



SINGLE COLOR LED

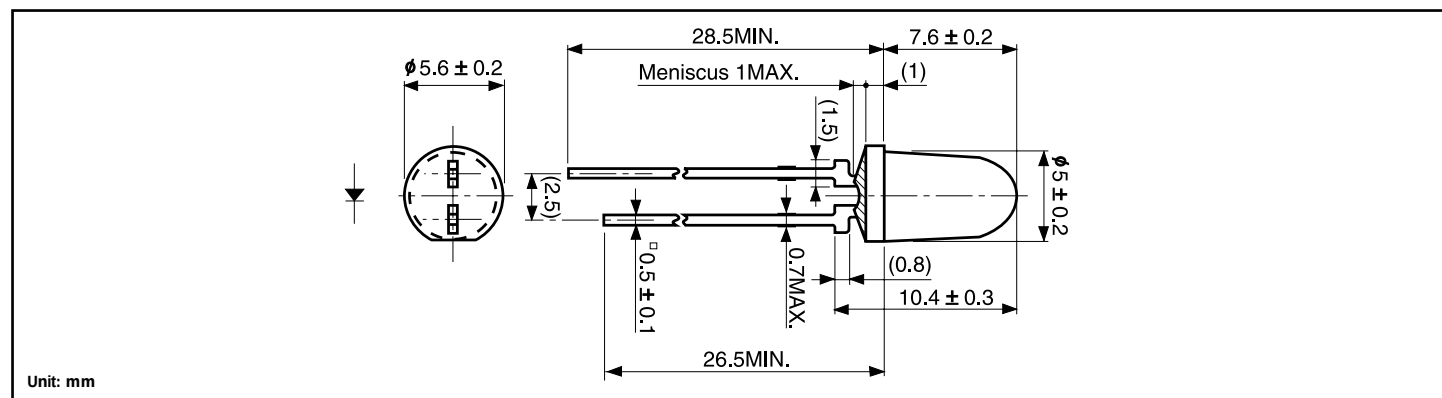
φ 5mm Round Shape



H-1000L / H-2000L / H-3000L

HIGH BRIGHTNESS COLOR

Outline Dimensions



Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	Red	Units
		H (KR)	
Power Dissipation	Pd	125	mW
Forward Current	I _F	50	mA
Peak Forward Current	I _{FM}	300	mA
Reverse Voltage	V _R	4	V
Operating Temperature	T _{opr}	-30 to +85	°C
Storage Temperature	T _{stg}	-30 to +100	°C
Derating (DC)*	ΔI _F	0.67	mA/°C

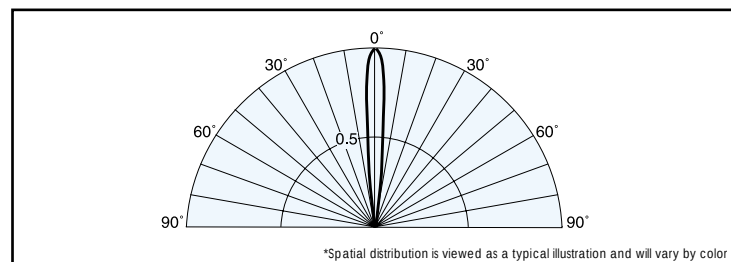
*Ta=25°C, I_{FM} applies for the pulse width ≤ 1msec. and duty cycle ≤ 1/20
The current derating for operation applies when the temperature is above 25°C

Electro-Optical Characteristics

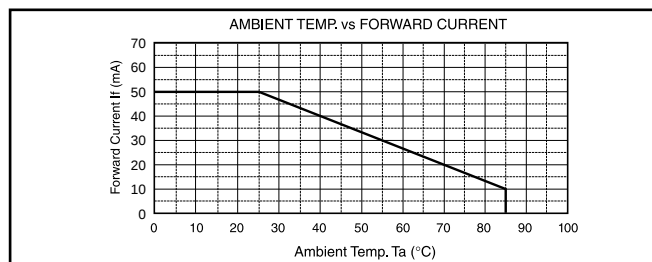
*The viewing angle is an average and will vary by color (Ta=25°C)

Part No.	Material	Emitted Color	Lens Color	Luminous Intensity I _V			Wavelength				Forward Voltage V _F			Reverse Current I _R		Viewing Angle (2 θ 1/2)
				MIN.	TYP.	I _F	Peak λ _p TYP.	Dominant λ _d TYP.	Spectral Line Half Width Δλ TYP.	I _F	TYP.	MAX.	I _F	MAX.	V _R	
H-3000L	GaAlAs	Red	Water Clear	2,400	3,000	20	660	647	25	20	1.8	2.5	20	100	4	10°
H-2000L				1,400	2,000	20	660	647	25	20	1.8	2.5	20	100	4	
H-1000L				700	1,000	20	660	647	25	20	1.8	2.5	20	100	4	
Units				mcd		mA	nm			mA	V		mA	μA	V	Deg.

Spatial Distribution (x)



Operation Current Derating Chart





SINGLE COLOR LED

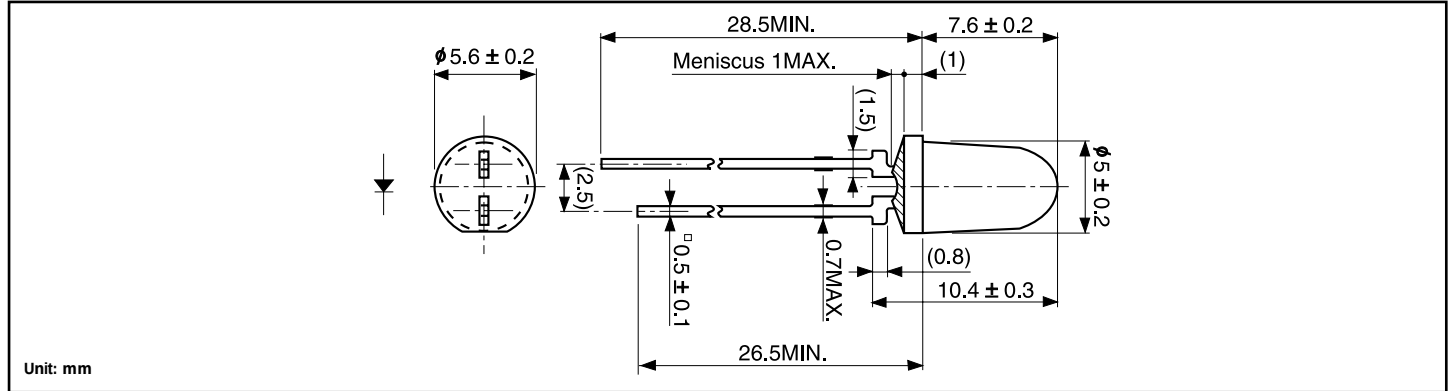
φ 5mm Round Shape



ER-300L / ER-500L

HIGH BRIGHTNESS COLOR

Outline Dimensions



Absolute Maximum Ratings

(Ta=25°C)

Item		Red	Units
	Symbol	ER	
Power Dissipation	Pd	100	mW
Forward Current	I _F	50	mA
Peak Forward Current	I _{FM}	300	mA
Reverse Voltage	V _R	4	V
Operating Temperature	Topr	-30 to 85	°C
Storage Temperature	Tstg	-30 to 100	°C
Derating (DC)*	ΔI _F	0.67	mA/°C

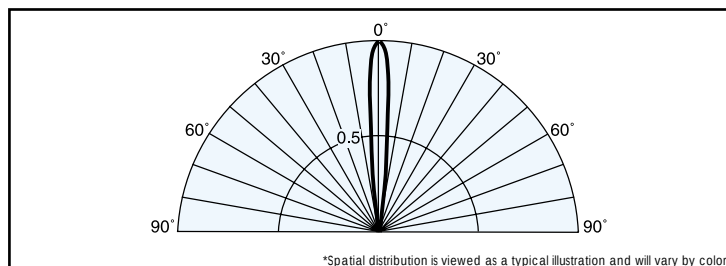
* Ta=25°C, I_{FM} applies for the pulse width ≤ 1msec. and duty cycle ≤ 1/20
The current derating for operation applies when the temperature is above 25°C

Electro-Optical Characteristics

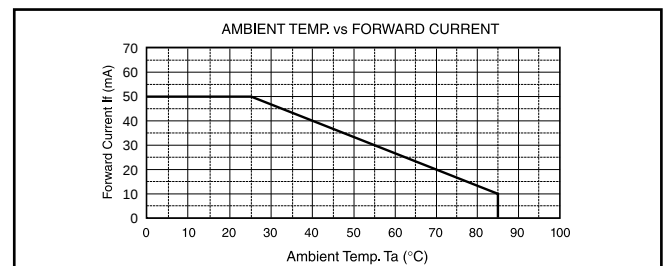
*The viewing angle is an average and will vary by color (Ta=25°C)

Part No.	Material	Emitted Color	Lens Color	Luminous Intensity I _V			Wavelength				Forward Voltage V _F			Reverse Current I _R		Viewing Angle (2 θ 1/2)
				MIN.	TYR.	I _F	Peak λ _p TYR.	Dominant λ _d TYR.	Spectral Line Half Width Δλ TYR.	I _F	TYP	MAX.	I _F	MAX.	V _R	
ER-500L	GaAlAs	Red	Water Clear	400	500	20	660	647	30	20	1.7	2.0	20	20	4	10°
ER-300L				200	300	20	660	647	30	20	1.7	2.0	20	20	4	
Units				mcd		mA	nm			mA	V	mA	μA	V	Deg.	

Spatial Distribution (x)



Operation Current Derating Chart





SINGLE COLOR LED

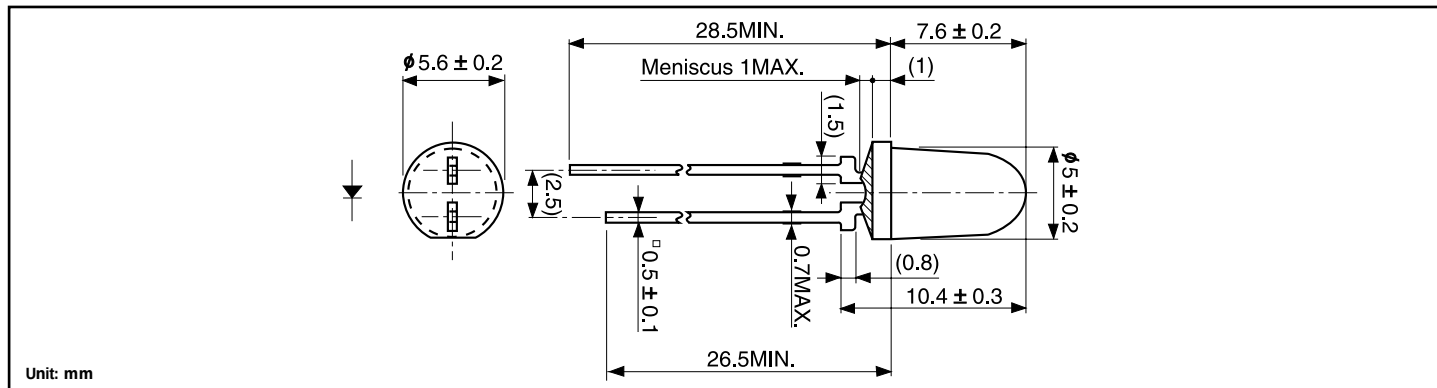
φ 5mm Round Shape



5066X Series

HIGH BRIGHTNESS COLOR

Outline Dimensions



Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	Red	Orange	Yellow	Yellow Green	Green	Pure Green	Units
		HBR	HAA	HAY	HPY	HPG	HBG	
Power Dissipation	Pd	100	125	125	125	125	125	mW
Forward Current	I _F	50	50	50	50	50	50	mA
Peak Forward Current	I _{FM}	300	100	100	100	100	100	mA
Reverse Voltage	V _R	4	4	4	4	4	4	V
Operating Temperature	T _{opr}	-30 to +85						°C
Storage Temperature	T _{stg}	-30 to +100						°C
Derating (DC)*	ΔI _F	0.67						mA/°C

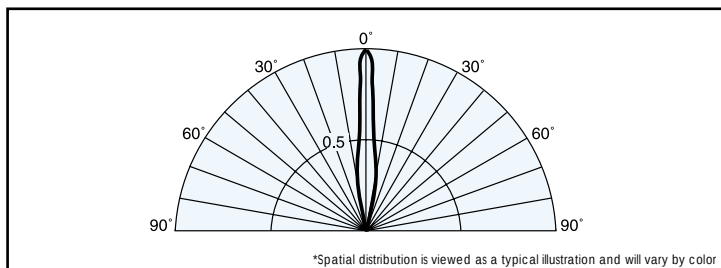
*Ta=25°C, I_{FM} applies for the pulse width ≤ 1msec. and duty cycle ≤ 1/20
The current derating for operation applies when the temperature is above 25°C

Electro-Optical Characteristics

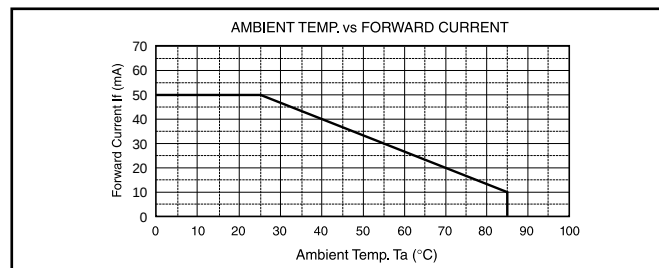
*The viewing angle is an average and will vary by color (Ta=25°C)

Part No.	Material	Emitted Color	Lens Color	Luminous Intensity I _V			Wavelength Spectral Line Half Width				Forward Voltage V _F			Reverse Current I _R		Viewing Angle (2 θ 1/2)
				MIN.	TYP.	I _F	Peak λ _p TYP.	Dominant λ _d TYP.	Δλ TYP.	I _F	TYP.	MAX.	I _F	MAX.	V _R	
HBR5066X	GaAlAs	Red	Clear Pastel Red	200	300	20	660	647	30	20	1.7	2.0	20	20	4	10°
HAA5066X	GaAsP	Orange	Clear Pastel Orange	160	250	20	605	606	30	20	2.2	2.5	20	20	4	
HAY5066X	GaAsP	Yellow	Clear Pastel Yellow	100	150	20	580	590	30	20	2.2	2.5	20	20	4	
HPY5066X	GaP	Yellow Green		200	300	20	570	572	30	20	2.1	2.5	20	20	4	
HPG5066X	GaP	Green	Clear Pastel Green	150	200	20	560	567	30	20	2.1	2.5	20	20	4	
HBG5066X	GaP	Pure Green		100	150	20	555	558	30	20	2.1	2.5	20	20	4	
Units				mcd		mA	nm			mA	V		mA	μA	V	Deg.

Spatial Distribution (x)



Operation Current Derating Chart





SINGLE COLOR LED

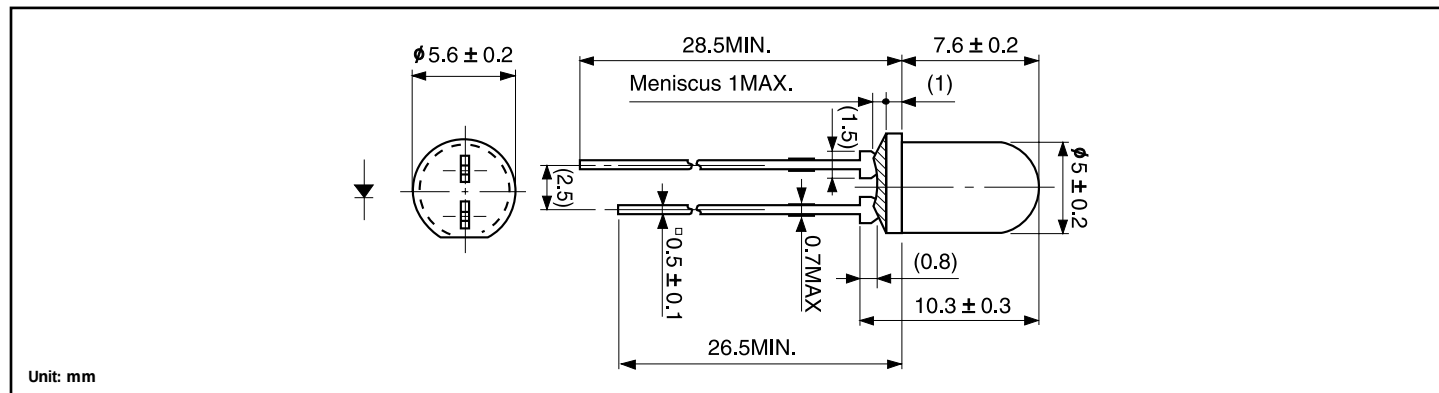
φ 5mm Round Shape



KR5004X

HIGH BRIGHTNESS COLOR

Outline Dimensions



Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	Red	Units
		KR	
Power Dissipation	Pd	125	mW
Forward Current	I _F	50	mA
Peak Forward Current	I _{FM}	300	mA
Reverse Voltage	V _R	4	V
Operating Temperature	T _{opr}	-30 to +85	°C
Storage Temperature	T _{stg}	-30 to +100	°C
Derating (DC)*	ΔI _F	0.67	mA/°C

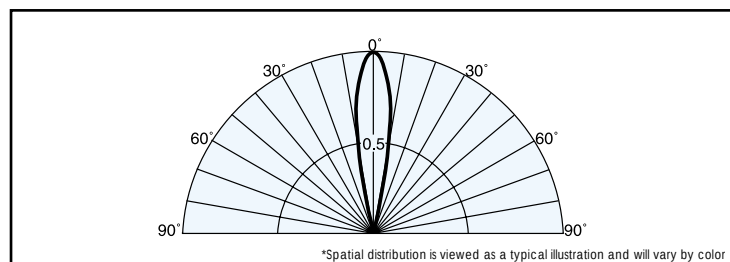
* Ta=25°C, I_{FM} applies for the pulse width ≤ 1msec. and duty cycle ≤ 1/20
The current derating for operation applies when the temperature is above 25°C

Electro-Optical Characteristics

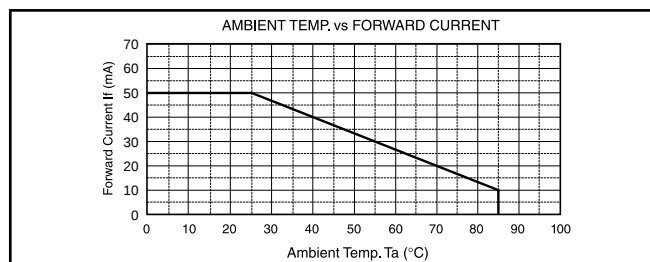
*The viewing angle is an average and will vary by color (Ta=25°C)

Part No.	Material	Emitted Color	Lens Color	Luminous Intensity I _V			Wavelength				Forward Voltage V _F			Reverse Current I _R		Viewing Angle (2θ 1/2)
				MIN.	TYP.	I _F	Peak λ _p TYP.	Dominant λ _d TYP.	Spectral Line Δλ TYP.	I _F	TYP.	MAX.	I _F	MAX.	V _R	
KR5004X	GaAlAs	Red	Water Clear	400	800	20	660	647	25	20	1.8	2.5	20	100	4	20°
Units				mcd		mA	nm			mA	V		mA	μA	V	Deg.

Spatial Distribution (x)



Operation Current Derating Chart





SINGLE COLOR LED

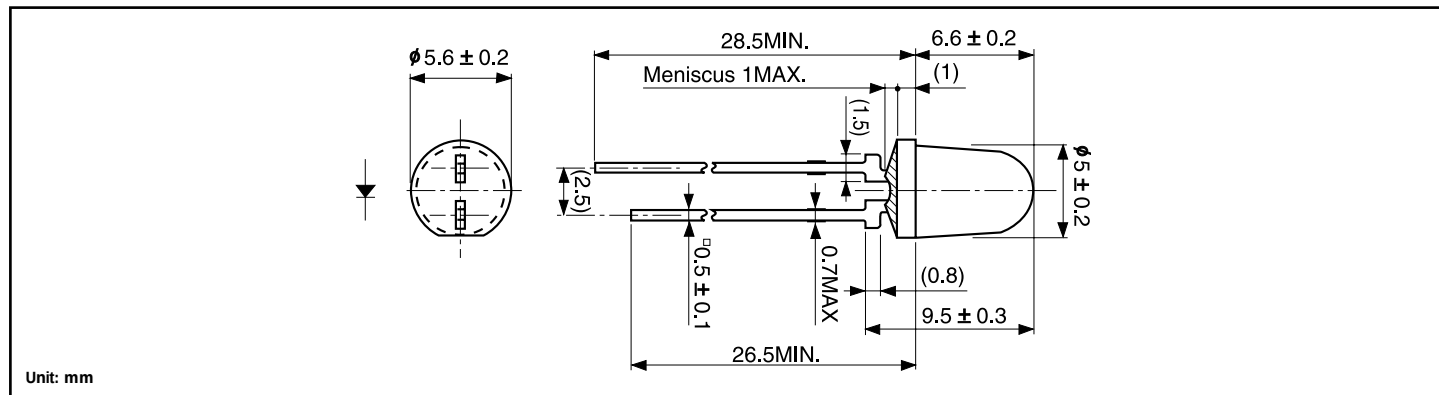
φ 5mm Round Shape



KR5005S

HIGH BRIGHTNESS COLOR

Outline Dimensions



Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	Red	Units
		KR	
Power Dissipation	Pd	125	mW
Forward Current	I _F	50	mA
Peak Forward Current	I _{FM}	300	mA
Reverse Voltage	V _R	4	V
Operating Temperature	T _{opr}	-30 to +85	°C
Storage Temperature	T _{stg}	-30 to +100	°C
Derating (DC)*	ΔI _F	0.67	mA/°C

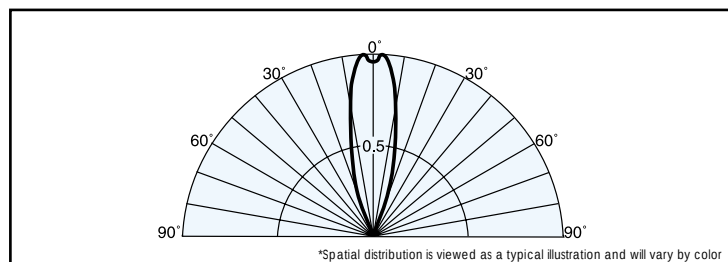
* Ta=25°C, I_{FM} applies for the pulse width ≤ 1msec. and duty cycle ≤ 1/20
The current derating for operation applies when the temperature is above 25°C

Electro-Optical Characteristics

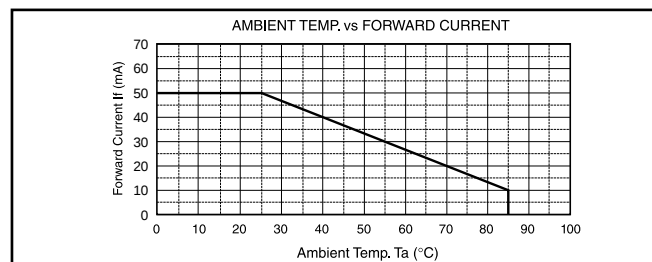
*The viewing angle is an average and will vary by color (Ta=25°C)

Part No.	Material	Emitted Color	Lens Color	Luminous Intensity I _V			Wavelength				Forward Voltage V _F			Reverse Current I _R		Viewing Angle (2θ 1/2)
				MIN.	TYP.	I _F	Peak λ _p TYP.	Dominant λ _d TYP.	Spectral Line Half Width Δλ TYP.	I _F	TYP.	MAX.	I _F	MAX.	V _R	
KR5005S	GaAlAs	Red	Water Clear	200	300	20	660	647	25	20	1.8	2.5	20	100	4	25°
Units				mcd		mA	nm			mA	V		mA	μA	V	Deg.

Spatial Distribution (x)



Operation Current Derating Chart





SINGLE COLOR LED

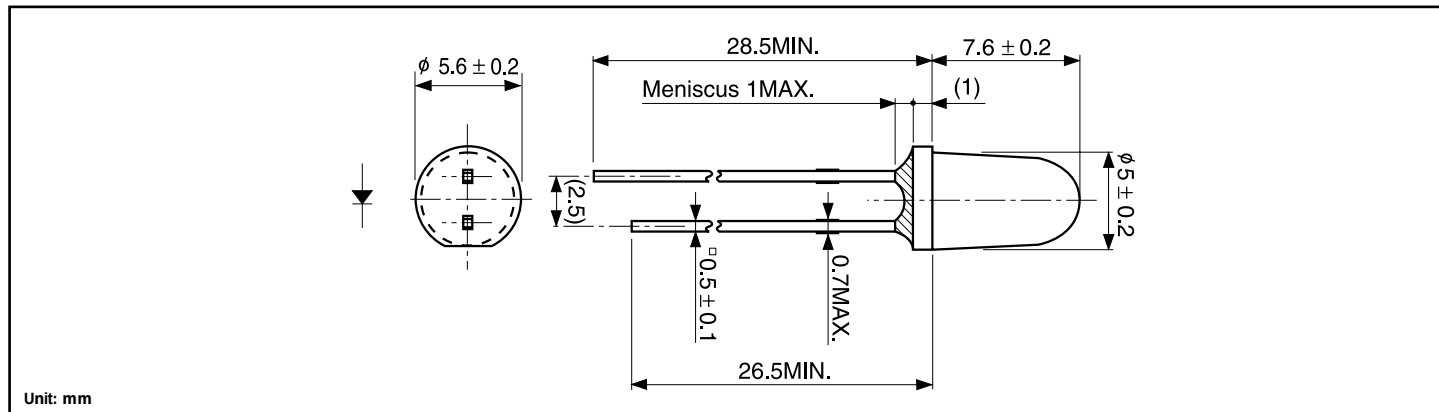
φ 5mm Round Shape



5304S Series

S T A N D A R D C O L O R

Outline Dimensions



Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	Red			Orange	Yellow	Yellow Green	Green	Pure Green	Units
		EBR, BR	PR	EVR, VR	EAA, AA	EAY, AY	EPY, PY	EPG, PG	EBG, BG	
Power Dissipation	Pd	100	75	75	125	125	125	125	125	mW
Forward Current	IF	50	30	30	50	50	50	50	50	mA
Peak Forward Current	IFM	300	100	100	100	100	100	100	100	mA
Reverse Voltage	VR	4	4	4	4	4	4	4	4	V
Operating Temperature	Topr	-30 to +85								°C
Storage Temperature	Tstg	-30 to +100								°C
Derating (DC)*	ΔIF	0.67	0.33			0.67				mA/°C

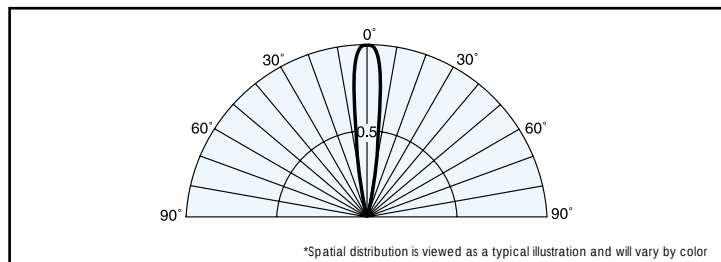
* Ta=25°C, IFM applies for the pulse width ≤ 1msec. and duty cycle ≤ 1/20
The current derating for operation applies when the temperature is above 25°C

Electro-Optical Characteristics

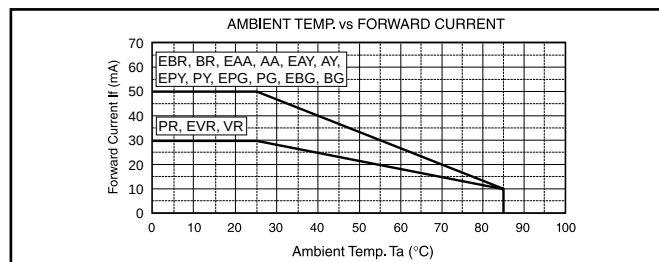
*The viewing angle is an average and will vary by color (Ta=25°C)

Part No.	Material	Emitted Color	Lens Color	Luminous Intensity I _V			Wavelength Spectral Line				Forward Voltage V _F			Reverse Current I _R		Viewing Angle (2 θ 1/2)
				MIN.	TYP.	IF	Peak	Dominant	Half Width	IF	TYP.	MAX.	IF	MAX.	V _R	
							λ _p TYP.	λ _d TYP.	Δλ TYP.							
EBR/BR5304S	GaAlAs	Red	Water Clear	80/40	160/80	20	660	647	30	20	1.7	2.0	20	100	4	15°
PR5304S	GaP			6	12	10	700	635	100	10	2.1	2.5	10	100	4	
EVR/VR5304S	GaAsP			60/30	90/60	20	630	624	30	20	2.0	2.5	20	100	4	
EAA/AA5304S	GaAsP	Orange		60/30	90/60	20	605	606	30	20	2.2	2.5	20	100	4	
EAY/AY5304S	GaAsP	Yellow		60/30	90/60	20	580	590	30	20	2.2	2.5	20	100	4	
EPY/PY5304S	GaP	Yellow Green		80/40	160/80	20	570	572	30	20	2.1	2.5	20	100	4	
EPG/PG5304S	GaP	Green		60/30	90/60	20	560	567	30	20	2.1	2.5	20	100	4	
EBG/BG5304S	GaP	Pure Green		50/25	80/50	20	555	558	30	20	2.1	2.5	20	100	4	
Units				mcd		mA	nm		mA		V		mA	μA	V	

Spatial Distribution (x)



Operation Current Derating Chart





φ 5mm Round Shape



STANDARD COLOR

Technical drawing of a probe tip (Fig. 10) showing dimensions:

- Overall length: 28.5MIN.
- Tip diameter: $\varnothing 5.6 \pm 0.2$
- Tip length: 6.6 $\pm$ 0.2
- Meniscus 1MAX.
- Tip diameter: $\varnothing 2.5$
- Tip length: 0.7MAX.
- Tip length: 0.5 $\pm$ 0.1
- Tip length: 26.5MIN.

Unit: mm

($T_a=25^{\circ}\text{C}$)

Item		Red			Orange	Yellow	Yellow Green	Green	Pure Green	Units
	Symbol	EBR, BR	PR	EVR, VR	EAA, AA	EAY, AY	EPY, PY	EPG, PG	EBG, BG	
Power Dissipation	Pd	100	75	75	125	125	125	125	125	mW
Forward Current	I _F	50	30	30	50	50	50	50	50	mA
Peak Forward Current	I _{FM}	300	100	100	100	100	100	100	100	mA
Reverse Voltage	V _R	4	4	4	4	4	4	4	4	V
Operating Temperature	Topr	-30 to +85								°C
Storage Temperature	Tstg	-30 to +100								°C
Derating (DC)*	ΔI _F	0.67	0.33		0.67					mA/°C

*The viewing angle is an average and will vary by color (Ta=25°C)

Part No.	Material	Emitted Color	Lens Color	Luminous Intensity I _V			Wavelength Spectral Line Half Width				Forward Voltage V _F			Reverse Current I _R		Viewing Angle (2 θ 1/2)	
				MIN.	TYP.	I _F	Peak λ_P	Dominant λ_D	Δλ Δλ	I _F	TYP.	MAX.	I _F	MAX.	V _R		
							λ _P TYP.	λ _D TYP.	Δλ TYP.								
EBR/BR5305S	GaAlAs	Red	Water Clear	20/10	30/20	20	660	647	30	20	1.7	2.0	20	100	4	50°	
PR5305S	GaP			4	8	10	700	635	100	10	2.1	2.5	10	100	4	35°	
EVR/VR5305S	GaAsP	20/10		30/20	20	630	624	30	20	2.0	2.5	20	100	4			
EAA/AA5305S	GaAsP	Orange		30/15	45/30	20	605	606	30	20	2.2	2.5	20	100	4		
EAY/AY5305S	GaAsP	Yellow		30/15	45/30	20	580	590	30	20	2.2	2.5	20	100	4		
EPY/PY5305S	GaP	Yellow Green		50/25	75/50	20	570	572	30	20	2.1	2.5	20	100	4		
EPG/PG5305S	GaP	Green		40/20	60/40	20	560	567	30	20	2.1	2.5	20	100	4		
EBG/BG5305S	GaP	Pure Green		12/6	18/12	20	555	558	30	20	2.1	2.5	20	100	4		
Units				mcd		mA	nm		mA		V		mA		μA	V	Deg.

*Spatial distribution is viewed as a typical illustration and will vary by color

AMBIENT TEMP. vs FORWARD CURRENT

This graph shows the forward current I_f (mA) versus ambient temperature T_a (°C) for various diode models. The y-axis ranges from 0 to 70 mA, and the x-axis ranges from 0 to 100 °C. Two lines represent the temperature dependence of the forward current for different diode types.

Ambient Temp. T_a (°C)	Forward Current I_f (mA) for EBR, BR, EAA, AA, EAY, AY, EPY, PY, EPG, PG, EBG, BG	Forward Current I_f (mA) for PR, EVR, VR
25	50	30
85	10	10