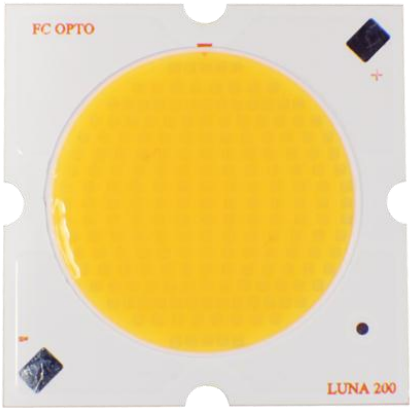
95CRI Luna 200

Best Lumen / Watt
LED Flip Chip COB Module

Brighter and Cooler

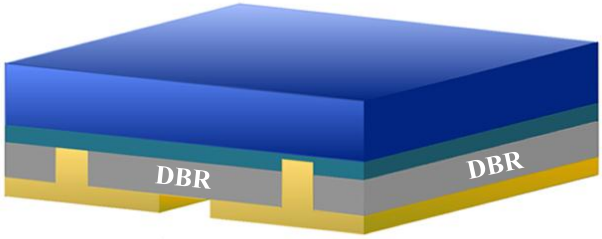
High Efficacy & Lower Thermal Resistance

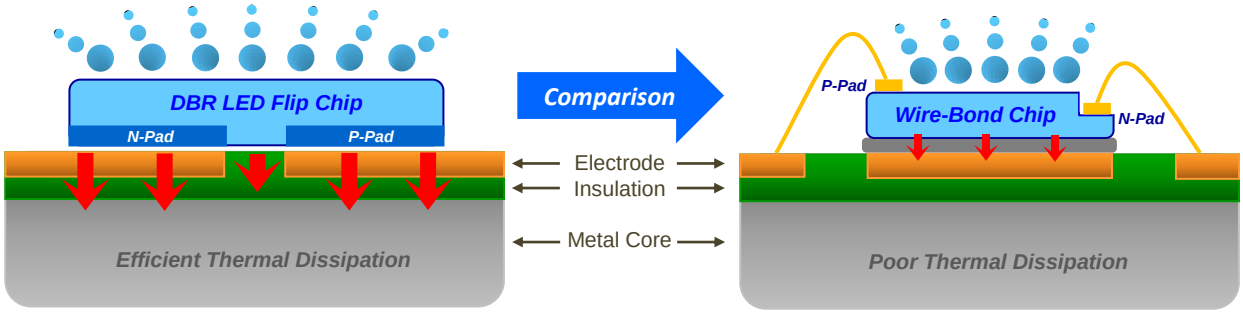


Luna 200 Chip on Board is a high-performance LED module based on patented **DBR Flip Chips** and unique low temperature bonding technology. The magnitude of the LED illumination is enhanced by the DBR structure to further increase the lighting efficacy. Additionally, the embedment between LED flip chips and MCPCB as well lowers the thermal resistance.

Features:

- Patented DBR Flip Chips
- 440W Maximum Power
- Available in 2700K, 3200K, 4000K, 5600K CCT
- 95+ CRI with Options of 95+ R9/R12
- 32mm Light Emitting Surface
- 0.12°C/W Thermal Resistance
- 35x35mil Flip Chips
- Low Temperature Bonding
- RoHS Compliant





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Absolute Maximum Ratings (Ta=25°C):

Parameter	Symbol	Max. Rating	Conditions
Power Dissipation	P_d	440W	Tj≤140°C
DC Forward Current	I_F	9,100mA	Tj≤140°C
Junction Temperature	Tj	140°C	
Reverse Voltage	V_r	-5V	$T_{ambient}$ = 25°C
Reverse Current	I_r	≤1μA	Vr = -5V
Operating Case Temperature	T_C	-40°C to 105°C	
Storage Temperature	T_{ST}	-40°C to 120°C	

Electro-Optical Characteristics (Ta=25°C):

Viewing Angle $2\theta_{1/2}$ = 140°

Nominal CCT	Luna Part Number	CRI (min)	Luminous Flux (lm) @ I_F=4.55A	V_F (V) @ I_F=4.55A	Luminous Flux (lm) @ I_F=9.1A	LES (mm)
5600K	200-5695	95	23,110	45.7	37,120	32
4000K	200-4095	95	20,150	45.7	32,360	
3200K	200-3295	95	18,714	45.7	30,050	
2700K	200-2795	95	15,180	45.7	24,380	

Thermal Characteristics:

Parameter	Symbol	°C/W	Definition
Thermal Resistance	$R_{th(j-b)}$	0.12	Between LED Junction and COB Bottom Surface

- Junction Temperature Tj = Tb + Power(W) x Rth(j-b), where Tb is the temperature at COB bottom surface.

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Color Rendering Index (Ta=25°C):

5700K														
R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
97.4	97.8	95.0	96.0	95.0	92.9	98.8	98.2	98.4	92.9	95.6	67.4	97.7	97.2	94.9

4000K														
R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
97.0	98.6	97.5	95.9	95.8	95.1	96.0	92.5	82.9	95.1	96.2	75.6	98.0	98.3	98.7

3200K														
R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
98.7	97.4	91.8	92.5	97.5	96.9	94.5	95.8	99.0	93.1	91.2	91.8	99.6	94.6	97.9

2700K														
R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
98.1	99.2	94.4	94.9	98.1	99.1	98.3	98.9	96.5	96.9	92.0	96.0	98.8	95.8	98.1

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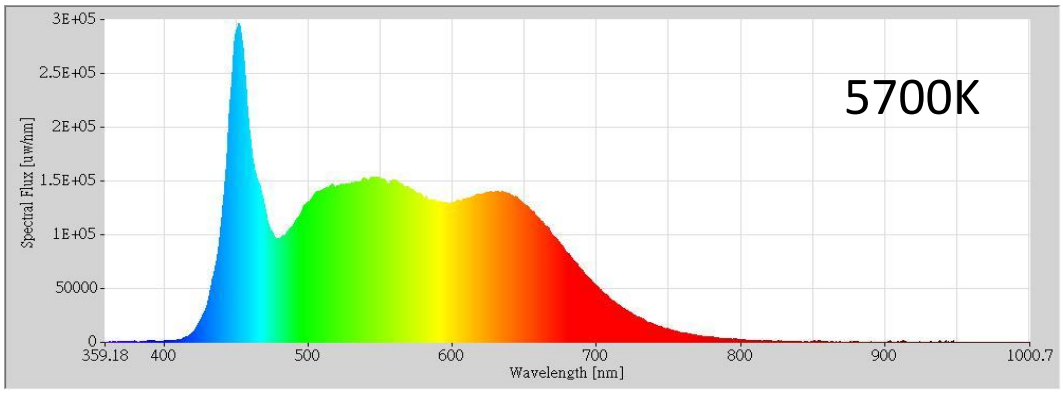
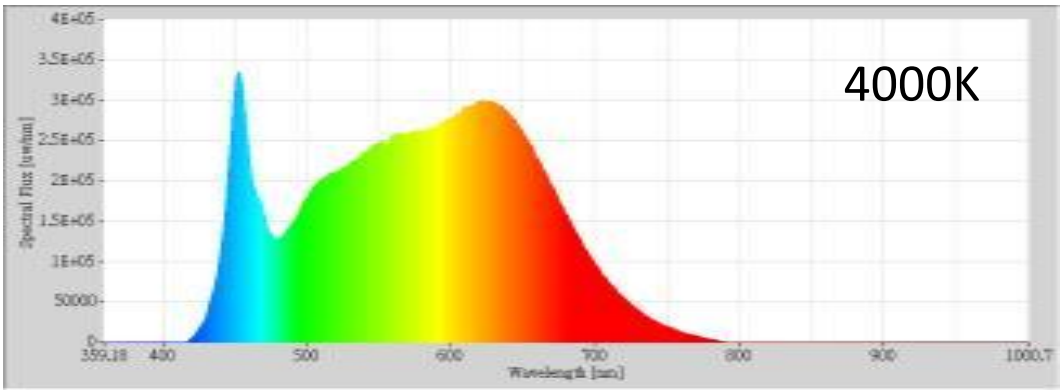
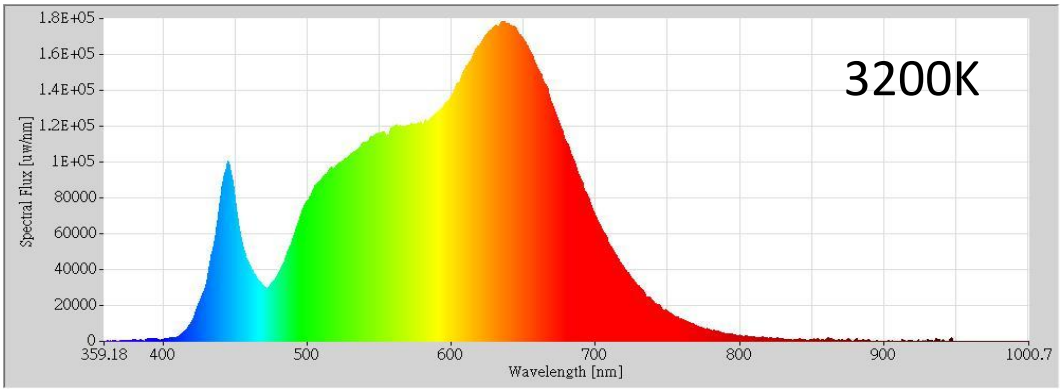
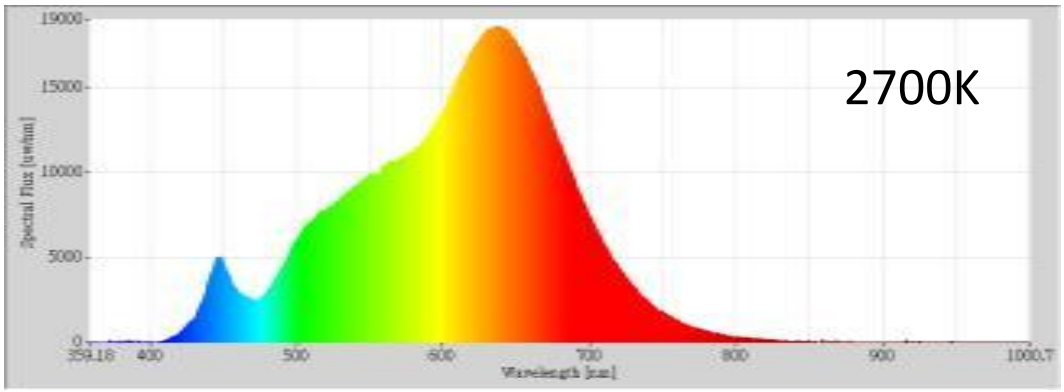
Spectrum (Ta=25°C):









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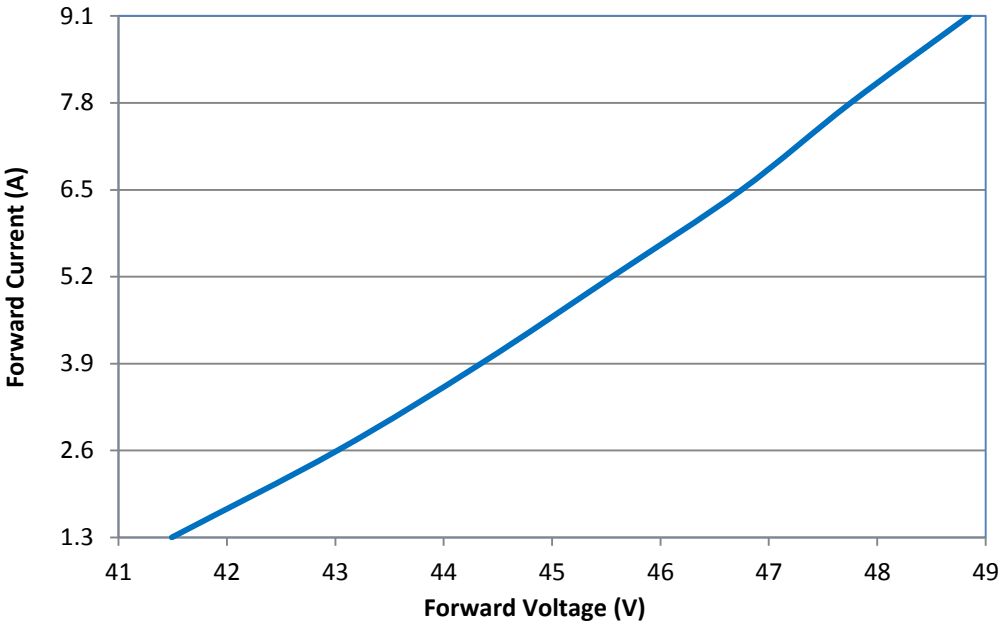
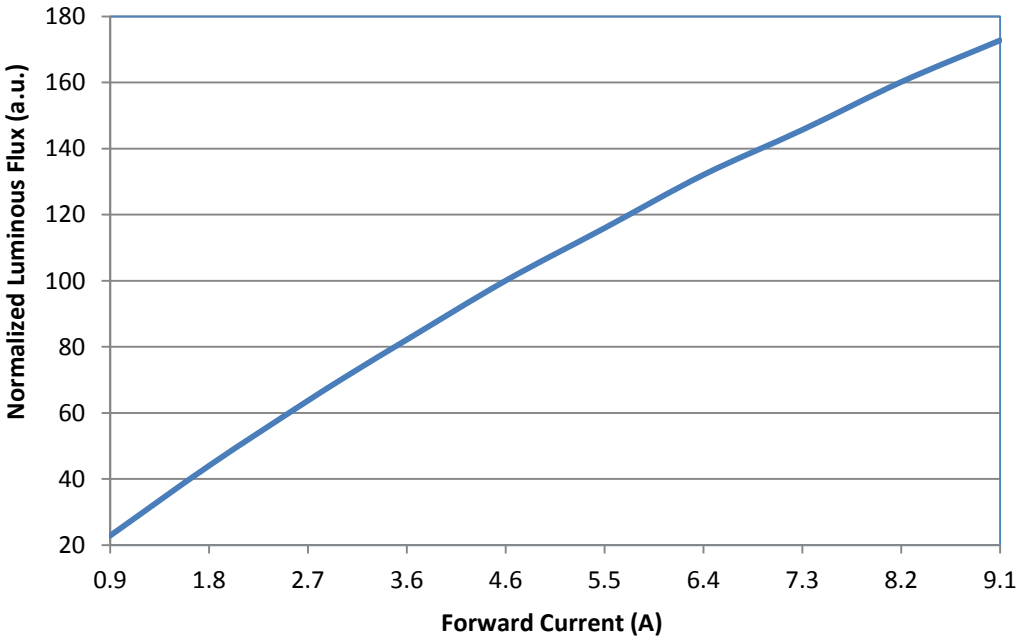
Characteristic Graphs (Ta=25°C):

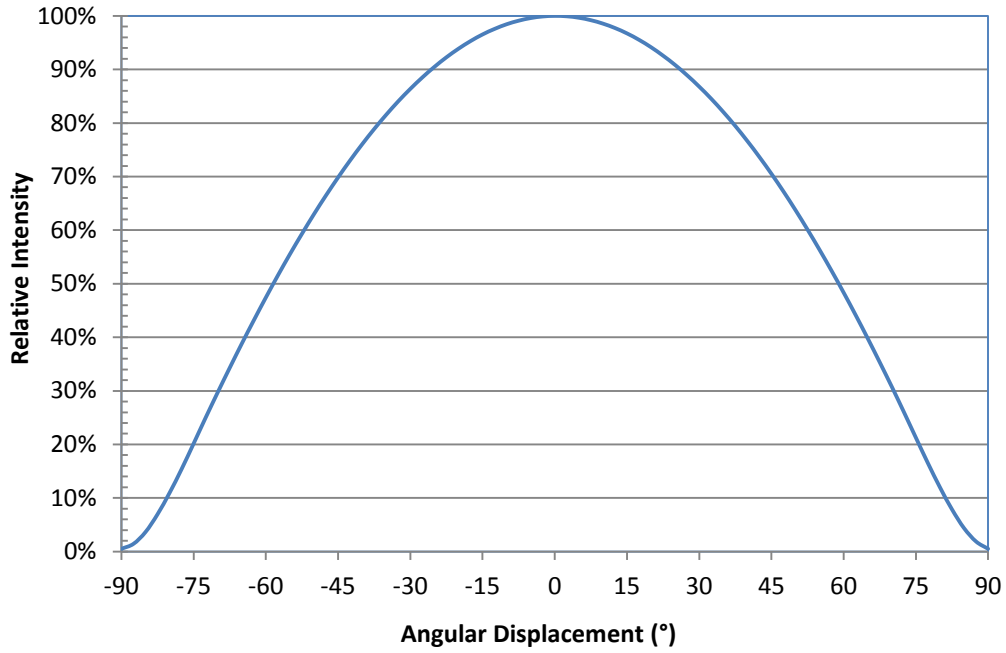
(i) Typical Forward Current (I_F) vs. Forward Voltage (V_F)



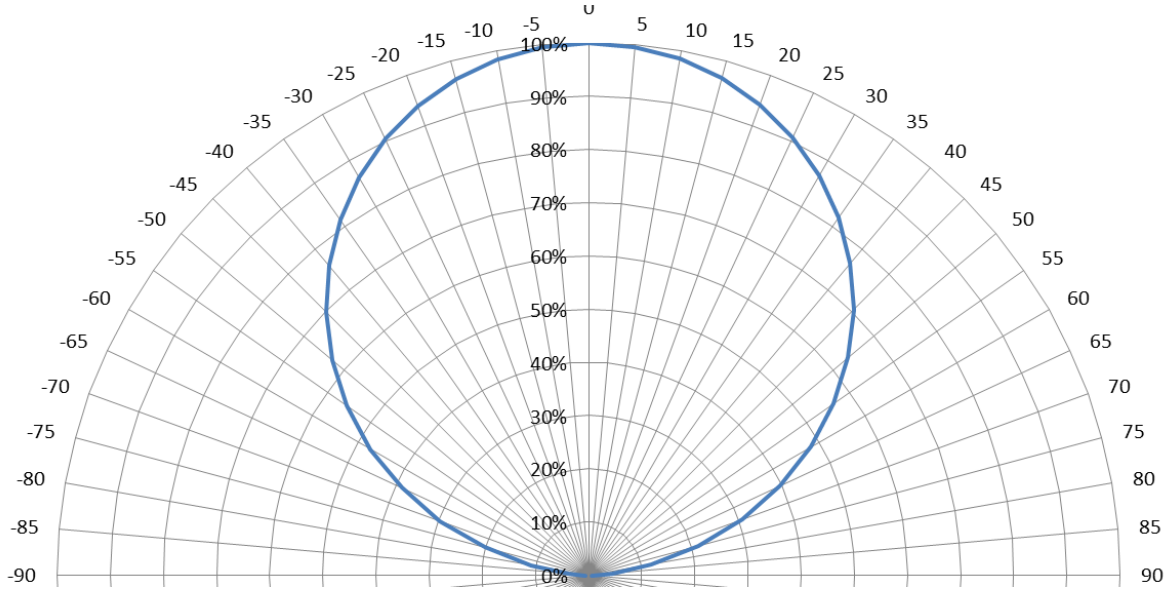
(ii) Typical Normalized Luminous Flux vs. Forward Current (I_F)



(iii) Typical Spatial Radiation Pattern



(iv) Typical Polar Radiation Pattern



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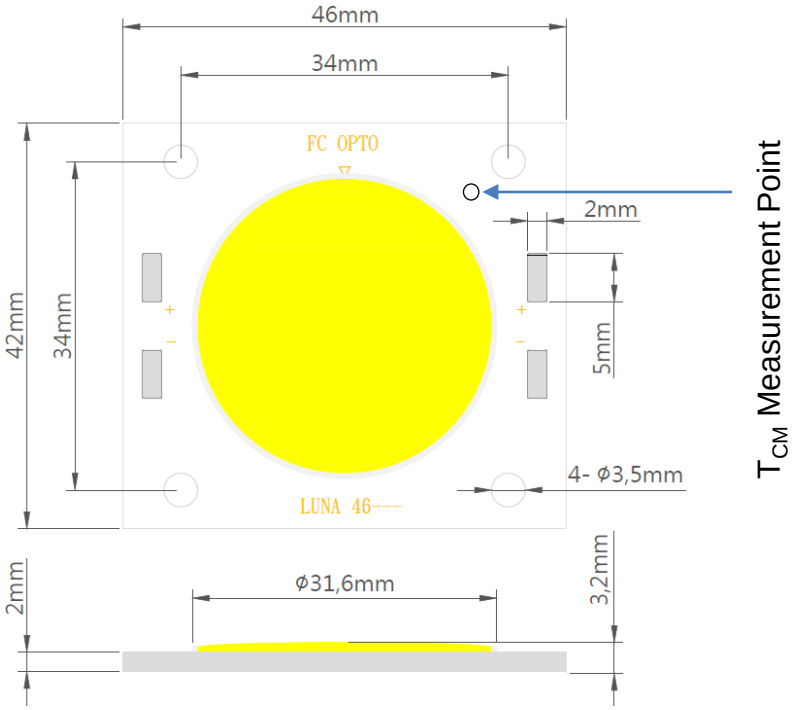
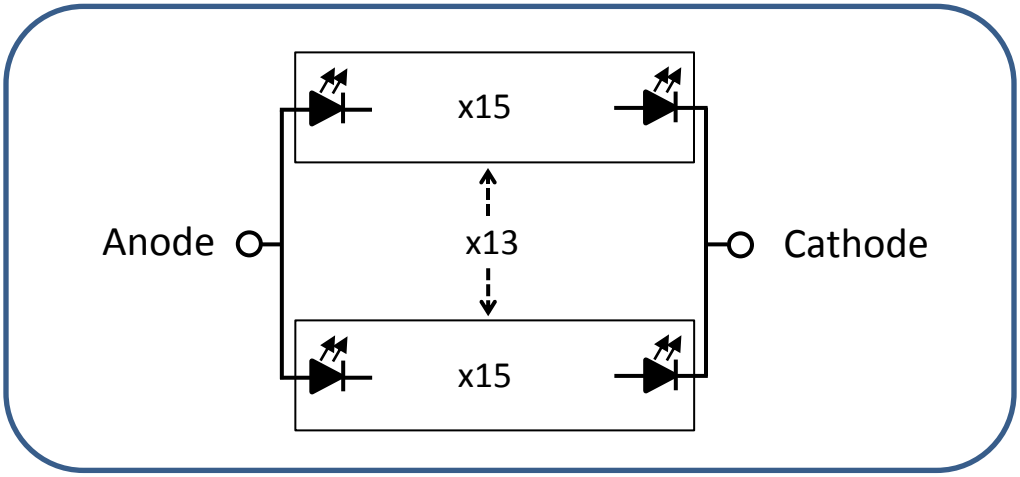
Mechanical Dimensions:

- Solder pads are labeled “+” and “-“ to denote positive and negative, respectively.
- Drawing dimensions are in millimeters, and are not to scale.
- Tolerance: ±0.2mm
- The optical center of the LED Array is defined by the mechanical center of the array.



Circuit Diagram:



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Cautions:

1. Circuit Protection is recommended during the assembly and operation.
    i. MOV, TVS, current fuse, thermal fuse, capacitor, resistor are options to avoid unexpected circuit faults.

2. Storage Conditions
    i. Moisture Controlled environment is recommended to avoid COB damages during storage. Moisture may cause circuit damages and result in brightness reduction or failure in circuit contacts.
    ii. COB in moisture-proof sealed bags should be stored in ambient conditions of temperature less than 30°C and humidity less than 90%RH.
    iii. COB in open air should be kept in ambient conditions of temperature less than 30°C and humidity less than 60%RH.
    iv. COB should be restored in moisture-proof bag with moisture absorbent together.

3. Handling Light Emitting Surface (LES)
    i. LES is a silicone lens and should not have direct contact with sharp tools and human fingers.

4. Recommendation on Assembly with Heat Sink
    i. Apply thermal grease over the heatsink contact surface to seal the voids and roughness pre-existing on the contact surface.
    ii. Attach COB onto heatsink contact surface with thermal grease in between. Thermal grease thickness is suggested less than 25um (1 mil)
    iii. Apply sufficient pressure to secure the COB, and ensure (a) full contact between COB and heatsink, (b) no voids within thermal grease, (c) minimal thermal grease thickness.

5. Flip Chip Opto is not responsible to the damages caused by the operation under the parameters exceeding the values described in the specification.

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