Hebei I.T.(Shanghai) Co.,Ltd.

LED SPECIFICATION

Part No./型号：940MWO4C

ATTENTION
OBSERVE PRECAUTIONS
FOR HANDLING
ELECTROSTATIC
DISCHARGE
SENSITIVE
DEVICES

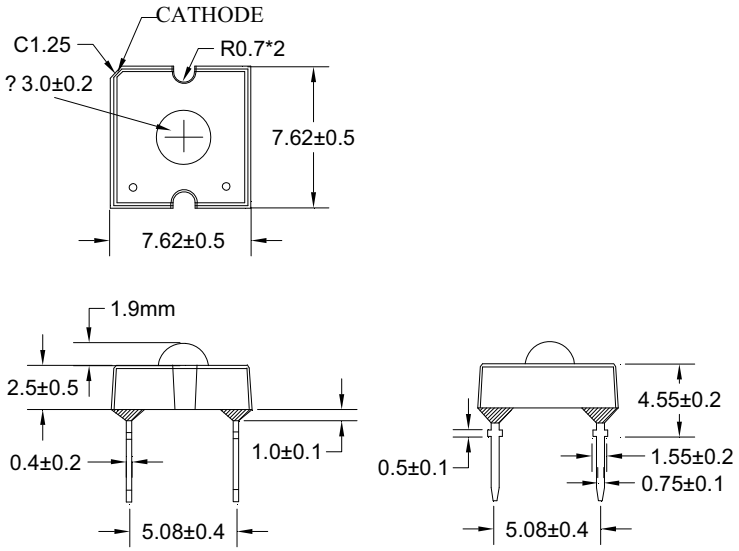
➢ Features/特征：

- High reliability and long life/
  可靠性高、寿命长
- Low power consumption/低功耗
- Single color/单色
- High bright output/高亮度输出
- High Current Operation/高工作电流

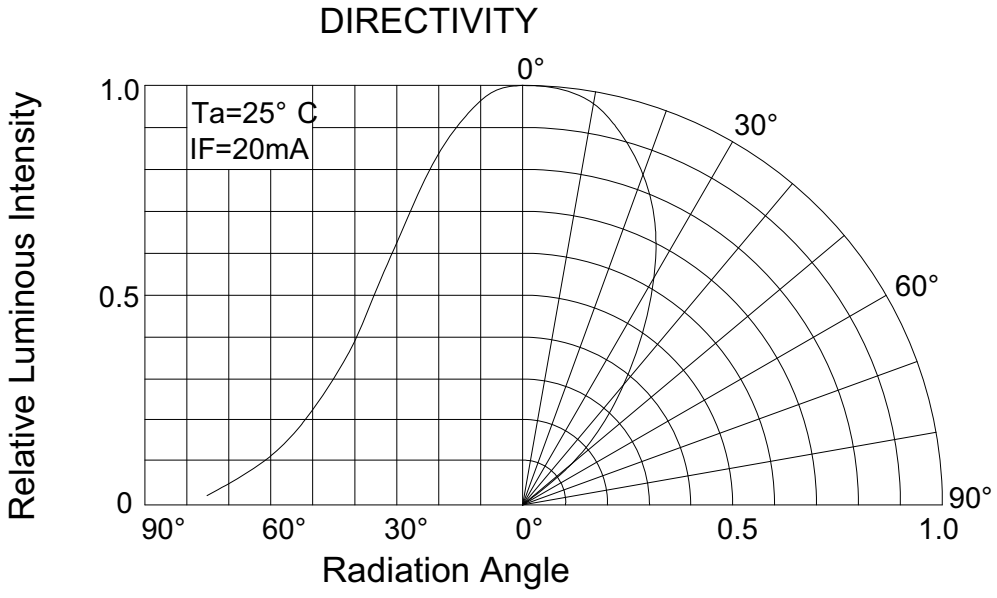
➢ Descriptions/描述：

- Dice material/芯片材质：InGaN
- Emitting Color/发光颜色：
- Warm color white/暖白色
- Device Outline/产品外形：
  7.62mmX7.62mm
- Lens Type 胶体颜色：
  Water Clear/ 无色透明

➢ Directivity/指向特性：



1. All dimensions are millimeters/单位：mm.
2. Tolerance is +/-0.25mm unless otherwise noted/
   没有标注的公差均为±0.25mm.



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➢ Absolute maximum ratings/极限参数（Ta = 25℃）

Parameter 参数	Symbol 符号	Test Condition 测试条件	Values 数值		Unit 单位
			Min.	Max.	
Reverse Voltage 反向电压	V_R	I_R = 30μA	5	--	V
Forward Current 正向工作电流	I_F	----	----	30	mA
Power Dissipation 损耗功率	P_d	----	----	250	mW
Pulse Current 正向峰值电流	I_{peak}	Duty=0.1mS，1kHz	----	100	mA
Operating Temperature 工作温度范围	T_{opr}	----	-40	+85	℃
Storage Temperature 储存温度范围	T_{str}	----	-40	+100	℃

➢ Electrical and optical characteristics/光电参数（Ta = 25℃）

Parameter 参数	Symbol 符号	Test Condition 测试条件	Values 数值			Unit 单位
			Min.	Typ.	Max.	
Forward Voltage 正向电压	V_F	I_F=50mA	----	V9~V12		V
Reverse Current 反向电流	I_R	V_R=5V	----	----	30	μA
Luminous Flux 光通量	Φ_V	I_F=50mA	----	L,M	----	lm

Color Temperature Bins Char/色温分档（Ta = 25℃）

Bin	WP0	WP1	WP2	WP3	WP4
CCT	<2500	2500~2800	2800~3000	3000~3300	3300~3600
Bin	WP5	WP6	WP7	WP8	WP9
CCT	3600~4000	4000~4500	4500~5000	5000~6000	>6000

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Typical electrical/optical characteristic curves/光电特性曲线：

Fig.1 正向电流 Vs. 正向电压

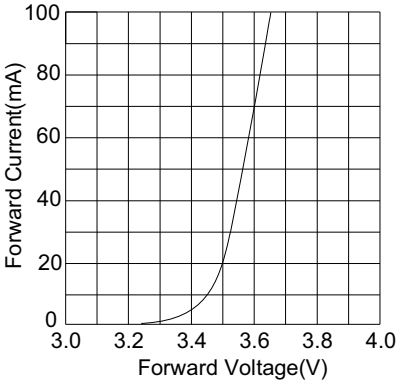


Fig.2 相对亮度 Vs. 正向电流

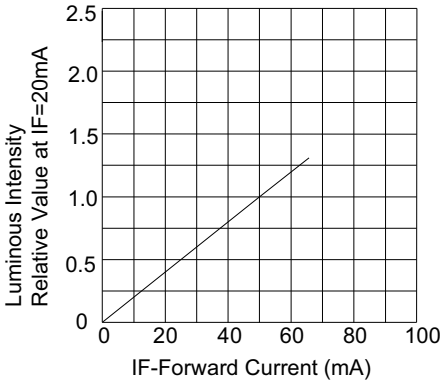


Fig.3 正向电流 Vs. 环境温度

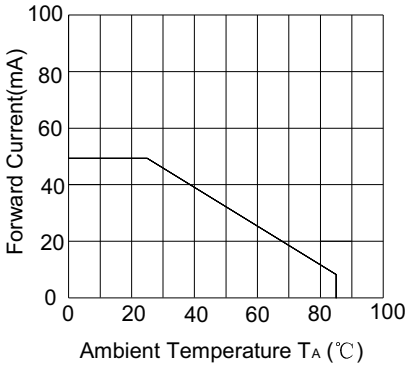
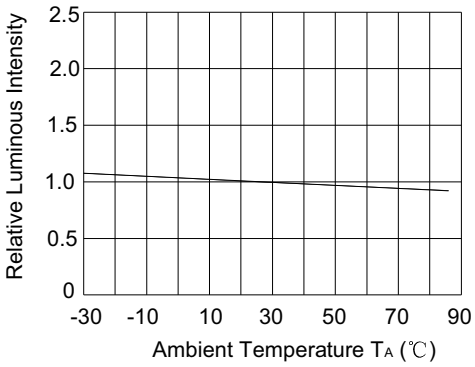
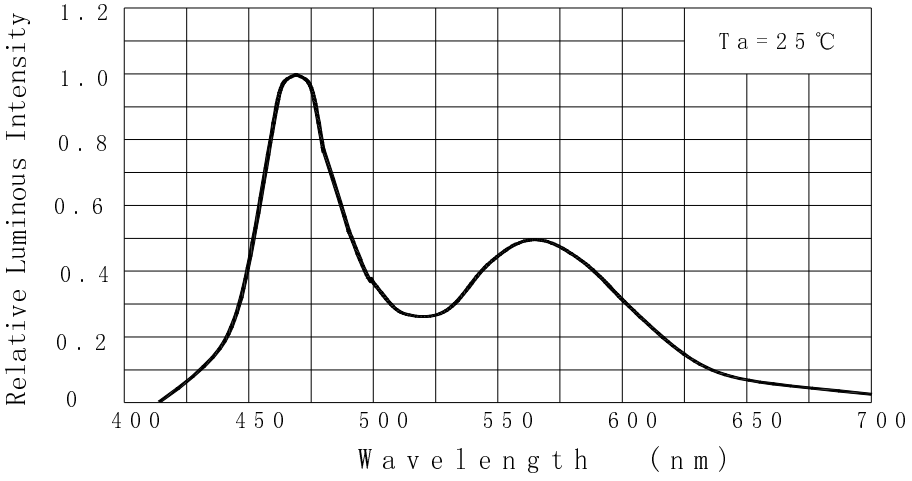


Fig.4 相对亮度 Vs. 环境温度





Leds Application Manual

1. Anti-static Note and Methods

InGan or GaN blue, green, white leds must avoid static electricity damage. When operating, remove any static electricity source; clear up static electricity; expedite the dissipation of electric charge. In most cases, static electricity arises from leds lead forming, installing, soldering and cleaning.

Main methods preventing static electricity

- Paving floor with anti-static floor board, installing earth connecting dissipation system as well. (Surface Resistivity: 106Ω~109Ω/c㎡)
- Using static electricity sensitive parts on anti-static work table, basic earthing requirement:

Surface Resistivity: 106Ω~109Ω/c㎡	Body Resistivity: 103Ω~108Ω/c㎡
Triboelectrification potential: ≤ 100V	Static electricity voltage attenuation time: ≤0.5S

- Applying static electricity sensitive parts in effective scope (within 60cm generally) of working uniflow ionic blower.
- Relative Humidity in static preventing zone should be over 50%, better ranking 70%~80%.
- Separating ground, wall, working table, equipment, instrument and wrist strip according to working area and unit, earthing in sequence, and then converging into assemble line connecting with ground.
- In static preventing area, instruments like container, clamp, instruments underlay, electric iron etc should all comply with anti-static electricity standard. In the mean time, operator must wear anti-static electricity jumper, shoes, hat and using anti-static electricity wrist strips, elbow or ankle strap.
- Do not use nylon bag, ordinary plastic bag or ethane material pack static electricity sensitive parts.
- Static electricity sensitive parts must be packed under anti-static electricity box or carton before it is shipped or transported.
- In transportation or passing, avoid mechanical vibration and strike.
- In Storage of static electricity sensitive parts or PCB fixing static electricity sensitive parts or whole machine, necessary anti-static electricity measures should be taken.

If leds damaged by static electricity, some poor performance appears, such as creepage current increasing, static forward voltage decreasing or increasing, no lighting or lighting abnormally under low current test.

2. Technical Requirement in Led Application.

A. Leads forming

Methods:

(1) Bending frame 2mm from colloid.

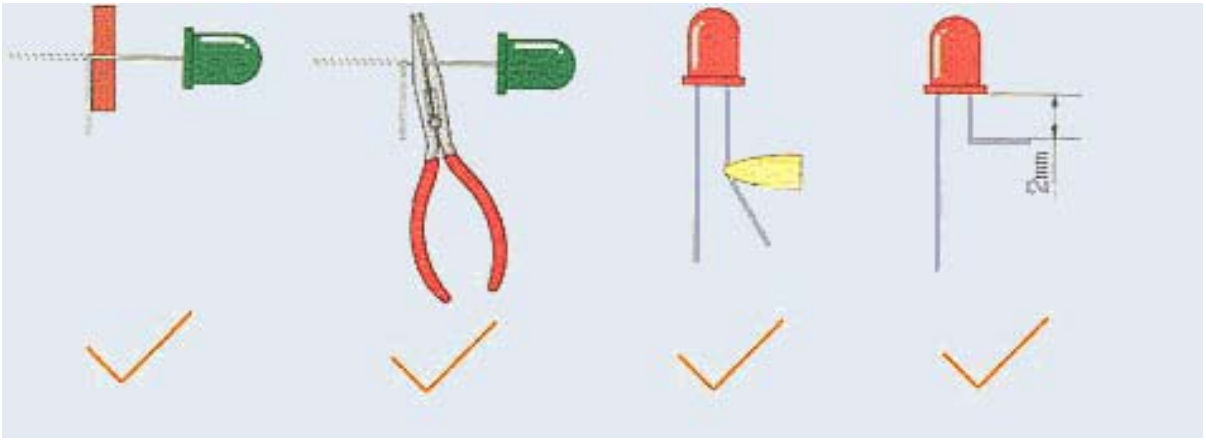
(2) Using clamp or operated by professional staff.

(3) Frame forming must be finished before soldering.

(4) Leads distance must be consistent to circuit board.

(5) Do not add external power squeezing leds colophony to avoid damaging PINs in colloid.

(6) Avoiding bending in the same position of leads twice or more.



B. Installation

Led Installation methods

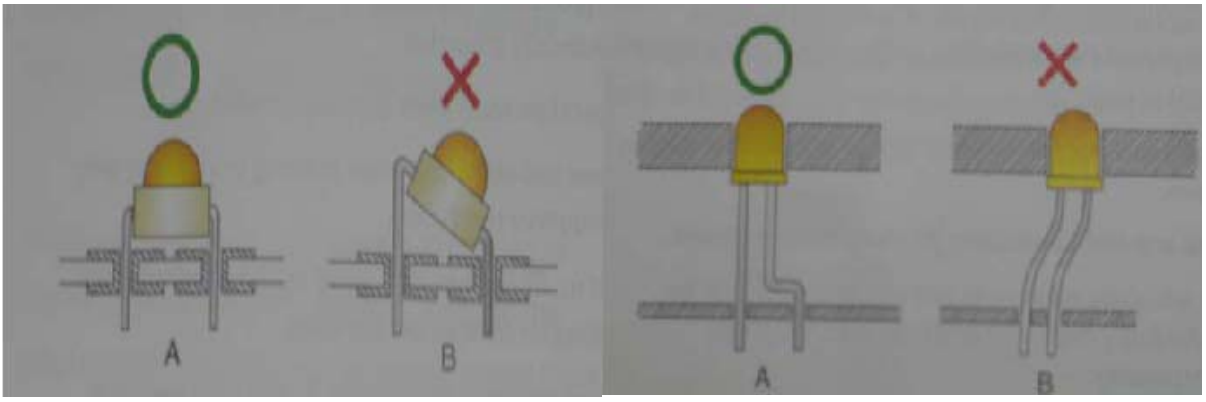
(1) Attention on the arrangement of external cables of parts where leds fixed to avoid wrong electrode installation. Parts should be away from heat source and operated under it's limited working conditions.

(2) Leds with distorted leads are not allowed installed.

(3) Don't press leads when Leds are installed on bottom board.

(4) Guide cap is recommend to use for Leds positioning.

(5) Avoid any vibration or external strength before soldering temperature turn back to normal.



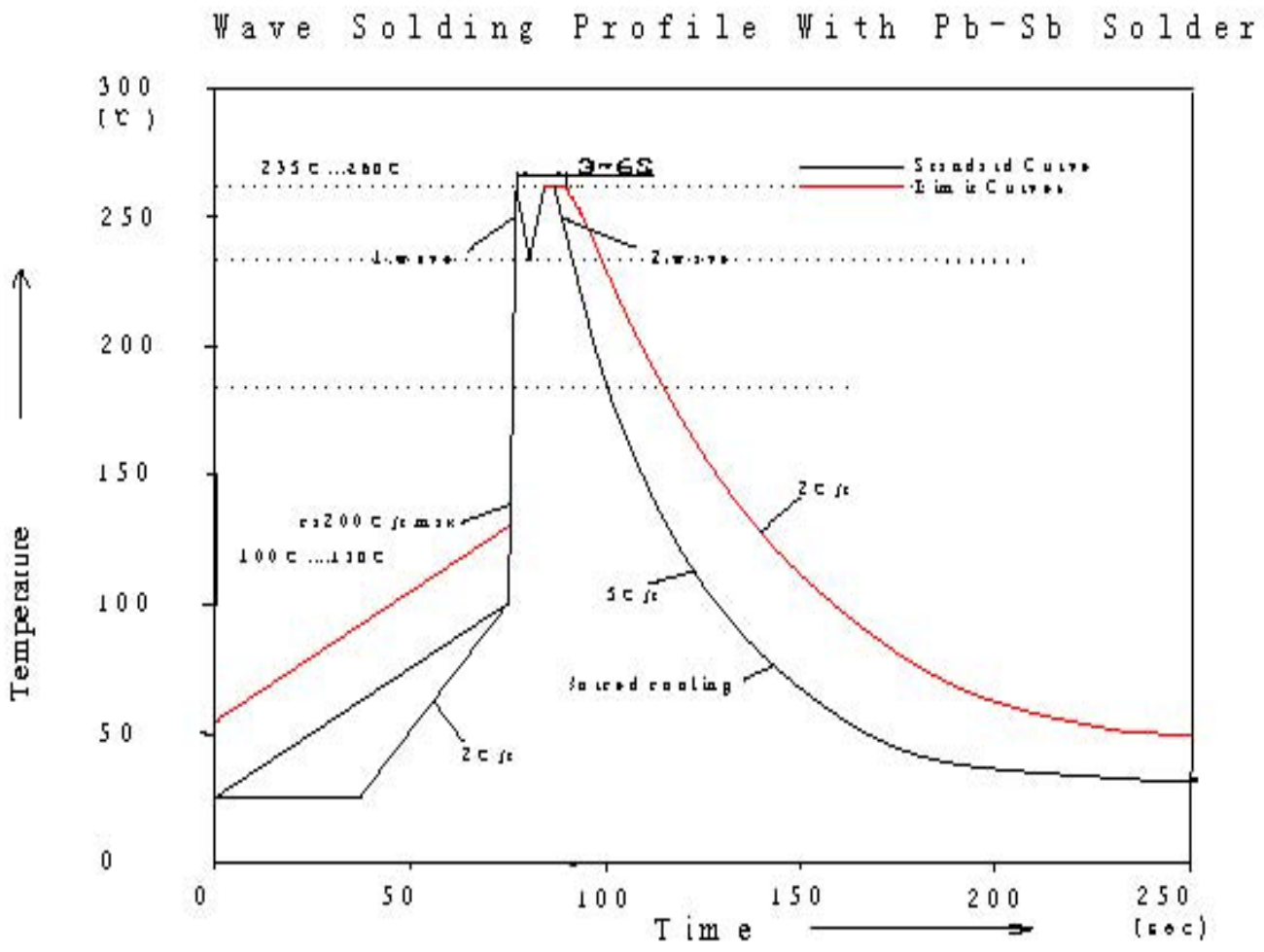
C. Soldering

(1) Electrical iron welding: Top end temperature of Iron (Max 30W) under 260 ℃; welding time no more than 3seconds, welding position at least 2mm away from colloid.

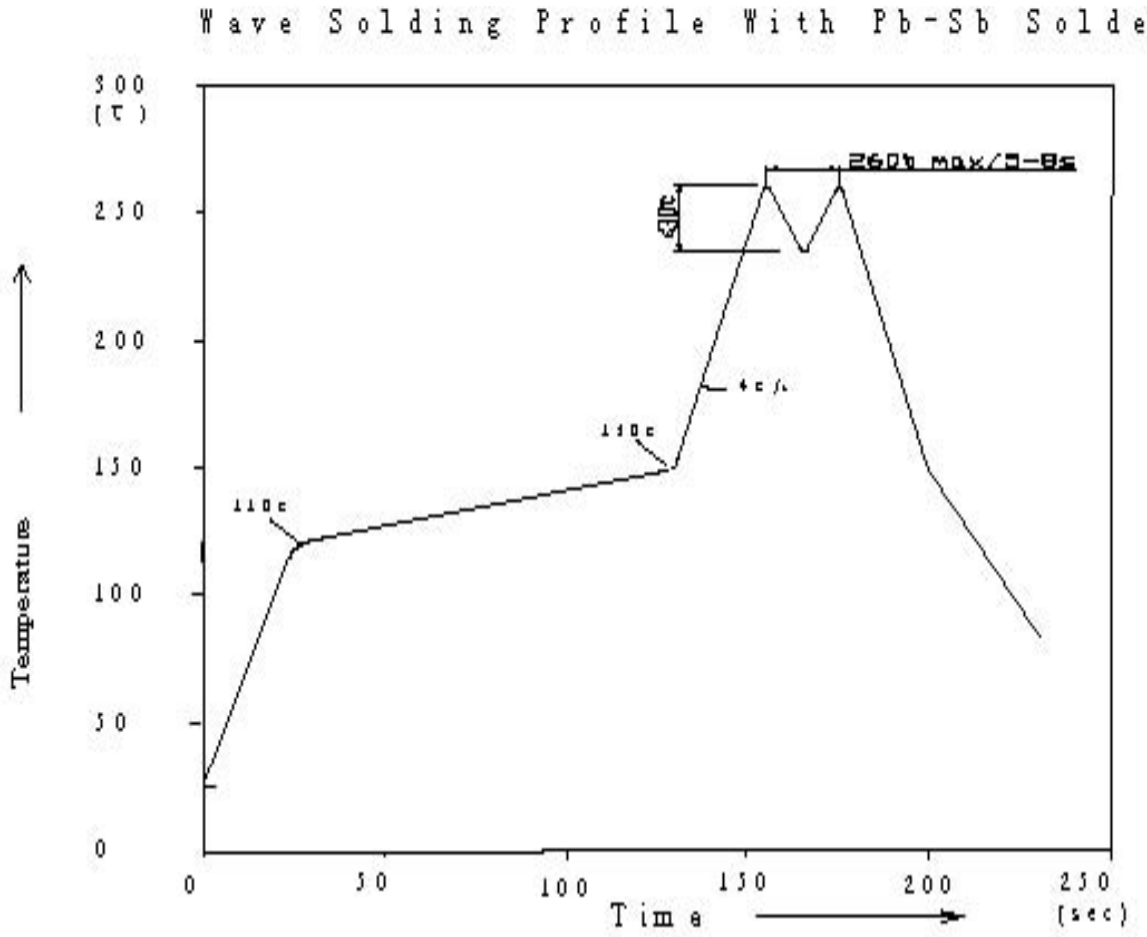
(2) Immersion soldering: limited temperature 260 ℃; immersion time under 3 seconds; immersion position at least 2mm away from colloid.

(3) Wave Soldering

a. Wave Soldering with Pb-Sb Solder



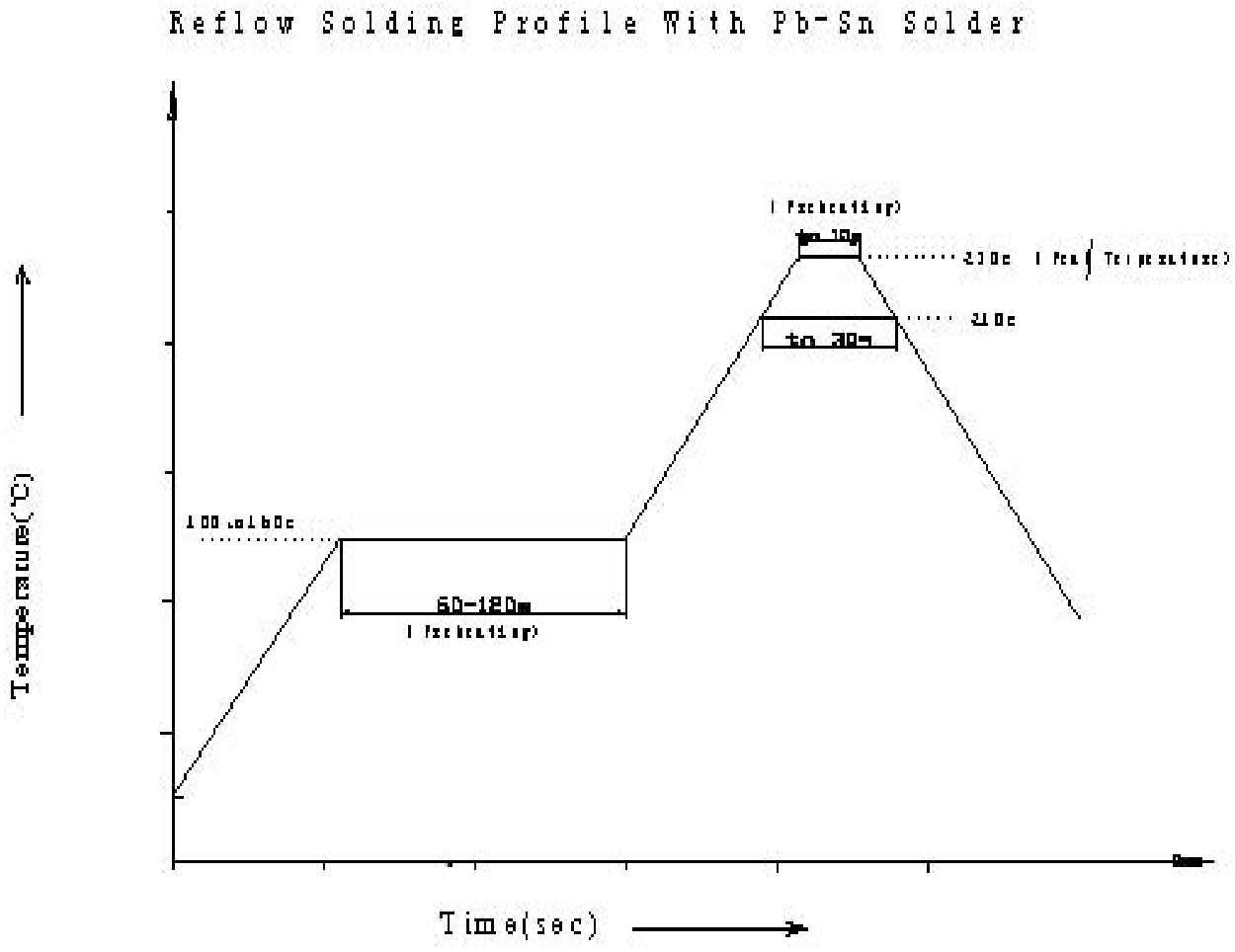
b. Pb-free Wave Soldering



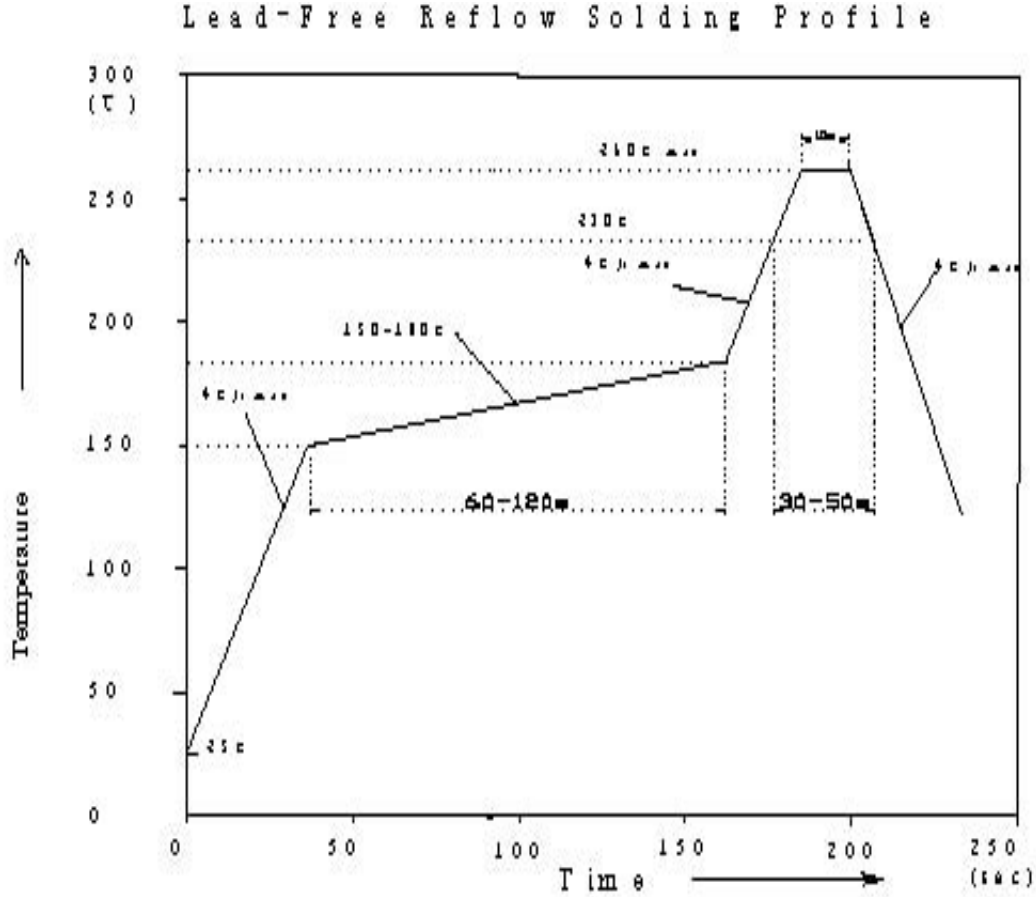
注意：1、设置波峰焊温度245℃～260℃，最高焊接温度不超过260℃；
2、在加热过程中，不能有外加物理压力；
3、焊接次数不超过2个循环。

(4) Reflow Soldering

a. Reflow Soldering with Pb-Sb Solder



a. Pb-free Solder Reflow Soldering



注意：1、典型温度设置245℃（±5℃）；最大焊接温度不大于260℃；
2、在加热过程中，不能有外加物理压力；
3、焊接次数不超过2个循环。

D. Cleaning

(1) Take care using chemical cleaning leds colloid, some chemicals like Trichloroethylene, Acetone may damage surface of colloid causing fading; Ethyl alcohol could be used for cleaning and dipping but less than 3 minutes under normal temperature.

(2) Use Neutral Soldering if possible.

(3) Do not clean by water, the remaining water may lead to rustiness.

(4) Leds may be damaged in ultrasonic cleaning. For safe, sample test first before mass cleaning.

3. Careful
   Using series connection protecting resistance to keep leds working stably, resistance value counting: R=(VCC-VF)/IF, VCC=Power Supply Voltage; VF=Leds Drive Voltage; IF=Current.

4. Electrical Characteristics Testing and Led Using
   - Testing VF, Brightness and Wavelength at 20mA; Testing IR, IR should be less than or equivalent to prescribed value when set VR=5V.
   - Testing or using leds, drive each led at the same current to keep consistence of brightness or other characteristics.
   - Operating temperature: -40℃~85℃
   - Do not using different BINs(Marked on every bag) on one product to avoid color and brightness difference. If mix-up is inevitable, apply leds according to different circuit., put nearest BINs together.(Avoid this situation if possible.)

5. Storage Conditions
   - Circumstance Temperature: -40℃~100℃, -20℃~50℃ is recommended.
   - Circumstance Humidity: 30%~70%, 40%~60 % is recommended.