

CCBTLV3257MPWREP

## Quality, reliability & packaging data download

Status: ACTIVE

Report date: 03/16/2022



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

RoHS	Yes
REACH	Yes
Device marking	CL257EP
Lead finish/Ball material	NIPDAU
MSL rating/Peak reflow	Level-1-260C-UNLIM
Rating	HiRel Enhanced Product

## 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	0.000707	7	0.000002	0
Precious Metals	Gold	7440-57-5	0.141404	99.997878	999979	0.244407	2444
Precious Metals	Silver	7440-22-4	0.000002	0.001414	14	0.000003	0
Sub-total	—	—	0.141407	100	1000000	0.244412	2444
<b>Die Attach Adhesive</b>							
Precious Metals	Silver	7440-22-4	0.260832	80.000000	800000	0.450829	4508
Thermoplastics	Epoxy	85954-11-6	0.065208	20.000000	200000	0.112707	1127
Sub-total	—	—	0.326040	100	1000000	0.563537	5635
<b>Lead Frame</b>							
Copper and Its Alloys	Copper	7440-50-8	21.91725	97.410000	974100	37.882394	378824
Copper and Its Alloys	Iron	7439-89-6	0.54	2.400000	24000	0.933351	9334
Copper and Its Alloys	Phosphorus	7723-14-0	0.00675	0.030000	300	0.011667	117
Other Nonferrous Metals and Alloys	Lead	7439-92-1	0.00675	0.030000	300	0.011667	117
Other Nonferrous Metals and Alloys	Tin	7440-31-5	0.00675	0.030000	300	0.011667	117
Zinc and Its Alloys	Zinc	7440-66-6	0.0225	0.100000	1000	0.038890	389
Sub-total	—	—	22.50000	100	1000000	38.889636	388896
<b>Lead Frame Plating</b>							
Nickel and Its Alloys	Nickel	7440-02-0	0.342432	95.120000	951200	0.591869	5919
Precious Metals	Gold	7440-57-5	0.002808	0.780000	7800	0.004853	49
Precious Metals	Palladium	7440-05-3	0.01476	4.100000	41000	0.025512	255
Sub-total	—	—	0.360000	100	1000000	0.622234	6222
<b>Mold Compound</b>							
Other Inorganic Materials	Fused Silica	60676-86-0	28.777923	86.000000	860000	49.740575	497406
Other Plastics and Rubber	Carbon Black	1333-86-4	0.100388	0.300000	3000	0.173513	1735
Thermoplastics	Epoxy	85954-11-6	4.58439	13.700000	137000	7.923789	79238
Sub-total	—	—	33.462701	100	1000000	57.837878	578379
<b>Semiconductor Device</b>							
Ceramics / Glass	Doped Silicon	7440-21-3	1.065884	100.000000	1000000	1.842304	18423
Sub-total	—	—	1.065884	100	1000000	1.842304	18423
Total	—	—	57.856032	—	—	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
2.19×10 <sup>9</sup>	0.5	55	60	0.7	125	1000	25558	0	—

## Qualification summary

Stress	Reference	Min lot qty	SS / lot	Condition	Duration	Result
HTOL	JESD22-A108	3	77	Life test, 125C	1000 hours	Pass
HTSL	JESD22-A103	3	25	High temp storage bake 150C	1000 hours	Pass
AC/UHAST	JESD22-A102/JESD22-A118	3	25	Autoclave 121C or unbiased HAST 130C / 85% RH	96 hours	Pass
THB/HAST	JESD22-A101/JESD22-A110	3	25	THB 85C/85%RH or HAST 130C/110C/85%RH	1000 hours or 96 hours	Pass
TC	JESD22-A104	3	25	Temperature cycle -65/150C	500 cycles	Pass
SD	J-STD-002	3	22	Per specification	>95% lead coverage	Pass
HBM	JS-001	1	3	ESD - HBM	Classification	<a href="#">See data sheet</a>
CDM	JESD22-C101	1	3	ESD - CDM	Classification	<a href="#">See data sheet</a>
LU	JESD78	1	3	Latch-up	Per JESD78	Pass
MSL	J-STD-020	—	—	Per J-STD-020	Classification	<a href="#">See data sheet</a>

## Ongoing reliability monitoring

### FAB process reliability data

Fab Process	Reliability Test	Rolling Year (4Q20 - 3Q21) Sample Size	Cumulative Sample Size	Disposition
CMOS	High Temperature Operating Life, 125C, 1000 Hours (or Equivalent)	462	51586	Pass

### Assembly process reliability data

Package Family	Reliability Test	Rolling Year (4Q20 - 3Q21) Sample Size	Cumulative Sample Size	Disposition
TSSOP	Autoclave, 121C, 96 Hours	3631	52474	Pass
TSSOP	Biased HAST, 110C/85%RH, 264 Hours	457	1063	Pass
TSSOP	Biased HAST, 130C/85%RH, 96 Hours	3064	33424	Pass
TSSOP	High Temperature Storage Life, 150C, 1000 Hours	1001	9554	Pass
TSSOP	High Temperature Storage Life, 170C, 420 Hours	782	16690	Pass

TSSOP	Temperature Cycle, -40/125C, 850 Cycles	0	82	Pass
TSSOP	Temperature Cycle, -55/125C, 700 Cycles	0	1475	Pass
TSSOP	Temperature Cycle, -65/150C, 500 Cycles	7689	73207	Pass
TSSOP	Temperature-Humidity Bias Test (85C/85%RH), 1000 Hours	0	1485	Pass
TSSOP	Unbiased HAST, 130C/85%RH, 96 Hours	637	8674	Pass

## Additional resources

[General quality guidelines](#)

[Certifications](#)

[Conflict minerals specialized disclosure report](#)

[Restricted chemical test report](#)

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