

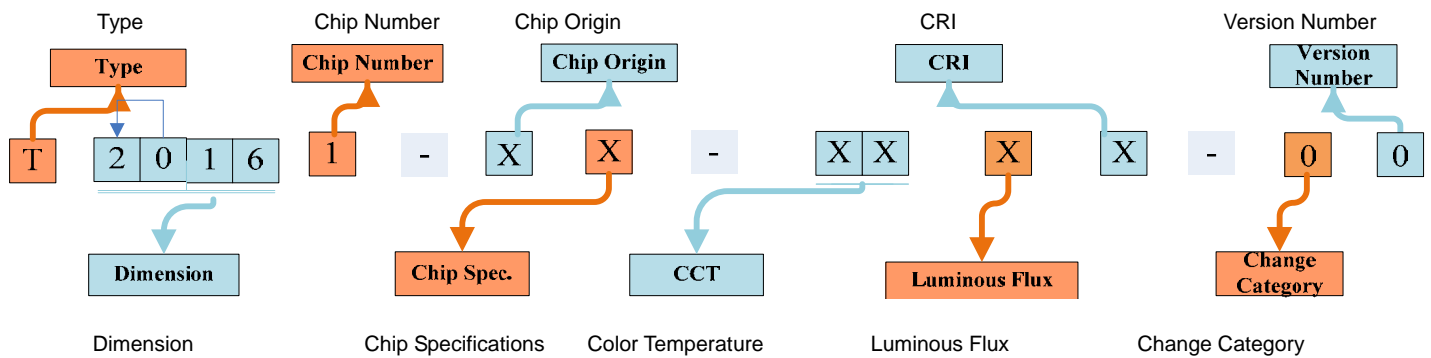


SMD 2016 Series Data Sheet

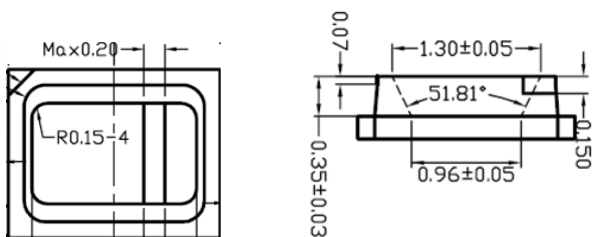
● Features

Super high efficiency
High reliability performance
Viewing angle 120°
Suitable for all SMT assembly and solder process
Complied with RoHS directive

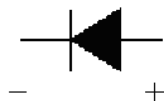
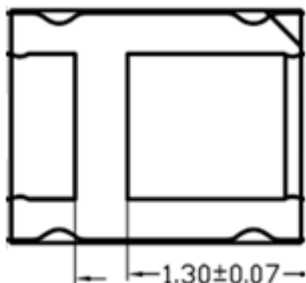
● Product Definition Code



● Dimension



All dimensions are in millimeter
Tolerance is ±0.1mm unless otherwise noted



Recommended pad layout

● Absolute maximum ratings at Ta=25°C

Item	Symbol	Absolute Maximum Rating	Unit
Forward Current	I _f	90	mA
Pulse Forward Current	I _{fp}	270	mA
Reverse Voltage	V _R	5	V
Power Dissipation	P _D	300	mW
Operating Temperature	T _{opr}	-30~80	°C
Storage Temperature	T _{stg}	-40~85	°C
Junction Temperature	T _j	110	°C
Thermal Resistance	R _{ja}	50	°C/W
Solder Temperature	T _s	260/10sec	°C

Notes: I_{fp} conditions with pulse width ≤10ms and duty cycle ≤10%

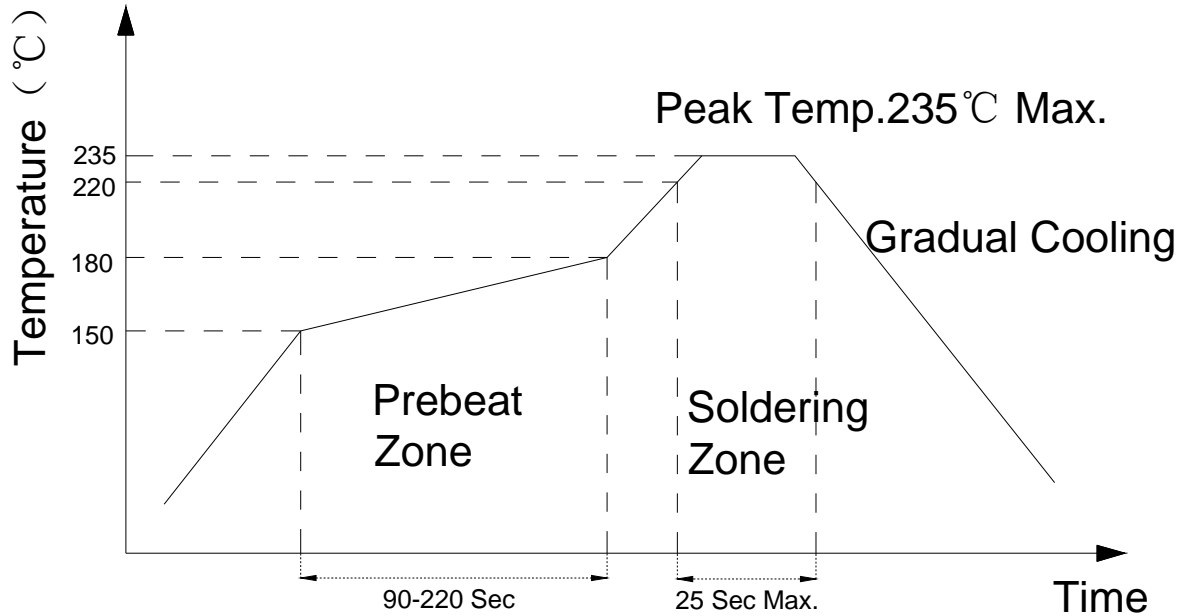
● Optical-Electrical Characteristics at Ta=25°C

Parameter	Symbol	Value			Unit	Test condition
		Min.	Typ.	Max.		
Forward Voltage	V _F	2.9	---	3.3	V	I _f =60mA
Luminous Flux	Φ	20	---	24	LM	I _f =60mA
		22		26		
		24		28		
Color Temperature	CCT	---	2940±85 4060±163 6020-6530	---	K	I _f =60mA
Color rendering Index	CRI	80	---	---	---	I _f =60mA
Reverse Current	I _R	---	---	10	uA	V _R =5V
Viewing angle	2θ _{1/2}	---	120	---	Deg	I _f =60mA
Antistatic ability	ESD 模式	HBM		4000V/2 Class		
		MM		300V/M3 Class		

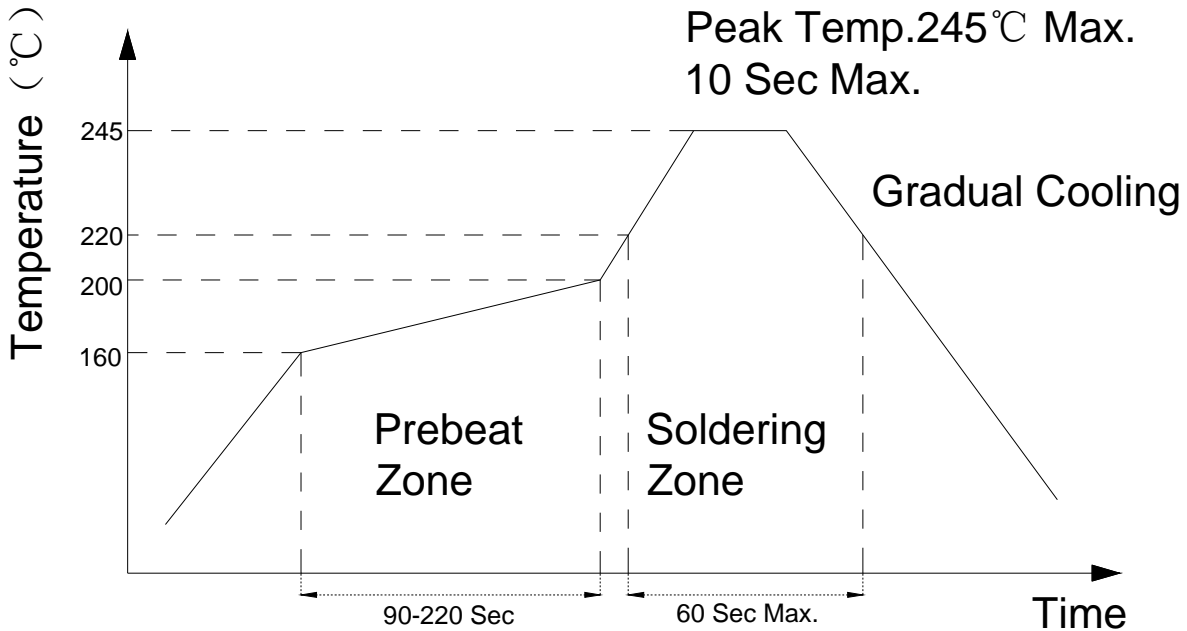
Notes: Luminous flux (LM) ±5%
 Forward Voltage (VF) ±0.1V
 Wavelength (X,Y) ±0.01 (CCT±5%)
 Color rendering Index (CRI) ±2
 Viewing angle (2θ_{1/2}) ±5

● IR reflow soldering Profile

Lead solder



Lead Free solder

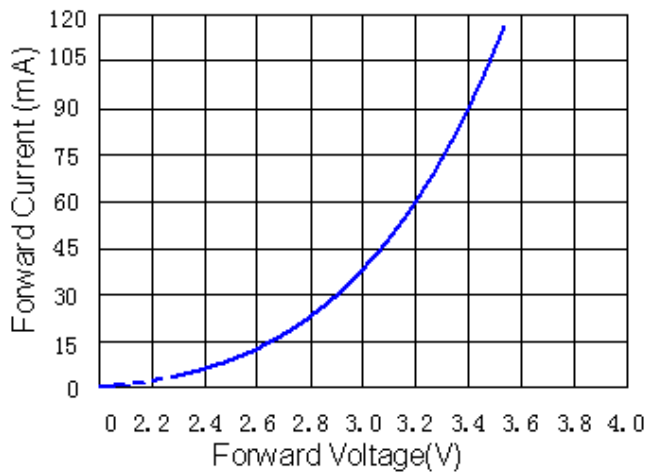


- NOTES:**
1. We recommend the reflow temperature $240^{\circ}\text{C} \pm 5^{\circ}\text{C}$.
 2. Don't cause stress to the silicone resin while it is exposed to high temperature.
 3. Number of reflow process shall be 1 time.

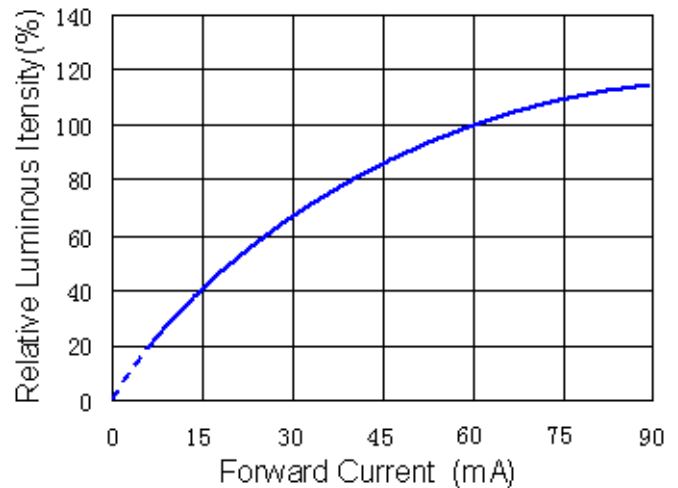
● Typical Optical-Electrical Characteristics curves

Environment Parameter: Temperature=25°C, Humidity=45%

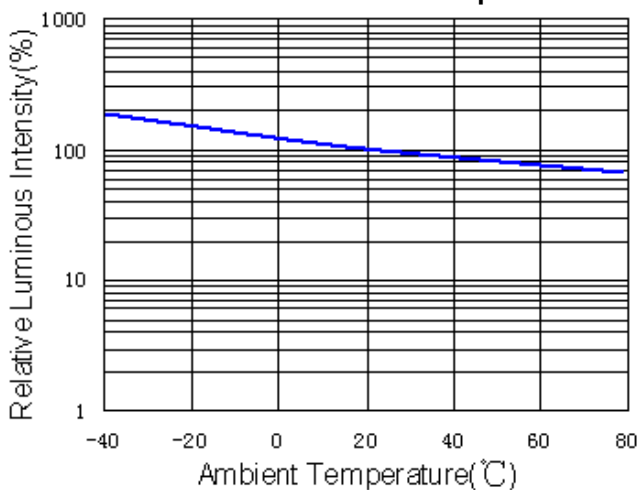
Forward Current VS Forward Voltage



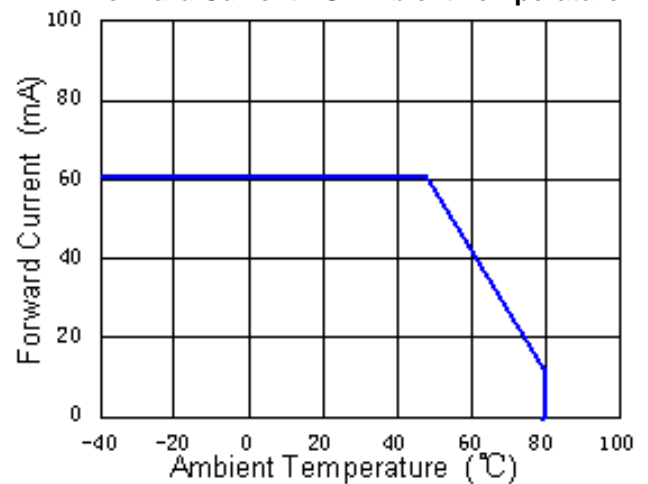
Relative Flux VS Forward Current



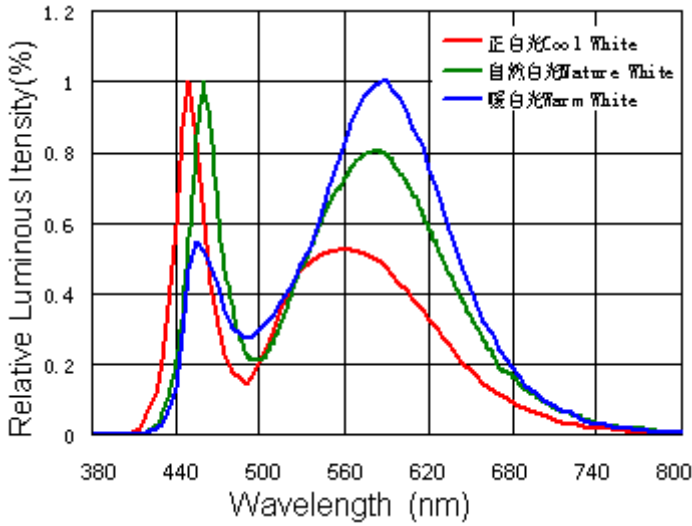
Relative Flux VS Ambient Temperature



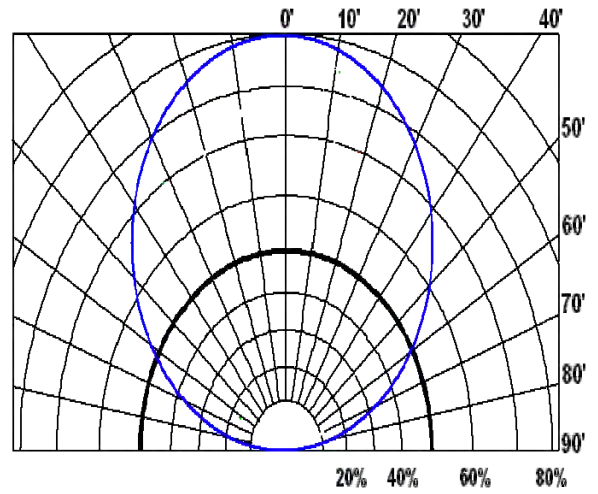
Forward Current VS Ambient Temperature



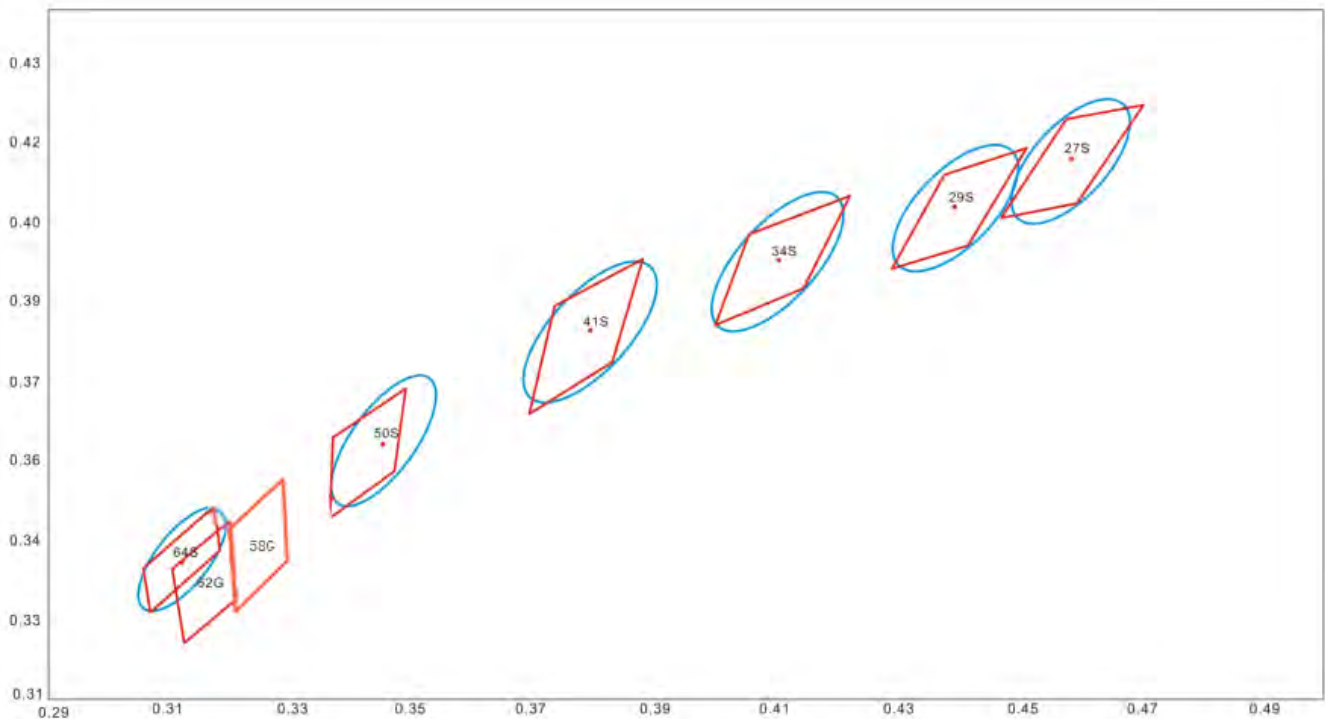
Relative Spectral Distribution



Typical Spectral Distribution



● Chromaticity coordinates bin chart:



Runlite shooting figure based on IEC60081 color tolerance standard coordinates
Coordinates within ellipse in blue by SDCM < 5

● Range of bins

CCT	Bin Code	CIE-X	CIE-Y	CCT	Bin Code	CIE-X	CIE-Y
2725±80K	27S	0.4475	0.4012	5100±200K	50S	0.3372	0.3449
		0.4582	0.4199			0.3378	0.3596
		0.470	0.4228			0.3496	0.3694
		0.4598	0.4041			0.3478	0.3533
	Central pint	0.459	0.412		Central pint	0.346	0.359
2940±85K	29S	0.4295	0.3918	6500±325K	64S	0.3079	0.3274
		0.4381	0.4097			0.3068	0.3354
		0.4515	0.4145			0.3181	0.3467
		0.442	0.3962			0.3192	0.3387
	Central pint	0.44	0.403		Central pint	0.313	0.337
3400±135K	34S	0.4006	0.3811	6020-6530K	62G	0.3133	0.3214
		0.4061	0.3980			0.3113	0.3350
		0.4226	0.4056			0.3208	0.3444
		0.4150	0.3930			0.3219	0.3296
	Central pint	0.411	0.393		Central pint	0.3168	0.3328
4060±163K	41S	0.3699	0.3646	5477-6020K	58G	0.3220	0.3280
		0.3743	0.3846			0.3209	0.3425
		0.3885	0.3934			0.3330	0.3533
		0.3835	0.3741			0.3329	0.3375
	Central pint	0.38	0.38		Central pint	0.3272	0.3403

● Voltage classes

Group	Min.	Max.	Unlit	Condition
1	2.9	3.0	V	IF=60mA
2	3.0	3.1		
3	3.1	3.2		
4	3.2	3.3		

● Luminous flux standard step

Color	CRI	CCT Range		Lumen (60mA)		
		Min	Max	Code	Lumen	
					Min	Max
Warm white	80	2645	2805	27S	18	24
		2855	3025	29S	18	26
		3265	3535	34S	20	28
Neutral white	80	3897	4223	41S	24	28
Cool white	80	4900	5300	50S	22	28
		6175	6825	64S	22	28
		5477	6020	58G	22	28
		6020	6530	62G	22	28

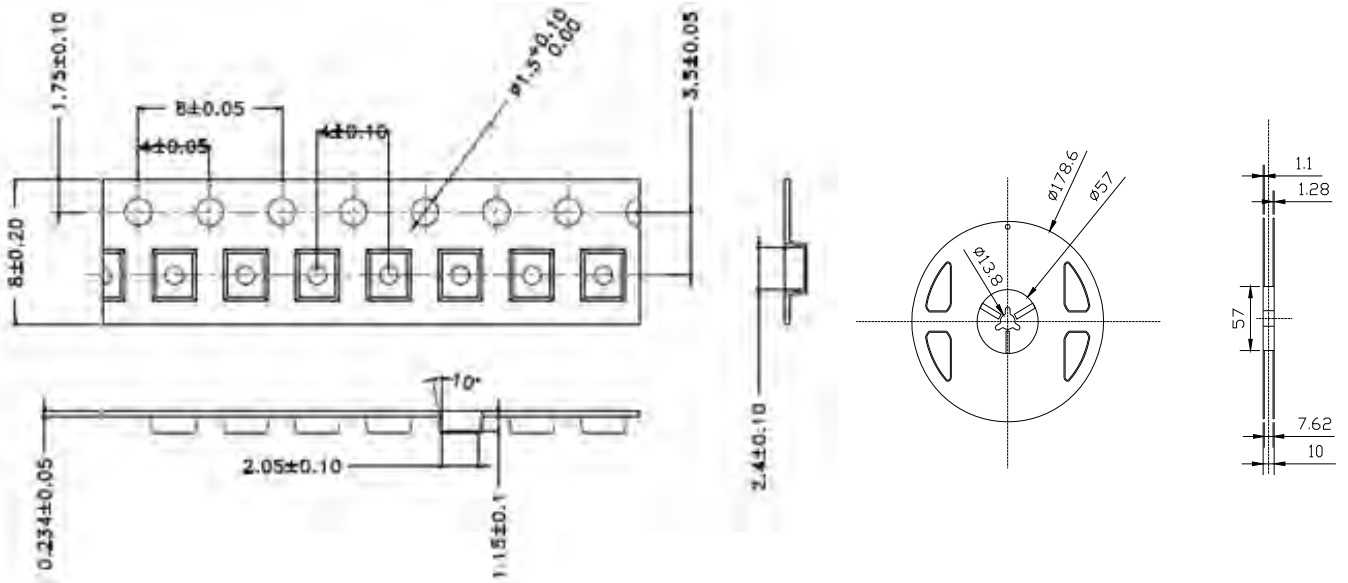
● Electro-Optical Characteristics(white)

If(mA)	Vf(v)	Power(w)	Flux(LM)	LM/W	CCT	Ra
20	2.815	0.0563	9.609	170.66	6415	82.7
30	2.971	0.08913	13.98	156.83	6383	82.2
40	2.981	0.11924	18.18	152.6	6385	81.9
50	3.051	0.15255	21.98	144.14	6392	81.8
60	3.122	0.18732	25.82	137.89	6376	81.5

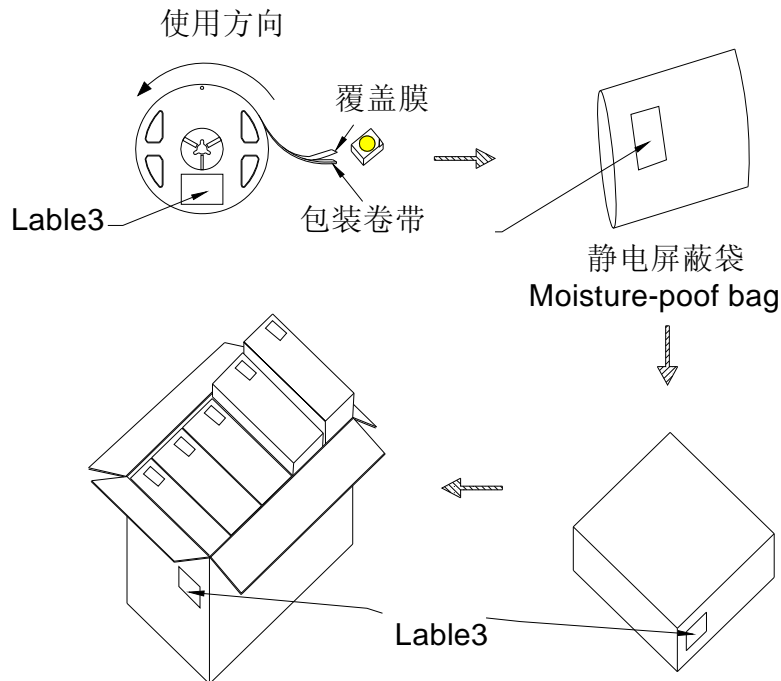
● Test items and results of reliability

Test Item	Test Conditions	Duration/Cycle	Number of Damage	Reference
Temperature	-40°C 30min ↑↓25°C(2min) 100°C 30min	100 times	0/100	JEITA ED-4701300 303
Thermal Shock	-40°C 30min ↑↓ 5sec 100°C 30min	100 times	0/100	JEITA ED-4701200 303
High Temperature Storage	Ta=100°C	1000 hours	0/100	EIAJED-4701200 201
Humidity Heat Storage	Ta=85°C RH=85%	1000 hours	0/100	EIAJED-4701100 103
Low Temperature Storage	Ta=-40°C	1000 hours	0/100	EIAJED-4701200 202
Room Temperature Test	Ta=25°C IF=60mA	1000 hours	0/100	Tested with Runlite standard
High Humidity Heat Test	60°C RH=90% IF=60mA	1000 hours	0/100	Tested with Runlite standard
Low Temperature Test	Ta=-40°C IF=60mA	1000 hours	0/100	Tested with Runlite standard
ESD(HBM)	-4KV at 1.5KΩ; 100pF	3 times	0/100	MIL-STD-883D

● Packaging



Package Dimension (Unit:mm)



每个外箱装5个内箱
外箱尺寸=425*245*273mm
Outside box
Maximums for inside
boxes

每盒5袋
内箱尺寸: 247*230*75
Inside box Maximums seven