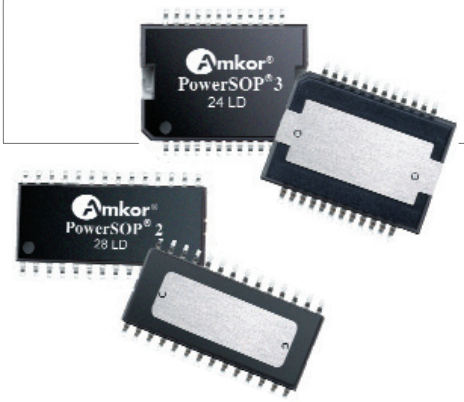


PowerSOP® 2&3

PowerSOP® Packages: (PSOP / PSSOP)

This Amkor-developed family of power IC packages significantly increases the thermal efficiency of power constrained standard SOIC packages. The PowerSOP© (PSOP) improves Theta JA up to 50% over a standard SOIC thereby expanding the margin of operating parameters. The large integrated exposed copper heatslug to which the IC chip is directly attached results in an increased ability to dissipate heat. The leadframe and heatslug are mechanically attached, leaving the leads electrically isolated. The package is offered in a low stand-off (.002) heatslug down version, which is MS-012, MS-013, or MO-166 JEDEC compliant depending on the package you choose. These flexibilities still allow maximum thermal management by directly soldering the slug to the PCB. Furthermore, there are two types of PSOPs (2 and 3) available with various features and benefits to address different market application needs.

Applications:

Increased end-application densities and shrinking product sizes demand more from IC packages. PSOPs give designers the needed margin for designing and producing high performing products such as telecom, disk drives, pagers, wireless, CATV/RF modules, radio, automotive/industrial and other similar applications. GaAs, SiGe and hi-speed silicon technologies work especially well in PSOP packages due to added shielding and grounding capabilities.

Features:

Exceptional performance through the innovative design of PSOPs offer:

- Up to 50% improvement in Theta JA when slug soldered to board
- Highly conductive copper heatslug and leadframes
- Optional PSOP assembly materials for enhanced power capability include soft solder die attach
- Available in:

PSOP 2	(.150" body) - 8, 16 lead
	(.300" body) - 16, 20, 24, 28 lead
PSOP 3	(11 x 15.9 mm body) - 20, 24, 30, 36, 44 lead
PSSOP	(.150" body) - 16, 28 lead

Thermal Resistance:

Single Layer PCB

Pkg	Body Size	Pad Size	Theta JA (°C/W) by Velocity (LFPM) 0 S/NS	200 S/NS	500 S/NS
PSOP 2					
8	3.8 x 4.9	2.3 x 3.1	144.1/157.6	120.2/131.1	104.2/112.8
16	3.8 x 9.9	2.3 x 4.9	91.2/95.9	72.2/75.2	61.8/64.4
PSOP 3					
20	11 x 15.9	7.5 x 7.9	50.8/52.4	35.7/37.6	27.8/28.8

Multi-Layer PCB

Pkg	Body Size	Pad Size	Theta JA (°C/W) by Velocity (LFPM) 0 S/NS	200 S/NS	500 S/NS
PSOP 2					
8	3.8 x 4.9	2.3 x 3.1	51.8/95.3	45.5/86.5	42.6/80.6
16	3.8 x 9.9	2.3 x 4.9	30.2/51.6	25.0/45.3	23.0/42.3
PSOP 3					
20	11 x 15.9	7.5 x 7.9	19.2/25.7	14.2/20.4	12.2/17.8

JEDEC Standard Test Boards

S - Slug Soldered to Test Board
N/S - Slug Not Soldered to Test Board

Electrical:

Pkg	Body Size	Pad Size	Lead	Inductance (nH)	Capacitance (pF)	Resistance (mΩ)
PSOP 2						
8 ld	4.9 x 3.9	3.2 x 2.3	Longest	1.120	0.456	9.9
			Shortest	0.684	0.344	5.7
PSOP 3						
20 ld	11 x 15.9	7.5 x 7.9	Longest	3.130	1.990	30.6
			Shortest	1.540	0.604	9.42
PSSOP						
16 ld	4.9 x 3.9	1.3 x 3.2	Longest	1.510	0.367	12.8
			Shortest	0.885	0.243	8.36

Reliability:

IC chips are assembled in optimized package designs with proven reliable semiconductor materials.

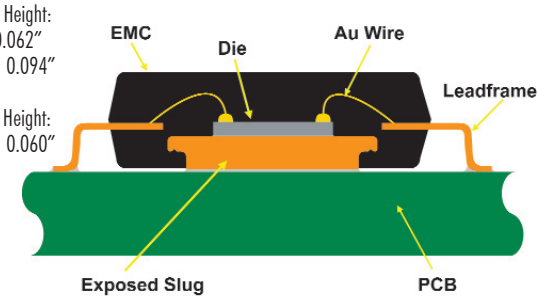
- High temp storage: 150 °C, 1000 hrs.
- HAST: 130 °C/85% RH, no bias, 96 hours
- Temp cycle: -65/150 °C, 500 cycles

PowerSOP® 2&3

Cross-sections PSOP 2&3

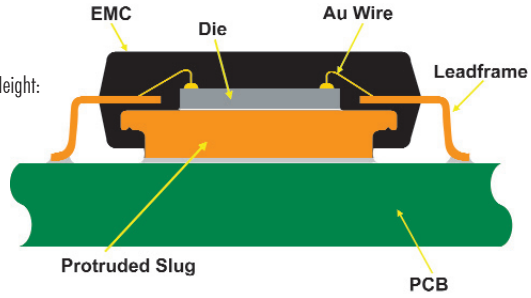
PSOP2 Mounted Height:
0.150″ body - 0.062″
0.300″ body = 0.094″

PSSOP Mounted Height:
0.150″ body = 0.060″



PSOP 2

PSOP3 Mounted Height:
3.35 mm



PSOP 3

Process Highlights

GaAs Thin Die Option	
Leadframes	Tapeless design available
Die thickness (max)	.150" PSOP 2 - 15 mil .300" PSOP 2 - 18 mil 11 mm PSOP 3 - 26 mil
Solder plating	85/15 Sn/Pb
Marking	Laser/pad
Lead inspection	Optical
Pack/ship options	Bar code, dry pack
Coplanarity (max)	3 mils

Test Services

Contact Amkor Test Services for more details.

- Program generation/conversion
- Product engineering support
- Wafer sort
- Burn-in
- Tape and reel services
- Ambient to +165 °C test available
- 256 pin x 20 MHz test system available

Shipping

Clear anti-static tube	20 inch

PowerSOP® 2 and 3/PSSOP Nominal Package Dimensions

Package	Body Size	Lead Pitch	Lead Count	Body Length	Lead Length	Tip to Tip	Body Thck	Stand-off	Mounted Height	JEDEC	Units per tube
PSOP 2 (units in inches unless otherwise stated)											
PSOP 2	.150” (3.8 mm)	0.050	8	0.194	0.041	0.236	0.060	.002	.062	MS-012*	97
PSOP 2	.150” (3.8 mm)	0.050	16	0.391	0.041	0.236	0.060	.002	.062	MS-012*	48
PSOP 2	.300” (7.6 mm)	0.050	16	0.407	0.055	0.406	0.092	.002	.094	MS-013*	46
PSOP 2	.300” (7.6 mm)	0.050	20	0.505	0.055	0.406	0.092	.002	.094	MS-013*	37
PSOP 2	.300” (7.6 mm)	0.050	24	0.607	0.055	0.406	0.092	.002	.094	MS-013*	31
PSOP 2	.300” (7.6 mm)	0.050	28	0.706	0.055	0.406	0.092	.002	.094	MS-013*	27
PSOP 3 (units in mm unless otherwise stated)											
PSOP 3	11.0 mm (.422”)	1.270	20	15.9	1.60	14.2	3.15	0.20	3.35	MO-166	30
PSOP 3	11.0 mm (.422”)	1.000	24	15.9	1.60	14.2	3.15	0.20	3.35	MO-166	30
PSOP 3	11.0 mm (.422”)	0.800	30	15.9	1.60	14.2	3.15	0.20	3.35	MO-166	30
PSOP 3	11.0 mm (.422”)	0.650	36	15.9	1.60	14.2	3.15	0.20	3.35	MO-166	30
PSSOP (units in inches unless otherwise stated)											
PSSOP	.150” (3.8 mm)	0.025	16	0.194	0.042	0.237	0.058	0.002	.060	N/A	97
PSSOP	.150” (3.8 mm)	0.025	28	0.391	0.042	0.237	0.058	0.002	.060	N/A	48

*JEDEC does not include heat slug

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