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OFFICE:7F.,NO.208,SEC.3,JHONGYANG Rd.,Tucheng City Taipei Hsien,Taiwan R.O.C
TEL:(02)22677686(REP)
FAX:(02)22675286,(02)22695616

LED SMD

LG-170HR-CT

DATA SHEET

DOC. NO : QW0905-LG-170HR-CT

REV. : A

DATE : 05 - May - 2004



Features:

- 1. Package in 8.0mm carrier tape on 7" diameter reel.
- 2. Compatible with automatic placement equipment.
- 3. Compatible with reflow solder process.

Descriptions:

- 1. The LG-170 SMD Taping is much smaller than lead frame type components, thus enable smaller board size, higher packing density, reduced storage space and finally smaller equipment to be obtained.
- 2. Besides, lightweight makes them ideal for miniature applications. etc.

Applications:

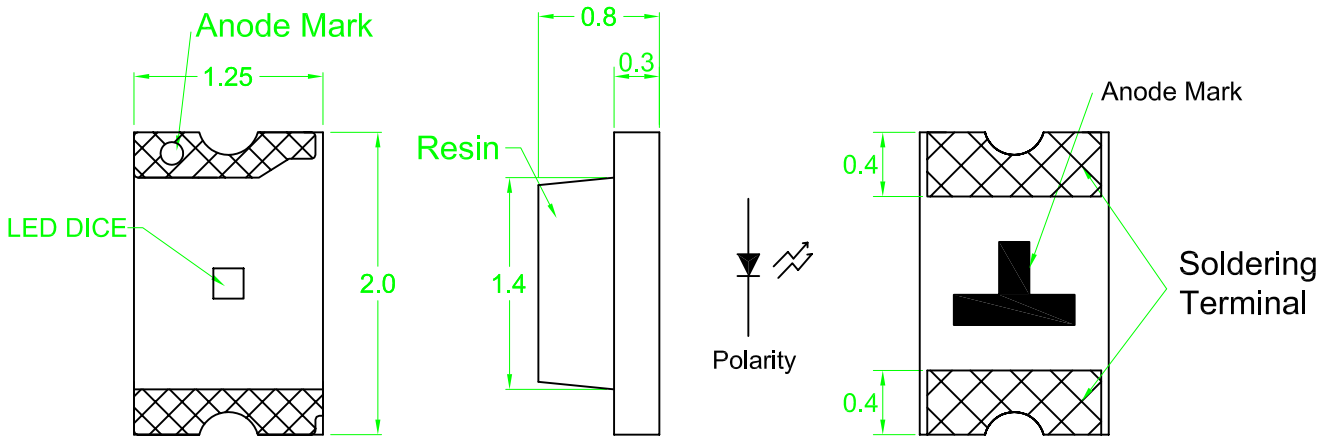
- 1. Automotive : backlighting in dashboard and switch.
- 2. Telecommunication : indicator and backlighting in telephone and fax.
- 3. Flat backlight for LCD, switch and symbol
- 4. General use.

Device Selection Guide:

PART NO	MATERIAL	COLOR	
		Emitted	Lens
LG-170HR-CT	GaAIAs	Red	Water Clear

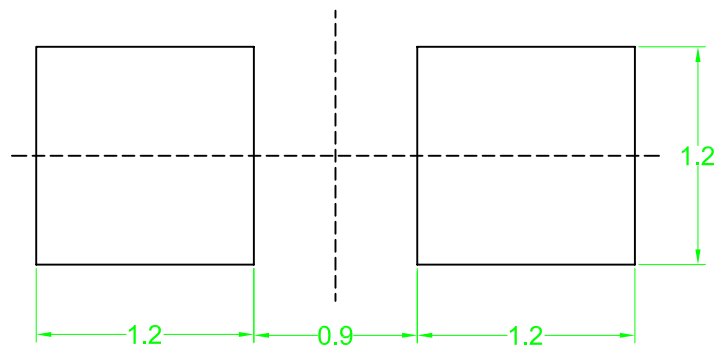


Package Dimensions



Note : 1.All dimension are in millimeter tolerance is $\pm 0.1\text{mm}$ 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 ± 0.5 . Unit=mm.



Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Absolute Maximum Ratings	UNIT
Power Dissipation	PD	100	mW
Peak Forward Current Duty 1/10@10KHz	I _{FP}	100	mA
Forward Current	I _F	30	mA
Reverse Current @5V	I _r	10	μA
Electrostatic Discharge	ESD	2000	V
Operating Temperature	T _{opr}	-40 ~ +85	°C
Storage Temperature	T _{stg}	-40 ~ +90	°C
Soldering Temperature	T _{sol}	Max 260°C for 5 sec Max	

Typical Electrical & Optical Characteristics (Ta=25°C)

Items	Symbol	Min.	Typ.	Max.	UNIT	CONDITION
Luminous Intensity	I _v	12.5	32	----	mcd	I _F =20mA
Dominant Wavelength	λ _D	----	643	----	nm	I _F =20mA
Spectral Line Half-Width	Δλ	----	20	----	nm	I _F =20mA
Forward Voltage	V _F	1.5	----	2.4	V	I _F =20mA
Viewing Angle	2θ 1/2	----	140	----	deg	I _F =20mA



Typical Electro-Optical Characteristics Curve

HR CHIP

Fig.1 Forward current vs. Forward Voltage

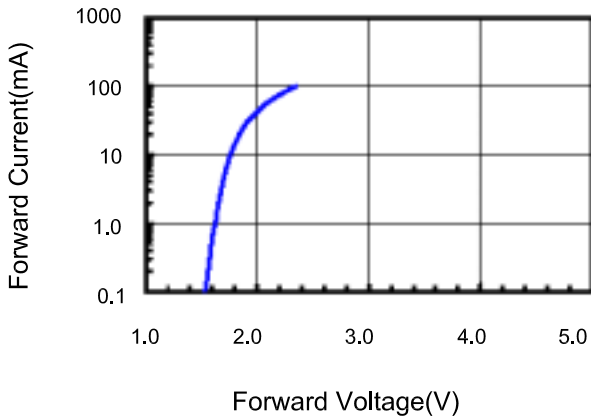


Fig.2 Relative Intensity vs. Forward Current

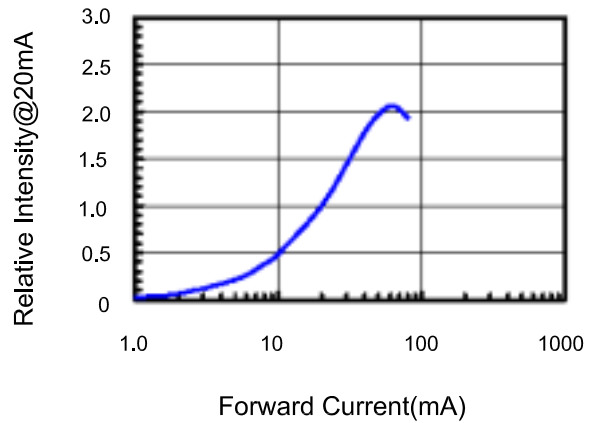


Fig.3 Forward Voltage vs. Temperature

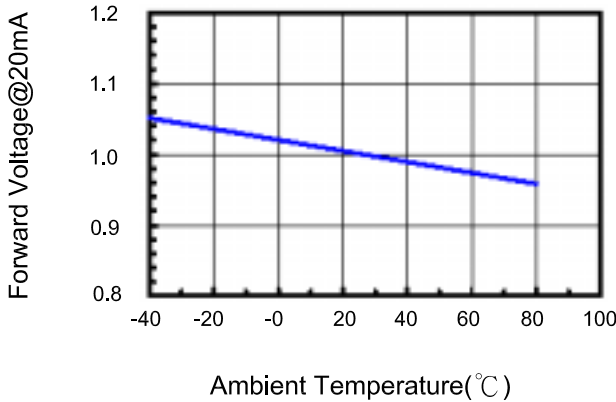


Fig.4 Relative Intensity vs. Temperature

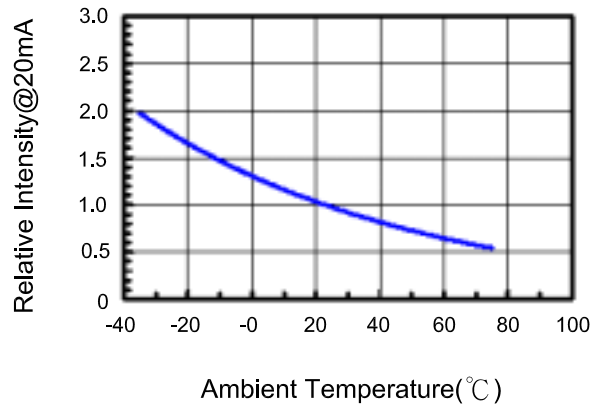


Fig.5 Relative Intensity vs. Wavelength

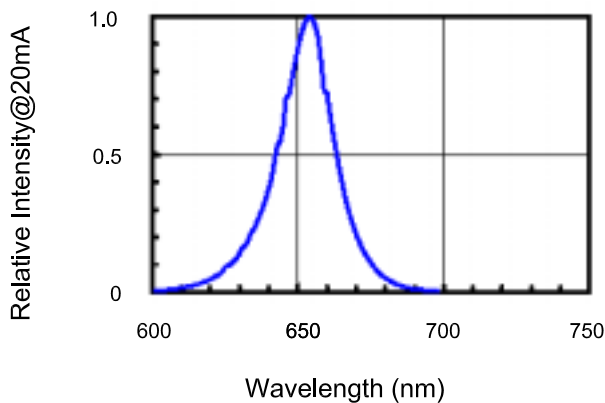
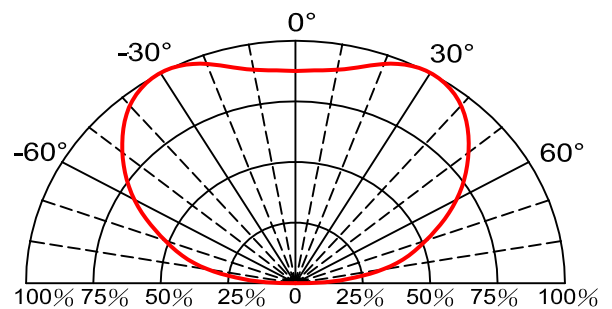
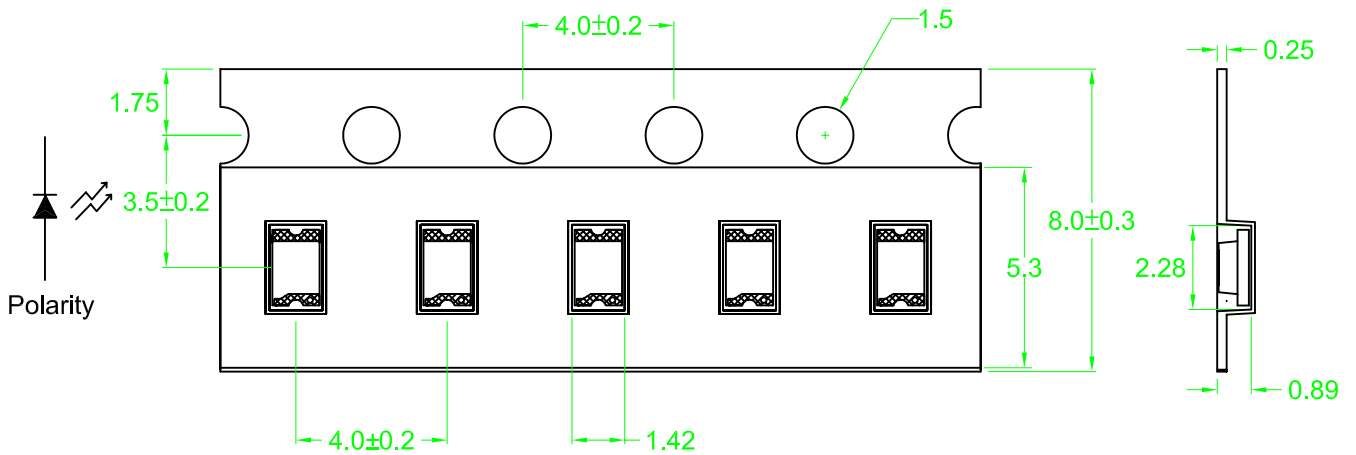


Fig.6 Directive Radiation



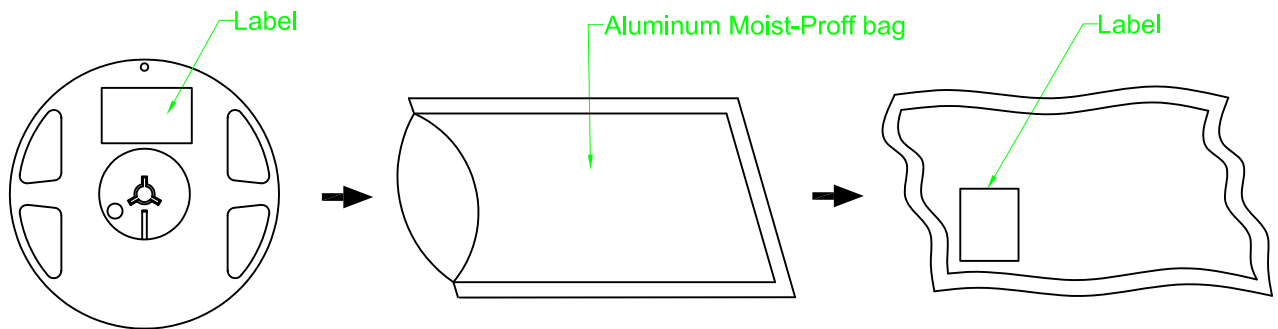


Carrier Type Dimensions



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

• Packing Specifications



Part No.	Description	Quantity/Reel
LG-170HR-CT	8.0mm tape,7"reel	4000 devices




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PART NO. LG-170HR-CT

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Label Explanation

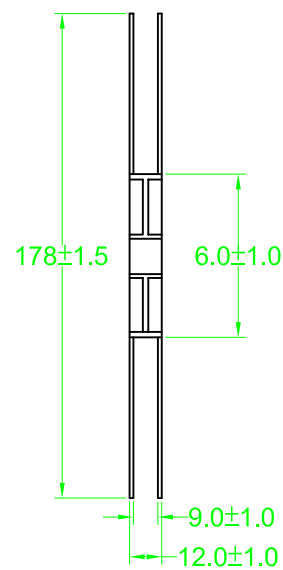
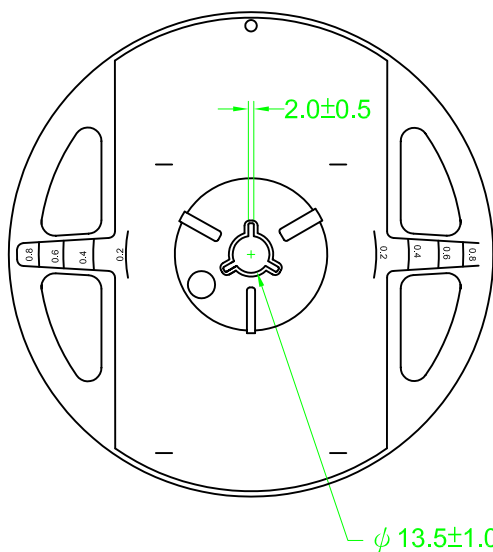
 立基電子工業股份有限公司 LIGITEK ELECTRONICS CO., LTD.	
PART NO. : LG-170HR-CT	
LOT NO. : 92000362	
Q'TY(PCS) : 4000 PCS	
BIN/HUE : M/33	1.8 - 2.0

BIN : Luminous Intensity

HUE : Dominant Wavelength

1.8 - 2.0 : Forward Voltage

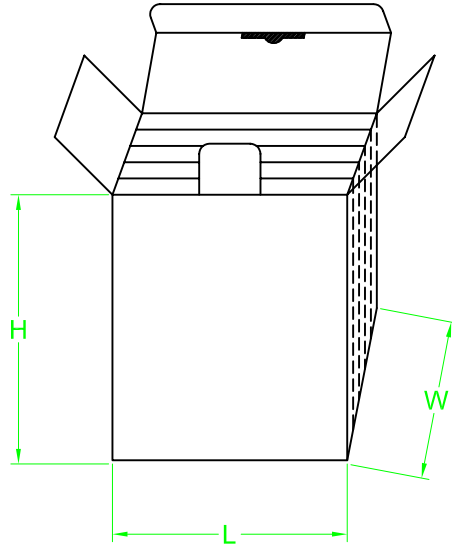
Reel Dimensions



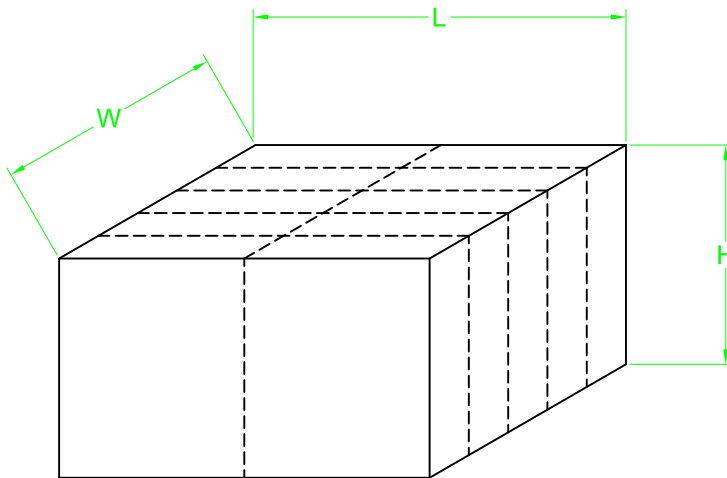


Box Explanation

- 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 49cm X 46cm x 29cm

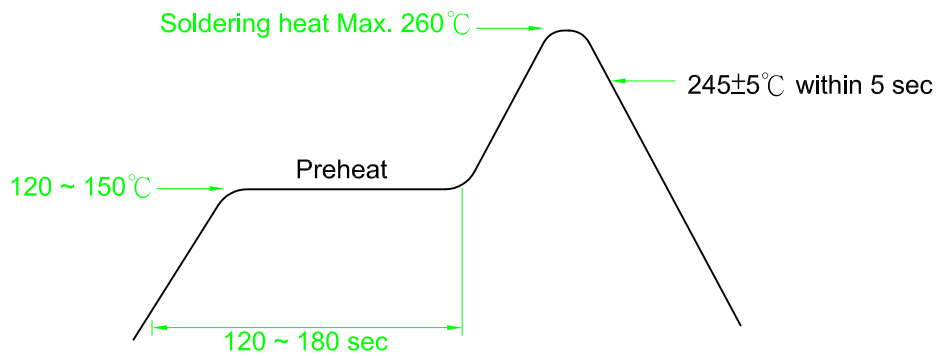




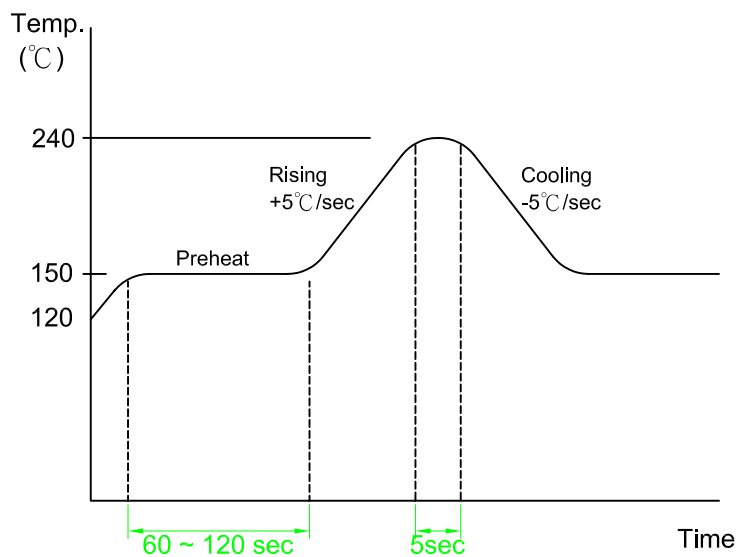
Soldering Iron:

Basic spec is ≤ 5 sec when 260°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 15W, and temperature should be controllable.
Surface temperature of the device should be under 230°C .

Soldering heat



Reflow Temp/Time





Precautions For Use:

Storage time:

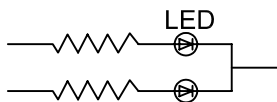
- 1.The operation of Temperatures and RH are : $5^{\circ}\text{C}\sim 35^{\circ}\text{C}$,RH60%.
- 2.Once the package is opened, the products should be used within a week.
Otherwise, they should be kept in a damp proof box with descanting agent.
Considering the tape life, we suggest our customers to use our products within a year(from production date).
- 3.If opened more than one week in an atmosphere $5^{\circ}\text{C} \sim 35^{\circ}\text{C}$,RH60%, they should be treated at $60^{\circ}\text{C}\pm 5^{\circ}\text{C}$ fo r 15hrs.

Drive Method:

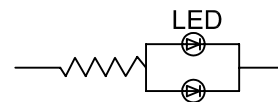
LED is a current operated device, and therefore, requirer some kind of current limiting incorporated into the driver circuit. This current limiting typically takes the form of a current limiting resistor placed in series with the LED.

Consider worst case voltage variations than could occur across the current limiting resistor. The forwr d 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-electrosatic glove is recommended when handing these LED. All devices, equipment and machinery must be properly grounded.



Reliability Test:

Classification	Test Item	Test Condition	Reference Standard
Endurance Test	Operating Life Test	1.Ta=Under Room Temperature As Per Data Sheet Maximum Rating. 2.If=20mA 3.t=1000 hrs (-24hrs, +72hrs)	MIL-STD-750D: 1026 MIL-STD-883D: 1005 JIS C 7021: B-1
	High Temperature Storage Test	1.Ta=105°C±5°C 2.t=1000 hrs (-24hrs, +72hrs)	MIL-STD-883D:1008 JIS C 7021: B-10
	Low Temperature Storage Test	1.Ta=-40°C±5°C 2.t=1000 hrs (-24hrs, +72hrs)	JIS C 7021: B-12
	High Temperature High Humidity Storage Test	1.IR-Reflow In-Board, 2 Times 2.Ta=65°C±5°C 3.RH=90%~95% 4.t=1000hrs±2hrs	MIL-STD-202F:103B JIS C 7021: B-11
Environmental Test	Thermal Shock Test	1.IR-Reflow In-Board,2 times 2.Ta=105°C±5°C & -40°C±5°C (10min) (10min) 3.total 10 cycles	MIL-STD-202F: 107D MIL-STD-750D: 1051 MIL-STD-883D: 1011
	Solder Resistance Test	1.T.Sol=260°C±5°C 2.Dwell Time= 10±1sec.	MIL-STD-202F: 210A MIL-STD-750D: 2031 JIS C 7021: A-1
	Solderability Test	1.T.Sol=235°C±5°C 2.Immersion time 2±0.5sec 3.Immersion rate 25±2.5mm/sec 4.Immersion rate 25±2.5mm/sec 5.Coverage ≥95% of the dipped surface	MIL-STD-202F: 208D MIL-STD-750D: 2026 MIL-STD-883D: 2003 IEC 68 Part 2-20 JIS C 7021: A-2
	Temperature Cycling	1.105°C ~ 25°C ~ 55°C ~ 25°C 30mins 5mins 30mins 5mins 2.10 Cyeles	MIL-STD-202F: 107D MIL-STD-750D: 1051 MIL-STD-883D: 1010 JIS C 7021: A-4
	Solderability Test	Ramp-up rate(183°C to Peak) +3°C second max Temp. maintain at 125(±25)°C 120 seconds max Temp. maintain above 183°C 60-150 seconds Peak temperature range 235°C +5/-0°C Time within 5°C of actual Peak Temperature(tp) 10-30 seconds Ramp-down rate +6°C/second max	MIL-STD-750D:2031.2 J-STD-020