

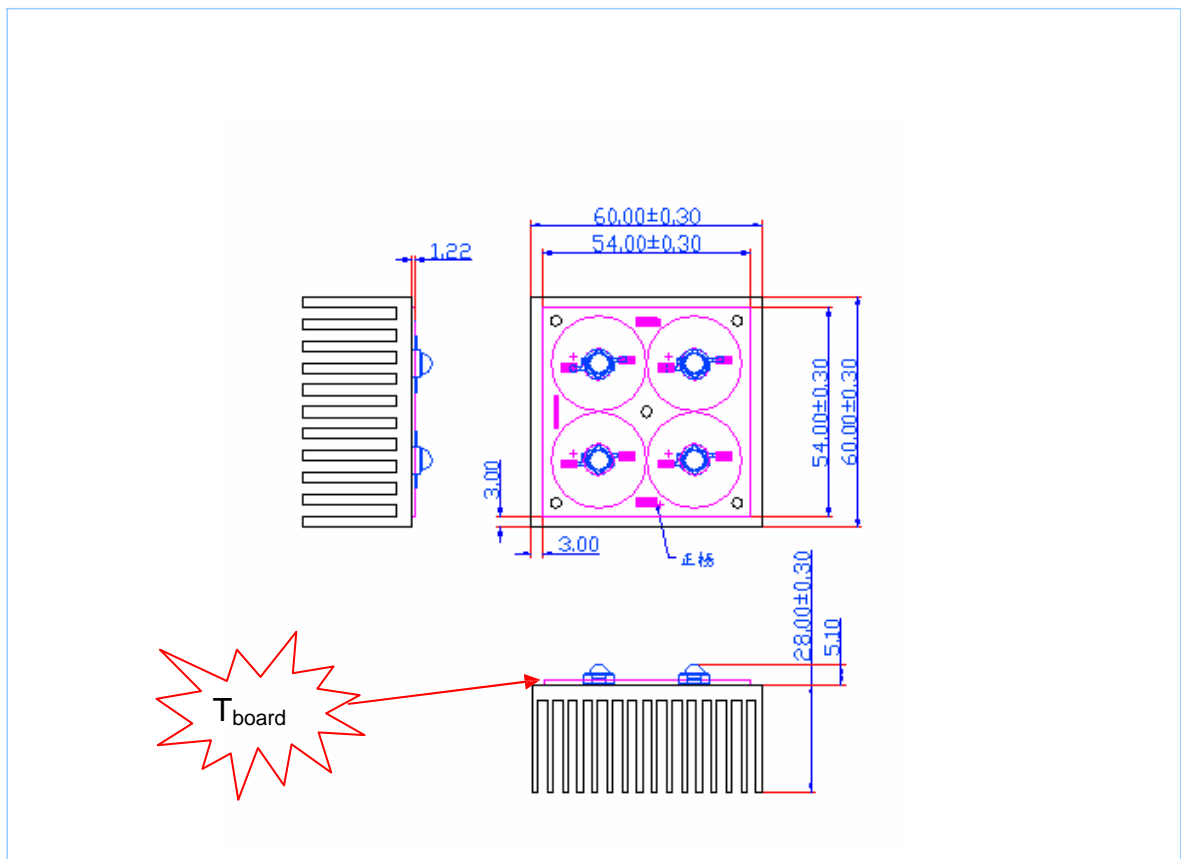
**Feature**

- Assembled multiple units are available
- Capable of heat dissipation without extra heat-sink
- The Product with a Thermal Solution
- Maximum Power of 12 W
- Balancing Temperature of 65 °C of T_{board} at 700 mA

Typical Application

- Road Lamp Module
- Room Lighting Module
- Products with light source module

Module Outline



Notes:

1. Dimension : W 60* L 60 * H28
2. Screw Size : $\phi 3 * 20$ mm
3. Weight : 125 g/ per module
4. All dimensions are in mm.
5. It is better to have the direction of fins upward.
6. If there is no path out for the heat, the temperature of the system will increase dramatically.

Absolute Maximum Rating

Parameter	Symbol	Rating	Units
DC Forward Current	I_F	700	mA
Peak pulse current;(tp ≤ 100μs, Duty cycle=0.25)	I_{pulse}	1400	mA
Reverse Voltage	V_R	20	V
Reverse Current($V_R=5V$)	I_R	100	μA
Balancing Temperature of Board (@ 700 mA)	T_j	65	°C
Operating Temperature	T_{opr}	-30 ~ +110	°C
Storage Temperature	T_{stg}	-40 ~ +120	°C
Manual Soldering Time at 260°C (Max.)	T_{sol}	5	seconds

Luminous Flux Characteristics at $I_F=700mA$ ($T_a=25^\circ C$, $T_{opr}= 1000$ ms)

Lens Item	Part Name	Color	Flux			Units
			Min.	Typ.	Max	
Lambertian	AOL-MPHW-M12	White	204.8	360	--	lm
	AOL-MPHX-M12	Warm White	157.6	240	--	lm
	AOL-MPHR-M12	Red	157.6	260	--	lm
	AOL-MPHO-M12	Red Orange	204.8	280	--	lm
	AOL-MPHA-M12	Amber	157.6	260	--	lm
	AOL-MPHT-M12	True Green	204.8	360	--	lm
	AOL-MPHB-M12	Blue	55.2	120	--	lm

Forward Voltage Characteristics at $I_F=700mA$ ($T_a=25^\circ C$, $T_{opr}= 1000$ ms):

Lens Item	Part Name	Color	V_F			Units
			Min.	Typ	Max	
Lambertian	AOL-MPHW-M12	White	12.4	--	17.2	V
	AOL-MPHX-M12	Warm White	12.4	--	17.2	V
	AOL-MPHR-M12	Red	8.0	--	12.0	V
	AOL-MPHO-M12	Red Orange	8.0	--	12.0	V
	AOL-MPHA-M12	Amber	8.0	--	12.0	V
	AOL-MPHT-M12	True Green	11.2	--	16.0	V
	AOL-MPHB-M12	Blue	12.4	--	17.2	V

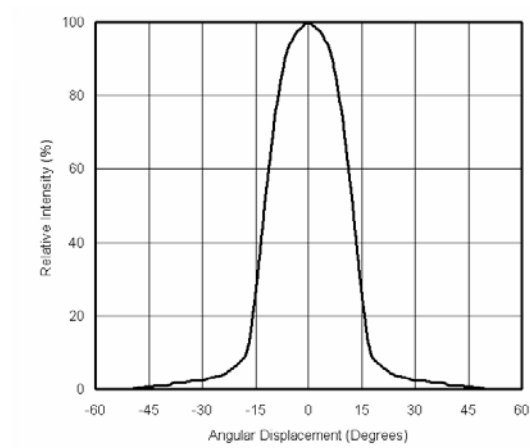
Note : V_F will decrease after thermal equilibrium. Ex: V_F of 3.7 will fall to 3.5 after therm equilibrium. However, the worse the heat dissipation is, the more the V_F decreases

Wavelength or Color Temperature Characteristics at $I_F=700\text{mA}$ ($T_a=25^\circ\text{C}$, $T_{opr}=1000\text{ms}$):

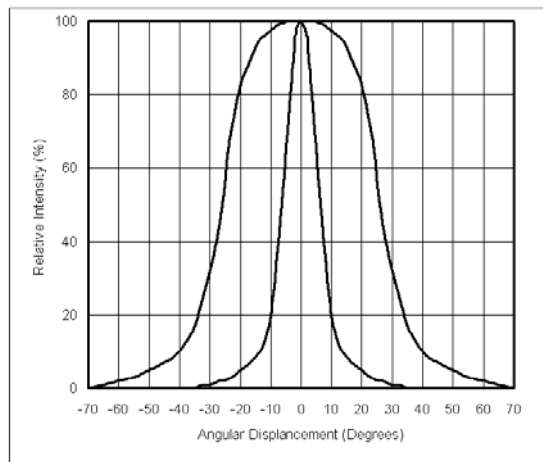
Lens Item	Part Name	Color	λ_d/CCT			Units
			Min.	Typ.	Max.	
Lambertian	AOL-MPHW-M12	White	5000	--	8000	K
	AOL-MPHX-M12	Warm White	2800	--	3800	K
	AOL-MPHR-M12	Red	620	--	630	nm
	AOL-MPHO-M12	Red Orange	610	--	620	nm
	AOL-MPHA-M12	Amber	585	--	595	nm
	AOL-MPHT-M12	True Green	515	--	530	nm
	AOL-MPHB-M12	Blue	460	--	475	nm

Typical Radiation Pattern for the APEX Heat-sink Module with the 25° collimator and Oval collimator($15^\circ-50^\circ$):

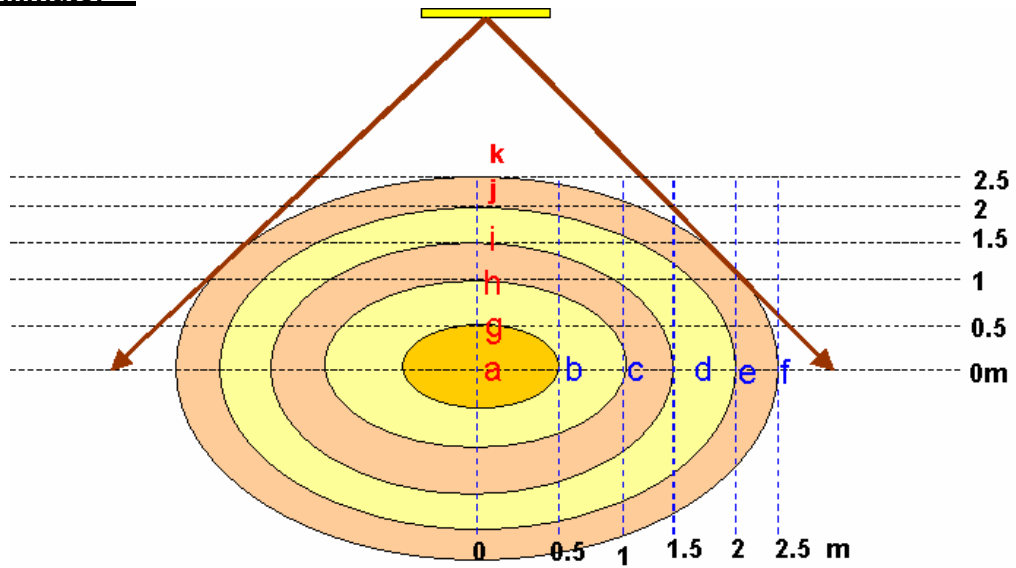
AOL-OLAA25-L1



AOL-OLAA1550-L1



Lux distribution pattern of APEX Heat-sink Module @ 1m with Oval Collimator :



Unit : Lux

a	b	c	d	e	f
840	480	160	45	15	6
g	h	i	j	k	
280	30	10	6	4	

Lux distribution pattern of APEX Heat-sink Module @ 1m with 25° Collimator :

Collimator :

Unit : Lux

a	b	c	d
3600	1800	270	20

Applied Indication : Multi-unit Module

High power LED+ PCB+ Heat-sink



1 unit

Operating Condition :

1. Driving V_F : 15.3 V
2. Power : 21.5 W



4 unit

Operating Condition :

1. Driving V_F : 15.3 V
2. Power : 43 W



6 unit

Operating Condition

1. Driving V_F : 15.3 V
2. Power : 64.5 W

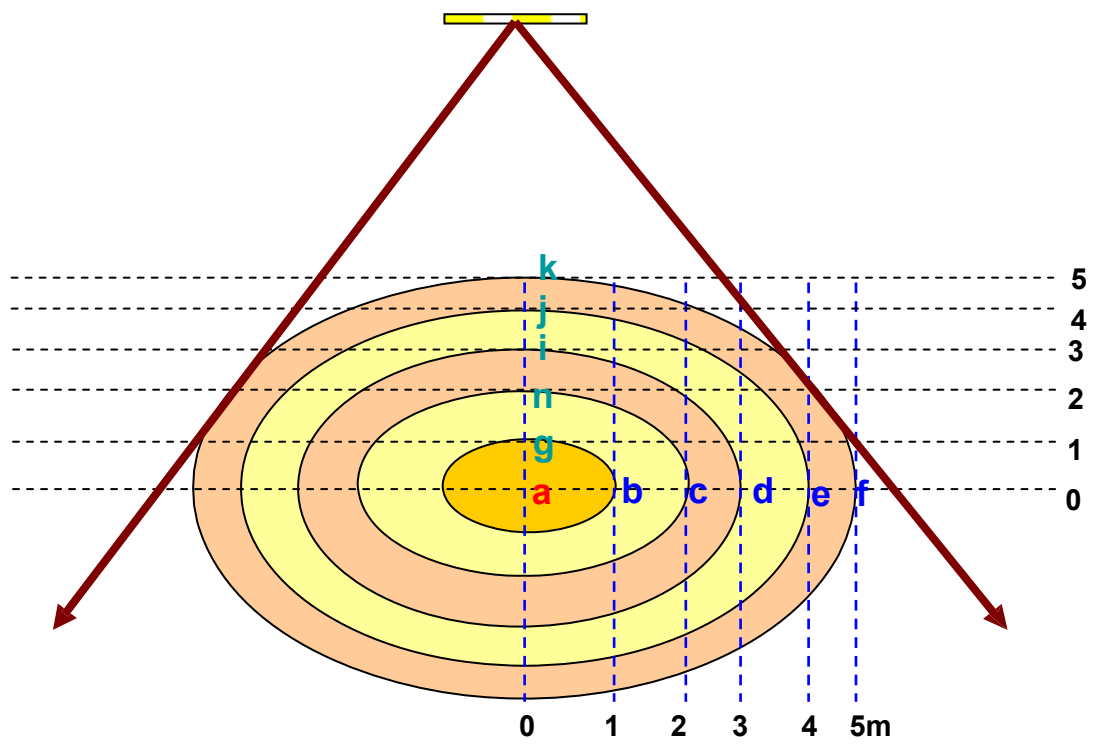
Module Measurement Condition

Number	Module	Height (m)	Color	CCT (K)	Lumens (lm)	V_F (V)	I_F (A)	Power (W)	Heat Balanced Temp. after 2 hr (°C)
1	2 units	4	W	6000	680	15.3	1.4	21.5	65~70
2	4 units	8	W	6000	1360	15.3	2.8	43.0	70~75
3	6 units	12	W	6000	2040	15.3	4.2	64.5	70~75
4	9 units	12	W	6000	3060	15.3	6.3	96.4	70~75
5	9 units	8	WW	3500	2160	18.0	6	108	75

The Circuits of the Multi-unit Module are Parallel, so that the V_F is the same. If they are series, the I_F is 700 mA for all kinds of the Multi-unit Module. All series listed bellow :

- | | |
|---|---|
| <p>V_F (Typ.)~multiple modules in Series</p> <ol style="list-style-type: none"> 1. 30.6 V (2 units) 2. 61.0 V (4 units) 3. 91.8 V (6 units) 4. 137 V (9 units) 5. 137 V (9 units) | <p>I_F ~ multiple modules in Parallel</p> <ol style="list-style-type: none"> 1. 1.4 A 2. 2.8 A 3. 4.2 A 4. 6.3 A 5. 6.3 A |
|---|---|

Note: Suggested Driving V is 14.4-15 V



a~k measured @
 Height: 4, 8, 12
 Collimator: AOL-OLAA1550-L1 (15°-50°)
 AOL-OLAA25-L1

Case 1

Module 2: 2 units @4m

With OVAL Collimator 15°-50°



Point	a	b	c	d	e	f	g	h	i	j	k
Lux	120	95	65	35	10	--	100	40	10	5	--

Module 2: 2 units @ 4m

With 25° Collimator



Point	a	(a+b)/2	b	(b+c)/2	c	(c+d)/2	d	(d+e)/2	e
Lux	460	380	205	80	35	17	7	5	



With OVAL Collimator 15°-50°



With 25° Collimator

Case 2

Module 2: 4 units @ 8m

With OVAL Collimator 15°-50°



Point	a	b	c	d	e	f	g	h	i	j	k
Lux	80	62	38	24	13	7	52	17	7	4	3

Module 2: 4 units @ 8m

With 25° Collimator

Point	a	(a+b)/2	b	(b+c)/2	c	(c+d)/2	d	(d+e)/2
Lux	235	220	195	150	110	75	30	15



With OVAL Collimator 15°-50°



With 25° Collimator

Case 3

Module 2: 6 units @ 12m

With OVAL Collimator 15°-50°



Point	a	b	c	d	e	f	g	h	i	j	k
Lux	52	50	48	45	37	30	51	48	30	20	10

Module 2: 6 units @ 12 m

With 25° Collimator

Point	a	(a+b)/2	b	(b+c)/2	c	(c+d)/2	d	(d+e)/2
Lux	165	155	150	135	120	95	70	45



With OVAL Collimator 15°-50°



With 25° Collimator

Case 4

Module 2: 9 units (W) @ 12m

With OVAL Collimator 15°-50°



Point	a	b	c	d	e	f	g	h	i	j	k
Lux	75	70	68	65	55	45	72	70	45	30	15

Module 2: 9 units @ 12 m

With 25° Collimator

Point	a	(a+b)/2	b	(b+c)/2	c	(c+d)/2	d	(d+e)/2
Lux	245	230	225	200	180	140	105	65

Case 5

Module 2: 9 units (WW) @ 8m

With OVAL Collimator 15°-50°

For Road Lamp Solution



Point	a	b	c	d	e	f	g	h	i	j	k
Lux	108	74	53	35	18	7	80	40	16	8	3

Chinese Road Lighting Standard @ 8 m

Point	a	b	c	d	e	f	g	h	i	j	k
Lux	120	93	60	40	22	12	80	40	16	8	5