

Ultra High Power LED

EdiPower™ Emitter

Approved By Customer	Designer	Checker	Approval

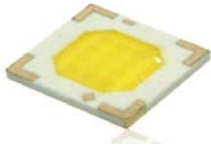
Date : 2006/6/17

Version : 1.3

Device No. : 3-RD-01-H0001
EDISON OPTO CORPORATION
4F, No. 800, Chung-Cheng Rd,
Chung-Ho, Taipei 235, Taiwan
Tel: 886-2-8227-6996
Fax: 886-2-8227-6997
<http://www.edison-opto.com.tw>



EdiPowerTM



EdiPower series can provide different power-operation and different colors. They serve as optical engine appropriately and applied to lighting and projector in the form of MR16 or others.

Features

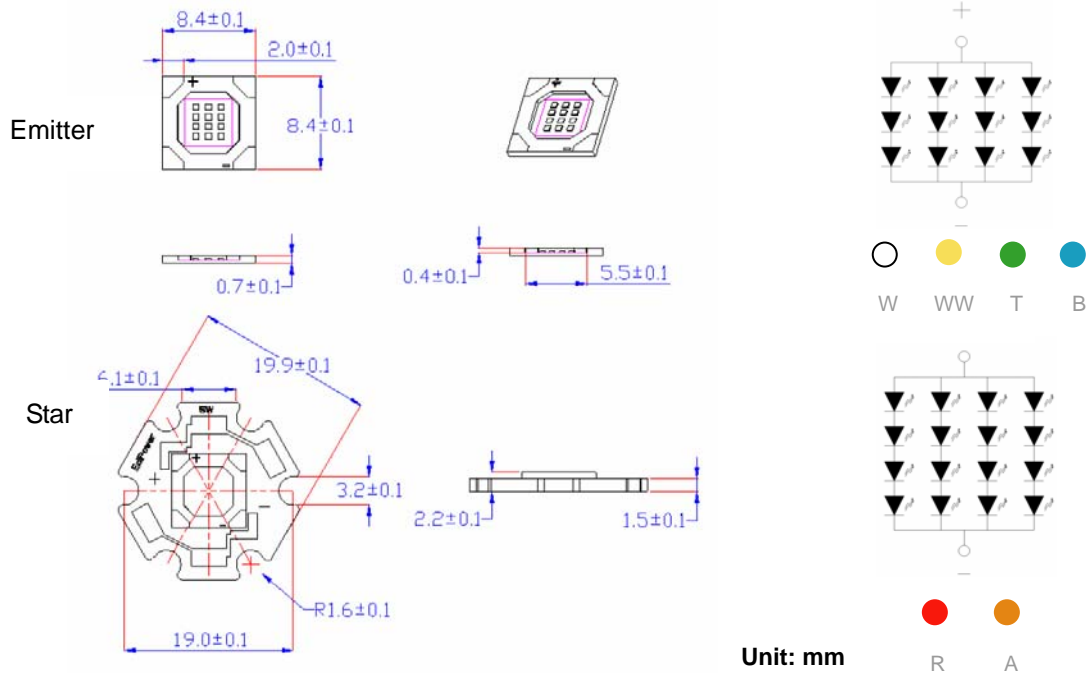
- LEDs lighting engine
- High power consumption
- Excellent thermal performance
- No UV

Typical Applications

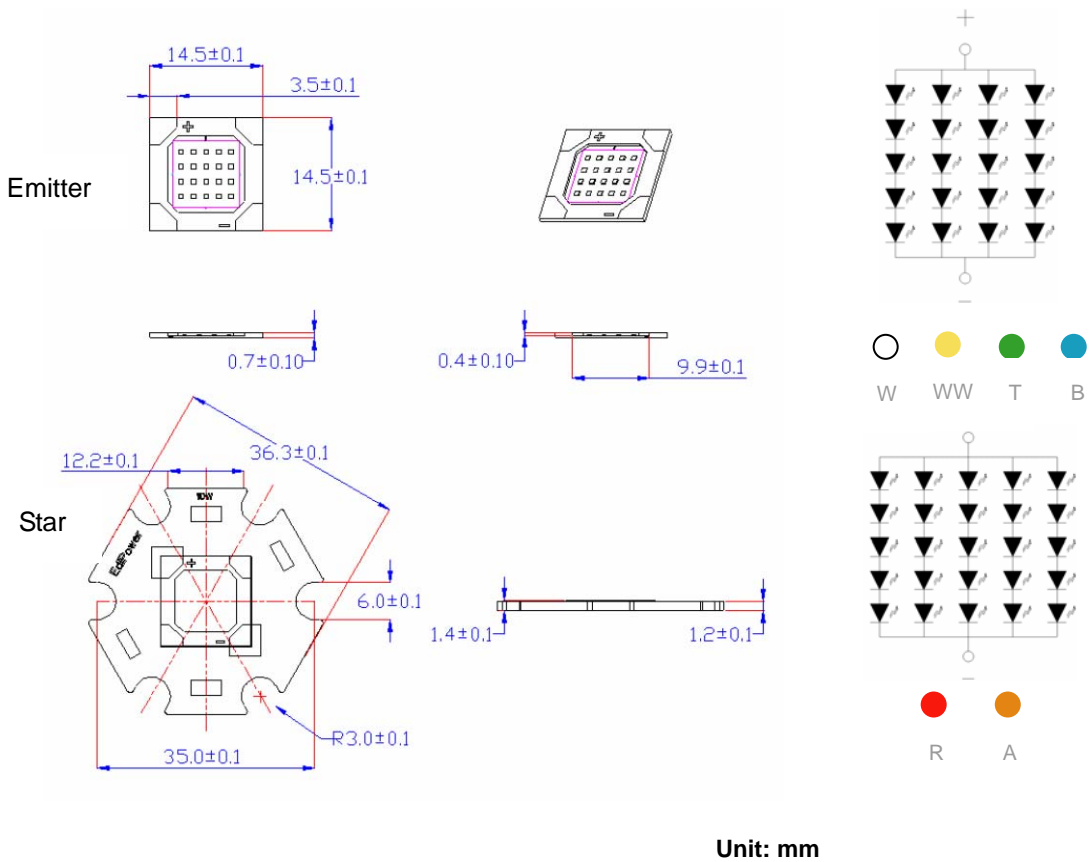
- Reading lights
- Portable flashlight
- LEDs lighting engine
- Bollards / Security / Garden lighting
- Indoor and Outdoor Commercial lighting
- LCD Backlights / Light guides
- Architectural lighting



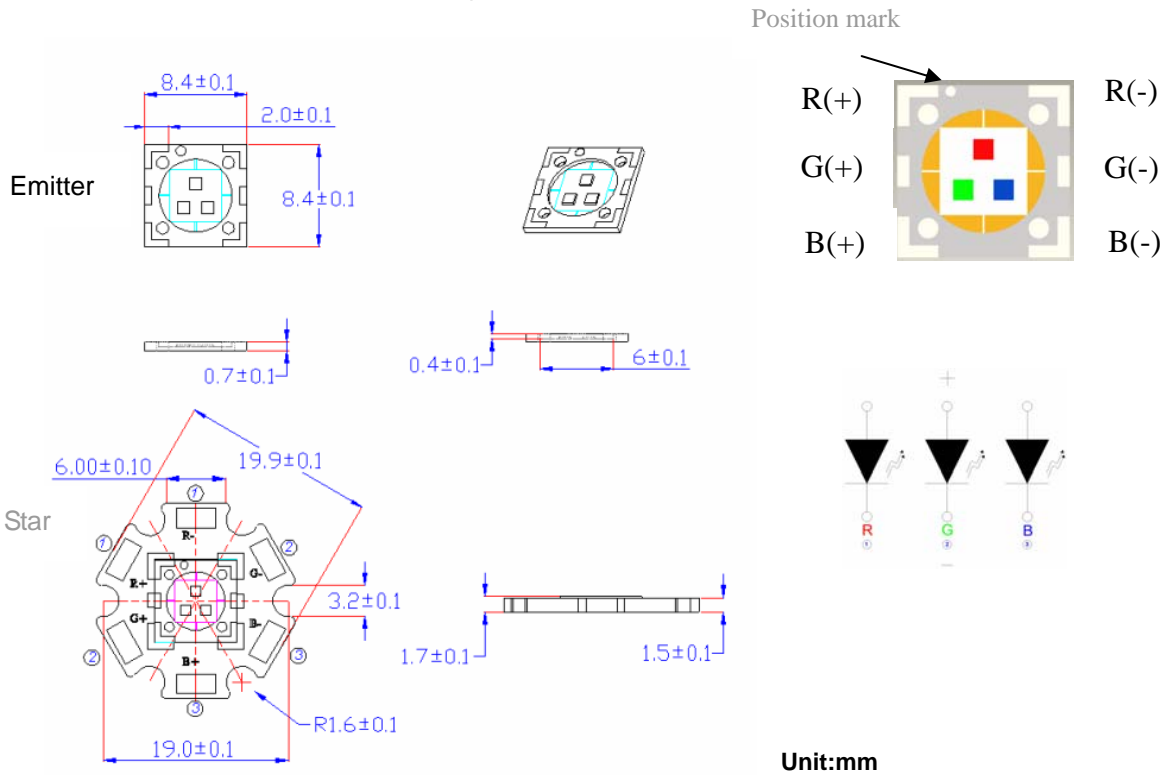
Package Outlines: 5W



Package Outlines: 10W, 20W



Package Outlines: RGB in one package



Absolute Maximum Ratings

Parameter	Symbol	Rating	Units
DC Forward Current	I_F	500 (5W)	mA
		645 (10W)	
		1120 (20W)	
Peak pulse current;(tp \leq 100 μ s, Duty cycle=0.005)	I_{pulse}	1000 (5W)	mA
		1290 (10W)	
		2240 (20W)	
LED junction Temperature	T_j	125	$^{\circ}$ C
Operating Temperature	T_{opr}	-30 ~ +110	$^{\circ}$ C
Storage Temperature	T_{stg}	-40 ~ +120	$^{\circ}$ C
Manual Soldering Time at 260 $^{\circ}$ C (Max.)	T_{sol}	5	seconds
LED Substrate Temperature	T_s	<100	$^{\circ}$ C

Luminous Flux and Electrical Characteristics

Power Consumption	Part Name	Color	Typ. Voltage (V)	Test Current (A)	Luminous Flux (lm)	Thermal Resistance To Board (°C/W)
5W	EP5W-2E00	White	10.4	0.50	200	2
	EP5X-2E00	Warm White	10.4	0.50	130	2
	EP5R-2E00	Red	8.4	0.60	130	2
	EP5A-2E00	Amber	8.4	0.60	130	2
	EP5T-2E00	True Green	10.4	0.50	130	2
	EP5B-2E00	Blue	10.4	0.50	60	2

Power Consumption	Part Name	Color	Typ. Voltage (V)	Test Current (A)	Luminous Flux (lm)	Thermal Resistance To Board (°C/W)
10W	EPAW-2E00	White	17.5	0.645	400	0.8
	EPAX-2E00	Warm White	17.5	0.645	250	0.8
	EPAR-2E00	Red	10.5	0.960	250	0.8
	EPAA-2E00	Amber	10.5	0.960	250	0.8
	EPAT-2E00	True Green	17.5	0.645	250	0.8
	EPAB-2E00	Blue	17.5	0.645	120	0.8

Power Consumption	Part Name	Color	Typ. Voltage (V)	Test Current (A)	Luminous Flux (lm)	Thermal Resistance To Board (°C/W)
20W	EPBW-4E00	White	18.5	1.12	700	0.5
	EPBX-4E00	Warm White	18.5	1.12	450	0.5
	EPBR-4E00	Red	10.5	1.90	500	0.5
	EPBT-4E00	True Green	18.5	1.12	500	0.5
	EPBB-4E00	Blue	18.5	1.12	240	0.5

Chip Characteristics for single color

Color	Dominant Wavelength (λ_d)nm	Forward Voltage (V)
Red	620~630	1.90~2.35
Amber	585~595	1.90~2.35
True Green	520~530	3.20~3.65
Blue	465~475	3.20~3.65

Chip Characteristics for RGB in one(EP3M-4XXX , 40 mil chip size)

Color	Dominant Wavelength (λ_d)nm	Forward Voltage (V)	Test current (A)	Luminous Flux (lm)
Red	625~630	1.9~2.2	0.35	30
True Green	520~525	3.2~3.5	0.35	35
Blue	455~460	3.4~3.7	0.35	12

Electrical Characteristics

Power Consumption	Part Name	Color	Min. Voltage (V)	Typ. Voltage (V)	Max. Voltage (V)
5W	EP5W-2E00	White	9.3	10.2	11.4
	EP5X-2E00	Warm White	9.3	10.2	11.4
	EP5R-2E00	Red	8.0	9.2	10.8
	EP5A-2E00	Amber	8.0	9.2	10.8
	EP5T-2E00	True Green	9.3	10.2	11.4
	EP5B-2E00	Blue	9.3	10.2	11.4

Power Consumption	Part Name	Color	Min. Voltage (V)	Typ. Voltage (V)	Max. Voltage (V)
10W	EPAW-2E00	White	16.6	17.2	18.3
	EPAX-2E00	Warm White	16.6	17.2	18.3
	EPAR-2E00	Red	11.0	12.1	13.0
	EPAA-2E00	Amber	11.0	12.1	13.0
	EPAT-2E00	True Green	16.6	17.2	18.3
	EPAB-2E00	Blue	16.6	17.2	18.3

Power Consumption	Part Name	Color	Min. Voltage (V)	Typ. Voltage (V)	Max. Voltage (V)
20W	EPBW-2E00	White	16.6	17.2	18.3
	EPBX-2E00	Warm White	16.6	17.2	18.3
	EPBR-2E00	Red	11.0	12.1	13.0
	EPBT-2E00	True Green	16.6	17.2	18.3
	EPBB-2E00	Blue	16.6	17.2	18.3

Voltage bin

Power Consumption	Part Name	Color	Bin Group		Bin Group	
5W	EP5W-2E00	White	VW01	9.3~10.1	VW02	10.2~10.8
	EP5X-2E00	Warm White	VX01	9.3~10.1	VX02	10.2~10.8
	EP5R-2E00	Red	VR01	8.0~9.1	VR02	9.2~10.8
	EP5A-2E00	Amber	VA01	8.0~9.1	VA02	9.2~10.8
	EP5T-2E00	True Green	VT01	9.3~10.1	VT02	10.2~10.8
	EP5B-2E00	Blue	VB01	9.3~10.1	VB02	10.2~10.8

Power Consumption	Part Name	Color	Bin Group		Bin Group	
10W	EPAW-2E00	White	VW01	16.6~17.1	VW02	17.2~18.3
	EPAX-2E00	Warm White	VX01	16.6~17.1	VX02	17.2~18.3
	EPAR-2E00	Red	VR01	11.0~12.0	VR02	12.1~13.0
	EPAA-2E00	Amber	VA01	11.0~12.0	VA02	12.1~13.0
	EPAT-2E00	True Green	VT01	16.6~17.1	VT02	17.2~18.3
	EPAB-2E00	Blue	VB01	16.6~17.1	VB02	17.2~18.3

Power Consumption	Part Name	Color	Bin Group		Bin Group	
20W	EPBW-2E00	White	VW01	16.6~17.1	VW02	17.2~18.3
	EPBX-2E00	Warm White	VX01	16.6~17.1	VX02	17.2~18.3
	EPBR-2E00	Red	VR01	11.0~12.0	VR02	12.1~13.0
	EPBT-2E00	True Green	VT01	16.6~17.1	VT02	17.2~18.3
	EPBB-2E00	Blue	VB01	16.6~17.1	VB02	17.2~18.3

CCT ranks

CCT Group	CCT (°K)
Warm White	2700 ~ 3300
X1	2700 ~ 2900
X2	2900 ~ 3100
X3	3100 ~ 3300
White	5200 ~ 7200
W1	5200 ~ 5600
W2	5600 ~ 6000
W3	6000 ~ 6400
W4	6400 ~ 6800
W5	6800 ~ 7200

Part No.Spec.

Power Consumption	Part Name	Color	Chip Connection	Note
5W	EP5W-2E00	White	3 series 4 parallel	Only emitter
	EP5X-2E00	Warm White	3 series 4 parallel	Only emitter
	EP5R-2E00	Red	4 series 4 parallel	Only emitter
	EP5A-2E00	Amber	4 series 4 parallel	Only emitter
	EP5T-2E00	True Green	3 series 4 parallel	Only emitter
	EP5B-2E00	Blue	3 series 4 parallel	Only emitter
Power Consumption	Part Name	Color	Chip Connection	Note
10W	EPAW-2E00	White	5 series 4 parallel	Only emitter
	EPAX-2E00	Warm White	5 series 4 parallel	Only emitter
	EPAR-2E00	Red	5 series 5 parallel	Only emitter
	EPAA-2E00	Amber	5 series 5 parallel	Only emitter
	EPAT-2E00	True Green	5 series 4 parallel	Only emitter
	EPAB-2E00	Blue	5 series 4 parallel	Only emitter

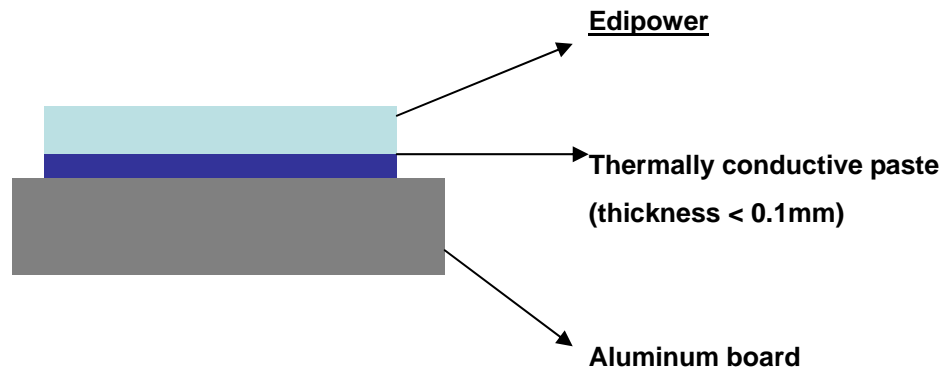
Power Consumption	Part Name	Color	Chip Connection	Note
20W	EPBW-2E00	White	5 series 4 parallel	Only emitter
	EPBX-2E00	Warm White	5 series 4 parallel	Only emitter
	EPBR-2E00	Red	5 series 5 parallel	Only emitter
	EPBT-2E00	True Green	5 series 4 parallel	Only emitter
	EPBB-2E00	Blue	5 series 4 parallel	Only emitter

Power Consumption	Part Name	Color	Chip Connection	Note
5W	EP5W-2S00	White	3 series 4 parallel	With star AI board
	EP5X-2S00	Warm White	3 series 4 parallel	With star AI board
	EP5R-2S00	Red	4 series 4 parallel	With star AI board
	EP5A-2S00	Amber	4 series 4 parallel	With star AI board
	EP5T-2S00	True Green	3 series 4 parallel	With star AI board
	EP5B-2S00	Blue	3 series 4 parallel	With star AI board

Power Consumption	Part Name	Color	Chip Connection	Note
10W	EPAW-2S00	White	5 series 4 parallel	With star AI board
	EPAX-2S00	Warm White	5 series 4 parallel	With star AI board
	EPAR-2S00	Red	5 series 5 parallel	With star AI board
	EPAA-2S00	Amber	5 series 5 parallel	With star AI board
	EPAT-2S00	True Green	5 series 4 parallel	With star AI board
	EPAB-2S00	Blue	5 series 4 parallel	With star AI board

Power Consumption	Part Name	Color	Chip Connection	Note
20W	EPBW-2S00	White	5 series 4 parallel	With star AI board
	EPBX-2S00	Warm White	5 series 4 parallel	With star AI board
	EPBR-2S00	Red	5 series 5 parallel	With star AI board
	EPBT-2S00	True Green	5 series 4 parallel	With star AI board
	EPBB-2S00	Blue	5 series 4 parallel	With star AI board

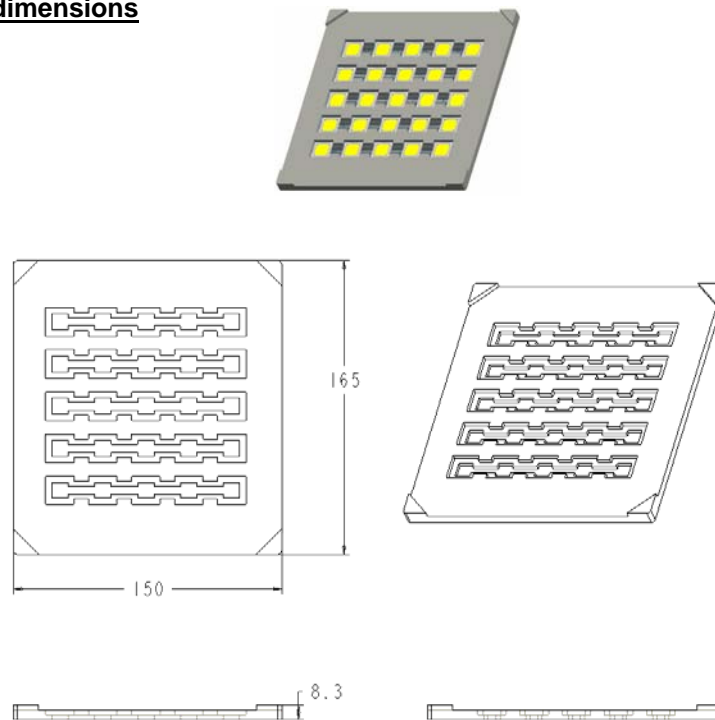
Thermal Management



Thermally conductive paste: $K > 2\text{W/m}\cdot\text{C}$

Aluminum board thickness: 1.5mm

Package dimensions



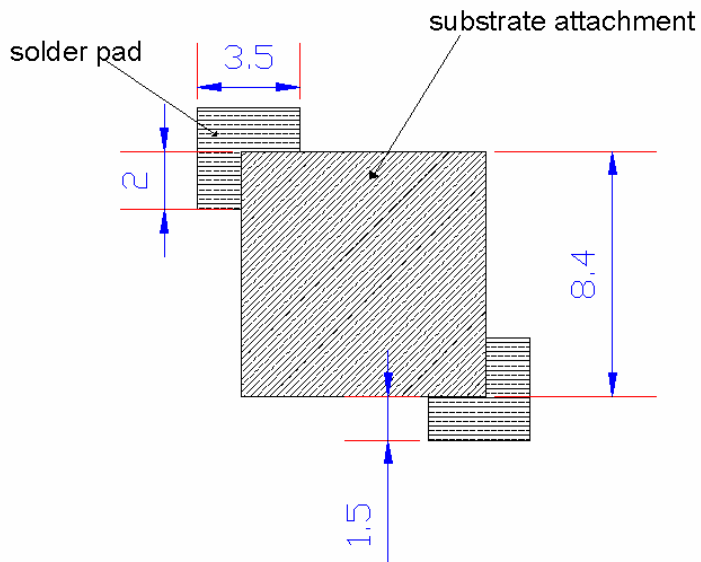
Unit : mm

Note: Package storage condition will be limited in temperature 20~30°C, RH 40~50%

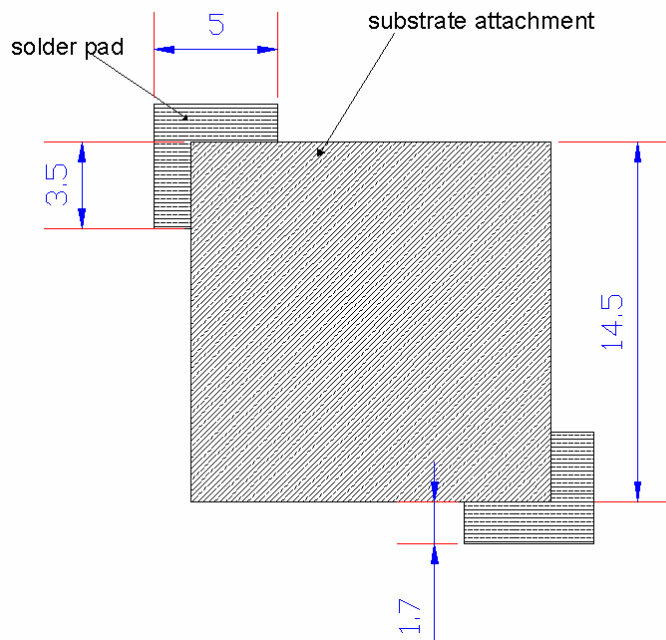
Manual Soldering: It is strongly recommended that solder tip temperature is limited under 350°C
5 seconds. Damage to the silicone layer can cause emitter failure.

AIPCB Design:

5W



10W, 20W



Unit : mm

Thermal Grease Application:

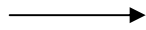
Company: YONYU APPLIED TECHNOLOGY MATERIAL (<http://www.yatm.com.tw>)

Grease Name: TG-6800-1 (K=2.6 W/mK)

Step1: Spread grease on the rear surface of emitter



Rear surface



Grease of rear surface

Step2: Fix emitter on heat sink or Al board.

Company: TOPCO SCIENTIFIC (<http://www.topco.com.tw>)

Grease Name: KJR-9086-1 (K=2.3 W/mK)

Step1: Spread grease on the rear surface of emitter



Rear surface



Grease of rear surface

Step2: Fix emitter on heat sink or Al board.

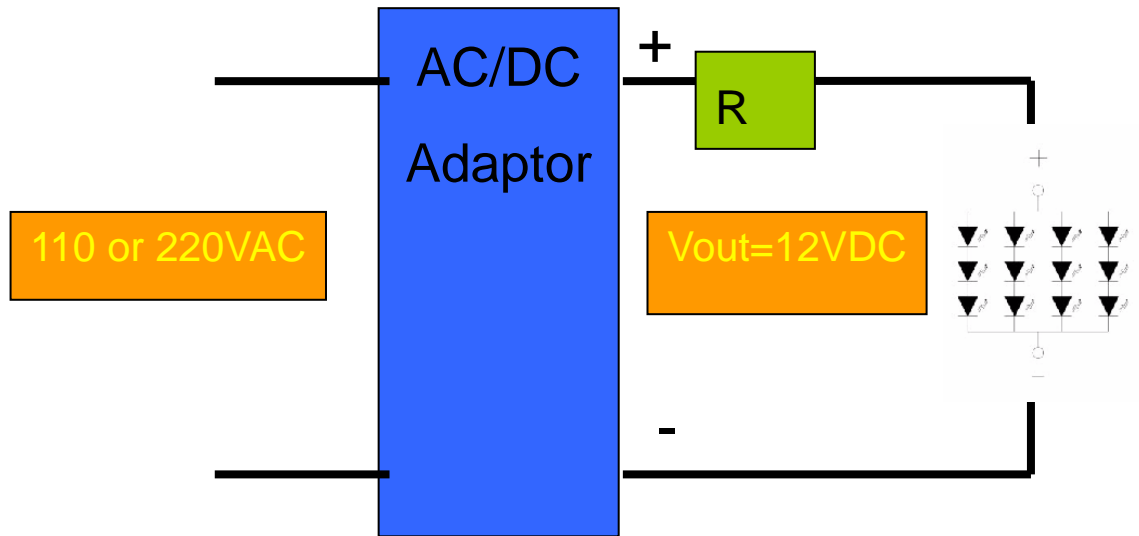
Step3: Put emitter and heat sink or Al board in oven 150°C 20 minutes

Emitter Assembly Note:

1. Please do not use tweezers to touch the surface of silicone (emitting area).
2. Please do not press or touch the surface of silicone (emitting area).
3. Please wear anti-static wrist or glove to prevent ESD damage when assembling.
4. Please do not let EdiPower emitter fall down or press the surface of ceramic

Simple Test Method

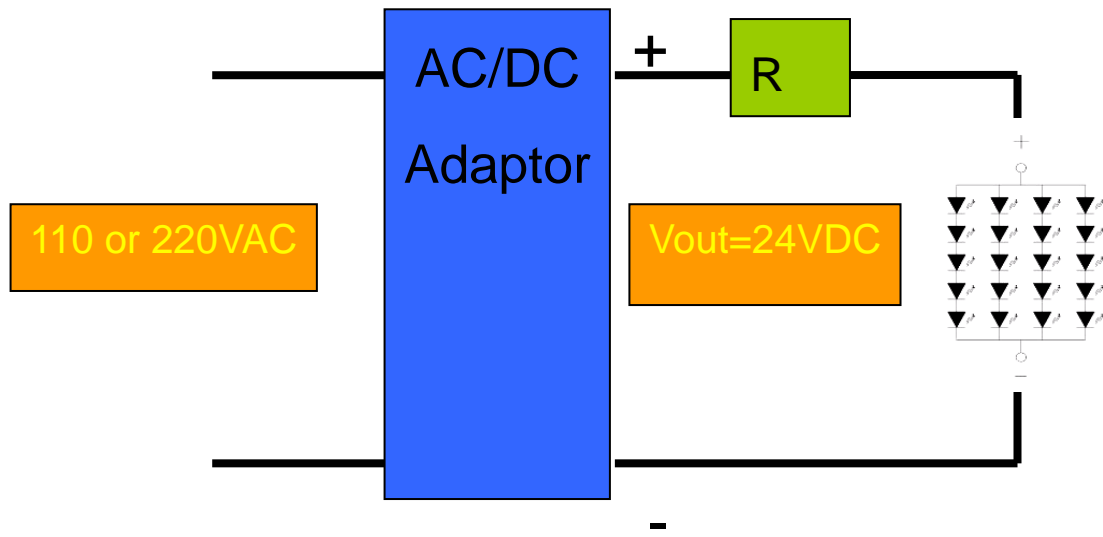
5W EdiPower



$R=4\Omega$ for white, warm white, Green and Blue

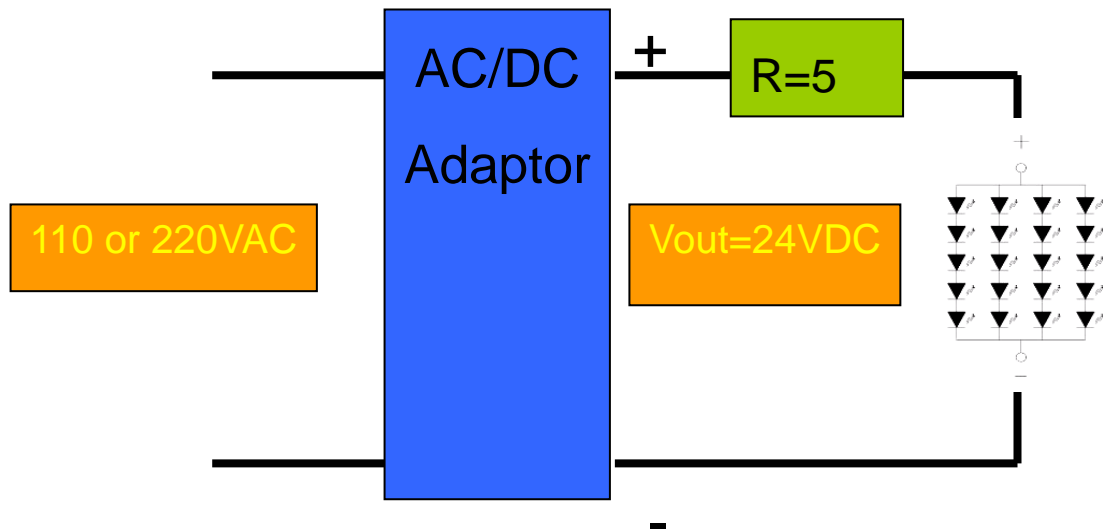
$R=6\Omega$ for red and Amber

10W



$R=10\Omega$ for White, Warm White, Green, Blue
 $R=2\Omega$ for Red and Amber

20W



$R=5\Omega$ for White and Warm

Revised History

Rev.	Issue Date	Revised Item	Note
1.1	2006/02/06	Form changed	
1.2	2006/03/27	1. Add thermal resistance 2. Add thermal grease application 3. Add simple test method	P. 4 P. 10 P. 11
1.3	2006/06/17	Add white and warm white CCT group	P. 7