
Specification



Part No. V0603-SMD-B

Draw Date 2013-3-13

Features

1.6mm x 0.8mm SMT LED, 0.6mm thickness

Low power consumption

Wide view angle

Package: 4000pcs/reel

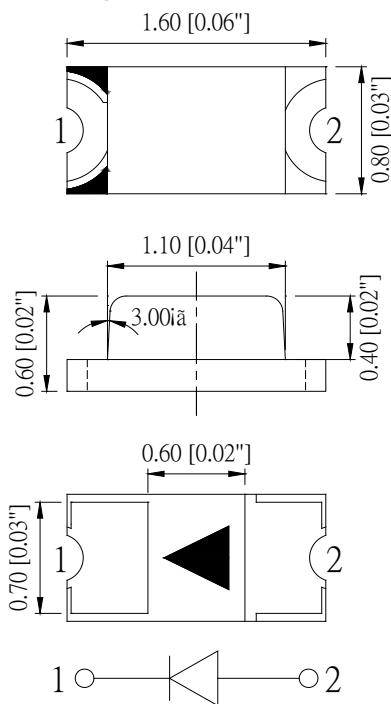
RoHS Compliant

Applications

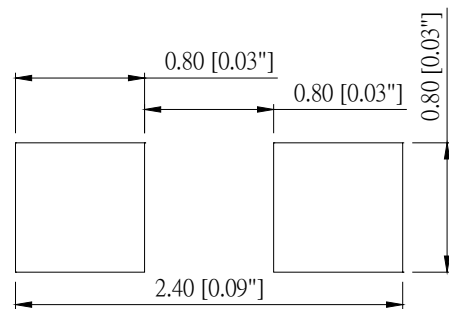
Ideal for back light and indicator

Various colors and lens types available

Package outlines



Recommend Pad Layout



Part No.	Emitted color	Dice	Lens color
JM1608BAB65TP-H	Blue	InGaN/GaN	Water transparent

Notes:

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

Absolute maximum ratings (TA=25°C)

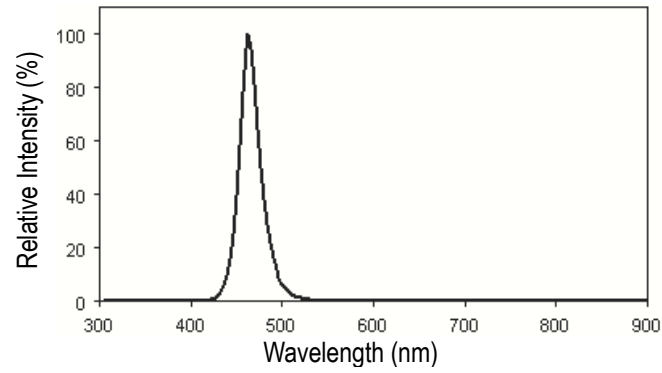
Parameter	Symbol	Value	Unit
Forward current	I _f	30	mA
Reverse voltage	V _r	5	V
Power dissipation	P _d	108	mW
Operating temperature	T _{op}	-40 ~+80	°C
Storage temperature	T _{stg}	-40 ~+85	°C
Peak pulsing current (1/8 duty f=1kHz)	I _{fp}	125	mA

Electro-optical characteristics (TA=25°C)

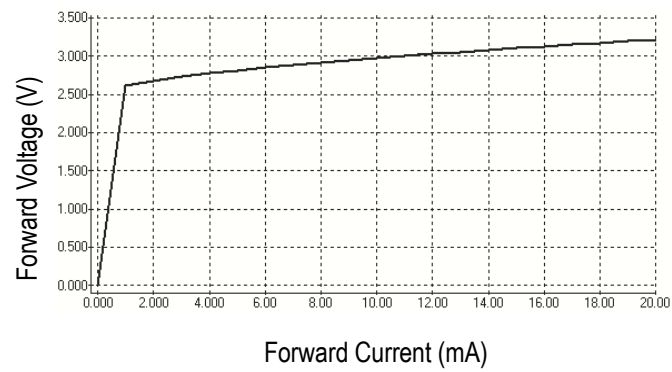
Parameter	Test Condition	Symbol	Value			Unit
			Min	Typ	Max	
Wavelength at peak emission	I _f =20mA	λ _p	--	465	--	nm
Spectral half bandwidth	I _f =20mA	Δλ	--	23	--	nm
Dominant wavelength	I _f =20mA	λ _d	464	--	474	nm
Forward voltage	I _f =20mA	V _f	2.8	--	3.6	V
Luminous intensity	I _f =20mA	I _v	125	200	--	mcd
Viewing angle at 50% I _v	I _f =10mA	2θ 1/2	--	120	--	Deg
Reverse current	V _r =5V	I _r	--	--	10	μA

Optical characteristic curves

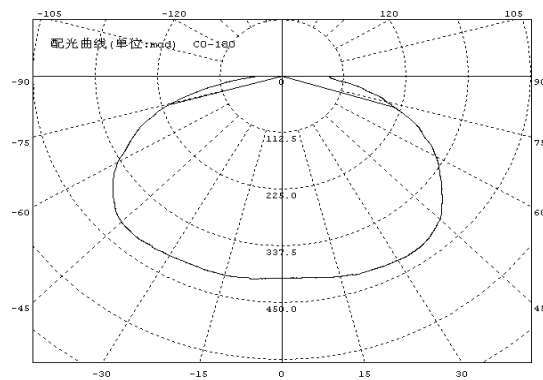
Relative Intensity vs. Wavelength



Forward Current vs. Forward Voltage

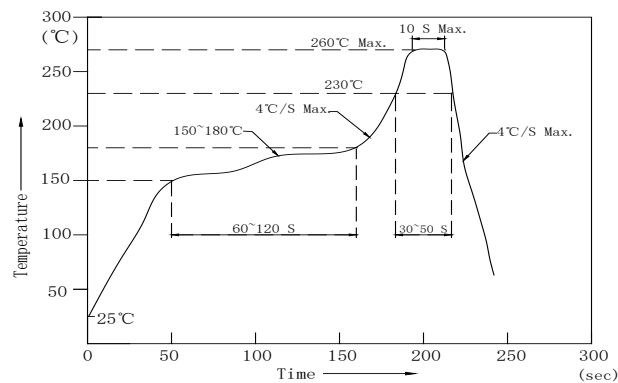


Directive Characteristics



Reflow Profile

■ Reflow Temp/Time



Notes:

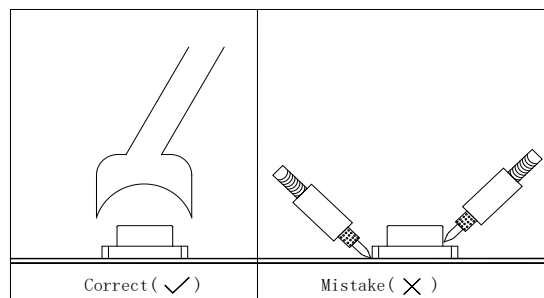
1. We recommend the reflow temperature $245^{\circ}\text{C}(\pm 5^{\circ}\text{C})$. the maximum soldering temperature should be limited to 260°C .
2. Don't cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

■ Soldering iron

Basic spec is $\leq 5\text{sec}$ when $320^{\circ}\text{C}(\pm 20^{\circ}\text{C})$. 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

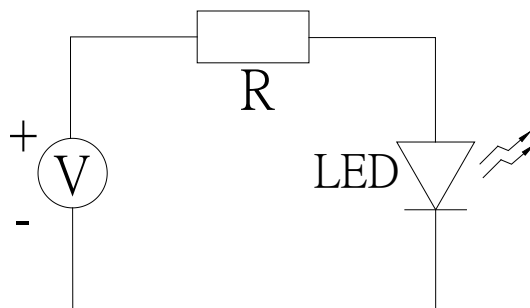
1. Customer must finish rework within 5 sec under 340°C .
2. The head of iron cannot touch copper foil
3. Twin-head type is preferred.



- 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(41°F~86°F)

2.2 Shelf life in sealed bag: 12 month at <5°C~30°C and <30% 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 <5%RH, taped reel type

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

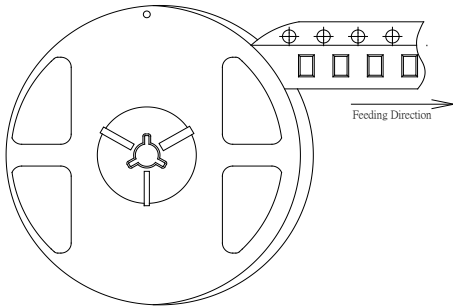
3.3 $130 \pm 3^\circ\text{C}$ x(15~30min), bulk type

Test items and results of reliability

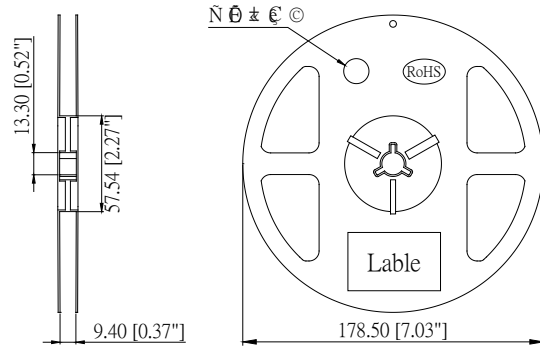
Type	Test Item	Test Conditions	Note	Number of Damaged
Environmental Sequence	Temperature Cycle	-20°C 30min ↑ ↓ 80°C 30min	100 cycle	0/22
	Thermal Shock	-20°C 15min ↑ ↓ 80°C 15min	100 cycle	0/22
	High Humidity Heat Cycle	30°C ↔ 65°C 90%RH 24hrs/1cycle	10 cycle	0/22
	High Temperature Storage	Ta=80°C	1000 hrs	0/22
	Humidity Heat Storage	Ta=60°C RH=90%	1000 hrs	0/22
	Low Temperature Storage	Ta=-30°C	1000 hrs	0/22
Operation Sequence	Life Test	Ta=25°C IF=20mA	1000 hrs	0/22
	High Humidity Heat Life Test	60°C RH=90% IF=10mA	500 hrs	0/22
	Low Temperature Life Test	Ta=-20°C IF=20mA	1000 hrs	0/22

1608 Series SMD Chip LED Lamps Packaging Specifications

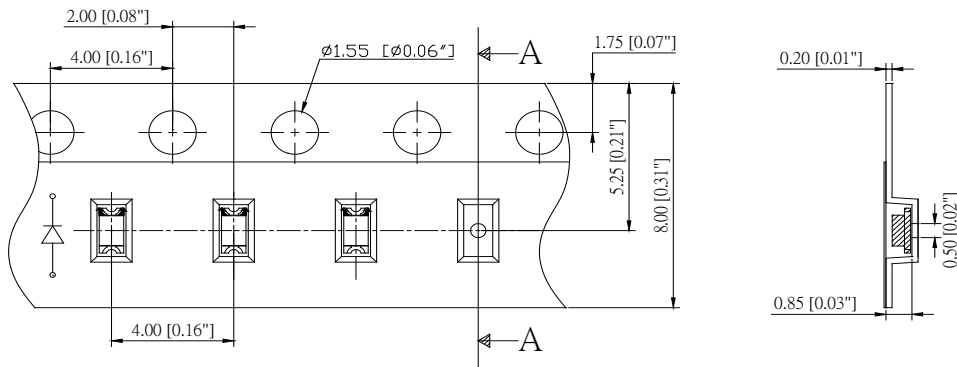
- Feeding Direction



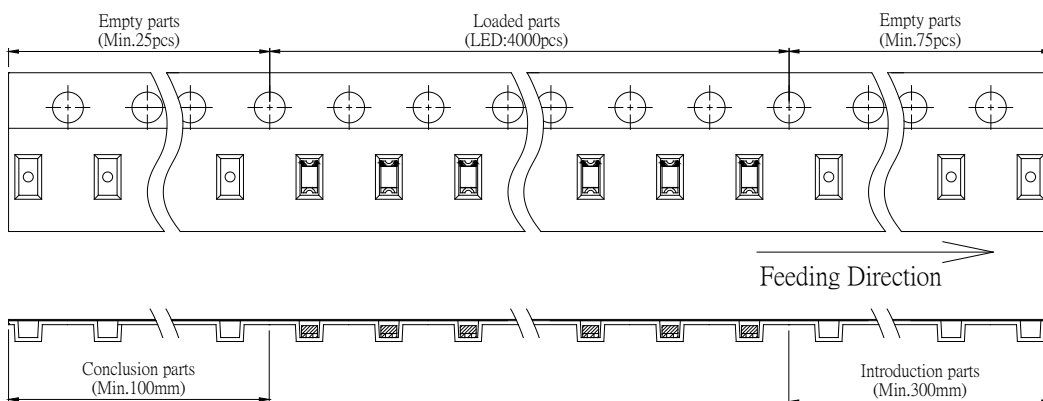
- Dimensions of Reel (Unit: mm)



- Dimensions of Tape (Unit: mm)



- Arrangement of Tape

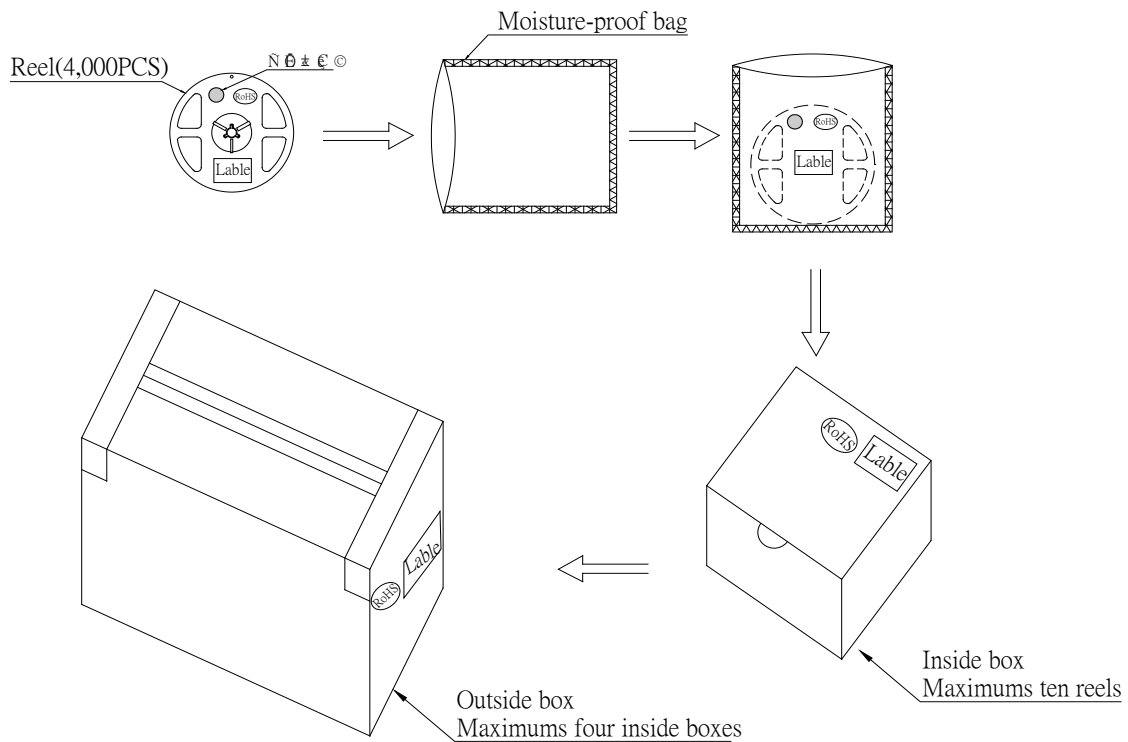


Notes:

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. 4,000 pcs/Reel.

1608 Series SMD Chip LED Lamps Packaging Specifications

- Packaging specifications



Notes:

Reeled products (numbers of products are 4,000pcs) packed in a seal off moisture-proof bag along with a desiccant one by one, ten moisture-proof bag of maximums (total maximum number of products are 40,000pcs) packed in an inside box (about size: 240x 220x 120mm) and four inside boxes of maximums are put in the outside box (about size: 460mm x 246mm x 250mm) Together with buffer material, and it is packed. (Part No., Lot No., quantity should appear on the label on the moisture-proof bag, part No. And quantity should appear on the label on the cardboard box.) The number of the loading steps of outside box (cardboard box) has it to three steps.

Forward Voltage Rank Combination (IF=20mA)

Rank	Min.	Max.	Unit
H	2.8	2.9	V
I	2.9	3.0	
J	3.0	3.1	
K	3.1	3.2	
L	3.2	3.3	
M	3.3	3.4	
N	3.4	3.5	
O	3.5	3.6	

Luminous Intensity Rank Combination (IF=20mA)

Rank	Min.	Max.	Unit
K	125	160	mcd
L	160	200	
M	200	250	
N	250	--	

Dominant wavelength Rank Combination (IF=20mA)

Rank	Min.	Max.	Unit
Bh	464	466	nm
Bi	466	468	
Bj	468	470	
Bk	470	472	
Bl	472	474	

Group Name on Label (Example DATA: **KMBj 20**)

DATA: KMBj 20	Vf(V)	Iv (mcd)	λ_d (nm)	Test Condition
K→M→Bj→20	3.1~3.2	200~250	468~470	IF=20mA

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.

Specification



Part No. V0603-SMD-G

Draw Date 2014-6-17

Features

1.6mm x 0.8mm SMT LED, 0.6mm thickness

Low power consumption

Wide view angle

Package: 4000pcs/reel

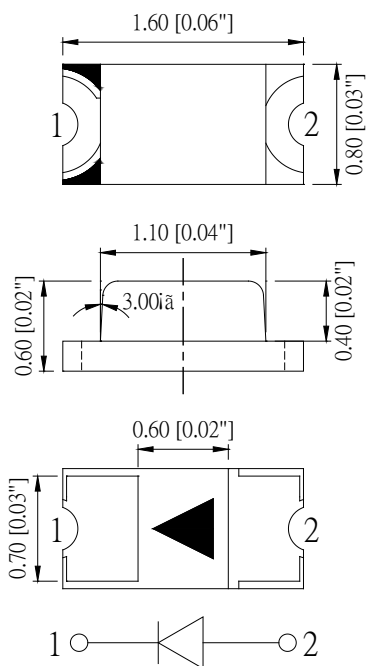
RoHS Compliant

Applications

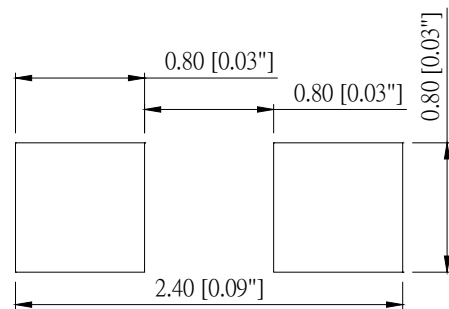
Ideal for back light and indicator

Various colors and lens types available

Package outlines



Recommend Pad Layout



Part No.	Emitted color	Dice	Lens color
JM1608BAW55TP-G	White	InGaN/GaN	Yellow

Notes:

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

Absolute Maximum Ratings (TA=25°C)

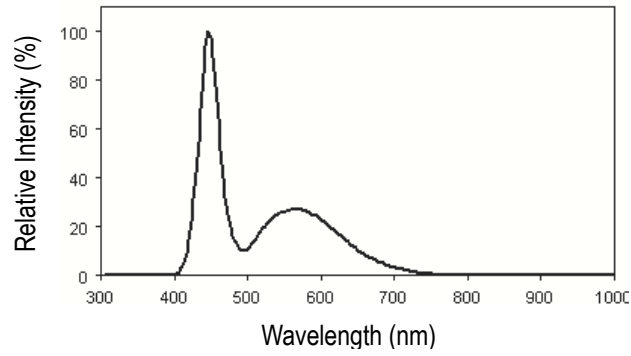
Parameter	Symbol	Value	Unit
Forward current	If	30	mA
Reverse voltage	Vr	5	V
Power dissipation	Pd	108	mW
Operating temperature	Top	-40 ~+80	°C
Storage temperature	Tstg	-40 ~+85	°C
Peak pulsing current (1/8 duty f=1kHz)	Ifp	125	mA

Electro-Optical Characteristics (TA=25°C)

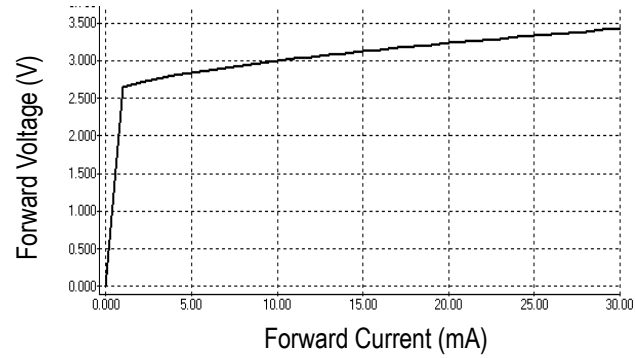
Parameter	Test Condition	Symbol	Value			Unit
			Min	Typ	Max	
CIE Coordinates	If=20mA	X	0.2517	--	0.2948	--
		Y	0.2292	--	0.3057	
Forward voltage	If=20mA	Vf	2.8	--	3.6	V
Luminous intensity	If=20mA	Iv	630	920	--	mcd
Viewing angle at 50% Iv	If=10mA	2 θ 1/2	--	140	--	Deg
Reverse current	Vr=5V	Ir	--	--	10	μA

Optical Characteristic Curves

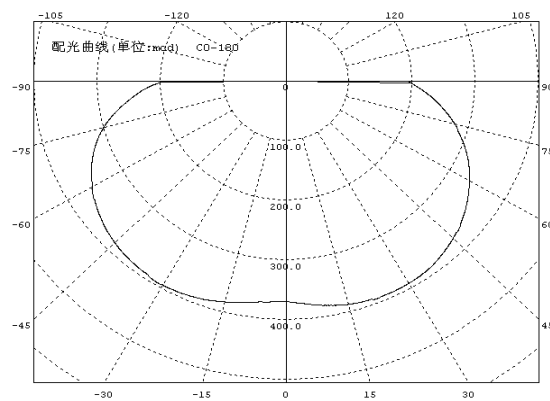
Relative Intensity vs. Wavelength



Forward Current vs. Forward Voltage

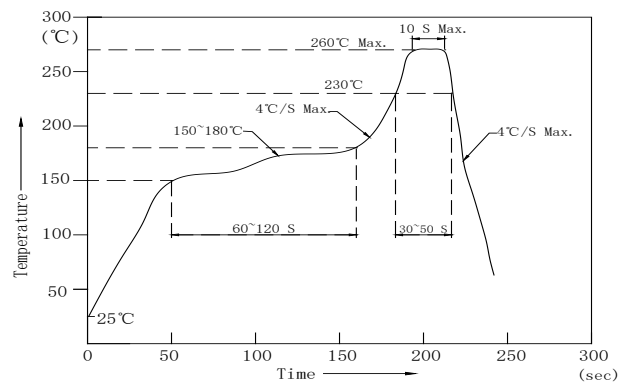


Directive Characteristics



Reflow Profile

■ Reflow Temp/Time



Notes:

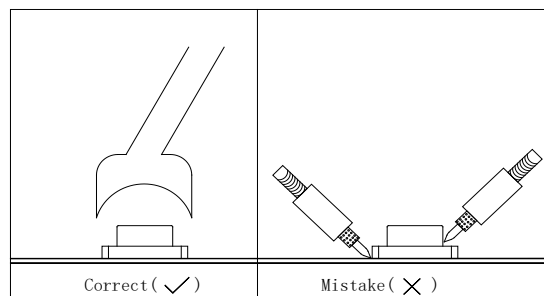
1. We recommend the reflow temperature $245^{\circ}\text{C}(\pm 5^{\circ}\text{C})$. the maximum soldering temperature should be limited to 260°C .
2. Don't cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

■ Soldering iron

Basic spec is $\leq 5\text{sec}$ when $320^{\circ}\text{C}(\pm 20^{\circ}\text{C})$. 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

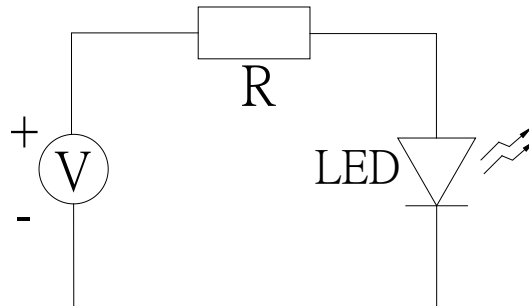
1. Customer must finish rework within 5 sec under 340°C .
2. The head of iron cannot touch copper foil
3. Twin-head type is preferred.



- 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(41°F~86°F)

2.2 Shelf life in sealed bag: 12 month at <5°C~30°C and <30% 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 <5%RH, taped reel type

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

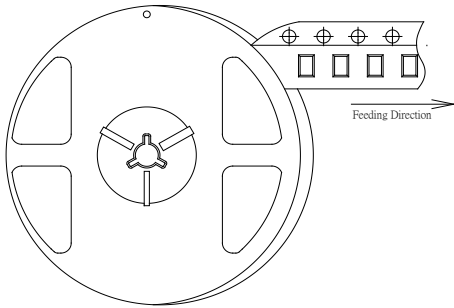
3.3 $130 \pm 3^\circ\text{C}$ x(15~30min), bulk type

Test Items and Results of Reliability

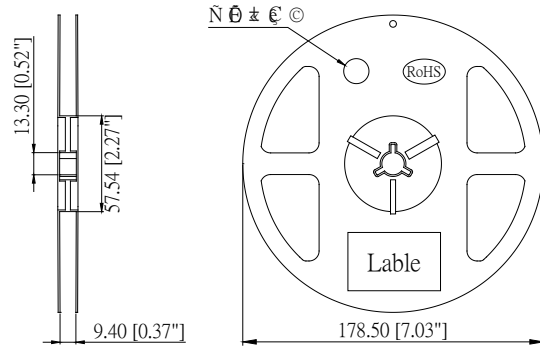
Type	Test Item	Test Conditions	Note	Number of Damaged
Environmental Sequence	Temperature Cycle	-40°C 30min ↑ → (25°C/5min) ↓ 100°C 30min	100 cycle	0/22
	Thermal Shock	-40°C 15min ↑ ↓ 100°C 15min	100 cycle	0/22
	High Humidity Heat Cycle	30°C ↔ 65°C 90%RH 24hrs/1cycle	10 cycle	0/22
	High Temperature Storage	Ta=100°C	1000 hrs	0/22
	Humidity Heat Storage	Ta=60°C RH=95%	1000 hrs	0/22
	Low Temperature Storage	Ta=-40°C	1000 hrs	0/22
Operation Sequence	Life Test	Ta=25°C IF=20mA	1000 hrs	0/22
	High Humidity Heat Life Test	60°C RH=95% IF=10mA	500 hrs	0/22
	Low Temperature Life Test	Ta=-20°C IF=20mA	1000 hrs	0/22

1608 Series SMD Chip LED Lamps Packaging Specifications

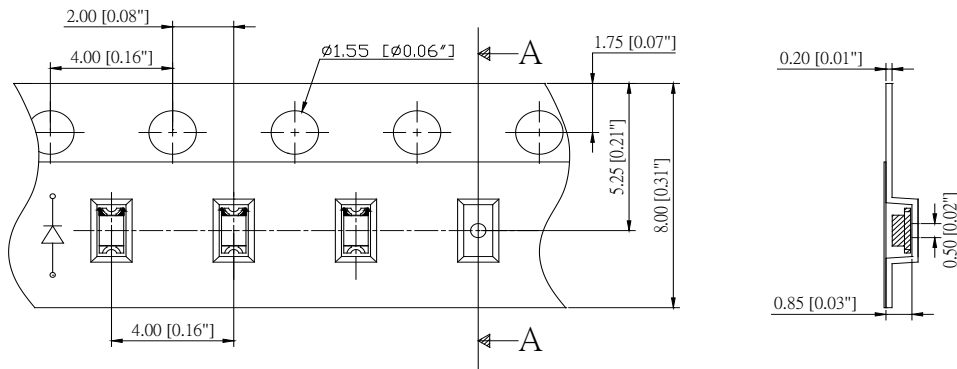
- Feeding Direction



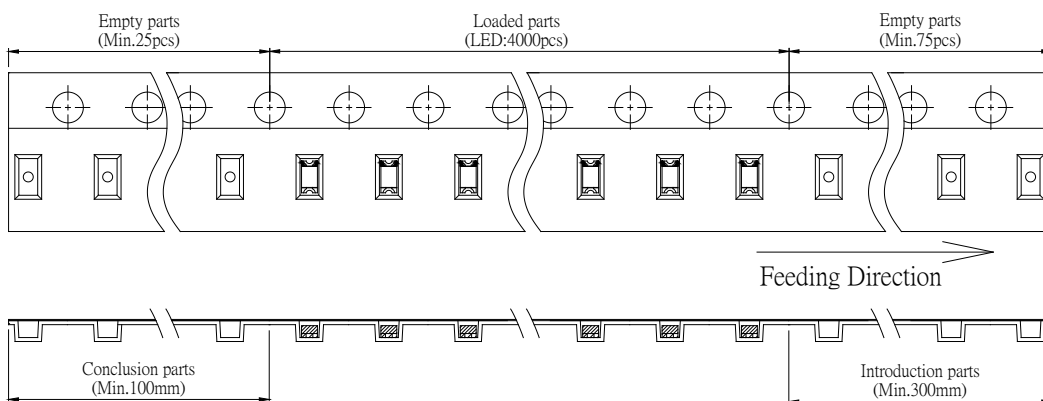
- Dimensions of Reel (Unit: mm)



- Dimensions of Tape (Unit: mm)



- Arrangement of Tape

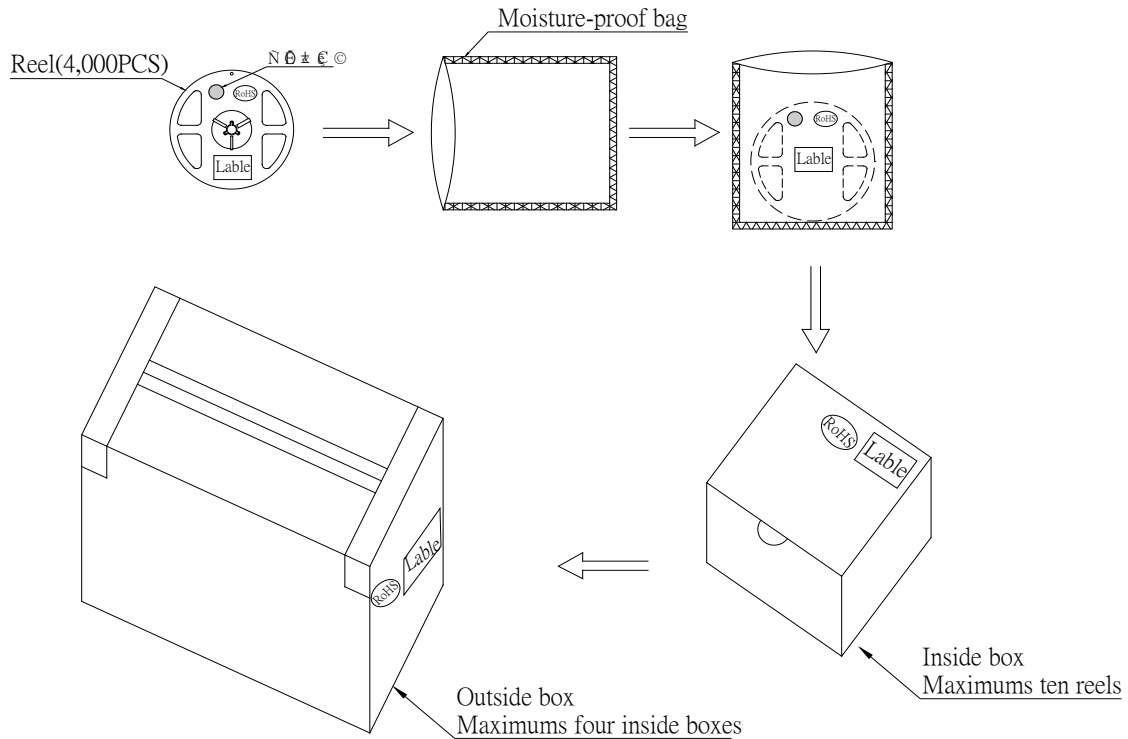


Notes:

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. 4,000 pcs/Reel.

1608 Series SMD Chip LED Lamps Packaging Specifications

- Packaging specifications



Notes:

Reeled products (numbers of products are 4,000pcs) packed in a seal off moisture-proof bag along with a desiccant one by one, ten moisture-proof bag of maximums (total maximum number of products are 40,000pcs) packed in an inside box (about size: 240x 220x 120mm) and four inside boxes of maximums are put in the outside box (about size: 460mm x 246mm x 250mm) Together with buffer material, and it is packed. (Part No., Lot No., quantity should appear on the label on the moisture-proof bag, part No. and quantity should appear on the label on the cardboard box.) The number of the loading steps of outside box (cardboard box) has it to three steps.

Forward Voltage Rank Combination (IF=20mA)

Rank	Min.	Max.	Unit
H	2.8	2.9	V
I	2.9	3.0	
J	3.0	3.1	
K	3.1	3.2	
L	3.2	3.3	
M	3.3	3.4	
N	3.4	3.5	
O	3.5	3.6	

Luminous Intensity Rank Combination (IF=20mA)

Rank	Min.	Max.	Unit
R	630	800	mcd
S	800	1000	
T	1000	1250	
U	1250	--	

Dominant Wavelength Rank Combination (IF=20mA)

Rank	Chromaticity coordinates				
	A8	X	0.2612	0.2517	0.2611
Y		0.2292	0.2338	0.2524	0.2463
B2	X	0.2697	0.2611	0.2701	0.2777
	Y	0.2463	0.2524	0.2704	0.2621
B5	X	0.2777	0.2701	0.2794	0.2855
	Y	0.2621	0.2704	0.2871	0.2769
B8	X	0.2855	0.2794	0.2898	0.2948
	Y	0.2769	0.2871	0.3057	0.2943

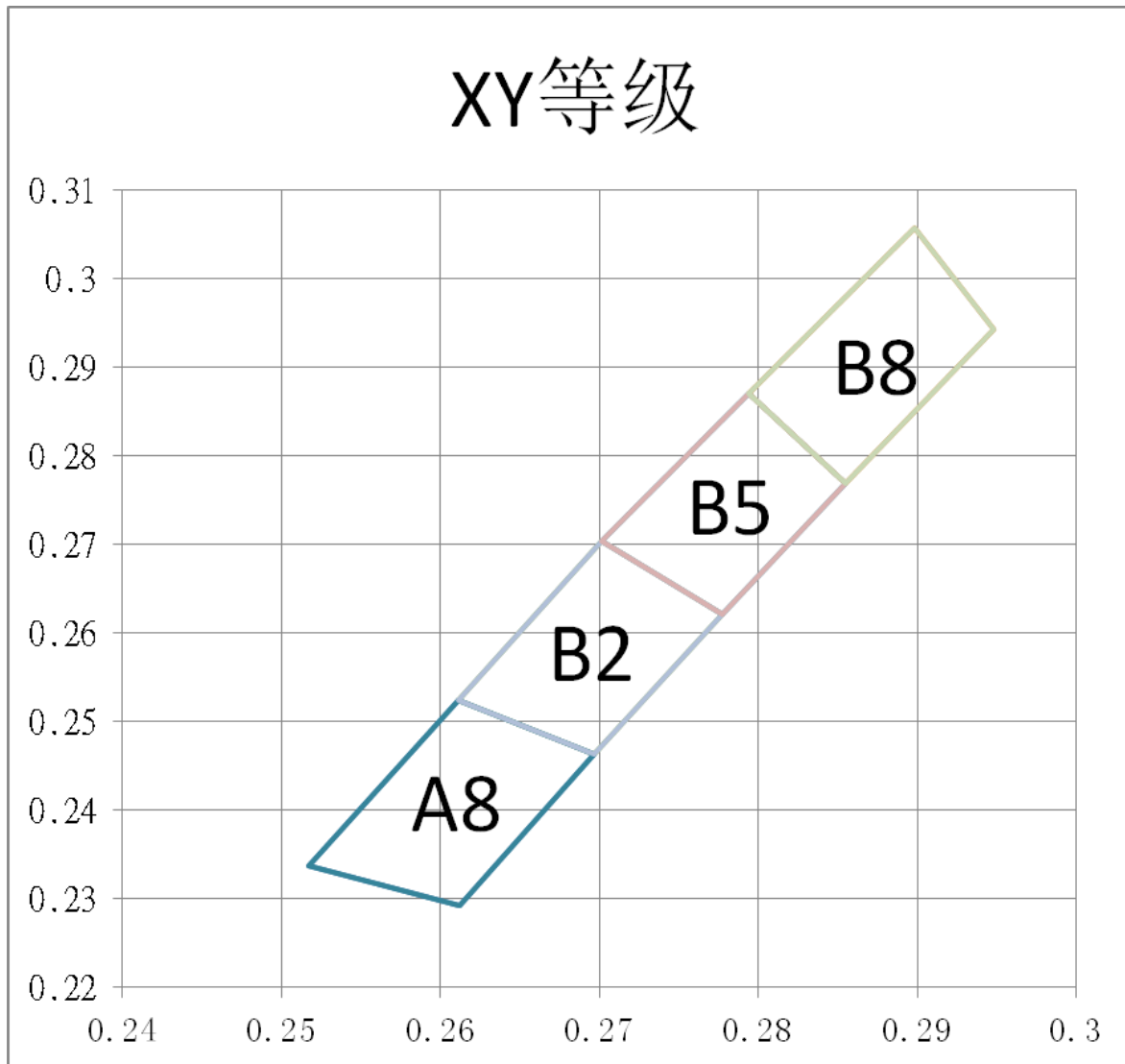
Group Name on Label (Example DATA: **KSB2 20**)

DATA: KSB2 20	Vf(V)	Iv (mcd)	CIE(X,Y)	Test Condition
K→S→B2→20	3.1~3.2	800~1000	X(0.2611~0.2777),Y(0.2463~0.2704)	IF=20mA

Notes:

- 1.The tolerance of luminous intensity (Iv)is $\pm 15\%$.
2. The tolerance of CIE Coordinates(X,Y) ± 0.01 .
- 3.This specification is preliminary.
- 4.This specification is a standard specification of our factory, can make in accordance with customer's special requirement.

XY Chromaticity Coordinate



Specification



Part No. V0603-SMD-R

Drawn Date 2013-8-12

Features

1.6mm x 0.8mm SMT LED, 0.6mm thickness

Low power consumption

Wide view angle

Package: 4000pcs/reel

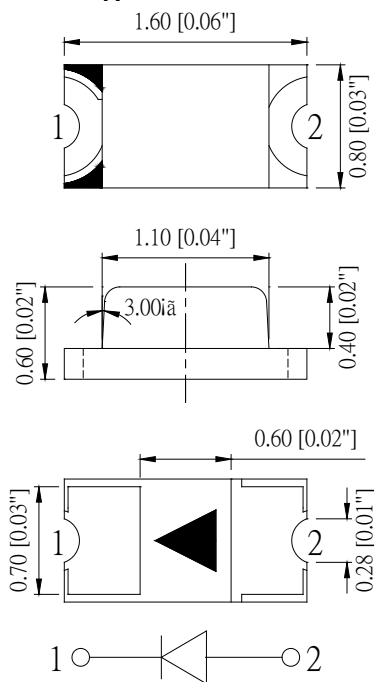
RoHS Compliant

Applications

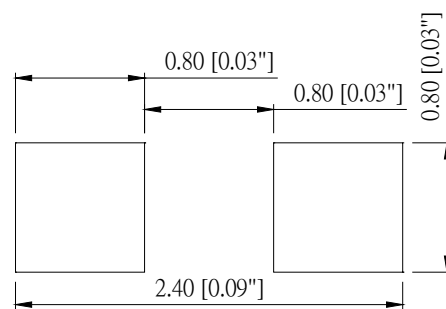
Ideal for back light and indicator

Various colors and lens types available

Package outlines



Recommend Pad Layout



Part No.	Emitted color	Dice	Lens color
JM1608BHR20TP-C	Red	AlGaInP	Water transparent

Notes:

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

Absolute Maximum Ratings (TA=25°C)

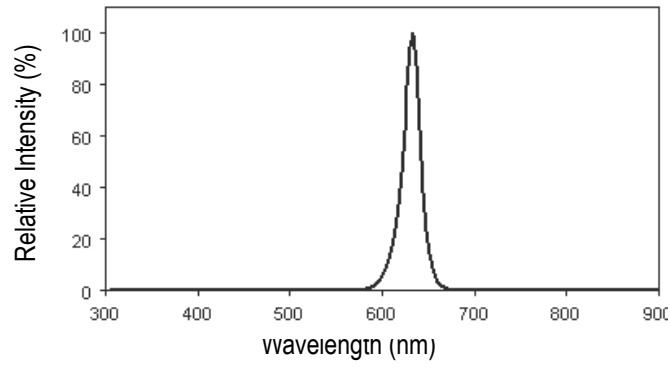
Parameter	Symbol	Value	Unit
Forward current	I _f	30	mA
Reverse voltage	V _r	5	V
Power dissipation	P _d	72	mW
Operating temperature	T _{op}	-40 ~+80	°C
Storage temperature	T _{stg}	-40 ~+85	°C
Peak pulsing current (1/8 duty f=1kHz)	I _{fp}	125	mA

Electro-Optical Characteristics (TA=25°C)

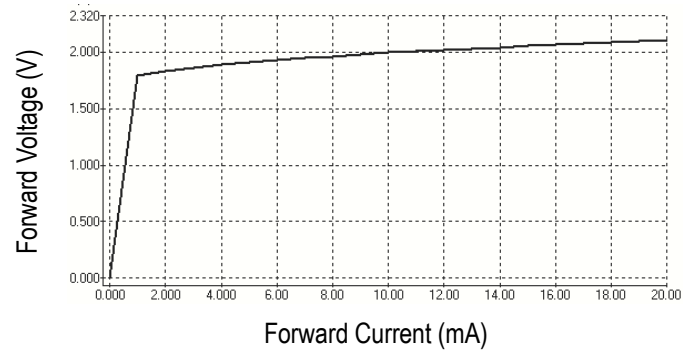
Parameter	Test Condition	Symbol	Value			Unit
			Min	Typ	Max	
Wavelength at peak emission	I _f =20mA	λ _p	--	630	--	nm
Spectral half bandwidth	I _f =20mA	Δλ	--	20	--	nm
Dominant wavelength	I _f =20mA	λ _d	620	--	630	nm
Forward voltage	I _f =20mA	V _f	1.8	--	2.4	V
Luminous intensity	I _f =20mA	I _v	63	130	--	mcd
Viewing angle at 50% I _v	I _f =10mA	2θ 1/2	--	120	--	Deg
Reverse current	V _r =5V	I _r	--	--	10	μA

Optical Characteristic Curves

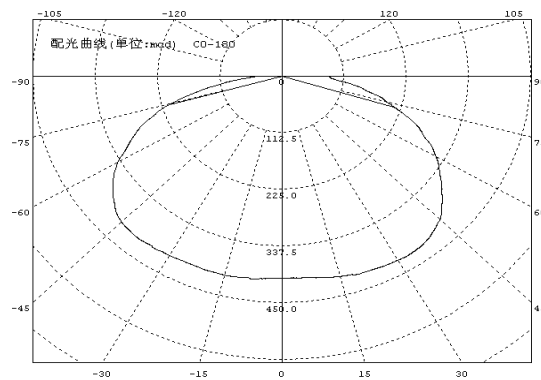
Relative Intensity vs. Wavelength



Forward Current vs. Forward Voltage

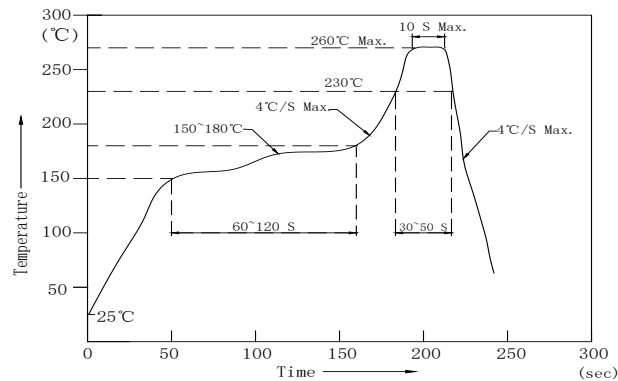


Directive Characteristics



Reflow Profile

■ Reflow Temp/Time



Notes:

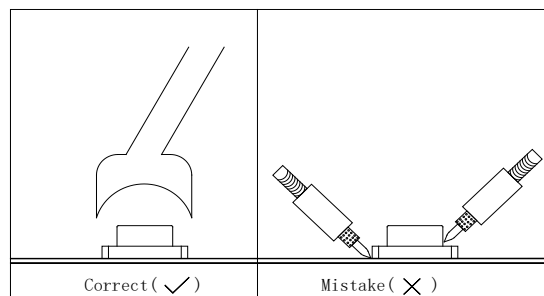
1. We recommend the reflow temperature $245^{\circ}\text{C}(\pm 5^{\circ}\text{C})$. the maximum soldering temperature should be limited to 260°C .
2. Don't cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

■ Soldering iron

Basic spec is $\leq 5\text{sec}$ when $320^{\circ}\text{C}(\pm 20^{\circ}\text{C})$. 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

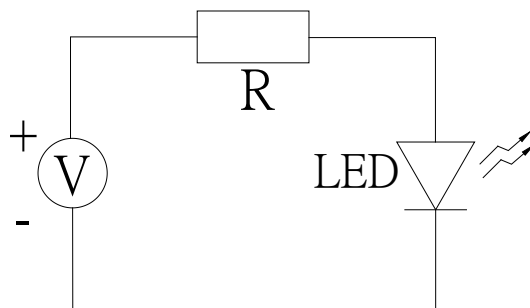
1. Customer must finish rework within 5 sec under 340°C .
2. The head of iron cannot touch copper foil
3. Twin-head type is preferred.



- 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 : $5^{\circ}\text{C}\sim 30^{\circ}\text{C}$ ($41^{\circ}\text{F}\sim 86^{\circ}\text{F}$)

2.2 Shelf life in sealed bag: 12 month at $<5^{\circ}\text{C}\sim 30^{\circ}\text{C}$ and $<30\%$ 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 $<5\%$ RH, taped reel type

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

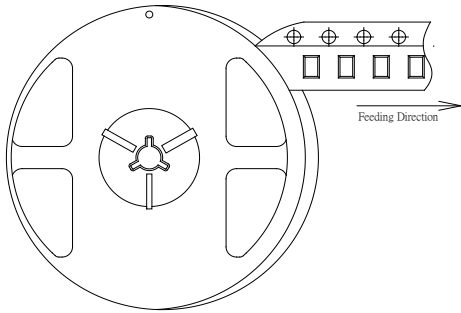
3.3 $130\pm 3^{\circ}\text{C}$ x(15~30min), bulk type

Test items and results of reliability

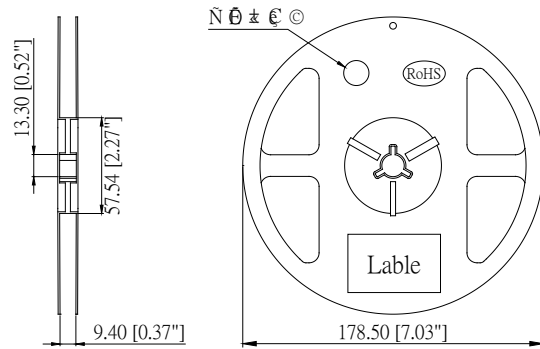
Type	Test Item	Test Conditions	Note	Number of Damaged
Environmental Sequence	Temperature Cycle	-40°C 30min ↑ → (25°C/5min) ↓ 100°C 30min	100 cycle	0/22
	Thermal Shock	-40°C 15min ↑ ↓ 100°C 15min	100 cycle	0/22
	High Humidity Heat Cycle	30°C ↔ 65°C 90%RH 24hrs/1cycle	10 cycle	0/22
	High Temperature Storage	Ta=100°C	1000 hrs	0/22
	Humidity Heat Storage	Ta=60°C RH=95%	1000 hrs	0/22
	Low Temperature Storage	Ta=-40°C	1000 hrs	0/22
Operation Sequence	Life Test	Ta=25°C IF=20mA	1000 hrs	0/22
	High Humidity Heat Life Test	60°C RH=95% IF=10mA	500 hrs	0/22
	Low Temperature Life Test	Ta=-20°C IF=20mA	1000 hrs	0/22

1608 Series SMD Chip LED Lamps Packaging Specifications

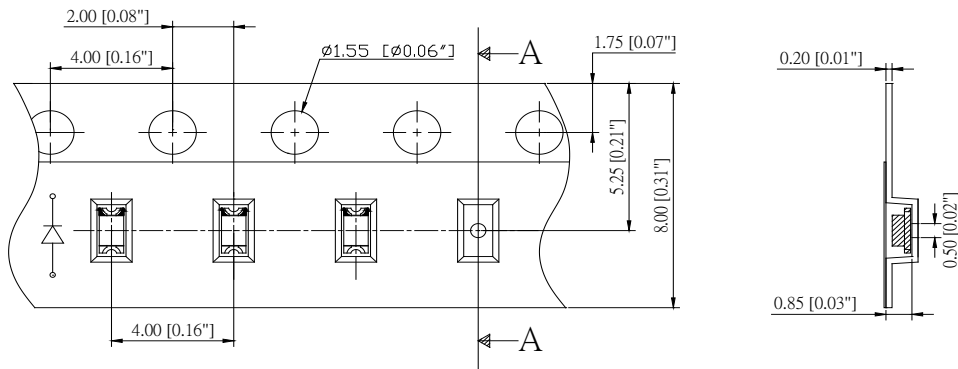
- Feeding Direction



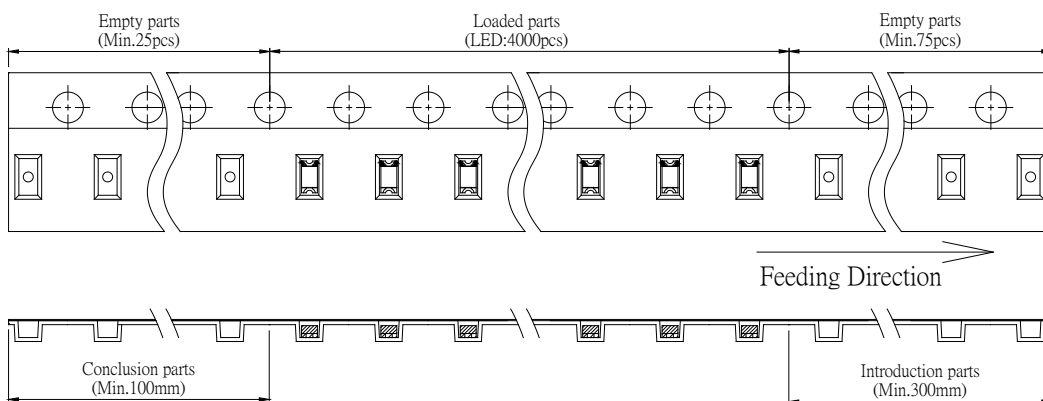
- Dimensions of Reel (Unit:



- Dimensions of Tape (Unit: mm)



- Arrangement of Tape

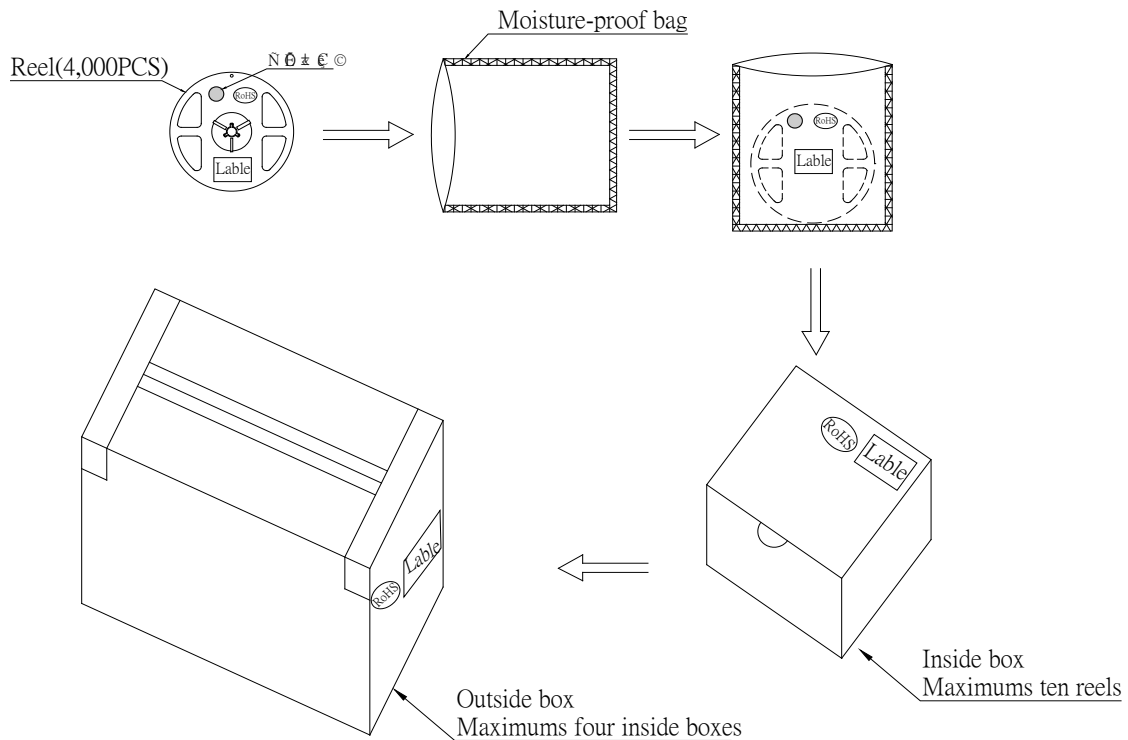


Notes:

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. 4,000 pcs/Reel.

1608 Series SMD Chip LED Lamps Packaging Specifications

- Packaging specifications



Notes:

Reeled products (numbers of products are 4,000pcs) packed in a seal off moisture-proof bag along with a desiccant one by one, ten moisture-proof bag of maximums (total maximum number of products are 40,000pcs) packed in an inside box (about size: 240x 220x 120mm) and four inside boxes of maximums are put in the outside box (about size: 460mm x 246mm x 250mm) Together with buffer material, and it is packed. (Part No., Lot No., quantity should appear on the label on the moisture-proof bag, part No. and quantity should appear on the label on the cardboard box.) The number of the loading steps of outside box (cardboard box) has it to three steps.

Forward Voltage Rank Combination (IF=20 mA)

Rank	Min.	Max.	Unit
7	1.8	1.9	V
8	1.9	2.0	
9	2.0	2.1	
A	2.1	2.2	
B	2.2	2.3	
C	2.3	2.4	

Luminous Intensity Rank Combination (IF=20 mA)

Rank	Min.	Max.	Unit
H	63	80	mcd
I	80	100	
J	100	125	
K	125	160	
L	160	200	
M	200	--	

Dominant wavelength Rank Combination (IF=20 mA)

Rank	Min.	Max.	Unit
Ra	620	622	nm
Rb	622	624	
Rc	624	626	
Rd	626	628	
Re	628	630	

Group Name on Label (Example DATA: **9IRa 20**)

DATA: 9IRa 20	Vf(V)	Iv (mcd)	λ_d (nm)	Test Condition
9→I→Ra→20	2.0~2.1	80~100	620~622	IF=20 mA

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.

Specification



Part No. V0603-SMD-W

Draw Date 2014-6-17

Features

1.6mm x 0.8mm SMT LED, 0.6mm thickness

Low power consumption

Wide view angle

Package: 4000pcs/reel

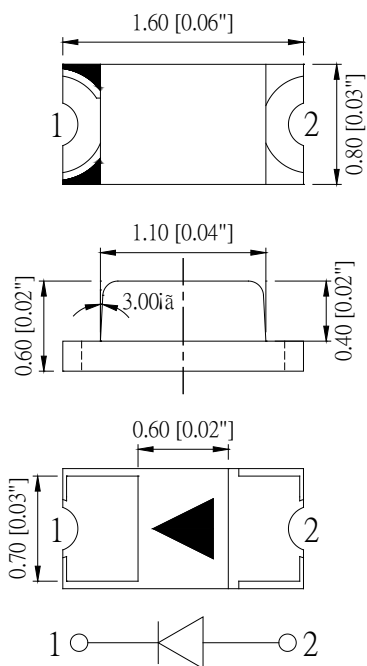
RoHS Compliant

Applications

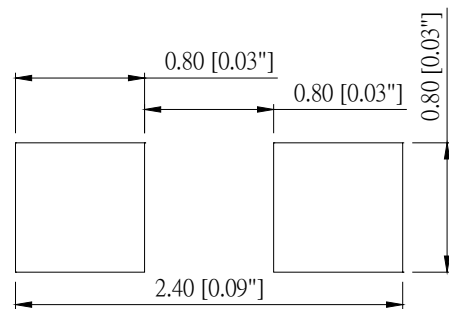
Ideal for back light and indicator

Various colors and lens types available

Package outlines



Recommend Pad Layout



Part No.	Emitted color	Dice	Lens color
JM1608BAW55TP-G	White	InGaN/GaN	Yellow

Notes:

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

Absolute Maximum Ratings (TA=25°C)

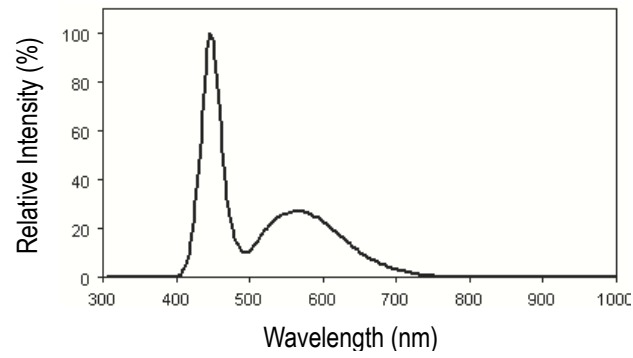
Parameter	Symbol	Value	Unit
Forward current	If	30	mA
Reverse voltage	Vr	5	V
Power dissipation	Pd	108	mW
Operating temperature	Top	-40 ~+80	°C
Storage temperature	Tstg	-40 ~+85	°C
Peak pulsing current (1/8 duty f=1kHz)	Ifp	125	mA

Electro-Optical Characteristics (TA=25°C)

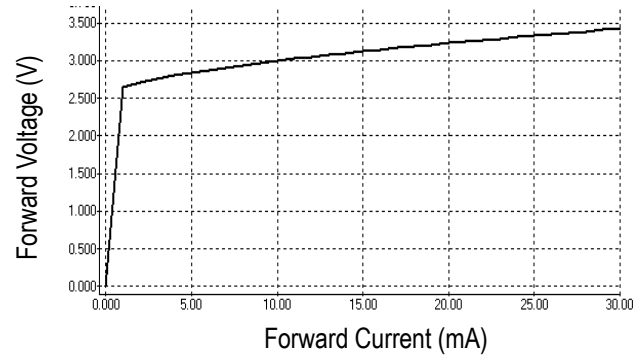
Parameter	Test Condition	Symbol	Value			Unit
			Min	Typ	Max	
CIE Coordinates	If=20mA	X	0.2517	--	0.2948	--
		Y	0.2292	--	0.3057	
Forward voltage	If=20mA	Vf	2.8	--	3.6	V
Luminous intensity	If=20mA	Iv	630	920	--	mcd
Viewing angle at 50% Iv	If=10mA	2θ 1/2	--	140	--	Deg
Reverse current	Vr=5V	Ir	--	--	10	μA

Optical Characteristic Curves

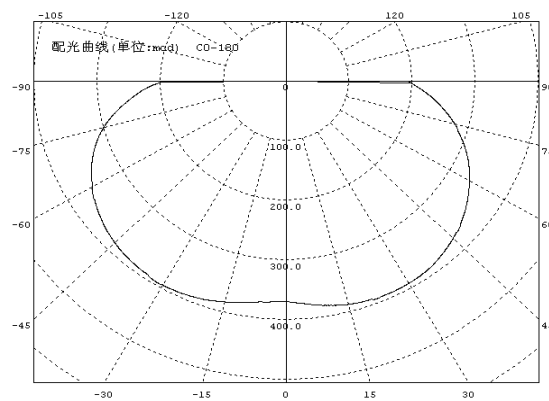
Relative Intensity vs. Wavelength



Forward Current vs. Forward Voltage

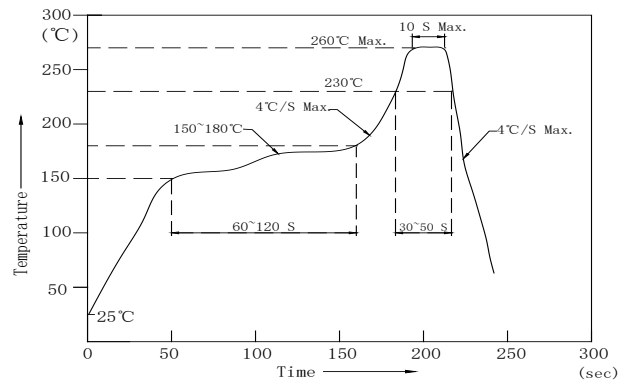


Directive Characteristics



Reflow Profile

■ Reflow Temp/Time



Notes:

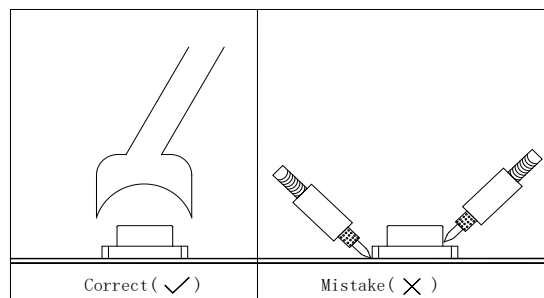
1. We recommend the reflow temperature $245^{\circ}\text{C}(\pm 5^{\circ}\text{C})$. the maximum soldering temperature should be limited to 260°C .
2. Don't cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

■ Soldering iron

Basic spec is $\leq 5\text{sec}$ when $320^{\circ}\text{C}(\pm 20^{\circ}\text{C})$. 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

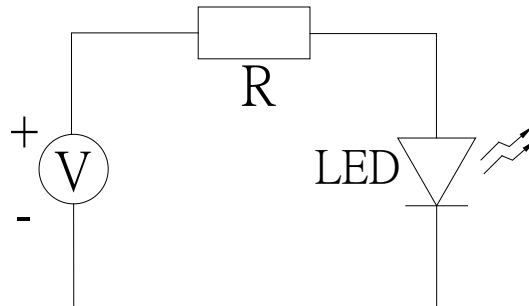
1. Customer must finish rework within 5 sec under 340°C .
2. The head of iron cannot touch copper foil
3. Twin-head type is preferred.



- 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(41°F~86°F)

2.2 Shelf life in sealed bag: 12 month at <5°C~30°C and <30% 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 <5%RH, taped reel type

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

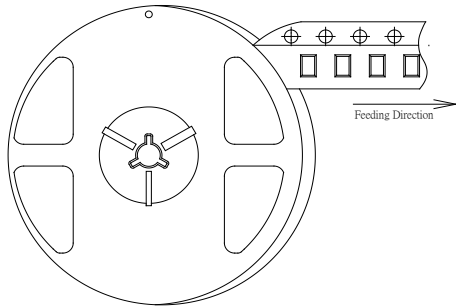
3.3 $130 \pm 3^\circ\text{C}$ x(15~30min), bulk type

Test Items and Results of Reliability

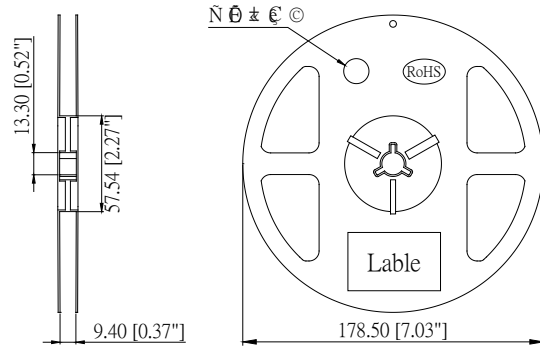
Type	Test Item	Test Conditions	Note	Number of Damaged
Environmental Sequence	Temperature Cycle	-40°C 30min ↑ → (25°C/5min) ↓ 100°C 30min	100 cycle	0/22
	Thermal Shock	-40°C 15min ↑ ↓ 100°C 15min	100 cycle	0/22
	High Humidity Heat Cycle	30°C ↔ 65°C 90%RH 24hrs/1cycle	10 cycle	0/22
	High Temperature Storage	Ta=100°C	1000 hrs	0/22
	Humidity Heat Storage	Ta=60°C RH=95%	1000 hrs	0/22
	Low Temperature Storage	Ta=-40°C	1000 hrs	0/22
Operation Sequence	Life Test	Ta=25°C IF=20mA	1000 hrs	0/22
	High Humidity Heat Life Test	60°C RH=95% IF=10mA	500 hrs	0/22
	Low Temperature Life Test	Ta=-20°C IF=20mA	1000 hrs	0/22

1608 Series SMD Chip LED Lamps Packaging Specifications

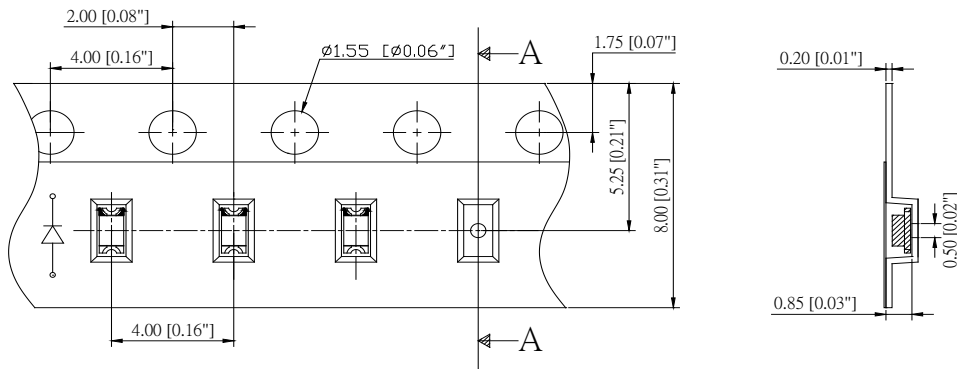
- Feeding Direction



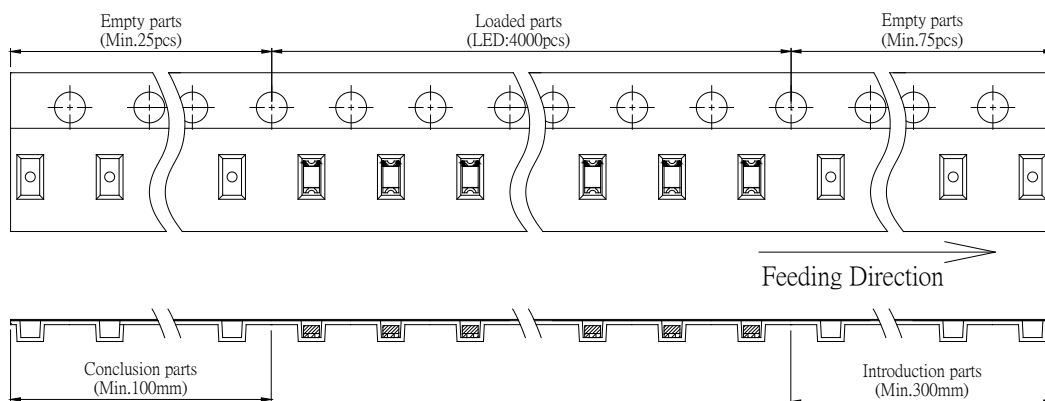
- Dimensions of Reel (Unit: mm)



- Dimensions of Tape (Unit: mm)



- Arrangement of Tape

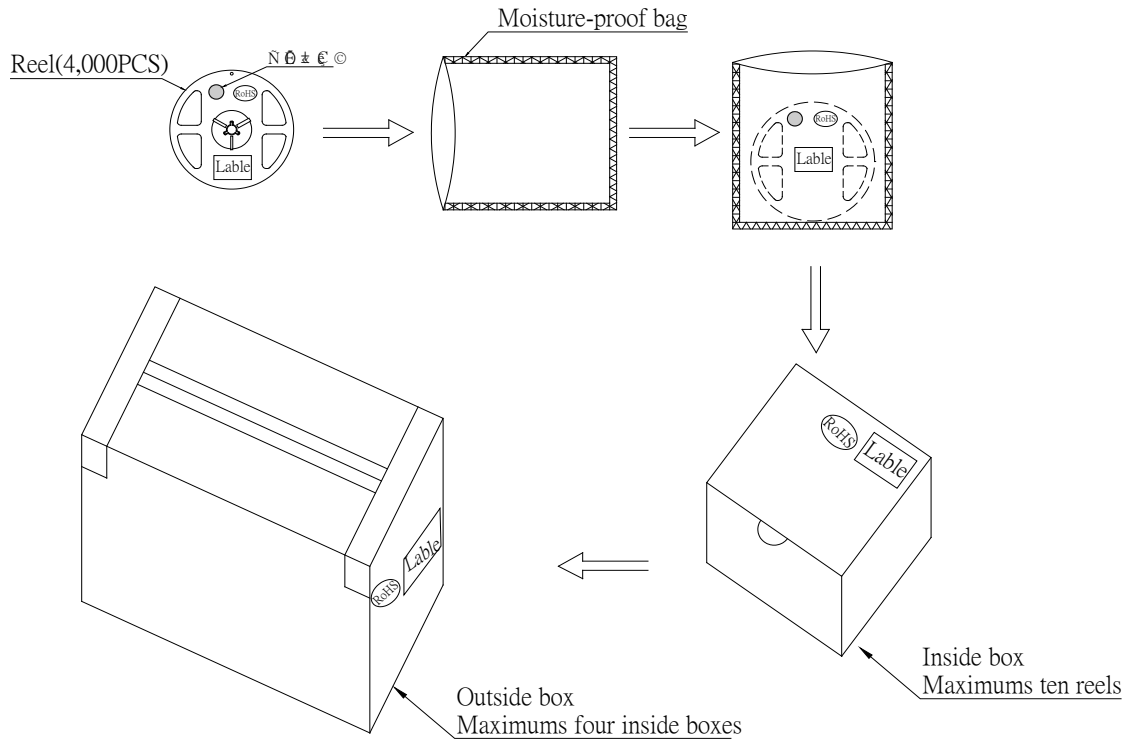


Notes:

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. 4,000 pcs/Reel.

1608 Series SMD Chip LED Lamps Packaging Specifications

- Packaging specifications



Notes:

Reeled products (numbers of products are 4,000pcs) packed in a seal off moisture-proof bag along with a desiccant one by one, ten moisture-proof bag of maximums (total maximum number of products are 40,000pcs) packed in an inside box (about size: 240x 220x 120mm) and four inside boxes of maximums are put in the outside box (about size: 460mm x 246mm x 250mm) Together with buffer material, and it is packed. (Part No., Lot No., quantity should appear on the label on the moisture-proof bag, part No. and quantity should appear on the label on the cardboard box.) The number of the loading steps of outside box (cardboard box) has it to three steps.

Forward Voltage Rank Combination (IF=20mA)

Rank	Min.	Max.	Unit
H	2.8	2.9	V
I	2.9	3.0	
J	3.0	3.1	
K	3.1	3.2	
L	3.2	3.3	
M	3.3	3.4	
N	3.4	3.5	
O	3.5	3.6	

Luminous Intensity Rank Combination (IF=20mA)

Rank	Min.	Max.	Unit
R	630	800	mcd
S	800	1000	
T	1000	1250	
U	1250	--	

Dominant Wavelength Rank Combination (IF=20mA)

Rank	Chromaticity coordinates				
	A8	X	0.2612	0.2517	0.2611
Y		0.2292	0.2338	0.2524	0.2463
B2	X	0.2697	0.2611	0.2701	0.2777
	Y	0.2463	0.2524	0.2704	0.2621
B5	X	0.2777	0.2701	0.2794	0.2855
	Y	0.2621	0.2704	0.2871	0.2769
B8	X	0.2855	0.2794	0.2898	0.2948
	Y	0.2769	0.2871	0.3057	0.2943

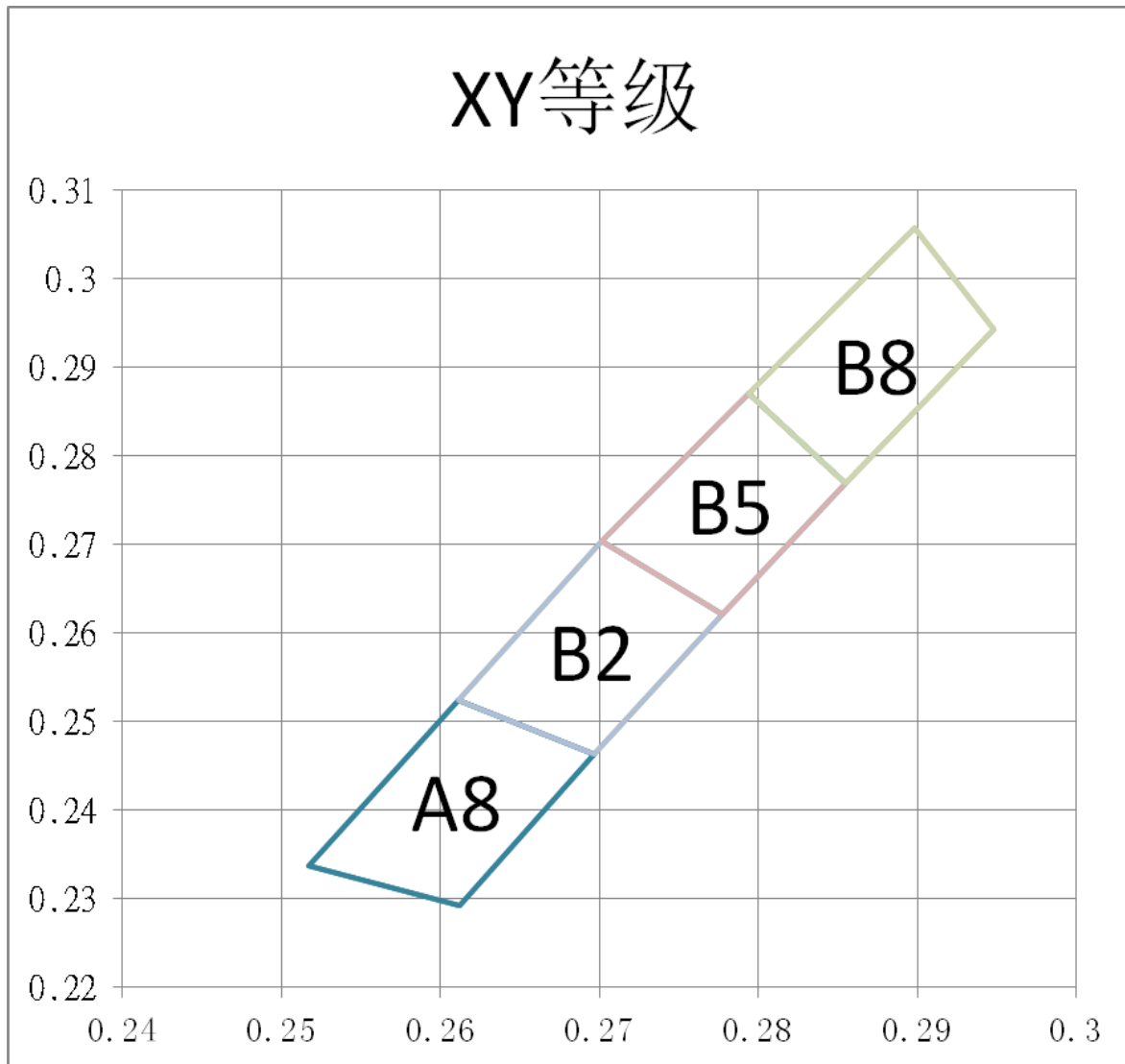
Group Name on Label (Example DATA: **KSB2 20**)

DATA: KSB2 20	Vf(V)	Iv (mcd)	CIE(X,Y)	Test Condition
K→S→B2→20	3.1~3.2	800~1000	X(0.2611~0.2777),Y(0.2463~0.2704)	IF=20mA

Notes:

- 1.The tolerance of luminous intensity (Iv)is $\pm 15\%$.
2. The tolerance of CIE Coordinates(X,Y) ± 0.01 .
- 3.This specification is preliminary.
- 4.This specification is a standard specification of our factory, can make in accordance with customer's special requirement.

XY Chromaticity Coordinate



Specification



Part No. V0603-SMD-Y

Draw Date 2013-1-30

Features

1.6mm x 0.8mm SMT LED, 0.6mm thickness

Low power consumption

Wide view angle

Package: 4000pcs/reel

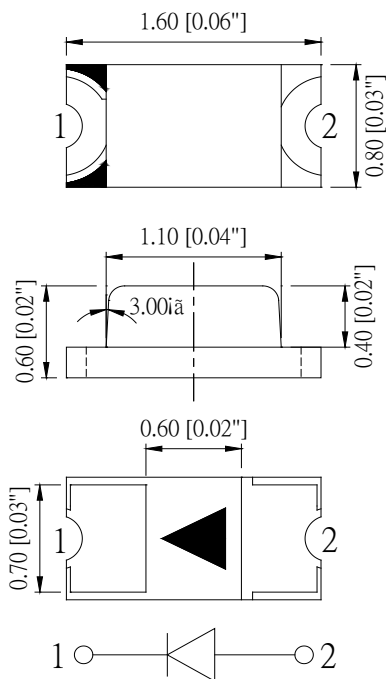
RoHS Compliant

Applications

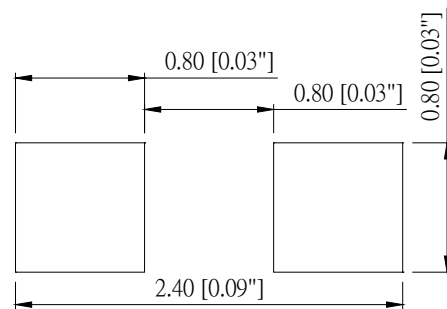
Ideal for back light and indicator

Various colors and lens types available

Package outlines



Recommend Pad Layout



Part No.	Emitted color	Dice	Lens color
JM1608BHY87TP-C	Yellow	AlGaInP	Water transparent

Notes:

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

Absolute maximum ratings (TA=25°C)

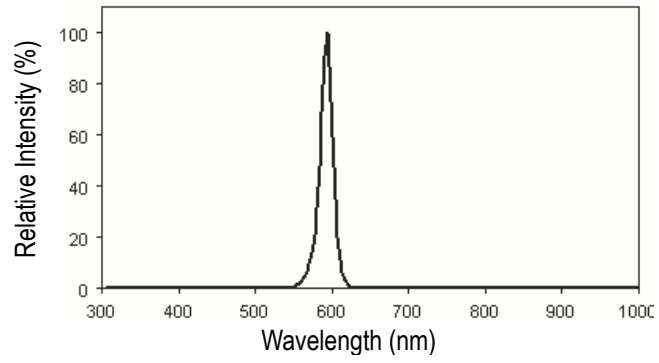
Parameter	Symbol	Value	Unit
Forward current	I _f	30	mA
Reverse voltage	V _r	5	V
Power dissipation	P _d	72	mW
Operating temperature	T _{op}	-40 ~+80	°C
Storage temperature	T _{stg}	-40 ~+85	°C
Peak pulsing current (1/8 duty f=1kHz)	I _{fp}	125	mA

Electro-optical characteristics (TA=25°C)

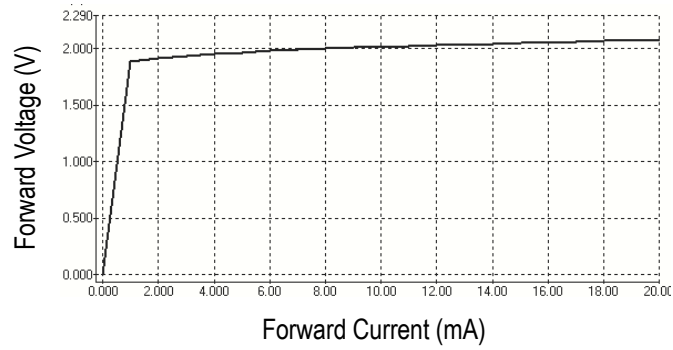
Parameter	Test Condition	Symbol	Value			Unit
			Min	Typ	Max	
Wavelength at peak emission	I _f =20mA	λ _p	--	593	--	nm
Spectral half bandwidth	I _f =20mA	Δλ	--	17	--	nm
Dominant wavelength	I _f =20mA	λ _d	584	--	594	nm
Forward voltage	I _f =20mA	V _f	1.8	--	2.4	V
Luminous intensity	I _f =20mA	I _v	63	110	--	mcd
Viewing angle at 50% I _v	I _f =10mA	2θ 1/2	--	120	--	Deg
Reverse current	V _r =5V	I _r	--	--	10	μA

Optical characteristic curves

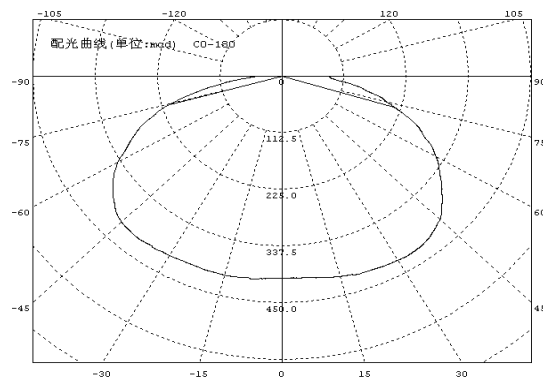
Relative Intensity vs. Wavelength



Forward Current vs. Forward Voltage

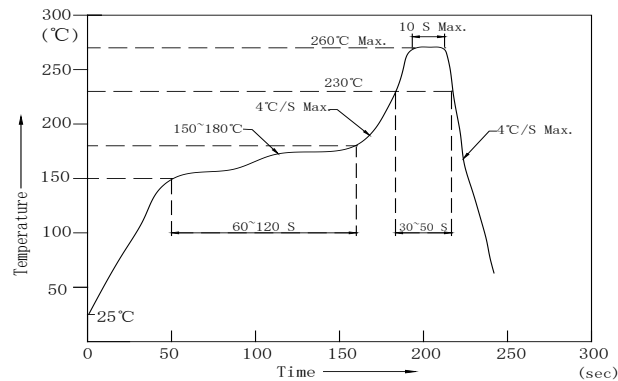


Directive Characteristics



Reflow Profile

■ Reflow Temp/Time



Notes:

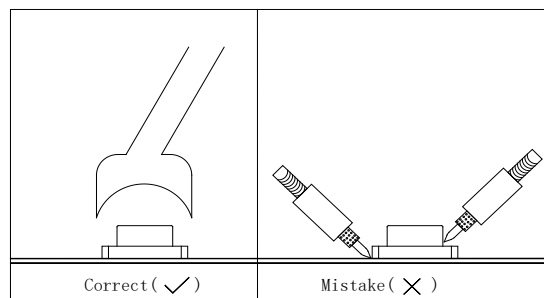
1. We recommend the reflow temperature $245^{\circ}\text{C}(\pm 5^{\circ}\text{C})$. the maximum soldering temperature should be limited to 260°C .
2. Don't cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

■ Soldering iron

Basic spec is $\leq 5\text{sec}$ when $320^{\circ}\text{C}(\pm 20^{\circ}\text{C})$. 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

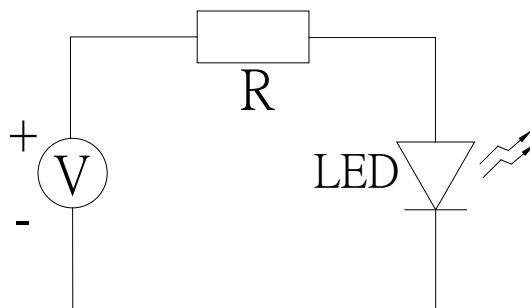
1. Customer must finish rework within 5 sec under 340°C .
2. The head of iron cannot touch copper foil
3. Twin-head type is preferred.



- 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(41°F~86°F)

2.2 Shelf life in sealed bag: 12 month at <5°C~30°C and <30% 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 <5%RH, taped reel type

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

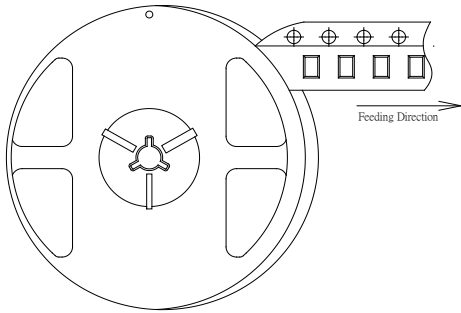
3.3 $130 \pm 3^\circ\text{C}$ x(15~30min), bulk type

Test items and results of reliability

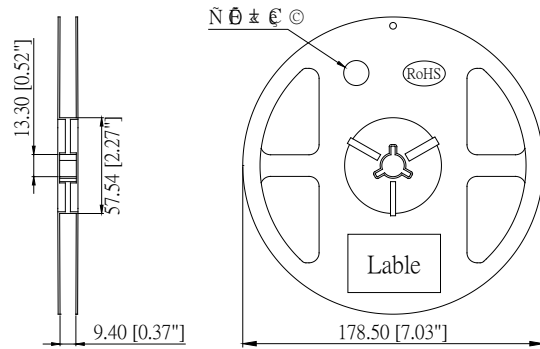
Type	Test Item	Test Conditions	Note	Number of Damaged
Environmental Sequence	Temperature Cycle	-20°C 30min ↑ ↓ 80°C 30min	100 cycle	0/22
	Thermal Shock	-20°C 15min ↑ ↓ 80°C 15min	100 cycle	0/22
	High Humidity Heat Cycle	30°C ↔ 65°C 90%RH 24hrs/1cycle	10 cycle	0/22
	High Temperature Storage	Ta=80°C	1000 hrs	0/22
	Humidity Heat Storage	Ta=60°C RH=90%	1000 hrs	0/22
	Low Temperature Storage	Ta=-30°C	1000 hrs	0/22
Operation Sequence	Life Test	Ta=25°C IF=20mA	1000 hrs	0/22
	High Humidity Heat Life Test	60°C RH=90% IF=10mA	500 hrs	0/22
	Low Temperature Life Test	Ta=-20°C IF=20mA	1000 hrs	0/22

1608 Series SMD Chip LED Lamps Packaging Specifications

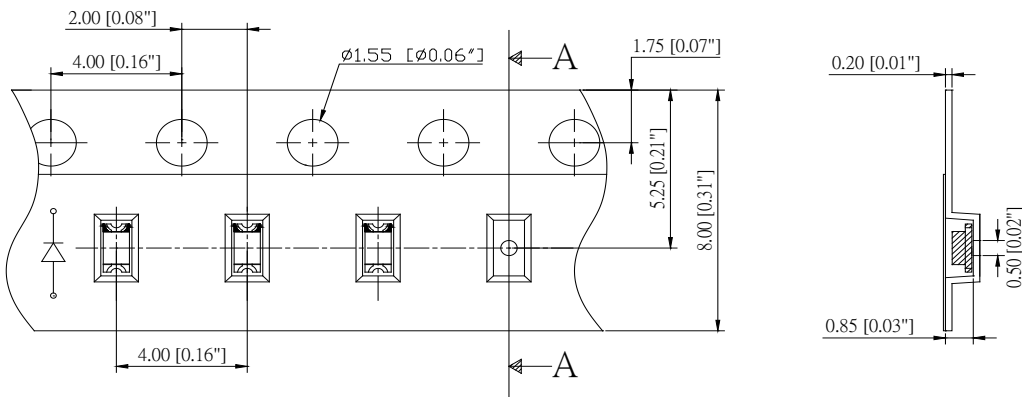
- Feeding Direction



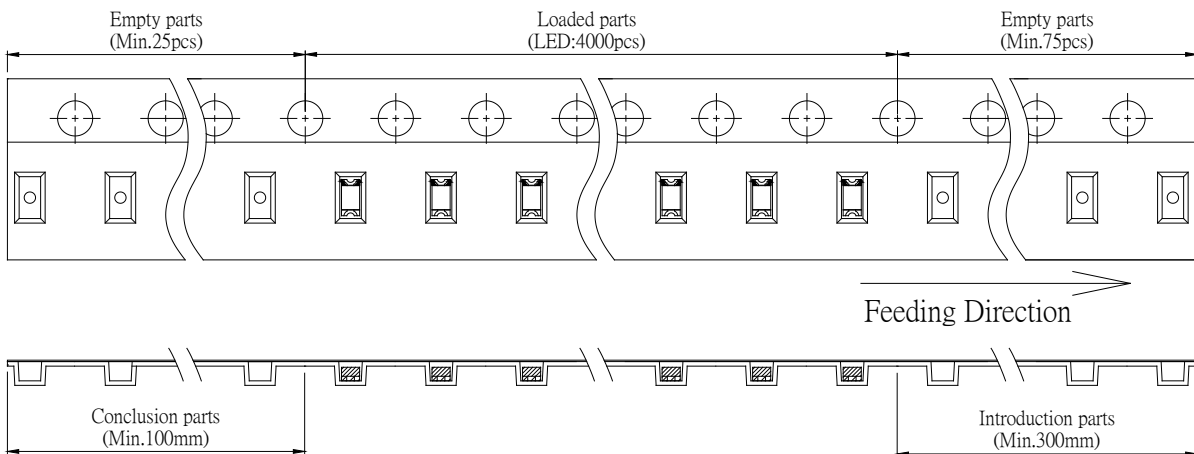
- Dimensions of Reel (Unit: mm)



- 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. 4,000 pcs/Reel.

Forward Voltage Rank Combination (IF=20mA)

Rank	Min.	Max.	Unit
7	1.8	1.9	V
8	1.9	2.0	
9	2.0	2.1	
A	2.1	2.2	
B	2.2	2.3	
C	2.3	2.4	

Luminous Intensity Rank Combination (IF=20mA)

Rank	Min.	Max.	Unit
H	63	80	mcd
I	80	100	
J	100	125	
K	125	160	
L	160	200	
M	200	--	

Dominant wavelength Rank Combination (IF=20mA)

Rank	Min.	Max.	Unit
Yc	584	586	nm
Yd	586	588	
Ye	588	590	
Yf	590	592	
Yg	592	594	

Group Name on Label (Example DATA: **8JYf 20**)

DATA: 8JYf 20	Vf(V)	Iv (mcd)	λ_d (nm)	Test Condition
8→J→Yf→20	1.9~2.0	100~125	590~592	IF=20mA

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.