

MSP432E401YTPDT

Quality, reliability & packaging data download

Status: ACTIVE

Report date: 03/27/2025



Assembly site: TI PHILIPPINES A/T

RoHS	Yes
REACH	Yes
Device marking	MSP432, E401YT
Lead finish/Ball material	NIPDAU
MSL rating/Peak reflow	Level-3-260C-168 HR
Rating	Catalog

Material content

				Homogeneous Material Level		Component Level	
Component	Substance	CAS Number	Amount (mg)	Percentage %	ppm	Percentage %	ppm
Bond Wire							
Aluminum and Its Alloys	Aluminum	7429-90-5	0.000002	0.000189	2	0.000000	0
Copper and Its Alloys	Copper	7440-50-8	1.019873	96.545878	965459	0.176592	1766
Not Categorized	Proprietary Materials	—	0.000119	0.011265	113	0.000021	0
Other Inorganic Materials	Silicon	7440-21-3	0.000001	0.000095	1	0.000000	0
Precious Metals	Gold	7440-57-5	0.006198	0.586731	5867	0.001073	11
Precious Metals	Palladium	7440-05-3	0.03015	2.854138	28541	0.005221	52
Precious Metals	Silver	7440-22-4	0.000018	0.001704	17	0.000003	0
Sub-total	—	—	1.056361	100	1000000	0.182910	1829
Die Attach Adhesive							
Precious Metals	Silver	7440-22-4	4.542901	85.000007	850000	0.786609	7866
Thermoplastics	Epoxy	85954-11-6	0.801688	14.999993	150000	0.138813	1388
Sub-total	—	—	5.344589	100	1000000	0.925422	9254
Lead Frame							
Copper and Its Alloys	Copper	7440-50-8	216.4944	97.520000	975200	37.486275	374863
Copper and Its Alloys	Iron	7439-89-6	5.106	2.300000	23000	0.884110	8841
Copper and Its Alloys	Phosphorus	7723-14-0	0.0666	0.030000	300	0.011532	115
Zinc and Its Alloys	Zinc	7440-66-6	0.333	0.150000	1500	0.057659	577
Sub-total	—	—	222.0000	100	1000000	38.439577	384396
Lead Frame Plating							
Nickel and Its Alloys	Nickel	7440-02-0	6.75352	95.120000	951200	1.169380	11694
Precious Metals	Gold	7440-57-5	0.05538	0.780000	7800	0.009589	96
Precious Metals	Palladium	7440-05-3	0.2911	4.100000	41000	0.050404	504
Sub-total	—	—	7.10000	100	1000000	1.229374	12294
Mold Compound							
Other Inorganic Materials	Fused Silica	60676-86-0	287.353914	88.000000	880000	49.755689	497557
Other Organic Materials	Carbon Black	1333-86-4	1.306154	0.400000	4000	0.226162	2262
Thermoplastics	Epoxy	85954-11-6	37.87847	11.600000	116000	6.558704	65587
Sub-total	—	—	326.538538	100	1000000	56.540555	565406
Semiconductor Device							
Ceramics / Glass	Doped Silicon	7440-21-3	15.490282	100.000000	1000000	2.682162	26822
Sub-total	—	—	15.490282	100	1000000	2.682162	26822
Total	—	—	577.529770	—	—	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
4.1532018 × 10 ⁸	2.41	55	60	0.7	125	1000	4890	0	—

Qualification summary

Stress	Reference	Min lot qty	SS / lot	Condition	Duration	Result	Notes
HTOL	JESD22-A108	3	77	Life test, 125C	1000 hours	Pass	Or equivalent JEDEC condition
HTSL	JESD22-A103	3	25	High temp storage bake, 150C	1000 hours	Pass	Or equivalent JEDEC condition
AC/UHAST	JESD22-A102/JESD22-A118	3	25	Unbiased HAST 130C / 85% RH	96 hours	Pass	Or equivalent JEDEC condition
THB/HAST	JESD22-A101/JESD22-A110	3	25	HAST 130C/85%RH	96 hours	Pass	Or equivalent JEDEC condition
TC	JESD22-A104	3	25	Temperature cycle -65/150C	500 cycles	Pass	Or equivalent JEDEC condition
SD	J-STD-002	3	22	Per specification	>95% lead coverage	Pass	—
HBM	JS-001	1	3	ESD - HBM	Classification	See data sheet	—
CDM	JS-002	1	3	ESD - CDM	Classification	See data sheet	—
LU	JESD78	1	3	Latch-up	Per JESD78	Pass	As applicable per JESD78
MSL	J-STD-020	—	—	Per J-STD-020	Classification	See data sheet	—

Ongoing reliability monitoring

FAB process reliability data

Fab Process	Reliability Test	Rolling Year (1Q2024 - 4Q2024) Sample Size	Cumulative Sample Size	Disposition
65nm CMOS	Life test 125C, 1000 Hours or Equivalent JEDEC Condition	4466	39988	Pass

Assembly process reliability data

Package Family	Reliability Test	Rolling Year (1Q2024 - 4Q2024) Sample Size	Cumulative Sample Size	Disposition
QFP (without Thermal Pad)	Biased HAST 130C/85%RH, 96 Hours or Equivalent JEDEC Condition	539	12576	Pass
QFP (without Thermal Pad)	High temp storage bake 150C, 1000 Hours or Equivalent JEDEC Condition	1894	23878	Pass
QFP (without Thermal Pad)	Temperature cycle -65/150C, 500 Hours or Equivalent JEDEC Condition	2541	44012	Pass
QFP (without Thermal Pad)	Unbiased HAST 130C/85% RH, 96 Hours or Equivalent JEDEC Condition	1540	34416	Pass

Pad)	Condition			
------	-----------	--	--	--

Additional resources

[General quality guidelines](#)

[Certifications](#)

[Conflict minerals specialized disclosure report](#)

[Restricted chemical test report](#)

For additional component information, please visit [Material content search](#)

For additional information, please contact [TI customer support center](#)

Important Notice and Disclaimer

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATA SHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES “AS IS” AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements.

These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI's products are provided subject to [TI's Terms of Sale](#) or other applicable terms available either on ti.com or provided in conjunction with such TI products. TI's provision of these resources does not expand or otherwise alter TI's applicable warranties or warranty disclaimers for TI products.

TI objects to and rejects any additional or different terms you may have proposed.