

LOT ASSURANCE INSPECTION

LOT ASSURANCE INSPECTION is executed to verify the quality every wafer process fabrication lot. It is the key to the assured delivery initial reliability.

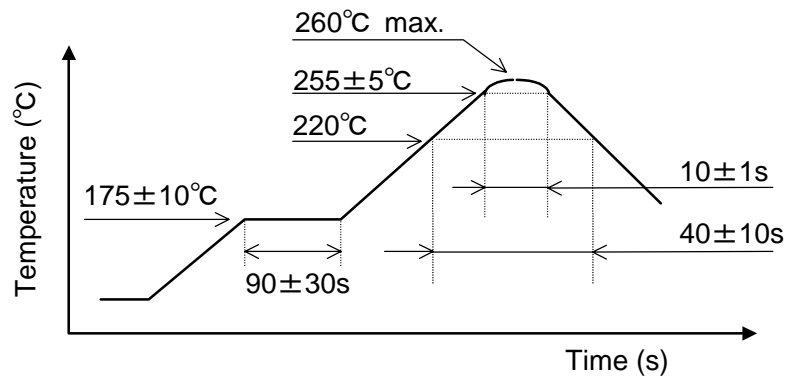
(for Real-Time Clock ICs)

TEST ITEMS	TEST CONDITION	Sample	LTPD
High Temperature Operating Test	Ta=125°C 48h	22	10%
Heat Treatment	IR Reflow (SMD Package)	22	10%
USPCT	Heating Profile (Fig-1) Twice Ta=125°C RH=85% 20h		

< Inspection Period >

Basically, LOT ASSURANCE INSPECTION is implemented in each shipping lot. After the quality level is stabilized, the inspection will shift to the periodical monitoring.

Fig-1 HEATING TREATMENT CONDITION OF INFRARED-RAY REFLOW



QUALITY ASSURANCE TEST INSPECTION

QUALITY ASSURANCE TEST INSPECTION is a sampling type inspection for finally verifying the delivery initial quality (electrical, visual) of a product to delivered.

(For Real-Time Clock ICs)

DIVISION	TEST ITEMS	CRITERIA	LEVEL *2)
Electrical	Heavy Defect	QAT Specification	*1) AQL 0.065%
	Light Defect		AQL 0.15%
Appearance	Heavy Defect	Visual Inspection Criteria	AQL 0.25%
	Light Defect		AQL 0.65%

*1) Catastrophic Failures (short, open or functionally inoperative) AQL 0.065%

*2) AQL : ANSI/ASQC Z1.4-1993

Sampling Plans : Table -C-Single sampling plans for reduced inspection

PERIODICAL RELIABILITY MONITORING

PERIODICAL RELIABILITY MONITORING is executed to verify that the long-term reliability is retained at the same level after the product is authorized and to verify the stabilized quality and reliability of a wafer process or assembly process.

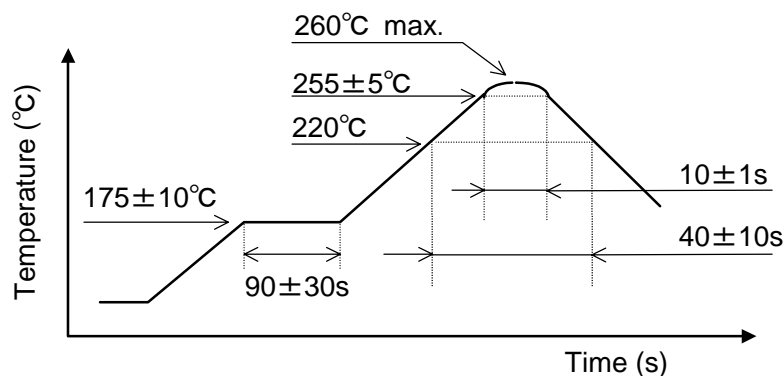
A period of time is specified for each type of circuit function or process technique to execute life and environmental tests. Information and data gained are feed back to the fabrication process and stored to retain or improve the reliability.

(For RTC)

No.	TEST ITEMS	TEST CONDITION	Sample SIZE	Sample	PERIOD
1	High Temperature Operating Life	Ta=125°C DC 1000h	22	At least 1item / process /package	Every 6month
2	High Temperature Storage	Ta=125°C 1000h	22		
3	Temperature Cycle	Ta=-55~125°C 100cycles	22		
4	USPCT	Ta=125°C RH=85% 100h	22		

Pre-condition : 【SMD】 85 85%RH 168h + IR Reflow (Fig-1) Twice
 【DIP】 85 85%RH 168h + Solder Dipping (260 10s) Once

Fig-1 HEATING TREATMENT CONDITION OF INFRARED-RAY REFLOW



RELIABILITY TEST REQUIREMENTS

(For SOP, SSOP Package)

No.	TEST ITEMS	TEST CONDITIONS	DURATION	SAMPLE SIZE	ACCEPT/REJECT	
1	High Temp. Operating Test	Ta=125°C DC=V _{DD} (Max.)	1000h	32	0/1	
2	High Temp. Storage Test	Ta=125°C	1000h	22	0/1	
3	Low Temp. Storage Test	Ta=-55°C	1000h	22	0/1	
4	Temp. & Humidity Bias Test	Ta=85°C RH=85% DC=V _{DD} (Max.)	1000h	22	0/1	
5	Temp. & Humidity Storage Test	Ta=85°C RH=85%	1000h	22	0/1	
6	Temp. Cycling Test (aire)	Ta=-55 to 125°C (30-5-30min)	100cycles	11	0/1	
7	Thermal Shock Test (Liquid)	Ta=-55 to 125°C (5min-10s-5min)	100cycles	11	0/1	
8	USPCBT	Ta=125°C RH=85% 2×10 ⁵ Pa DC=V _{DD} (Max.)	100h	11	0/1	
9	USPCT	Ta=125°C RH=85% 2×10 ⁵ Pa	100h	11	0/1	
10	Resistance to soldering heat	Ta=85°C RH=65% t=168h	IR Reflow (see Fig-1)	twice	11	0/1
			Ta=350°C (only terminal)	3s	11	0/1
11	Solderability	Ta=235°C (4h aging in steam)	5s	11	0/1	
12	ESD Sensitivity : MM	C=200pF R=0Ω ±150V (Min.)	5times	11	0/1	
	ESD Sensitivity : HBM	C=100pF R=1.5kΩ ± 1kV (Min.)	3times	11	0/1	
13	Latch Up	Pulse Current Injecting Method V _{DD} (Max.) ±100mA	once	11	0/1	

[Pre-condition]

Test No.4 to 9 shall be performed this pre-condition before testing.

- Ta=85°C RH=65% Storage 168h



- IR Reflow soldering heat stress (twice)

Fig-1 HEATING TREATMENT CONDITION OF INFRARED-RAY REFLOW

