

Reliability Test Report

Product Information

Product Type	650V Cascode GaN (TOLL_MOS)
Package Voltage	650V
Report Date	2026/04/27

Product List

No	Part-number	Package Type
1	GR-65J100MS	TOLL_MOS
2	GR-65J075MS	TOLL_MOS

Reliability Test Report Content

1. Reliability test purpose
2. Reliability test item
3. Reliability test result
4. Supporting data
5. Conclusion

1. Reliability Test Purpose

- ☒ Reliability monitoring test
- ☐ Others_____

2. Reliability Test Item

I. Biased Reliability Test:

- ☒ High temperature gate bias (HTGB)
- ☒ High temperature reverse bias (HTRB)
- ☐ Intermittent Operating Life (IOL)
- ☒ Electrostatic Discharge Test (ESD)

II. Non-Biased Reliability Test :

- ☒ Precondition + MSL3
- ☒ High temperature storage test (HTS)
- ☐ Low temperature storage test (LTS)
- ☒ Unbiased Highly Accelerated Stress Test (UHAST)
- ☒ Temperature cycling test (TCT)
- ☒ Thermal Shock Test (TST)
- ☒ Pressure cooking test (PCT)
- ☐ Wire Bond Integrity (WBI)

3. Test result

GR-65J100MS/GR-65J075MS						
No	Test item	Standard	Package Type	Sample Q'ty	Fail Q'ty	Result
1	HTGB	JESD22-A108	TOLL_MOS	77	0	PASS
2	HTRB	JESD22-A108	TOLL_MOS	77	0	PASS
3	MSL3	J-STD-020	TOLL_MOS	77	0	PASS
4	HTS	JESD22-A103C	TOLL_MOS	77	0	PASS
5	UHASt	JESD22-A104	TOLL_MOS	77	0	PASS
6	TCT	JESD22-A102	TOLL_MOS	77	0	PASS
7	PCT	JESD22-A119	TOLL_MOS	77	0	PASS

ESD (HBM)								
Part-number	Standard	Pass Level	G(+)-S (V)	G(-)-S (V)	G(+)-D (V)	G(-)-D (V)	D(+)-S (V)	D(-)-S (V)
GR-65J100MS	JEDEC JS-001	Class-1C	+1250	-1900	+1250	-1500	+8000	-8000
GR-65J075MS	JEDEC JS-001	Class-1C	+1200	-2050	+1250	-1550	+8000	-8000

4. Supporting Data

I. Device level:

Item	Name	Conditions	Sample Q'ty	Duration	Result
HTGB	High Temperature Gate Bias	Tj=150°C, Vgs=100%	<u>77</u> EA	☐ 168hrs ☐ 500hrs ☒ 1000hrs	☒ Pass ☐ Fail
HTRB	High Temperature Reverse Bias	Tj=150 °C, Vds=80%	<u>77</u> EA	☐ 168hrs ☐ 500hrs ☒ 1000hrs	☒ Pass ☐ Fail

II. Package level:

Item	Name	Conditions	Sample Q'ty	Duration	Result
UHASt	Unbiased Highly Accelerated Stress Test	Tj=130°C, RH=85%, T=96HR	<u>77</u> EA	■ 96hrs	■ Pass □ Fail
HTS	High Temperature Storage	Ta=150°C, T=1000HR	<u>77</u> EA	□ 168hrs □ 500hrs ■ 1000hrs	■ Pass □ Fail
TCT	Temperature Cycling Test	Ta=-40°C → 125°C, Δ5~15°C/min, 1000cycles	<u>77</u> EA	□ 100cycles ■ 1000cycles	■ Pass □ Fail
PCT	Pressure Cooker Test	Ta=121°C, RH=100%, 2atm,168HR	<u>77</u> EA	■ 168hrs	■ Pass □ Fail

5. Criteria

Item Data shift (%)	Ron1	Vth1	Igss	Idss	BVdss
Criteria	≤ 20%	≤20%	≤20%	Within 20 times of the standard value	≤ 20%

6. Conclusion

Biased Reliability Test				
Item Data shift (%)	Ron1 (%)	Vth1(%)	Igss(%)	Idss (%)
HTGB	< 10%	< 10%	< 10%	< 10%
HTRB	< 20%	< 20%	< 20%	< 20%

Non-Biased Reliability Test

Item Data shift (%)	Ron1 (%)	Vth1(%)	Igss(%)	Idss (%)
MSL3	< 5%	< 5%	< 5%	< 5%
HTS	< 10%	< 10%	< 5%	< 10%
UHAST	< 10%	< 10%	< 20%	< 18 times
TCT	< 10%	< 10%	< 10%	< 20%
PCT	< 10%	< 15%	< 20%	< 18 times