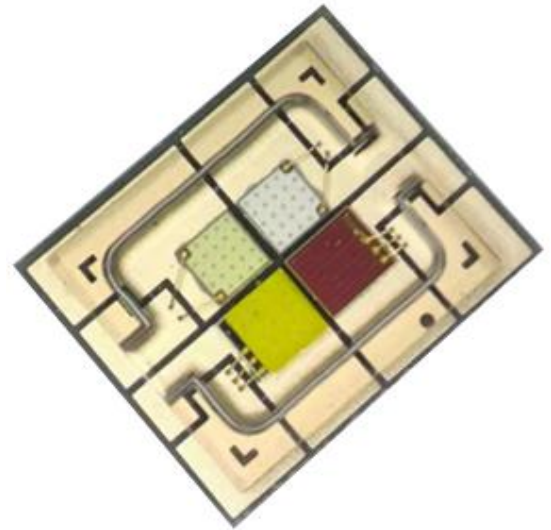


High Efficacy LED Series

TG2-N56BJ-0104Z1

20W RGBW / RGBL



特性 Features

- 氧化铝陶瓷基板 Alumina ceramic substrate
- 外观尺寸 Package Dimension: 5.76mm×4.68mm×1.24mm
- 发光角度 Viewing Angle: 120°
- 符合 ROHS 标准 ROHS Approved

描述 Description

同一方 5060 产品具有高光效，高显指，低功耗，发光角度广等一系列特性，这些特性使其成为照明应用的首选。

The TYF5060 package has high efficacy, high Ra, low power consumption, wide viewing angle and a compact form factor. These features make the package an ideal LED for lighting applications.

应用 Applications

- 室内通用照明 Indoor General Lighting
- 舞台、影视、文旅 Stage, film and television, cultural travel
- 军工、海事 Military, maritime
- 医疗、医美 Medical, medical beauty

目录

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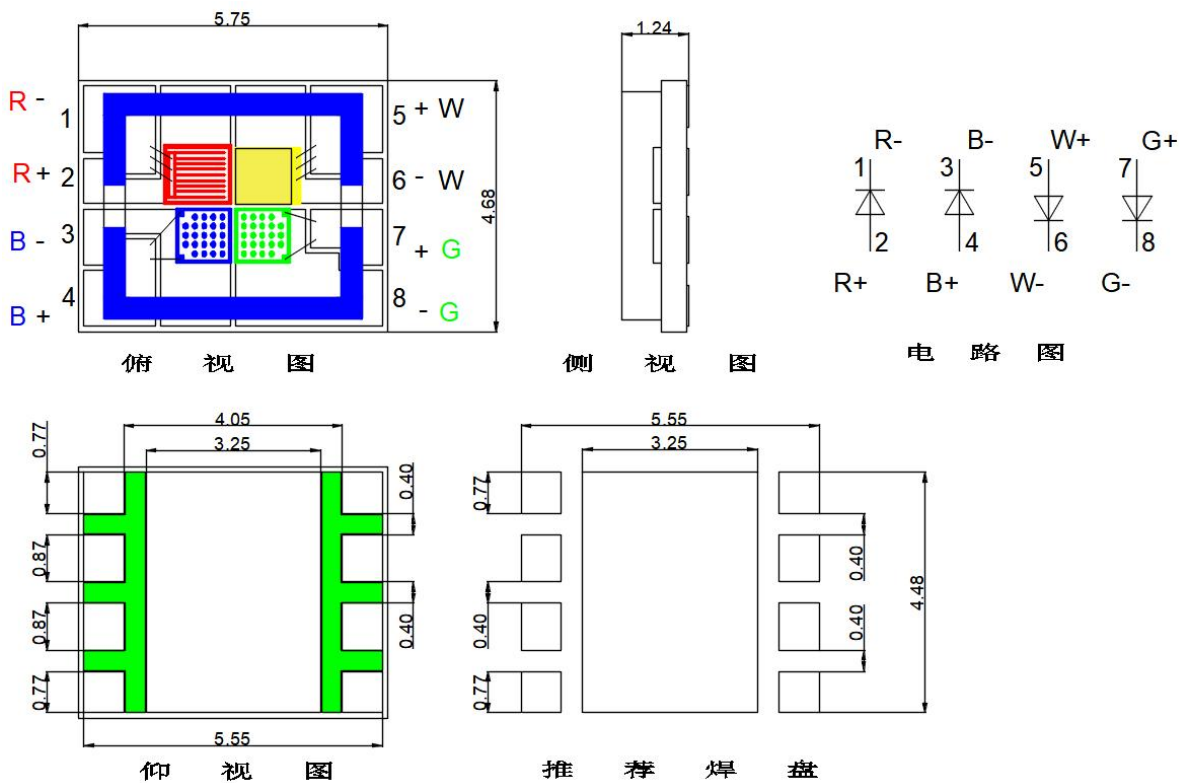
1.产品编码/Product Number

1	2	3	-	4	5	6	7	8	-	9	10	11	12	13	14	-	15	16	17	18	19
T	G	2	-	N	5	6	B	J	-	0	1	0	4	Z	1	-	R	G	B	W	1

编码序号 code NO.	封装信息 PKG Information
1-3	产品系列 Range of products
4-8	产品外形 Designates product type
9-12	串并方案 Product specifications Size
13-14	亮度等级 Class of brightness
15-19	颜色代码 Color code

2.外形尺寸/Dimensions

单位(Units):毫米(mm)



备注/Postscript:
所有尺寸单位为 mm，如无特殊说明误差范围为±0.2mm
All dimensions area in mm tolerance is ±0.2mm unless otherwise noted.

3.极限参数/Absolute Maximum Ratings

项目 Item	符号 Symbol	数值 Value		单位 Unit
极限功率 Limiting Power	P	25		W
正向电流 Forward Current	I _F	R	≤1500	mA
		G	≤1500	
		B	≤1500	
		W	≤2000	
工作温度 Operating Temperature	T _{opr}	-40~+85		°C
结点温度 Junction Temperature	T _j	R	125	°C
		G	150	
		B	150	
		W	150	
储存温度 Storage Temperature	T _{stg}	-40~+105		°C
反向电压 Reverse Voltage	V _R	Reverse testing is not allowed		/
反向电流 Reverse Current	I _R	1 (V _R =5V)		uA
焊接温度 Soldering Temperature	T _{sld}	260 (3~5sec.)		°C
湿度敏感级别 Moisture Sensitivity Rating	MSR	MSL3		°C/RH/H

补充说明/Additional Remarks

- 极限功率和正向电流是指模块温度通过使用合适的散热体下的最大设置数值；
Max power and positive current mean the maximum setting value of the bottom temperature of led light source by using the appropriate heat sink.
- 最初连接错误的反向电压，超出将可能损坏模组；
Connection error and off-limits voltage may damage LED chip.

4.光电特性(Ta=25℃)/Electrical-Optical characteristics

参数 Parameter	测试条件 Test condition	颜色 Colour	符号 Symbol	最小 Min	典型值 Typ	最大 Max	单位 Unit
正向电压 Forward voltage	1000mA	R	V_F	2.0	--	2.6	V
		G		3.0	--	3.6	
		B		3.0	--	3.6	
		W		3.0	--	3.6	
光通量 Luminous Flux	1000mA	R	Φ	90	--	115	lm
		G		190	--	220	
		B		30	--	50	
		CW		190	--	220	
		WW		140	--	160	
		L		210	--	230	
主波长 Dominant Wavelength	1000mA	R	λ_D	620	--	630	nm
		G		520	--	530	
		B		450	--	465	
显色指数 Rendering Index	1000mA	CW	Ra	--	70	--	/
		WW		--	90	--	
发光角度 View angle	1000mA	All	$2\theta_{1/2}$	--	120	--	Deg.
静电击穿电压 ESD Sensitivity	HBM	All	ESD	--	2000	--	V
热阻 Thermal resistance	1000mA	R	R_{J-A}	--	2	--	°C/W
		G		--	5.5	--	
		B		--	5.5	--	
		W		--	2	--	

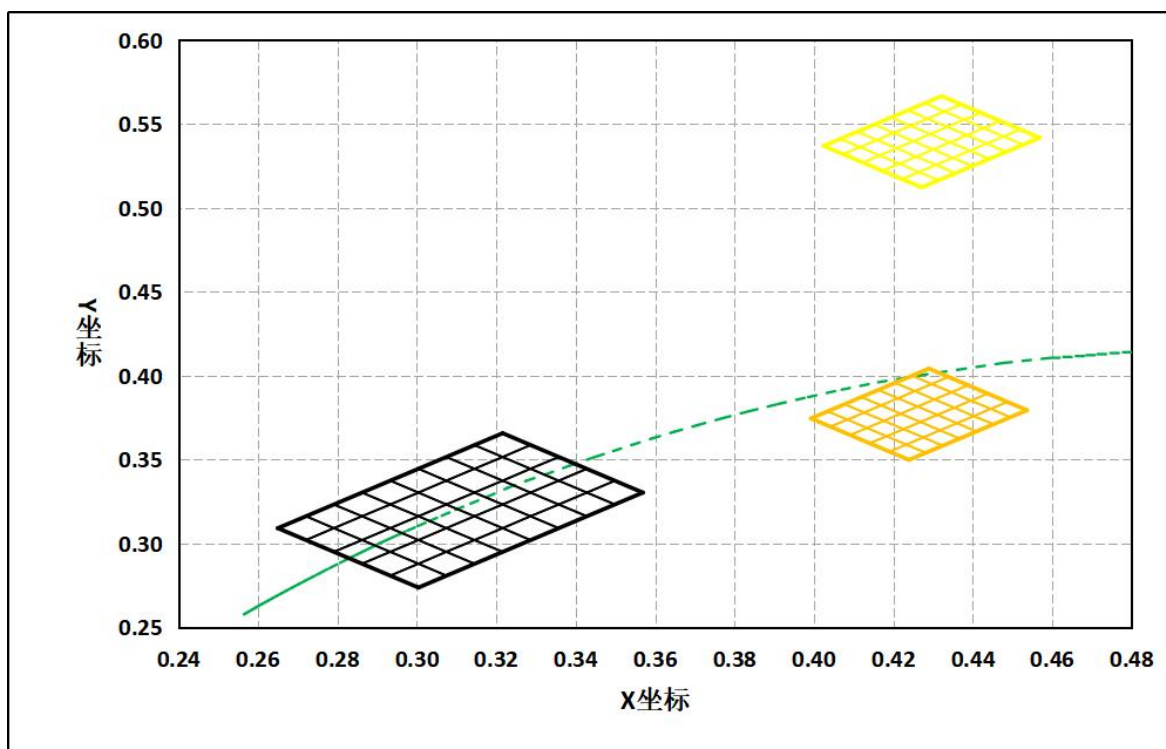
- 在 $T_j=25^\circ\text{C}$ 时, 额定电流 ($I_F=1000\text{mA}$) 下测试的光电参数

产品系列 Product	颜色 Colour	色温 Colour temperature	显色指数 Rendering Index	光通量 Luminous Flux
TG2-N56BJ-0104Z1	CW	6500K	70	190-220
	WW	3000K	90	140-160
	L	4000K	/	210-230

备注/note:

- 测试环境温度 25°C , 若使用不同电流或不同的环境温度测试, 会引起色温及电压的变化;
Testing environment temperature 25°C , and CCT and voltage will changed if tested in different current and environment temperature.
- 不同标准测试仪正常测试允许公差: 电压 $\pm 0.1\text{V}$, 流明 $\pm 5\%$, 显指 ± 2 , 色坐标 ± 0.005 ;
Tolerance among different testing machine: Voltage: $\pm 0.1\text{V}$, Lumen $\pm 5\%$, CRI ± 2 , Color coordinate ± 0.005 .

5.色区/Chromaticity regions



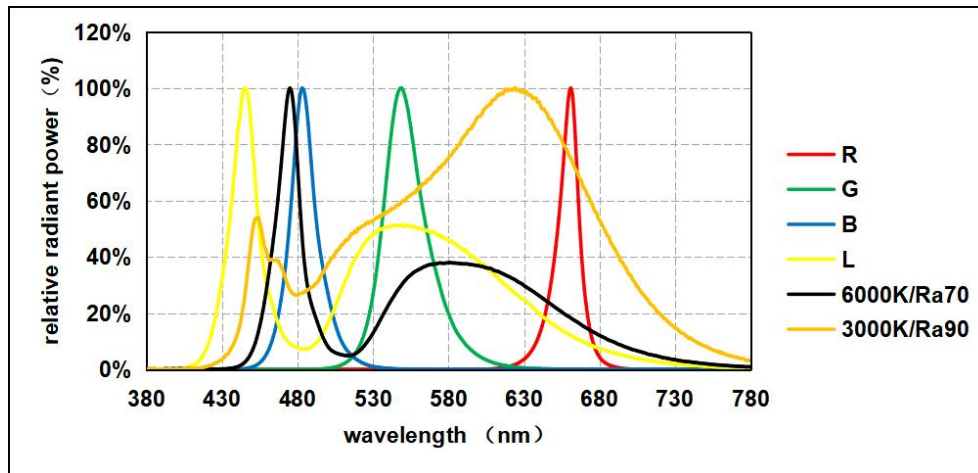
色温	区块	X1	Y1	X2	Y2	X3	Y3	X4	Y4
3000K	A1	0.3992	0.3744	0.4034	0.3786	0.4084	0.3737	0.4041	0.3695
	A2	0.4034	0.3786	0.4077	0.3829	0.4126	0.3779	0.4084	0.3737
	A3	0.4077	0.3829	0.4119	0.3871	0.4169	0.3822	0.4126	0.3779
	A4	0.4119	0.3871	0.4162	0.3914	0.4211	0.3864	0.4169	0.3822
	A5	0.4162	0.3914	0.4204	0.3956	0.4254	0.3907	0.4211	0.3864
	A6	0.4204	0.3956	0.4247	0.3999	0.4296	0.3949	0.4254	0.3907
	A7	0.4247	0.3999	0.4289	0.4041	0.4338	0.3991	0.4296	0.3949
	B1	0.4041	0.3695	0.4084	0.3737	0.4133	0.3687	0.4091	0.3645
	B2	0.4084	0.3737	0.4126	0.3779	0.4176	0.373	0.4133	0.3687
	B3	0.4126	0.3779	0.4169	0.3822	0.4218	0.3772	0.4176	0.373
	B4	0.4169	0.3822	0.4211	0.3864	0.4261	0.3815	0.4218	0.3772
	B5	0.4211	0.3864	0.4254	0.3907	0.4303	0.3857	0.4261	0.3815
	B6	0.4254	0.3907	0.4296	0.3949	0.4346	0.39	0.4303	0.3857
	B7	0.4296	0.3949	0.4338	0.3991	0.4388	0.3942	0.4346	0.39
	C1	0.4091	0.3645	0.4133	0.3687	0.4183	0.3638	0.414	0.3596
	C2	0.4133	0.3687	0.4176	0.373	0.4225	0.368	0.4183	0.3638
	C3	0.4176	0.373	0.4218	0.3772	0.4268	0.3723	0.4225	0.368
	C4	0.4218	0.3772	0.4261	0.3815	0.431	0.3765	0.4268	0.3723
	C5	0.4261	0.3815	0.4303	0.3857	0.4353	0.3808	0.431	0.3765
	C6	0.4303	0.3857	0.4346	0.39	0.4395	0.385	0.4353	0.3808
	C7	0.4346	0.39	0.4388	0.3942	0.4437	0.3892	0.4395	0.385
	D1	0.414	0.3596	0.4183	0.3638	0.4232	0.3588	0.419	0.3546
	D2	0.4183	0.3638	0.4225	0.368	0.4275	0.3631	0.4232	0.3588
	D3	0.4225	0.368	0.4268	0.3723	0.4317	0.3673	0.4275	0.3631
	D4	0.4268	0.3723	0.431	0.3765	0.436	0.3716	0.4317	0.3673
	D5	0.431	0.3765	0.4353	0.3808	0.4402	0.3758	0.436	0.3716
	D6	0.4353	0.3808	0.4395	0.385	0.4445	0.3801	0.4402	0.3758
	D7	0.4395	0.385	0.4437	0.3892	0.4487	0.3843	0.4445	0.3801
	E1	0.419	0.3546	0.4232	0.3588	0.4282	0.3539	0.4239	0.3497
	E2	0.4232	0.3588	0.4275	0.3631	0.4324	0.3581	0.4282	0.3539
	E3	0.4275	0.3631	0.4317	0.3673	0.4367	0.3624	0.4324	0.3581
	E4	0.4317	0.3673	0.436	0.3716	0.4409	0.3666	0.4367	0.3624
	E5	0.436	0.3716	0.4402	0.3758	0.4452	0.3709	0.4409	0.3666
	E6	0.4402	0.3758	0.4445	0.3801	0.4494	0.3751	0.4452	0.3709
	E7	0.4445	0.3801	0.4487	0.3843	0.4536	0.3793	0.4494	0.3751

色温	区块	X1	Y1	X2	Y2	X3	Y3	X4	Y4
4000K	A1	0.4024	0.5368	0.4066	0.541	0.4116	0.5361	0.4073	0.5319
	A2	0.4066	0.541	0.4109	0.5453	0.4158	0.5403	0.4116	0.5361
	A3	0.4109	0.5453	0.4151	0.5495	0.4201	0.5446	0.4158	0.5403
	A4	0.4151	0.5495	0.4194	0.5538	0.4243	0.5488	0.4201	0.5446
	A5	0.4194	0.5538	0.4236	0.558	0.4286	0.5531	0.4243	0.5488
	A6	0.4236	0.558	0.4279	0.5623	0.4328	0.5573	0.4286	0.5531
	A7	0.4279	0.5623	0.4321	0.5665	0.437	0.5615	0.4328	0.5573
	B1	0.4073	0.5319	0.4116	0.5361	0.4165	0.5311	0.4123	0.5269
	B2	0.4116	0.5361	0.4158	0.5403	0.4208	0.5354	0.4165	0.5311
	B3	0.4158	0.5403	0.4201	0.5446	0.425	0.5396	0.4208	0.5354
	B4	0.4201	0.5446	0.4243	0.5488	0.4293	0.5439	0.425	0.5396
	B5	0.4243	0.5488	0.4286	0.5531	0.4335	0.5481	0.4293	0.5439
	B6	0.4286	0.5531	0.4328	0.5573	0.4378	0.5524	0.4335	0.5481
	B7	0.4328	0.5573	0.437	0.5615	0.442	0.5566	0.4378	0.5524
	C1	0.4123	0.5269	0.4165	0.5311	0.4215	0.5262	0.4172	0.522
	C2	0.4165	0.5311	0.4208	0.5354	0.4257	0.5304	0.4215	0.5262
	C3	0.4208	0.5354	0.425	0.5396	0.43	0.5347	0.4257	0.5304
	C4	0.425	0.5396	0.4293	0.5439	0.4342	0.5389	0.43	0.5347
	C5	0.4293	0.5439	0.4335	0.5481	0.4385	0.5432	0.4342	0.5389
	C6	0.4335	0.5481	0.4378	0.5524	0.4427	0.5474	0.4385	0.5432
	C7	0.4378	0.5524	0.442	0.5566	0.4469	0.5516	0.4427	0.5474
	D1	0.4172	0.522	0.4215	0.5262	0.4264	0.5212	0.4222	0.517
	D2	0.4215	0.5262	0.4257	0.5304	0.4307	0.5255	0.4264	0.5212
	D3	0.4257	0.5304	0.43	0.5347	0.4349	0.5297	0.4307	0.5255
	D4	0.43	0.5347	0.4342	0.5389	0.4392	0.534	0.4349	0.5297
	D5	0.4342	0.5389	0.4385	0.5432	0.4434	0.5382	0.4392	0.534
	D6	0.4385	0.5432	0.4427	0.5474	0.4477	0.5425	0.4434	0.5382
	D7	0.4427	0.5474	0.4469	0.5516	0.4519	0.5467	0.4477	0.5425
	E1	0.4222	0.517	0.4264	0.5212	0.4314	0.5163	0.4271	0.5121
	E2	0.4264	0.5212	0.4307	0.5255	0.4356	0.5205	0.4314	0.5163
	E3	0.4307	0.5255	0.4349	0.5297	0.4399	0.5248	0.4356	0.5205
	E4	0.4349	0.5297	0.4392	0.534	0.4441	0.529	0.4399	0.5248
	E5	0.4392	0.534	0.4434	0.5382	0.4484	0.5333	0.4441	0.529
	E6	0.4434	0.5382	0.4477	0.5425	0.4526	0.5375	0.4484	0.5333
	E7	0.4477	0.5425	0.4519	0.5467	0.4568	0.5417	0.4526	0.5375

色温	区块	X1	Y1	X2	Y2	X3	Y3	X4	Y4
6500K	A1	0.265	0.309	0.2721	0.3161	0.2791	0.309	0.2721	0.3019
	A2	0.2721	0.3161	0.2791	0.3231	0.2862	0.3161	0.2791	0.309
	A3	0.2791	0.3231	0.2862	0.3302	0.2933	0.3231	0.2862	0.3161
	A4	0.2862	0.3302	0.2933	0.3373	0.3004	0.3302	0.2933	0.3231
	A5	0.2933	0.3373	0.3004	0.3444	0.3074	0.3373	0.3004	0.3302
	A6	0.3004	0.3444	0.3074	0.3514	0.3145	0.3444	0.3074	0.3373
	A7	0.3074	0.3514	0.3145	0.3585	0.3216	0.3514	0.3145	0.3444
	B1	0.3145	0.3585	0.3216	0.3656	0.3286	0.3585	0.3216	0.3514
	B2	0.2721	0.3019	0.2791	0.309	0.2862	0.3019	0.2791	0.2949
	B3	0.2791	0.309	0.2862	0.3161	0.2933	0.309	0.2862	0.3019
	B4	0.2862	0.3161	0.2933	0.3231	0.3004	0.3161	0.2933	0.309
	B5	0.2933	0.3231	0.3004	0.3302	0.3074	0.3231	0.3004	0.3161
	B6	0.3004	0.3302	0.3074	0.3373	0.3145	0.3302	0.3074	0.3231
	B7	0.3074	0.3373	0.3145	0.3444	0.3216	0.3373	0.3145	0.3302
	C1	0.3145	0.3444	0.3216	0.3514	0.3286	0.3444	0.3216	0.3373
	C2	0.3216	0.3514	0.3286	0.3585	0.3357	0.3514	0.3286	0.3444
	C3	0.2791	0.2949	0.2862	0.3019	0.2933	0.2949	0.2862	0.2878
	C4	0.2862	0.3019	0.2933	0.309	0.3004	0.3019	0.2933	0.2949
	C5	0.2933	0.309	0.3004	0.3161	0.3074	0.309	0.3004	0.3019
	C6	0.3004	0.3161	0.3074	0.3231	0.3145	0.3161	0.3074	0.309
	C7	0.3074	0.3231	0.3145	0.3302	0.3216	0.3231	0.3145	0.3161
	D1	0.3145	0.3302	0.3216	0.3373	0.3286	0.3302	0.3216	0.3231
	D2	0.3216	0.3373	0.3286	0.3444	0.3357	0.3373	0.3286	0.3302
	D3	0.3286	0.3444	0.3357	0.3514	0.3428	0.3444	0.3357	0.3373
	D4	0.2862	0.2878	0.2933	0.2949	0.3004	0.2878	0.2933	0.2807
	D5	0.2933	0.2949	0.3004	0.3019	0.3074	0.2949	0.3004	0.2878
	D6	0.3004	0.3019	0.3074	0.309	0.3145	0.3019	0.3074	0.2949
	D7	0.3074	0.309	0.3145	0.3161	0.3216	0.309	0.3145	0.3019
	E1	0.3145	0.3161	0.3216	0.3231	0.3286	0.3161	0.3216	0.309
	E2	0.3216	0.3231	0.3286	0.3302	0.3357	0.3231	0.3286	0.3161
	E3	0.3286	0.3302	0.3357	0.3373	0.3428	0.3302	0.3357	0.3231
	E4	0.3357	0.3373	0.3428	0.3444	0.3499	0.3373	0.3428	0.3302
	E5	0.2933	0.2807	0.3004	0.2878	0.3074	0.2807	0.3004	0.2736
	E6	0.3004	0.2878	0.3074	0.2949	0.3145	0.2878	0.3074	0.2807
	E7	0.3074	0.2949	0.3145	0.3019	0.3216	0.2949	0.3145	0.2878

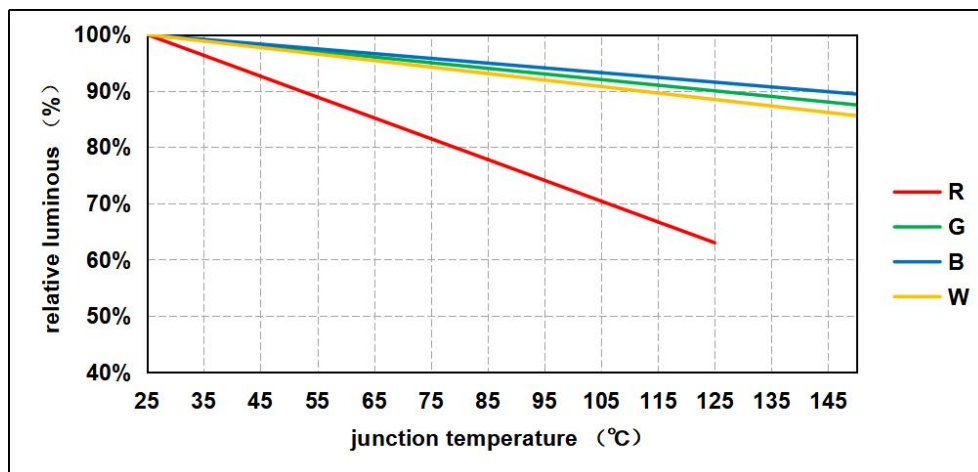
6.典型特性曲线/Typical Characteristic Curves

典型光谱分布 ($T_j=25^{\circ}\text{C}/I_F=1000\text{mA}$) /Typical spectral distribution

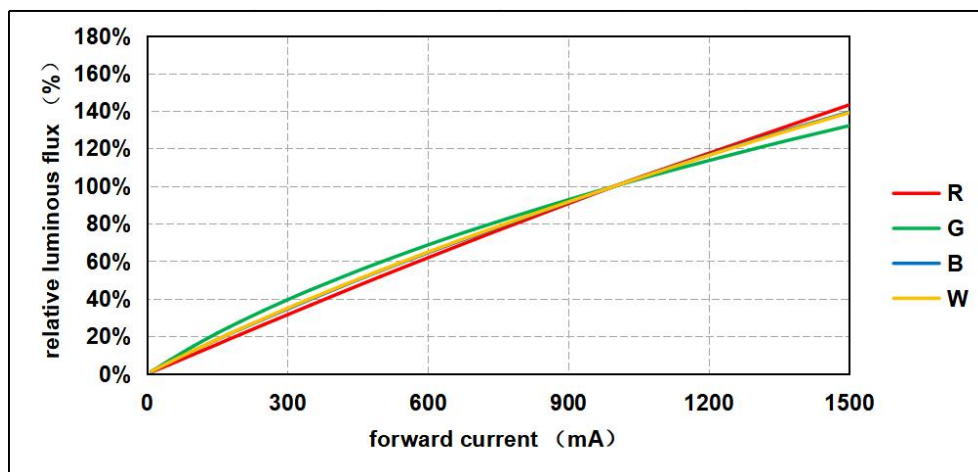


Light Output Characteristics ($T_j=25^{\circ}\text{C}/I_F=1000\text{mA}$)

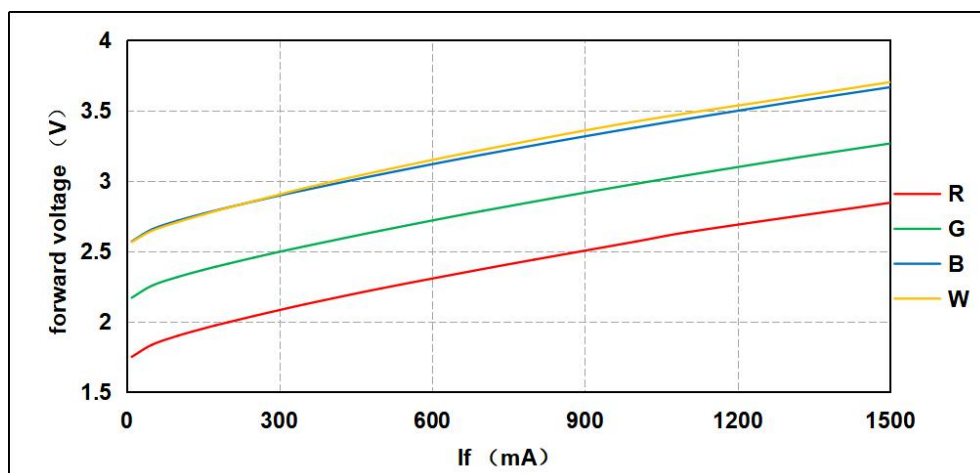
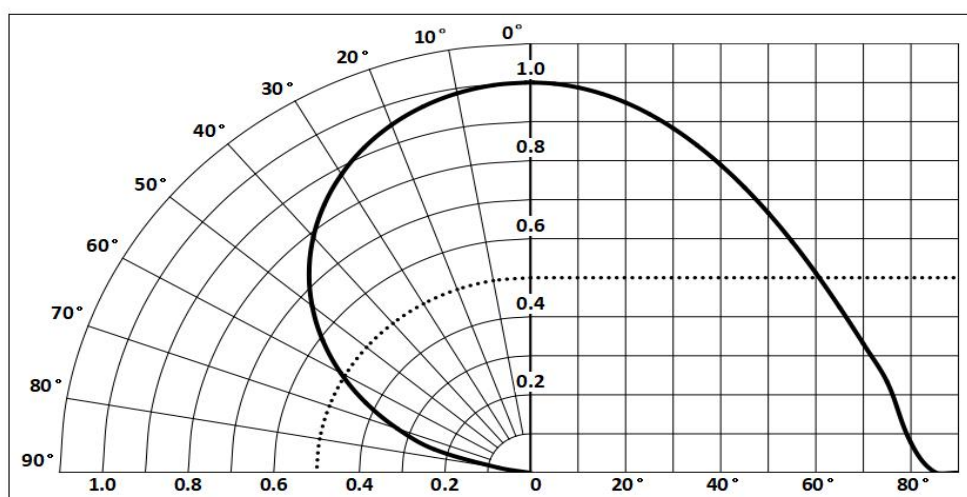
Relative Luminous Intensity VS Junction Temperature



Relative Luminous Intensity VS Forward Current



Forward Current VS Forward Voltage

Radiation Pattern Characteristics ($T_j=25^{\circ}\text{C}/I_F=1000\text{mA}$)

7.可靠性试验/Reliability Test Items And Conditions

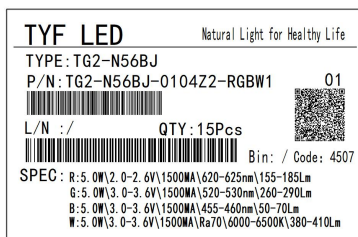
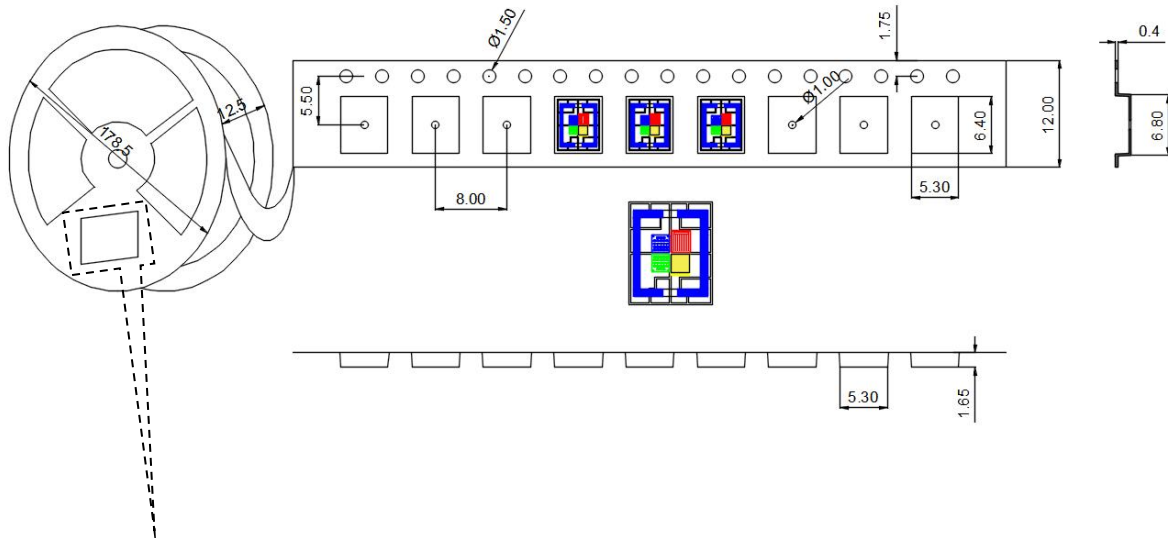
序号 No.	试验项目 Test Item	参考标准 reference standard	试验条件 Test condition		样品数量 Sample Quantity	失效数量 Failure Quantity
1	高温存放 High Temperature Storage	JESD22-A103D	+100℃, 1000h		22pcs	0
2	低温存放 Low Temperature Storage	JESD22-A119	-40℃, 1000h		22pcs	0
3	高温高湿老化 High Temperature, High Humidity, Aging Test	JESD22-A101C	T=+85℃, RH=85%	IF=1000MA 1000h	22pcs	0
4	高温使用寿命 High-temperature operation	IES LM80-2015	T=+105℃,	IF=1000MA 1000h	22pcs	0
5	低温使用寿命 Low temperature operation	JESD22-A108D	T=-40℃,	IF=1000MA 1000h	22pcs	0
6	回流焊湿度敏感实验 Moisture/Reflow Sensitivity Test	J-STD-020E	60℃/60%RH/168H Tsld=260℃/10sec/3 Reflows		22pcs	0

失效判定标准 Criteria For Judging Damage

项目 Test Items	测试条件 Test Condition	判定标准	判定标准
		Min. 最小	Max. 最大
正向电压 Forward Voltage	IF=1000mA	/	U. S. L*1. 1
反向电流 Reverse current	VR=5V	/	U. S. L*2. 0
光通量 Luminous Flux	IF=1000mA	L. S. L*0. 7	/

8.包装/Packaging

单位 (Units) : 毫米 (mm)



The label 标签

Aluminum foil bag 铝箔袋

Drying agent 干燥剂

The label 标签

每卷数量 500 个/卷. Package: 500Pcs/Reel

备注/Postscript:

- LED 编带后放置在铝箔袋中真空包装, 内置湿度卡, 在装带之后纸箱包装;
After the LED is braided, it is placed in a vacuum package in an aluminum foil bag, with a built-in humidity card. The LED is packed in a carton after being braided.
- 最小包装标签注明以下: 产品名称、批号、参数范围、数量;
The label on the minimum packing unit shows ; Part Number, Lot Number, Ranking, Quantity.
- 请注意防水防潮;
Keep away from water, moisture in order to protect the LEDs.
- 须采取适当防护措施, 以防包装箱跌落或受到强力撞击造成对产品的损伤;
The LEDs may be damaged if the boxes are dropped or receive a strong impact against them. so precautions must be taken to prevent any damage.

9.使用注意事项/Caution

1) 储藏条件 Storage conditions

打开前:温度为 5~30°C, 相对湿度低于 60%。(打开后模组应在 24H 之内使用完毕), 如未用完之产品, 请进行除湿并抽真空后密封保存。湿度卡变色或包装袋漏气等现象必须除湿, 除湿条件: 60°C±5°C, 24H。产品密封保存有效使用期为 3 个月;

Before open: temperature is 5 ~ 30 °C, relative humidity below 60%.(the module should be used within 24H when opens), if not, please dehumidification and vacuum sealing .Humidity card changes color or bags leak must dehumidifier, dehumidifier conditions: 60°C±5°C, 24 h.The effective use period of product seal is 3 months.

2) 取放条件 Attention

取放及组装过程禁止挤压发光区胶体表面, 注意 SMT 贴装吸嘴选择, 防止压死灯现象;
During use and assembly, please do not press light-emitting colloid surface, pay attention to the choice of suction nozzle SMT , to prevent chip die.

3) 静电防护 Electrostatic protection

LED 属于 I 级静电敏感器件, 接触、使用过程做好防静电保护;

LED belong to grade I electrostatic sensitive device, please do ESD protection when touch and use

4) 清洁条件 Clean condition

LED 胶体表面脏污, 可用酒精清洗, 不可用丙酮等腐蚀性的清洗溶剂清洗;

If LED colloid surface dirt, use alcohol to clean.Can't use acetone or corrosive to clean.

5) 灯珠检测 The electrical test

单颗灯珠电 6V 的设置不能高于 8V, , 灯珠有正负方向, 焊反则不能正常点亮;

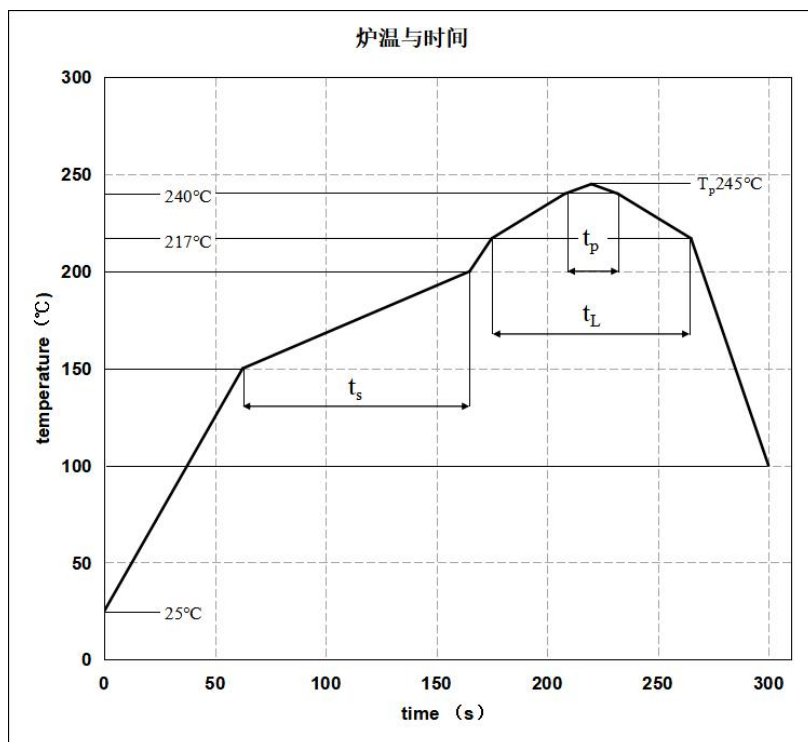
he setting of a single lamp bead electricity of 6V can not be higher than 8V, the lamp bead has positive and negative direction, welding can not be lit normally;

6) 焊接条件 Welding conditions

可用加热台或回流焊机焊接。加热台焊接: ≤260°C, 熔锡后 3-6 秒内取出, 最多可焊接 2 次, 自然降温到室温, 方可包装。回流焊接如图:

Heating units or reflow welding machine are available to weld.Heat welding machine: 260 °C or less and molten tin, 3-6 seconds after maximum welding 2 times, natural cooling to room temperature, before packing.Reflow soldering is shown in figure:

预热温度	无铅
	180-200°C
预热时间	<120S 秒
峰值温度	<260°C
峰值温度焊接时间	<10 秒



说明:

最多只可回焊两次, 且在首次回焊后须冷却至室温之后方可进行第二次回焊.

LEDs can be welded twice at most, it can be welded again only after the LEDs are cooled as room temperature.

7) 电路及散热设计 Design of circuit and heat dissipation

- a) 产品正常工作温度: TS 点 (负极焊盘) 小于 85°C, 如果超出我司给定要求, 客户必须做产品可靠性评估, 风险由客户承担;

Normal operating temperature: TS point (negative pad) is less than 85 °C, if exceeded, customer needs to make reliability assessment, customer takes the risk.

- b) 电源驱动选取: 本产品需使用恒流源进行驱动, 且输出电流符合规格书上的功率使用范围, 如需使用恒压源或其他使用条件, 请进行使用效果风险评估;

Power Supply Select: This product is powered by using a constant current driver, and the output current of the power range meets the requirement of specifications book, if use constant voltage source or other conditions, please do risk assessment.

8) 使用环境要求 Environmental requirements

此产品设计不针对下列任何条件, 如在下列任何条件下使用产品, 请确定其正常性能和可靠性; 如: 潮湿, 有露水凝霜, 盐水空气, 腐蚀性气体的地方 (CL, H₂S, NH₃, SO₂, NOX, 等); 太阳直晒下, 户外暴露, 多灰尘的地方。水中, 油, 医用液体和有机溶剂等;

This product can not use under below situations, if use the product in any of the below conditions, please make sure the performance and reliability; Such as: wet, frost, salt air, corrosive gases (Cl, H₂S, where NH₃, SO₂, NOX); Exposure under the sun, exposure outdoor, dusty. Water, oil, liquid medical and organic solvent.

9) 使用兼容性 Using Compatibility

- a) 灯具中气体的化学成分以及光源周围的环境对灯具的寿命至关重要, 特别是当您选择在灯具设计中使用化学成分时尤为重要。考虑使用任何材料之前, 务必先咨询产品供应商

或 LED 制造商。使用某种材料前获取的信息越多，灯具寿命期内的性能越高；

The chemical composition of gas in lamps and surrounding environment of light source are essential to the life of the lamps, especially when you choose to use chemical composition, it is particularly important in lighting design. Before considering the use of any material, be sure to consult the product supplier or LED manufacturer. The more information obtained before using some material, the higher the performance of the lamp.

b) 产品色差问题 Color difference matters needing attention

不同 BIN 的 LED 光电参数有差异，使用前，须仔细评估；

The different Bin led has different photoelectric data, before use, please assess carefully。

c) 具体使用注意事项参考《SMD 产品使用注意事项》；

Specific please check the <<Precautions for using SMD products>> for reference