

Eco products

- | [Eco SAMSUNG](#)
- | [Eco technology](#)
 - [lead\(Pb\)-free solution](#)
 - [quality & reliability](#)
 - [what is whisker?](#)
 - [halogen free](#)
- | [Eco search](#)
- | [FAQs](#)
- | [references](#)
- | [ESH activities](#)

quality & reliability

MSL(Moisture Sensitivity Level)

SAMSUNG's Condition & Representative Example

SAMSUNG Qualification Standard

Test Procedure

- Component : PRE-COND & T/C, PCT (Option = HTS, THB)
- Board : T/C (Option = THB)



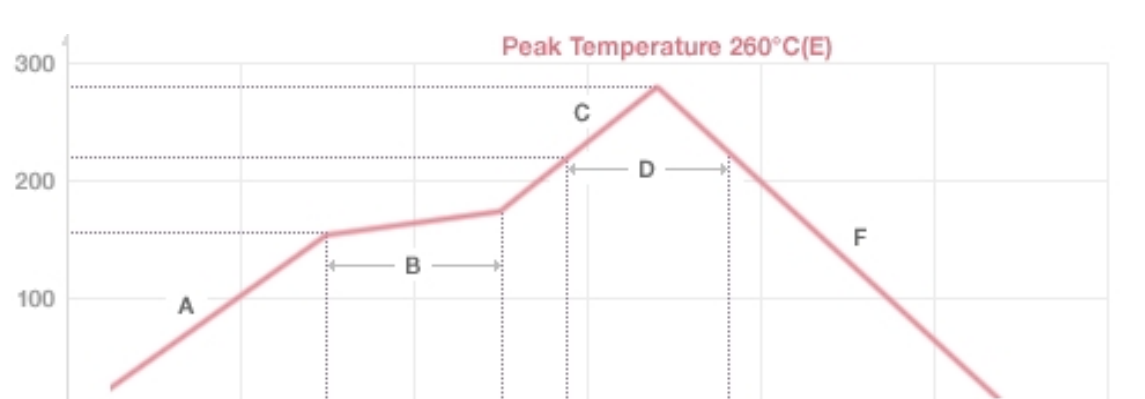
Reliability Test

1. PRE-COND (Pre-conditioning Test)

Process	Bake -> T/C 5 time -> SOAK -> Reflow * SOAK Condition: MIN. 30°C/60% RH 192hrs (All Package)
Reflow	3 time * Reference Reflow Profile
Target	354/0
REF.SPEC	JESD22-A113

2. Lead Free Condition IR Profile (Memory Component)

Section	Temp.(°C)	Time(sec)	Note
Preheating	160~190	MAX 120	B
Reflow	220	MAX 60	D
Soak	255(+5, -0)	MAX 11	-
Max Peak	260	-	E
Ramp up / Down	1~3(°C)/sec		A,C,F



3. Lead Free Condition IR Profile(System LSI Component)

Process	Temperature, Time	Comment
Pre-Heating	160~190°C, 90±30 sec	Applied to All Package
Heating	255+5, -0°C, 10±3 sec	
Peak Temperature	Max. 260°C	

4. T/C(Temperature Cycle)

Condition	Lead Type: -65°C~150°C, Ball Type: -55°C~125°C (Comp) Lead Type: 0~125°C, Ball Type: -25°C~125°C(Module)
Read Out Time	150, 300, 600, 1000(cycle)
Target	LTPD 2%, 116/0
REF.SPEC	MIL 883D, 1017.7,B

5. PCT(Pressure Cooker Test)

Condition	121°C, 2atm, 100% RH
Read Out Time	96, 168, 240(hrs) * Lead Type: 240hrs, Ball Type: 168hrs Target
Target	LTPD 2%, 116/0
REF.SPEC	JA102

6. THB(Temperature Humidity Bias)

Condition	85°C/85%, Bias
Read Out Time	96, 168, 300, 500, 1000(hrs)
Target	LTPD 2%, 116/0
REF.SPEC	JESD22-A101

note

TC, PCT, THB are done after pre-condition

7. HTS(High Temperature Storage)

Condition	150°C, No Bias
Read Out Time	96, 168, 300, 500, 1000(hrs)
Target	LTPD 3%, 76/0
REF.SPEC	JESD22-A103

Storage & Packing Recommendation

- It is recommended that the device should be assembled after opening the moisture barrier bag under 30°C/60% R.H. within 7 days.
- If the humidity indicator is pink from the 30% mark or device were not assembled within 7 days after opening, the device should be baked for 6 hours at 125°C (Tray type) or 24 hours at 50°C (Tape&Reel type).

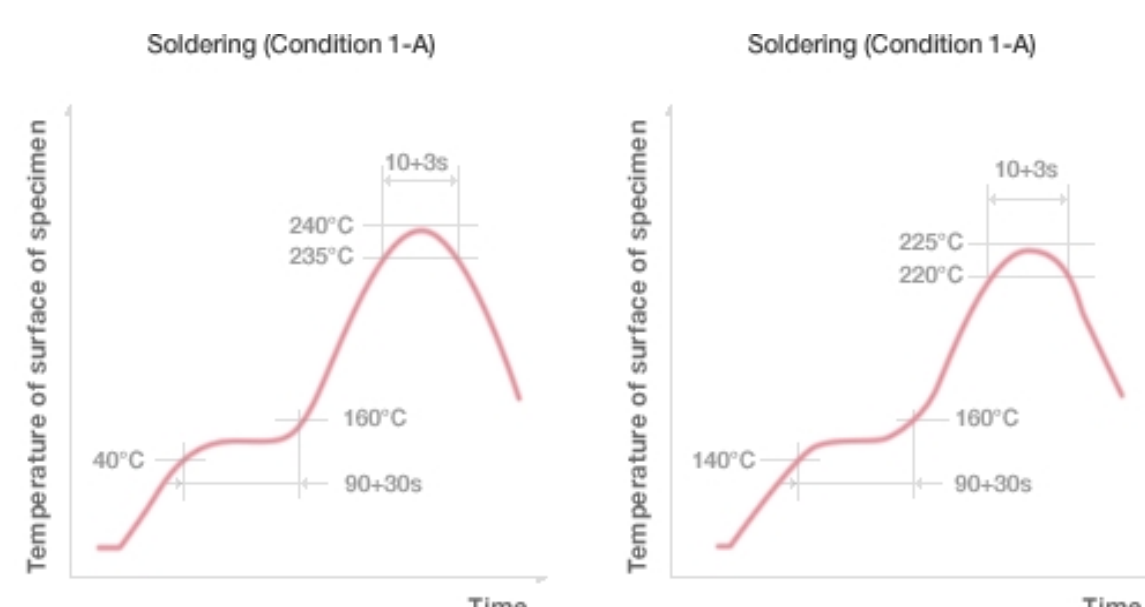
JEDEC / EIAJ

1. EDEC / EIAJ

Section	SOAK Condition (JESD22-A113)	Reflow (JSTD20)	Note
Level 1	85°C/85% RH 168hrs	• PKG Thickness ? 2.5mm and ? 350mm3 ? 245 +0/-5°C • PKG Thickness < 2.5mm and PKG VOL < 350mm3 ? 250°C +0/-5°C	JEDEC Level 1~6
Level 2	85°C/60% RH 168hrs		
Level 2a	30°C/60% RH 696hrs		
Level 3	30°C/60% RH 192hrs		

2. EIAJ IR Condition

- Temperature profile of infrared convection and convection reflow soldering (Condition 1-A)
- Temperature profile of infrared convection and convection reflow soldering (Condition 1-B)



Examples of Component & Board Level Reliability

Package Type	Test Vehicle	Component Level Reliability	Board Level Reliability
Lead frame Package	54TSOP/ 54sTSOP	1. Component Level Reliability • Pre-con. :Pass • TC 1000cycles :Pass • PCT 240hrs :Pass • HTS 100hrs :Pass Level III(IR peak temp. 260°C) (-65 ~ 150°C) (121°C/2atm/100%RH) (150°C)	2. Board Level Reliability • T/C 1000cycles :Pass • THB 504hrs :Pass (0~125°C) (85°C, 85%, 5.0V)
CSP(Chip Scale Package)	54WBGA	1. Component Level Reliability • Pre-con. :Pass • TC 1000cycles :Pass • PCT 240hrs :Pass (Level III : IR peak Temp. 260°C) (-55°C ~ +125°C) (121°C, 2 atm, 100%RH)	2. Board Level Reliability • TC 1000cycles : Pass (-25 ~ +125°C)
Ball type Package	90FBGA	1. Component Level Reliability • Pre-con. :Pass • TC 1000cycles :Pass • PCT 240hrs :Pass (Level III : IR peak Temp. 260°C) (-55°C ~ +125°C) (121°C, 2 atm, 100%RH)	2. Board Level Reliability • TC 1000cycles : Pass (-25 ~ +125°C)