

NMOP-PLCC-471

Surface Mount LED Tape and Reel

Features:

1. Top View LED.
2. white SMT package
3. LEadframe package with individual 2 pin
4. Wide viewing angle
5. soldering methods: IR reflow soldering
6. Feature of the device: more light due to higher optical efficiency;
extremely wide viewing angle; ideal or backlighting and coupling in light guide

Descriptions:

The NMOP-PLCC-471 SMD has wide viewing angle and optimized light coupling by inter reflector, The low current requirement makes this device ideal for portable equipment or any other application where power is at a premium.

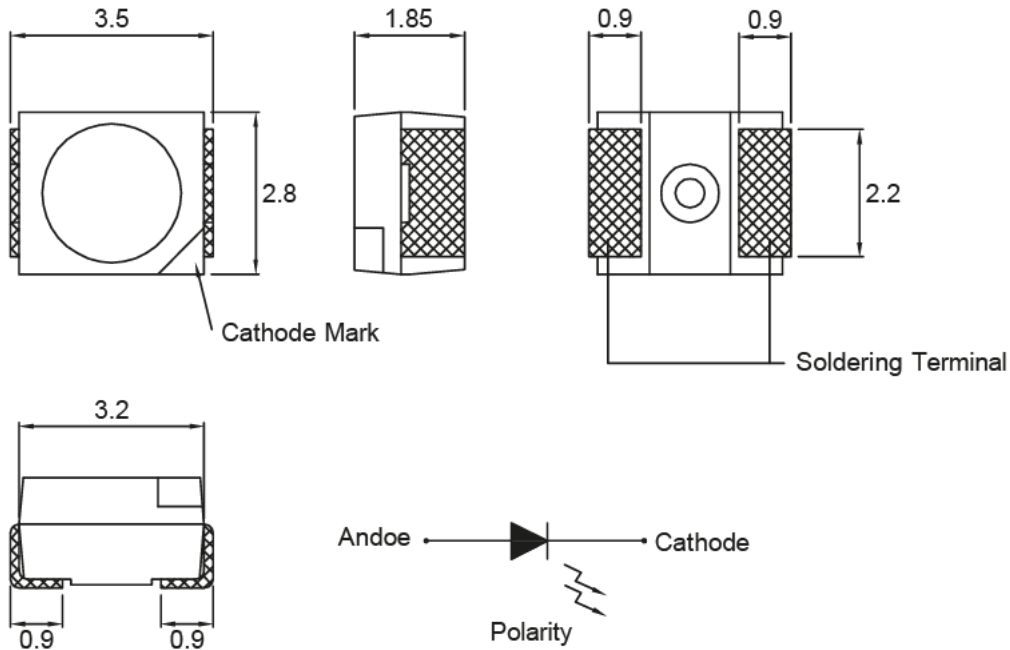
Applications:

1. Telecommunication: indicator and backlighting in telephone and fax
2. Indicators
3. Switch lights

Device Selection Guide

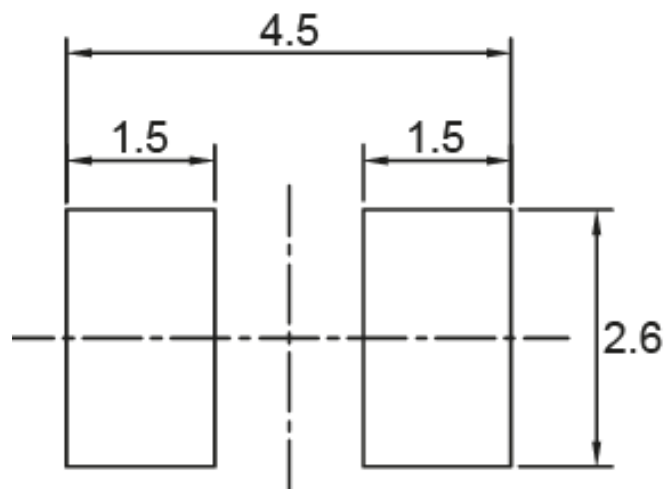
Part No	Material	Color	
		Emitted	Lens
NMOP-PLCC-471	InGaN	Blue	Water Clear

Package Dimensions



Note : 1. All dimension are in millimeter tolerance is $\pm 0.2\text{mm}$ unless otherwise noted.
2. Specifications are subject to change without notice.

Recommended Soldering Pad Dimensions



Note : The tolerances unless mentioned is $\pm 0.1\text{mm}$, Angle $\pm 0.5^\circ$. Unit=mm.

Absolute Maximum Ratings

(Ta=25°C, VDD=5V, VSS=0)

Parameter	Symbol	Ratings	UNIT
		DBK	
Forward Current	I_F	30	mA
Peak Forward Current Duty 1/11@10KHz	I_{FP}	100	mA
Power Dissipation	PD	108	mW
Reverse Current @5V	I_r	50	μ A
Electrostatic Discharge	ESD	500	V
Operating Temperature	T_{opr}	-40 ~ +85	°C
Storage Temperature	T_{stg}	-40 ~ +100	°C

Typical Electrical & Optical Characteristics

(Ta=25° C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	I_v	200	---	800	mcd	IF=20mA
Dominant Wavelength	λ_D	465	---	477	nm	IF=20mA
Spectral Line Half-Width	$\Delta\lambda$	---	30	---	nm	IF=20mA
Forward Voltage	V_F	2.8	---	3.6	V	IF=20mA
Viewing Angle	2Θ 1/2	---	120	---	deg	IF=20mA

Note:

1. The forward voltage did not including $\pm 0.1V$ testing tolerance.
2. The luminous intensity data did not including $\pm 15\%$ testing tolerance.
3. The dominant wavelength data did not including $\pm 1nm$ testing tolerance.

Luminous Intensity Classification

BIN CODE	Iv(mcd) at 20mA	
	Min.	Max.
S	200	320
T	320	500
U	500	800

Dominant Wavelength Classification

BIN CODE	λD (nm) at 20mA	
	Min.	Max.
0D	465	468
0C	468	471
0B	417	474
0A	474	477

Forward Voltage Classification

BIN CODE	Vf(v) at 20mA	
	Min.	Max.
1	2.8	3.0
2	3.0	3.2
3	3.2	3.4
4	3.4	3.6

Typical Electro-Optical Curve

DBK CHIP

Fig.1 Forward current vs. Forward Voltage

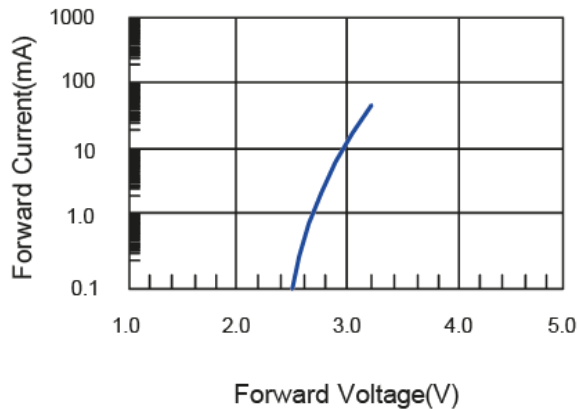


Fig.2 Relative Intensity vs. Forward Current

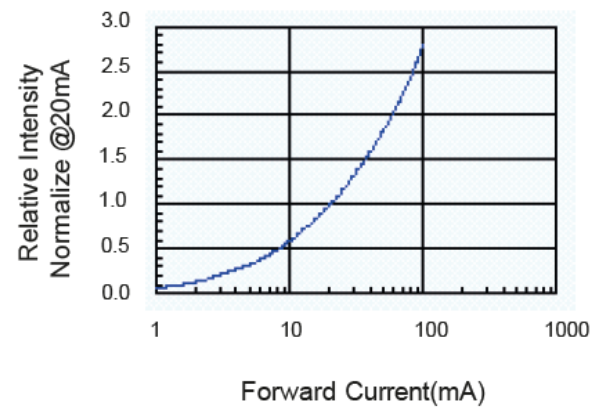


Fig.3 Forward Voltage vs. Temperature

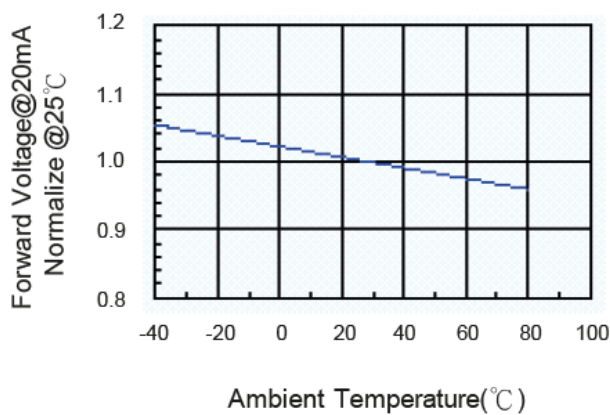


Fig.4 Relative Intensity vs. Temperature

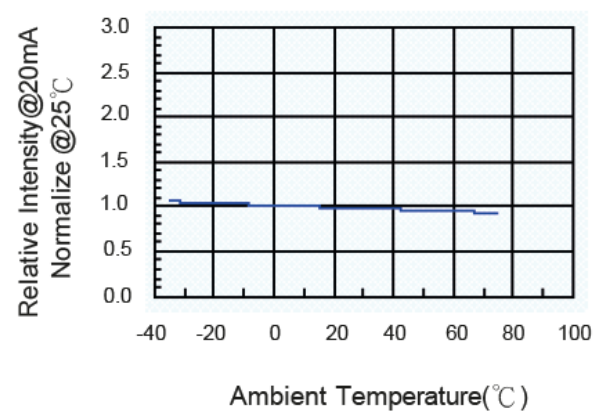


Fig.5 Relative Intensity vs. Wavelength

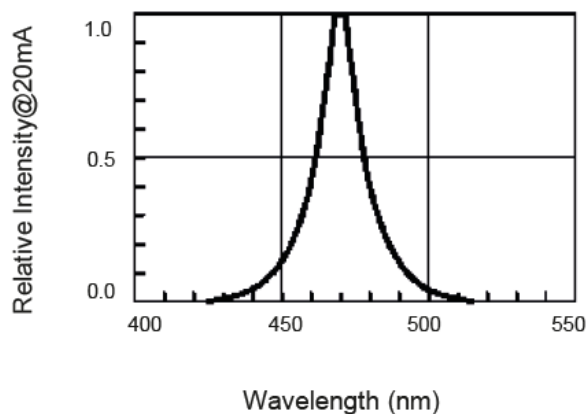
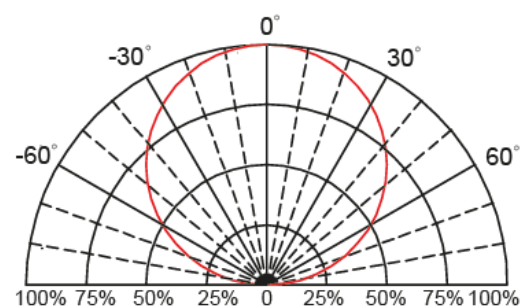
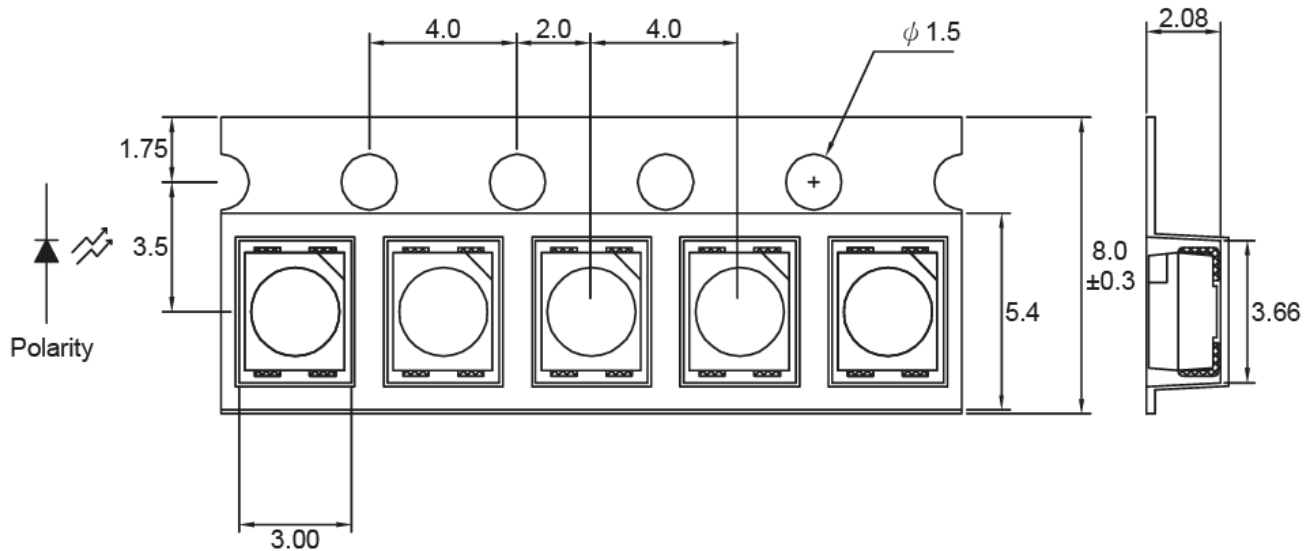


Fig.6 Directive Radiation

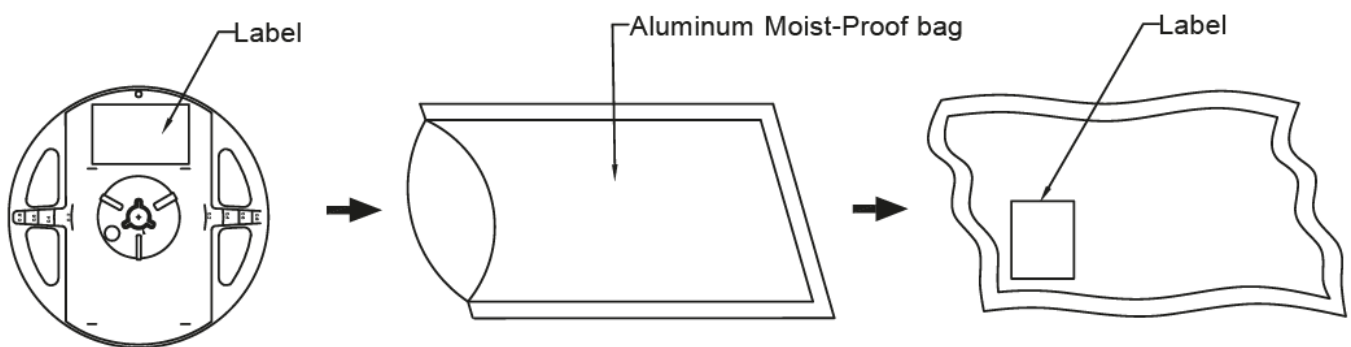


Carrier Type Dimensions



Note : The tolerances unless mentioned is ± 0.1 mm, Angle ± 0.5 . Unit=mm.

Packing Specifications



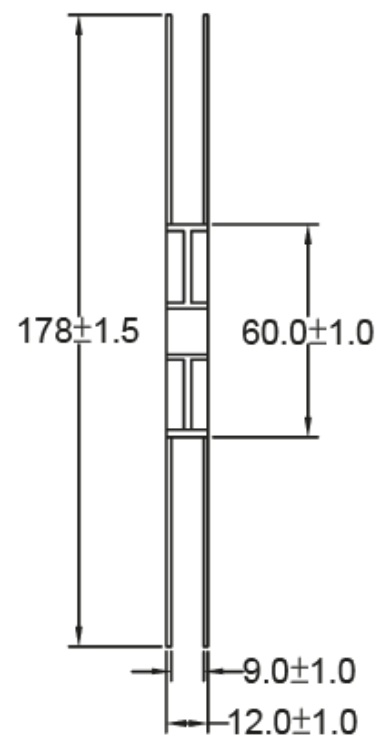
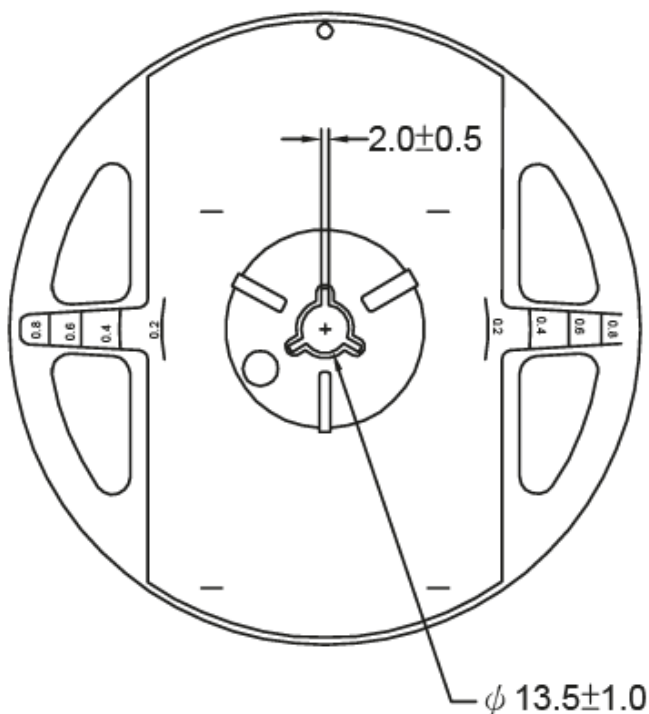
Part No.	Description	Quantity/Reel
NMOP-PLCC-471	8.0mm tape, 7" reel	2000 PCS

Label Explanation

 Neumüller Elektronik GmbH www.neumueller.com	
Typ / Part No. _____	
Date Code / Rank _____	
Menge / Quantity _____	
Kunde / Customer _____	

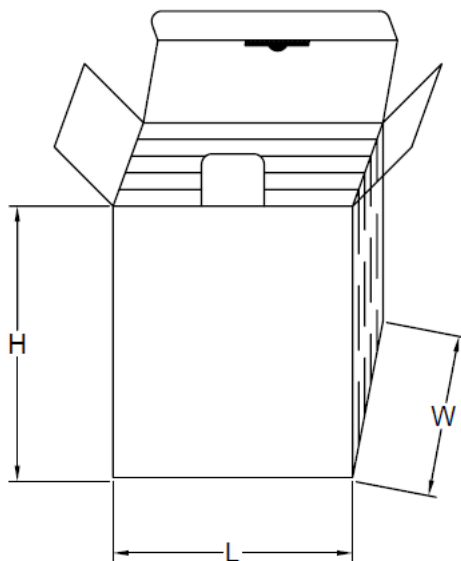
BIN : Luminous Intensity
HUE: Dominant Wavelength
VF: Forward Voltage

Reel Dimensions

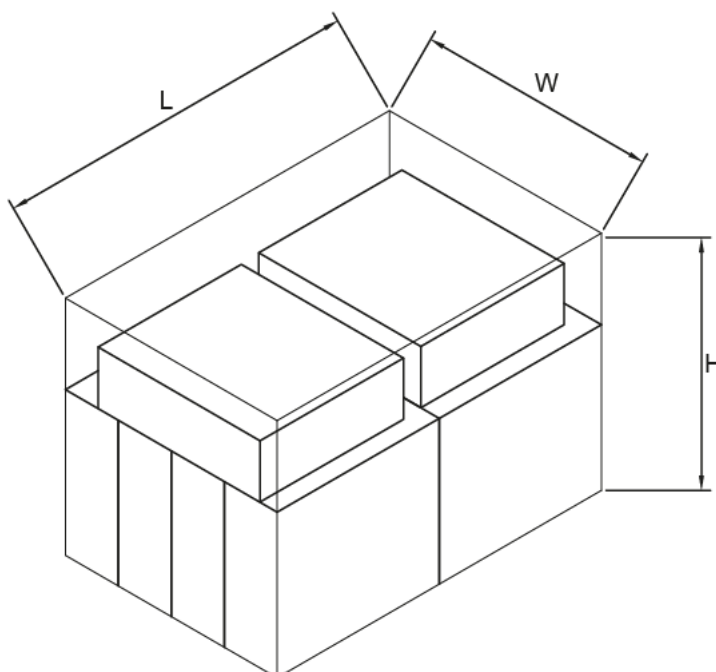


Box Explanation

1. 5 BAG / INNER BOX
2. INNER BOX SIZE : L X W X H 23cm X 8.5cm x 26cm



3. 10 INNER BOXES / CARTON
4. CARTON SIZE : L X W X H 58cm X 34cm x 35cm

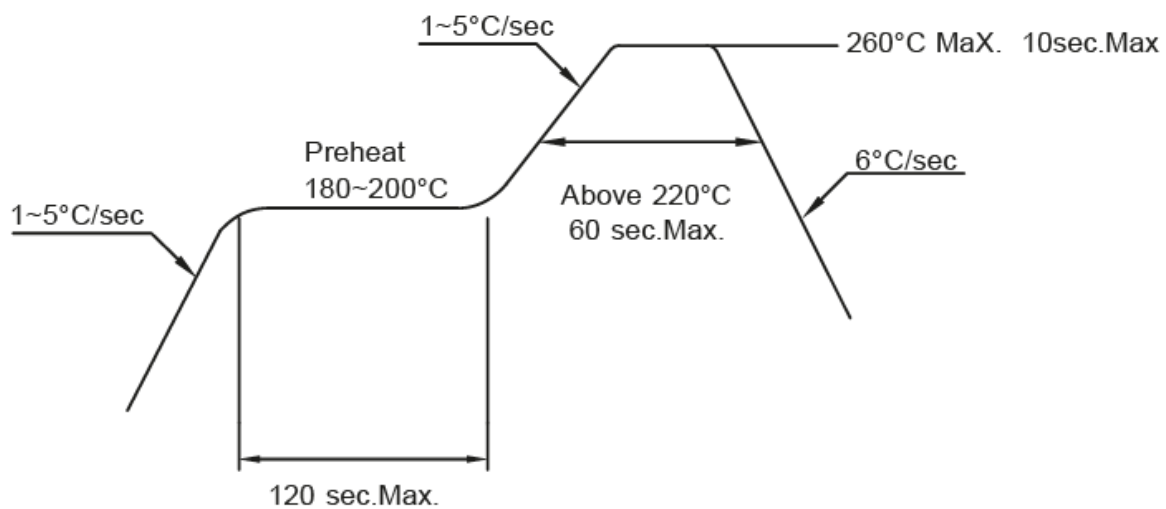


Recommended Soldering Conditions

1. Hand Solder

Basic spec is $\leq 320^{\circ}\text{C}$ 3 sec one time only.

2. PB-Free Reflow Solder



- Note:
1. Reflow soldering should not be done more than two times.
Wave solder should not be done more than one times.
 2. When soldering, do not put stress on the LEDs during heating.
 3. After soldering, do not warp the circuit board.

Precautions For Use:

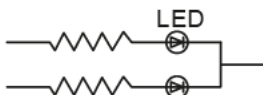
Storage time:

1. Calculated shelf life before opening is 12 months at $< 30^{\circ}\text{C}$ and $< 90\%$ relative humidity (RH)
2. After bag is opened, devices which will be subjected to reflow soldering or other high temperature processes must be
 - a) Assembled within 168 hours in an environment of $\leq 30^{\circ}\text{C}$ / 60% RH, or
 - b) Stored at ambient of 10% RH or less
3. Devices are required baking before assembly if:
 - a) Humidity Indicator Card reads $>10\%$ (for level 2a -5a)
or $>60\%$ (for level 2) at ambient temperature $23\pm 5^{\circ}\text{C}$
 - b) 2.a) or 2.b) doesn't meet
4. If baking is required, devices should be baked for >24 hours at $60\pm 5^{\circ}\text{C}$ / 5% RH. Performing baking only once, and using the baked devices within 8 hours.

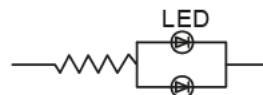
Drive method

LED is a current operated device, and therefore, requires some kind of current limiting incorporated into the driver circuit. This current limiting typically takes the form of a current limiting resistor placed in series with the LED. Consider worst case voltage variations than could occur across the current limiting resistor. The forward current should not be allowed to change by more than 40% of its desired value

Circuit model A



Circuit model B



(A) Recommended circuit.

(B) The difference of brightness between LED could be found due to the VF-IF characteristics of LED.

Cleaning

Use alcohol-based cleaning solvents such as isopropyl alcohol to clean the LED.

ESD(Electrostatic Discharge):

Static Electricity or power surge will damage the LED. Use of a conductive wrist band or anti-electrostatic glove is recommended when handling these LED. All devices, equipment and machinery must be properly grounded.

Reliability Test:

Classification	Test Item	Test Condition	Sample Size
Endurance Test	Operating Life Test	1. Ta=25°C 2. If=20mA 3. t=1000 hrs (-24hrs,+72hrs)	22
	High Temperature Storage Test	1. Ta=100°C±5°C 2. t=1000 hrs (-24hrs,+72hrs)	22
	Low Temperature Storage Test	1. Ta=-40°C±5°C 2. t=1000 hrs (-24hrs,+72hrs)	22
	High Temperature High Humidity Storage Test	1. Ta=85°C 2. RH=85% 3. t=1000hrs(-24hrs,+72hrs)	22
Environmental Test	Thermal Shock Test	1. Ta=100°C±5°C ~ -40°C±5°C 20min/ 10sec / 20min 2. total 100 cycles	22
	Temperature Cycling	1. 100°C±5°C ~ -40°C±5°C 30mins / 5mins / 30mins 2. 100 Cycles	22
	IR Reflow	1. T=260°C Max. 10sec.Max. 2. 6 Min	22