LUCKY LIGHT

1W Hi- Power LEDs
Technical Data Sheet

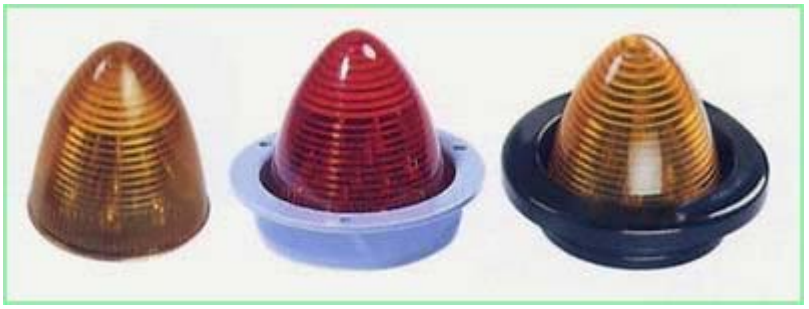
Model No:LL-HP60MXXXX-X

Features

- ◇ Very long operating life (up to100k hours)
- ◇ Available in white, green, blue, red, yellow. Amber.
- ◇ More energy efficient than incandescent and most halogen lamps
- ◇ Low voltage DC operated
- ◇ Cool beam, safe to the touch
- ◇ Instant light (less than 100 ns)

Applications

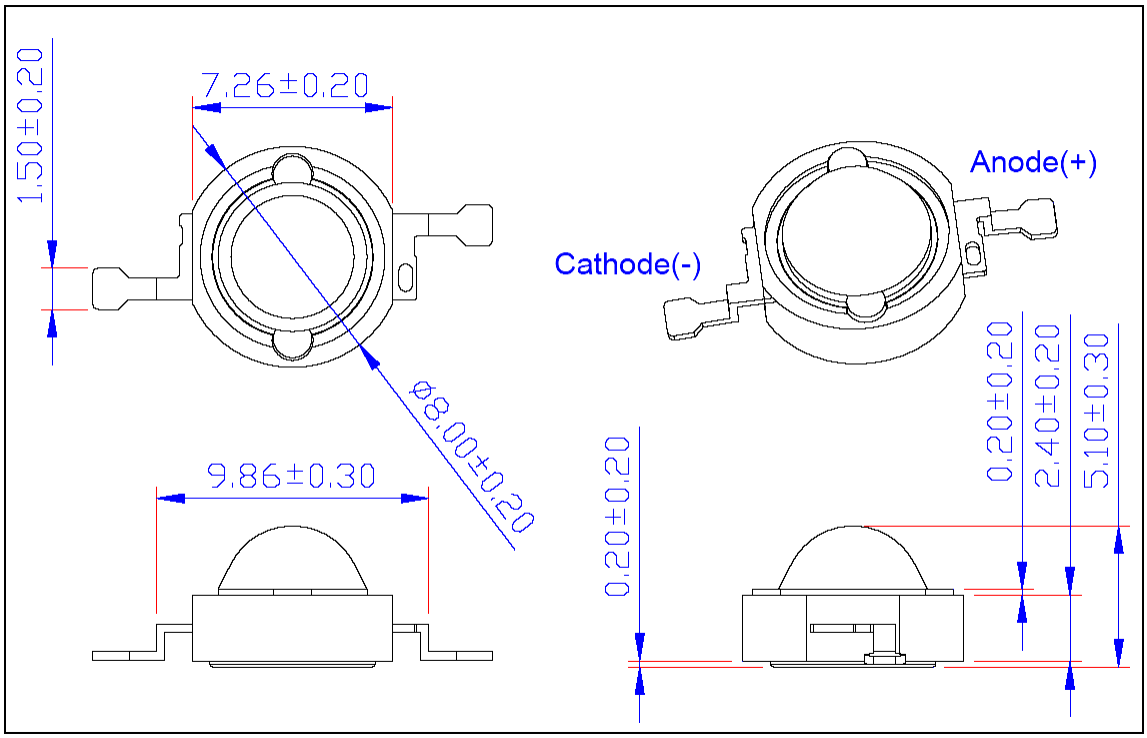
- ◇ Reading lights (car, bus, aircraft).
- ◇ Portable (flashlight, bicycle).
- ◇ Mini_accent/Uplighters/ Downlighters/Orientation
- ◇ Bollards/Security/Garden
- ◇ Cove/Undershelf/Task
- ◇ Automotive rear combination lamps.
- ◇ Traffic signaling/Beacons/ Rail crossing and Wayside
- ◇ Indoor/Outdoor Commercial and Residential Architectural
- ◇ Edge_lit signs (Exit, point of sale)
- ◇ LCD Backlights/Light Guides.



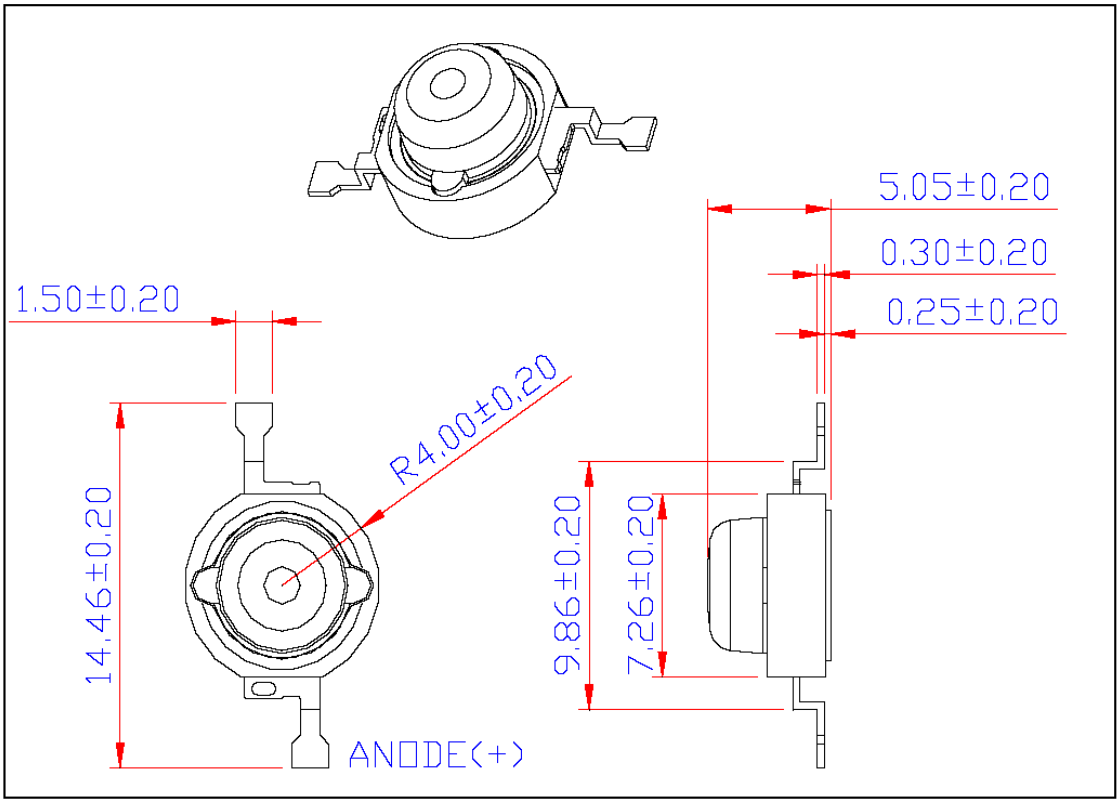
Emitter group

White Housing	Emitter	White	Warm White	Red	Green
	Lambertion	LL-HP60MW1L	LL-HP60MW61L	LL-HP60MV1L	LL-HP60MPG1L
	Batwing	LL-HP60MW1B	LL-HP60MW61B	LL-HP60MV1B	LL-HP60MPG1B
	Side Emitting	LL-HP60MW1S	LL-HP60MW61S	LL-HP60MV1S	LL-HP60MPG1S
	Focusing	LL-HP60MW1F	LL-HP60MW61F	LL-HP60MV1F	LL-HP60MPG1F
	Emitter	Blue	Amber		
	Lambertion	LL-HP60MB1L	LL-HP60MUY1L		
	Batwing	LL-HP60MB1B	LL-HP60MUY1B		
	Side Emitting	LL-HP60MB1S	LL-HP60MUY1S		
	Focusing	LL-HP60MB1F	LL-HP60MUY1F		

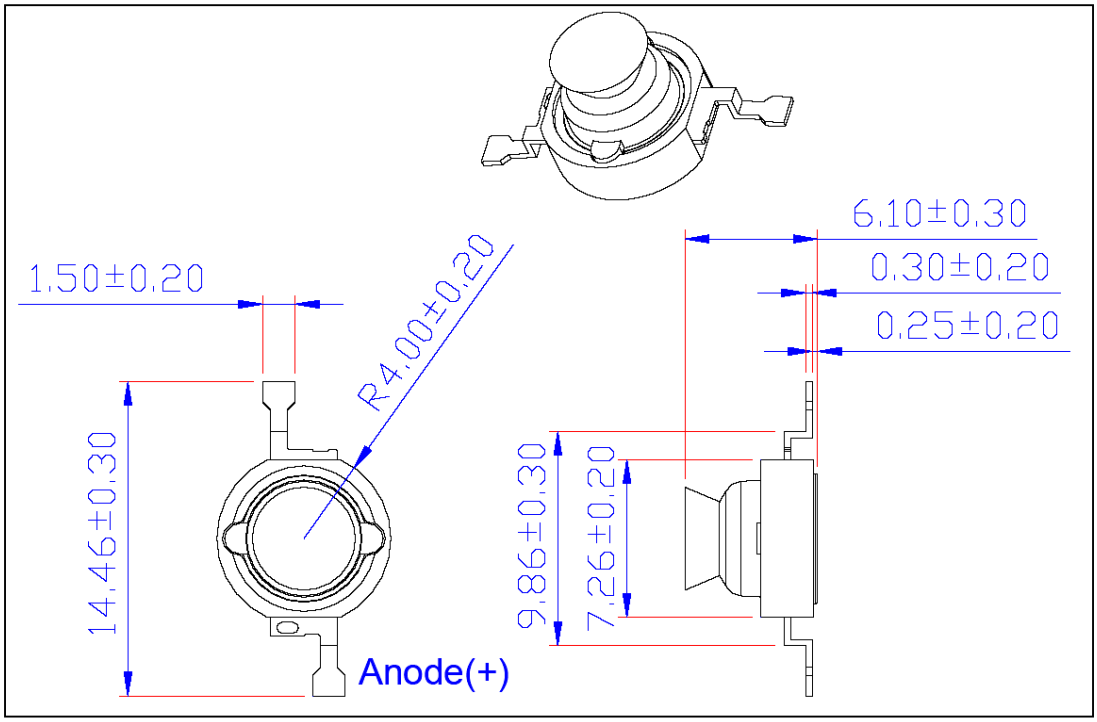
Lambertion Package Outlines



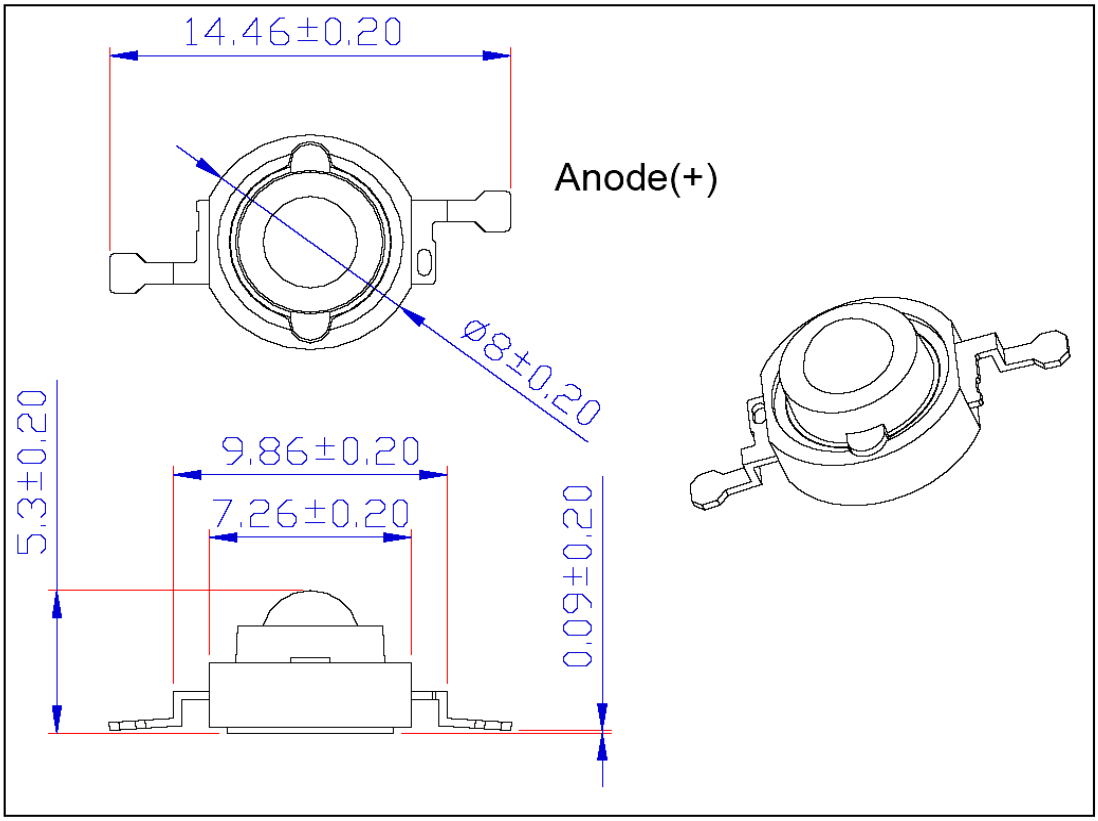
Batwing Package Outlines



Side Emitting Package Outlines



Focusing Emitting Package Outlines



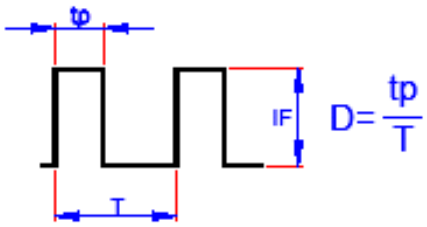
Unit:mm

Absolute Maximum Ratings at Ta=25℃

Parameter	Symbol	Rating	Units
Continuous Forward Current	IF	350	mA
Peak Pulse Current (tp≤100μs, Duty cycle=0.005) [1]	I_{pulse}	1000	mA
Reverse Voltage	V_R	5	V
LED Junction Temperature(at 350mA)	Tj	125	℃
Operating Temperature Range	Topr	-30 to +110	℃
Storage Temperature Range	Tstg	-30 to +120	℃
Soldering Temperature	Tsol	5	Seconds

Note:

[1] Duty cycle



Luminous Flux Characteristics at IF=350mA (Ta=25℃)

Lens Item	Part No	Color	Flux			Units
			Min	Typ	Max	
Lambertian Side Emitting Batwing Focusing	LL-HP60MWXX	White	23.3	30.0	---	l m
	LL-HP60MW6XX	Warm White	17.9	22.0	---	l m
	LL-HP60MBXX	Blue	4.8	9.0	---	lm
	LL-HP60MPGXX	True Green	23.3	30	---	lm
	LL-HP60MVXX	Red	17.9	26	---	lm
	LL-HP60MUYXX	Amber	23.3	30	---	lm

Forward Voltage Characteristics at IF=350mA (Ta=25℃)

Lens Item	Part No	Color	VF			Units
			Min	Typ	Max	
Lambertian Side Emitting Batwing Focusing	LL-HP60MWXX	White	2.8	3.5	4.0	V
	LL-HP60MW6XX	Warm White	2.8	3.5	4.0	V
	LL-HP60MBXX	Blue	2.8	3.5	4.0	V
	LL-HP60MPGXX	True Green	2.8	3.2	4.0	V
	LL-HP60MVXX	Red	2.0	2.2	2.8	V
	LL-HP60MUYXX	Amber	2.0	2.2	2.8	V

Wavelength or Color Temperature Characteristics at IF=350mA (Ta=25℃)

Lens Item	Part No	Color	λ D/CCT			Units
			Min	Typ	Max	
Lambertian Side Emitting Batwing Focusing	LL-HP60MWXX	White	5000	---	8000	K
	LL-HP60MW6XX	Warm White	2850	---	3800	K
	LL-HP60MBXX	Blue	460	---	475	nm
	LL-HP60MPGXX	True Green	515	---	535	nm
	LL-HP60MVXX	Red	620	---	630	nm
	LL-HP60MUYXX	Amber	585	---	595	nm

Thermal Resistance Junction to Board Characteristics at IF=350mA(Ta=25℃)

Lens Item	Part No	Color	RθJ-P			Units
			Min	Typ	Max	
Lambertian Side Emitting Batwing Focusing	LL-HP60MWXX	White	---	15	---	℃/W
	LL-HP60MW6XX	Warm White	---	15	---	℃/W
	LL-HP60MBXX	Blue	---	15	---	℃/W
	LL-HP60MPGXX	True Green	---	15	---	℃/W
	LL-HP60MVXX	Red	---	15	---	℃/W
	LL-HP60MUYXX	Amber	----	15	---	℃/W

Temperature Coefficient Of Forward Voltage Characteristics at IF=350mA(Ta=25℃)

Lens Item	Part No	Color	ΔVF/ Δ T			Units
			Min	Typ	Max	
Lambertian Side Emitting Batwing Focusing	LL-HP60MWXX	White	---	-2	---	mV/℃
	LL-HP60MW6XX	Warm White	---	-2	---	mV/℃
	LL-HP60MBXX	Blue	---	-2	---	mV/℃
	LL-HP60MPGXX	True Green	---	-2	---	mV/℃
	LL-HP60MVXX	Red	---	-2	---	mV/℃
	LL-HP60MUYXX	Amber	----	-2	---	mV/℃

Reverse Current Characteristics at VR=5V(Ta=25)

Lens Item	Part No	Color	Ir (Vr=5V)			Units
			Min	Typ	Max	
Lambertian Side Emitting Batwing Focusing	LL-HP60MWXX	White	---	---	50	mV/℃
	LL-HP60MW6XX	Warm White	---	---	50	mV/℃
	LL-HP60MBXX	Blue	---	---	50	mV/℃
	LL-HP60MPGXX	True Green	---	---	50	mV/℃
	LL-HP60MVXX	Red	---	---	50	mV/℃
	LL-HP60MUYXX	Amber	----	---	50	mV/℃

Emission Angle Characteristics at IF=350mA(Ta=25)

Lens Item	Part No	Color	2θ½			Units
			Min	Typ	Max	
Lambertian	LL-HP60MWXX	White	---	140	---	Degree
	LL-HP60MW6XX	Warm White	---	140	---	Degree
	LL-HP60MBXX	Blue	---	140	---	Degree
	LL-HP60MPGXX	True Green	---	140	---	Degree
	LL-HP60MVXX	Red	---	120	---	Degree
	LL-HP60MUYXX	Amber	----	120	---	Degree
Side Emitting	Part No	Color	Θ peak			Units
			Min	Typ	Max	
	LL-HP60MWXX	White	---	80	---	Degree
	LL-HP60MW6XX	Warm White	---	80	---	Degree
	LL-HP60MBXX	Blue	---	80	---	Degree
	LL-HP60MPGXX	True Green	---	80	---	Degree
	LL-HP60MVXX	Red	---	75	---	Degree
	LL-HP60MUYXX	Amber	----	75	---	Degree

Emission Angle Characteristics at IF=350mA(Ta=25)

Lens Item	Part No	Color	2θ½			Units
			Min	Typ	Max	
Focusing	LL-HP60MWXX	White	---	85	---	Degree
	LL-HP60MW6XX	Warm White	---	85	---	Degree
	LL-HP60MBXX	Blue	---	60	---	Degree
	LL-HP60MPGXX	True Green	---	60	---	Degree
	LL-HP60MVXX	Red	---	55	---	Degree
	LL-HP60MUYXX	Amber	----	55	---	Degree

Lens Item	Part No	Color	2θ½ Typ	Θ peak Typ	Units
Batwing	LL-HP60MWXX	White	110	40	Degree
	LL-HP60MW6XX	Warm White	110	40	Degree
	LL-HP60MBXX	Blue	110	40	Degree
	LL-HP60MPGXX	True Green	110	40	Degree
	LL-HP60MVXX	Red	110	35	Degree
	LL-HP60MUYXX	Amber	110	35	Degree

Electrical & Optical Bin Group
Flux Ranks

Part No	Flux Rank	Flux(lm) @IF=350mA
LL-HP60MBXX	Full	4.8-----13.80
	H	4.8-----6.30
	J	6.30-----8.20
	K	8.20-----10.6
	L	10.6----13.80
LL-HP60MVXX LL-HP60MW6XX	Full	17.9---39.4
	N	17.9---23.3
	P	23.3---30.3
	Q	30.3---39.4
LL-HP60MWXX LL-HP60MPGXX LL-HP60MUYXX	Full	23.3---51.2
	P	23.3---30.3
	Q	30.3---39.4
	B	39.4---51.2

CCT Ranks

CCT Group	CCT(K) @IF=350mA
Warm White	2,850---3,800
○T	2,850---3,325
○U	3,325---3800
White	5,000---8,000
○W	5,000---6,000
○X	6,000---7,000
○Y	7,000---8,000

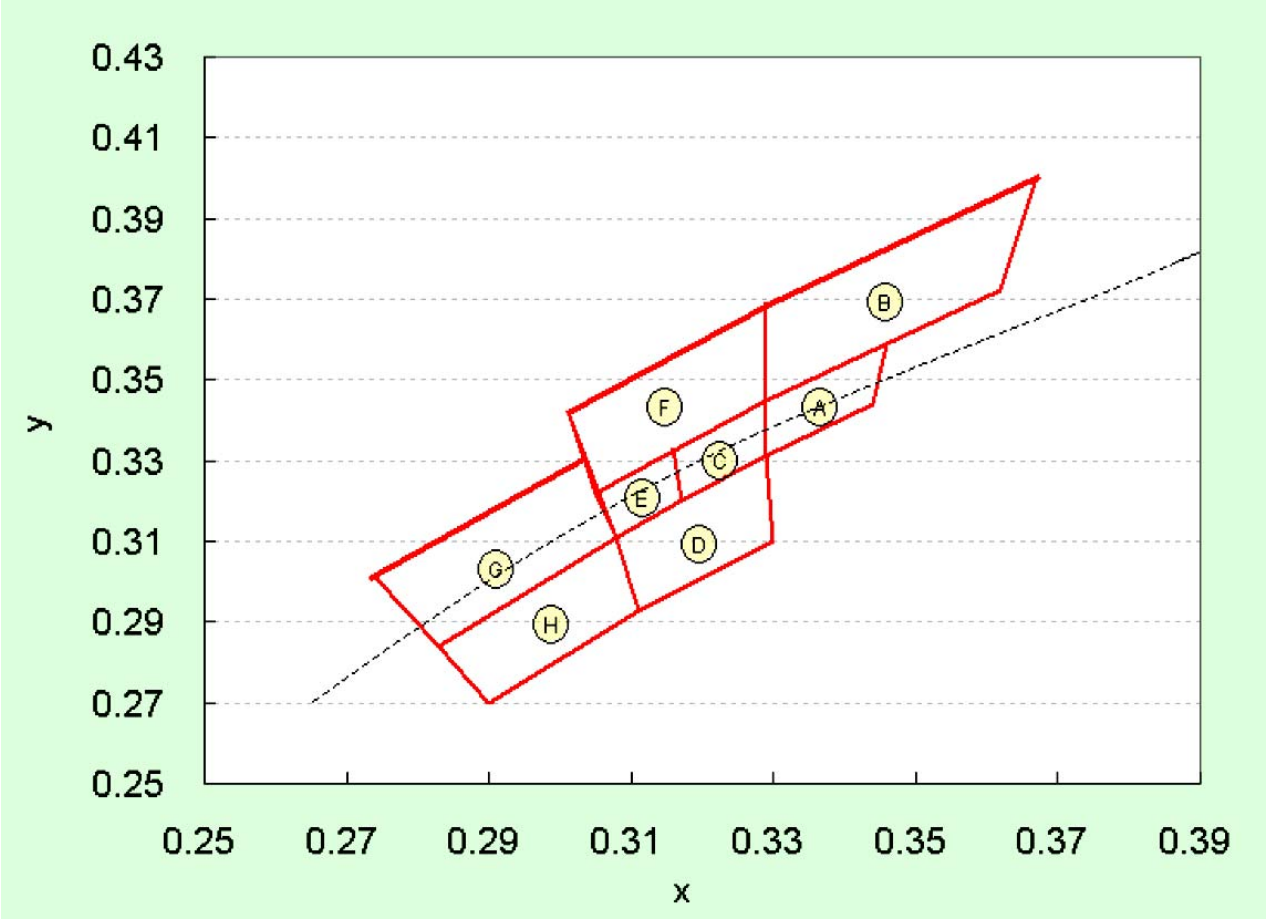
White

Chromaticity Coordinates Specifications for Bin Ranks

Ranks	X	Y	CCT(Typ.)	Ranks	X	Y	CCT(Typ.)
A	0.34	0.359	5350	E	0.316	0.333	6700
	0.344	0.344			0.317	0.320	
	0.329	0.331			0.308	0.311	
	0.329	0.345			0.305	0.322	
B	0.367	0.400	5500	F	0.329	0.369	6300
	0.362	0.372			0.329	0.345	
	0.329	0.345			0.305	0.322	
	0.329	0.369			0.301	0.342	
C	0.329	0.345	6050	G	0.308	0.311	8000
	0.329	0.331			0.311	0.293	
	0.317	0.320			0.290	0.270	
	0.316	0.333			0.283	0.284	
D	0.329	0.331	6300	H	0.303	0.333	8000
	0.330	0.310			0.308	0.311	
	0.311	0.293			0.283	0.284	
	0.308	0.311			0.274	0.301	

White

CIE Chromaticity Diagram



Viersion: 2.2

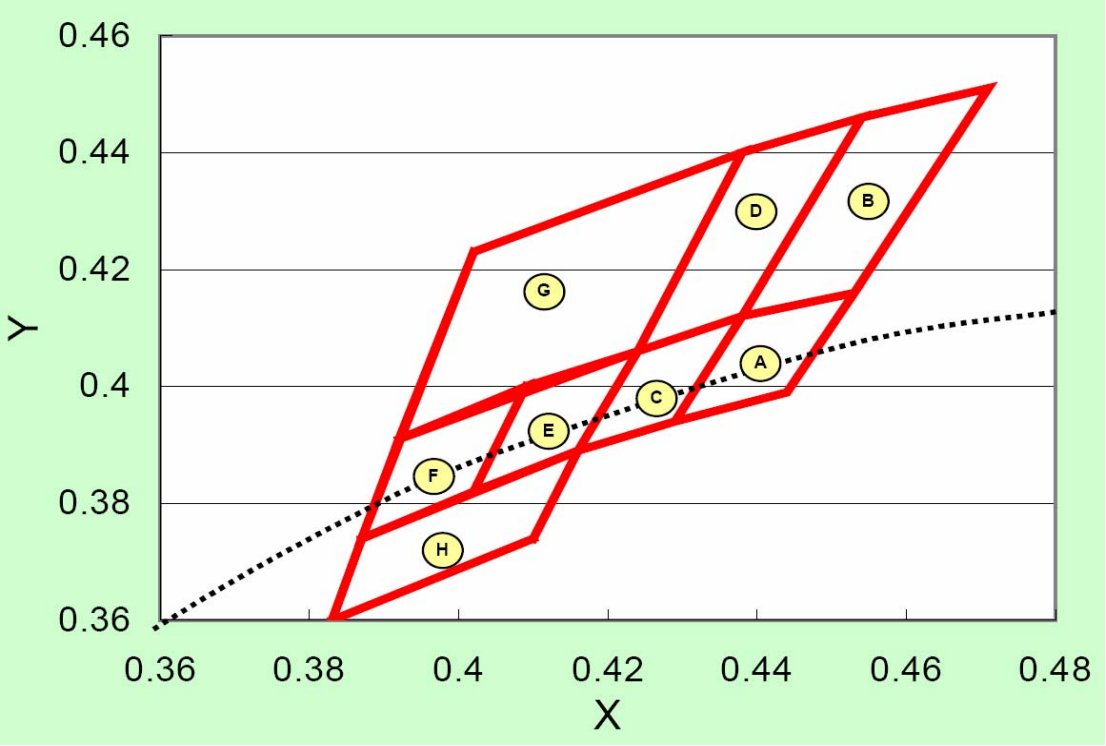
White

Chromaticity Coordinates Specifications for Bin Ranks

Ranks	X	Y	CCT(Typ.)	Ranks	X	Y	CCT(Typ.)
A	0.438	0.412	2950	E	0.409	0.400	3370
	0.429	0.394			0.402	0.382	
	0.444	0.399			0.416	0.389	
	0.453	0.416			0.424	0.406	
B	0.454	0.446	2950	F	0.392	0.391	3640
	0.438	0.412			0.387	0.374	
	0.453	0.416			0.402	0.382	
	0.471	0.451			0.409	0.400	
C	0.424	0.406	3150	G	0.402	0.423	3500
	0.416	0.389			0.392	0.391	
	0.429	0.394			0.424	0.406	
	0.438	0.412			0.438	0.440	
D	0.438	0.440	3150	H	0.387	0.374	3500
	0.424	0.406			0.383	0.360	
	0.438	0.412			0.410	0.374	
	0.454	0.446			0.416	0.389	

Warm White

CIE Chromaticity Diagram



Wavelength Ranks

Ranks	λ D@IF=350mA
● **Blue**	**460-475**
W	460-465
X	465-470
Y	470-475
● **True Green**	**515-535**
V	515-520
W	520-525
X	525-530
Y	530-535
● **Amber**	**585-595**
X	585-595
● **Red**	**620-630**
X	620-630

Forward Voltage Ranks For White & True Green & Blue

Ranks	λ D@IF=350mA
Full	2.8-4.0
● V01	2.8-3.1
● V02	3.1-3.4
● V03	3.4-3.7
● V04	3.7-4.0

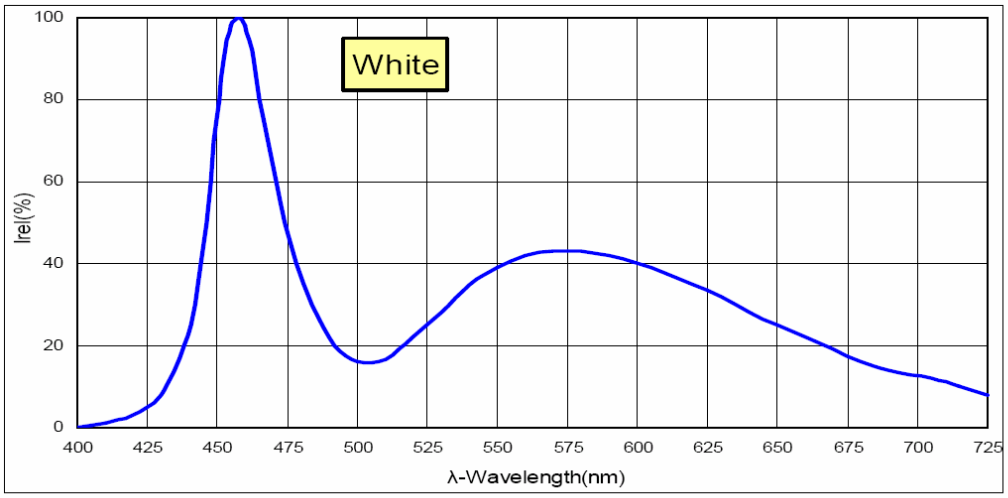
Forward Voltage Ranks For Red & Amber

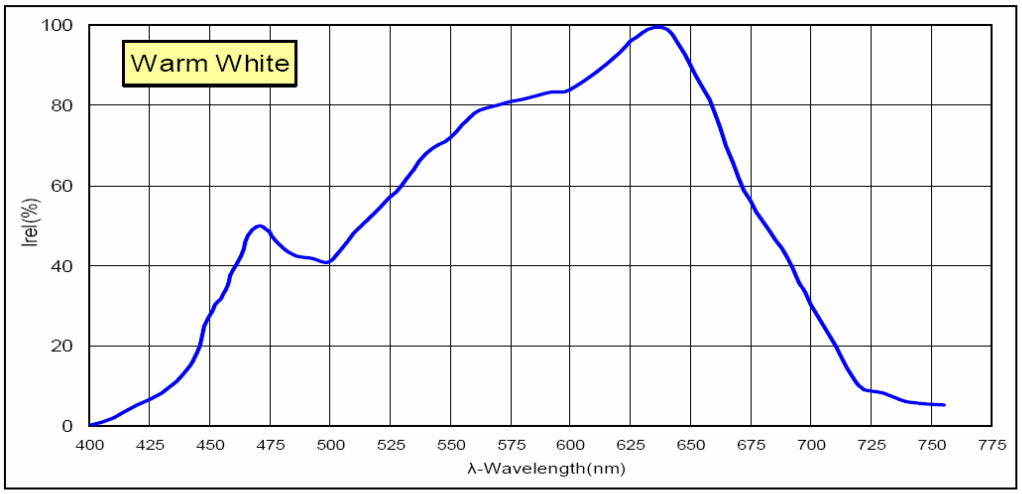
Ranks	λ D@IF=350mA
Full	2.00-2.75
● V01	2.00-2.25
● V02	2.25-2.50
● V03	2.50-2.75

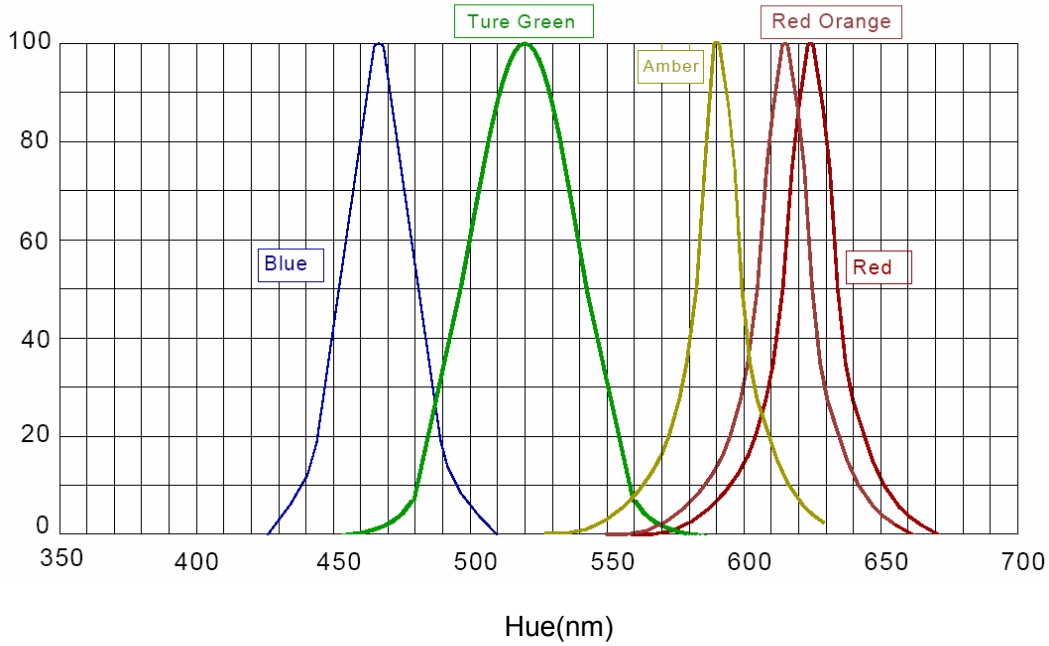
Note

1. Flux is measured with an accuracy of ± 15%.
2. CCT selection acc. to CCT groups and an accuracy of ± 400K
3. Forward Voltage is measured with an accuracy of ± 0.2V.
4. Wavelength is measured with an accuracy of ± 3nm
5. Angle is measured with an accuracy of ± 15 degree

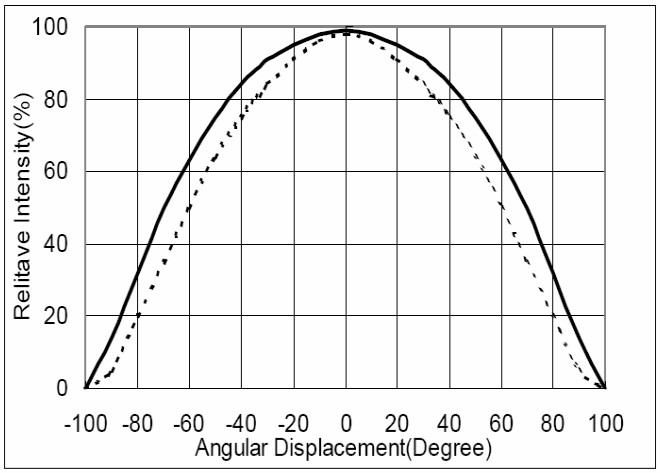
Electrical & Optical Curves
Wavelength Spectrum



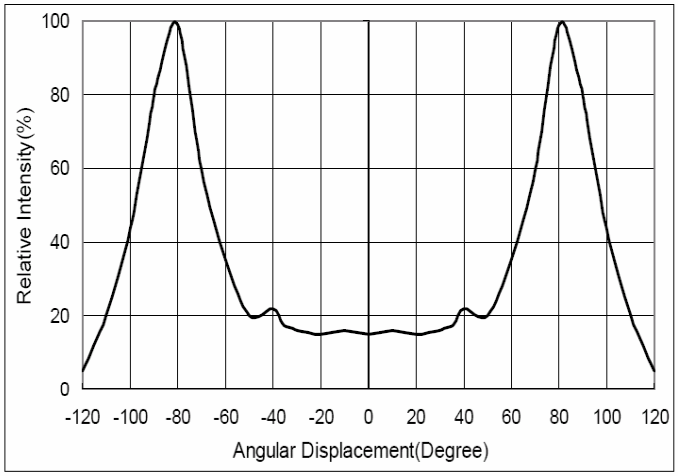




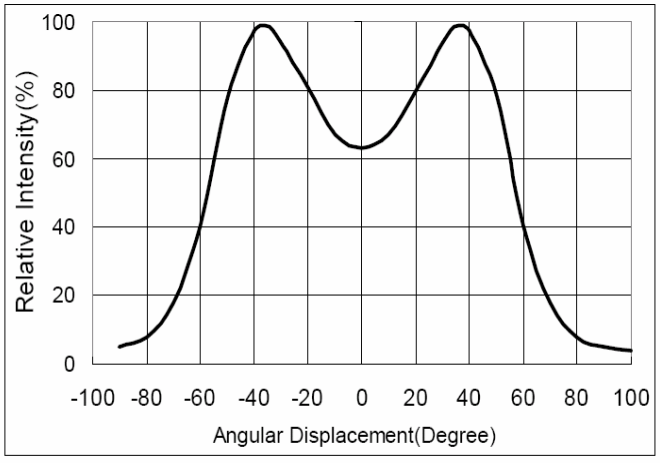
Typical Radiation Pattern for Lambertian



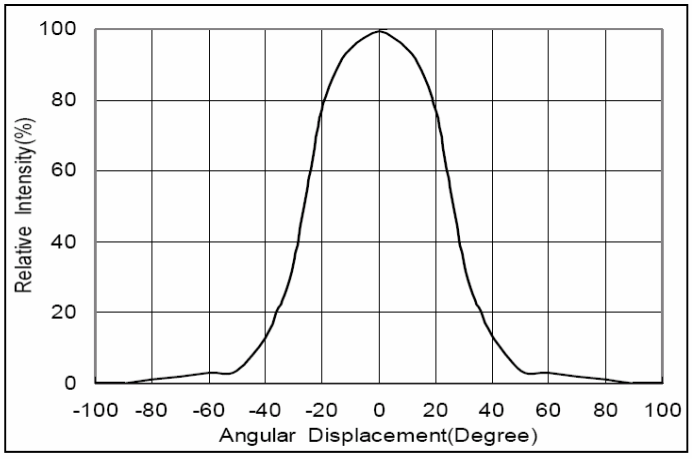
Typical Radiation Pattern for Side Emitting



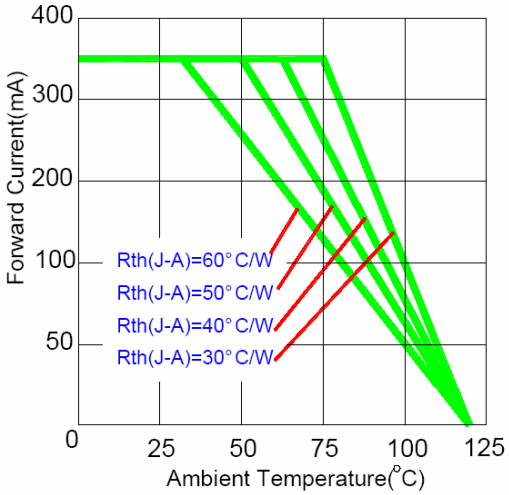
Typical Radiation Pattern for Batwing



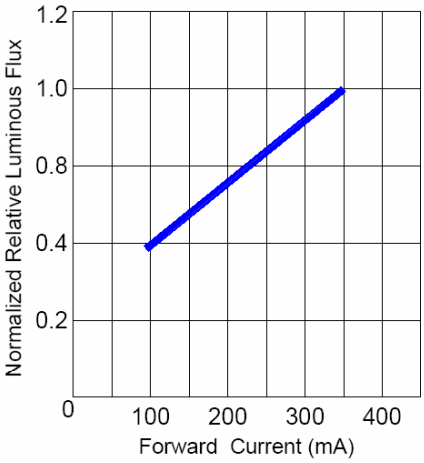
Typical Radiation Pattern for Focusing



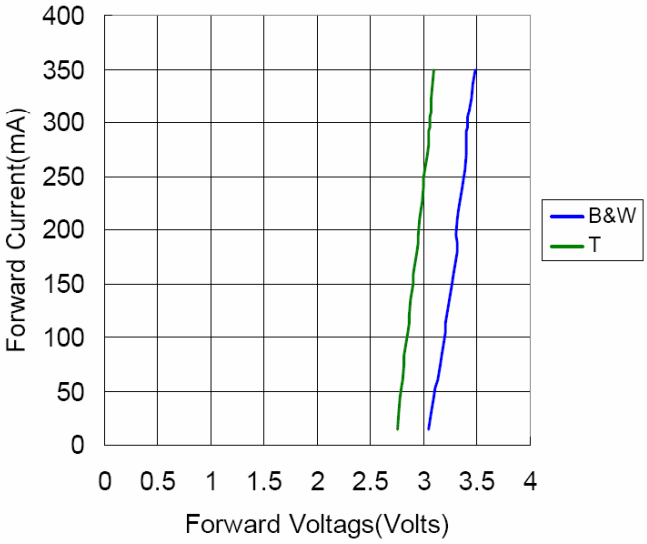
Operating Current & Ambient Temperature

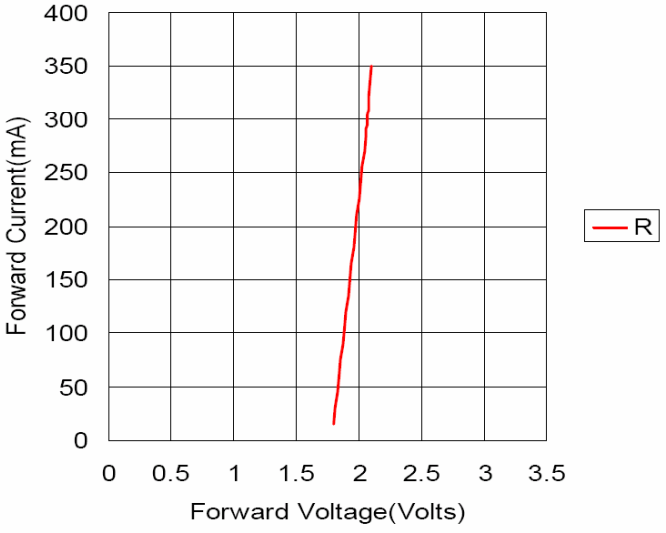


Current & Luminous Flux



Operating Current & Forward Voltage





Revision Histoty

Version	Page	Subjects (major change since last revision)	Date
1.0			2004/05/01
1.1			2004/06/08
1.2			2004/07/01
1.3			2004/07/20
2.0			2004/08/20
2.1			2004/11/05
2.2			2004/01/12