



Micro Systems Technologies
engineering for life

Interconnect Solutions such as Wrap-Around PCBs for Optimal Thermal Management

HIGHLIGHTS

- Wrap-around technology – flexible multilayer system wrapped around a metal core
- Integration of metal sheets and cores for fast heat dissipation
- CIC technology to control thermal expansion
- High reliability through copper filled microvias
- Miniaturized high-density solutions through ultra-thin materials, ultra-fine line technology, and advanced registration concepts
- EN 9100:2009 certification



DYCONEX

an MST company

Interconnect Solutions such as Wrap-Around PCBs for Optimal Thermal Management



For optimal thermal management of electronic modules DYCONEX features its wrap-around technology, back metal sheets, metal cores and CIC build-ups to provide PCBs for applications demanding high levels of integration density as well as maximum reliability. This is achieved by the use of wrap-around technology which enables designers to separate electrical from mechanical functions.

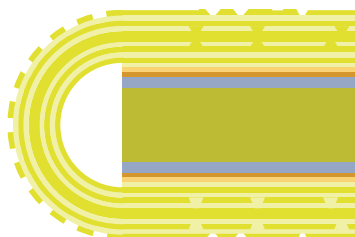
DYCONEX has long-standing expertise in delivering high-end PCBs and a firm understanding of the challenging characteristics and requirements of aerospace & defense electronics. Based on its Center of Competence for reliability, systematic methodologies have been developed to gather solid evidence about product and process reliability. DYCONEX manufacturing is based on automated standards using the very latest fabrication and inspection systems.

Wrap-Around Technology

Electrical functions completely isolated from mechanical functions
Flexible multilayer system supporting finest structures and reliable microvias for high interconnect density
Copper filled microvias for fast heat dissipation
Staggered or stacked microvias instead of long plated through holes for less sensitivity to thermal loads
Finished flexible PCB bent around a rigid core
Heat to be transferred to metal core
Core to be designed depending on mechanical and thermal requirements
Core materials: CIC, CMC, Al, various epoxies

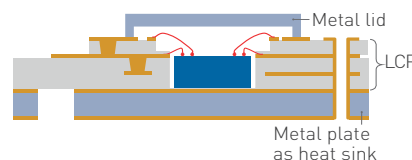


- Flex Polyimide
- Adhesive
- Surface Finish
- Copper
- Metal heat sink
- Polymide glass



Metal Sheets / Cores and CIC Build-Ups

Metal sheets to support fast heat dissipation as backpanels
Metal inserts and cores as effective heat sinks for sensitive active components
Liquid Crystal Polymer (LCP) material with excellent high frequency properties
Insulation materials: polyimide, various epoxies, LCP
Metal sheet materials: CIC, CMC, Cu, Al
Applications: transceiver/receiver modules, power supply modules, radar modules, monolithic microwave ICs, HF packages



Characteristics of Core Materials

Characteristic	Unit	CIC	CMC	CU	Al
Thickness	μm	112	100, 360	5-5000	500
Thickness Cu cladding	μm	18	18, 120	--	--
Young's modulus	GPa	119	263	130	70
CTE, XY	ppm/K	5	6	16	23
Thermal conductivity	W/mK	112	204	394	220
Heat capacity	J/kgK	479	286	385	900

CIC Copper-Invar-Copper

CMC Copper-Molybdenum-Copper

Based in Switzerland, DYCONEX has been in the PCB business for more than 50 years and delivers leading edge interconnect solutions in flex, rigid-flex and rigid technology. DYCONEX core competence lies in the production of highly complex HDI, high-frequency and high-reliability circuit boards for medical, defense, aerospace, industrial and semiconductor applications. DYCONEX is an MST company.



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