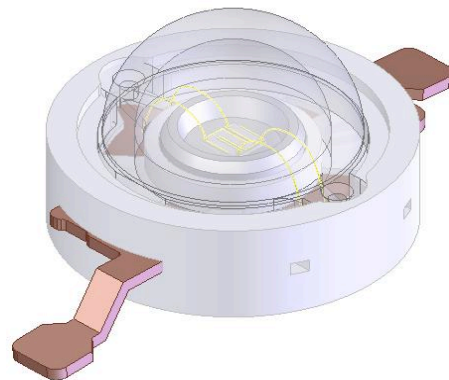


Power Light Source

Introduction :

THEM-CLW is one the highest flux LEDs in the world. Due to the special design of chip and package, the THEM-CLW is designed by particular package for high power LED. 1W THEM-CLW white has typical 100 lumens under 350mA.

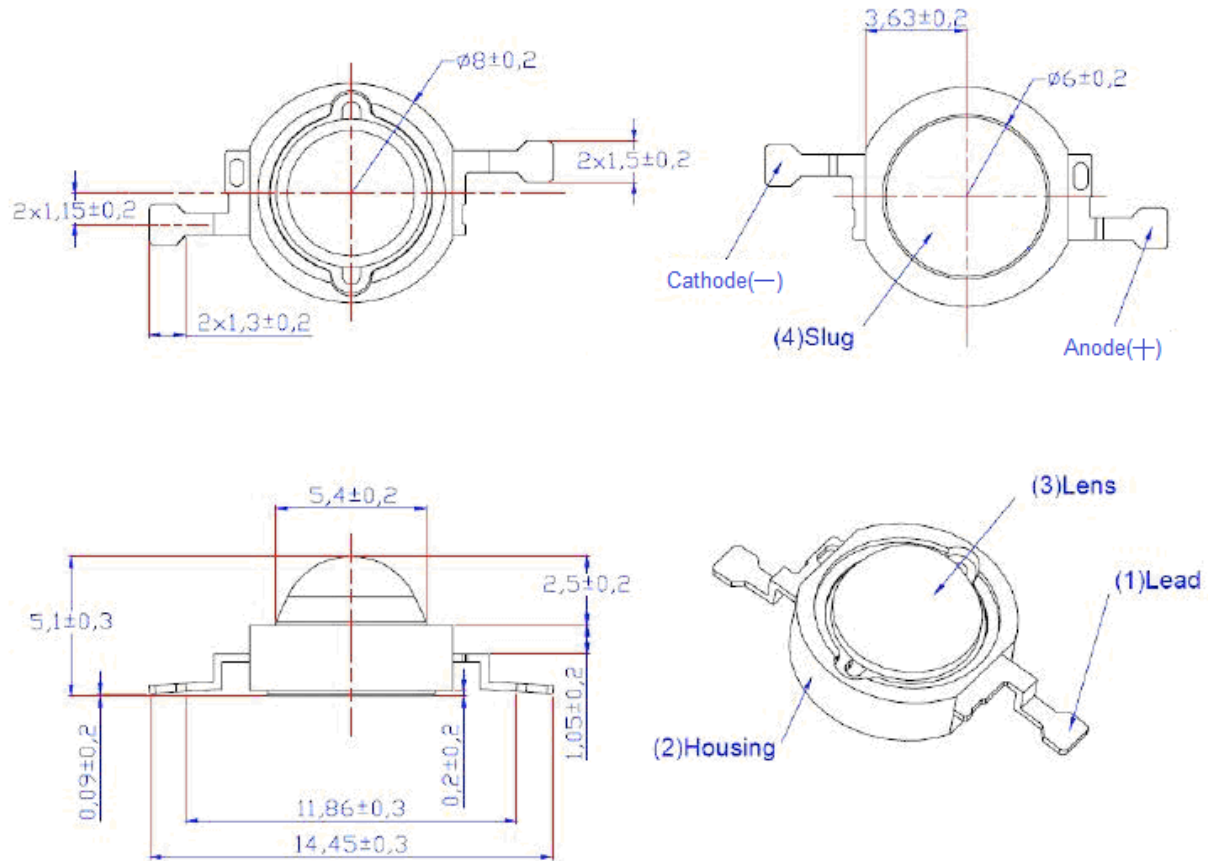


Feature :

- Long operating life
- Energy efficiency
- Low thermal resistance
- Compact design
- Instant light
- Fully dimmable
- No UV
- Superior ESD protection
- ROHS compatibility

Typical Applications:

- Reading lights
- Portable light
- Orientation
- Entertainment
- Garden
- Security light
- Ceiling light
- Architectural lighting
- General lighting
- Jewel display illumination



Notes :

1. Drawings are not to scale.
2. All dimensions are in millimeter.
3. General tolerance is $\pm 0,2$ mm.
4. The polarity of slug at bottom is anode.
5. It is important that the slug can't contact aluminum surface, it is strongly recommended that there should coat a uniform electrically isolated heat dissipation film on the surface.
6. It is strongly recommended that the temperature of lead be not higher than 70°C .

Absolute Maximum Ratings

Parameter	Conditions	Conditions
DC Forward Current (mA)	350	700
Peak Pulse Current (mA)	500	800
LED Junction Temperature (°C)	110	110
Operating Temperature (°C)	-30~100	-30~100
Storage Temperature (°C)	-40~120	-40~120
Soldering Temperature	Manual 260°C (max) 5 Seconds	Manual 260°C (max) 5 Seconds
Reverse Voltage	Not design to be driven in reverse bias	Not design to be driven in reverse bias

Flux Characteristics at 350mA, Junction Temperature, Tj=25°C

Color	Part Number	Minimum Luminous Flux(lm)	Typical Luminous Flux(lm)	Maximum Luminous Flux(lm)	Beam Pattern
Cool White	THEM-CLWX	80	125	--	Lambertian
Neutral White	THEM-CLNX	70	100	--	
Warm White	THEM-CLMX	60	85	--	
Blue	THEM-CLBX	--	23	--	
Red	THEM-CLRX	--	45	--	
Amber	THEM-CLAX	--	45	--	
Green	THEM-CLGX	--	75	--	

Flux Characteristics at 700mA, Junction Temperature, Tj=25°C

Color	Part Number	Minimum Luminous Flux(lm)	Typical Luminous Flux(lm)	Maximum Luminous Flux(lm)	Beam Pattern
Cool White	THEM-DLWX	150	220	--	Lambertian
Neutral White	THEM-DLNX	130	170	--	
Warm White	THEM-DLMX	100	150	--	
Blue	THEM-DLBX	--	35	--	
Red	THEM-DLRX	--	80	--	
Amber	THEM-DLAX	--	80	--	
Green	THEM-DLGX	--	130	--	

Notes :

1. Luminous flux is measured with an accuracy of $\pm 10\%$

Optical Characteristics at 350mA, Junction Temperature, T_j=25°C

Color	Dominant Wavelength λ_d Peak Wavelength λ_p or Color Temperature (CCT)		Viewing Angle Degree 2 θ 1/2
	Min.	Max.	
Cool White	5000K	10000K	120
Neutral White	3800K	5000K	
Warm White	2700K	3800K	
Blue	460nm	490nm	
Red	620nm	640nm	
Amber	584.5nm	597nm	
Green	520nm	550nm	

Notes :

1. CCT \pm 5% tester tolerance.
2. Wavelength is measured with an accuracy of \pm 0.5nm.

Electrical Characteristics at 350mA, Junction Temperature, T_j=25°C

Color	Part Number	Forward Voltage V _F (V)			Temperature Coefficient of V _F (mV/°C)	Thermal Resistance Junction to lead (°C/W)
		Min.	Typ.	Max.	$\Delta V_F/\Delta T_j$	
Cool White	THEM-CLWX	--	3.2	--	-2	12
Neutral White	THEM-CLNX	--	3.2	--	-2	12
Warm White	THEM-CLMX	--	3.2	--	-2	12
Blue	THEM-CLBX	--	3.2	--	-2	12
Red	THEM-CLR X	--	2.0	--	-2	12
Amber	THEM-CLAX	--	2.0	--	-2	12
Green	THEM-CLGX	--	3.4	--	-2	12

Notes:

1. V_F \pm 0.1V tester tolerance.

RELIABILITY ITEMS and SPECTIONS

No	Test Item	Test Conditions	units	Result
1	Room Temperature Operating Life	25°C, 350mA 10,000Hours	20	Pass
2	High Temperature Storage	Temperature : 110°C Time : 1000 Hours	20	Pass
3	Thermal shock	-20°C ~ 100°C 500cycle 5mins 5mins	20	Pass
4	High Temperature , High Humidity Storage	Temperature : 85°C Relative Humidity : 85% Time : 1000 Hours	20	Pass
5	Low Temperature Storage	Temperature : -40°C Time : 1000 Hours	20	Pass
6	Solderability	Pad immersion in flux 5~10 sec. Temperature : 260±5°C Time : 5 sec.	20	Pass
7	Drop test	120 cm height , fall freely onto stainless board 3 times	20	Pass

Failure Criteria :

1. VF shift \geq 200mA
2. Luminous Flux (Lm) Degradation \geq 30%

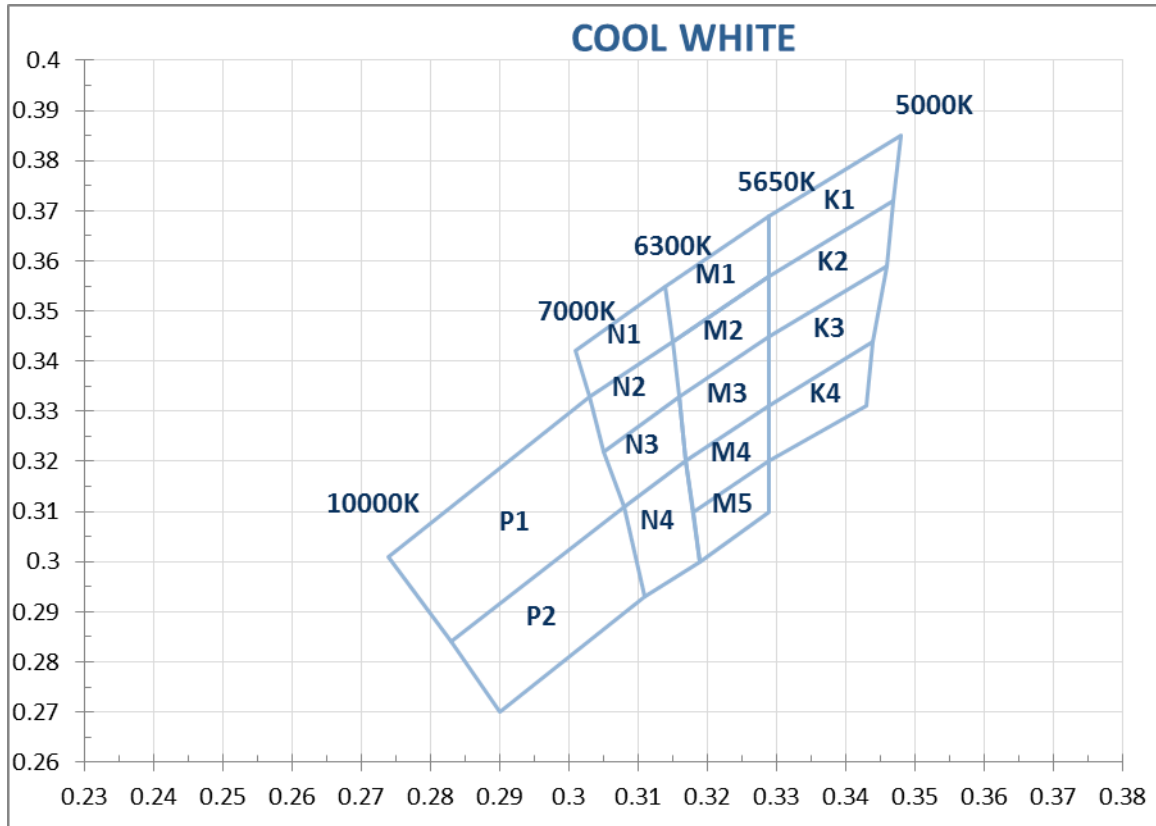
Color Bins for Cool White

Bin Code	X	Y	Typ. CCT(K)	Bin Code	X	Y	Typ. CCT(K)
P3	0.308 0.283 0.274 0.303	0.311 0.284 0.301 0.333	8000	M3	0.329 0.329 0.317 0.316	0.345 0.331 0.320 0.333	5970
P4	0.308 0.311 0.290 0.283	0.311 0.293 0.270 0.284	8000	M4	0.329 0.329 0.318 0.317	0.331 0.320 0.310 0.320	5970
N1	0.303 0.301 0.314 0.315	0.333 0.342 0.355 0.344	6650	M5	0.329 0.329 0.319 0.318	0.320 0.310 0.300 0.310	5970
N2	0.305 0.303 0.315 0.316	0.322 0.333 0.344 0.333	6650	K1	0.329 0.329 0.348 0.347	0.357 0.369 0.385 0.372	5320
N3	0.308 0.305 0.316 0.317	0.311 0.322 0.333 0.320	6650	K2	0.329 0.329 0.347 0.346	0.345 0.357 0.372 0.359	5320
N4	0.308 0.317 0.319 0.311	0.311 0.320 0.300 0.293	6650	K3	0.329 0.329 0.346 0.344	0.331 0.345 0.359 0.344	5320
M1	0.314 0.329 0.329 0.315	0.355 0.369 0.357 0.344	5970	K4	0.329 0.344 0.343 0.329	0.331 0.344 0.331 0.320	5320
M2	0.315 0.329 0.329 0.316	0.344 0.357 0.345 0.333	5970				

- Tolerance on each Color bin (x, y) is ± 0.01

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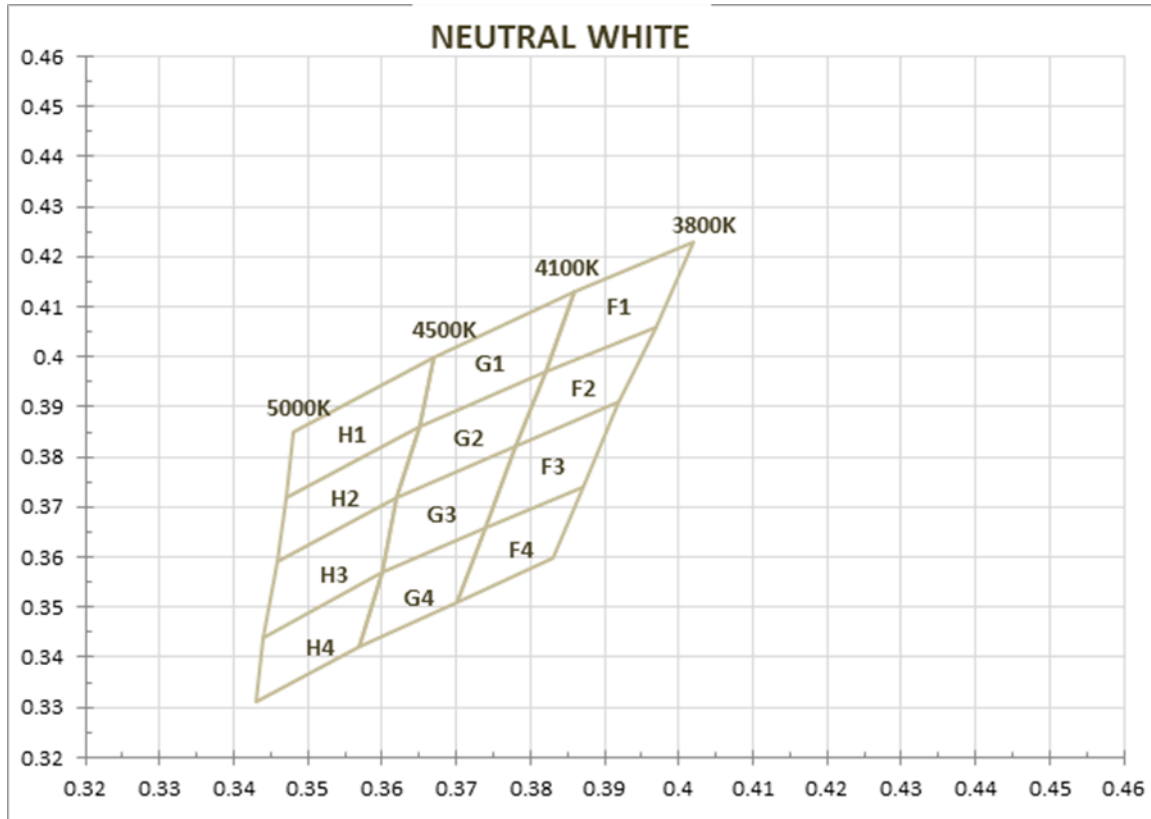
Color Bins for Neutral White

Bin Code	X	Y	Typ. CCT(K)	Bin Code	X	Y	Typ. CCT(K)
H1	0.365 0.367 0.348 0.347	0.386 0.400 0.385 0.372	4750	G3	0.378 0.374 0.360 0.362	0.382 0.366 0.357 0.372	4300
H2	0.365 0.362 0.346 0.347	0.386 0.372 0.359 0.372	4750	G4	0.374 0.370 0.357 0.36	0.366 0.351 0.342 0.357	4300
H3	0.362 0.36 0.344 0.346	0.372 0.357 0.344 0.359	4750	F1	0.402 0.397 0.382 0.386	0.423 0.406 0.397 0.413	3950
H4	0.36 0.357 0.343 0.344	0.357 0.342 0.331 0.344	4750	F2	0.397 0.392 0.378 0.382	0.406 0.391 0.382 0.397	3950
G1	0.386 0.382 0.365 0.367	0.413 0.397 0.386 0.4	4300	F3	0.392 0.387 0.374 0.378	0.391 0.374 0.366 0.382	3950
G2	0.382 0.378 0.362 0.365	0.397 0.382 0.372 0.386	4300	F4	0.387 0.383 0.370 0.374	0.374 0.360 0.351 0.366	3950

- Tolerance on each Color bin (x, y) is ± 0.01

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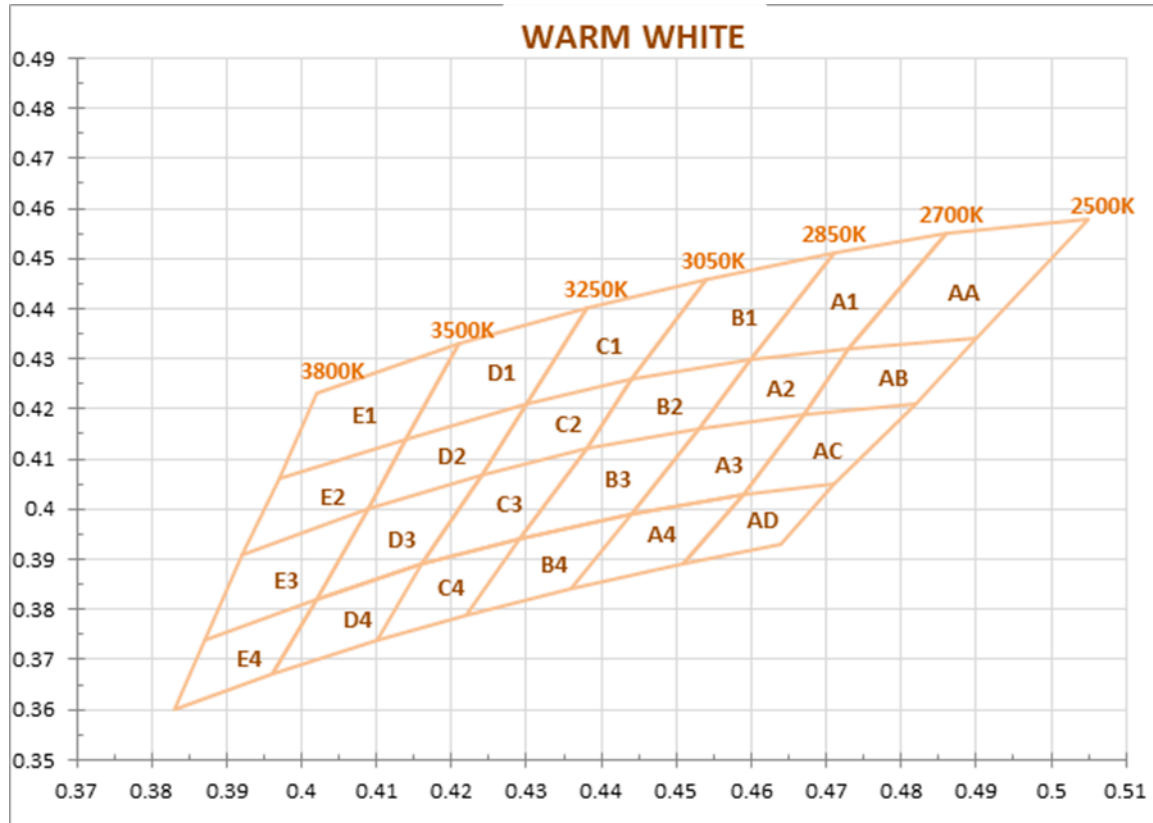


Color Bins for Warm White

Bin Code	X	Y	Typ. CCT(K)	Bin Code	X	Y	Typ. CCT(K)
E1	0.421 0.414 0.397 0.402	0.433 0.414 0.406 0.423	3650	B1	0.454 0.444 0.460 0.471	0.446 0.426 0.430 0.451	2950
E2	0.414 0.409 0.392 0.397	0.414 0.400 0.391 0.406	3650	B2	0.444 0.438 0.453 0.460	0.426 0.412 0.416 0.430	2950
E3	0.392 0.387 0.402 0.409	0.391 0.374 0.382 0.400	3650	B3	0.438 0.429 0.444 0.453	0.412 0.394 0.399 0.416	2950
E4	0.387 0.383 0.396 0.402	0.374 0.360 0.367 0.382	3650	B4	0.444 0.429 0.422 0.436	0.399 0.394 0.379 0.384	2950
D1	0.421 0.414 0.43 0.438	0.433 0.414 0.421 0.440	3370	A1	0.471 0.460 0.473 0.486	0.451 0.430 0.432 0.455	2770
D2	0.414 0.409 0.424 0.430	0.414 0.400 0.407 0.421	3370	A2	0.460 0.453 0.467 0.473	0.430 0.416 0.419 0.432	2770
D3	0.409 0.402 0.416 0.424	0.400 0.382 0.389 0.407	3370	A3	0.453 0.444 0.459 0.467	0.416 0.399 0.403 0.419	2770
D4	0.416 0.402 0.396 0.410	0.389 0.382 0.367 0.374	3370	A4	0.459 0.444 0.436 0.451	0.403 0.399 0.384 0.389	2770
C1	0.438 0.430 0.444 0.454	0.440 0.421 0.426 0.446	3150	AA	0.4860 0.4730 0.4900 0.5050	0.4550 0.4320 0.4340 0.4580	2600
C2	0.43 0.424 0.438 0.444	0.421 0.407 0.412 0.426	3150	AB	0.4730 0.4670 0.4820 0.4900	0.4320 0.4190 0.4210 0.4340	2600
C3	0.424 0.416 0.429 0.438	0.407 0.389 0.394 0.412	3150	AC	0.4670 0.4590 0.4710 0.4820	0.4190 0.4030 0.4050 0.4210	2600
C4	0.429 0.416 0.410 0.422	0.394 0.389 0.374 0.379	3150	AD	0.4590 0.4510 0.4640 0.4710	0.4030 0.3890 0.3930 0.4050	2600

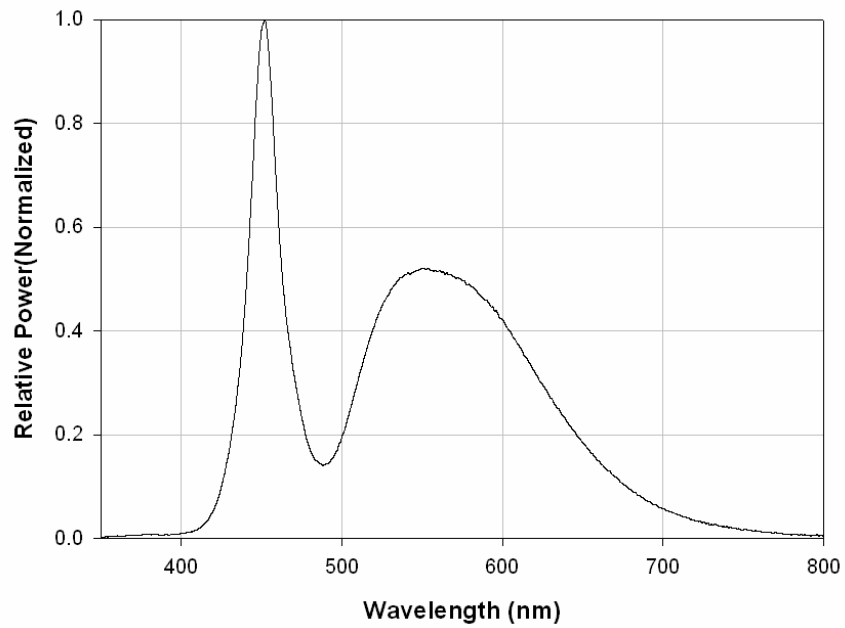
- Tolerance on each Color bin (x, y) is ± 0.01

Color Bins for Warm White

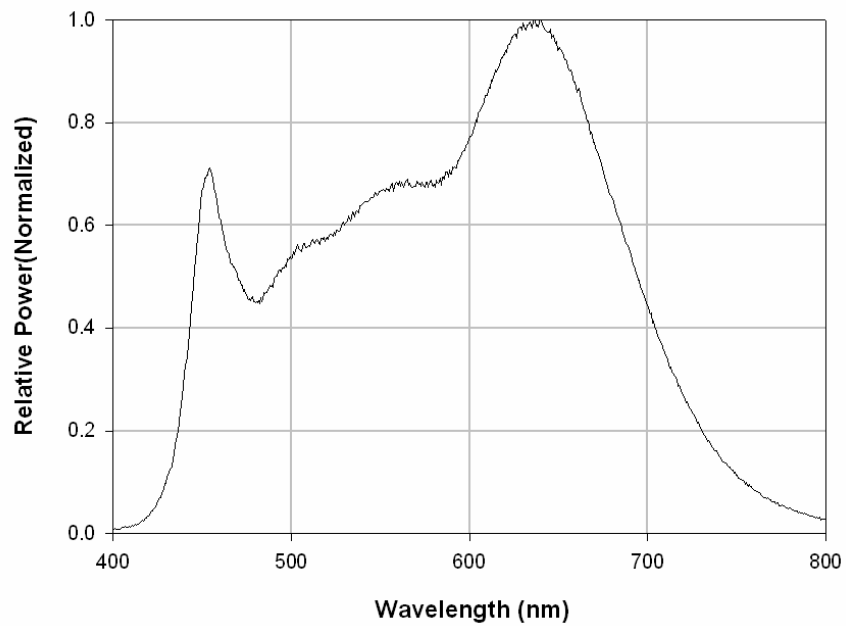


Wavelength Spectrum, Ta=25 oC

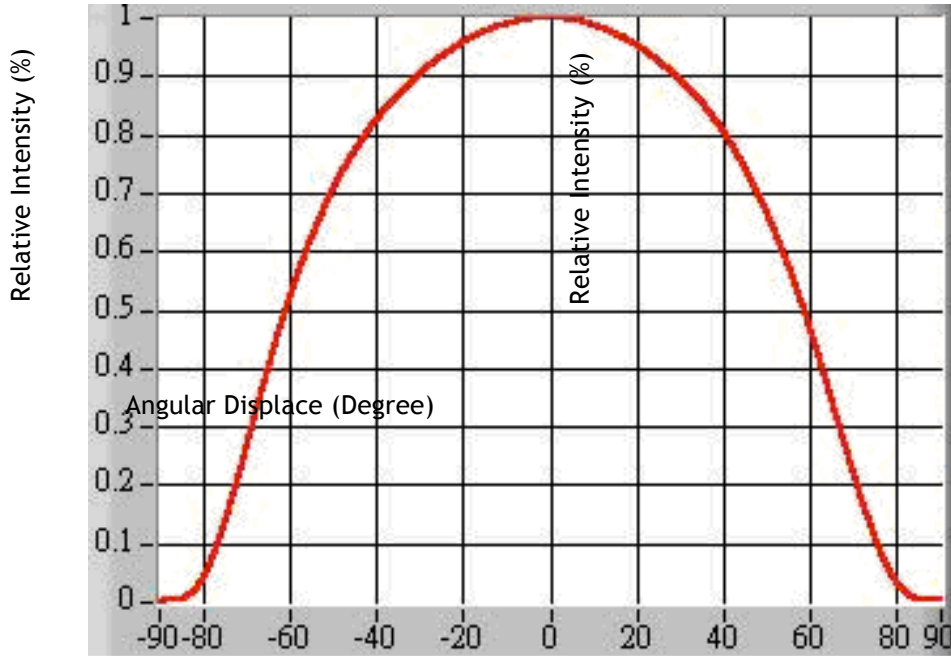
White Color Spectrum



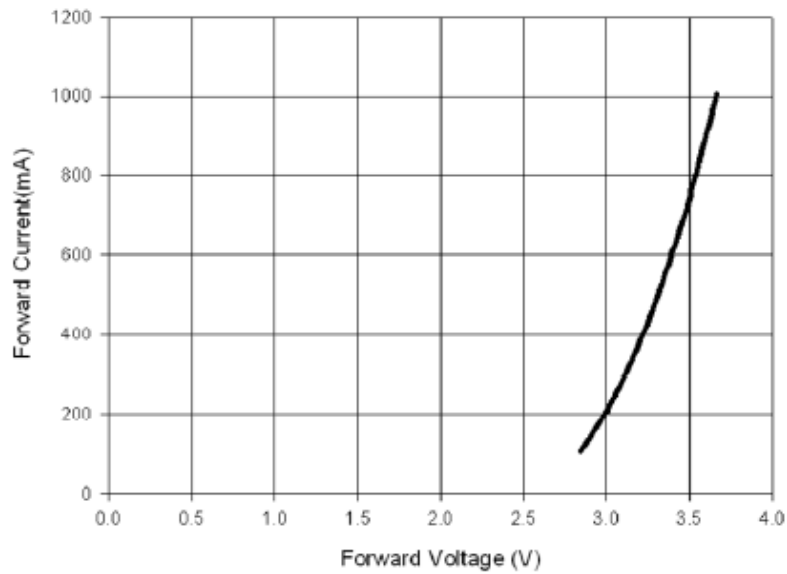
Warm White Spectrum



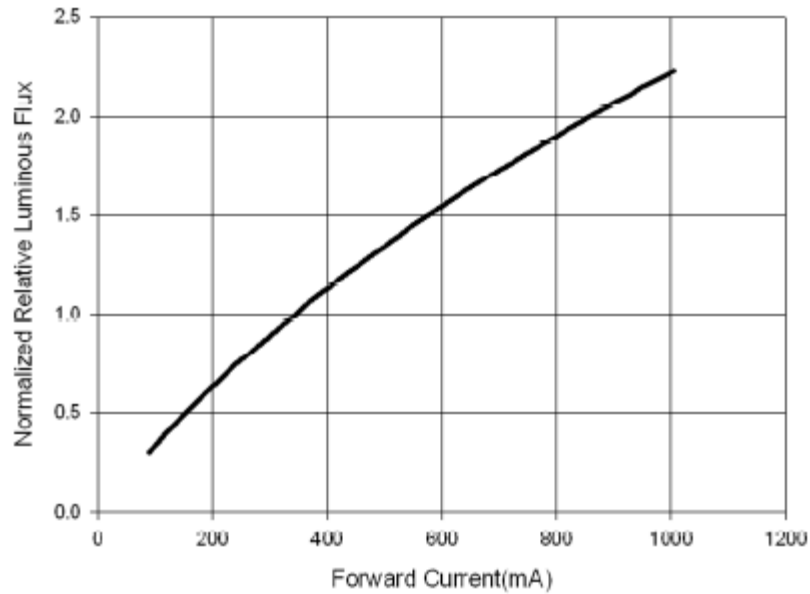
Typical Spatial Radiation Pattern



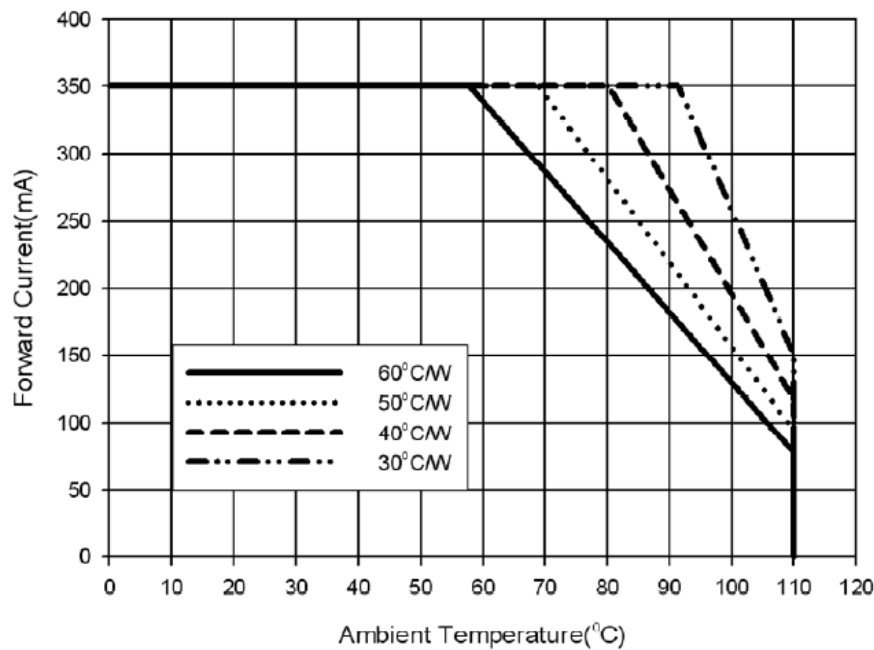
Forward I-V Characteristics



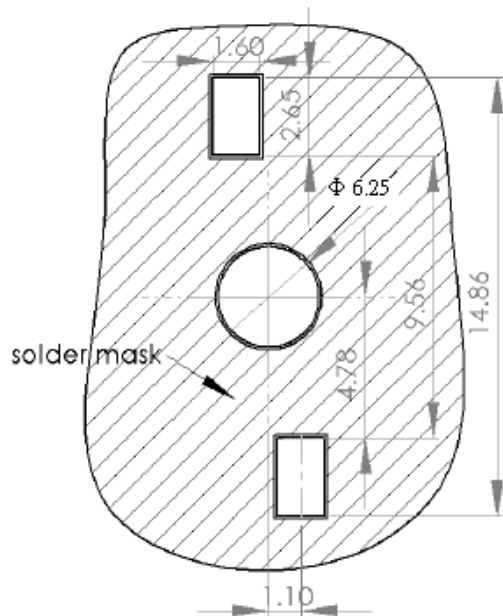
Forward L-I Characteristics



Current Derating Curves

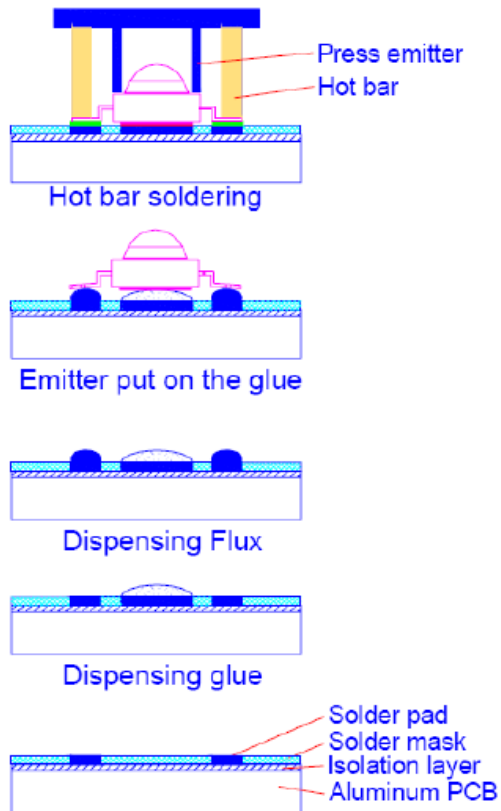


Recommended Solder Pad Design



Notes :

1. Drawing is not to scale
2. All dimensions are in millimeter
3. Solder pad can't be connected to slug

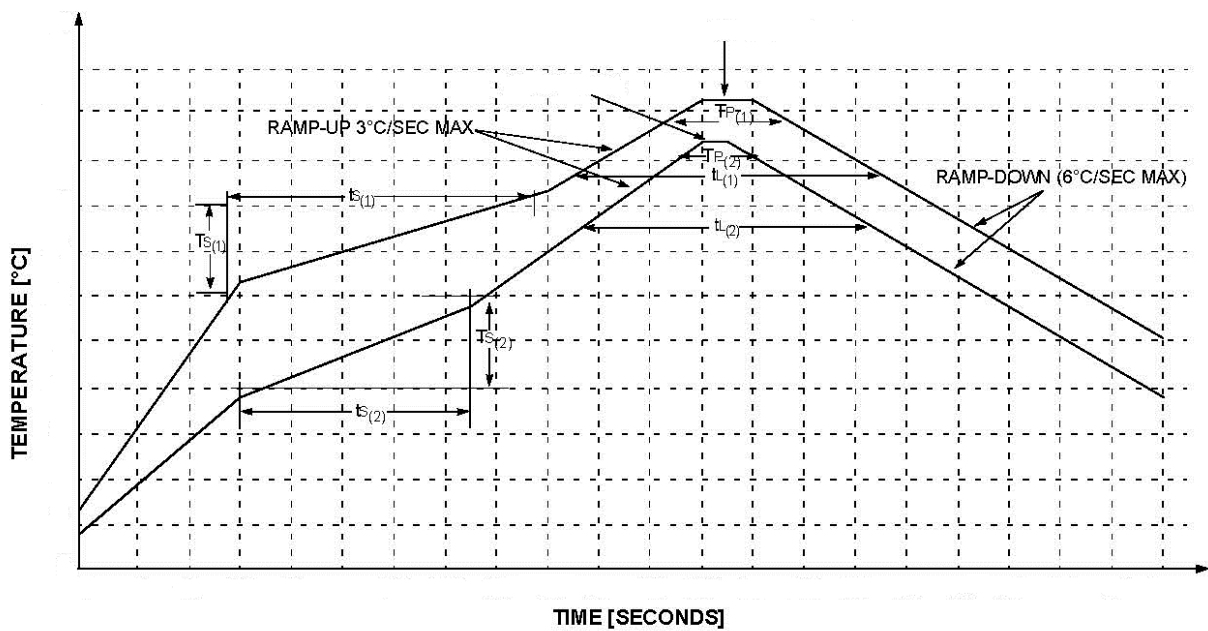


Notes:

1. Aluminum PCB material with a thermal conductivity greater than 2.0 W/mK.
2. Solder pad can't be connected to slug.
3. The thermal glue should be as thin as possible for better heat conductivity.
4. During any assembly process touching lens is avoided. This will cause pollution or scratch on the surface of lens.
5. Thermal glue with a thermal conductivity greater than 1.0 W/mK and the thickness must be less than 100um.

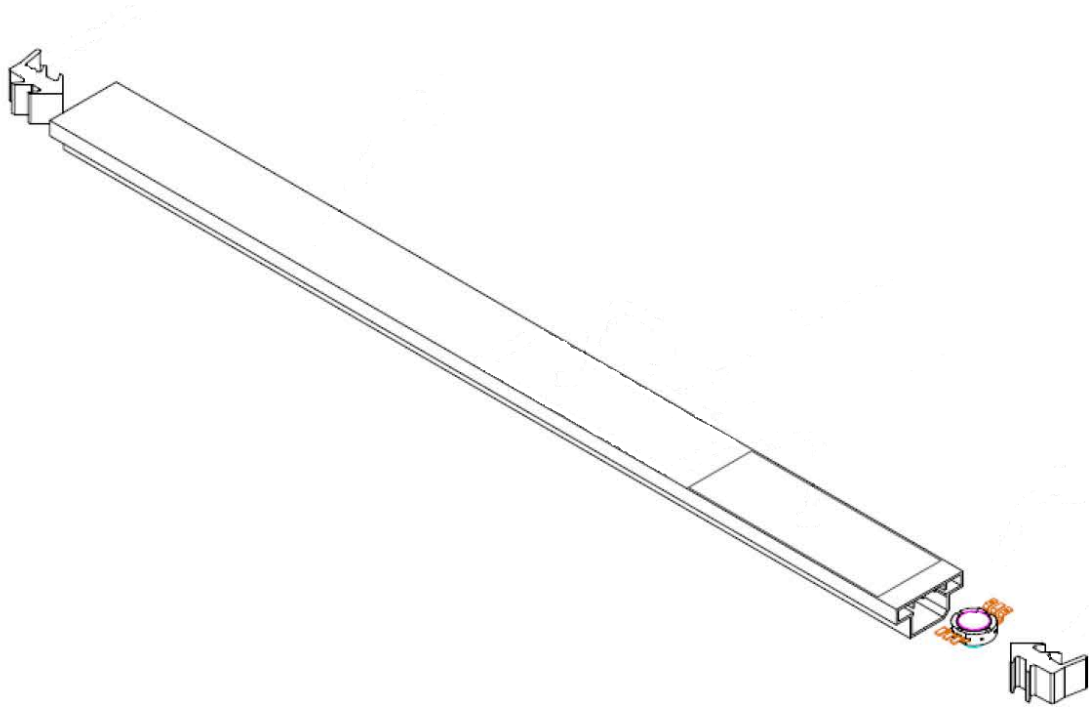
Recommended Soldering Profile

The LEDs can be soldered using the parameter listed below. As a general guideline, the users are suggested to follow the recommended soldering profile provided by the manufacturer of the solder paste. Although the recommended soldering conditions are specified in the list, reflow soldering at the lowest possible temperature is preferred for the LEDs.

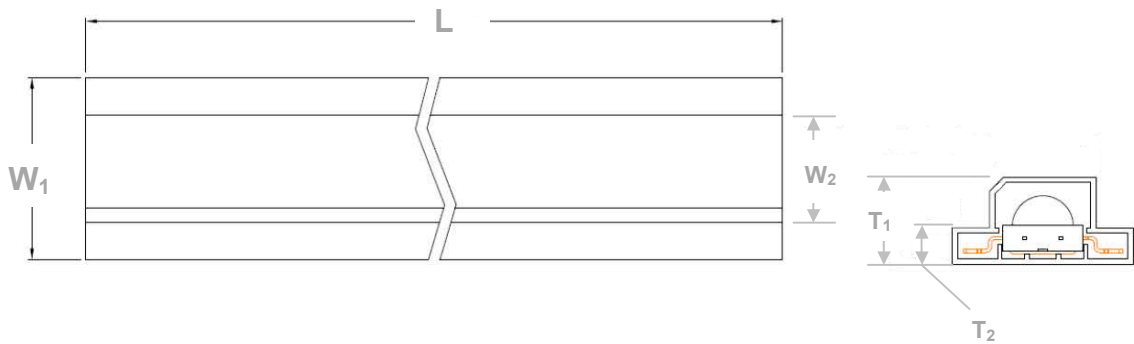


Sym.	Min.	Max.	Units	Test Conditions
Ts ₍₁₎	150	200	°C	Pb-Free
Ts ₍₂₎	100	150	°C	Sn-Pb
ts ₍₁₎	60	180	Sec	Pb-Free
ts ₍₂₎	60	120	Sec	Sn-Pb
tl ₍₁₎	60	150	Sec	Pb-Free
tl ₍₂₎	60	150	Sec	Sn-Pb
Tp ₍₁₎	245	260	°C	Pb-Free
Tp ₍₂₎	225	240	°C	Sn-Pb

Tube Package Specifications



Tube Dimensions



Unit(mm)

W_1	W_2	T_1	T_2	L
16.5	9.7	7.9	3.3	420

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Notes

1. There are 50pcs emitters in a tube.
2. There are 40 tubes in an inner carton.

Package

