

Specifications for Approval

Customer Part No.:

Inhere Part No.: S1916CHRYGBT-001

Part Name: 1916 红黄绿蓝三色 LED

Spec Issue Date: 2018-07-17

Revision No.: A

To Customer:

We submit herewith the following information for your approval:

- Sample
- OQC Inspection Record
- LED Dimension
- Electrical Characteristics Curve
- Internal Circuit Diagram
- Soldering recommendation

Prepared by: Lily

Date: 2018-07-17

Checked by: Tom

Date: 2018-07-17

Approved by: Wangxiaojun

Date: 2018-07-17

Customer Opinion

- Approve and no objection
- Reject with the following reason:

inhere 
light for your mind
银河光电

东莞市银河光电有限公司
DongGuan Inhere Opto CO.,LTD.
地址:东莞市莞城科技园 D 幢
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TEL: 0769-23320868 FAX: 0769-23320878
E-mail: bill@inhereopto.com
Http://www.inhereopto.com

Features

1.9mm x 1.6mm SMD LED, 0.8mm thickness

Low power consumption

Wide view angle

Package: 3000pcs/reel

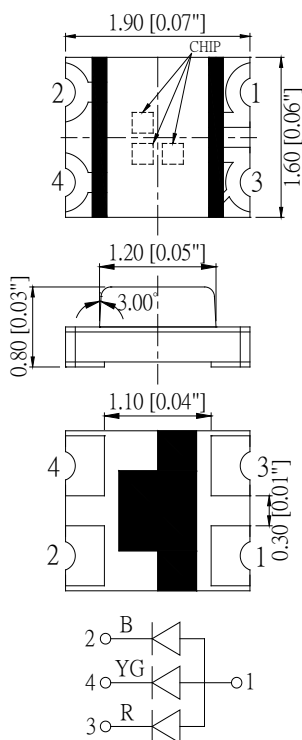
RoHS Compliant

Applications

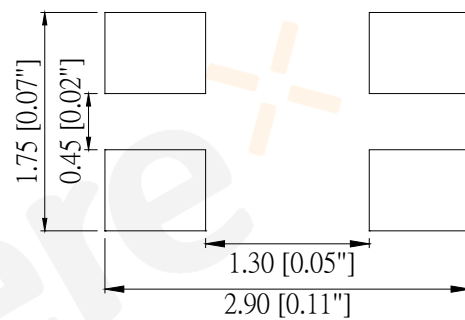
Ideal for back light and indicator

Various colors and lens types available

Package outlines



Recommend Pad Layout



Part No.	Emitted color	Dice	Lens color
S1916CHRYGBT-001	Red	AlGaInP	Water transparent
	Yellow Green	AlGaInP	
	Blue	InGaIn/GaN	

Notes:

- All dimensions are in millimeters (inches);
- Tolerances are $\pm 0.1\text{mm}$ (0.004inch) unless otherwise noted.

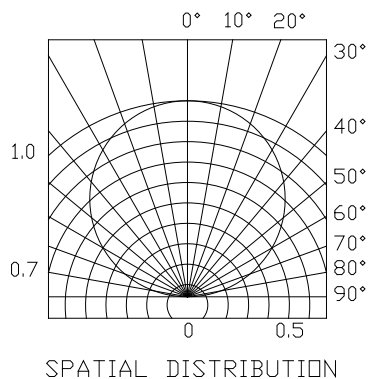
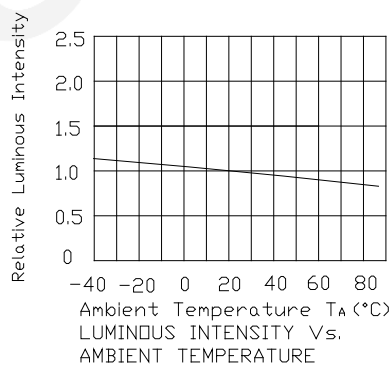
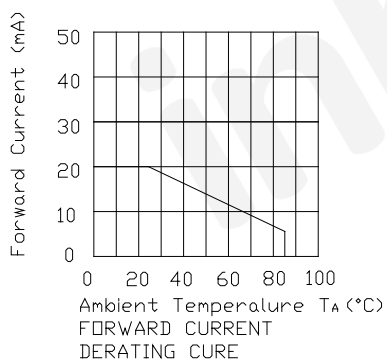
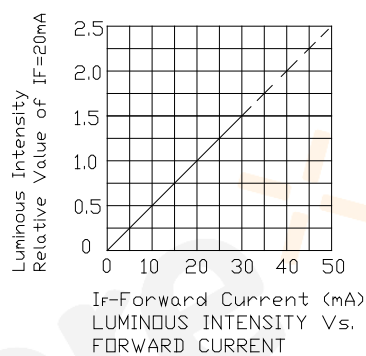
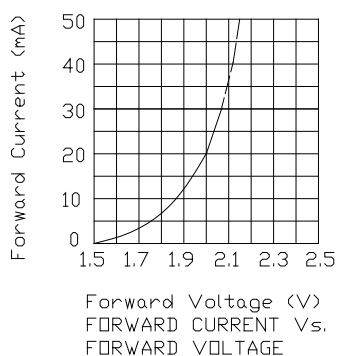
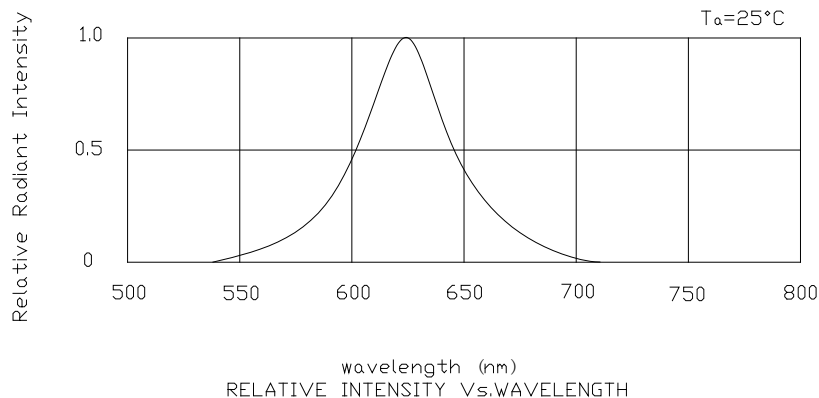
Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Value			Unit
		R	YG	B	
Power dissipation	Pd	72	72	111	mW
Forward current	If	30			mA
Reverse voltage	Vr	5			V
Operating temperature	Top	-40 ~+80			°C
Storage temperature	Tstg	-40 ~+85			°C
Peak pulsing current (1/8 duty f=1kHz)	Ifp	125			mA

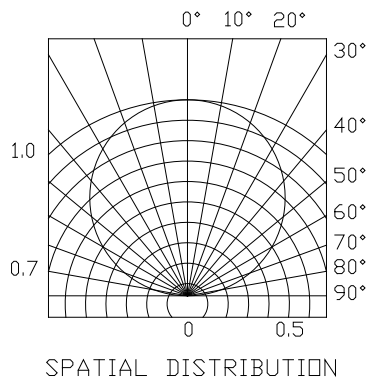
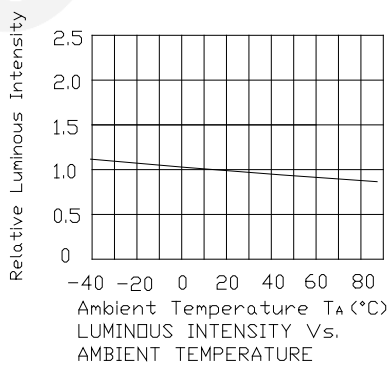
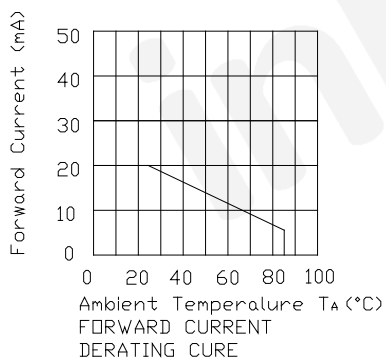
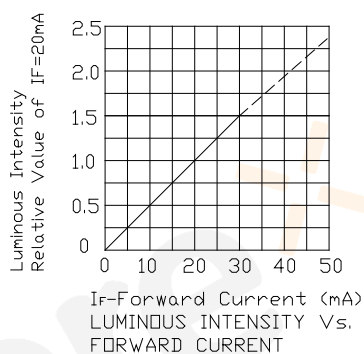
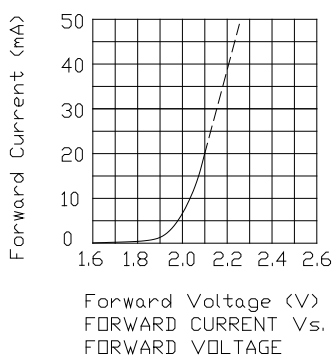
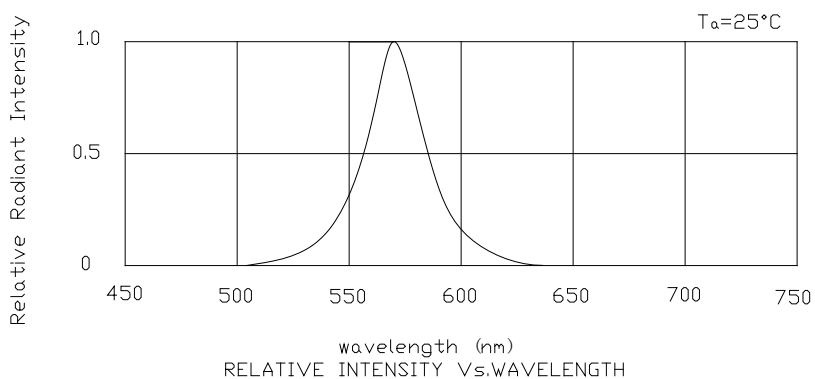
Electro-Optical Characteristics (Ta=25°C)

Parameter	Test Condition	Symbol	Value			Unit
			Min	Typ	Max	
Wavelength at peak emission	If=20mA	R	--	633	--	nm
		YG	--	573	--	
		B	--	465	--	
Spectral half bandwidth	If=20mA	R	--	19	--	nm
		YG	--	18	--	
		B	--	25	--	
Dominant wavelength	If=20mA	R	620	--	630	nm
		YG	565	--	576	
		B	465	--	475	
Forward voltage	If=20mA	R	1.8	--	2.4	V
		YG	1.8	--	2.4	
		B	2.8	--	3.7	
Luminous intensity	If=20mA	R	100	180	--	mcd
		YG	25	40	--	
		B	100	160	--	
Viewing angle at 50% Iv	If=10mA	2 ^θ 1/2	--	120	--	Deg
Reverse current	Vr=5V	Ir	--	--	10	μA

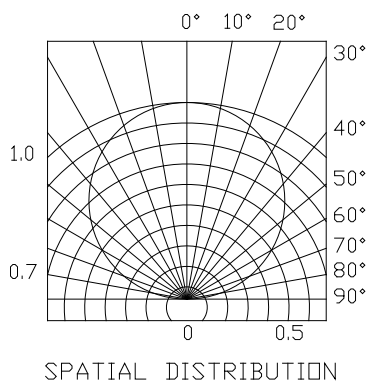
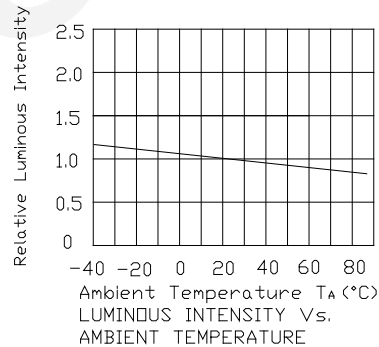
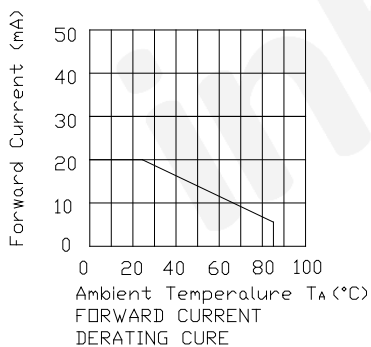
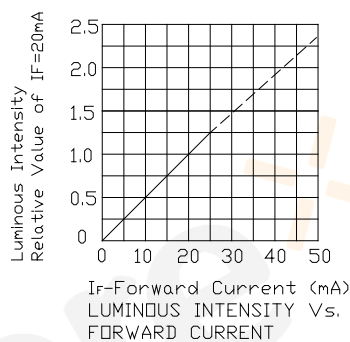
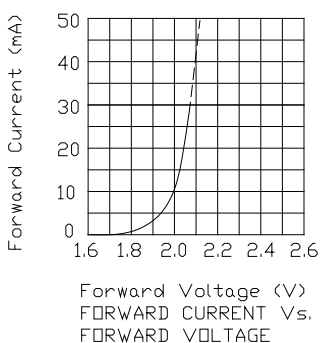
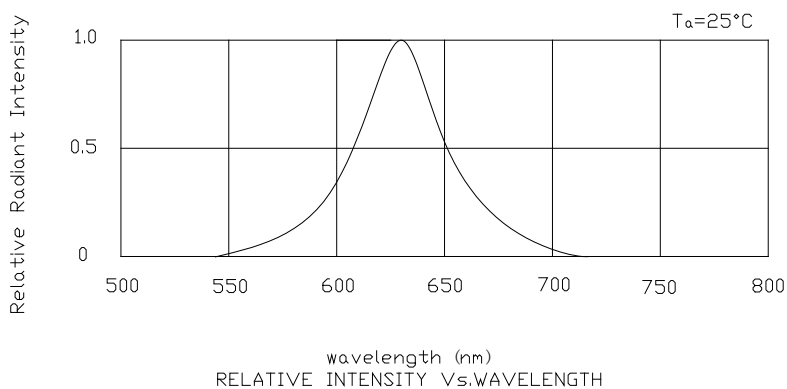
Optical Characteristic Curves (Red)



Optical Characteristic Curves (Yellow Green)

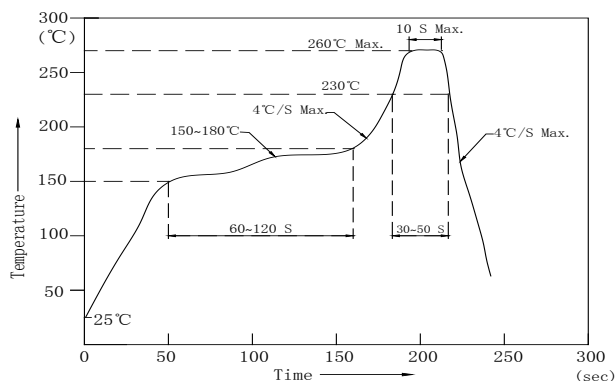


Optical Characteristic Curves (Blue)



Reflow Profile

■ Reflow Temp/Time



Notes:

1. We recommend the reflow temperature 245°C ($\pm 5^{\circ}\text{C}$).the maximum soldering temperature should be limited to 260°C .
2. Don't cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

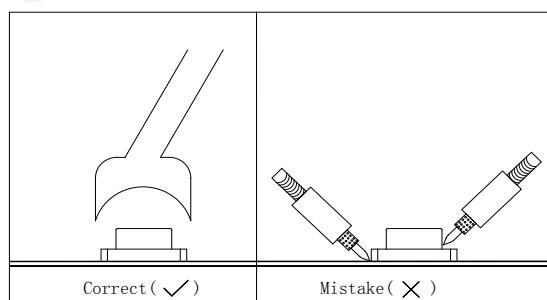
■Soldering iron

Basic spec is $\leq 5\text{sec}$ when 320°C ($\pm 20^{\circ}\text{C}$). If temperature is higher, time should be shorter ($+10^{\circ}\text{C} \rightarrow -1\text{sec}$).

Power dissipation of iron should be smaller than 20W, and temperatures should be controllable .Surface temperature of the device should be under 350°C .

■Rework

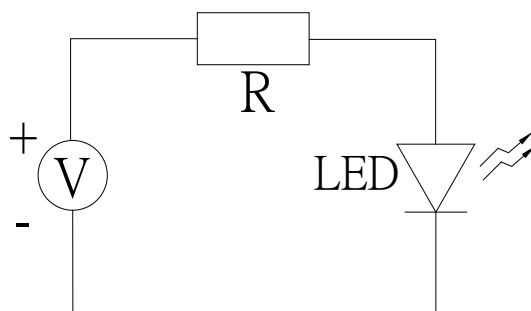
1. Customer must finish rework within 5 sec under 340°C .
2. The head of iron cannot touch copper foil
3. Twin-head type is preferred.



- Avoid rubbing or scraping the resin by any object, during high temperature, for example reflow solder etc.

Test circuit and handling precautions

■ Test circuit



■ Handling precautions

1. Over-current-proof

Customer must apply resistors for protection; otherwise slight voltage shift will cause big current change (Burn out will happen).

2. Storage

2.1 It is recommended to store the products in the following conditions:

Humidity: 60% R.H. Max.

Temperature: 5°C~30°C

2.2 Shelf life in sealed bag: 12 month at <math>< 5^{\circ}\text{C}\sim 30^{\circ}\text{C}</math> and <math>< 30\%</math> R.H. after the package is opened, the products should be used within a week or they should be keeping to stored at ≤ 20 R.H. with zip-lock sealed.

3. Baking

It is recommended to baking before soldering when the pack is unsealed after 72hrs. The Conditions are as followings:

3.1 $60\pm 3^{\circ}\text{C}$ x (12~24hrs) and <math>< 5\%</math>RH, taped reel type

3.2 $100\pm 3^{\circ}\text{C}$ x (45min~1hr), bulk type

3.3 $130\pm 3^{\circ}\text{C}$ x (15~30min), bulk type

Test Items and Results of Reliability

Test Item	Test Conditions	Standard Test Method	Note	Number of Test
Reflow Soldering	Ta=260±5℃,Time=10±2S	JB/T 10845-2008	3times	0/22
Salt Atmosphere	Ta=35±3℃,PH=6.5~7.2	GB/T 2423.17-2008	24hrs	0/22
Temperature Cycling	-40±5℃ 30±1min ↑→(25℃/5±1min)↓ 100±5℃ 30±1min	GB/T 2423.22-2012	100cycles	0/22
Thermal Shock	Ta=-40±5℃~100±5℃, 15±1min dwell	GB/T 2423.22-2012	100cycles	0/22
High Humidity High Temp. Cycling	Ta=30±5℃~65±5℃, 90±5%RH,24hrs/1cycle	GB/T 2423.4-2008	10cycles	0/22
High Humidity High Temp. Storage Life	Ta=85±5℃,ψ(%)=85±5%RH	GB/T 2423.3-2006	1000hrs	0/22
High Temperature Storage Life	Ta=100±5℃,non-operating	GB/T 2423.2-2008	1000hrs	0/22
Low Temperature Storage Life	Ta=-40±5℃,non-operating	GB/T 2423.1-2008	1000hrs	0/22
Life Test	Ta=26±5℃,@20mA, ψ(%)=25%RH~55%RH	--	1000hrs	0/22
High Humidity High Temp. Operating Life	Ta=85±5℃,@20mA, ψ(%)=85%RH	GB/T 2423.3-2006	500hrs	0/22
Low Temperature Operating Life	Ta=-20±5℃,@20mA	GB/T 2423.1-2008	1000hrs	0/22

Forward Voltage Rank Combination (IF=20mA)

Rank		Min.	Max.	Unit
Red	□	1.8	2.4	V
Yellow Green	□	1.8	2.4	
Blue	f	2.8	3.1	
	g	3.1	3.4	
	h	3.4	3.7	

Luminous Intensity Rank Combination (IF=20mA)

Rank		Min.	Max.	Unit
Red	J	100	125	mcd
	K	125	160	
	L	160	200	
	M	200	250	
	N	250	320	
	O	320	--	
Yellow Green	D	25	32	
	E	32	40	
	F	40	50	
	G	50	63	
	H	63	--	
Blue	J	100	125	
	K	125	160	
	L	160	200	
	M	200	250	
	N	250	--	

Dominant wavelength Rank Combination (IF=20mA)

Rank		Min.	Max.	Unit
Red	t	620	625	nm
	u	625	630	
Yellow Green	h	565	568	
	i	568	572	
	j	572	576	
Blue	G	465	467.5	
	H	467.5	470	
	I	470	472.5	
	J	472.5	475	

Group Name on Label (Example DATA: Lt Ej gJG 20)

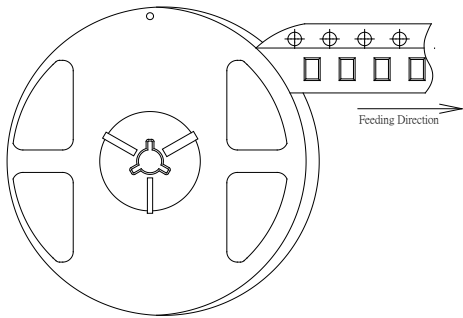
DATA: <input type="checkbox"/> Lt <input type="checkbox"/> Ej gJG 20	Vf(V)	Iv (mcd)	λd (nm)	Test Condition
Red <input type="checkbox"/> →L→t→20	1.8~2.4	160~200	620~625	IF=20mA
Yellow Green <input type="checkbox"/> →E→j→20	1.8~2.4	32-40	572~576	
Blue g→J→G→20	3.1~3.4	100~125	465~467.5	

Notes:

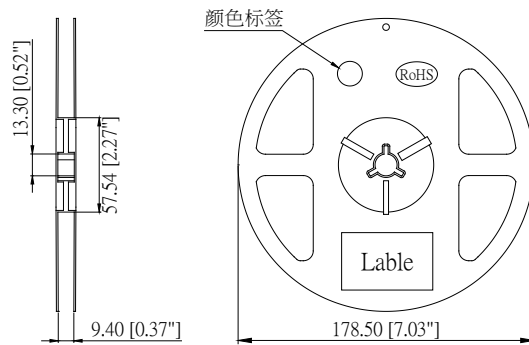
- 1.The tolerance of luminous intensity (Iv)is $\pm 15\%$.
2. The tolerance of dominant wavelength is $\pm 1\text{nm}$.
3. This specification is preliminary.
4. This specification is a standard specification of our factory, can make in accordance with customer's special requirement.

1916 Series SMD Chip LED Lamps Packaging Specifications

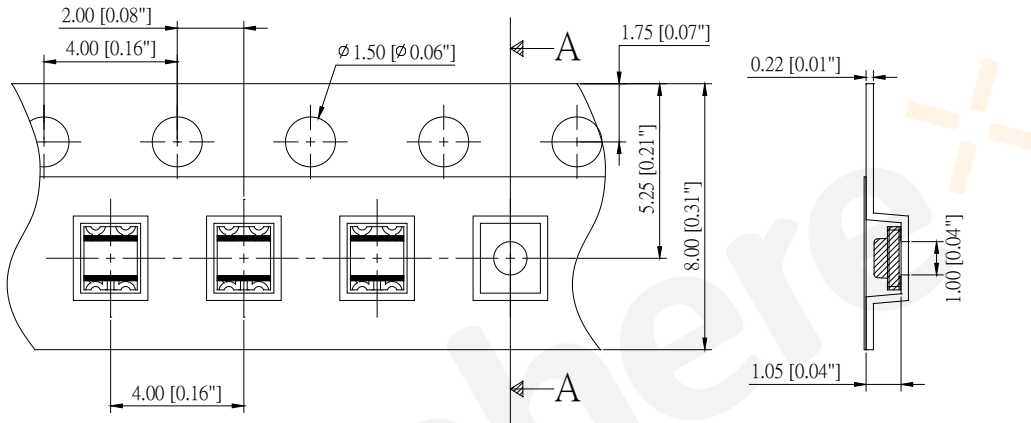
● Feeding Direction



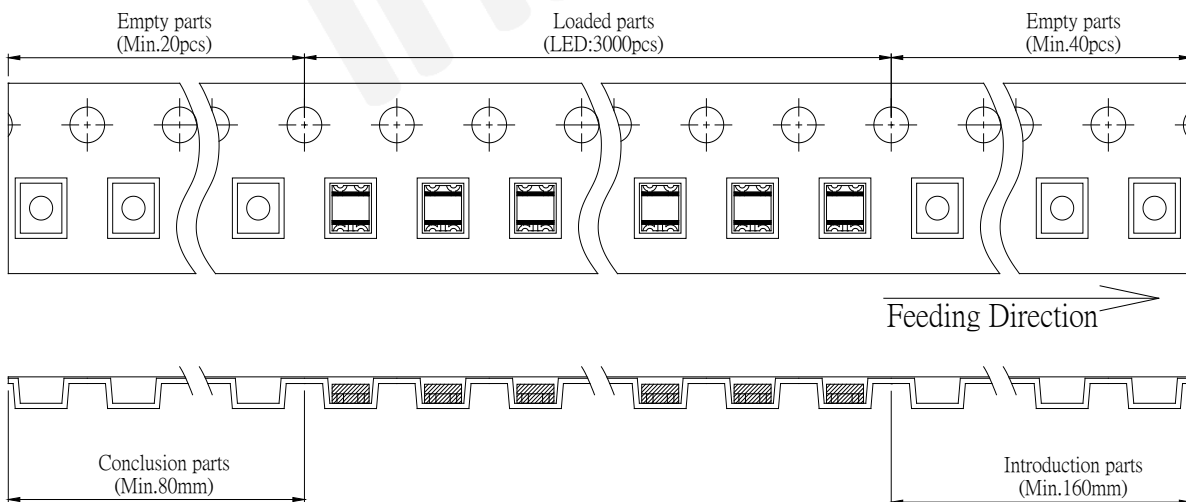
● Dimensions of Reel (Unit: mm)



● Dimensions of Tape (Unit: mm)



● Arrangement of Tape



Notes:

1. Empty component pockets are sealed with top cover tape;
2. The maximum number of missing lamps is two;
3. The cathode is oriented towards the tape sprocket hole in accordance with ANSI/EIA RS-481 specifications.
4. 3,000pcs/Reel.

