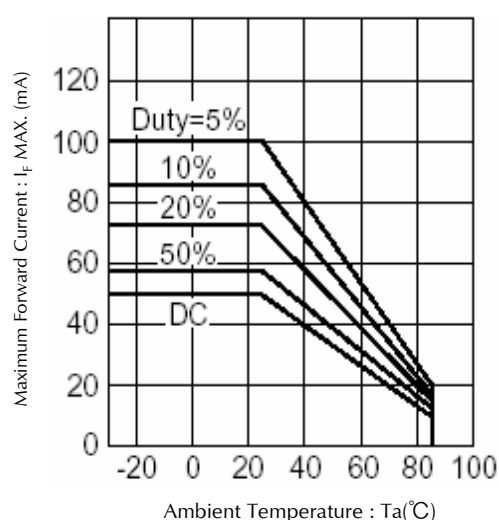
Forward Current vs. Relative Intensity
Condition : $T_a = 25^\circ\text{C}$



Technical Data(EPG/PG)

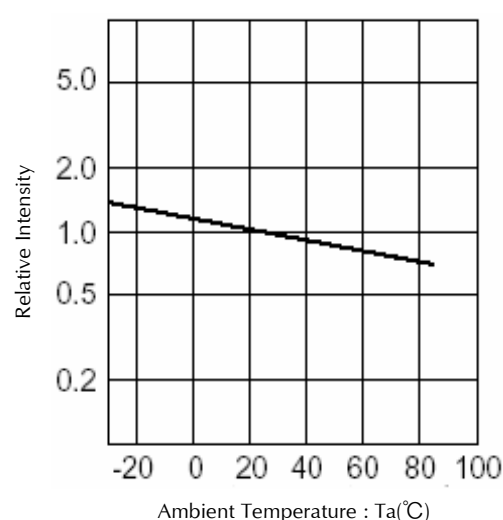
Derating

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

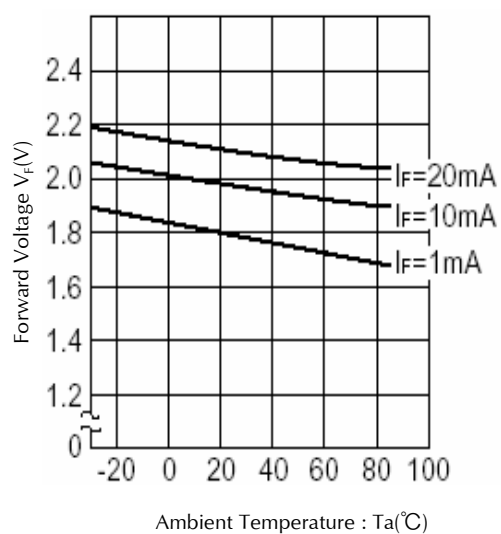


Ambient Temperature vs. Relative Intensity

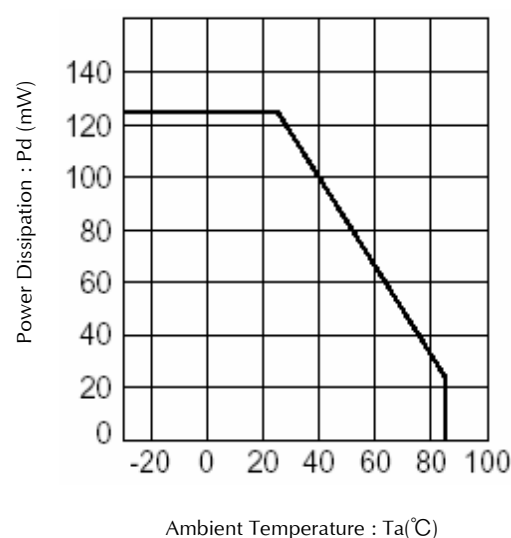
Condition : $I_F=20\text{mA}$



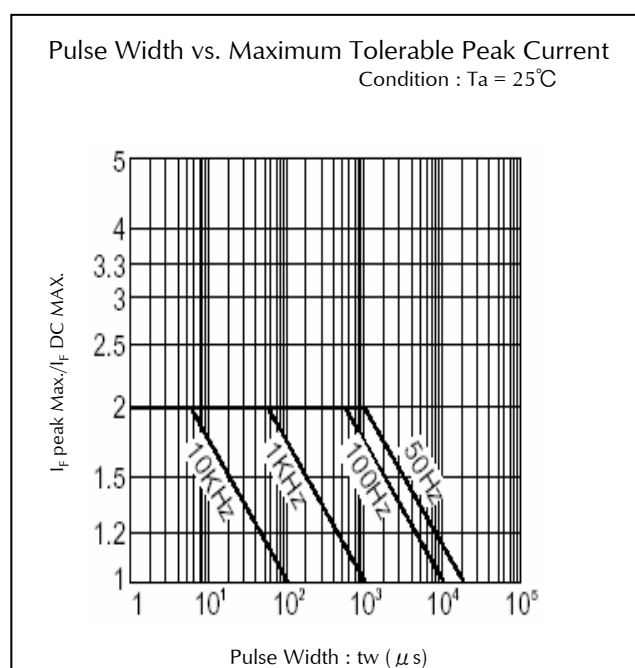
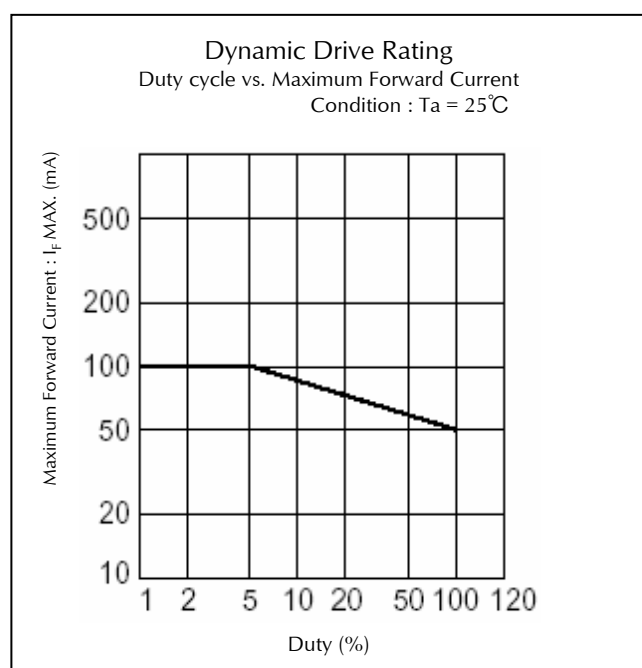
Ambient Temperature vs. Forward Voltage



Power Dissipation vs. Ambient Temperature

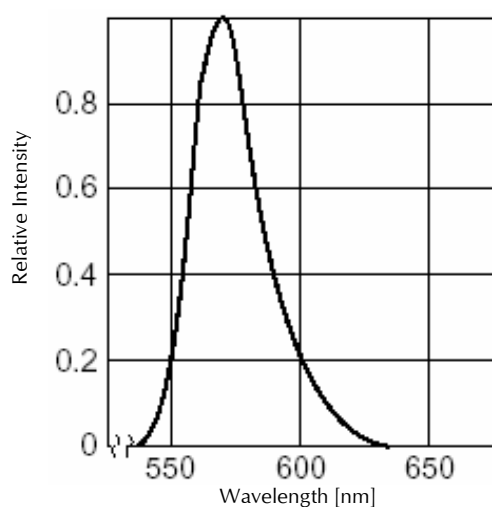


Technical Data(EPG/PG)



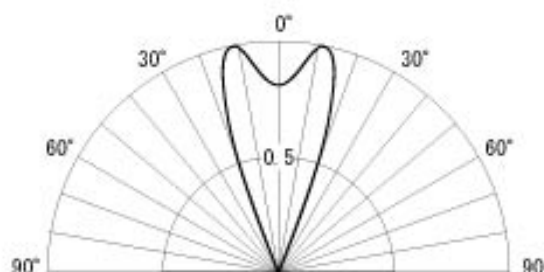
Technical Data(EPY/PY)

Spectral Distribution
Relative Intensity vs. Wavelength
Condition : $T_a = 25^\circ\text{C}$, $I_f = 20\text{mA}$

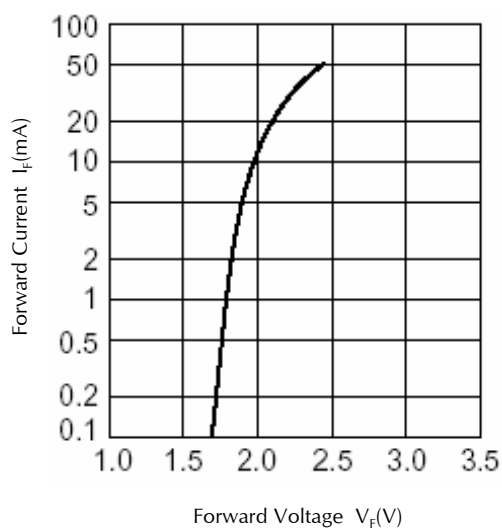


Spatial Distribution Example

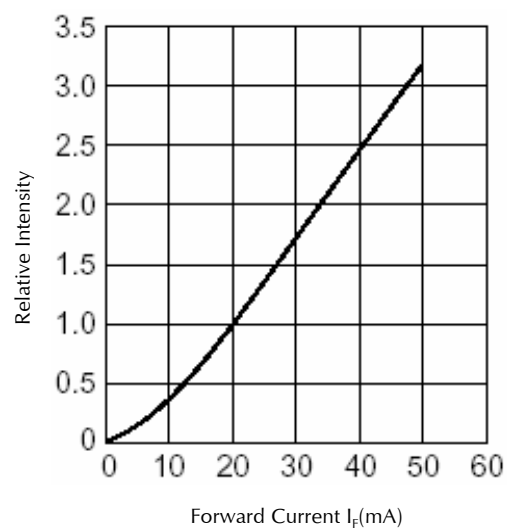
Condition : $T_a = 25^\circ\text{C}$



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



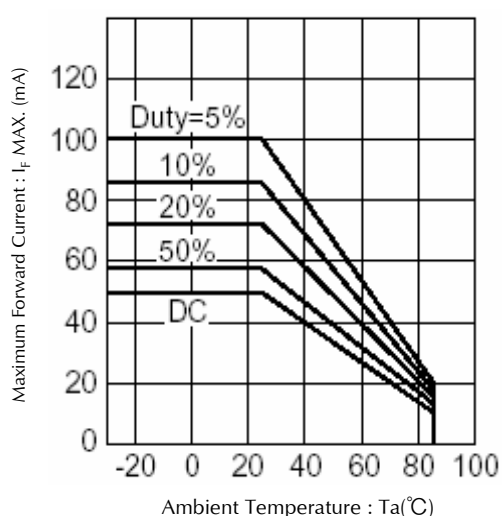
Forward Current vs. Relative Intensity
Condition : $T_a = 25^\circ\text{C}$



Technical Data(EPY/PY)

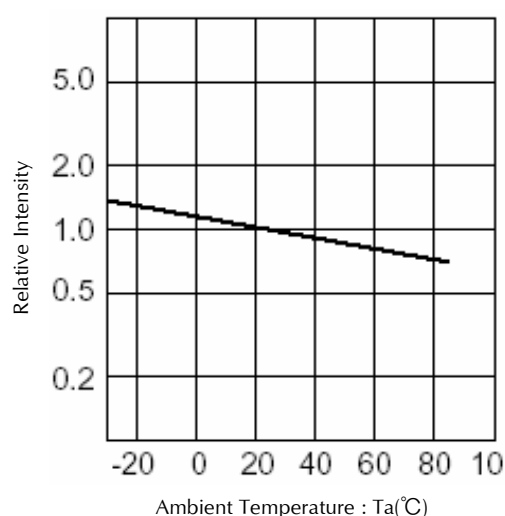
Derating

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

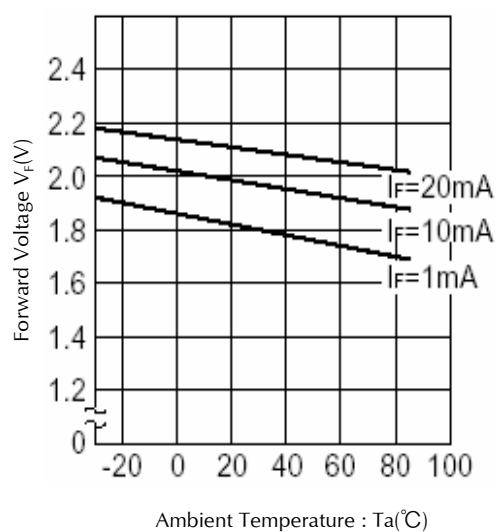


Ambient Temperature vs. Relative Intensity

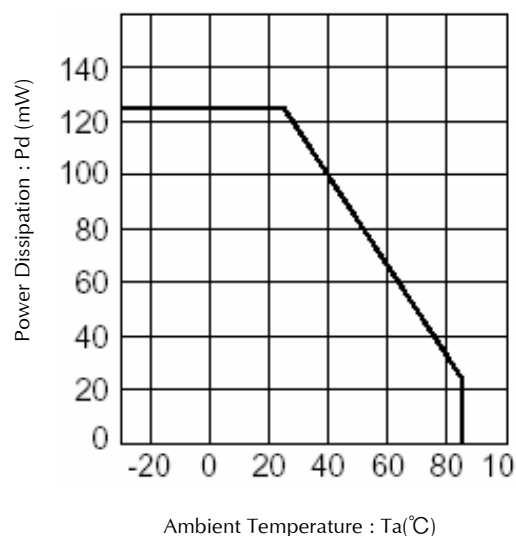
Condition : $I_F=20\text{mA}$



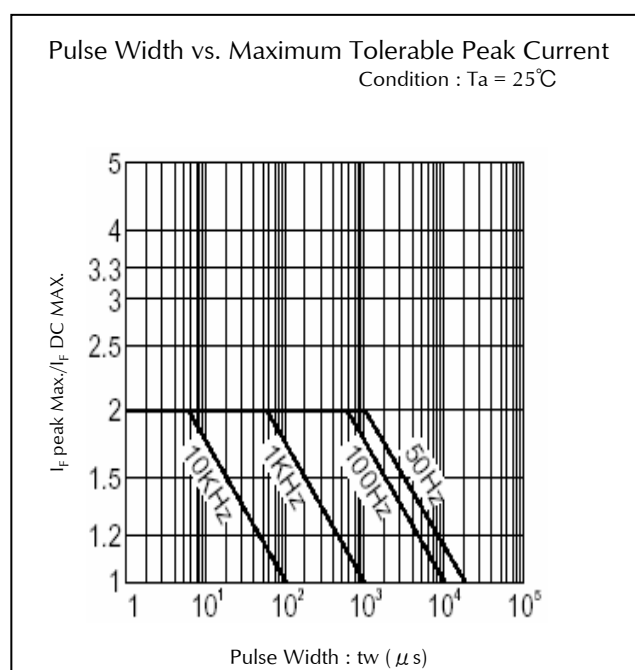
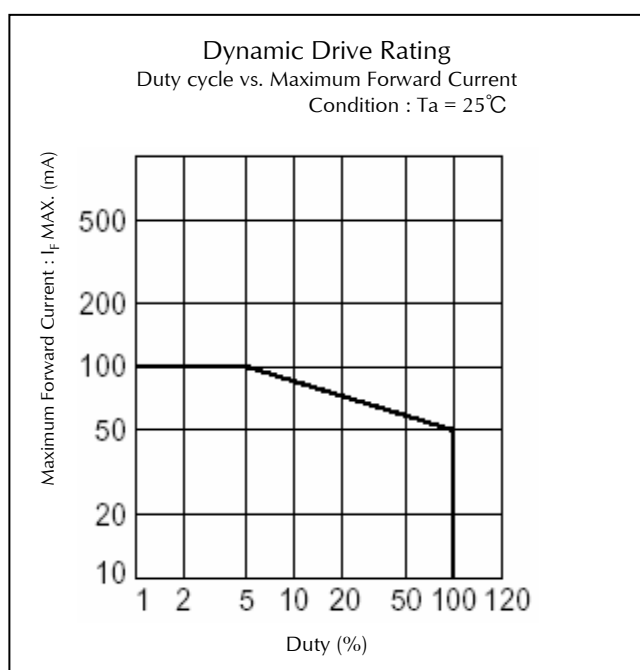
Ambient Temperature vs. Forward Voltage



Power Dissipation vs. Ambient Temperature

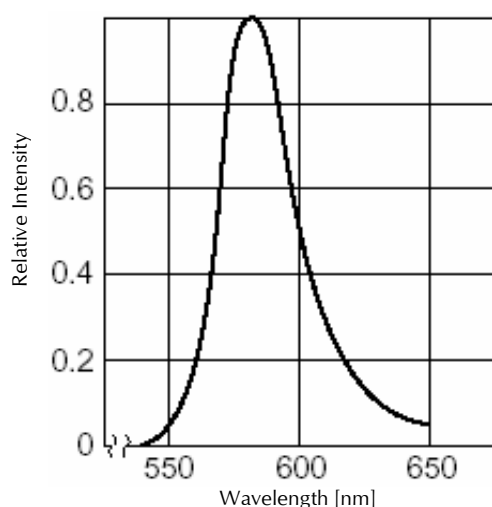


Technical Data(EPY/PY)



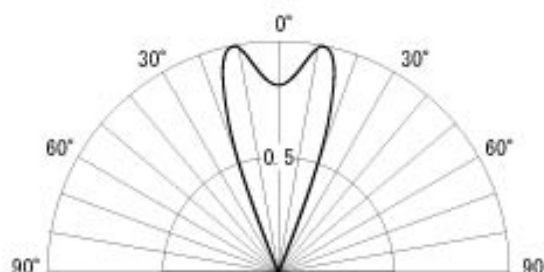
Technical Data(EAY/AY)

Spectral Distribution
Relative Intensity vs. Wavelength
Condition : $T_a = 25^\circ\text{C}$, $I_f = 20\text{mA}$

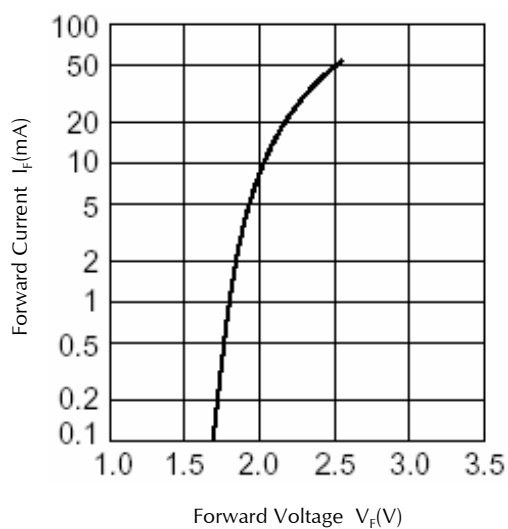


Spatial Distribution Example

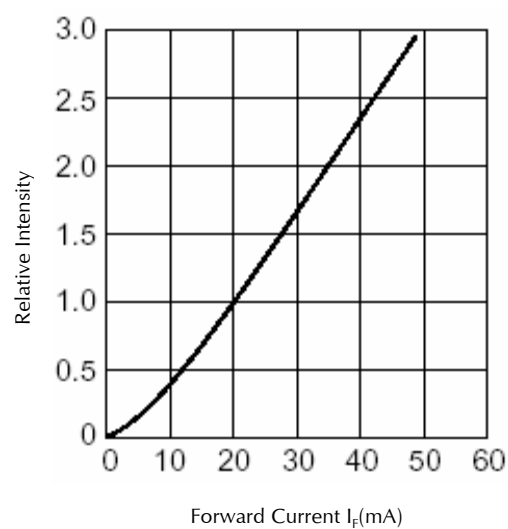
Condition : $T_a = 25^\circ\text{C}$



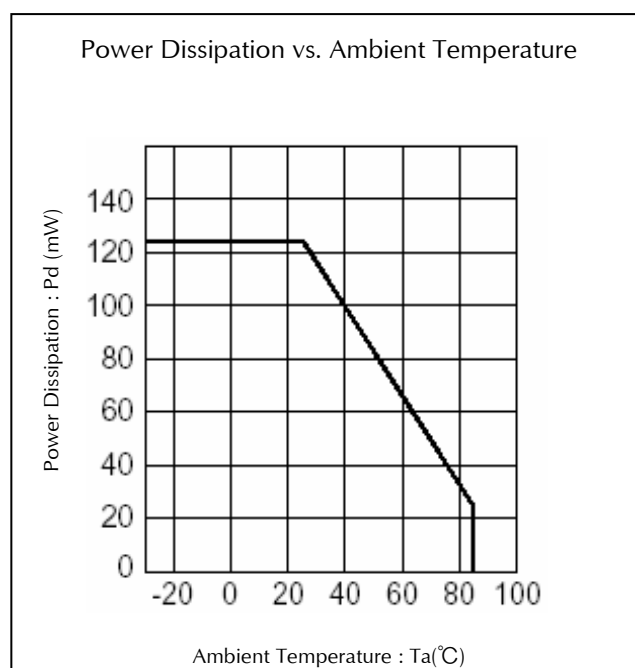
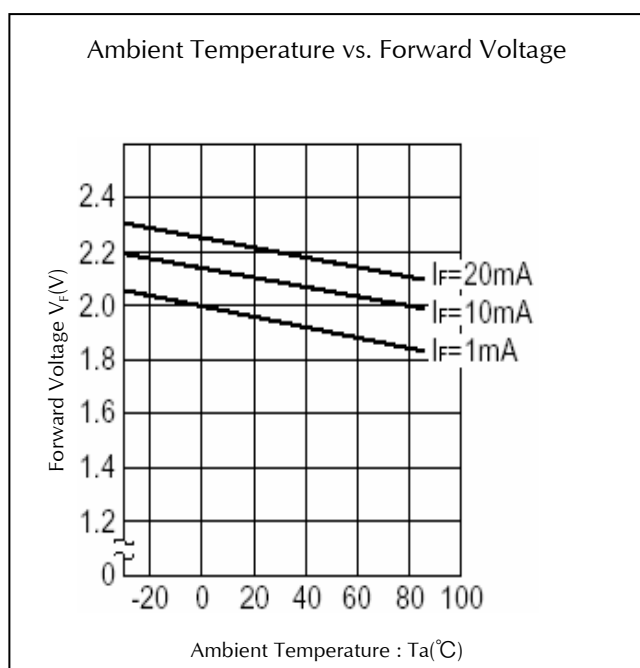
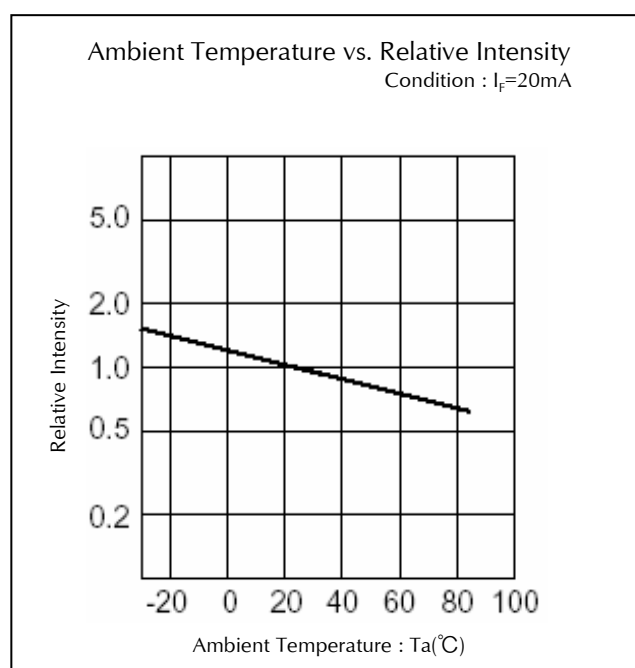
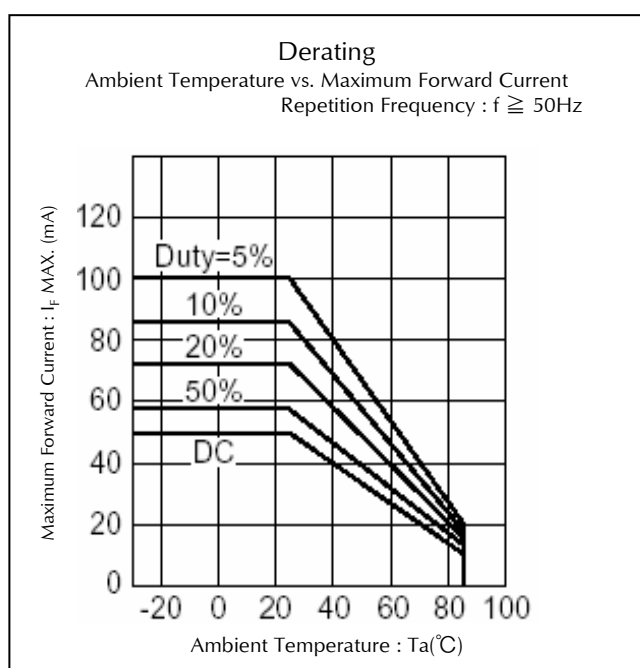
Forward Voltage vs. Forward Current
Condition : $T_a = 25^\circ\text{C}$



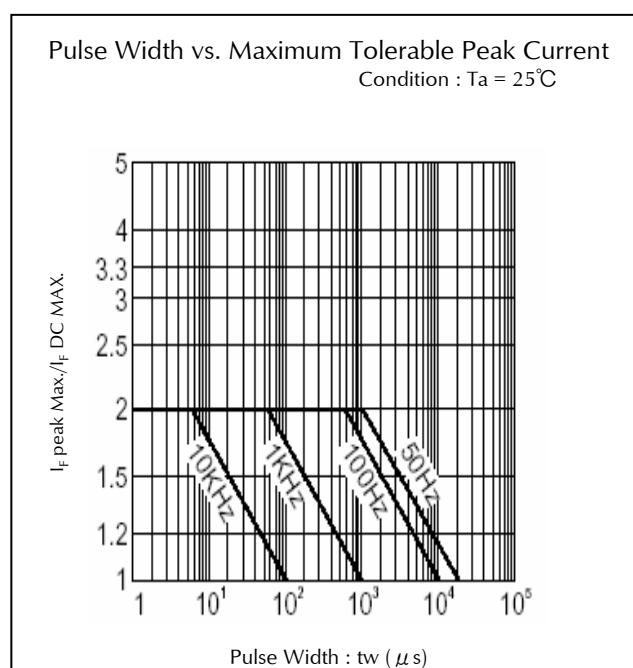
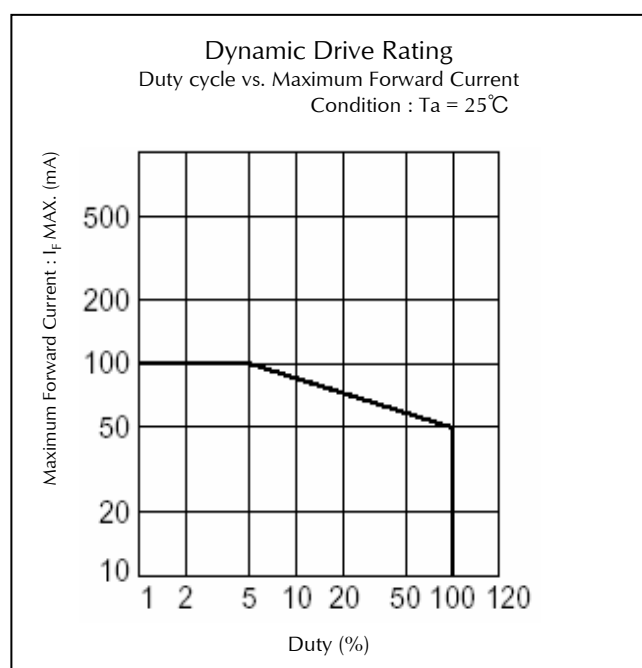
Forward Current vs. Relative Intensity
Condition : $T_a = 25^\circ\text{C}$



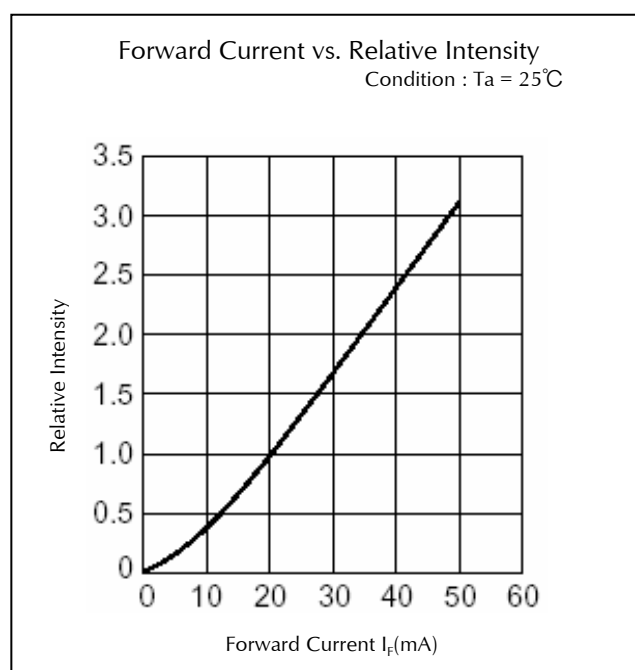
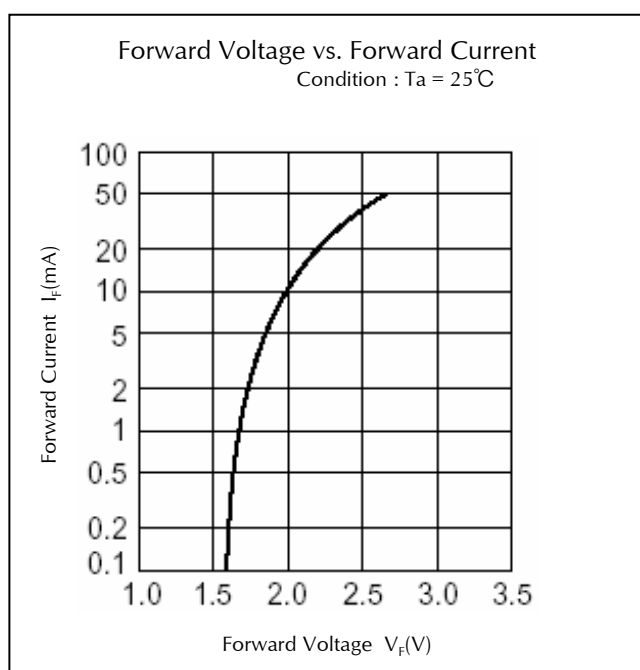
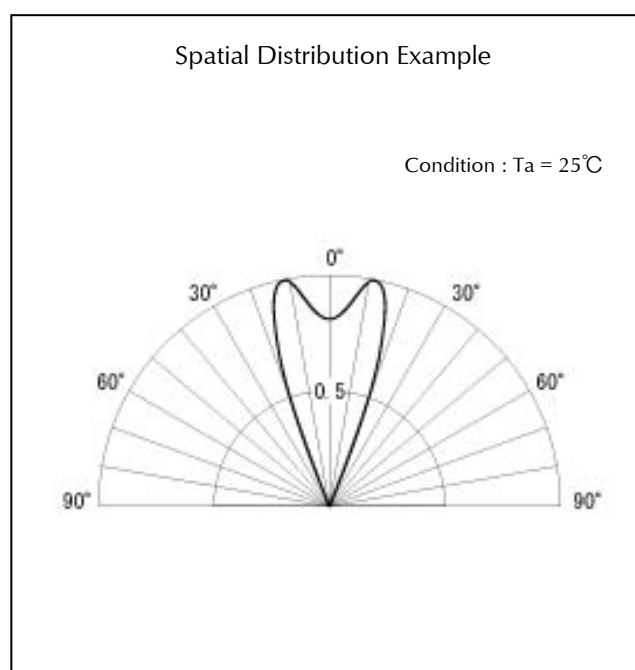
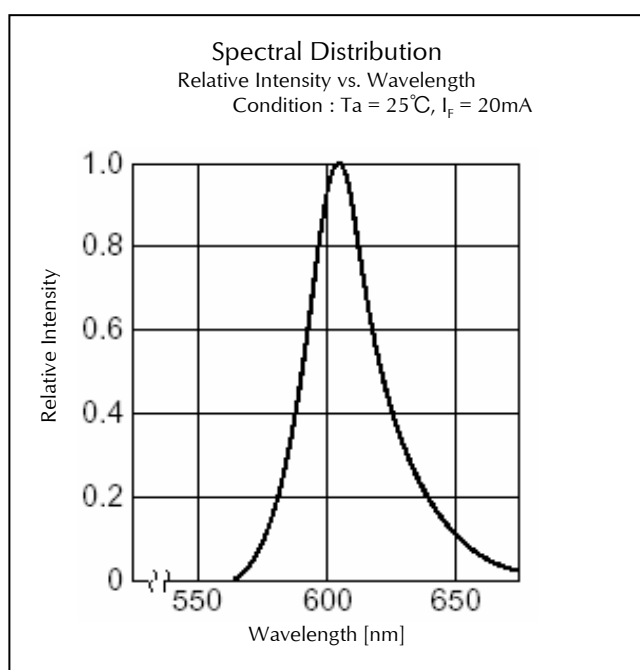
Technical Data(EAY/AY)



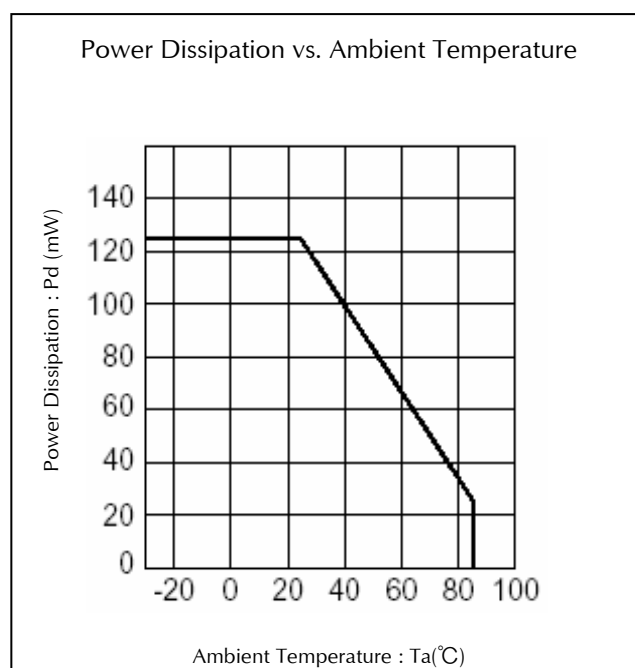
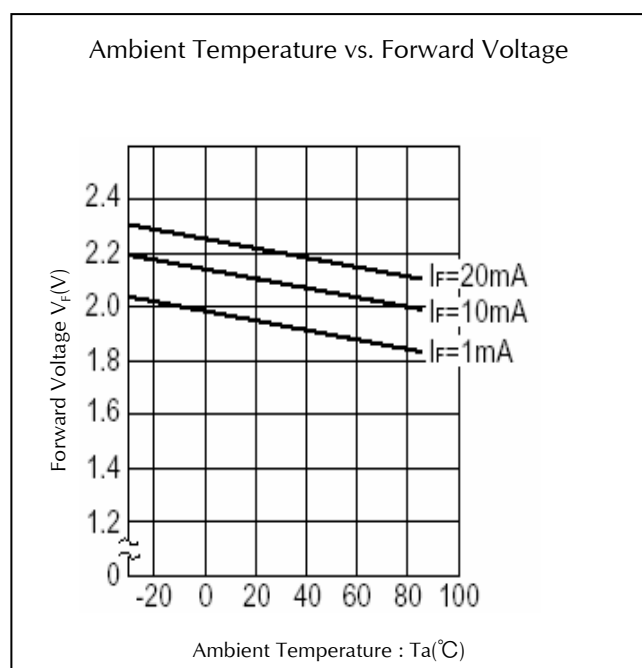
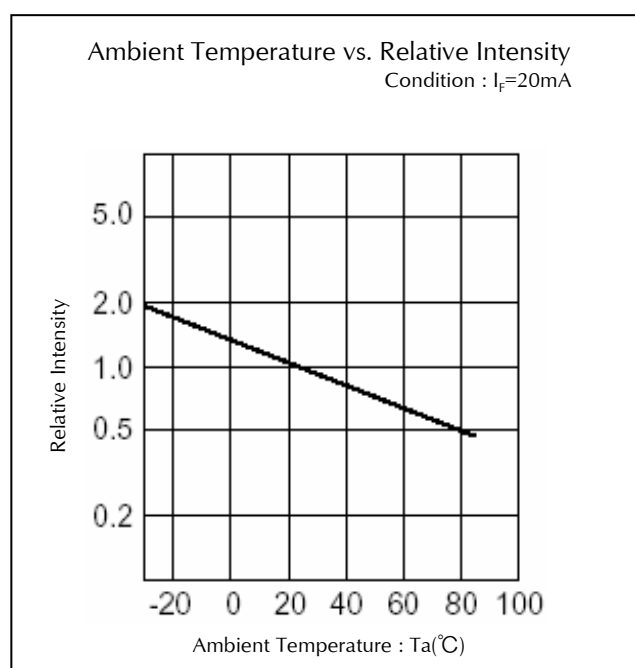
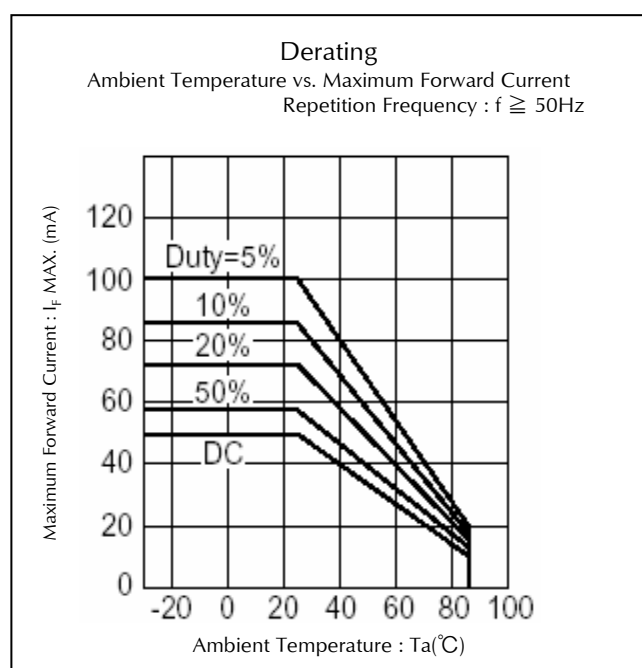
Technical Data(EAY/AY)



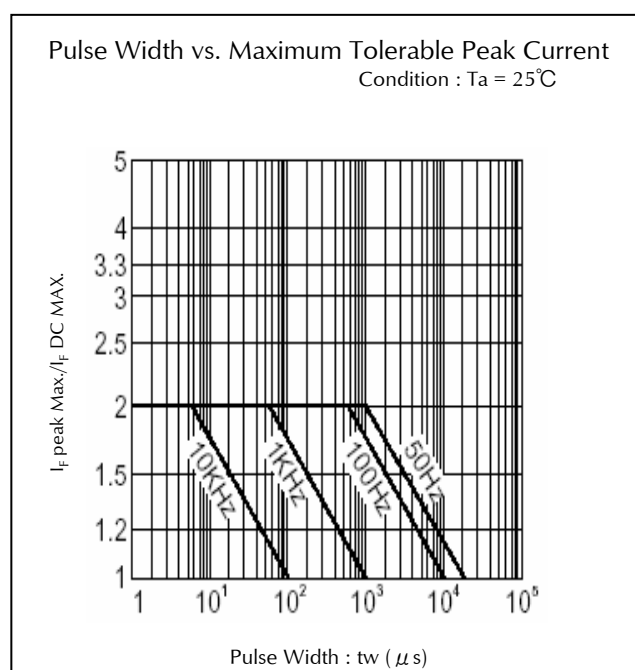
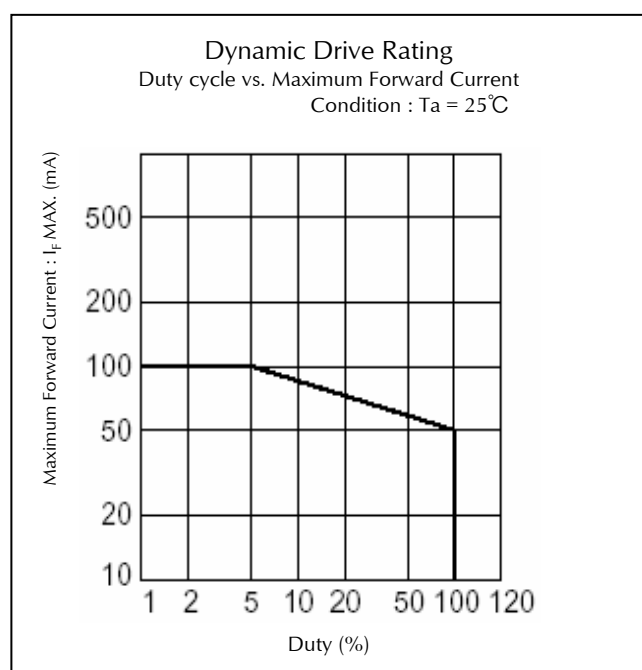
Technical Data(EAA/AA)



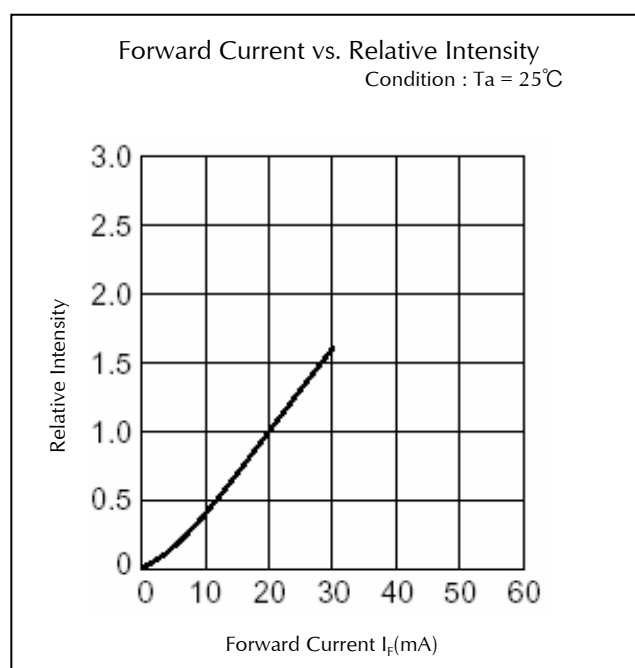
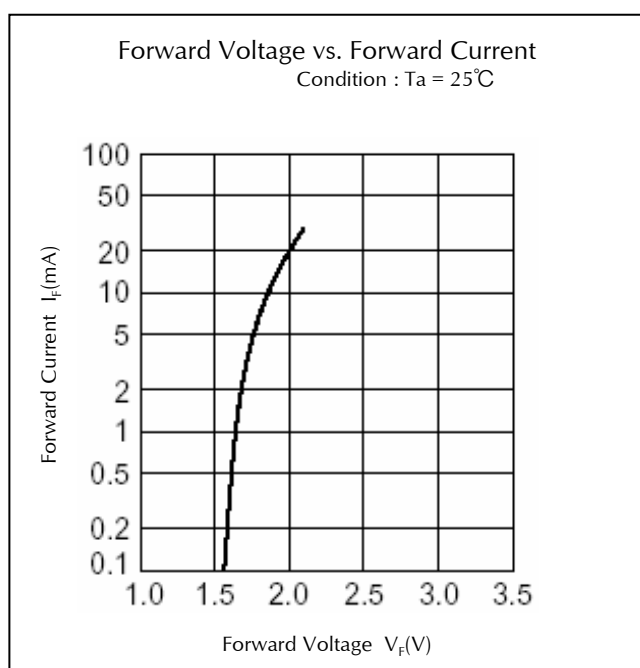
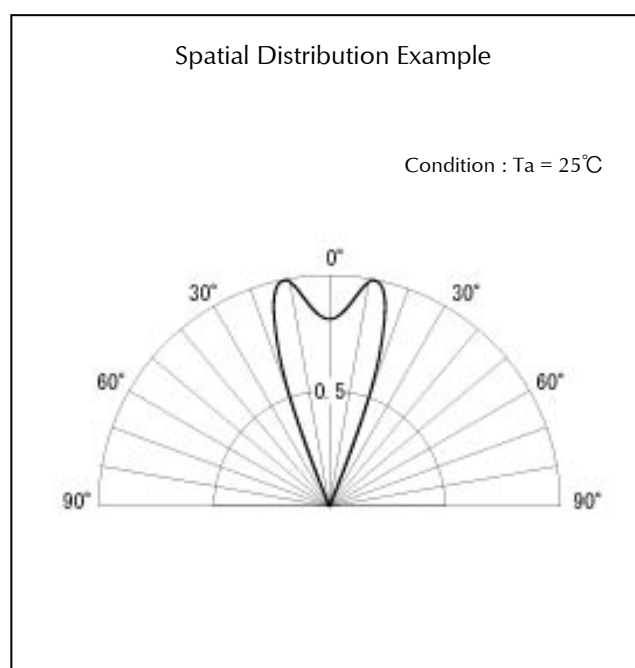
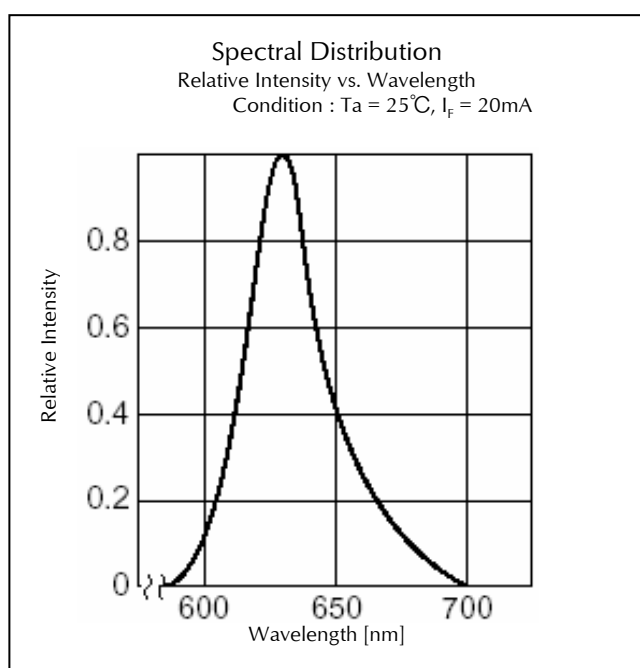
Technical Data(EAA/AA)



Technical Data(EAA/AA)



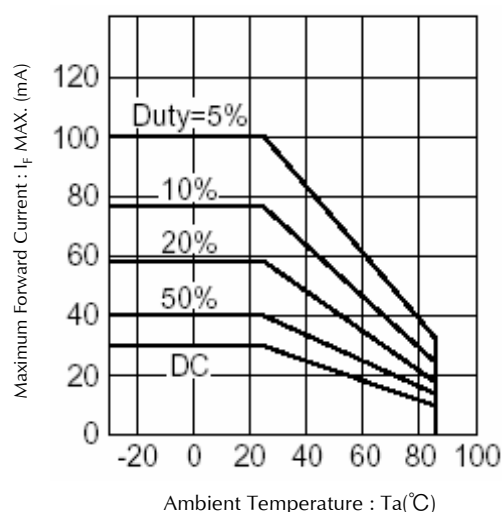
Technical Data(EVR/VR)



Technical Data(EVR/VR)

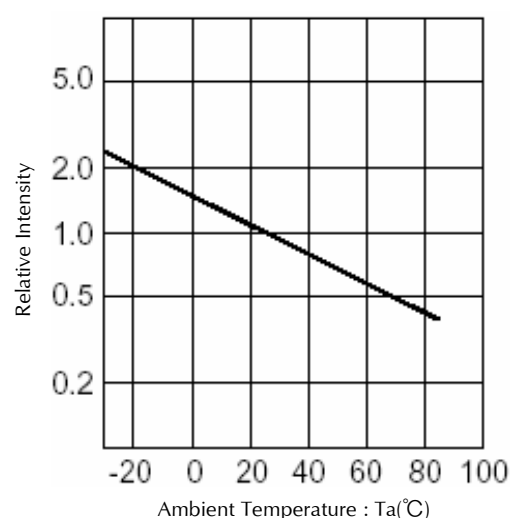
Derating

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

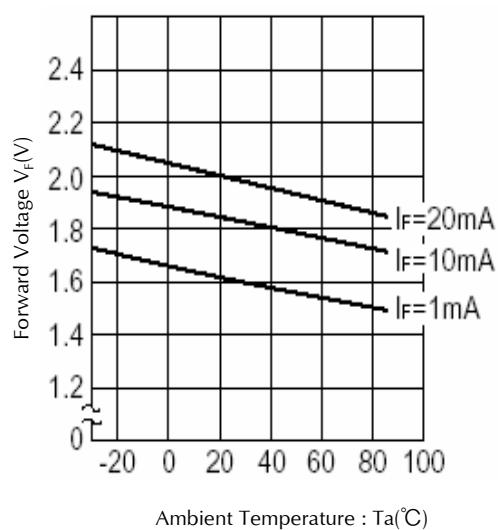


Ambient Temperature vs. Relative Intensity

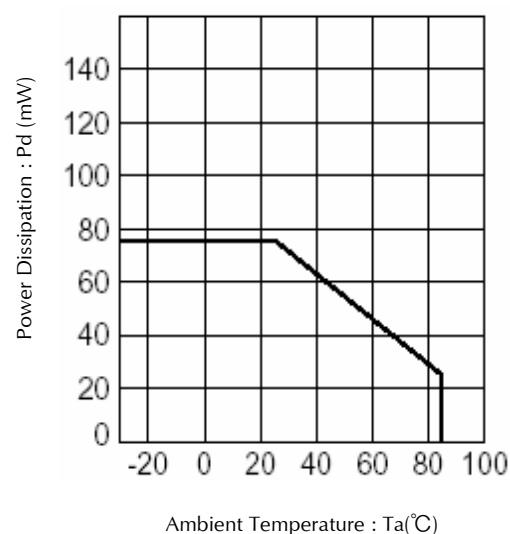
Condition : $I_f = 20\text{mA}$



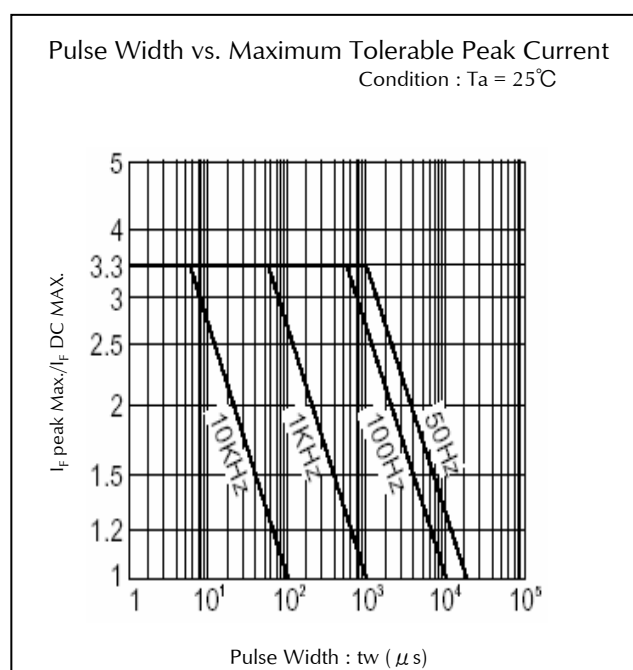
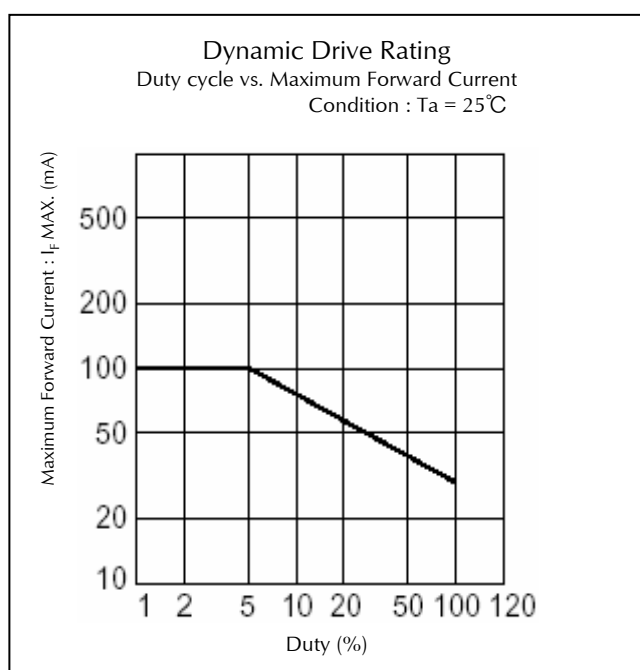
Ambient Temperature vs. Forward Voltage



Power Dissipation vs. Ambient Temperature

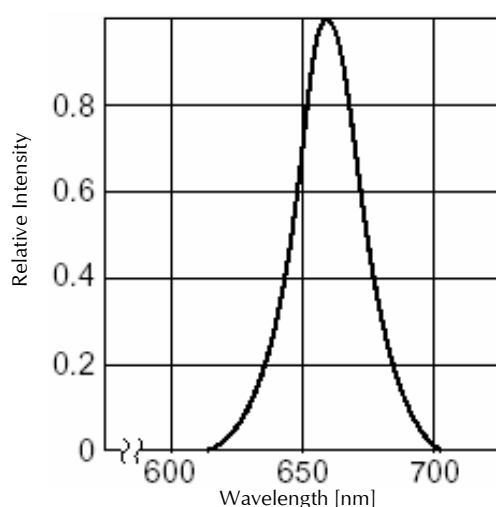


Technical Data(EVR/VR)



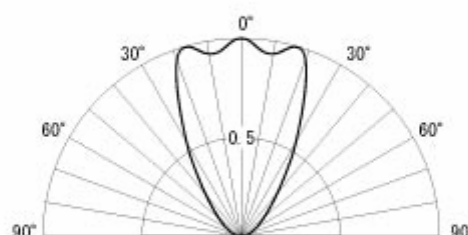
Technical Data(EBR/BR)

Spectral Distribution
Relative Intensity vs. Wavelength
Condition : $T_a = 25^\circ\text{C}$, $I_f = 20\text{mA}$

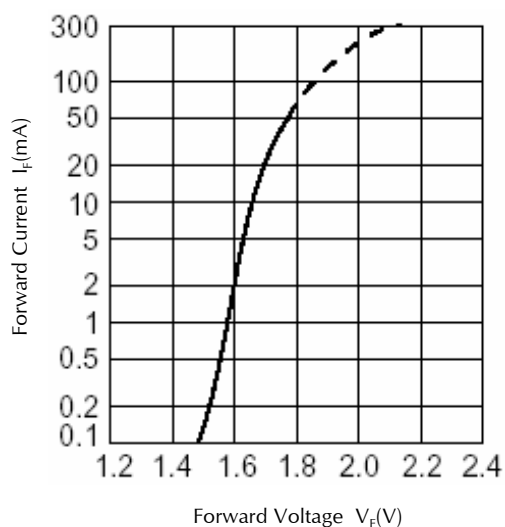


Spatial Distribution Example

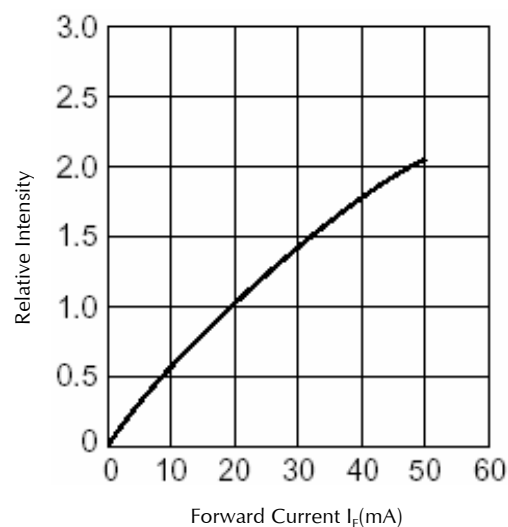
Condition : $T_a = 25^\circ\text{C}$



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



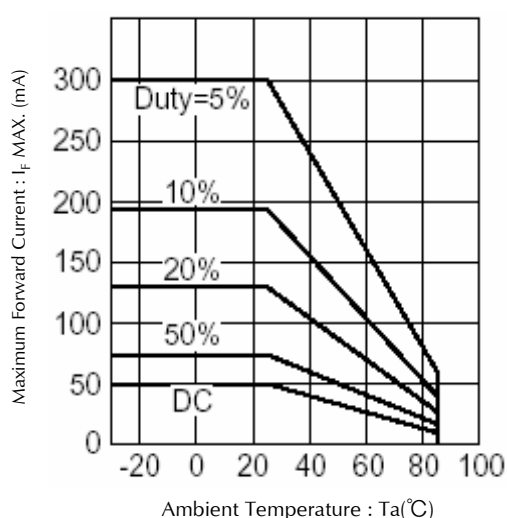
Forward Current vs. Relative Intensity
Condition : $T_a = 25^\circ\text{C}$



Technical Data(EBR/BR)

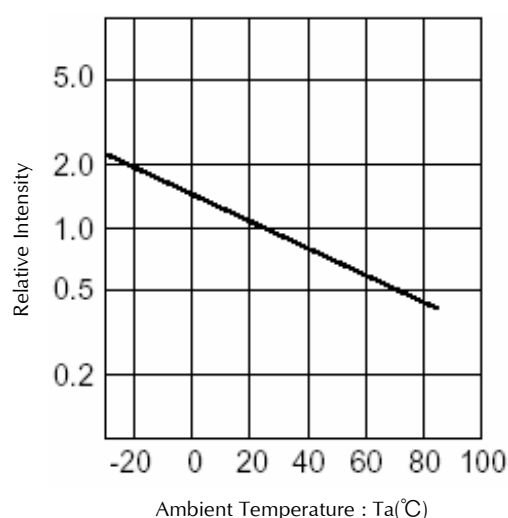
Derating

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

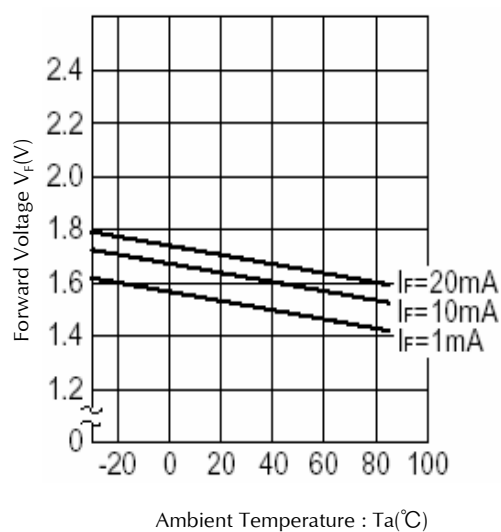


Ambient Temperature vs. Relative Intensity

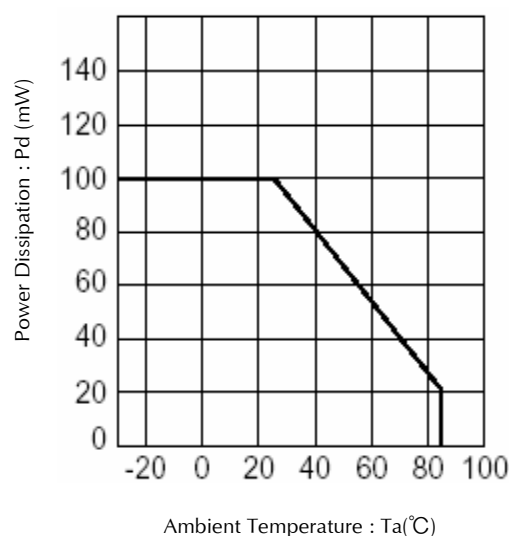
Condition : $I_f=20\text{mA}$



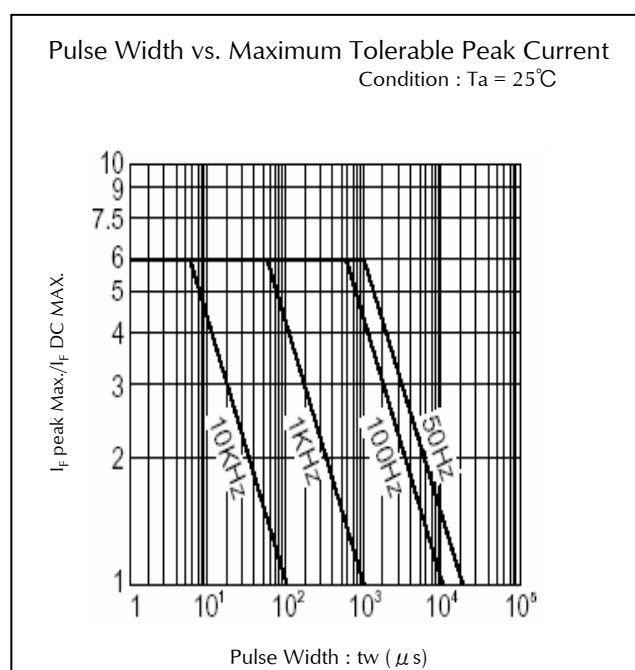
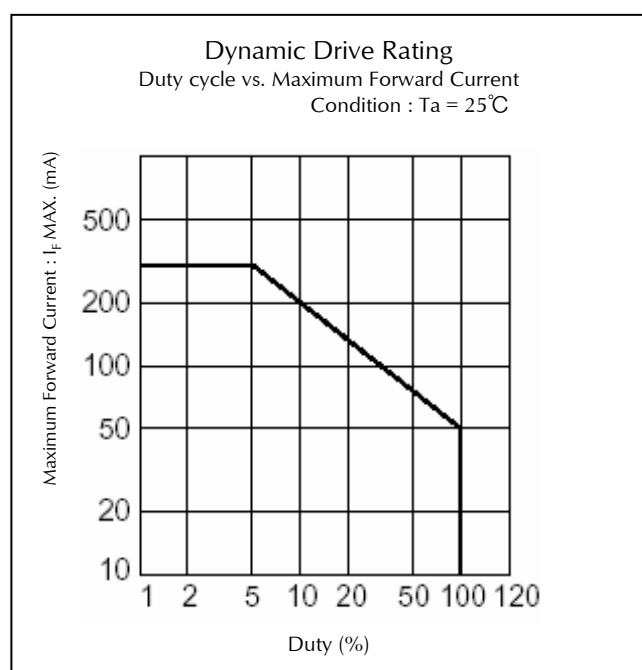
Ambient Temperature vs. Forward Voltage



Power Dissipation vs. Ambient Temperature

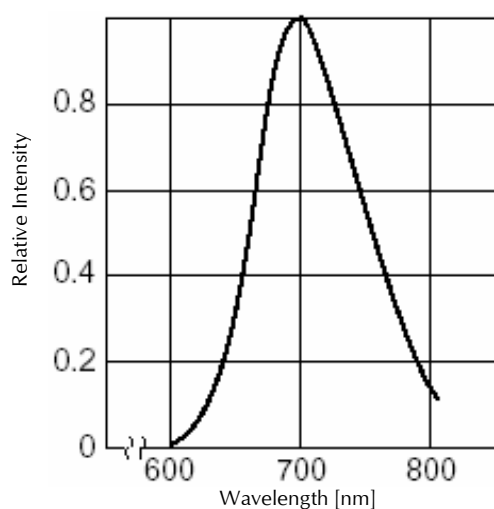


Technical Data(**EBR/BR**)



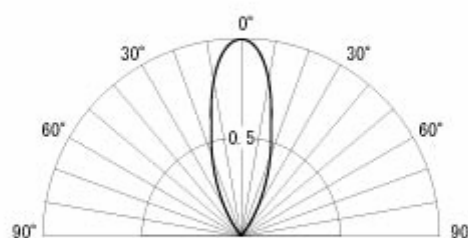
Technical Data(PR)

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

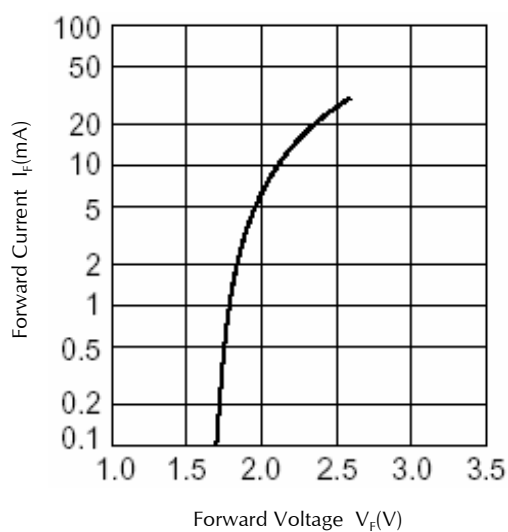


Spatial Distribution Example

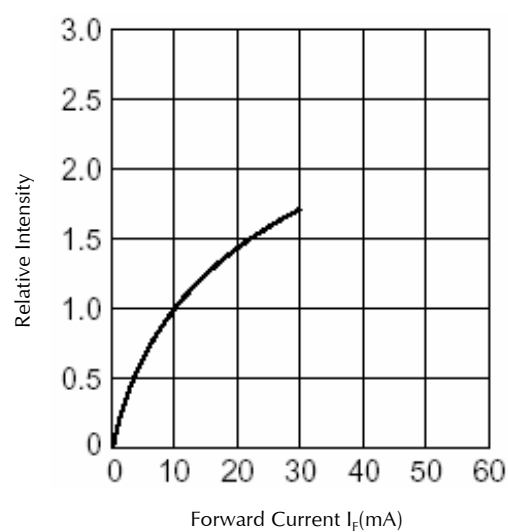
Condition : $T_a = 25^\circ\text{C}$



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



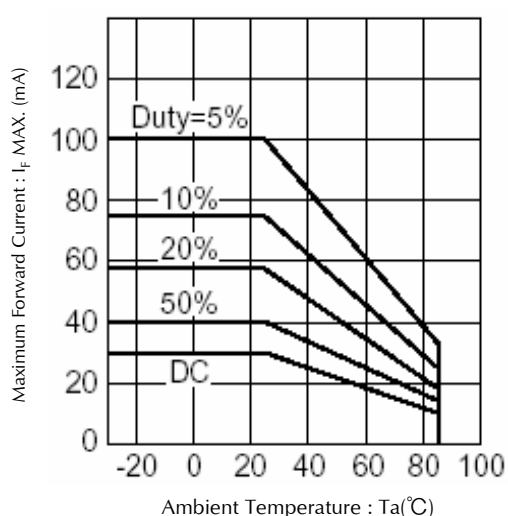
Forward Current vs. Relative Intensity
Condition : $T_a = 25^\circ\text{C}$



Technical Data(PR)

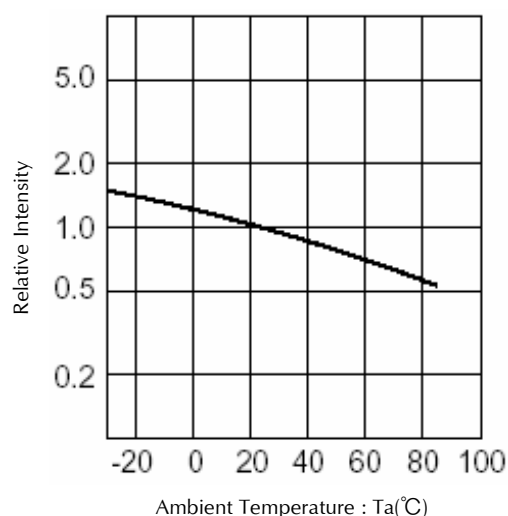
Derating

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

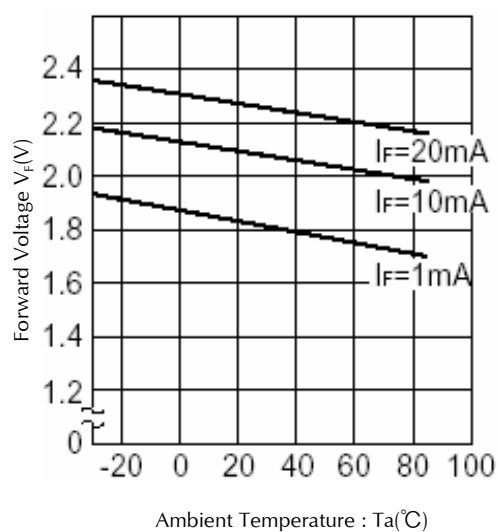


Ambient Temperature vs. Relative Intensity

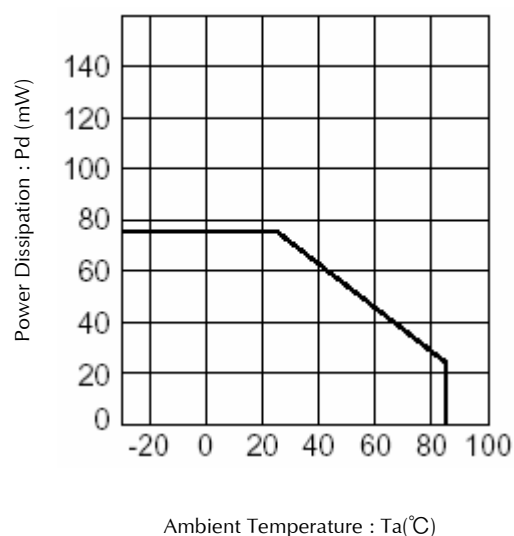
Condition : $I_F=10\text{mA}$



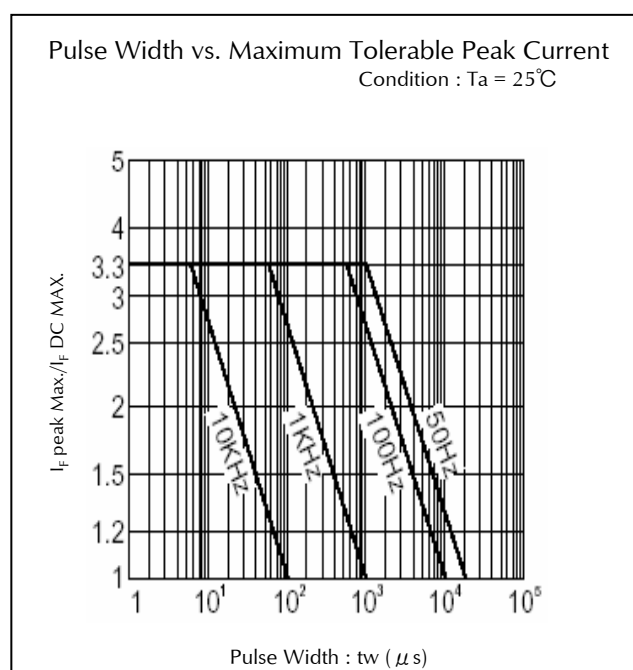
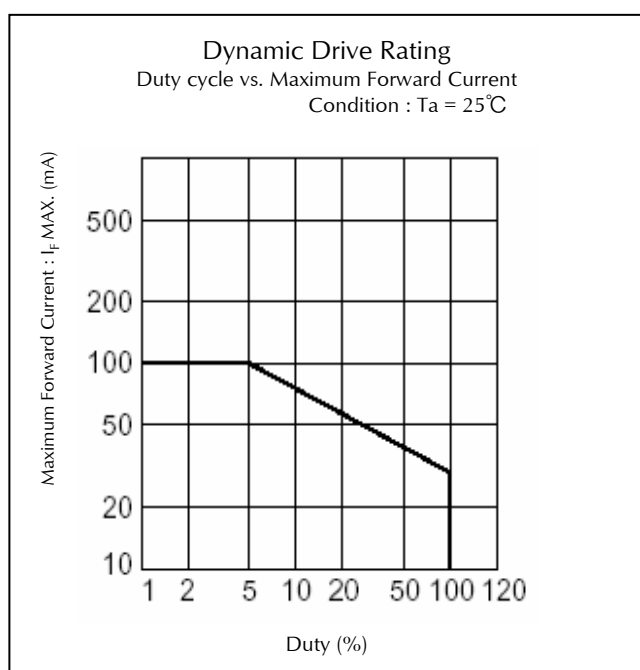
Ambient Temperature vs. Forward Voltage



Power Dissipation vs. Ambient Temperature

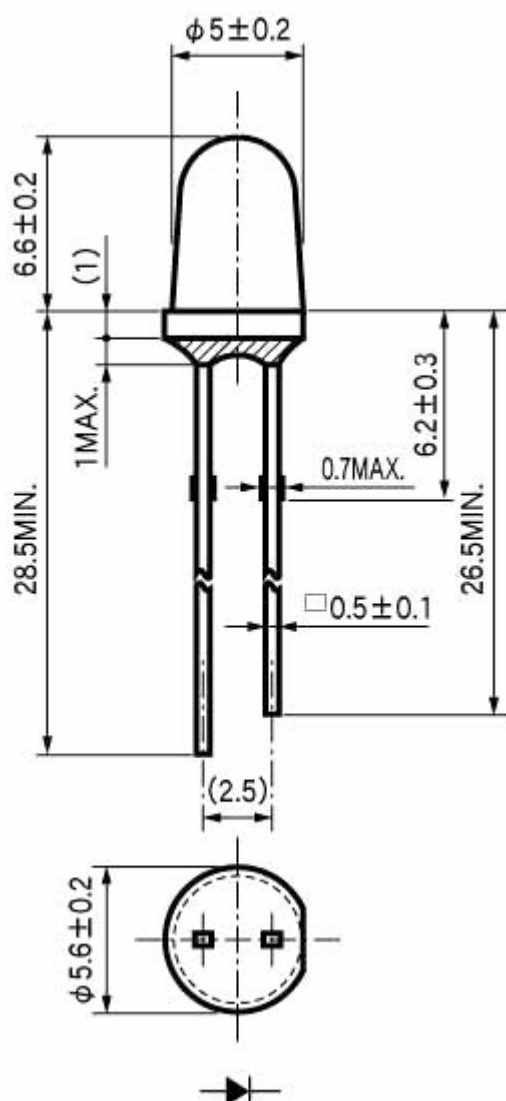


Technical Data(PR)



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 $\pm$ 5°C, 3mm from package base	10s	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 $\pm$ 2°C, RH = 90 $\pm$ 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 ($\square$ 0.4 and Flat Package : 5N)	10s	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 $\geq$ Spec. Max. Value x 1.2
Reverse Current	I _R	V _R = Maximum Rated Reverse Voltage V	Testing Max. Value $\geq$ Spec. Max. Value x 2.5
Cosmetic Appearance	-	-	Occurrence of notable decoloration, deformation and cracking

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