

TPS7B8250EPWPRQ1

Quality, reliability & packaging data download

Status: ACTIVE

Report date: 03/20/2024



Assembly site: **TI MALAYSIA A/T**

RoHS	Yes
REACH	Yes
Device marking	7B8250E
Lead finish/Ball material	NIPDAU
MSL rating/Peak reflow	Level-3-260C-168 HR
Rating	Automotive

## Material content

				Homogeneous Material Level		Component Level	
Component	Substance	CAS Number	Amount (mg)	Percentage %	ppm	Percentage %	ppm
<b>Bond Wire</b>							
Other Nonferrous Metals and Alloys	Yttrium	7440-65-5	0.000001	0.000847	8	0.000001	0
Precious Metals	Gold	7440-57-5	0.118063	99.998306	999983	0.100537	1005
Precious Metals	Silver	7440-22-4	0.000001	0.000847	8	0.000001	0
Sub-total	—	—	0.118065	100	1000000	0.100539	1005
<b>Die Attach Adhesive</b>							
Precious Metals	Silver	7440-22-4	0.239904	85.000000	850000	0.204292	2043
Thermoplastics	Epoxy	85954-11-6	0.042336	15.000000	150000	0.036051	361
Sub-total	—	—	0.282240	100	1000000	0.240343	2403
<b>Lead Frame</b>							
Copper and Its Alloys	Copper	7440-50-8	77.46592	97.585001	975850	65.966550	659666
Copper and Its Alloys	Iron	7439-89-6	1.825809	2.299999	23000	1.554778	15548
Copper and Its Alloys	Phosphorus	7723-14-0	0.011907	0.014999	150	0.010139	101
Zinc and Its Alloys	Zinc	7440-66-6	0.079383	0.100000	1000	0.067599	676
Sub-total	—	—	79.383019	100	1000000	67.599067	675991
<b>Lead Frame Plating</b>							
Nickel and Its Alloys	Nickel	7440-02-0	0.20641	95.119816	951198	0.175770	1758
Precious Metals	Gold	7440-57-5	0.001693	0.780184	7802	0.001442	14
Precious Metals	Palladium	7440-05-3	0.008897	4.100000	41000	0.007576	76
Sub-total	—	—	0.217000	100	1000000	0.184788	1848
<b>Mold Compound</b>							
Other Inorganic Materials	Fused Silica	60676-86-0	31.960462	88.000000	880000	27.216116	272161
Other Organic Materials	Carbon Black	1333-86-4	0.145275	0.400000	4000	0.123710	1237
Thermoplastics	Epoxy	85954-11-6	4.21297	11.600000	116000	3.587579	35876
Sub-total	—	—	36.318707	100	1000000	30.927404	309274
<b>Semiconductor Device</b>							
Ceramics / Glass	Doped Silicon	7440-21-3	1.113091	100.000000	1000000	0.947859	9479
Sub-total	—	—	1.113091	100	1000000	0.947859	9479
Total	—	—	117.432122	—	—	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

8.71×10 <sup>9</sup>	0.1	55	60	0.7	125	1000	101758	0	—
----------------------	-----	----	----	-----	-----	------	--------	---	---

## Qualification summary

Type	AEC Q100 test #	Test spec	Min lot qty	SS / lot	Test name	Condition	Result	Notes
<b>Test group A - accelerated environment stress test</b>								
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	—
<b>Test group B - accelerated lifetime simulation test</b>								
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	—
<b>Test group C - package assembly integrity tests</b>								
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
<b>Test group D - die fabrication reliability tests</b>								
EM	D1	—	—	—	Electromigration	Per technology requirements	Pass	—
TDDDB	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	—
<b>Test group E - electrical verification</b>								
HBM	E2	AEC Q100-002	1	3	Electrostatic discharge - human body model	Per AEC Q100-002	<a href="#">See data sheet</a>	—
CDM	E3	AEC Q100-011	1	3	Electrostatic discharge - charged device model	Per AEC Q100-011	<a href="#">See data sheet</a>	—
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

### FAB process reliability data

Fab Process	Reliability Test	Rolling Year (1Q2023 - 4Q2023) Sample Size	Cumulative Sample Size	Disposition
Power BICMOS	Life test 125C, 1000 Hours or Equivalent JEDEC Condition	31433	391952	Pass

### Assembly process reliability data

Package Family	Reliability Test	Rolling Year (1Q2023 - 4Q2023) Sample Size	Cumulative Sample Size	Disposition
HTSSOP	Biased HAST 130C/85%RH, 96 Hours or Equivalent JEDEC Condition	4053	41465	Pass
HTSSOP	High temp storage bake 150C, 1000 Hours or Equivalent JEDEC Condition	3338	29912	Pass
HTSSOP	Temperature cycle -65/150C, 500 Hours or Equivalent JEDEC Condition	10500	89197	Pass
HTSSOP	Unbiased HAST 130C/85% RH, 96 Hours or Equivalent JEDEC Condition	6607	66063	Pass

## 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 DATASHEETS), 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.