

# Reliability Test Requirements

No	Test item	Test conditions	Pre-condition *1	Duration	Sample size	LTPD
1	High temperature operating Life test	Ta=125C VCC=VCCMAX Dynamic	A	1000h	32pcs	7%
2	Temperature and humidity bias test	Ta=85C/85%RH VCC=VCCMAX DC-Bias	B	1000h	22pcs	10%
3	Temperature cycling test(air)	Ta=-55~+125C(30min-5min-30min)	B	100 cycles	22pcs	10%
4	Unbiased HAST	Ta=120C/85%RH/1.7 × 10E5Pa	B	96h	22pcs	10%
5	ESD sensitivity : CDM	±1kV	Non	one time	3pcs	-
6	ESD sensitivity : HBM	C=100pF/ R=1.5kΩ/ ±2kV	Non	one time	3pcs	-
7	Latch up	±100mA/ VCCMAX	Non	one time	3pcs	-

HAST(Highly Accelerated temperature and humidity Stress Test)

ESD(Electro Static Discharge)

CDM(Charged Device Model)

HBM(Human Body Model)

\*1: Pre-condition

A: Bake(125C/24h) → Reflow(IR/Max260C / 3times)

B: Bake(125C/24h) → Moisture soak(30C/60%RH/192h) → Reflow(IR/Max260C / 3times)

## Lot Assurance Inspection (Short Term Reliability)

Lot assurance inspection is executed to verify the quality every wafer process fabrication lot.  
It is the key to the assured delivery initial reliability.

No	Test item	Test conditions	Pre-condition * 1	Duration	Sample size	LTPD
1	High temperature operating Life test	Ta=125C VCC=VCCMAX Dynamic	A	40h	22pcs	10%
2	Unbiased HAST	Ta=120C/85%RH/1.7 × 10E5Pa	A	40h	11pcs	20%

HAST(Highly Accelerated temperature and humidity Stress Test)

\*1: Pre-condition

A: Bake(125C/24h) → Reflow(IR/Max260C / 3times)

< Inspection period >

After the quality level is stabilized, the inspection will shift to the periodical monitoring.

# Periodic Reliability Monitoring

Periodic 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.

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.

Reliability samples are selected by every type of process and every six months.

No	Test item	Test conditions	Pre-condition * 1	Duration	Sample size	LTPD
1	High temperature operating Life test	Ta=125C VCC=VCCMAX Dynamic	A	1000h	22pcs	10%

\*1: Pre-condition

A: Bake(125C/24h) → Reflow(IR/Max260C / 3times)

# Outgoing Inspection

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Outgoing inspection is a sampling type inspection for finally verifying the delivery initial quality (electrical , visual) of a product to be delivered. And after the quality level is stabilized , the inspection will shift to the data check.

No	item	criteria	AQL *1
1	Electrical	specification	0.15%
2	Visual	Internal visual inspection criteria	0.15%

\*1) AQL : ANSI/ASQC Z1.4-1993

sampling condition : inspection level II ,  
standard,  
single sampling