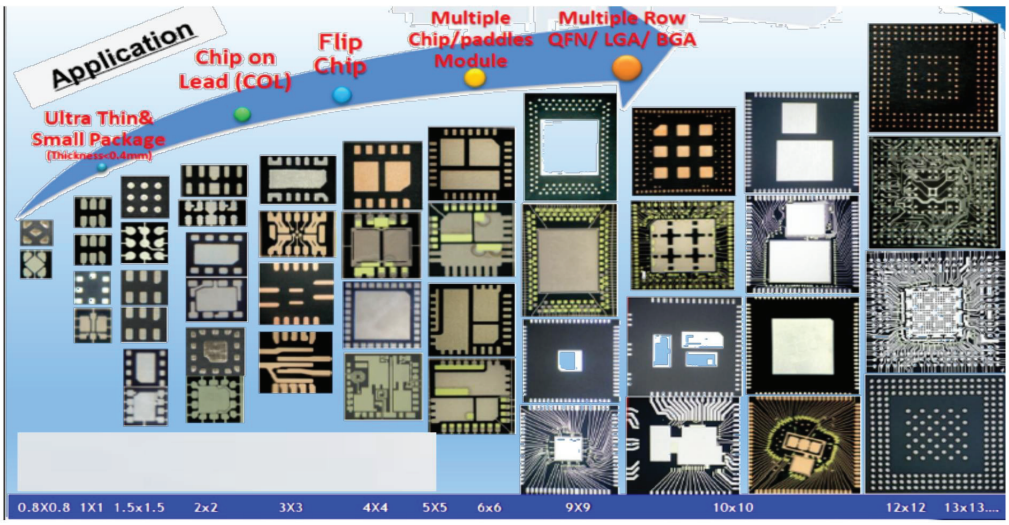
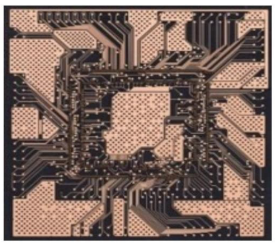
QPTECHNOLOGIES

Design Rules for Package Substrates

Using virtually any substrate type, QP Technologies can create board solutions to meet your unique requirements, with industry-leading delivery times **(ABF build in ≤ 16 weeks)** and quality. Through our substrate design and development service, we provide board solutions to meet customers' demand for a broad range of substrate materials.

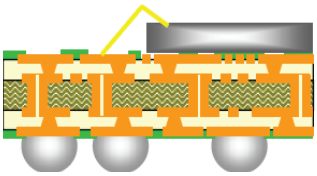




The illustration above shows some of the package types and applications that we can address using various substrate options.

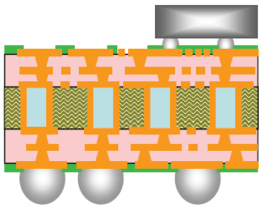
Types of Organic Packages

Type 1: WB/FC-BGA/CSP Package



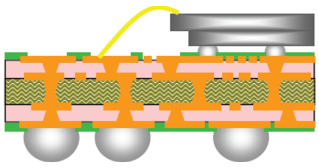
- BT core <0.2mm
- BT prepreg build up
- Subtractive process
- Off-set via
- Filled via plating
- WB or FC assembly package

Type 2A & 2B: FC-HDI BGA Package



- Low CTE FR4 core 0.4/0.8mm
- Prepreg or ABF build up
- mSAP or SAP process
- TH filling via stack
- Filled via plating
- FC assembly package

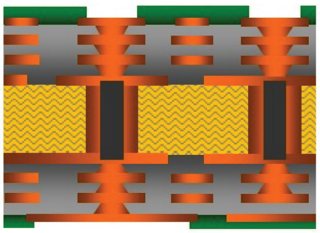
Type 3 (MIS): Ultra HDI Module/ FC Package



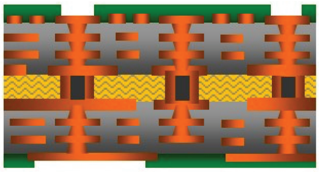
- **Ultra HDI L/S capability**
- **Cu filled via plating technology**
- **Thin core handling/alignment**
- **Multi-chip module**
- Coreless <0.2mm
- ABF build-up SAP process
- Filled TH Cu
- Cu stud vias
- Via plating, via stack
- Multi or FC assembly package

Build-up Materials Available

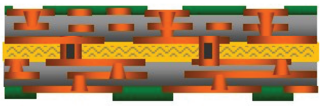
Current Package Structure



BGA



CSP



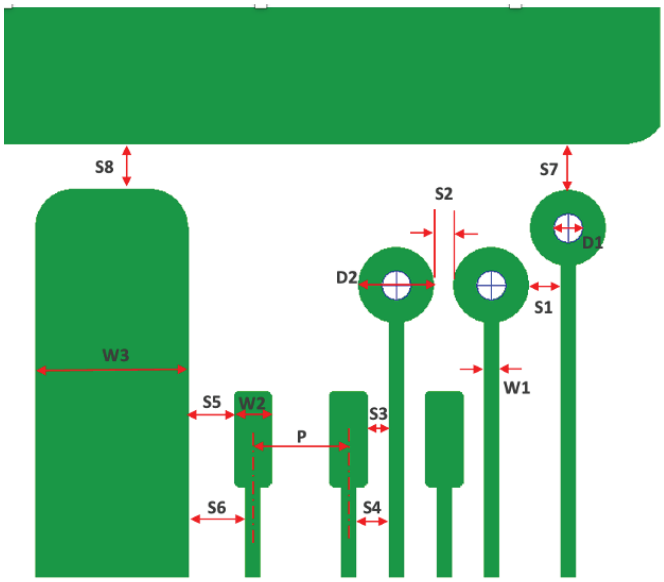
Coreless Package

- Downsizing
- Use thinner core
- High function
- High reliability

Demand for build-up material

- Fine line & space
  (high adhesion with low roughness)
- Fine via pitch
- Low warpage during cure and reflow
  - Low CTE
- High insulation reliability
  (Layer to layer, and circuit to circuit)
- Lower dielectric constant and loss tangent

Range covers standard BT, LDI, SAP and mSAP technologies



Layers Structure: From Up to 4-2-4 to Up to 7-2-7		Standard Cu (20μm≤CuT<25μm or 15μm≤CuT<20μm)	
Item	**Description (min.)**	**Standard (μm)**	**LDI Advance (μm)**
D1	Via Diameter	100—200/150	50—100/50
	Cu Stud Diameter [SAP]	80	80
D2	Via Pad Diameter	230—350/300	110—200/150
	Cu Stud Pad Diameter [SAP]	130	130
S1	Via Pad to Trace Space	20—45	15—35
S2	Via Pad to Via Pad Space	20—45	15—35
S3	Bump Pad to Trace Space	20—50	15—40
S4	Trace to Trace Space	20—50	15—40
S5	Bump Pad to Shape Space	25—50	20—40
S6	Trace to Shape Space	25—50	20—40
S7	Via Pad to Shape Space	25—45	20—35
S8	Shape to Shape Space	30—50	25—40
W1	Trace Width	20—45	15—35
W2	Bump Pad Width	25—45	20—35
W3	Shape Width	20—45	15—35

Contact us today to get started on your project!

A Division of Promex Industries
2063 Wineridge Place Escondido, CA 92029
858.674.4676 | moreinfo@qptechnologies.com

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