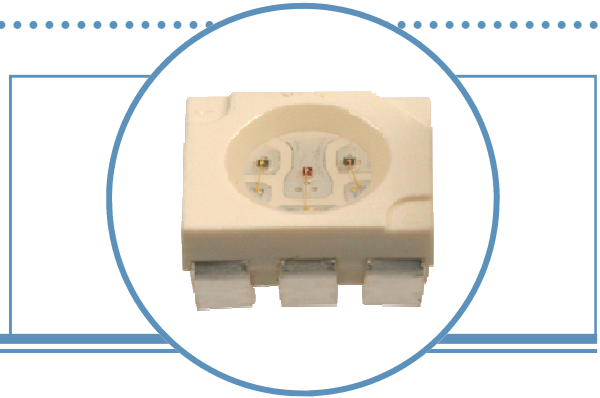


# Full Color PLCC6 LED

## OVSTRGBBCR8

- Full-color red/green/blue
- PLCC package with 6 pins
- Wide viewing angle
- High performance
- Tuneable color mix



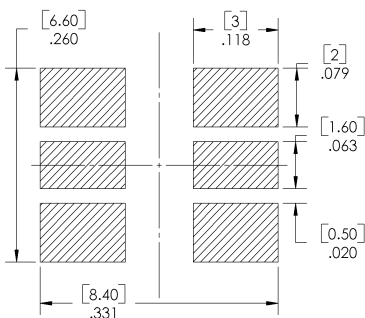
The **OVSTRGBBCR8** package design provides wide viewing angle, low power consumption, and high luminous intensity. Color on demand is made possible by isolated chip circuits, allowing each LED to be driven individually or in tuneable color combinations.

### Applications

- Amusement equipment
- Information boards
- Automotive interior lighting
- Portable appliances
- Indoor and outdoor displays
- Backlighting
- Camera flash
- RGB full-color displays

Part Number	Chip				Lens Color
	Type	Material	Emitted Color	Intensity Typ. mcd	
OVSTRGBBCR8	R	AlInGaP	Red	1000	Water Clear
	G	InGaN	Green	900	
	B	InGaN	Blue	390	

RECOMMENDED PWB PATTERN FOR SOLDERING



PIN CONNECTIONS

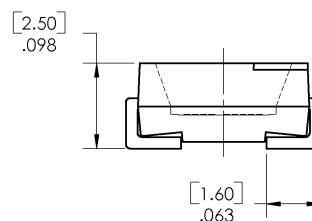
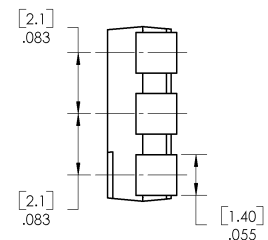
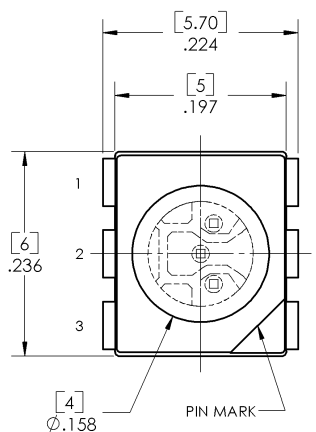
GREEN 1 —▶— 4 GREEN

RED 2 —▶— 5 RED

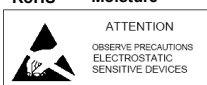
BLUE 3 —▶— 6 BLUE

1,2,3 ANODE 4,5,6 CATHODE

DIMENSIONS ARE IN: [MILLIMETERS]  
[INCHES]



**DO NOT LOOK DIRECTLY AT LED WITH UNSHIELDED EYES OR DAMAGE TO RETINA MAY OCCUR.**



OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

# Full Color PLCC6 LED

## OVSTRGBBCR8



### Absolute Maximum Ratings

T<sub>A</sub> = 25° C unless otherwise noted

PARAMETER	RATING			UNIT
	R	G	B	
Storage Temperature	-40 ~ +100			°C
Operating Temperature	-40 ~ +100			°C
Reverse Voltage	5			V
Continuous Forward Current <sup>1</sup>	80	80	80	mA
Peak Forward Current (10% Duty Cycle, PW ≤ 100 μsec)	200	100	100	mA
Power Dissipation	240	410	410	mW
Junction Temperature	110	110	110	°C
Junction/ambient (1 chip on <sup>2</sup> )	250	210	210	°C/W
Junction/ambient (3 chips on <sup>2</sup> )	500	300	300	°C/W
Junction/solder point (1 chip on)	150	130	130	°C/W
Junction/solder point (3 chips on)	150	160	160	°C/W

Notes:

1. Single color light
2. R<sub>th</sub> test condition: Mounted on PC Board FR 4 (pad size ≥ 40mm<sup>2</sup>)

### Electrical Characteristics

T<sub>A</sub> = 25° C unless otherwise noted

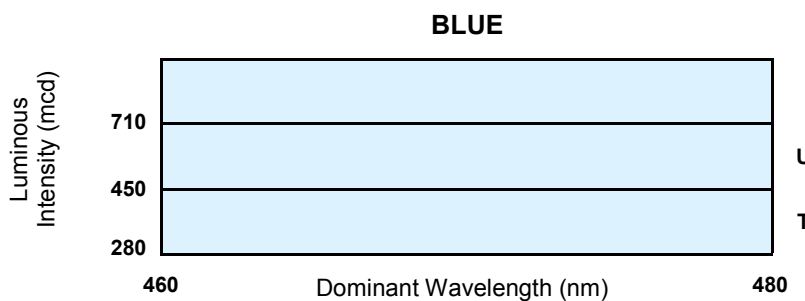
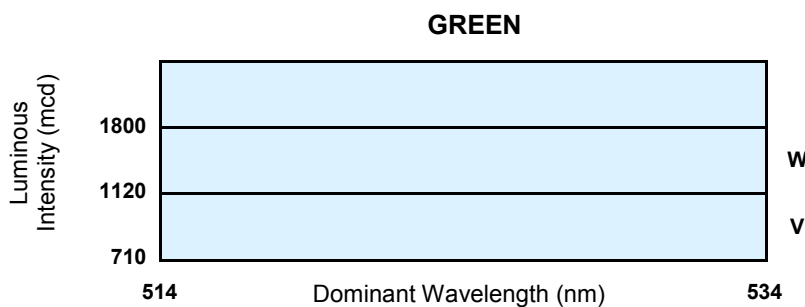
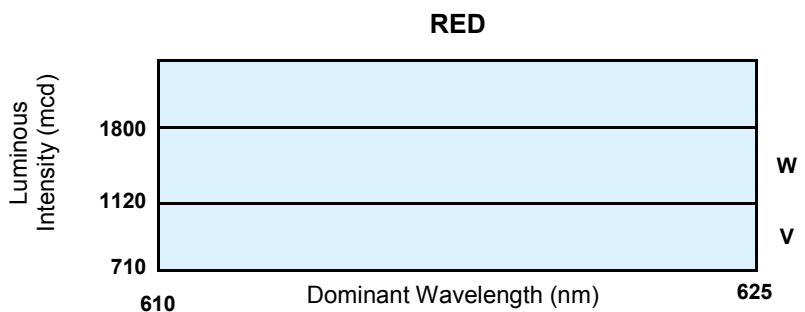
SYMBOL	PARAMETER	VALUES			UNIT	CONDITIONS	
			R	G			B
I <sub>V</sub>	Luminous Intensity	Min	710	710	280	mcd	I <sub>F</sub> = 50 mA
		Avg	1000	900	390		
V <sub>F</sub>	Forward Voltage	Avg	2.0	4.0	4.0	V	I <sub>F</sub> = 50 mA
		Max	2.5	5.1	5.1		
I <sub>R</sub>	Reverse Current (max)		10	10	10	μA	V <sub>R</sub> = 5 V
λ <sub>D</sub>	Dominant Wavelength		624	525	470	nm	I <sub>F</sub> = 50 mA
λ <sub>P</sub>	Wavelength at Peak Emission		620	521	468	nm	I <sub>F</sub> = 50 mA
2 Θ <sub>½</sub>	50% Power Angle		120	120	120	deg	I <sub>F</sub> = 50 mA
Δλ	Spectrum Radiation Bandwidth		24	38	28	nm	I <sub>F</sub> = 50 mA

OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

# Full Color PLCC6 LED OVSTRGBBCR8

## Standard Bins ( $I_F = 50 \text{ mA}$ )

Lamps are sorted to luminous intensity ( $I_V$ ) and dominant wavelength ( $\lambda_D$ ) bins shown. Orders for OVSTRGBBCR8 may be filled with any or all bins contained as below.

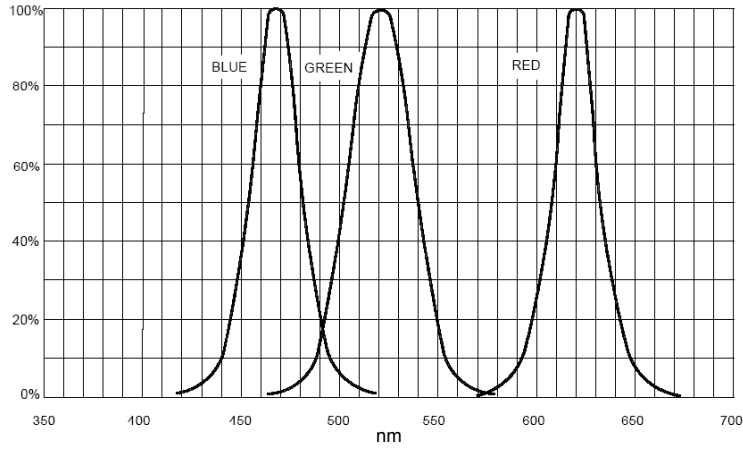


### Notes:

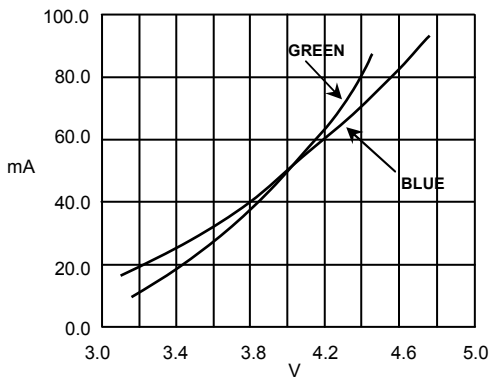
1. All ranks will be included per delivery, rank ratio will be based on the chip distribution.
2. Tolerance of measurement of luminous intensity is  $\pm 10\%$ .
3. Tolerance of measurement of dominant wavelength is  $\pm 1 \text{ nm}$ .
4. Tolerance of measurement of  $V_F$  is  $\pm 0.05\text{V}$ .

OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

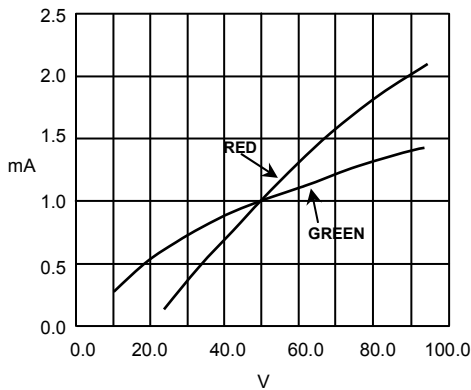
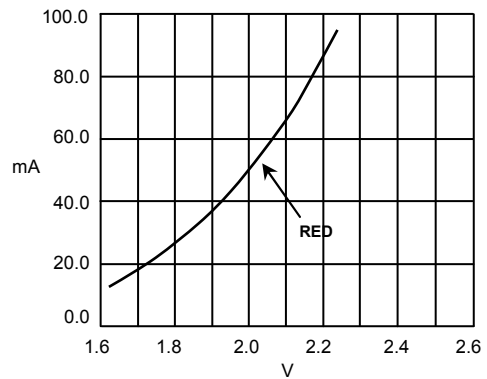
Typical Electro-Optical Characteristics Curves



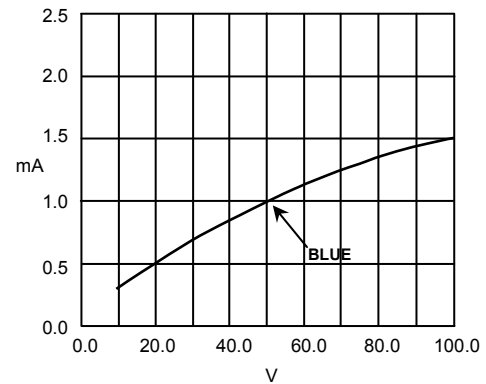
Relative Intensity vs Dominant Wavelength



Forward Current vs Forward Voltage

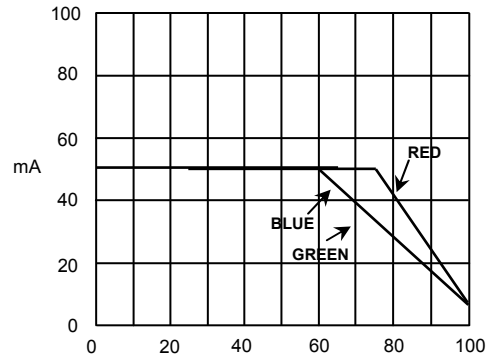
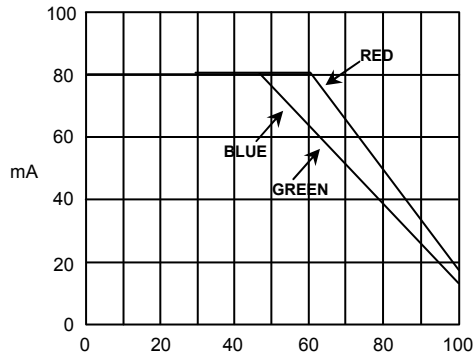


Relative Luminous Intensity vs Forward Current

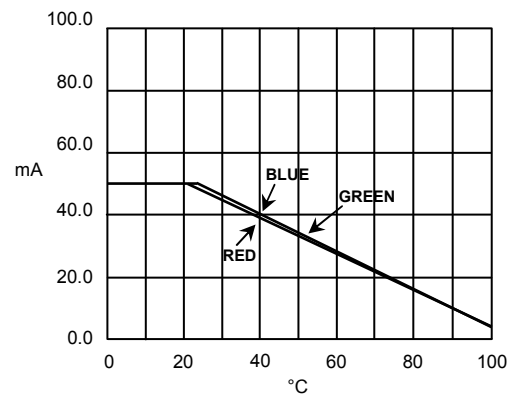
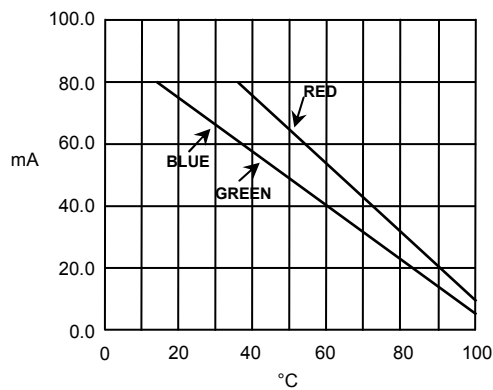


OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

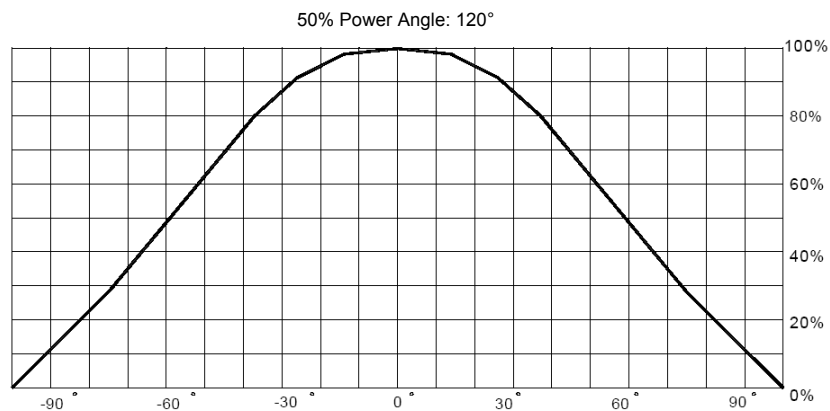
## Typical Electro-Optical Characteristics Curves



Maximum Forward DC Current vs Solder Point Temperature



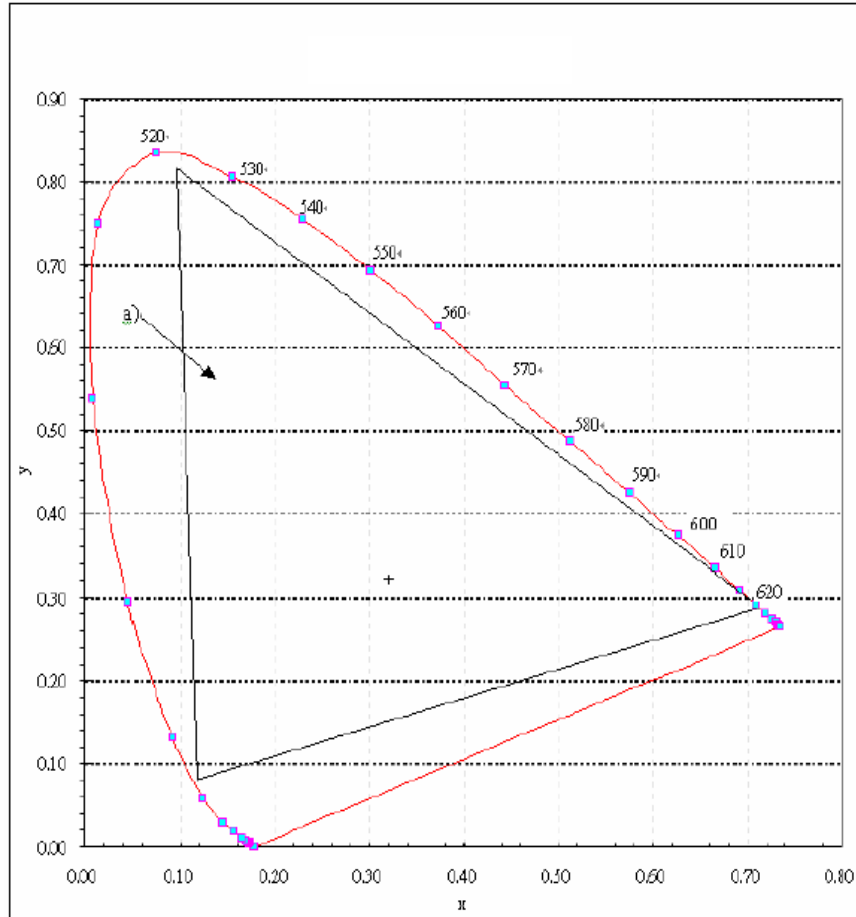
Maximum Forward DC Current vs Ambient Temperature



Far Field Pattern

OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

### CIE Chromaticity Diagram



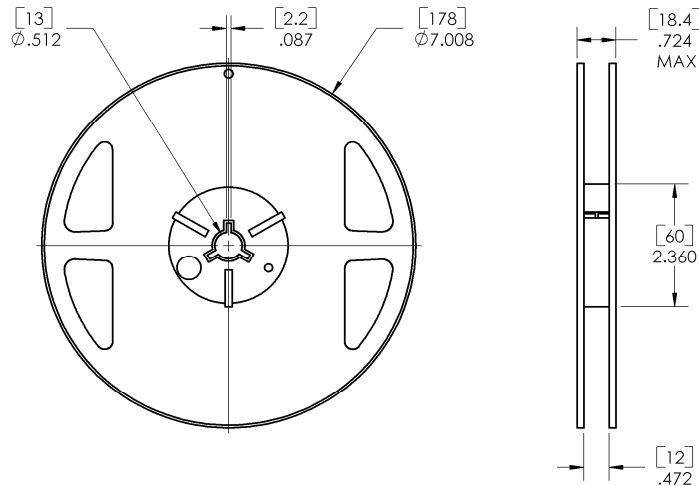
**Note:**

1. The color coordinates of the mixed light can be expected within the area of the color triangle marked a). The achromatic point ( $x=0.33$ ,  $y=0.33$ ) is marked "+".

OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

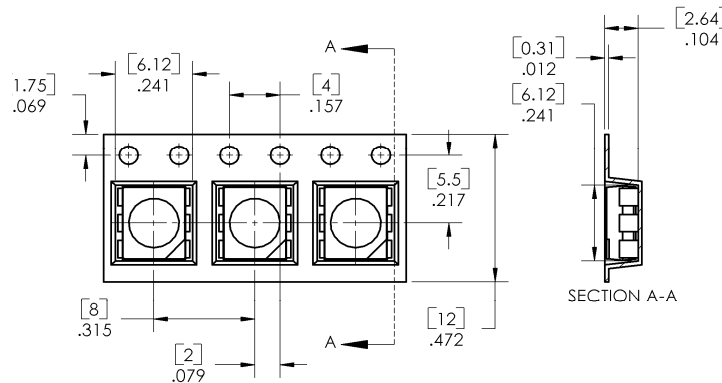
# Full Color PLCC6 LED OVSTRGBBCR8

## Reel Dimensions: 13-inch reel



LOADED QUANTITY - 2000 PCS PER REEL

## Carrier Tape Dimensions: Loaded quantity 2000 pieces per reel



DIMENSIONS ARE IN INCHES AND [MILLIMETERS].

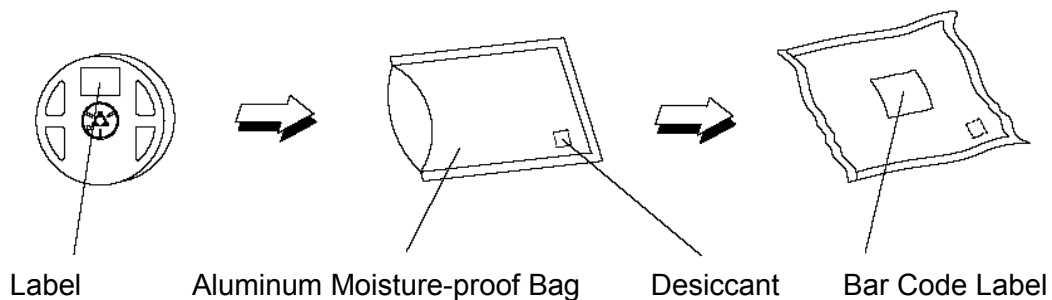
ITEM	W	A <sub>0</sub>	B <sub>0</sub>	K <sub>0</sub>	T	P	F	E	D	D <sub>1</sub>	P <sub>0</sub>	P <sub>2</sub>
DIM	12.0 <sup>+0.30</sup> <sub>-0.10</sub>	6.12 <sup>+0.10</sup> <sub>-0.10</sub>	6.12 <sup>+0.10</sup> <sub>-0.10</sub>	2.64 <sup>+0.10</sup> <sub>-0.10</sub>	0.305 <sup>+0.02</sup> <sub>-0.02</sub>	8.00 <sup>+0.10</sup> <sub>-0.10</sub>	5.50 <sup>+0.10</sup> <sub>-0.10</sub>	1.75 <sup>+0.10</sup> <sub>-0.10</sub>	Ø1.50 <sup>+0.10</sup> <sub>-0.00</sub>	Ø1.50MIN	4.00 <sup>+0.10</sup> <sub>-0.10</sub>	2.00 <sup>+0.05</sup> <sub>-0.05</sub>

### Notes:

- 10 sprocket hole pitch cumulative tolerance  $\pm 0.20$  mm.
- Carrier camber not to exceed 1 mm in 100 mm.
- A<sub>0</sub> and B<sub>0</sub> measured on a plane 0.3 mm above the bottom of the pocket.
- K<sub>0</sub> measured from a p lane on the inside bottom of the pocket to the top surface of the carrier.
- All dimensions meet EIA-481-2A requirements.
- Material: Black Anti-static Polystyrene.
- Thickness: 0.305 $\pm$ 0.02 mm.

OPTeK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

## Moisture Resistant Packaging



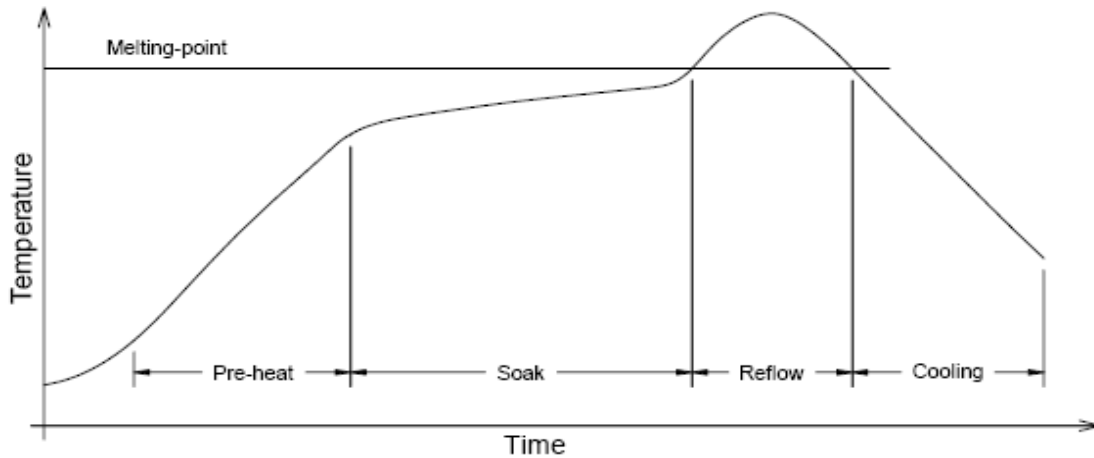
OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.



SMD LED Application Notes  
PLCC Package

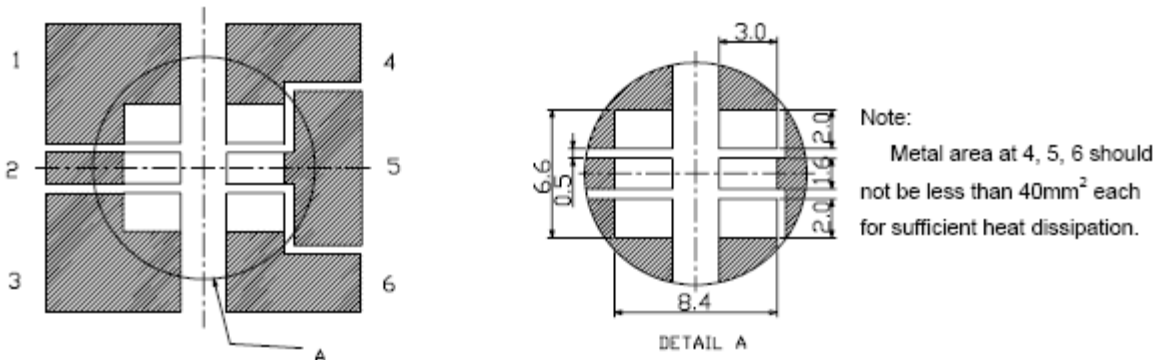
Reflow Soldering

The temperature (Top surface of SMD LED) profile is as below:



Solder = Sn63-Pb37	Solder = Lead-free
Average ramp-up rate = 4°C/s max.	Average ramp-up rate = 4°C/s max
Preheat temperature = 100°C ~150°C	Preheat temperature = 150°C ~200°C
Preheat time = 100s max.	Preheat time = 100s max.
Ramp-down rate = 6°C/s max.	Ramp-down rate = 6°C/s max.
Peak temperature = 230°C max.	Peak temperature = 250°C max.
Time within 5°C of actual Peak Temperature = 10s max.	Time within 5°C of actual Peak Temperature = 10s max.
Duration above 183°C is 80s max.	Duration above 217°C is 80s max.

Recommended solder pad design for heat dissipation (6-pin SMD LED)



- Modification is not recommended on SMD LED after soldering. If modification cannot be avoided, the modifications must be pre-qualified to avoid damaging SMD LED.
- Reflow soldering should not be done more than one time.
- No stress should be exerted on the package during soldering.
- PCB should not be wrapped after soldering; this is to allow natural cooling of the PCB board and SMD LED.

OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.