



CAPABILITIES THAT FIT YOUR NEEDS

STRONGER KNOWLEDGE, STRONGER RESULTS

PIONEER CIRCUITS CAPABILITIES OVERVIEW

UPFRONT SUPPORT

FREE TECHNICAL TRAINING SEMINARS

Our free technical training seminars are offered as lunch and learn sessions and are conveniently held at your site or at the Pioneer Circuits Learning Center. Webinars are also available upon customer request.

CONCURRENT ENGINEERING

Concurrent Engineering is a unique design service in which our team of experienced engineers collaborates with our customers to achieve pcb solutions with product reliability, guaranteed producibility and reduced cycle time.

MATERIAL SELECTION ASSISTANCE

Our decades of experience has given us insight on the highest quality materials, and we continually use what has been successfully tested for long term reliability.

OUR CAPABILITIES

- √ Upfront Support 1
 - > Training Seminars
 - > Concurrent Engineering
 - > Material Selection
 - > Design Guidelines
 - > Mock Ups
 - > Artwork Layout
 - > Drawings

- √ Manufacturing Capabilities 2
 - > Book-Binder
 - > Extended Length Flex
 - > Large Panel Rigid Flex
 - > Alternative Shielding

- √ Assembly Services 3

- √ Certifications 3
 - > Aerospace QMS
 - > Fabrication
 - > Assembly

- √ Contact 3

IMPEDANCE MODELING/DESIGN GUIDELINES

The most successful projects have Pioneer Circuits' involvement early on in the process. Therefore, our impedance model and design guidelines can help to anticipate and eliminate issues before manufacturing begins.

NO CHARGE MOCK-UPS

Pioneer Circuits' free mechanical mock up services allow you to optimize your design without incurring the costs and time of an actual build.

FLEX ARTWORK LAYOUT

With decades of experience in flex and rigid flex production, we are experienced to help you with your flex artwork layout with emphasis on manufacturability.

DRAWINGS IN YOUR CAD FORMAT

We never retain the design "rights" or control, making sure our customers always get the final say for their drawings.

MANUFACTURING CAPABILITIES

BOOK-BINDER RIGID FLEX

- Staggered flex lengths to accommodate bend radius

EXTENDED LENGTH FLEX

- Multilayer flex 10M and longer
- Customer splice interconnects
- Controlled impedance maintained

LARGE PANEL RIGID FLEX

- Part size up to 22" x 34"
- Customer panels up to 80"

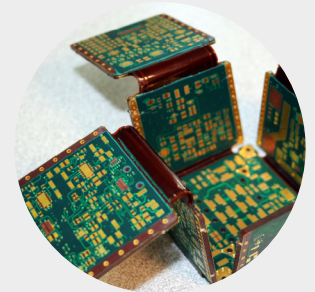
ALTERNATIVE SHIELDING

- Silver Epoxy
- Sputtered (Thin) Nickel-gold
- Thermal management with Constantan
- Ceramic matched CTE Materials

DESIGN TIP

Always be careful in making sure that your data matches your drawings!

Check for items such as hole schedules for correct counts, data dimensions and radius callouts, & line width and spacing requirements (with manufacturing tolerances taken into consideration.) These are some sources for the largest amount of reported errors and reasons for product launch delays.



FEATURE HIGHLIGHT

Book-Binder Technology: Our Book-Binder Technology allows for much more complex designs such as the cube you see pictured above that went into a space exploration program. Staggered flex lengths are created to accommodate the necessary bend radius. With the book-binder, efficient use of space enables stress-free installation. Book-binders also enable 3D form factor with high layer rigid-flex.

ASSEMBLY SERVICES

1. SMT, Compliant pin & through-hole processing
2. Process controls for flex materials
3. Formed leads
4. Connectorized Assemblies
5. Connector Potting
6. Conformal Coating
7. Custom Form Fixtures
8. "Box Level" Turnkey

CERTIFICATIONS

AEROSPACE QMS
AS9100 & ISO 9000

RIGID-FLEX/FLEX/RIGID FABRICATION
IPC-6013 Types 1-5, Class 3
IPC-6012 Types 1-3, Class 3 & 3A (Space)
MIL-PRF-31032 / 1-4
MIL-PRF-50884 Types 1-5 (Adhesive & Adhesiveless)
MIL-PRF-55110
NADCAP AC7119 (Third party Process Certification)
Associates Certified to IPC-A-600

ASSEMBLY
J-STD-001, Class 3 (Including SE/Space Addendum)
NASA 8739.1, .2, and .3 (JPL Certified Trainer)
Associates Certified to IPC-A-610

TECHNICAL CONTACTS

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DESIGN TIP

Avoid adding "stress risers" in flexible sections. Failure due to cracked copper traces can be caused by design deficiencies. To avoid this, keep circuit paths perpendicular to the bend. Do not place components or vias in flexible areas, and do not make angular transitions in circuit routings. Try to use large radius transitions throughout your design.



CASE HIGHLIGHT

NASA/JPL's Curiosity Rover. Through concurrent engineering, Pioneer Circuits was able to help NASA's JPL team to design the flex circuitry for the Curiosity Rover that landed on Mars in 2012. Pioneer Circuits' extended length flex technology goes up into Curiosity's camera mast and can be seen like in the picture above when the rover takes a selfie. The rover and our flex have both outlasted its 2-year-mission goal on Mars.