VIA ELECTRONIC

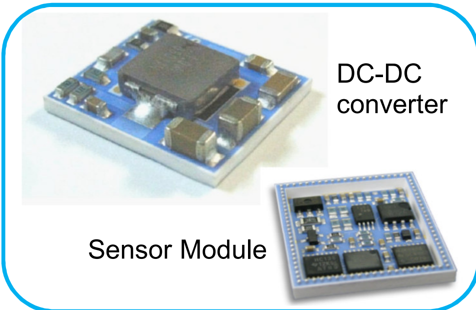
Low Temperature Co-fired Multilayer Ceramic Substrates

KOA

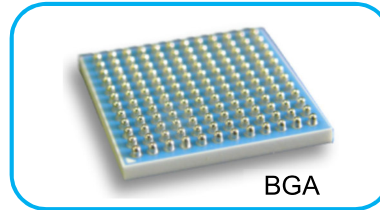
Pilot to Mass Production, Module Assembly

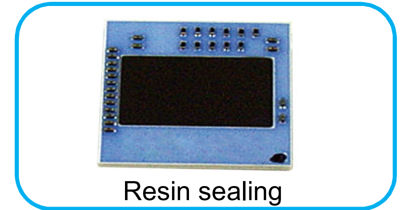
Module Assembly

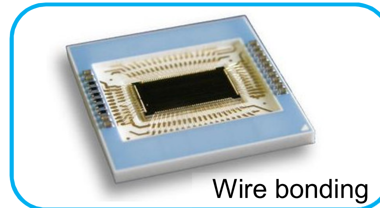
- Total support from design to assembly
- Reliability test on request


DC-DC converter

Sensor Module


BGA


Resin sealing


Wire bonding

High Flexibility

- Small to large volume production
- Low initial costs

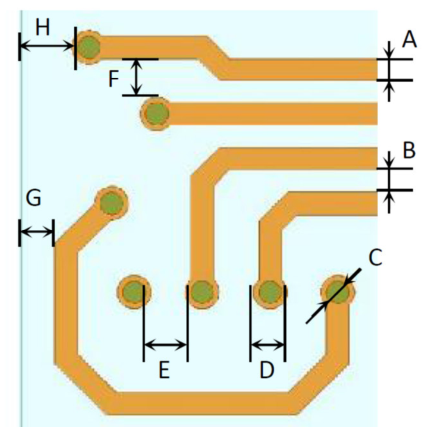
Material Characteristics

Parameter	Material Systems		
	KLC	DuPont 951	DuPont 9K7
Bending strength	250 MPa	320 MPa	230 MPa
Thermal expansion coefficient	5.5 ppm / K	5.8 ppm / K	4.4 ppm / K
Thermal conductivity	3 W / m·K	3 W / m·K	4 W / m·K
Insulation resistance	> 10^{13} Ω·cm	> 10^{12} Ω·cm (100V DC)	> 10^{12}Ω·cm (100V DC)
Dielectric constant	6.6 @1GHz	7.8 @3GHz	7.1 @10GHz
Dielectric loss	0.004 @1GHz	0.0140 @10GHz	0.0010@10GHz
Conductor Material	Ag	Ag / Au / AgPd	Ag / Au / AgPd
Density	2.8 g / cm^3	3.1 g / cm^3	3.1 g / cm^3
Surface roughness; Ra	< 0.4 μm	< 0.4 μm	< 0.6 μm
Withstanding voltage	> 15 kV / mm	> 15kV / mm	>15 kV / mm

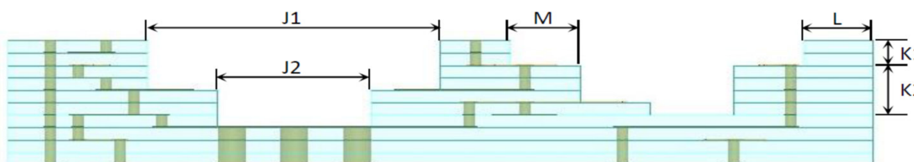
Design Rules for KLC

*Please contact KOA for other material systems

Symbol	Parameter	Standard	Special*
A	Line width	0.06 mm Min	0.05 mm Min.
B	Line to line spacing	0.06 mm Min	0.05 mm Min.
C	Via diameter	0.1 mm, 0.15 mm	0.06 mm Min.
D	Via pad diameter	C + 0.05 mm Min.	Pad less
E	Via to Via spacing	0.2 mm Min.	0.08 mm Min.
F	Via to line spacing	0.125 mm Min	0.075 mm Min.
G	Part edge to conductor spacing	0.2 mm Min.	0.10 mm Min.
H	Part edge to Via pad spacing	0.3 mm Min.	0.15 mm Min.
J1, J2	Cavity width	0.6 mm Min.	0.20 mm Min.
K1, K2	Cavity depth	0.1 mm Min.	0.08 mm Min.
L	Cavity wall thickness	0.5 mm Min.	-
M	Cavity step width	0.5 mm Min.	0.1 mm Min.



* Please contact us for special design rules



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29. Nov. 2018

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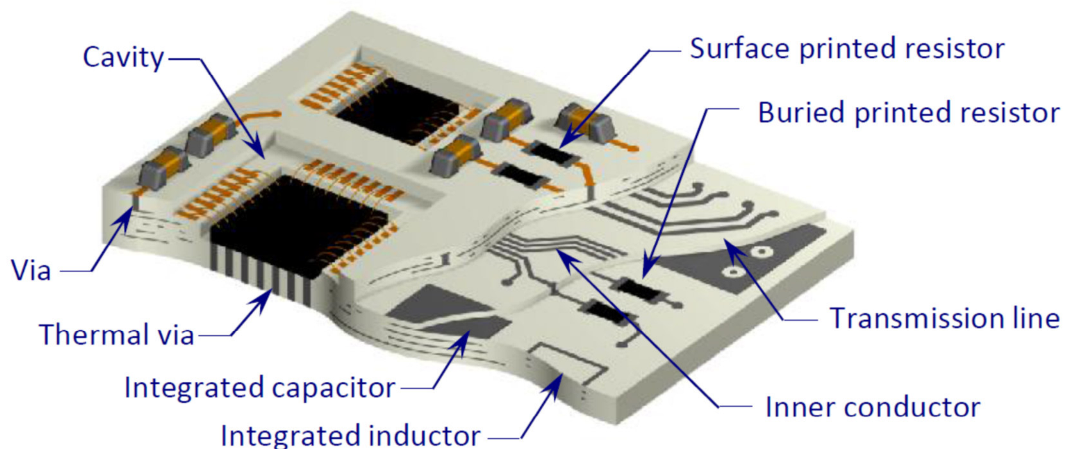
VIA ELECTRONIC · KOA

Multilayer ceramics and cavity packages enable complex module creation

- Highly controlled dimensions, flatness
- Low thermal expansion enhances bare IC's use
- Ceramics with low dielectric constant & loss
- Low ohm silver conductor

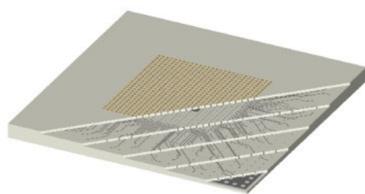
Optimal for bare chip module — **High frequency performance**

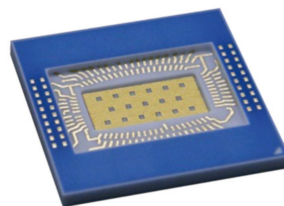


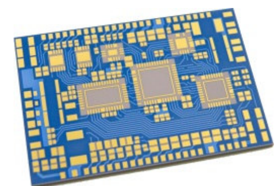
Miniaturization & Integration — **Environmental & reliability**

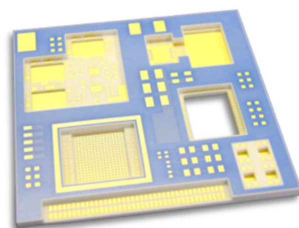
- Multilayer, multi-cavity
- Surface & buried printed resistors
- High heat/moisture resistance (zero water absorption)
- Outgas/dust free, impermeability

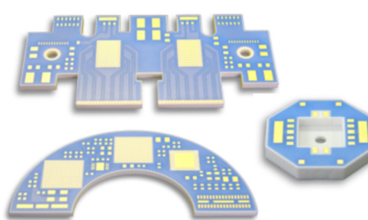
Application Examples

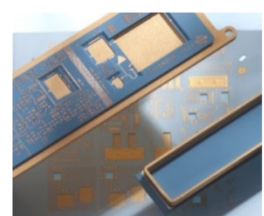

Interposer


Semiconductor package


Multi-chip module


Multi-cavity


Customized shape


High frequency module

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