

Wuxi CMC electronics Co., Ltd



Vision: Become a leader in the domestic IC testing industry

Mission: Scientific and technological innovation, integration and development,
pursuit of excellence

Values: Integrity, Quality, Endeavour and Win win

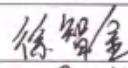
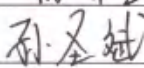
AEC Q100 CERTIFICATION REPORT

QR-RE-09-02-B

Device Name	:	<u>FM33HT0X10A</u>
Sample Model	:	<u>FM33HT0510A</u>
Batch Number	:	<u>C7B38J0G /C7B38J1G/C7B38J2G</u>
Entrusting party	:	<u>Shanghai Fudan Microelectronics Group Co.,Ltd</u>
Certification Grade	:	<u>Grade 1: -40℃~125℃</u>
Humidity Sensitivity Level	:	<u>MSL=3</u>

DECLARATION

The test(s) shown in the report were conducted according to the confirmed procedures. We take full responsibility for the accuracy and completeness of these tests, and provide qualification certification of all testing personnel.

Post	Name	Signature	Date
Testing Engineer	<u>Zhijin Xu</u>		<u>2025/03/03</u>
Inspection Engineer	<u>Shengbin Sun</u>		<u>2025/03/03</u>

Wuxi CMC Electronics CO.,Ltd



NOTES

1. The report is invalid without company seal or report seal.
2. The report is invalid without signatures of testing person、 auditors and approver.
3. The report is invalid with any scrawl.
4. Partial copy of the report is unallowed without approving.
5. If test devices come from customers' samples, our company only be responsible of the samples, the results only could explain the quality of samples.
6. If you have any objection to the test results, please appeal to our company within one month from the date of receipt of the report, and attach the original report, otherwise it will not be accepted.

ADDR: No.5 Huihe Road,Binhu District,Wuxi,Jiangsu Province,CN

ZIP CODE: 214035

TEL: +86510-85866683

FAX: +86510-85819710

E-Mail: service@cmctest.com

Catalogue

1. Test Report.....	4
2. Reliability test summary	5
2.1 Sample Information	5
2.2 Description of Product	5
2.3 Test Flow	6
2.4 Test Result Summary	7
3. Test Equipment	11
4. Process photos.....	13
5. Test data.....	16
6. Appendix.....	16

1. Test Report

Entrusting party	Shanghai Fudan Microelectronics Group Co.,Ltd	Device Name	FM33HT0X10A
Sample Model	FM33HT0510A	Sample Batch Number	C7B38J0G/C7B38J1G/C7B38J2G
Package Type	LQFP100	Quantity	306/286/286
Sample Source	Customer sample delivery	Test Category	AEC Q100 Reliability Test
Test Start Date	2024/11/20	Test End Date	2025/02/26
Inspection Standard	AEC Q100-Rev-J-2023 AEC Q006-Rev-A-2016 JEDEC MIL-STD-883		
Results and Conclusions	The samples have tested and certified according to the requirements of the client and the standard AEC Q100-Rev-J-2023, and the test progress is normal. The certification result is : PASS.		
Comment	/		
Sign	Editor: 孙圣斌	Examiner: 李为记	Approver: 马锡春
	Date: 2025.3.3	Date: 2025.3.3	Date: 2025.3.3

2. Reliability test summary

2.1 Sample Information

Table 1: Sample Information

Lot#	Batch Number	Wafer Fabrication	Wafer Test facility	Assembly facility	Final Test facility
1	C7B38J0G	SAMSUNG	FMSH	JSCC	CMC
2	C7B38J1G				
3	C7B38J2G				

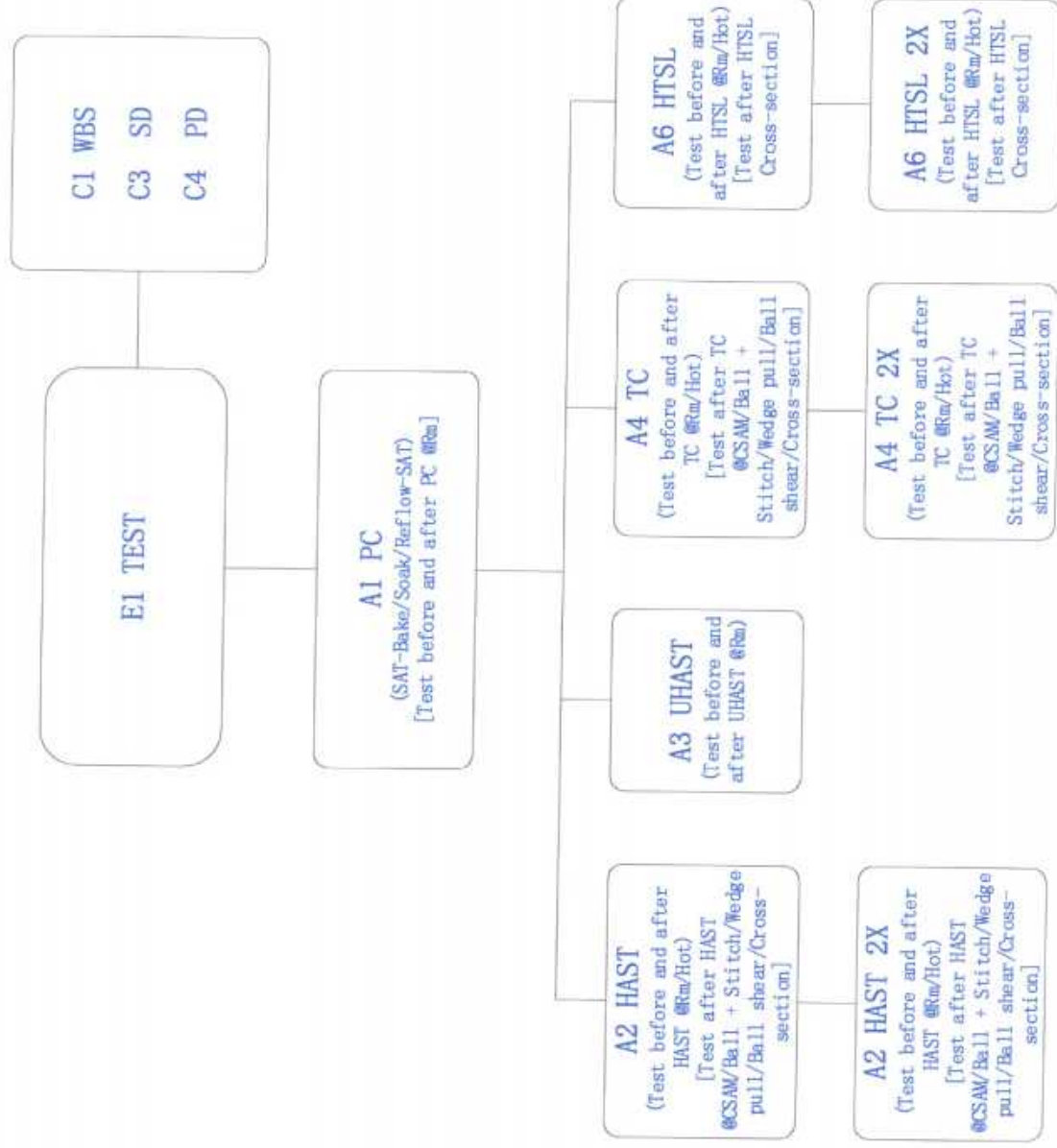
Item	Vendor	Material type
Lead Frame	AAMI	LQFP 100L C9-DEM
Molding Compound	Sumitomo	G700LALA
Wire	Nippon	AuPdCu/0.8mil/EX1F20μm
Epoxy/DAF	Resonac	EN-4900GC-CJ
Wafer process	Samsung	Silicon

2.2 Description of Product

Table 2: Description of Product

Product Model	Package Type	Operating temperature range	Moisture sensitivity Level	Automotive Temperature Grade
FM33HT0510A	LQFP100	-40℃~125℃	MSL=3	Grade 1

2.3 Test Flow



2.4 Test Result Summary

Table 3: Test Result Summary

TEST GROUP A ACCELERATED ENVIRONMENT STRESS TESTS									
Group	Test Description	ABV	Test Method	Test Condition	#Lots	Total # Units	Result	Conclusion	Remark
A1	Pre-conditioning	PC	JESD22-A113 JEDEC J-STD-020	SAT-Bake/Soak/Reflow-SAT	3	3*231	0/693	Pass	/
	Biased HAST	HAST	JESD22-A110	Ta=130°C,85%RH, Vd= 5.5V,96hrs	3	3*77	0/231	Pass	/
	CSAM	/	AEC-Q006	Test to spec	3	3*22	0/66	Pass	/
A2	Ball + Stitch/Wedge pull	/	AEC-Q006	Wire AuPdCu 20µm	3	3*3	0/9	Pass	/
	Ball shear	/	AEC-Q006	Bond 2.0mil	3	3*3	0/9	Pass	/
	Cross-section	/	AEC-Q006	Test to spec	3	3*1	0/3	Pass	/
	Biased HAST Stress 2X	HAST	JESD22-A110	Ta=130°C,85%RH, Vd= 5.5V,96hrs	3	3*70	0/210	Pass	/
	CSAM	/	AEC-Q006	Test to spec	3	3*22	0/66	Pass	/
	Ball + Stitch/Wedge pull	/	AEC-Q006	Wire AuPdCu 20µm	3	3*3	0/9	Pass	/
	Ball shear	/	AEC-Q006	Bond 2.0mil	3	3*3	0/9	Pass	/
	Cross-section	/	AEC-Q006	Test to spec	3	3*1	0/3	Pass	/

TEST GROUP A ACCELERATED ENVIRONMENT STRESS TESTS									
Group	Test Description	ABV	Test Method	Test Condition	#Lots	Total # Units	Result	Conclusion	Remark
A3	Unbiased HAST	UHAST	JESD22-A118	Ta=130°C, 85%RH, 96hrs	3	3*77	0/231	Pass	/
	Temperature Cycling	TC	JESD22-A104	Ta=-65°C to +150°C, 500 cycles	3	3*77	0/231	Pass	/
A4	CSAM	/	AEC-Q006	Test to spec	3	3*22	0/66	Pass	/
	Ball + Stitch/Wedge pull	/	AEC-Q006	Wire AuPdCu 20µm	3	3*3	0/9	Pass	/
	Ball shear	/	AEC-Q006	Bond 2.0mil	3	3*3	0/9	Pass	/
	Cross-section	/	AEC-Q006	Test to spec	3	3*1	0/3	Pass	/
	Temperature Cycling Stress 2X	TC	JESD22-A104	Ta=-65°C to +150°C, 500 cycles	3	3*70	0/210	Pass	/
	CSAM	/	AEC-Q006	Test to spec	3	3*22	0/66	Pass	/
	Ball + Stitch/Wedge pull	/	AEC-Q006	Wire AuPdCu 20µm	3	3*3	0/9	Pass	/
	Ball shear	/	AEC-Q006	Bond 2.0mil	3	3*3	0/9	Pass	/
	Cross-section	/	AEC-Q006	Test to spec	3	3*1	0/3	Pass	/

TEST GROUP A ACCELERATED ENVIRONMENT STRESS TESTS									
Group	Test Description	ABV	Test Method	Test Condition	#Lots	Total # Units	Result	Conclusion	Remark
A6	High Temperature Storage Life	HTSL	JESD22-A103	Ta=150℃, 1000hrs	3	3*45	0/135	Pass	/
	Cross-section	/	AEC-Q006	Test to spec	3	3*1	0/3	Pass	/
	High Temperature Storage Life Stress 2X	HTSL	JESD22-A103	Ta=150℃, 1000hrs	3	3*44	0/132	Pass	/
	Cross-section	/	AEC-Q006	Test to spec	3	3*1	0/3	Pass	/

TEST GROUP C-PACKAGE ASSEMBLY INTEGRITY TESTS

Group	Test Description	ABV	Test Method	Test Condition	#Lots	Total # Units	Result	Conclusion	Remark
C1	Wire Bond Shear	WBS	AEC-Q100-001	Bond 2.0mil	1	5	0/5	Pass	CPK: 11.06
C2	Wire Bond Pull	WBP	MIL-STD-883 Method 2011	Wire AuPdCu 20μm	1	5	0/5	Pass	CPK: 3.72
C3	Solderability	SD	JESD22-B102	8 hour water vapor aging prior to test Ta=245±5°C, Infiltration time 5 ± 0.5s	1	15	0/15	Pass	>95% Lead coverage
C4	Physical Dimensions	PD	JESD22-B100 JESD22-B108	Test to spec	3	3*10	0/30	Pass	CPK _(min) : 1.68

TEST GROUPE ELECTRICAL CHARACTERISTIC VERIFICATION TESTS

Group	Test Description	ABV	Test Method	Test Condition	#Lots	Total # Units	Result	Conclusion	Remark
E1	Pre and post stress electrical test	Test	Test program to supplier data sheet or user specification	Test to spec	3	All	0/all	Pass	/

3. Test Equipment







Table 4: Test Equipment Information

No.	Equipment Nr.	Equipment Name	Model Nr.	Effective period of measurement
1	JS24CM023	Ultrasonic microscope	UTSCAN 400	/
2	58566244680020	Temperature shock chamber	VT ³ 7012S2	2024.10.15 - 2025.10.14
3	2006770989	Strong acceleration humidity box	PC-422R8D	2024.08.19 - 2025.08.18
4	2006770978	Strong acceleration humidity box	PC-422R8D	2024.07.29 - 2025.07.28
5	8112180015	High and low temperature humid heat test chamber	SETH-A-100L	2024.07.22 - 2025.07.21
6	7824	Reflow soldering machine	TNV25-308EN-P	2024.09.23 - 2025.09.22
7	21102342	High temperature test chamber	PH201	2024.10.15 - 2025.10.14
8	0030-003157	High temperature test chamber	GPV-H21	2024.08.26 - 2025.08.25
9	1040210024	Small high temperature test chamber	STH-120	2024.10.15 - 2025.10.14
10	1040210030	Small high temperature test chamber	STH-120	2024.08.26 - 2025.08.25
11	800543010737110049	DC power supply	IT6952A	2024.09.23 - 2025.09.22
12	800543010737110072	DC power supply	IT6952A	2024.09.23 - 2025.09.22
13	800543013757310042	DC power supply	IT6952A	2024.09.23 - 2025.09.22
14	EC30SM-221117	Grinder	EcoMet 30	/
15	199	Ion polisher	Fischione/1061	/
16	8602-04	Electron microscope	SU8600	2024.11.01 - 2025.10.31

No.	Equipment Nr.	Equipment Name	Model Nr.	Effective period of measurement
17	745499001	Tensile shear force tester	DAGE-4000	2024.07.29 - 2025.07.28
18	MT50000000008	High precision three-dimensional measurement and analysis system	MT-500	2024.05.13 - 2025.05.12
19	XL20240911	Weldability testing machine	JF-108B	2024.11.04 - 2025.11.03

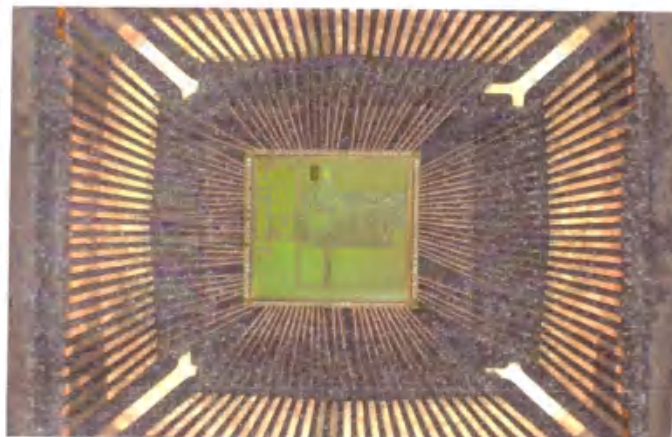
4. Test process photos

Table 5: Test process photos

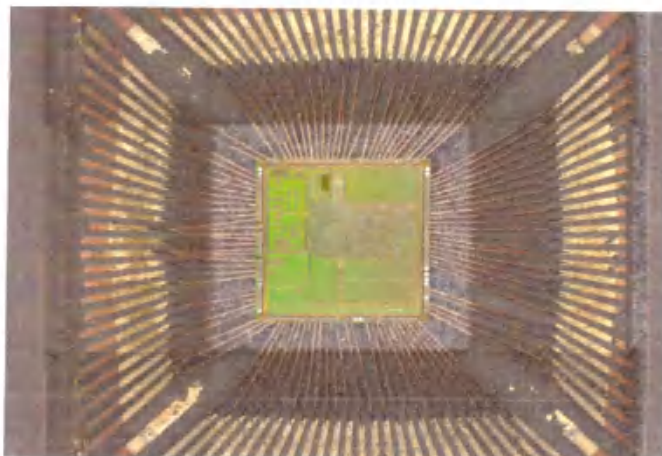
SAT	
C7B38J0G_SAT before PC	C7B38J0G_SAT after PC
	
C7B38J1G_SAT before PC	C7B38J1G_SAT after PC
	
C7B38J2G_SAT before PC	C7B38J2G_SAT after PC
	

Decap

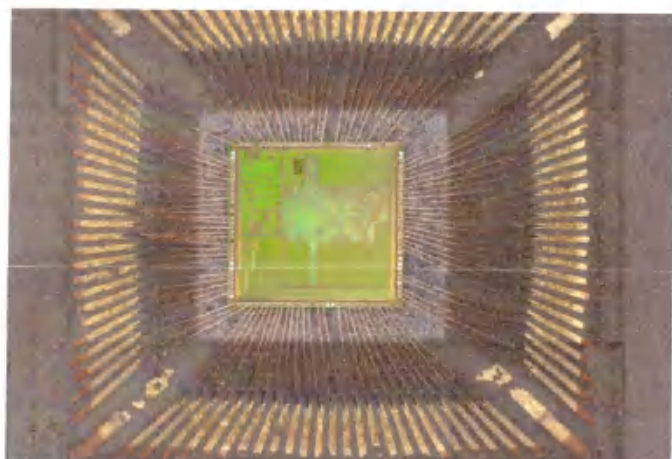
Graph 1



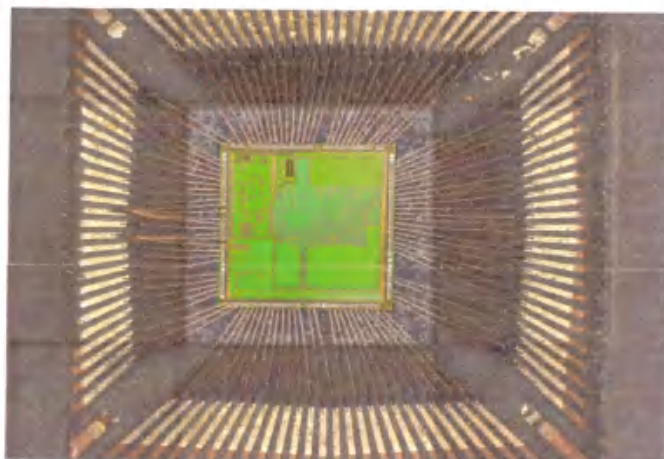
Graph 2



Graph 3



Graph 4



Solderability

Graph 1



Graph 2



Graph 3



Graph 4



Graph 5



Graph 6



5. Test raw data

See the CD for the electrical performance test data.

6. Appendix

Appendix1: Wire Bond Pull Data

Appendix2: Wire Bond Shear Data

Appendix3: Physical Dimensions Data

Appendix1: Wire Bond Pull Strength Data

Sample Model	Sample Batch Number		Wire type		Wire diameter	
FM33HT0510A	C7B38J0G		AuPdCu		20μm	
Wire Bond Pull Data (SPEC: ≥1.5g)						
Sample#	1#					
Wire#	Wire1	Wire2	Wire3	Wire4	Wire5	Wire6
Data	5.298	5.392	5.244	4.534	5.564	5.666
Result:	Pass	Pass	Pass	Pass	Pass	Pass
Sample#	2#					
Wire#	Wire1	Wire2	Wire3	Wire4	Wire5	Wire6
Data	4.570	5.030	5.654	5.118	4.844	5.004
Result:	Pass	Pass	Pass	Pass	Pass	Pass
Sample#	3#					
Wire#	Wire1	Wire2	Wire3	Wire4	Wire5	Wire6
Data	5.222	5.332	5.550	5.176	5.040	4.998
Result:	Pass	Pass	Pass	Pass	Pass	Pass
Sample#	4#					
Wire#	Wire1	Wire2	Wire3	Wire4	Wire5	Wire6
Data	5.482	5.022	5.378	4.896	5.318	5.350
Result:	Pass	Pass	Pass	Pass	Pass	Pass
Sample#	5#					
Wire#	Wire1	Wire2	Wire3	Wire4	Wire5	Wire6
Data	4.906	4.902	5.312	4.490	5.278	5.784
Result:	Pass	Pass	Pass	Pass	Pass	Pass

Appendix2: Wire Bond Shear Data

Sample Model		Sample Batch Number			Bond diameter	
FM33HT0510A		C7B38J0G			2.0mil	
Wire Bond Shear Data (SPEC: ≥5.7 g)						
Sample#	1#					
Bond #	Bond 1	Bond 2	Bond 3	Bond 4	Bond 5	Bond 6
Data	26.575	27.038	27.309	26.456	25.371	27.332
Result:	Pass	Pass	Pass	Pass	Pass	Pass
Sample#	2#					
Bond #	Bond 1	Bond 2	Bond 3	Bond 4	Bond 5	Bond 6
Data	27.077	26.146	26.676	26.631	25.504	26.436
Result:	Pass	Pass	Pass	Pass	Pass	Pass
Sample#	3#					
Bond #	Bond 1	Bond 2	Bond 3	Bond 4	Bond 5	Bond 6
Data	27.175	26.654	27.116	26.879	27.164	27.021
Result:	Pass	Pass	Pass	Pass	Pass	Pass
Sample#	4#					
Bond #	Bond 1	Bond 2	Bond 3	Bond 4	Bond 5	Bond 6
Data	27.227	27.124	26.117	26.398	25.907	27.730
Result:	Pass	Pass	Pass	Pass	Pass	Pass
Sample#	5#					
Bond #	Bond 1	Bond 2	Bond 3	Bond 4	Bond 5	Bond 6
Data	26.489	26.089	25.623	25.588	25.823	26.002
Result:	Pass	Pass	Pass	Pass	Pass	Pass

Appendix3: Physical Dimensions Data

Sample Model		FM33HT0510A		Samples Count		30 (10/lot)		Package Type			LQFP100		
Symbol	Sample ID	1#	2#	3#	4#	5#	6#	7#	8#	9#	10#	CPK	
A	C7B38J0G	1.5085	1.4993	1.5041	1.5009	1.5116	1.5081	1.5009	1.5001	1.5099	1.5027	4.91	
	C7B38J1G	1.5030	1.5050	1.5063	1.4962	1.5045	1.5082	1.5020	1.5068	1.5081	1.5019		
	C7B38J2G	1.5281	1.5097	1.5053	1.5148	1.5076	1.5081	1.5147	1.5094	1.5151	1.5152		
A1	C7B38J0G	0.1145	0.1028	0.0998	0.1034	0.1160	0.1150	0.1028	0.1079	0.1144	0.1104	1.93	
	C7B38J1G	0.1105	0.1069	0.1126	0.1032	0.1104	0.1164	0.1117	0.1130	0.1139	0.1048		
	C7B38J2G	0.1316	0.1195	0.1055	0.1181	0.1132	0.1104	0.1169	0.1129	0.1204	0.1152		
A2	C7B38J0G	1.3940	1.3965	1.4043	1.3975	1.3956	1.3931	1.3981	1.3922	1.3955	1.3923	4.91	
	C7B38J1G	1.3925	1.3981	1.3937	1.3930	1.3941	1.3918	1.3903	1.3938	1.3942	1.3971		
	C7B38J2G	1.3965	1.3902	1.3998	1.3967	1.3944	1.3977	1.3978	1.3965	1.3947	1.4000		
D	C7B38J0G	15.9888	15.9819	16.0074	16.0116	16.0167	15.9969	15.9882	16.0167	15.9884	16.0138	5.94	
	C7B38J1G	15.9910	16.0015	16.0129	16.0010	16.0038	15.9963	16.0114	16.0100	15.9951	15.9878		
	C7B38J2G	16.0168	15.9904	16.0102	16.0132	16.0036	15.9913	16.0171	15.9954	16.0162	16.0111		
D1	C7B38J0G	13.9861	13.9774	13.9710	13.9770	13.9700	13.9692	13.9750	13.9723	13.9784	13.9722	4.67	
	C7B38J1G	13.9692	13.9690	13.9698	13.9613	13.9773	13.9796	13.9643	13.9742	13.9796	13.9781		
	C7B38J2G	13.9741	13.9691	13.9676	13.9742	13.9685	13.9675	13.9760	13.9769	13.9747	13.9764		
E	C7B38J0G	15.9960	16.0076	15.9914	15.9831	15.9865	16.0082	16.0001	15.9904	16.0016	16.0072	7.08	
	C7B38J1G	16.0071	16.0136	15.9994	15.9800	16.0136	16.0033	15.9916	15.9906	16.0001	15.9969		
	C7B38J2G	15.9985	16.0089	16.0085	16.0053	16.0079	16.0091	16.0023	15.9967	15.9872	15.9847		
E1	C7B38J0G	13.9758	13.9723	13.9666	13.9741	13.9793	13.9837	13.9751	13.9698	13.9804	13.9764	4.65	
	C7B38J1G	13.9718	13.9715	13.9740	13.9705	13.9820	13.9847	13.9691	13.9800	13.9656	13.9871		
	C7B38J2G	13.9742	13.9695	13.9735	13.9769	13.9673	13.9746	13.9738	13.9718	13.9769	13.9721		
L	C7B38J0G	0.5867	0.5798	0.6005	0.5936	0.5982	0.5844	0.5821	0.6051	0.5729	0.5936	3.97	
	C7B38J1G	0.6051	0.5982	0.6051	0.5982	0.6166	0.5959	0.6005	0.5982	0.6074	0.6097		
	C7B38J2G	0.6143	0.6028	0.5913	0.6258	0.5913	0.5798	0.6235	0.5959	0.5982	0.6074		

L1	C7B38J0G	0.9962	0.9663	1.0123	1.0146	1.0100	1.0031	0.9847	1.0031	0.9962	1.0146	/
	C7B38J1G	1.0192	1.0123	1.0284	0.9847	1.0284	0.9962	1.0054	1.0192	1.0284	1.0353	
	C7B38J2G	1.0261	1.0238	1.0100	1.0284	1.0146	0.9801	1.0307	1.0238	1.0192	1.0146	
T	C7B38J0G	0.1501	0.1524	0.1593	0.1576	0.1561	0.1522	0.1515	0.1576	0.1588	0.1531	4.61
	C7B38J1G	0.1574	0.1533	0.1502	0.1535	0.1563	0.1566	0.1597	0.1554	0.1536	0.1540	
	C7B38J2G	0.1512	0.1503	0.1570	0.1520	0.1566	0.1531	0.1538	0.1577	0.1495	0.1462	
b	C7B38J0G	0.2047	0.2093	0.2139	0.2139	0.2070	0.2093	0.2047	0.2185	0.2093	0.2162	1.68
	C7B38J1G	0.2185	0.2254	0.2162	0.2116	0.2162	0.2116	0.2162	0.2162	0.2139	0.2070	
	C7B38J2G	0.2047	0.2070	0.2024	0.2116	0.2047	0.2001	0.1932	0.2116	0.1932	0.1932	
e	C7B38J0G	0.5015	0.4992	0.5015	0.5015	0.4992	0.4992	0.4992	0.5018	0.4992	0.4969	/
	C7B38J1G	0.4969	0.5038	0.4992	0.5015	0.4969	0.4949	0.5015	0.5038	0.4969	0.4969	
	C7B38J2G	0.4969	0.5038	0.4992	0.4992	0.4969	0.4969	0.5015	0.4992	0.5015	0.5015	
H	C7B38J0G	11.9904	11.9895	11.9960	12.0054	11.9996	11.9967	11.9925	12.0048	11.9898	11.9978	/
	C7B38J1G	12.0030	12.0029	12.0057	11.9982	11.9991	12.0064	11.9951	11.9998	12.0032	11.9991	
	C7B38J2G	11.9869	11.9893	12.0054	11.9935	12.0001	11.9946	11.9984	11.9822	12.0024	11.9956	

END