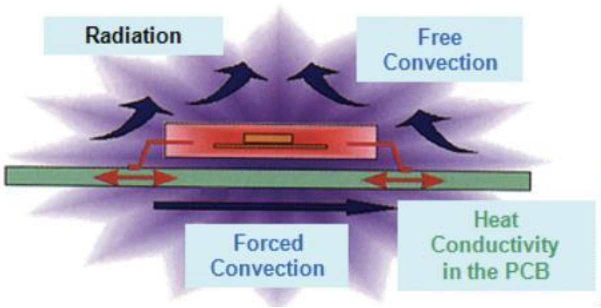
THERMAL MANAGEMENT

Temperature Versus Reliability

Long term reliability of electronic systems is a function of operating temperature. Lower temperature and lower delta T cycling increases reliability.

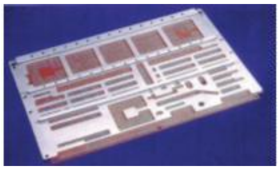
The most common thermal requirement of the printed circuit board is to transfer dissipated heat from the components to somewhere else in the system where the heat can be removed.



GROWING DENSITY + MINIATURIZATION + HIGHER POWER COMPONENTS = NEED FOR IMPROVED THERMAL DISSIPATION

Thermal Solutions for PCB

- External Metalized Heatsink
- Internal Metalized Heatsink
- Distributed Heavy Copper
- Thermally Conductive Laminates
- Embedded Metalized Coins
- Liquid Cooling
- Engineered Specialty Materials
- Metal Back Active Aluminum
- Metal Back Passive Aluminum

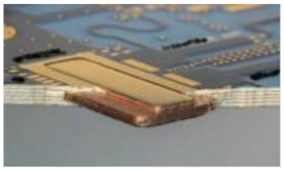


External Metalized Heatsink

Internal Metalized Heatsink

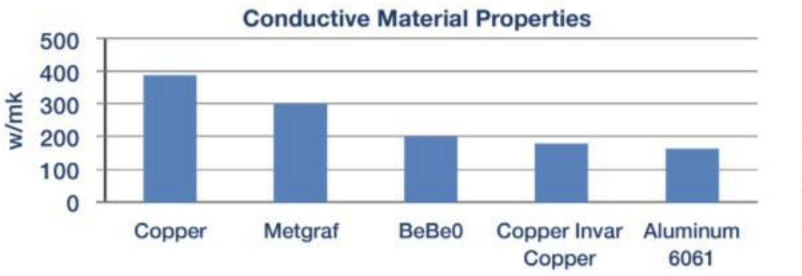
Liquid Cooling

Thermally Conductive Laminates



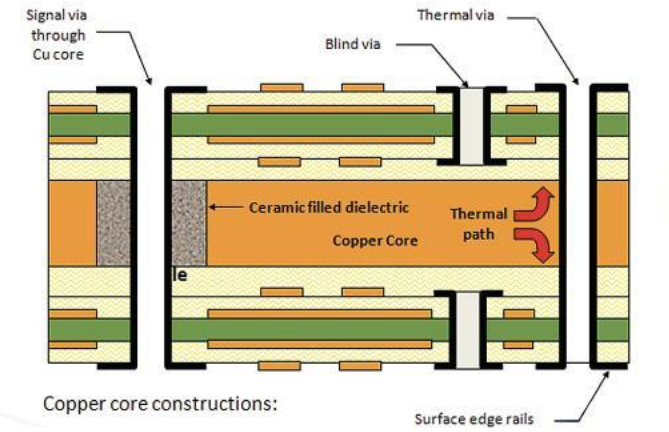
Embedded Coins

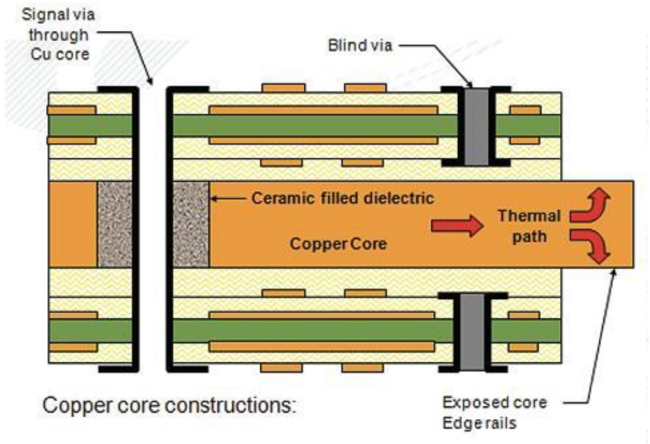
Engineered Specialty Materials

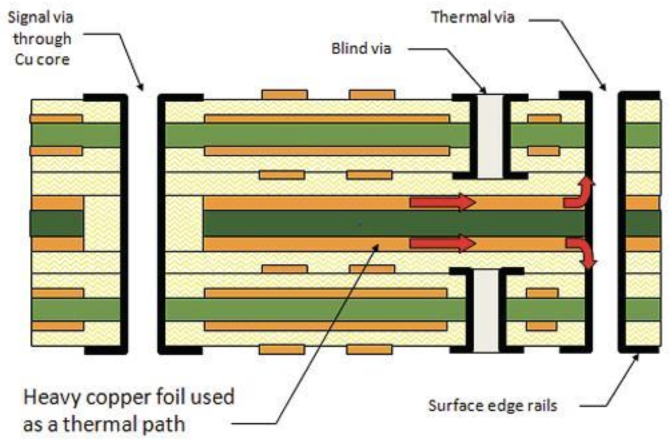


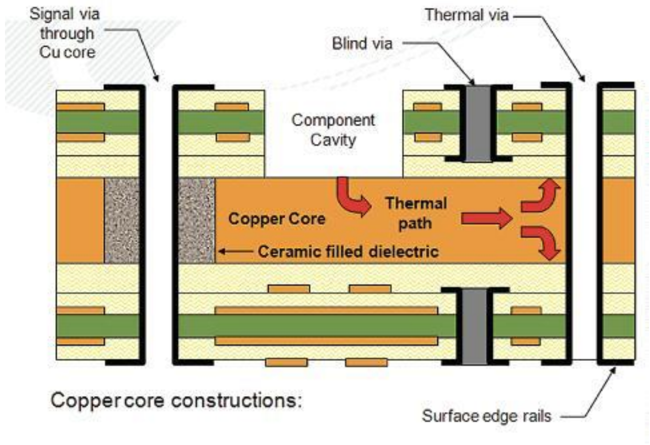
THERMAL MANAGEMENT

4 MOST COMMON APPROACHES









Thermal Solutions for PCB	Cost	Implementation Factor
Epoxy	No	No
91ML & 92ML	Low	Low
Laird / Thermagon	Low	Low
Aluminum 6061	Low - Med	Low
Copper (HHOF)	Low - Med	Low - High
Distributed Cu (4oz – 10oz)	Low - Med	Low - Med
Copper Invar Copper	Med - High	Med - High
BeBeO	High	Low - Med
Metgraf	High	Med - High