

■ Type2. 2S2P Circuit Design Maximum Rating (Ta : 25°C)

Characteristics	Symbol	Min.	Typical	Max.	Unit
DC Forward Current ¹	I_F		1,000	1,400	mA
Pulse Forward Current ²	I_{PF}			2,000	mA
Forward Voltage	V_F	6.0	7.2	8.4	V
Reverse Voltage	V_R		-10		V
Leakage Current (5V)	UV			10	μ A
Junction Temperature ³	T_j		85		°C
Storage Temperature Range	T_{stg}	-40	-	100	°C
Soldering Temperature	T_{sol}		260		°C
Thermal Resistance Junction / Solder Point	R_{th}		2.0		°C/W
Viewing Angle	$2\theta_{1/2}$		60/120		Deg
Electrostatic Discharge (HBM)	ESD		8		KV
Operating Temperature Range	T_{opr}	-40°C		+80°C	°C

Notes:

1. For other ambient, limited setting of current will depend on de-rating curves.
2. D=0.01s duty 1/10.
3. When drive on maximum current , T_j must be kept below 85°C.
4. Viewing angle ($2\theta_{1/2}$) $\pm 10^\circ$.

■ **Type3. 4S Circuit Design Maximum Rating (Ta : 25°C)**

Characteristics	Symbol	Min.	Typical	Max.	Unit
DC Forward Current ¹	I _F		500	1,000	mA
Pulse Forward Current ²	I _{PF}			1,200	mA
Forward Voltage	V _F	12.0	14.0	16.8	V
Reverse Voltage	V _R		-20		V
Leakage Current (5V)	UV			10	μA
Junction Temperature ³	T _j		85		°C
Storage Temperature Range	T _{stg}	-40	-	100	°C
Soldering Temperature	T _{sol}		260		°C
Thermal Resistance Junction / Solder Point	R _{th}		2.0		°C/W
Viewing Angle	2θ _{1/2}		60/120		Deg
Electrostatic Discharge (HBM)	ESD		8		KV
Operating Temperature Range	T _{opr}	-40°C		+80°C	°C

Notes:

1. For other ambient, limited setting of current will depend on de-rating curves.
2. D=0.01s duty 1/10.
3. When drive on maximum current , T_j must be kept below 85°C.
4. Viewing angle (2θ_{1/2}) ± 10°.

■ **Type.2 Circuit 2S2P Product Spec**

Color	Radiometric Power (mW) @1,400mA			Peak Wavelength (nm@1,400mA)	Forward Voltage (V@1,400mA)		Part Number
	Bin code	Min	Max		Min	Max	
UV	P35	3,000	3,500	365-370	6.0	8.4	YS-682SPV365CJ100 YS-682SPV365FJ100
	P40	3,500	4,000				
	P45	4,000	4,500				
	P50	4,500	5,000				
	P50	4,500	5,000	380-390	6.0	8.4	YS-682SPV385CJ100 YS-682SPV385FJ100
	P55	5,000	5,500				
	P60	5,500	6,000				
	P65	6,000	6,500				
	P50	4,500	5,000	390-400	6.0	8.4	YS-682SPV395CJ100 YS-682SPV395FJ100
	P55	5,000	5,500				
	P60	5,500	6,000				
	P65	6,000	6,500				
	P50	4,500	5,000	400-410	6.0	8.4	YS-682SPV405CJ100 YS-682SPV405FJ100
	P55	5,000	5,500				
	P60	5,500	6,000				
	P65	6,000	6,500				

Notes :

1. Tolerance of Forward voltage (V_F) $\pm 0.5V$
2. Tolerance of Radiometric Power (P_o) $\pm 10\%$
3. Tolerance of Wavelength $\pm 2nm$

■ **Type.3 4S Circuit Product Spec**

Color	Radiometric Power (mW) @700mA			Peak Wavelength (nm@700mA)	Forward Voltage (V@700mA)		Part Number
	Bin code	Min	Max		Min	Max	
UV	P35	3,000	3,500	365-370	12.8	16.8	YS-684SV365CG100 YS-684SV365FG100
	P40	3,500	4,000				
	P45	4,000	4,500				
	P50	4,500	5,000				
	P50	4,500	5,000	380-390	12.0	16.8	YS-684SV385CG100 YS-684SV385FG100
	P55	5,000	5,500				
	P60	5,500	6,000				
	P65	6,000	6,500	390-400	12.0	16.8	YS-684SV395CG100 YS-684SV395FG100
	P50	4,500	5,000				
	P55	5,000	5,500				
	P60	5,500	6,000				
	P65	6,000	6,500	400-410	12.0	16.8	YS-684SV405CG100 YS-684SV405FG100
	P50	4,500	5,000				
	P55	5,000	5,500				
	P60	5,500	6,000				
	P65	6,000	6,500				

Notes :

1. Tolerance of Forward voltage (V_F) $\pm 0.8V$
2. Tolerance of Radiometric Power (P_o) $\pm 10\%$
3. Tolerance of Wavelength $\pm 2nm$

■ **Type2. 2S2P Voltage Binning**

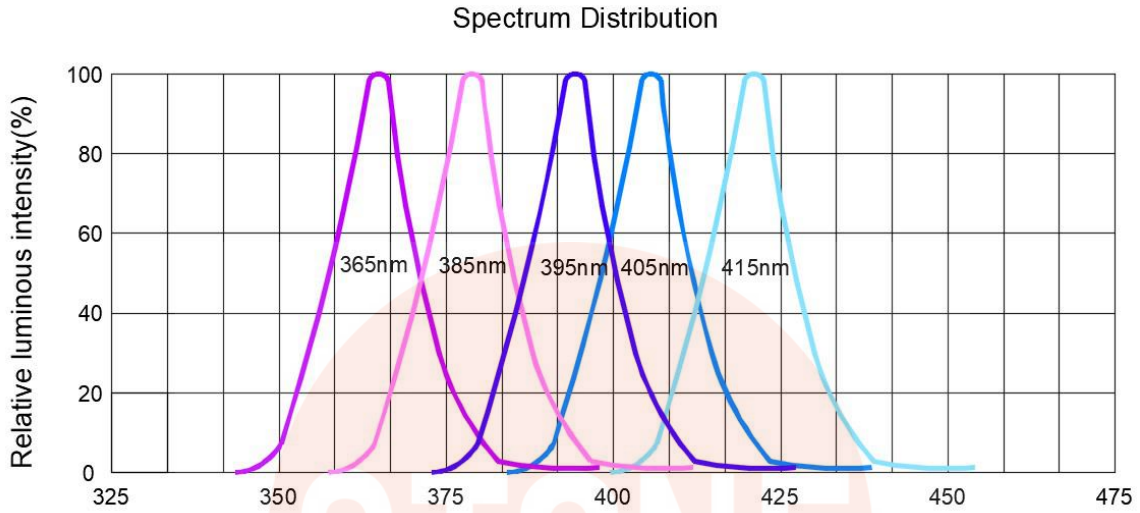
Item	Forward Foltage @1,400mA			Peak Wavelength (nm@1,400mA)	Forward Voltage (V@1,400mA)	
	Bin	Min	Max		Min	Max
Voltage	B0	6.0	6.8	365-410	6.0	8.4
	B1	6.8	7.6			
	B2	7.6	8.4			

■ **Type3. 4S Voltage Binning**

Item	Forward Foltage @700mA			Peak Wavelength (nm@700mA)	Forward Voltage (V@700mA)	
	Bin	Min	Max		Min	Max
Voltage	C0	12.0	12.8	365-410	12.8	16.8
	C1	12.8	13.6			
	C2	13.6	14.4			
	C3	14.4	15.2			
	C4	15.2	16.0			
	C5	16.0	16.8			



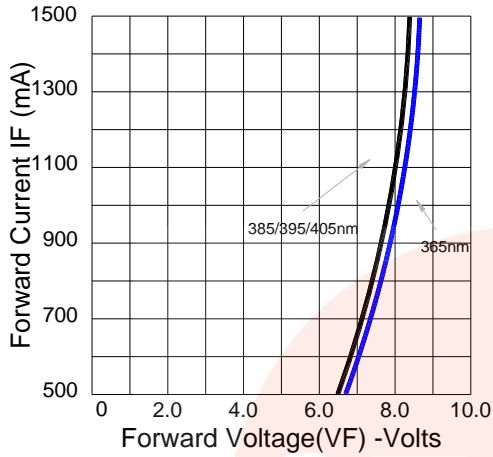
■ Relative spectral power distribution



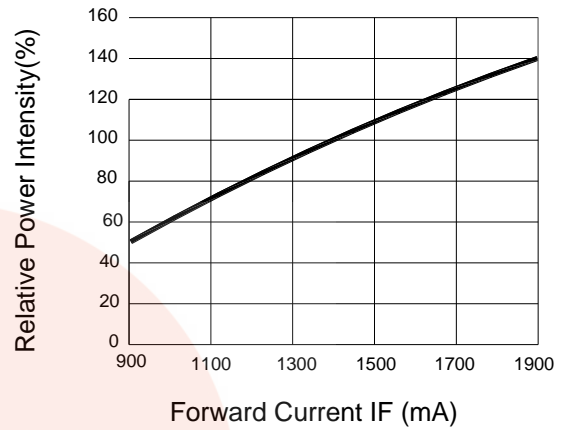
■ Characteristics

Type.2 2S2P

Forward Current VS. Forward Voltage

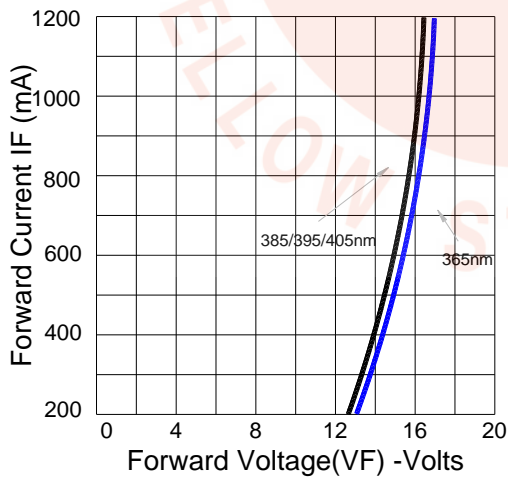


Relative Radiant Flux VS. Forward Current

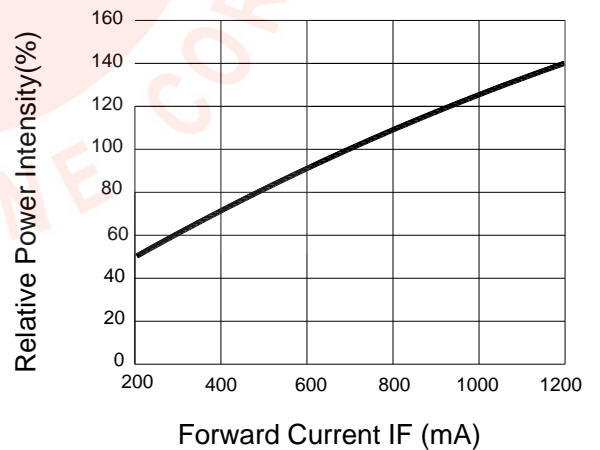


Type3 4S

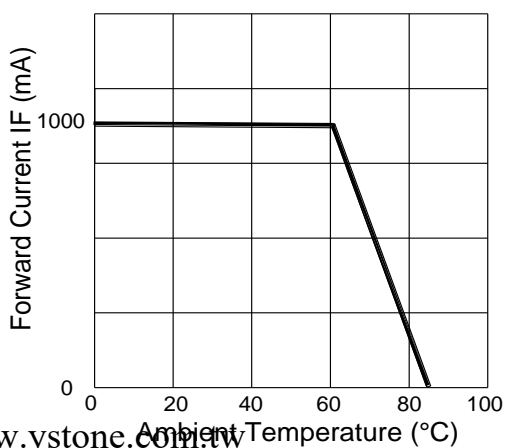
Forward Current VS. Forward Voltage



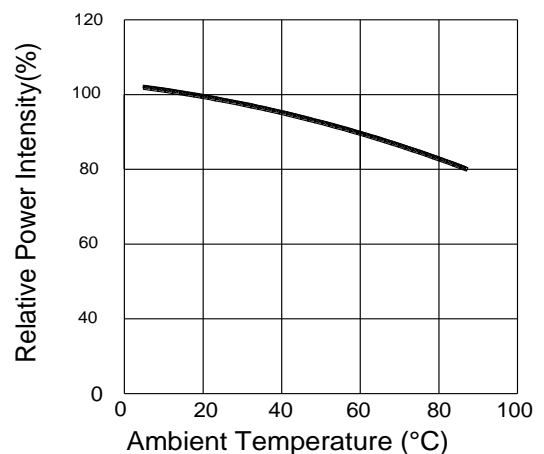
Relative Radiant Flux VS. Forward Current



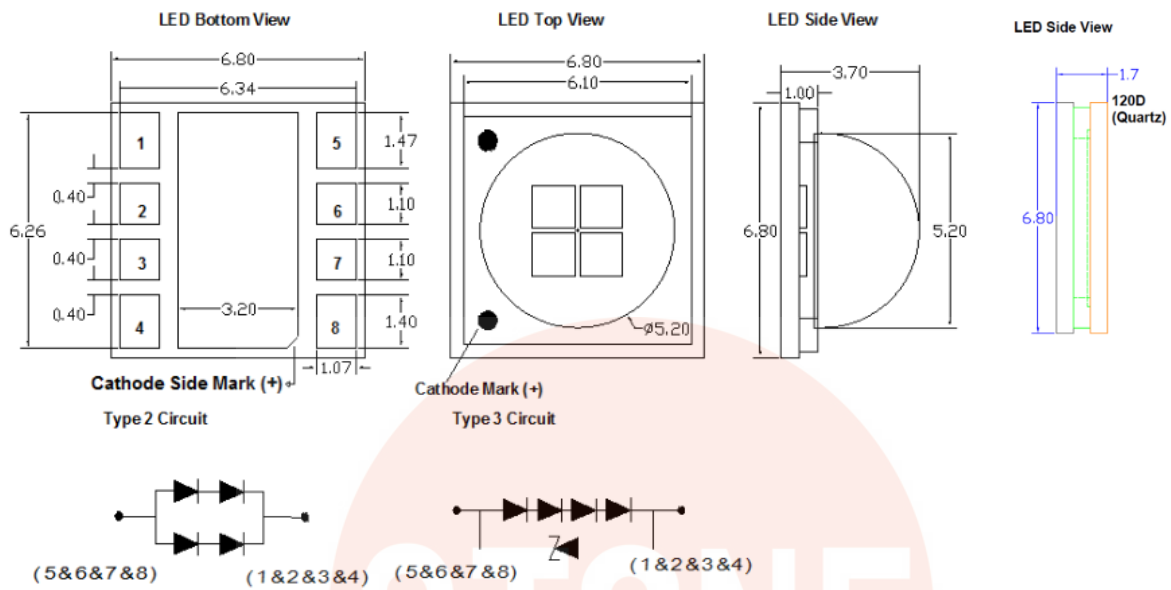
Forward Current VS. Ambient Temperature



Radiant Power VS. Ambient Temperature



■ Type 2 & 3 Dimensions & Circuit

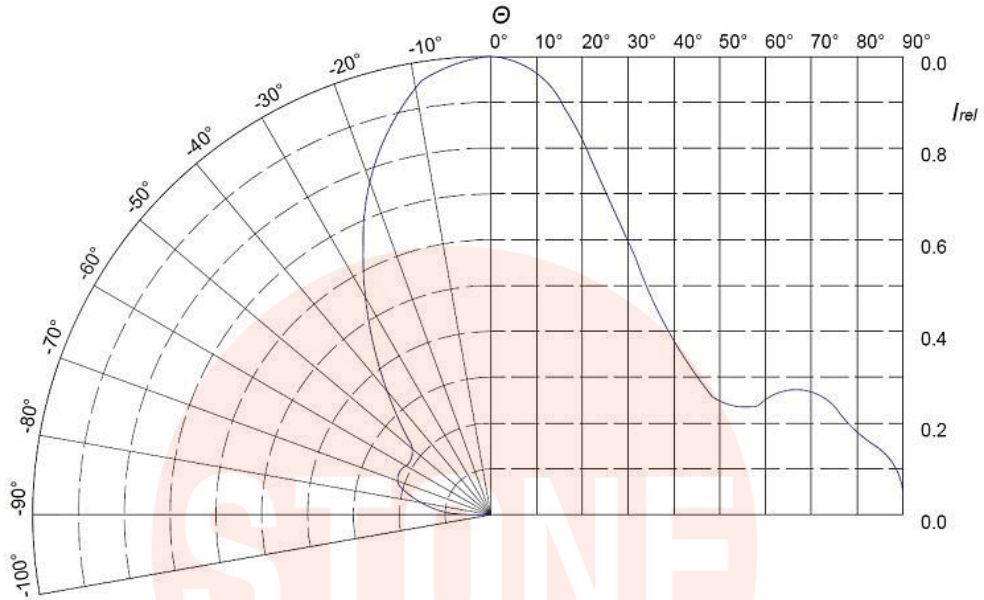


Notes:

§ All dimensions are in millimeters.

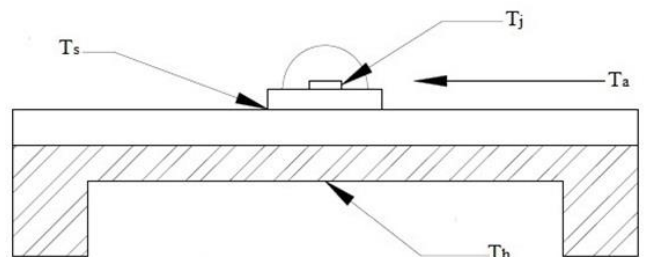
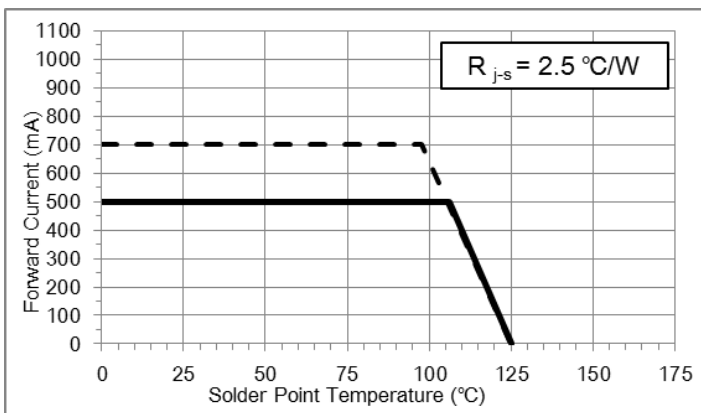
§ Tolerance is $\pm 0.13\text{mm}$ unless other specified.

■ Typical Spatial Distribution



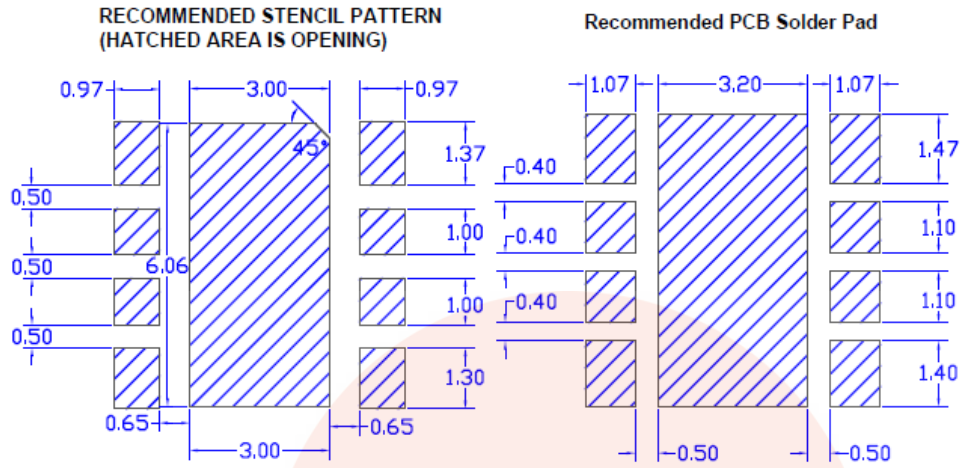
■ Thermal Design for De-rating

The maximum forward current is determined by the thermal resistance between the LED junctions and ambient. It is crucial for the end product to be designed in a manner that minimizes the thermal resistance from the solder point to ambient in order to optimize lamp life and optical characteristics.



T_j : Junction Temp.
 T_s : Solder Point Temp.
 T_h : Heat Sink Temp.
 T_a : Ambient Temp.
 $R_{th(j-s)}$: Thermal Resistance from point " T_j " to point " T_s "

■ Suggest Stencil Pattern

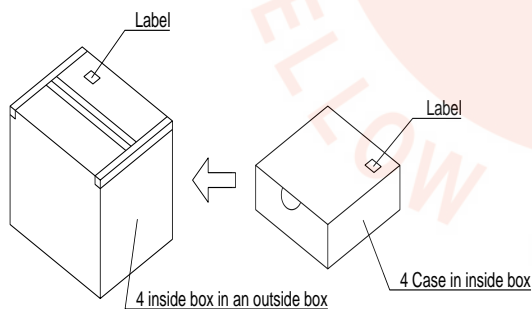
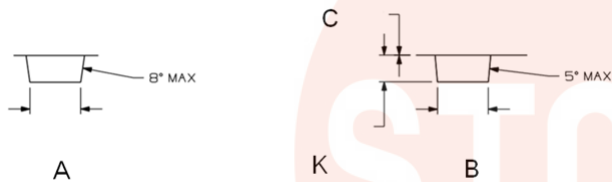
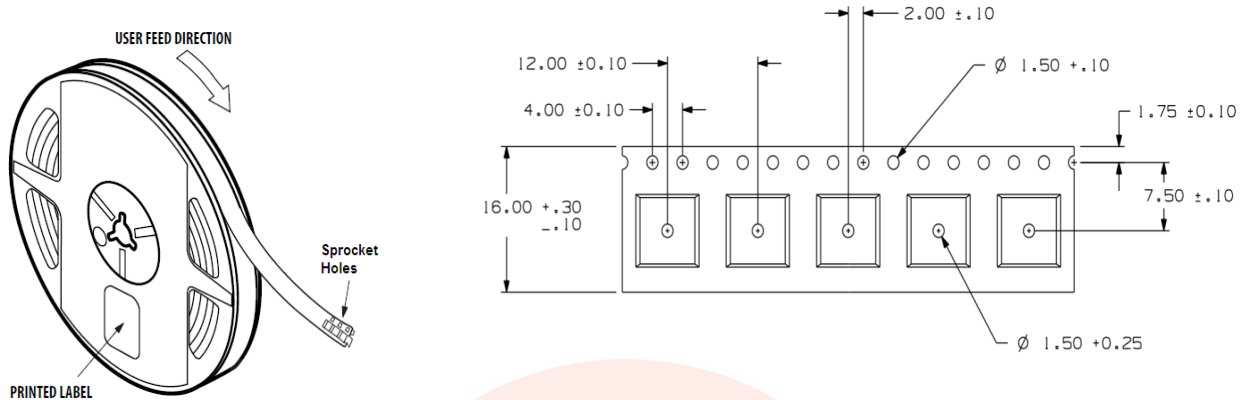


§ Suggest stencil t = 0.12 mm

§ All dimensions are in millimeters.

§ Tolerance is ± 0.13 mm unless other specified.

■ Packing



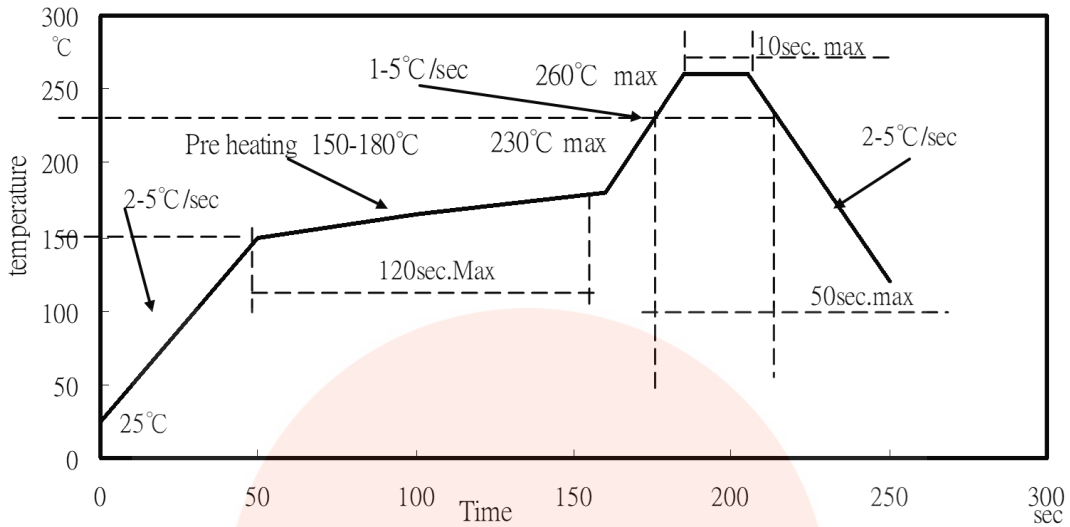
Item	Dimension	Tolerance	Unit
A	7.30	±0.10	mm
B	7.30	±0.10	mm
C	0.30	±0.05	mm
D	4.30	±0.10	mm

Notes:

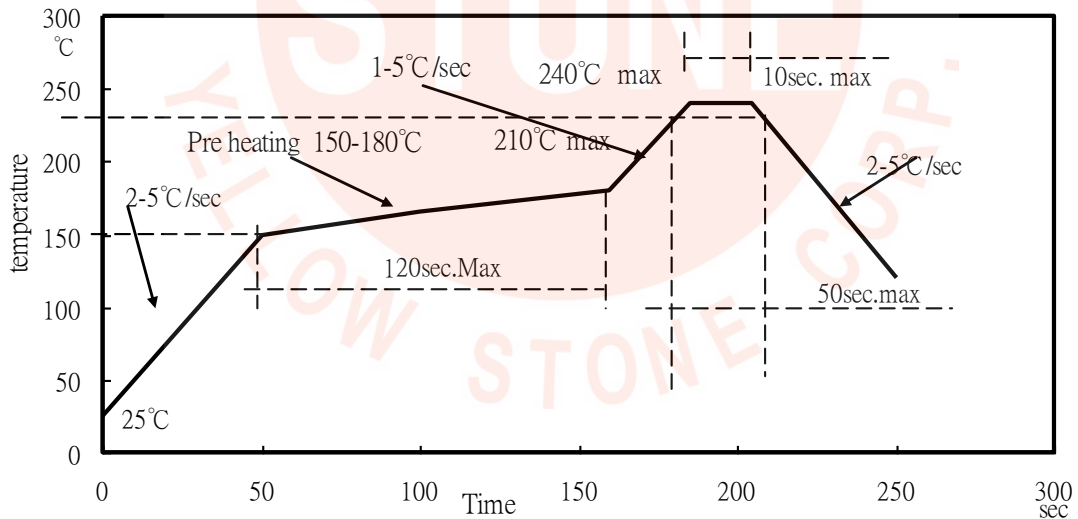
1. Each Reel (minimum 100 pcs and maximum 350 pcs) is packed in a moisture-proof bag along with 1 packs of desiccant and a humidity indicator card;
2. A maximum of 5 moisture-proof bags are packed in an inner box (size: 240mm x 200mm x 105mm ±5mm).
3. A maximum of 4 inner boxes are put in an outer box (size: 410mm x 255mm x 230mm ±5mm).
4. Part No., Lot No., quantity should be indicated on the label of the moisture-proof bag and the cardboard box.

■ Reflow Profile

Lead Free solder



Lead solder



Notes:

1. The recommended reflow temperature is 240°C(±5°C). The maximum soldering temperature should be limited to 260°C.
2. Do not stress the silicone resin while it is exposed to high temperature.
3. The number of reflow process should not exceed 3 times.

■ Test Items and Results of Reliability

Test Item	Test Conditions	Duration/ Cycle	Number of Damage	Reference
Thermal Shock	-40°C 30min ↑ ↓ 5min 125°C 30min	100 cycles	0/22	AECQ101
High Temperature Storage	T _a =100°C	1000 hrs	0/22	EIAJ ED-4701 200 201
Humidity Heat Storage	T _a =85°C RH=85%	1000 hrs	0/22	EIAJ ED-4701 100 103
Low Temperature Storage	T _a =-40°C	1000 hrs	0/22	EIAJ ED-4701 200 202
Life Test	T _a =25°C I _f =1,000mA	1000 hrs	0/22	Tested with standard
High Humidity Heat Life Test	85°C RH=85% I _f =1,000mA	1000 hrs	0/22	Tested with standard
High Temperature Life Test	T _a =85°C	1000 hrs	0/22	Tested with standard
ESD(HBM)	2KV at 1.5kΩ;100pf	3 Times	0/22	MIL-STD-883

Criteria for Judging the Damage

Item	Symbol	Condition	Criteria for Judgment	
			Min	Max
Forward Voltage	V _F	I _f =1,000mA	-	USL ¹ ×1.1
Reverse Current	I _R	V _R =5V	-	100μA
Luminous Intensity	I _v	I _f =1,000mA	LSL ² ×0.7	-

Notes:

1. USL: Upper specification level
2. LSL: Lower specification level