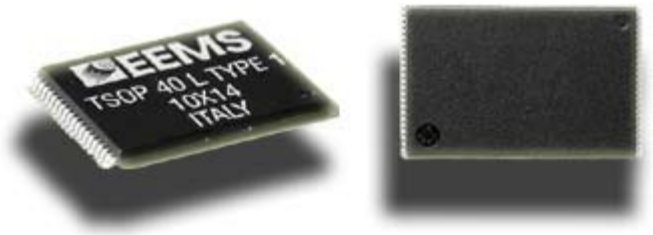
TSOP I

Thin Small Outline Package Type I



EEMS offers TSOP I packages to the designers who require a package that is small and thin with end leads.

With a 1.0mm thick body, this package has the short lead lengths for die designs where speed is important: it is available in different body sizes and pin count.

The packages are automatically fully inspected to insure flatness and coplanarity.

Features & Benefits

- Small board area needed
- Small size
- Cost competitive
- High reliability
- Compliant to Rohs directive 2002/95/CE

Copper Substrate

MATRIX Leadframe

Applications

Memory, memory and memory are the primary users of this package.

Device

- SDRAM
- NAND FLASH
- E^2 PROM
- ASIC's

End Equipment

- Telecom Systems
- Memory Cards
- USB Stickers
- Wireless Base System
- Data Media
- PC Peripherals

Standard Materials

Substrate	AL42/Copper Leadframe
Die Attach	Low stress mtl
Gold wire	25-30 um
Mold Compound	Epoxy
Lead Solder Plating	85/15 Sn/Pb or 100% Sn
Packing	Jedec Tray/Tape & Reel
Packing option	Dry Pack

Process Highlights

Processable wafer	200 – 300 mm
Die Tickness	0.280 mm max
Bond Pad Pitch	60 um min
Marking	Laser
Lead inspection	Auto inspection

TSOP I

Specifications

Electrical (simulated w/bondwire)

(12 x 18.4 x 1.0 mm body with 48 leads)

Capacitance (pF) : 0.5 - 0.9 at 1 GHz

Inductance (nH) : 3.2 - 4.3 at 1 GHz

Resistance (mΩ) : 200 - 260 at 100 Mhz

Thermal Resistance (simulated)

(12 x 18.4 x 1.0 mm with 48 leads; 1 Watt, 0 m/s airflow as per JEDEC JESD51.2):

Θ ja = 39 ºC/watt Typical

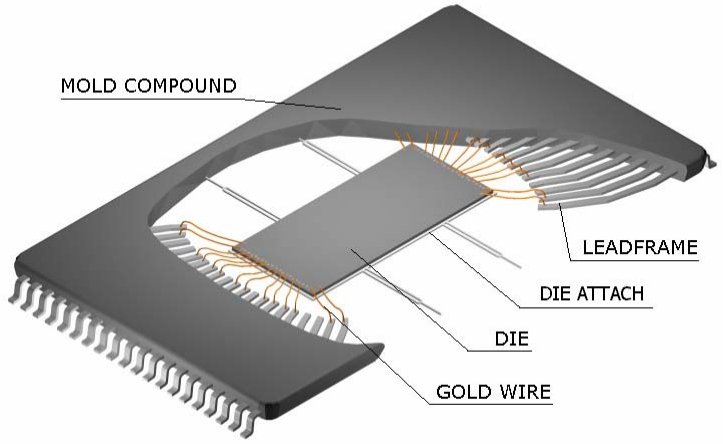
Reliability

Moisture Sensitivity	:	JEDEC MSL 3 @ up to 260 ºC,
High Temp Storage	:	150 ºC, 1000 hours
Temp Cycle	:	-65/+150 ºC, 1000 cicles
Temp Humidity Test	:	130 ºC/85% RH, 240 hours HAST
PCT	:	121 ºC/2 atm., 240 hours

Available Services

- 300 mm wafer full processing
- Wafer backgrinding
- Wafer map / sort
- Product Engineering
- -30 + 125 ºC full test
- Dynamic Burn In
- Compliant to Rohs directive 2002/95/CE

Cross – Section



TSOP I Nominal Package Dimensions (mm)

Body Area	Lead Count	Lead Pitch	Lead edge to edge	Body Thickness	Stand-off	Overall Height	JEDEC
10.0 x 12.4	40	0.50	14.0	1.00	0.10	1.2 max	MO-142
8.0 x 18.4	32	0.50	20.0	1.00	0.10	1.2 max	MO-122
10.0 x 18.4	40	0.50	20.0	1.00	0.10	1.2 max	MO-122
12.0 x 18.4	48	0.50	20.0	1.00	0.10	1.2 max	MO-142

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