data sheet

TSSOP

Thin Shrink Small Outline Package (TSSOP):

With the evolution of smaller, denser, faster and lighter end products, Amkor not only shrunk the SOP by decreasing the lead pitch, but also made it thin - 0.9 mm thin! Amkor invested time and research into assuring quality and reliability with advanced designs, assembly equipment/ processes and materials. The result is controlled package flatness, wire sweep, solderability and delamination resistance. Amkor now makes it possible for IC designers, packaging engineers, circuit designers and component specifiers to work concurrently and succeed with its TSSOP product line.

Applications:

These IC packages are particularly suited for gate drivers, controllers, op amps, logic, analog, memory (EPROM, E²PROM), comparators and optoelectronics. Memory modules, disk drives, recordable optical disks, telephone handsets, speed dialers, video/audio and consumer electronics/ appliances are among the suggested uses for TSSOP packaging.

Features:

TSSOPs from Amkor's product portfolio presents:

- 8 to 80 lead counts
- 3.0 mm, 4.4 mm and 6.1 mm body sizes
- 0.9 mm body thickness for 4.4 & 6.1 mm body
  0.85 mm body thickness for 3.0 mm body
- JEDEC package outline standard
- Hi-conductivity copper leadframes
- Very low-stress mold compound
- All leads electrically active
- Available in ExposedPad™ versions

Thermal Resistance:

Forced Convection, Single-Layer PCB

Pkg	Body Size (mm)	Theta JA (°C/W) by Velocity (LFPM) 0	200	500
16 ld	4.4 x 5.0	137.1	118.2	106.8
20 ld	4.4 x 6.5	114.5	98.0	88.0
28 ld	6.1 x 9.7	82.9	68.7	60.5
48 ld	16.1 x 12.5	82.6	70.3	63.7

Forced Convection, Multi-Layer PCB

Pkg	Body Size (mm)	Theta JA (°C/W) by Velocity (LFPM) 0	200	500
16 ld	4.4 x 5.0	89.0	81.8	78.1
20 ld	4.4 x 6.5	73.2	66.6	63.5
28 ld	6.1 x 9.7	49.8	43.9	41.2
48 ld	6.1 x 12.5	58.3	52.3	49.9

JEDEC Standard Test boards

Electrical:

Pkg	Body Size (mm)	Lead	Inductance (nH)	Capacitance (pF)	Resistance (mΩ)
8 ld	4.4 x 3.0	Longest	1.470	0.224	13.7
		Shortest	0.725	0.177	7.5
28 ld	4.4 x 9.7	Longest	2.100	0.368	16.1
		Shortest	0.713	0.180	6.8
28 ld	6.1 x 9.7	Longest	2.630	0.389	23.4
		Shortest	0.751	0.180	8.0
56 ld	6.1 x 14.0	Longest	4.040	0.631	36.5
		Shortest	1.380	0.213	16.2

Simulated Results @ 100 MHz

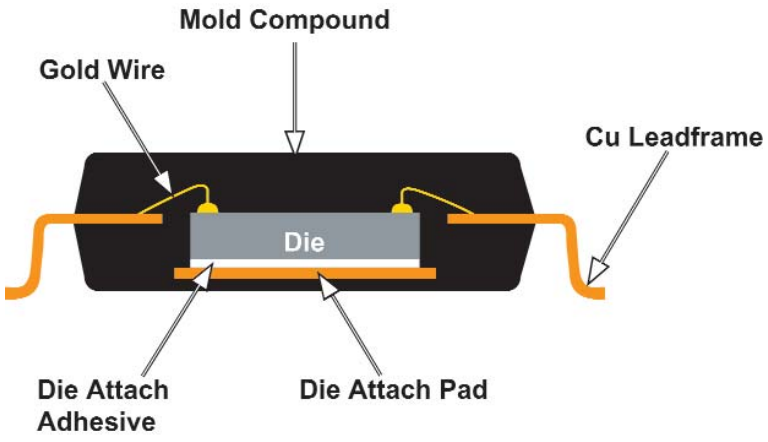
Reliability:

Amkor subjects their TSSOP packages to high level testing to ensure reliable performance.

- HAST — 130 °C /85% RH, No Bias, 96 hours
- Temp cycle — -65/+150 °C, 500 cycles
- Temp/humidity — 85 °C/85% RH, No Bias, 1000 hours

TSSOP

TSSOP Cross Section



Process Highlights

Die thickness	
4.4 & 6.1 mm body	10.5-11.5 mil
3.0 mm body	7.5-8.5 mil
Bond pad pitch	0.10 mm
Strip solder plating	85/15 Sn/Pb or NiPd PPF
Strip marking	Laser
Lead inspection	Optical
Pack/ship options	Bar code, dry pack, TNR
Wafer backgrinding	Available
Coplanarity (max)	0.08 mm

Test Services

- Program generation/conversion
- Product engineering
- Wafer sort
- Ambient to +165 °C test available
- Burn-in
- Strip test
- Tape and reel services

Shipping

Clear anti-static tube	20 inch

Configuration Options:

TSSOP Nominal Package Dimensions (Units in mm)

Body Size	Lead Count	Body Length	Lead Pitch	Tip To Tip	Body Thck	Standoff	Overall Height	JEDEC	Units Per Tube
3.0	8	3.0	.65	5.0	0.85	0.10	0.95	MO-187	98
3.0	10	3.0	.50	5.0	0.85	0.10	0.95	MO-187	98
4.4	8	3.0	.65	6.4	0.90	0.10	1.00	MO-153	100
4.4	14	5.0	.65	6.4	0.90	0.10	1.00	MO-153	96
4.4	16	5.0	.65	6.4	0.90	0.10	1.00	MO-153	96
4.4	20	6.5	.65	6.4	0.90	0.10	1.00	MO-153	74
4.4	24	7.8	.65	6.4	0.90	0.10	1.00	MO-153	62
4.4	28	9.7	.65	6.4	0.90	0.10	1.00	MO-153	50
4.4	30	7.8	.50	6.4	0.90	0.10	1.00	MO-153	62
4.4	38	9.7	.50	6.4	0.90	0.10	1.00	MO-153	50
4.4	44	11.3	.50	6.4	0.90	0.10	1.00	MO-153	42
4.4	48	9.7	.40	6.4	0.90	0.10	1.00	MO-153	50
4.4	56	11.3	.40	6.4	0.90	0.10	1.00	MO-153	42
6.1	28	9.7	.65	8.1	0.90	0.10	1.00	MO-153	50
6.1	32	11.0	.65	8.1	0.90	0.10	1.00	MO-153	44
6.1	38	12.5	.65	8.1	0.90	0.10	1.00	MO-153	39
6.1	48	12.5	.50	8.1	0.90	0.10	1.00	MO-153	39
6.1	56	14.0	.50	8.1	0.90	0.10	1.00	MO-153	35
6.1	64	17.0	.50	8.1	0.90	0.10	1.00	MO-153	28
6.1	80	17.0	.40	8.1	0.90	0.10	1.00	MO-153	28