Data Sheet

PowerSOP® 3



Power Small Outline Package, PowerSOP® (PSOP3)

PSOP3 is a leadframe based, plastic encapsulated package that is well suited for applications requiring optimum performance in IC packaging. This industry standard package utilizes a thick copper heat slug to accommodate the needs of higher power devices. A green BOM is standard, allowing devices to meet applicable Pb-free and RoHS standards.

Features

- Cu wire interconnect for low cost
- Standard JEDEC package outlines
- Multi-die production capability
- Turnkey test services
- Green materials are standard – Pb-free and RoHS compliant
- Theta JC of under 1°C/W can be achieved with optimal heatsinking
- Highly conductive copper heat-slug and leadframes
- PSOP3 package has optional soft solder die attach for enhanced power capability

New Developments

- Stealth dicing (narrow saw streets)
- Leadframe roughening for improved MSL capability

Services and Support

Amkor has a broad base of resources available to help customers bring quality new products to market quickly and at the lowest possible cost.

- Full package characterization
- Thermal, mechanical stress and electrical performance modeling
- Turnkey assembly, test and drop ship
- World class reliability testing and failure analysis

Thermal Performance

Forced Convection, Single-layer PCB

Pkg	Die Size (mm)	S/NS	ΘJA (°C/W) by Velocity (LFPM)		
			0	200	500
20 ld	5.1 x 5.1	S	50.8	35.7	27.8
		NS	52.4	37.6	28.8

Forced Convection, Multi-layer PCB

Pkg	Die Size (mm)	S/NS	ΘJA (°C/W) by Velocity (LFPM)		
			0	200	500
20 ld	5.1 x 5.1	S	19.2	14.2	12.2
		NS	25.7	20.4	17.8

S = Slug soldered to test board
NS = Slug not soldered to test board
JEDEC Standard Test Boards

Electrical Performance

Pkg	Body Size (mm)	Pad Size (mm)	Lead	Inductance (nH)	Capacitance (pF)	Resistance (mF)
20 ld	11 x 15.9	7.5 x 7.9	Longest Shortest	3.130 1.540	1.990 0.604	30.6 9.42

Simulated Results @ 100 MHz

Reliability Qualification

Amkor package qualification uses three independent production lots and a minimum of 77 units per test group. All testing includes JSTD-020 moisture preconditioning.

- Moisture Sensitivity Characterization — JEDEC Level 3, 30°C/60% RH, 192 hrs
- uHAST — 130°C/85% RH, No Bias, 96 hrs
- Temp Cycle — -65°C/+150°C, 500 cycles
- High Temp Storage — 150°C, 1000 hours

Process Highlights

- Pcc wire bonding standard, Ag wire available
- Wafer backgrinding services available
- Multiple die and die stacking capability
- NiPdAu (PPF) or Matte Sn lead finish options
- Laser mark on package body

Visit Amkor Technology online for locations and to view the most current product information.

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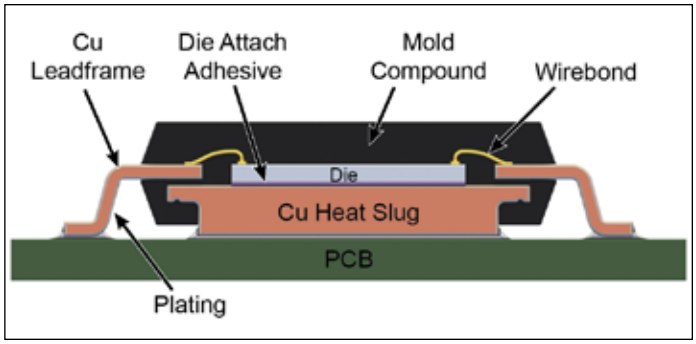
Test Services

- Program generation/conversion
- Wafer probe
- Burn-in capabilities
- -55°C to +165°C test available

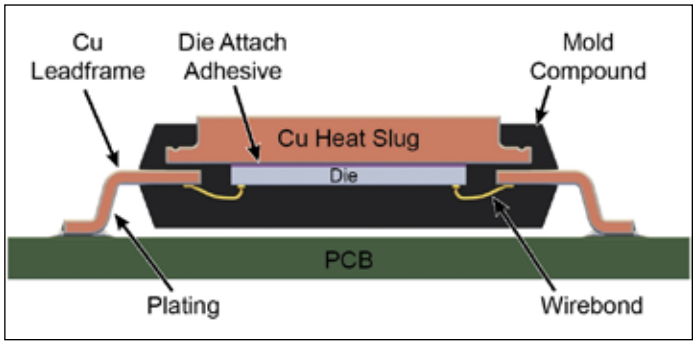
Shipping

- Clear anti-static tube, 20 inch
- Tape and reel
- Dry pack
- Drop ship

Cross-section PowerSOP® 3 (Bottom Slug)



Cross-section PowerSOP® 3 (Top Slug)



Configuration Options

PowerSOP (PSOP3) Nominal Package Dimensions (mm)

Lead Count	Body Width	Body Length	Body Thickness	Standoff	Overall Height	Lead Pitch	Tip-to-Tip	JEDEC
20	11.0 mm (.433")	15.9	3.15	0.20	3.35	1.27	14.2	MO-166
24	11.0 mm (.433")	15.9	3.15	0.20	3.35	1.00	14.2	MO-166
30	11.0 mm (.433")	15.9	3.15	0.20	3.35	0.80	14.2	MO-166
36	11.0 mm (.433")	15.9	3.15	0.20	3.35	0.65	14.2	MO-166
44	11.0 mm (.433")	15.9	3.15	0.20	3.35	0.65	14.2	MO-166

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