Technical Data Sheet

Side View LEDs (Height 0.8 mm)

99-713LM2C/L6772T3U6FO/TR8-T

Features

- Side view white LED
- White SMT package
- Lead frame package with individual 2 pins
- Wide viewing angle
- Soldering methods: IR reflow soldering
- Pb-free
- The product itself will remain within RoHS compliant version.

Descriptions

- Due to the package design, 99-713 has wide viewing angle, low power consumption and white LEDs are devices that are materialized by combing blue chips and special phosphor. This feature makes the LED ideal for light guide application.

Applications

- LCD Back Light
- Mobile Phones
- Indicators
- Illuminations
- Switch Lights

Device Selection Guide

Chip Material	Emitted Color	Resin Color
InGaN	Pure White	Water Clear

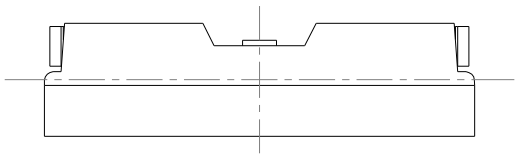
Coding

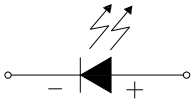
99-713LM2C/LXX XX XXXX XX/TR8-T

- XX — Bin Code of Min. Luminous Flux
- XX — Bin Code of Max. Luminous Flux
- XXXX — Bin Group of Chromaticity Coordinates
- XX — Bin Code of Forward Voltage

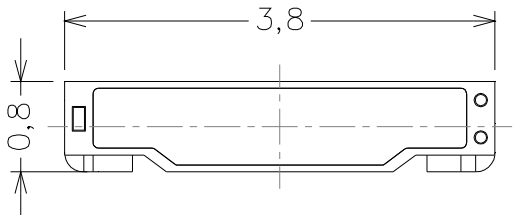
99-713LM2C/L6772T3U6FO/TR8-T

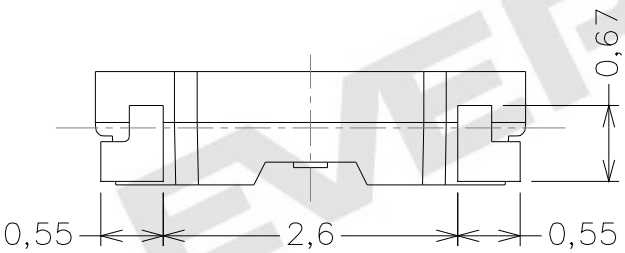
Package Outline Dimensions

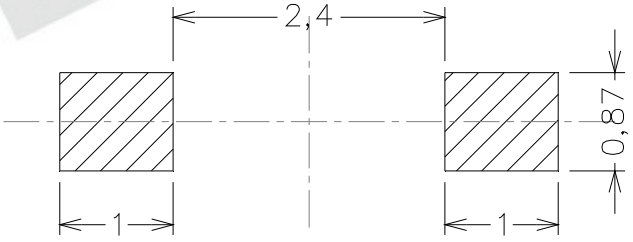




Polarity







Note: The tolerances unless dimensions are ± 0.1mm.

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Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Rating	Unit
Reverse Voltage	V_R	5	V
DC Forward Current	I_F	30	mA
Pulse Forward Current (Duty 1/10 @1KHz)	I_{FP}	100	mA
Electrostatic Discharge(HBM)*1	ESD	2000	V
LED Junction Temperature	Tj	110	℃
Operating Temperature	T_{opr}	-30 ~ +85	℃
Storage Temperature	T_{stg}	-40 ~ +90	℃
Soldering Temperature	T_{sol}	Reflow Soldering: 260℃ for 10sec. Hand Soldering: 350℃ for 3sec.	

Note: The products are sensitive to static electricity and must be carefully taken when handling products.

Electro-Optical Characteristics (Ta=25℃)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Flux	Φ	6.75	---	7.50	Lm	I_F=20mA
Viewing Angle	$2\theta_{1/2}$	---	120	---	deg	
Forward Voltage	V_F	2.95	---	3.45	V	
Reverse Current	I_R	---	---	50	μA	V_R=5V

Notes:

1. Tolerance of Luminous Intensity: ± 7%
2. Tolerance of Forward Voltage: ± 0.05V

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Bin Range of Luminous Intensity

Bin Code	Lm(Min.)	Lm(Max.)	Unit	Condition	Mcd(Min.)	Mcd(Max.)
67	6.75	7	Lm	I_F=20mA	2425	2515
70	7	7.25			2515	2610
72	7.25	7.5			2610	2700

Note: Tolerance of Luminous Intensity、Luminous Flux: ± 7%

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Bin Range of Forward Voltage

Bin Code	Min.	Max.	Unit	Condition
F	2.95	3.00	V	I_F=20mA
G	3.00	3.05		
H	3.05	3.10		
I	3.10	3.15		
J	3.15	3.20		
K	3.20	3.25		
L	3.25	3.30		
M	3.30	3.35		
N	3.35	3.40		
O	3.40	3.45		

Note: Tolerance of Forward Voltage: ± 0.05V

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Chromaticity Coordinates of Bin Code

Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y
T3	0.2770	0.2590	T4	0.2813	0.2663
	0.2740	0.2640		0.2785	0.2715
	0.2785	0.2715		0.2830	0.2790
	0.2813	0.2663		0.2855	0.2735
	0.2770	0.2590		0.2813	0.2663
U3	0.2800	0.2540	U4	0.2840	0.2610
	0.2770	0.2590		0.2813	0.2663
	0.2813	0.2663		0.2855	0.2735
	0.2840	0.2610		0.2880	0.2680
	0.2800	0.2540		0.2840	0.2610
T5	0.2855	0.2735	T6	0.2895	0.2805
	0.2830	0.2790		0.2870	0.2860
	0.2870	0.2860		0.2910	0.2930
	0.2895	0.2805		0.2935	0.2875
	0.2855	0.2735		0.2895	0.2805
U5	0.2880	0.2680	U6	0.2920	0.2750
	0.2855	0.2735		0.2895	0.2805
	0.2895	0.2805		0.2935	0.2875
	0.2920	0.2750		0.2960	0.2820
	0.2880	0.2680		0.2920	0.2750

Note: Tolerance of Chromaticity Coordinates: ±0.01

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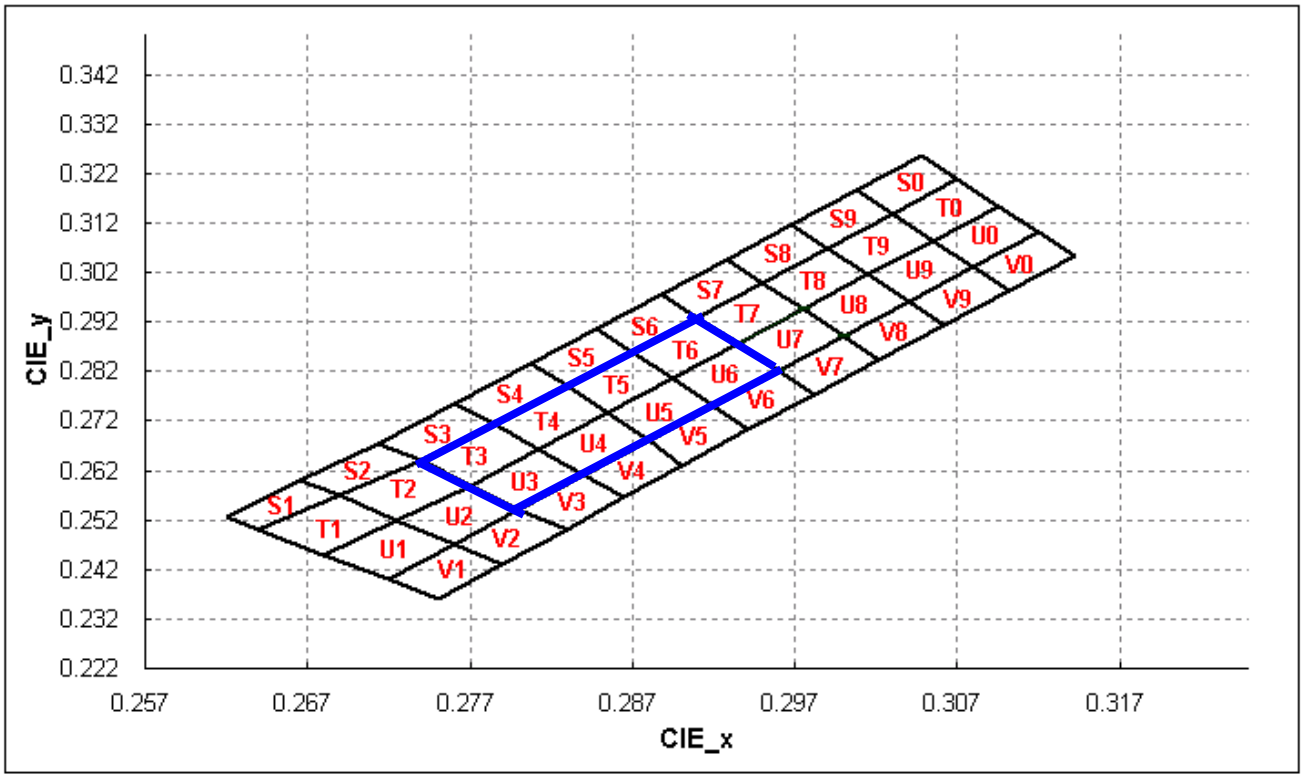
The C.I.E. 1931 Chromaticity Diagram



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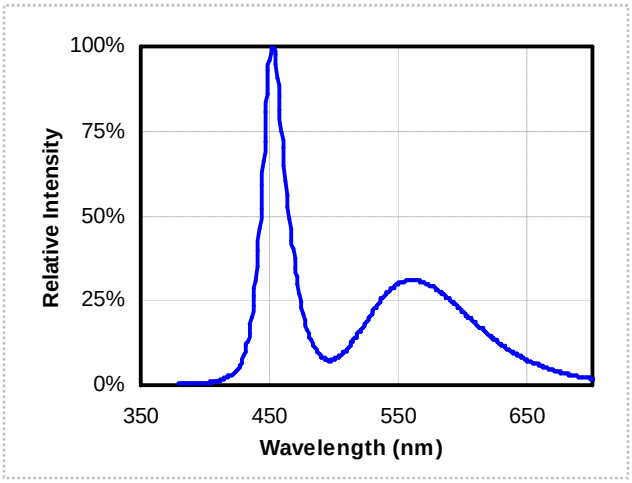
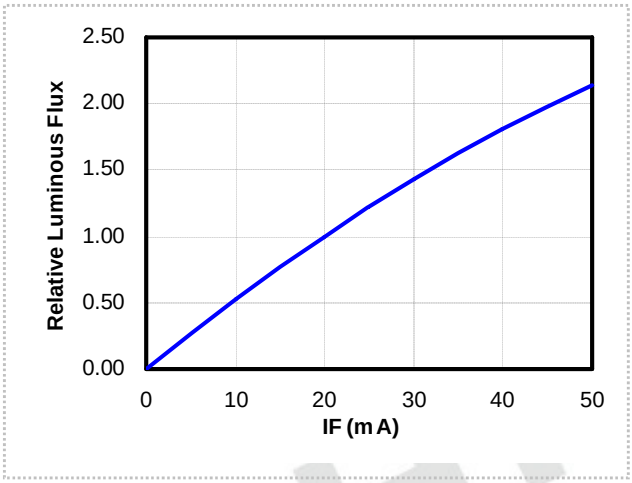
Typical Electro-Optical-Thermal Characteristics Curves

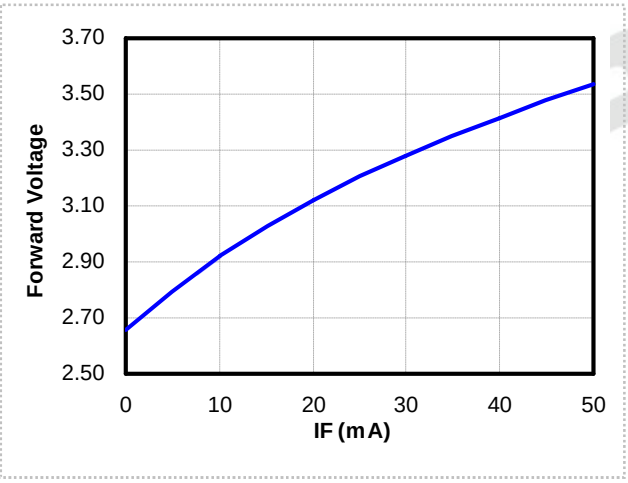
1. Spectrum Distribution
(T_S=25°C, I_F=20mA)



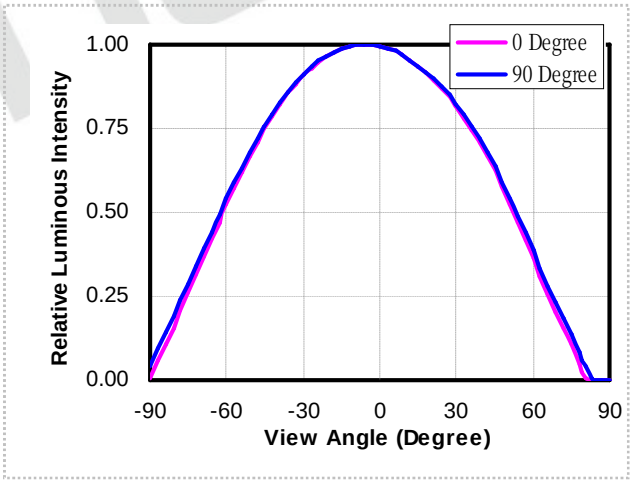
2. Relative Luminous Flux vs. Forward Current
(T_S=25°C)



3. Relative Forward Voltage vs. Forward Current
(T_S=25°C)



4. Radiation Diagram
(T_S=25°C, I_F=20mA)



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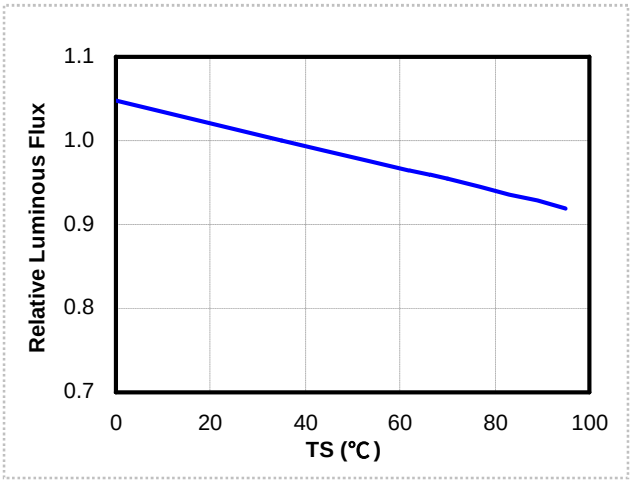
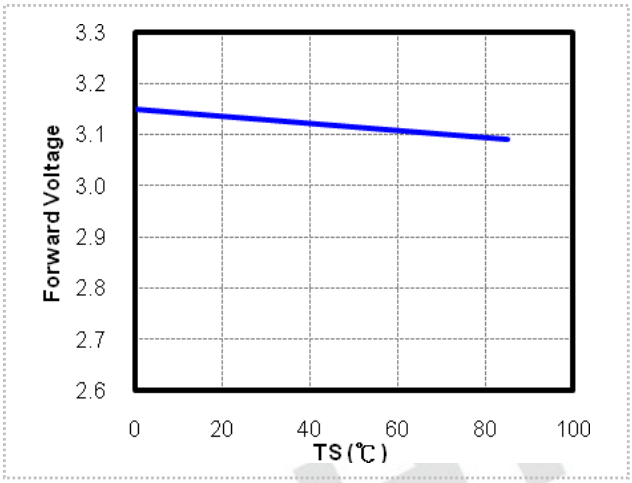
Typical Electro-Optical-Thermal Characteristics Curves

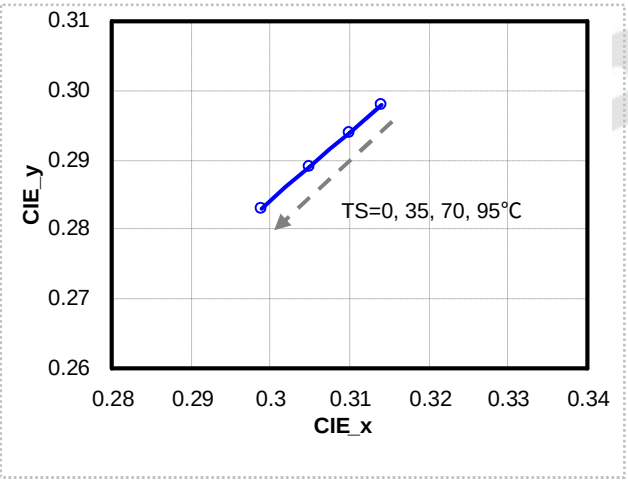
5. Relative Luminous Flux vs. Ambient Temperature (I_F=20mA)



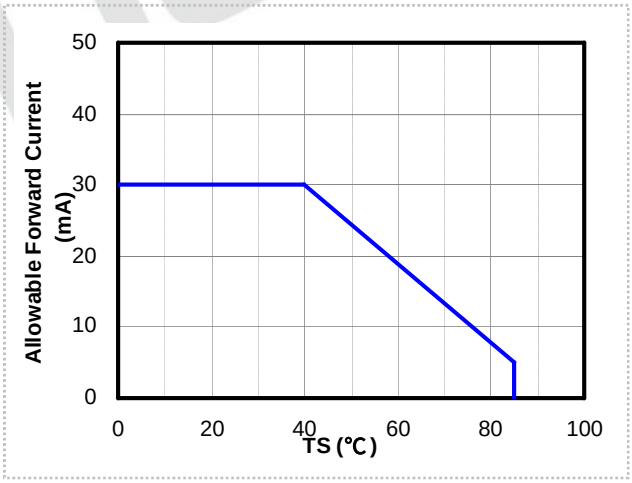
6. Forward Voltage vs. Ambient Temperature (I_F=20mA)



7. Chromaticity Coordinates vs. Ambient Temperature (I_F=20mA)



8. Forward Current De-rating Curve



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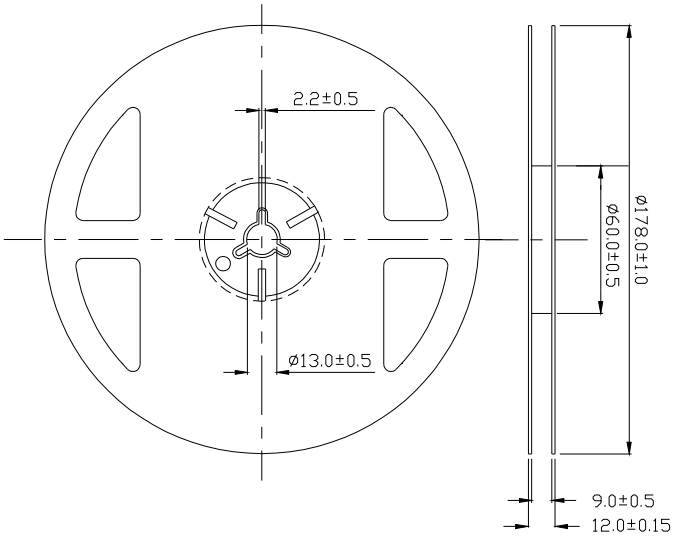
Label Explanation

CAT: Luminous Intensity Rank
HUE: Chromaticity Coordinates
REF: Forward Voltage Rank

Reel Dimensions



Note: The tolerances unless dimension are ± 0.1mm.

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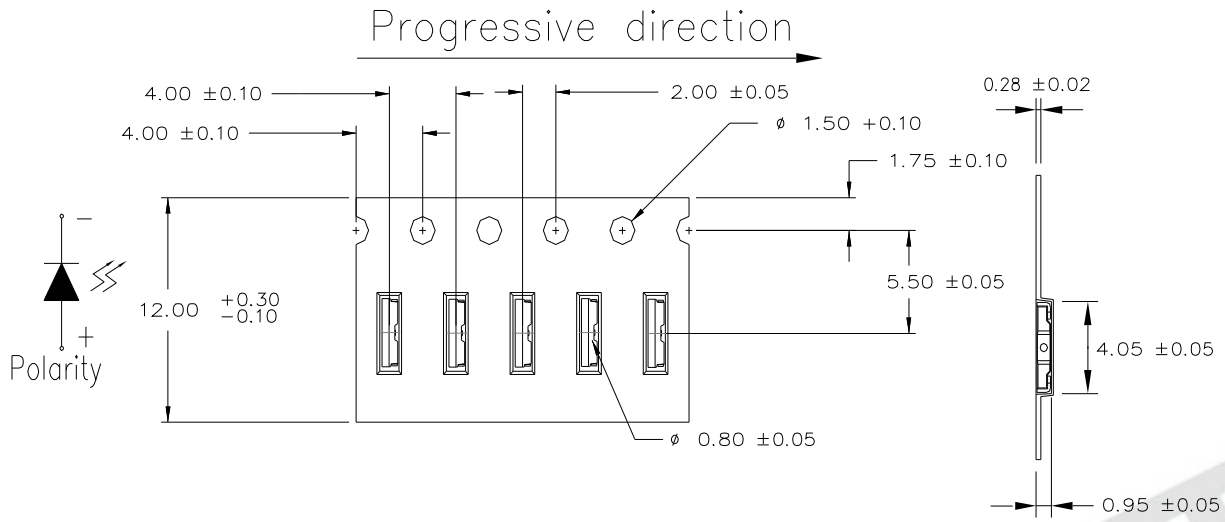
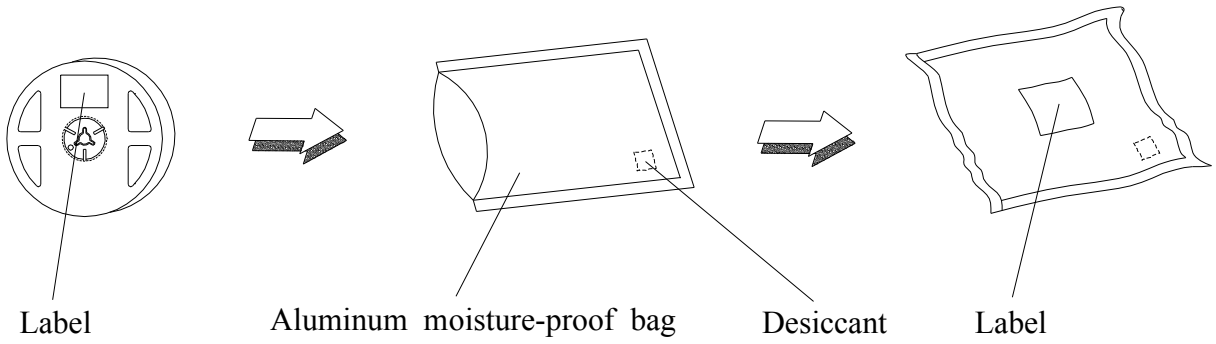
Carrier Tape Dimensions: Loaded Quantity 250 up/500/1000/2000 pcs. Per Reel



Note: The tolerances unless dimension are ± 0.1mm.

Moisture Resistant Packaging



Note: Actual photo of standard packing bag

99-713LM2C/L6772T3U6FO/TR8-T

Reliability Test Items and Conditions

The reliability of products shall be satisfied with items listed below.
Confidence level：90%
LTPD：10%

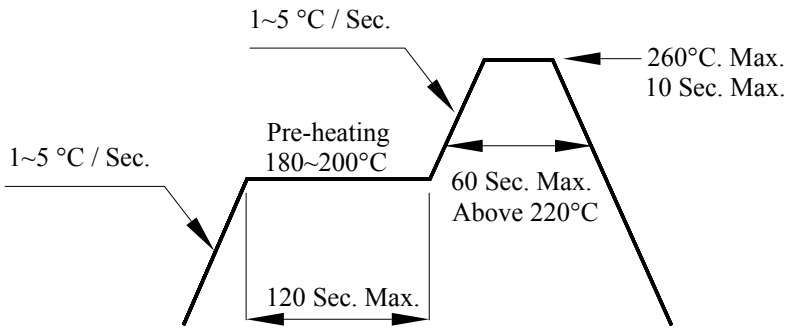
NO	Item	Test Condition		Test Hours / Times	Criteria	
		Temp./ Humidity	IF (mA)		Iv@20mA	V_F@ 20mA
1	Reflow Soldering	TSld = 260℃, Max. 10sec.		2 time	<±10%	<±10%
2	Thermal Cycle	-40℃ ~ 100℃ 30min. (5min.) 30min.		200 cycles	Iv > 70%, VF < 110%,	
3	Thermal Shock	-10℃ ~ 100℃ 20min. (<15sec.) 20min.		200 cycles		
4	Low Temp. Storage	Ta= -40℃	--	1000 hrs		
5	High Temp. Storage	Ta= 100℃	--	1000 hrs		
6	Temp. Humidity Storage	Ta= 60℃/ 90%RH	--	1000 hrs		
7	Steady State Operating Life of Low Temp.	Ta= -40℃	20	1000 hrs		
8	Steady State Operating Life Condition 1	Ta= 25℃/ Room Humidity	20	1000 hrs		
9	Steady State Operating Life Condition 2	Ta= 60℃	20	1000 hrs		
10	Steady State Operating Life of High Temp.	Ta= 85℃	5	1000 hrs		
11	Steady State Operating Life of High Humidity Heat	Ta= 60℃/ 90%RH	20	1000 hrs		

99-713LM2C/L6772T3U6FO/TR8-T

Precautions For Use

1. Over-current-proof
   Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change (Burn out will happen).

2. Soldering Condition
   2.1 Pb-free solder temperature profile



   2.2 Reflow soldering should not be done more than two times.
   2.3 When soldering, do not put stress on the LEDs during heating.
   2.4 After soldering, do not warp the circuit board.

3. Soldering Iron
   Each terminal is to go to the tip of soldering iron temperature less than 350℃ for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

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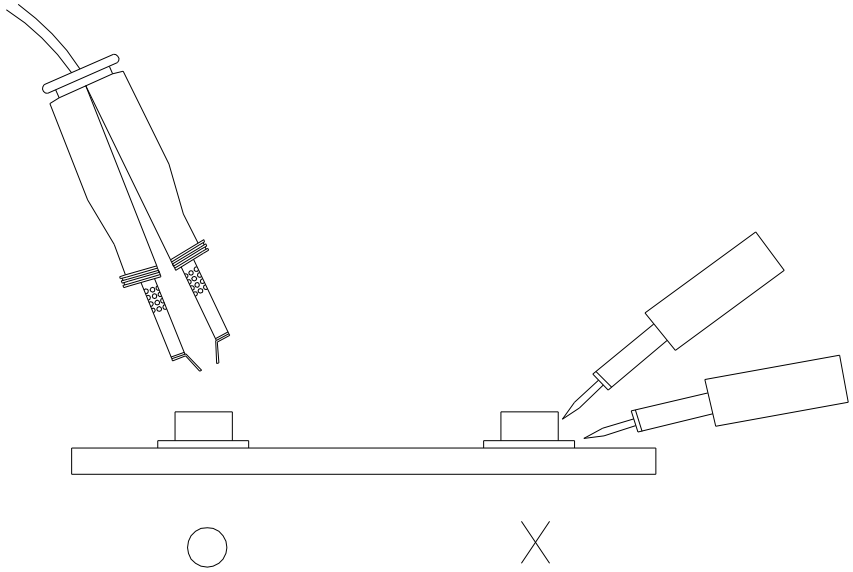
4. Repairing
Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.



5. Handling Indications
During processing, mechanical stress on the surface should be minimized as much as possible. Sharp objects of all types should not be used to pierce the sealing compound

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