



# USP/UTS

Ultra Small Package

Ultra Thin Small Package

## DESCRIPTION

Lingsen Ultra Small & Thin Package (USP) is a plastic encapsulated package with exterior leads around the bottom periphery of the package to provide short electrical connection to the PWB. The sawing type package design offers dimension & manufacturing flexibility and reduce time to market effectively. It also reduces initial cost considerably and allows IC designs with any number of pins.

The USP package meets JEDEC Moisture Sensitivity Level 1 standard that ensures reliability in its functions.

## APPLICATIONS

- Telecommunication Products  
Cellular Phone, Wireless LAN
- Low to medium lead count packages
- Portable Products, PDAs, Digital Camera, MP3 Player, Pagers, Handsets

## SPECIFICATIONS

• Die Thickness	200um (8 mil) maximum for USP , 150um (6 mil) maximum for UTS
• Gold Wire	99.99% Au
• Mold Compound	EME-G770
• Plating	Au-Ni-Au or Au-Ni(Ni: 50um Au: 0.3um)
• Marking	Laser Mark
• Packing	Tape & Reel or Canister

## DEFINITION

- Exterior leads can be designed at the bottom periphery of the package or customized design
- Package thickness is 0.6 mm (MAX.) for USP and 0.5 mm (MAX.) for UTS

## RELIABILITY

MSL Level	JEDEC Level 1 @ 260°C
Temperature Cycling Test	1000 cycles (-40°C/ 85°C)
HAST	100 hrs (130°C, 85%RH)
Temperature & Humidity Test	1,000 hrs (85°C, 85%RH)
High Temperature Storage	1,000 hrs (150°C)
Pressure Cooker Test	168 hrs (121°C, 2 atm , 100% RH)

## FEATURES

- Improved board space efficiency
- Package body size flexible by substrate design and reduce the size , thickness and weight.
- Reduced mounted height and space
- JEDEC MSL level 1 qualified

## THERMAL PERFORMANCE

Package	Body Size (mm)	Pad Size (mm)	Die Size (mm)	Thermal Performance $\theta_{ja}$ (°C/W)
USP 6L	2.0x1.8	1.4x1.0	1.1x1.0x0.2	52.29

USP 8L	2.0x2.0	1.8x0.7	0.4x0.47 / 0.65x0.52	68.91
USP 12L	3.6x2.85	2.6x2.75	0.9x1.6 / 1.2x1.6 / 0.75x0.5	36.28
USP 24L	4.0x4.0	2.84x2.84	1.95x2.5 / 0.64x0.6	35.77

Note: Simulated with JEDEC Standard 4-layer test board under still air condition, ambient temperature 45°C

<b>ELECTRICAL PERFORMANCE</b>						
Package	Body Size (mm)	Pad Size (mm)	Frequency (MHz)	Self Inductance (nH)	Self Capacitance (pF)	Resistance (mohm)
USP 6L	1.8x2.0	1.4x1.0	100	0.583~0.746	0.074~0.081	63.49~73.78
USP 8L	2.0x2.0	1.8x0.7	2500	0.506~0.908	0.059~0.083	195.12~282.75
USP 12L		3.6x2.85	2500	0.474~1.197	0.050~0.086	118.65~344.73
USP 24L	1.8x2.0	4.0x4.0	2500	0.317~1.298	0.077~0.862	88.263~403.36

Note: Results are simulated. Data is available through 100 MHz.

### CROSS-SECTION

