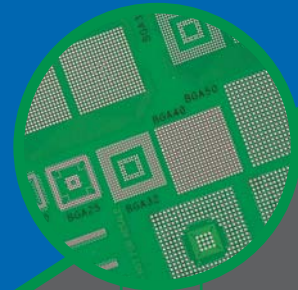


MILITARY & AEROSPACE

Printed Circuit Boards for the Military & Aerospace Industry



DYNAMIC & PROTO CIRCUITS (DAPC) MILITARY & AEROSPACE SERVICES

We are a leading manufacturer of high density, high reliability printed circuit boards for the Military and Aerospace Industry. Our state-of-the-art facility is specifically configured for the high mix, low to medium volume customer quick-turn requirements.

In 1998, we were the first non-captive printed circuit board company in North America to obtain MIL-PRF-31032 certification. We offer a wide range of advanced high speed and high performance military and aerospace preferred materials combined with our expertise to push the envelope on high density board designs. Our extensive SPC controls provide the enhanced, repeatable process capabilities to match and sometimes exceed our customers' expectations. DAPC offers RoHS compatible materials and processes to provide environmentally compliant solutions for our customers and our community.

Our powerful front-end engineering department features eleven single seat Cam stations running Genesis 2000 Cam software compatible with the ODB ++ enhancement. Design Rule Checks, Design for Manufacturability, and Impedance Modeling are conducted efficiently and accurately to ensure complete customer satisfaction and improve initial product integrity. We offer concurrent engineering services to help you reduce design cycle times. We also provide on-site and off-site DFM and DFR training sessions to ensure that we become your first choice for new design requirements.

DAPC – PEACE OF MIND

- Design Rule Checks
- Design for Manufacturability
- Design for Reliability
- Impedance Modeling
- Training Courses, DFM, DFR, Design for RoHS & WEEE compliant, & Introduction to printed circuit boards



CAPACITIES

PROTOTYPES AND PREPRODUCTION 2 – 10 DAYS

PRODUCTION 4 – 6 WEEKS

State-of-the-art continuous foil lamination press for controlled dielectric lamination



Plasma Chamber for precise etchback or desmear



Netlist flying probe testing to reduce cycle time



Our financial stability and success allows us to continue with a significant strategic capital investment plan which is specifically tailored to our customers' technology roadmaps and to enhancing our "best place to work" environment.

DAPC's team of highly motivated, knowledgeable employees are quality and performance driven towards continuous improvement. Our goal is to be the first choice supplier for high technology PCB solutions addressing the Military & Aerospace OEM and EMS providers.

OUR QUALIFICATIONS

- MIL-PRF-31032
- MIL-PRF-55110
- ISO 9001:2000
- IPC 6012

DAPC'S ITAR COMPLIANCE

What is ITAR?

International Traffic and Arms Regulations. Administered by the U.S. Department of State, in consultation with the U.S. Department of Defense and other relevant U.S. Government agencies, the ITAR sets forth U.S Government export and re-export controls on defense articles (i.e., items specifically designed or modified for military or space applications), as well as related technical data and services.

Why should you choose DAPC?

It is easier to buy from DAPC than a large company or a company with limited capabilities, or limited financial resources. We have built multilayer military boards since 1987 and have been registered with the Canadian Controlled Goods Program (CCGP) since the inception of the program.

As a Canadian PCB manufacturer registered with the Canadian Controlled Goods Program, we are mandated to implement many industrial security measures that are not required of U.S. PCB manufacturers:

- Plant-wide security and access systems
- Employee background checks
- Data files can only be viewed by Canadian Nationals
- Secured areas for documents and manufactured products.

We are not an offshore facility, therefore no sacrifice in delivery times. Time zone issues are minimized by using a North American facility.

How can I safely quote or place a Military purchase order with a Canadian company like DAPC?

A U.S. company can submit "build-to-print" technical data (e.g., drawings, specifications, and Gerber files) for the manufacture of ITAR-controlled PCB's to DAPC under the ITAR § 126.5 Canadian Exemptions, without first having to obtain a license or other written authorization from the U.S. Department of State. To ease our customer's use of this exemption, DAPC has flowcharts, checklists, and reporting templates and we have retained U.S. legal counsel to advise our customers on the exemption's specific requirements. Alternately, a U.S. company can apply for a DSP-5 export license from the U.S. Department of State to export data to DAPC which does not fall under the ITAR § 126.5 Canadian Exemption. This will require the U.S. Department of State's approval of a Manufacturing License Agreement for Offshore Procurement under ITAR Part 124. Given our considerable experience in manufacturing military PCB's, our customers normally only need to export build-to-print data using the ITAR § 126.5 Canadian Exemption for us to fill your order.



A Glance at DAPC's Design for Manufacturability for Military and Aerospace

	Standard	Advanced
Pad Size Internal over Drill	0.012"	0.010"
Pad Size External over Drill	0.014"	0.012"
Minimum Drill Diameter	0.008"	0.004"
Aspect Ratio	10:1	16:1
Impedance Tolerance	+/- 10%	+/- 5%
Micro Via Aspect Ratio	0.5:1	1:1
Maximum Thickness	0.125"	0.250"
Lamination Tolerance	+/- 10%	+/- 7%
Panel Size	18" X 24"	21" X 24"
Minimum Copper Weight	1/2 ounce	3/8 ounce
Maximum Copper Weight	3 ounce	5 ounce
Minimum Line Width & Spacing	0.004"/0.004"	0.002"/0.002"

DAPC Standard Materials Available for Military and Aerospace Fabrications

MATERIALS

High Temp FR4
 Polyimide
 BT
 GETEK and Nelco - 13
 Cyanate Ester
 Rogers 3006, 4000, 4350, 5880, 6002
 Taconic TLC, TLX, RF-35
 Arlon 522, 527

SURFACE FINISHES

HASL
 ENIG (Electroless Nickel Immersion Gold)
 Immersion Silver
 Immersion Tin
 OSP (Organic Solderability Preservative)
 Palladium
 Selective Hard Gold
 Wire-Bondable Gold
 Carbon Ink

SOLDER MASKS

Taiyo PSR 4000BN
 Dupont Vacrel Dry Film
 Conformask Dry Film

NOMENCLATURE

Epoxy Screened
 Ink Jet Printing



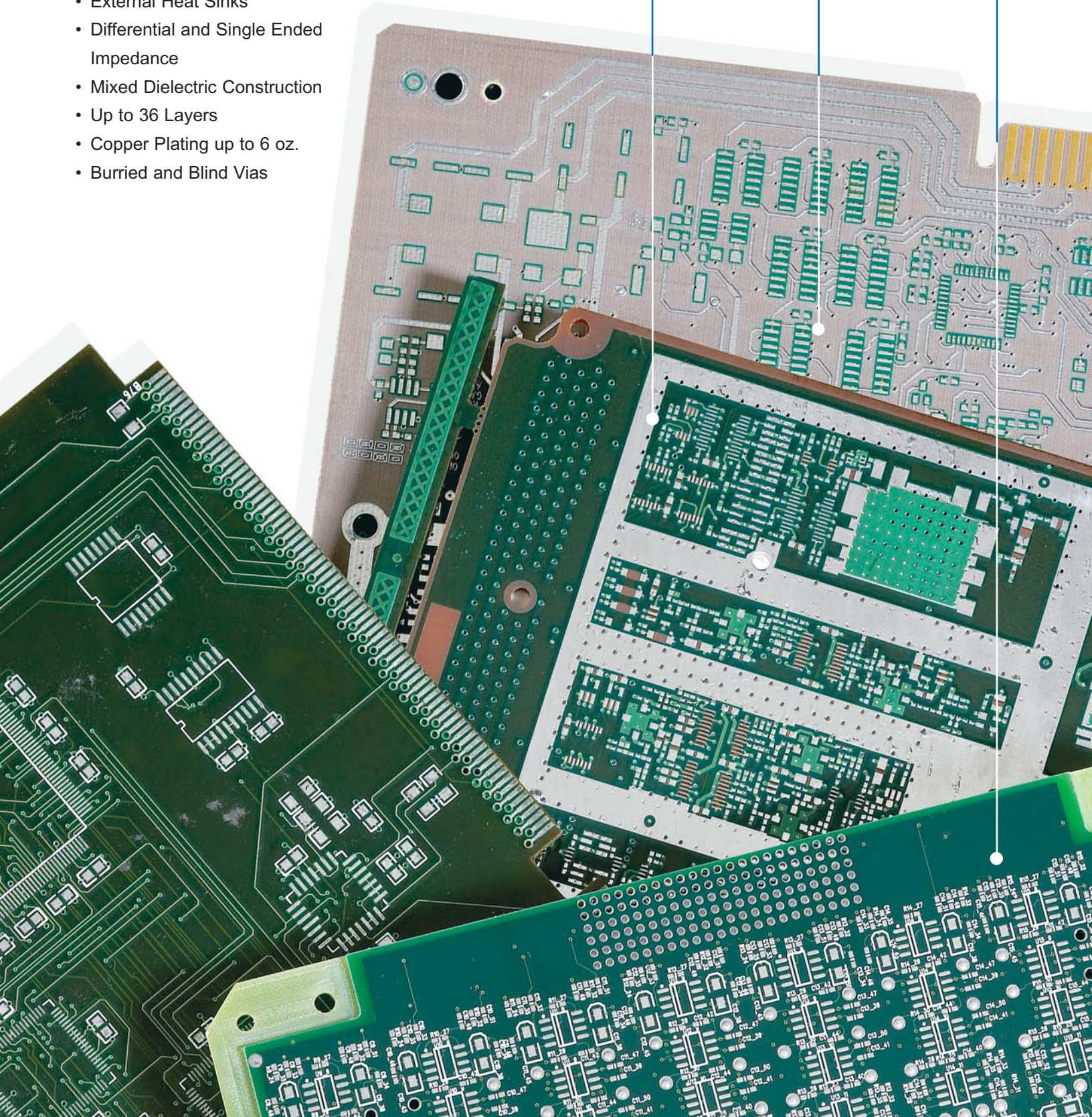
Multilayer FR4 with Controlled Depth Milling

DAPC is able to offer you the ability to design and fabricate PCBs with:

- High Density
- High Reliability
- Sequential Lamination
- Filled and Tented Vias
- Controlled Depth Drilling & Routing
- External Heat Sinks
- Differential and Single Ended Impedance
- Mixed Dielectric Construction
- Up to 36 Layers
- Copper Plating up to 6 oz.
- Burried and Blind Vias

Hybrid Teflon/FR4

Polyimide Multilayer





Dynamic & Proto Circuits Inc

869 Barton St
Stoney Creek, Ontario
L8E 5G6

Tel: 866.643.9900

Tel: 905.643.9900

Fax: 905.643.9911

Email: dynamicinfo@dapc.com

www.dapc.com