



ST Series COB Gen.2 (Tunable COB/TCOB)

双色 COB 第二代

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1. Applications 产品应用

- Indoor lighting: LED bulb, Spotlight, Ceiling lamp, Downlight
室内照明: 球泡, 射灯, 天花灯, 筒灯
- Industry and Outdoor lighting: Floodlight, Hight bay light, Streetlight
工业和户外照明: 投光灯, 工矿灯 A, 路灯
- Other illumination 其它照明

2. Features 产品特点

- Support 3w to 200w solution 提供 3w 到 200w 的解决方案
- High efficiency 高光效
- Low thermal resistance 低热阻
- Long time reliability 长时间的可靠性
- RoHS compliant 符合 ROHS 标准

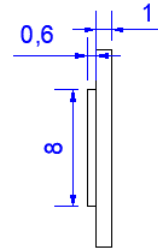
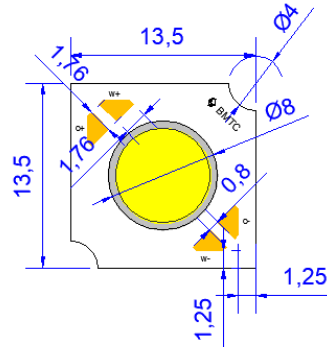
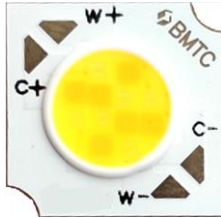
3. Part No. Description 产品型号说明

Example 示例: MT1901-101202T565M-B4A0

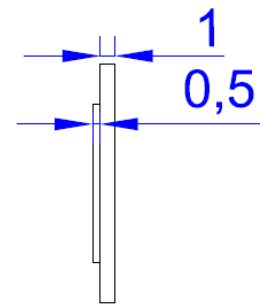
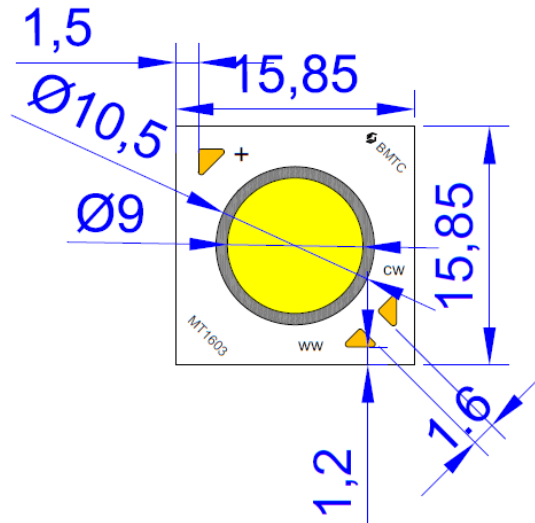
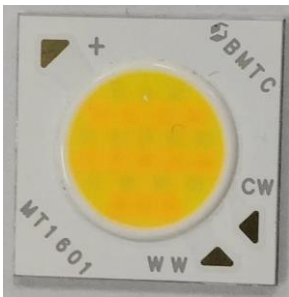
Model 型号	MT1901	10	1202	T565	M	B4A0
Meaning 含义	Series 产品系列	Power 功率	Chip array 芯片排布	Bin code 颜色标准	CRI 显指	Internal code 内部代码
	倒装 1919	10w	12S1P*2	2700K 6500K	>80	

4. Package Outline Dimensions 封装外形尺寸

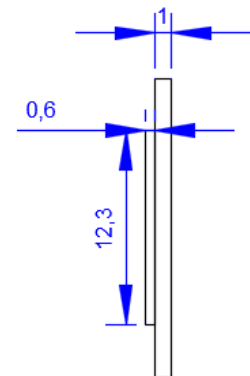
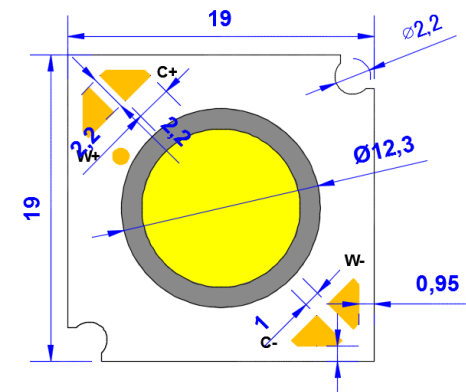
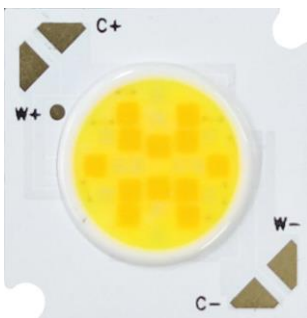
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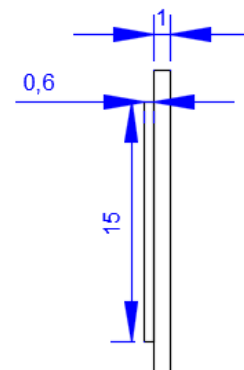
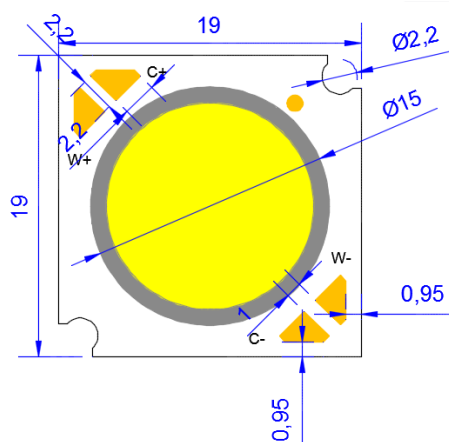
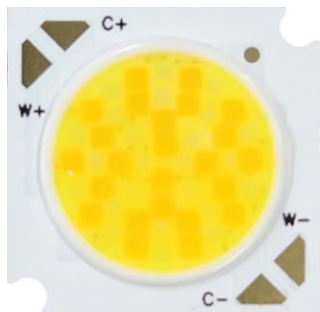
2) 10w_MT1603-12S1P*2



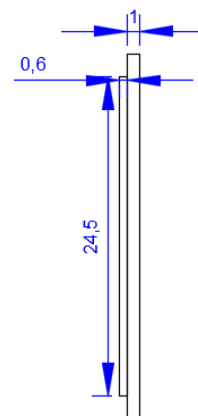
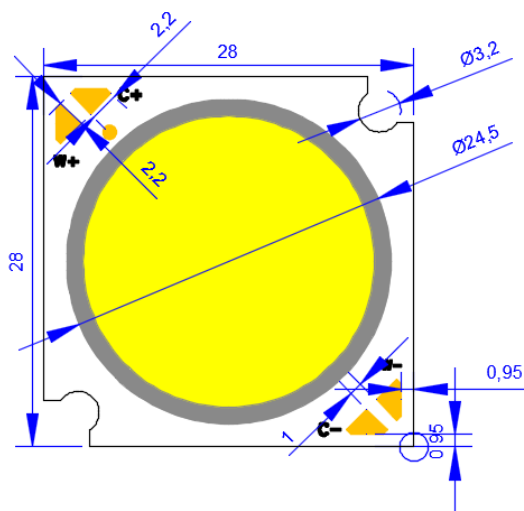
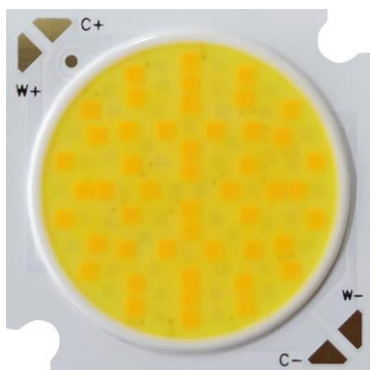
3) 10w_MT1901-12S1P*2



4) 20w_MT1902-12S2P*2



5) 35w_MT2801-12S4P*2



Note:

a. UNIT: MM [INCH]. 单位: 毫米[英寸]

b. The tolerances unless mentioned is ± 0.3 mm. 除非另有说明, 以上尺寸的公差为 ± 0.3 mm.

5. Absolute Maximum Ratings 极限参数

Item	Symbol	Model		Rating	Unit
Max. Current / Max. Power 最大正向电流 / 最大功率	I _{max} / P _{max}	MT1301	6S1P*2	400/7.5	mA/W
		MT1603	12S1P*2	400/15	
		MT1901	12S1P*2	400/15	
		MT1902	12S2P*2	800/30	
		MT2801	12S4P*2	1250/45	
Operating Temperature 工作温度	T _a		-	-40 ~ +85	°C
Storage Temperature 储存温度	T _{stg}		-	-40 ~ +105	°C
LED Junction Temperature LED 结点温度	T _j		-	130	°C
Thermal measurement point 热测试点	T _c		-	105	°C

Note:

- 1) Input power and forward current are the values when the LED is used within the range of the derating curve in this data sheet.本数据表中的输入电源和正向电流值是使用的 LED 降额曲线范围内的值.
- 2) The temperature of Aluminum PCB do not exceed 105°C. 基板负极引线温度不能超过 105°C.
- 3) When hand soldering, keep the temperature of iron below less 350°C less than 5seconds.当手工焊接时,烙铁的温度必须小于 350°C,时间不能超过 5 秒.

6. Electro-Optical Characteristics 光电特性 (T_j=25°C)

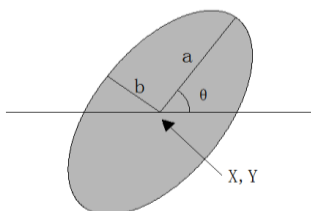
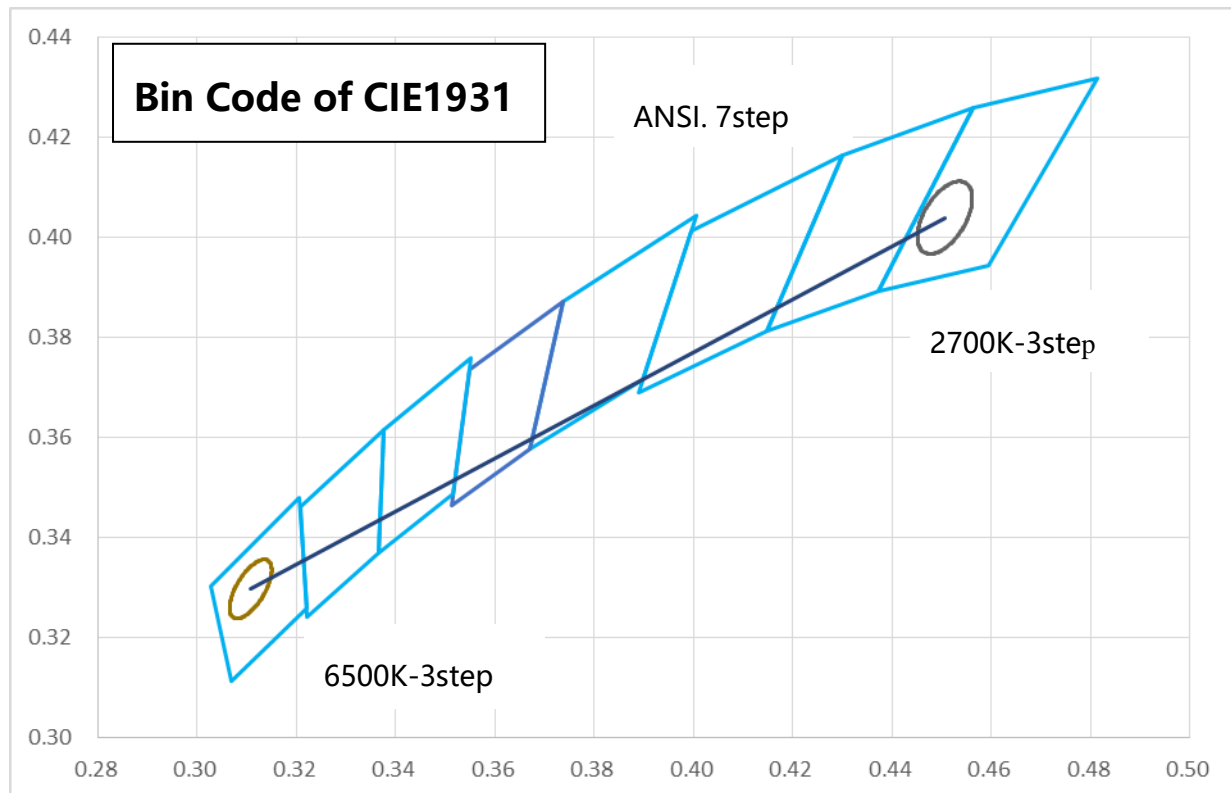
型号 Model	CRI (Min)	CCT	If Typ. (mA)	Vf Min. (V)	Vf Max. (V)	Flux Min. (lm)	Flux Typ. (lm)	Eff. Typ. (lm/W)
MT1301-060602T565M-B4A0	80	2700	280	15	20	563	605	123
		6500	280	15	20	583	627	125
MT1301-060602T550H-B4A0	90	2700	280	15	20	480	515	105
		5000	280	15	20	487	525	106
MT1603-101202T365M-A8A0	80	2700	280	32	38	990	1160	110
		6500	280	32	38	1210	1410	132
MT1603-101202T350H-A8A0	90	2700	280	32	38	840	990	94
		5000	280	32	38	1010	1180	112
MT1901-101202T565M-B4A0	80	2700	280	32	35	1080	1180	120
		6500	280	32	35	1180	1280	130
MT1901-101202T550H-B4A0	90	2700	280	32	35	900	1000	102
		5000	280	32	35	980	1080	110
MT1902-201204T565M-B4A0	80	2700	560	32	35	2080	2280	116
		6500	560	32	35	2200	2400	122
MT1902-201204T550H-B4A0	90	2700	560	32	35	1740	1940	99
		5000	560	32	35	1840	2040	104
MT2801-351208T565M-B4A0	80	2700	980	32	35	4050	4350	127
		6500	980	32	35	4180	4480	131
MT2801-351208T550H-B4A0	90	2700	980	32	35	3400	3700	107.9
		5000	980	32	35	3820	4120	120

Note:

- 1) Color bins are defined at rated test current operation. If use different forward current, it may cause the change of chromaticity and forward voltage (T_j=T_c=25°C) .
该产品通过瞬态额定电流测试分光分色，若使用不同电流，可能会引起色温及电压的变化。
- 2) BMTC maintains measurement tolerance of: Luminous flux = ±10 %, CRI = ±2, VF±3%.
不同标准源测试存在仪器公差：流明±10%，显指±2 和电压±3%。

7. Bin Code of CIE1931 CIE 分级代码 (If = Typ. If, Tj = 25°C)

7.1 80 Ra 2700K-6500K CIE 图示

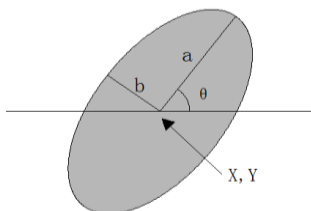
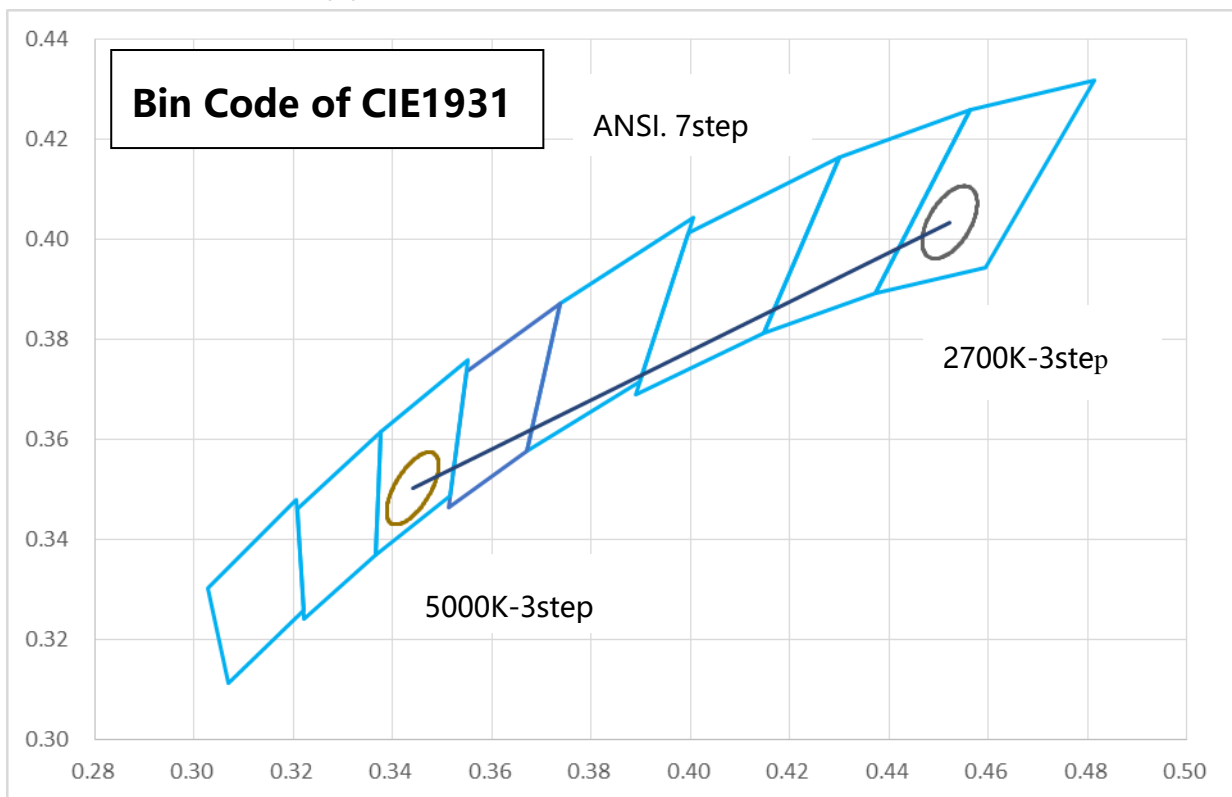


Step	CCT	X	Y	θ	a	b
3-Step	2700K	0.4506	0.4040	53.7	0.0081	0.0042
3-Step	6500K	0.3108	0.3298	58.6	0.0067	0.0029

Note: Tolerance of Color coordinates is ± 0.005 .

色坐标 x, y 的测量误差为 ± 0.005 。

7.2 90 Ra 2700K-5000K CIE 图示



Step	CCT	X	Y	θ	a	b
3-Step	2700K	0.4522	0.4035	53.7	0.0081	0.0042
3-Step	5000K	0.344	0.3503	59.62	0.0082	0.0035

8. Reliability 可靠性

Test Item	Test conditions	Test Duration	Failure Criteria *4	Unites Failed/Tested
Temperature Cycle 温度循环	-40°C(15min) ~125°C (15min) Temperature change within 30sec	300cycles	*2	0/10
High Temperature Storage 高温贮存	Ta=100°C±3°C	1000 hrs	*2	0/10
Low Temperature Storage 低温贮存	Ta=-40°C±3°C	1000 hrs	*2	0/10
Temperature Humidity Storage 高温湿度贮存	Ta=60°C±3°C, RH=90%±3%	1000 hrs	*2	0/10
Life Test 寿命试验	Ta=25°C±3°C, If=*1	1000 hrs	*2	0/10
High Temperature Life Test 高温寿命试验	Ta=85°C±3°C, If=*1	1000 hrs	*2	0/10

Note:

*1 Refer to IF typ.

*2 Failure criteria:

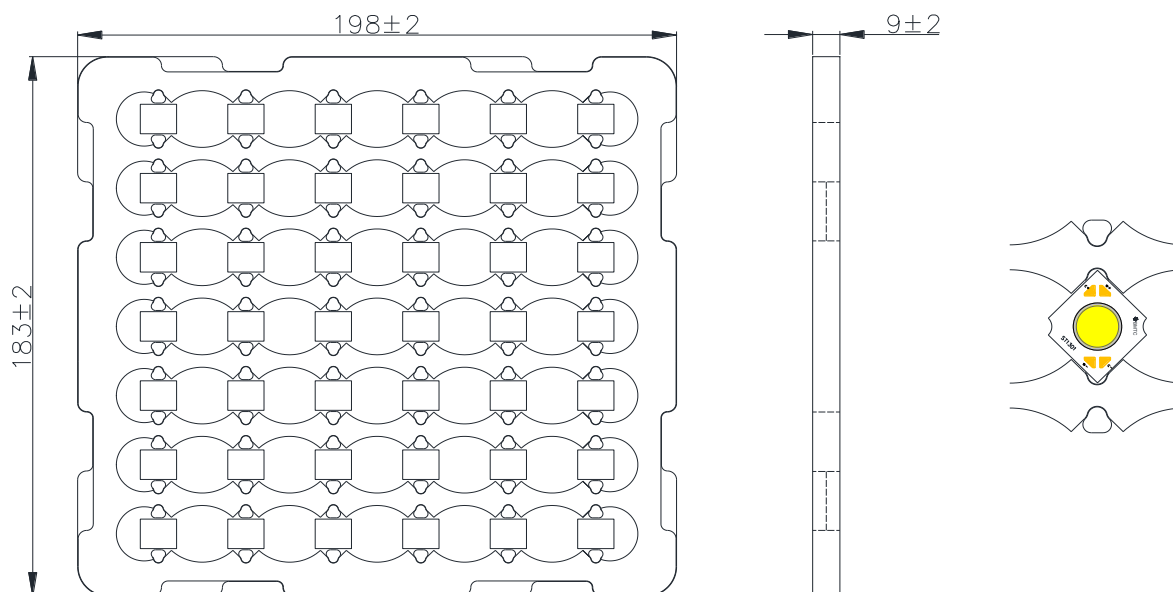
Criteria	Items	Failure Criteria
*4	Forward Voltage (VF) 正向电压	> initial value x1.1 大于 1.1 倍的标称值
	Luminous Flux (φv) 光通量	< initial value x0.7 小于标称值的 70%

9. Packing Specifications 包装规格

➤ MT13XX

Packing material 包装材料	Max. quantity 最大数量	Dimension(mm) 尺寸			
	in pcs of COB COB 数量 (个)	Length 长	Width 宽	Height 高	Tolerance 公差
Tray 托盘	42	198	183	9	2
Anti-Static Bag 静电袋 (最小包装数)	210 (5 Trays)	300	240	-	1
Outer Box (little) 外箱	2520 (12Bags)	365	265	260	5
Outer Box (large) 外箱	5040 (24Bags)	730	265	260	5

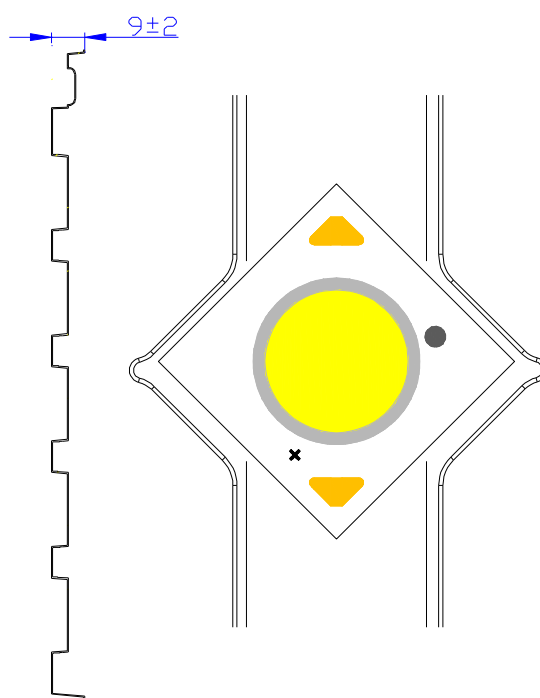
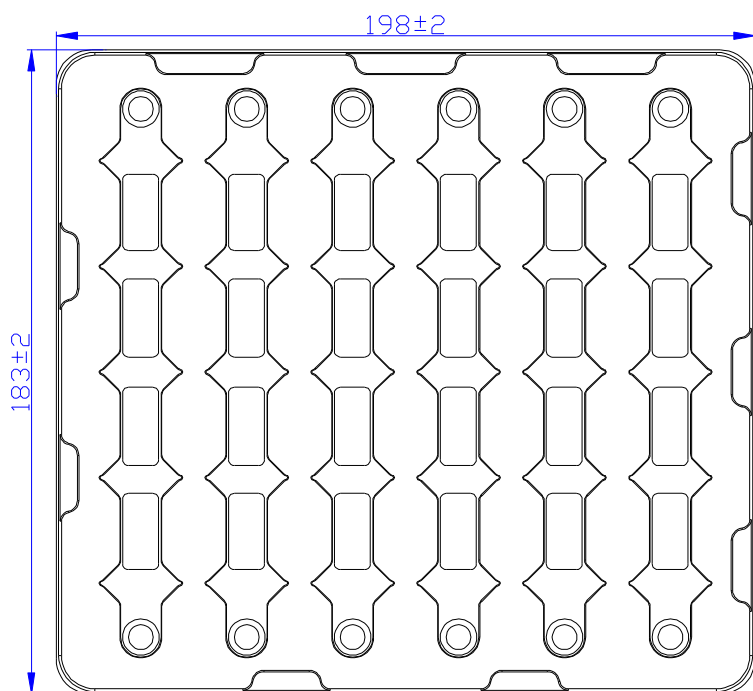
Tray



➤ MT16XX

➤ Packing material ➤ 包装材料	Max. quantity 最大数量	Dimension(mm) 尺寸			
	in pcs of COB COB 数量 (个)	Length 长	Width 宽	Height 高	Tolerance 公差
Tray 托盘	30	198	183	9	2
Anti-Static Bag 静电袋 (最小包装数)	150 (5 Trays)	300	240	-	1
Outer Box 外箱	2100 (14Bags)	365	265	260	5

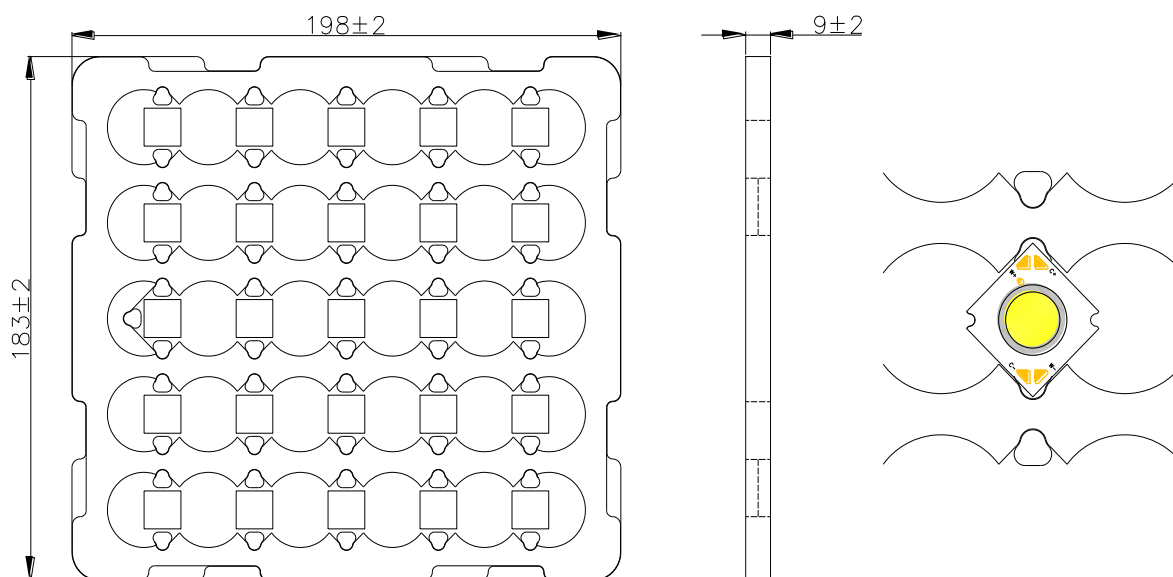
Tray



➤ MT19XX

Packing material 包装材料	Max. quantity 最大数量	Dimension(mm) 尺寸			
	in pcs of COB COB 数量 (个)	Length 长	Width 宽	Height 高	Tolerance 公差
Tray 托盘	25	198	183	9	2
Anti-Static Bag 静电袋 (最小包装量)	125 (5 Trays)	300	240	-	1
Outer Box (little) 外箱	1500 (12Bags)	365	265	260	5
Outer Box (large) 外箱	3000 (24Bags)	730	265	260	5

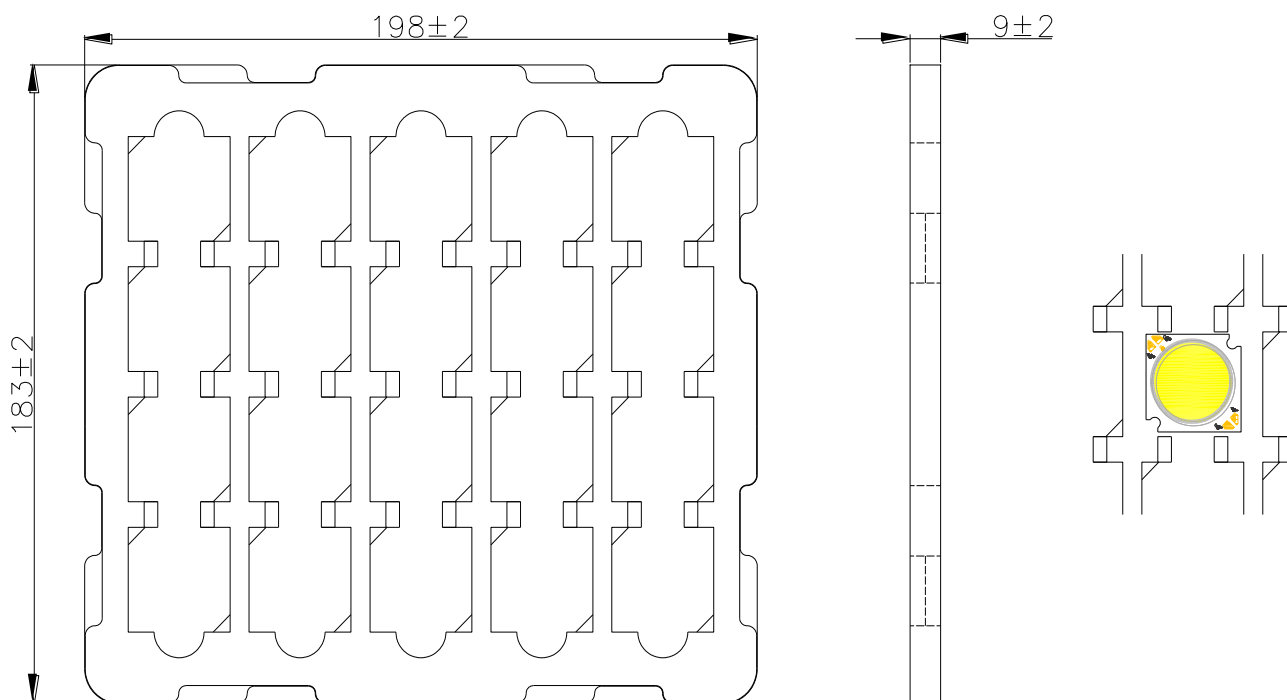
Tray



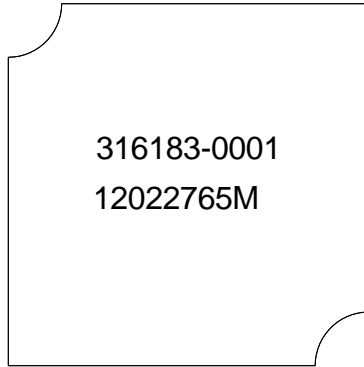
➤ MT28XX

Packing material 包装材料	Max. quantity 最大数量	Dimension(mm) 尺寸			
	in pcs of COB COB 数量 (个)	Length 长	Width 宽	Height 高	Tolerance 公差
Tray 托盘	20	198	183	9	2
Anti-Static Bag 静电袋 (最小包装量)	100 (5 Trays)	300	240	-	1
Outer Box (little) 外箱	1200 (12 Bags)	365	265	260	5
Outer Box (large) 外箱	2400 (24 Bags)	730	265	260	5

Tray



laser 镭射规则



第一行: 316183-0001, BMTC 内部追踪码

第二行: 12022765M

1-4 位: 代表串并信息, 如 1202=12 串 1 并*2, 与型号编码规则一致

5-8 位: 代表色温信息, 如 2765=2700K+6500K 双色组合色温, 与型号编码规则一致

9 位: 代表显指, 如 M=80 显指

10. Handling Precautions 处理注意事项

10.1 Cleaning 清洗

10.1.1 When necessary, cleaning should occur only with isopropyl alcohol (IPA) at room temperature (25°C) for a duration of no more than one minute. Dry at room temperature for 15 minutes before use.

产品如需清洗, 只能在室温(25°C)下采用异丙醇(IPA)清洗, 清洗时间不超过 1 秒。使用前在室温下放置 15 分钟晾干产品。

10.1.2 The influence of ultrasonic cleaning on the COB depends on factors such as ultrasonic power and the way the COB is mounted. Ultrasonic cleaning should be pre-qualified to ensure this will not cause damage to the COB.

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超声波清洗对 COB 的影响取决于超声波功率及 COB 的安装方式等因素。超声波清洗需经过预审合格, 以确保此举不会对 COB 造成损害。

10.2. Storage 储存

10.2.1 Don't open moisture barrier bag before the products are ready to use.

产品在准备使用之前, 请勿打开防潮袋

10.2.2 Before opening the package: The LEDs should be kept at 30°C or less and 90%RH or less.

防潮袋打开之前: LED应该保存在环境温度30°C (含) 以下和相对湿度90% (含) 以下环境

10.2.3 After opening the package: The LED's floor life are 24 hours under 30°C or less and 70% RH or less. If unused LEDs remain, it should be stored in moisture proof packages.

防潮袋打开之后: 在环境温度30°C (含) 以下和相对湿度70% (含) 以下, LED的使用时间是24小时; 未使用完的LED需使用防潮袋密封包装

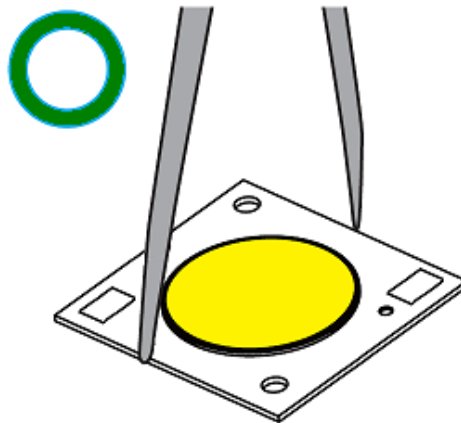
10.3 Operating 操作

Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more susceptible to damage by external mechanical force. As a result, special handling precautions need to be observed during assembly using silicone encapsulated LED products. Failure to comply might leads to damage and premature failure of the LED.

与又硬又脆的环氧封装相比，硅胶更软，更具弹性。尽管它的特性明显降低热应力，但它更易被外界压力破坏。因此，在使用硅胶封装的 LED 产品时，应该留意安装过程中的一些特殊处理事项。不遵守操作的话可能导致 LED 损坏和失效

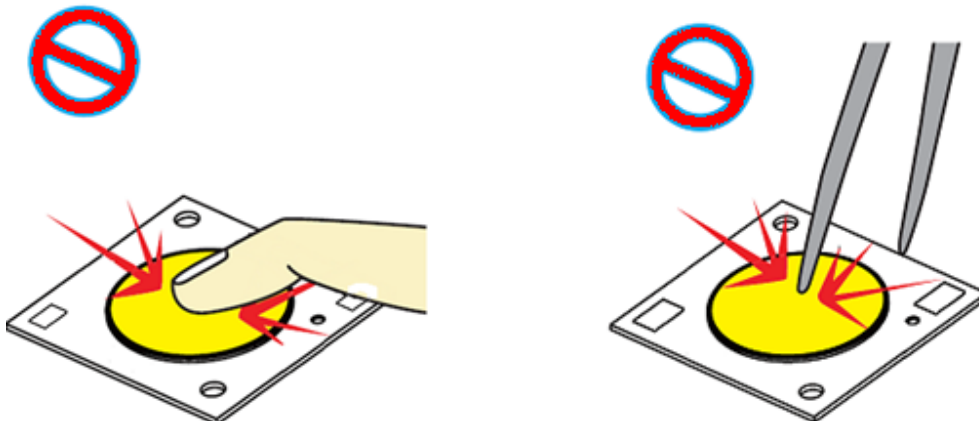
10.3.1 Handle the component along the side surfaces by using forceps or appropriate tools.

用镊子或合适的工具夹在元件的侧边



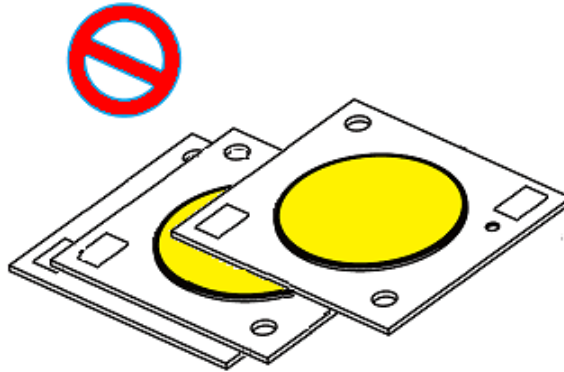
10.3.2 Do not directly touch or handle the silicone lens surface. It may damage the internal circuitry.

请勿直接触摸或操作硅胶透镜表面，这可能会损坏内部的电路



10.3.3 Do not stack the COBs. Impact may scratch the silicone lens or damage the internal circuitry.

请勿将 COB 材料叠成堆。相互间的挤压可能会划伤硅胶透镜表面或损坏内部电路



10.3.4 Users should be cautioned not to stare at the light of this LED product. The bright light can damage the eye.

用户应注意，LED 发光时，请勿直视。LED 的强光可能会伤害您的眼睛。

10.4 Chemicals Tested as Harmful 化学测试中的有害物质

In testing, BMTc has found the following chemicals to be harmful to the LEDs. BMTc recommends not using these chemicals anywhere in an LED system. The fumes from even small amounts of these chemicals may damage the LEDs.

经过测试，BMTc发现下列化学品会对LED造成损害，建议不要在任何的LED系统使用这些化学品。即使这些化学品量很少，其所释放的气体也可能会导致LED损害。

- Chemicals that might outgas aromatic hydrocarbons (e.g., toluene, benzene, xylene)
可能会致使芳香烃化合物释气的化学物 (如：甲苯，苯，二甲苯)
- Methyl acetate or ethyl acetate (i.e., nail polish remover)
乙酸甲酯或乙酸乙酯 (如：指甲油清洗剂)
- Cyanoacrylates (i.e., Superglue)
氰基丙烯酸酯 (如：强力胶)
- Glycol ethers (including Precision Electronics Cleaner - propylene glycol monomethyl ether)
乙二醇 (包括精密电子清洗剂-二丙二醇单甲醚)
- Formaldehyde or butadiene
甲醛或丁二烯
- bleach

漂白剂

- Cleaner spray

清洁喷雾剂

- activator

活化剂

- thread locker

螺丝固定胶

- Sulfur, bromide, iodine , chloride

硫, 溴, 碘, 氯

10.5 ESD Protection During Production 生产过程中的静电保护

Electric static discharge can result when static-sensitive products come in contact with the operator or other conductors.

当操作人员或者其他导体接触静电敏感材料时, 容易产生静电放电。

The following procedures may decrease the possibility of ESD damage:

以下操作可降低静电破坏的可能性

10.5.1 Minimize friction between the product and surroundings to avoid static buildup.

将产品和外界之间的摩擦减到最低以避免静电产生

10.5.2 All production machinery and test instruments must be electrically grounded.

所有的产品设备和测试仪器必须接地

10.5.3 Operators must wear anti-static bracelets.

操作人员必须配戴静电环

10.5.4 Wear anti-static suit when entering work areas with conductive machinery.

进入带电设备工作区域时需穿防静电服

10.5.5 Set up ESD protection areas using grounded metal plating for component handling.

使用经电镀处理的金属部件接地从而建立 ESD 保护区域

10.5.6 All workstations that handle IC and ESD-sensitive components must maintain an electrostatic potential of 150V or less.

所有操作 IC 和 ESD 敏感器件元器件的工作台必须保持低于 150V 的静电保护

10.5.7 Maintain a humidity level of 50% or higher in production areas.

产品区域环境需保持高于 50%的湿度水平

10.5.8 Use anti-static packaging for transport and storage.



运输和储存需使用防静电包装

10.5.9 All anti-static equipment and procedures should be periodically inspected and evaluated for proper functionality.

防静电设备及相关操作应该定期检查及评估以确保运行正常

10.6 Thermal Management 热管理

10.6.1 Thermal design of the end product is of paramount importance. Please consider the heat generation of the LED when making the system design. The coefficient of temperature increase per input electric power is affected by the thermal resistance of the circuit board and density of LED placement on the board, as well as other components. It is necessary to avoid intense heat generation and operate within the maximum ratings given in this specification.

终端产品的散热设计是极其重要的。在做整体设计时请考虑 LED 的热量处理。单位输入功率的温度系数的增加受线路板的热阻，LED 在板上布置的密度和其他元器件的影响。避免热量积累和在本规格书中指定的最大额定范围内操作是必要的

10.6.2 The equation ① indicates correlation between Tj and Ta, and the equation ② indicates correlation between Tj and Ts

等式①表明 Tj 和 Ta 的相互关系，等式②表明 Tj 和 Tc 的相互关系

$$T_j = T_a + R_{thj-a} * W \quad \text{.....} \quad \text{①}$$

$$T_j = T_c + R_{thj-c} * W \quad \text{.....} \quad \text{②}$$

Tj = dice junction temperature: °C Tj = 晶片结点温度: °C

Ta = ambient temperature: °C Ta = 环境温度: °C

Tc = substrate test point temperature: °C Tc = 基板测试点温度: °C

Rth j-a = heat resistance from dice junction temperature to ambient temperature : °C / W

Rth j-a = 晶片结温至环境温度之间的热阻: °C/W

Rth j-c = heat resistance from dice junction temperature to Ts measuring point : °C / W

Rth j-c = 晶片结温至 Ts 测量点之间的热阻: °C/W

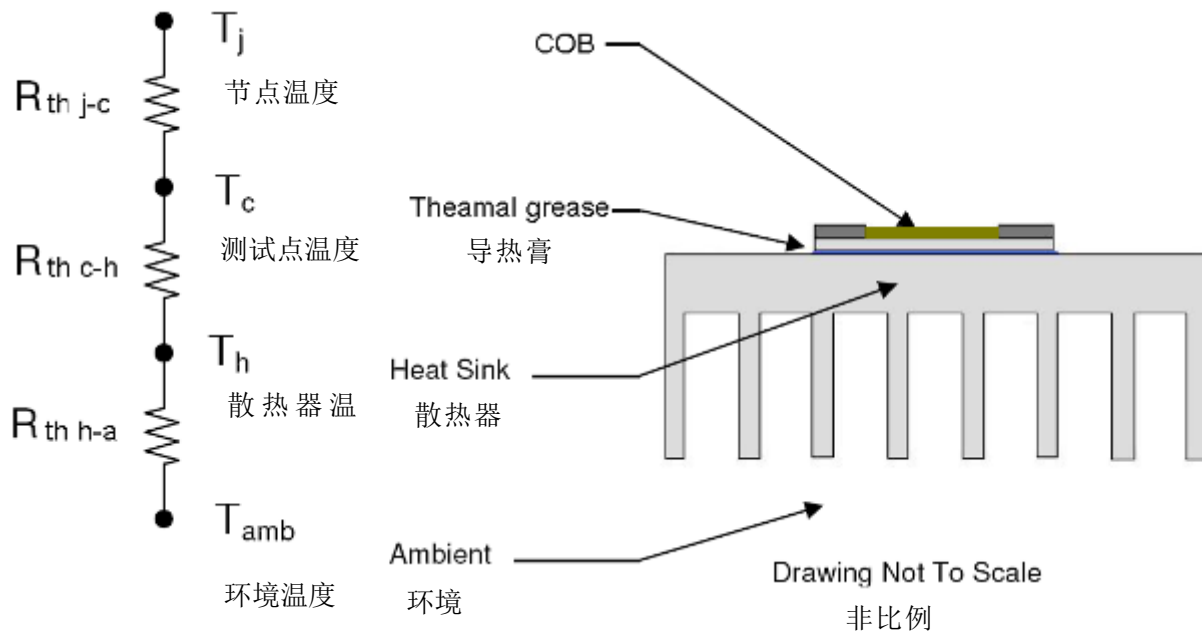
W = inputting power (IFx VF) : W

W = 输入功率 (IFx VF) : W

10.6.3 Thermal model 热模型

shows a thermal model for a single COB mounted to a heat sink.

显示单一 COB 材料到散热器的热传导模型



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