AM62A74AUMSIAMBRQ1

Quality, reliability & packaging data download

Status: ACTIVE

Report date: 12/17/2024

Assembly site: **Ext-Mfg**

RoHS	Yes
REACH	Yes
Device marking	AM62A74A, 498, UMSIAMBQ1
Lead finish/Ball material	—
MSL rating/Peak reflow	Level-3-250C-168 HR
Rating	Automotive

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Material content

				Homogeneous Material Level		Component Level	
Component	**Substance**	**CAS Number**	**Amount (mg)**	**Percentage %**	**ppm**	**Percentage %**	**ppm**
Lid							
Copper and Its Alloys	Copper	7440-50-8	1358.61	98.450000	984500	53.357307	533573
Nickel and Its Alloys	Nickel	7440-02-0	21.39	1.550000	15500	0.840059	8401
Sub-total	—	—	1380.00	100	1000000	54.197366	541974
Lid Attach Adhesive							
Other Inorganic Materials	Aluminum Oxide	1344-28-1	23.229531	100.000000	1000000	0.912304	9123
Sub-total	—	—	23.229531	100	1000000	0.912304	9123
Semiconductor Device							
Ceramics / Glass	Doped Silicon	7440-21-3	61.07467	100.000000	1000000	2.398613	23986
Sub-total	—	—	61.07467	100	1000000	2.398613	23986
Solder Ball							
Copper and Its Alloys	Copper	7440-50-8	1.174283	0.500000	5000	0.046118	461
Copper and Its Alloys	Iron	7439-89-6	0.020433	0.008700	87	0.000802	8
Nickel and Its Alloys	Nickel	7440-02-0	0.006106	0.002600	26	0.000240	2
Other Nonferrous Metals and Alloys	Antimony	7440-36-0	0.009159	0.003900	39	0.000360	4
Other Nonferrous Metals and Alloys	Bismuth	7440-69-9	0.004227	0.001800	18	0.000166	2
Other Nonferrous Metals and Alloys	Germanium	7440-56-4	0.014326	0.006100	61	0.000563	6
Other Nonferrous Metals and Alloys	Tin	7440-31-5	226.582446	96.476901	964769	8.898675	88987
Precious Metals	Silver	7440-22-4	7.0457	3.000000	30000	0.276709	2767
Sub-total	—	—	234.856680	100	1000000	9.223633	92236
Solder Bump							
Copper and Its Alloys	Copper	7440-50-8	1.414913	0.600000	6000	0.055569	556
Other Nonferrous Metals and Alloys	Tin	7440-31-5	225.206965	95.500000	955000	8.844655	88447
Precious Metals	Silver	7440-22-4	9.196934	3.900000	39000	0.361195	3612
Sub-total	—	—	235.818812	100	1000000	9.261419	92614
Substrate							
Ceramics / Glass	Random E-Glass	65997-17-3	144.655492	24.097200	240972	5.681121	56811
Copper and Its Alloys	Copper	7440-50-8	286.765111	47.770300	477703	11.262256	112623
Other Inorganic Materials	Inorganic Filler	—	3.418709	0.569500	5695	0.134265	1343
Other Inorganic Materials	Silica	7631-86-9	65.624196	10.931900	109319	2.577289	25773
Other Inorganic Materials	Silicon Dioxide	7631-86-9	23.348669	3.889500	38895	0.916983	9170
Other Nonferrous Metals and Alloys	Barium Sulfate	7727-43-7	5.080339	0.846300	8463	0.199522	1995
Other Nonferrous Metals and Alloys	Tin	7440-31-5	1.175988	0.195900	1959	0.046185	462
Other Plastics and Rubber	Other Filler	—	7.24442	1.206800	12068	0.284513	2845
Precious Metals	Silver	7440-22-4	0.036618	0.006100	61	0.001438	14
Thermoplastics	Epoxy	85954-11-6	62.95046	10.486500	104865	2.472282	24723
Sub-total	—	—	600.300002	100	1000000	23.575854	235759

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Underfill							
Other Inorganic Materials	Aluminum Nitride	24304-00-5	0.884635	8.064497	80645	0.034743	347
Other Inorganic Materials	Silica	7631-86-9	7.666858	69.892502	698925	0.301104	3011
Other Organic Materials	Carbon Black	1333-86-4	0.058972	0.537600	5376	0.002316	23
Thermoplastics	Epoxy	85954-11-6	2.359035	21.505401	215054	0.092647	926
Sub-total	—	—	10.969500	100	1000000	0.430810	4308
Total	—	—	2546.249195	—	—	100	1000000

MTBF/FIT estimates

MTBF / FIT		MTBF / FIT supporting data							
MTBF	FIT	Usage temp (°C)	Conf level (%)	Activation energy (eV)	Test temp (°C)	Test duration (hours)	Sample size	Fails	Additional comments
1.9784847×10^8	5.1	55	60	0.7	130	1000	1801	0	—

Qualification summary

Type	AEC Q100 test #	Test spec	Min lot qty	SS / lot	Test name	Condition	Result	Notes
Test group A - accelerated environment stress test								
THB/HAST	A2	JESD22-A101/JESD22-A110	3	77	Biased HAST	130C/85%RH 96 hours	Pass	Or equivalent Q100 condition
AC/UHAST	A3	JESD22-A102/JESD22-A118	3	77	Unbiased HAST	130C/85%RH for 96 hours	Pass	Or equivalent Q100 condition
TC	A4	JESD22-A104	3	77	Temperature cycle	Per grade requirements. See data sheet.	Pass	—
TC-WBP	A4	MIL-STD883 method 2011	1	30	Post temp cycle bond pull	Per requirements	Pass	As applicable per die configuration
HTSL	A6	JESD22-A103	1	45	High temp storage bake	Per grade requirements. See data sheet.	Pass	—
Test group B - accelerated lifetime simulation test								
HTOL	B1	JESD22-A108	3	77	High temperature operating life	Per grade requirements. See data sheet.	Pass	—
ELFR	B2	AEC Q100-008	3	800	Early life failure rate	Per grade requirements. See data sheet.	Pass	—
Test group C - package assembly integrity tests								
WBS	C1	AEC Q100-001	1	30	Wire bond shear	Cpk > 1.67	Pass	As applicable per die configuration
WBP	C2	MIL-STD883 method 2011	1	30	Wire bond pull	Cpk > 1.67	Pass	As applicable per die configuration
SD	C3	JEDEC J-STD-002	1	15	Solderability	>95% lead coverage	Pass	—
PD	C4	JESD22-B100 and B108	3	10	Physical dimensions	Cpk > 1.67	Pass	—
SBS	C5	AEC Q100-010	3	5 balls from 10 devices	Solder Ball Shear	Cpk > 1.67	Pass	As applicable per die configuration
Test group D - die fabrication reliability tests								

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EM	D1	—	—	—	Electromigration	Per technology requirements	Pass	—
TDDB	D2	—	—	—	Time dependent dielectric breakdown	Per technology requirements	Pass	—
HCI	D3	—	—	—	Hot carrier injection	Per technology requirements	Pass	—
BTI	D4	—	—	—	Bias temperature instability	Per technology requirements	Pass	—
SM	D5	—	—	—	Stress Migration	Per technology requirements	Pass	—
Test group E - electrical verification								
HBM	E2	AEC Q100-002	1	3	Electrostatic discharge - human body model	Per AEC Q100-002	See data sheet	—
CDM	E3	AEC Q100-011	1	3	Electrostatic discharge - charged device model	Per AEC Q100-011	See data sheet	—
LU	E4	AEC Q100-004	1	3	Latch-up	Per AEC Q100-004	Pass	As applicable per Q100-004
ED	E5	AEC Q100-009	3	30	Electrical distributions	Per AEC Q100-009	Pass	—

Ongoing reliability monitoring

No results found

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