Report No. APR-22-H0172-B
Date: July 1, 2026

RELIABILITY REPORT

SERIES: UPC451GR(20)

DEVICE: UPC451GR(20)-9LG-E1-A
UPC451GR(20)-9LG-E2-A
UPC451GR(21)-9LG-E1-A
UPC451GR(25)-9LG-E1-A
UPC451GR(25)-9LG-E2-A
UPC451GR(28)-9LG-E1-A
UPC451GR(30)-9LG-E2-A
UPC451GR(63)-9LG-E1-A
UPC451GR(63)-9LG-E2-A
UPC451GR(20)-9LG-E1-AT
UPC451GR(20)-9LG-E2-AT
UPC451GR(21)-9LG-E1-AT
UPC451GR(25)-9LG-E1-AT
UPC451GR(25)-9LG-E2-AT
UPC451GR(28)-9LG-E1-AT
UPC451GR(30)-9LG-E2-AT
UPC451GR(63)-9LG-E1-AT
UPC451GR(63)-9LG-E2-AT

QUALITY GRADE: High Quality

For both products assembled by Renesas Semiconductor (Kedah) Sdn. Bhd. and Greatek Electronics Inc.

Quality Assurance Div.
Renesas Electronics Corporation

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Table. Reliability test results

Test Items	Reference	Test Conditions	Number of Lots	Number of Samples	Results Failure/Size	Comments
High Temperature Operating Life (HTOL)	JESD22-A108, JESD85	Ta=125C, 1000 hrs	3	77	0/231	
Early Life Failure Rate (ELFR)	JESD22-A108, JESD74	Ta=125C, 48 hrs	3	800	0/2400	
High Temperature Storage Life (HTSL)	JESD22-A103	Ta=150C, 1000 hrs	3	45	0/135	
Latch-Up (LU)	JESD78	Pulse Current Injection, I=+/-150 mA	1	3	0/3	
Human Body Model ESD (ESD-HBM)	JS-001	1.5 kΩ, 100 pF, +/-1000 V, 1 time	1	3	0/3	
Charged Device Model ESD (ESD-CDM)	JS-002	+/-500V, 1time	1	3	0/3	Class: C2
Temperature Humidity bias (THB)	JESD22-A101	Ta=85C, RH=85 %, 1000 hrs	3	77	0/231	*1
Temperature Cycling (TC)	JESD22-A104	Ta=-65C to 150C , 500 cycles	3	77	0/231	*1
Temperature Humidity Storage (THS)	JESD22-A101	Ta=85C, RH=85 %, 1000 hrs	3	77	0/231	*1
Solderability (SD)	J-STD-002	245C, 5s, Solder coverage ≥95 %	1	15	0/15	
Resistance to Soldering Heat (PC)	JESD22-A113, J-STD-020	MSL1 (Moisture Sensitivity Level 1)	3	77	0/231	
Estimated Failure Rate	–	Estimated failure rate: 15FIT Ta= 55C, Ea= 0.7eV, C.L.= 60%				

*1 With preconditioning per JESD22-A113, MSL 1

・It is tested to confirm that all the samples are satisfied with an individual product specification.

Note :

Basically qualification tests were performed using a representative product with the same wafer process and the same package structure .

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