



**all flex**  
SOLUTIONS

# **RIGID FLEX** **SOLUTIONS**



Military Survivability



Commercial and Industrial Electronics



Medical Diagnosis and Treatment



## Why Rigid Flex?

### The innovation in your products...

Rigid Flex circuits give you a unique tool to bring your innovative packaging ideas to market, and to separate your products from the crowd. Rigid Flex gives you the ability to design your circuitry to fit the device, rather than building the device to fit the circuit board.

### The density in your packaging...

The standard dielectric in flexible circuits is .001 - .002" making it a natural for ultra thin, ultra light packaging. Adhesiveless laminates, HDI and thin copper layers make it ideal for fine line technology, giving you the smallest – thinnest – lightest solution for your circuit designs.

### The reliability of your circuitry...

Rigid Flex circuits are designed for the rigors of aerospace, medical and military applications, for the ultimate reliability. Rigid flex assemblies also reduce connectors, and the labor, yield, transmission, and reliability issues that are inherent in their application.

## Why All Flex Solutions?

### We're focused...

In 1982 we built our first rigid flex, and in 1997 we decided to invest in the technology, equipment and people to excel at rigid flex manufacturing. That is over 40 years of rigid flex expertise, so we have the focus and experience to help you engineer your product for success.

### We're certified...

All Flex Solutions boards are used in military, aerospace, and medical applications, where there's no option for failure. We are certified to ISO 9001:2015. The reliability of our technology is built into your product.

### We're friendly...

At All Flex Solutions we love a challenge, and would love to work with you to produce your next design. Ask to see some examples of our work, and how we've given package designers the innovation, circuit density, reliability, focus, certification, and friendly service they needed to compete in today's electronics marketplace.



## Customer Focus:

- Medical devices
- Military electronics
- Avionics
- Aerospace/satellite
- Telecommunications
- High reliability packaging
- Industrial Electronics

## Typical Applications:

- High reliability requirements
- Flex to install
- Dynamic flex for long life
- Microelectronic packaging
- UL certification requirements
- Buried passive components for improved device reliability
- Challenging Shock and Vibration Environments
- Extreme G force applications

# RIGID FLEX SOLUTIONS

## Enabling Technologies....

Technologies that we use to bring your concepts to reality

**Laser Direct Imaging** LDI offers the ability to image below .003/.003 with excellent repeatability and registration, but where it excels is providing dimensional scaling holding annular ring tolerances on outer layers and soldermask registration within  $\pm .001$ "

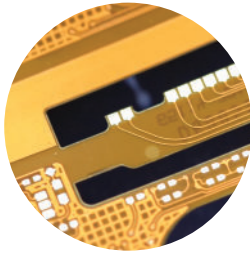
**Laser Drilling and Routing** Laser gives you improved capabilities for very tight tolerance work with reasonable cost, and provides greater density with laser vias.

**"Smart" Equipment** integrated equipment that provides manufacturing data back to engineering in a feedback loop that increases manufacturing yield.

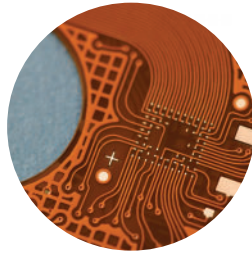
**Notion Direct Soldermask and Legend Ink Printing** providing the next generation in mask and legend ink printing



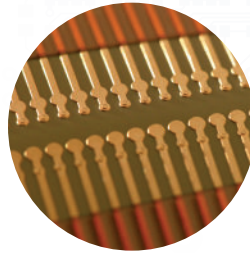
LDI imaged antenna – .004/.004 with perfect front to back registration.



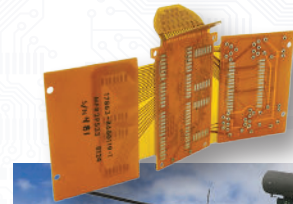
Laser routed flex  $\pm .001$ "



.004/.004 pads with Laser Direct Imaged photoimagable coverlayer



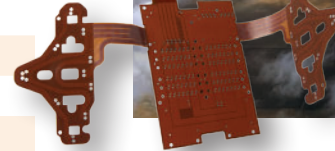
Bump plating within traces



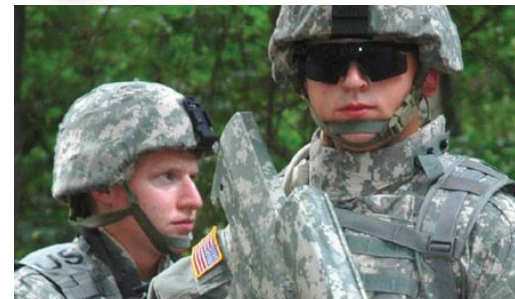
All Flex Solutions first rigid flex, built in 1982 for the Apache

## All Flex Solutions Rigid Flex Capabilities

Board Attribute	Standard Technology	Advanced Technology
Layer Count	4-20	22-30
Board Thickness	.009"-.093"	.004"-.250"
Internal Imaging	.003"/.003"	.002"/.002"
External Imaging	.004"/.004"	.003"/.003"
Minimum Dielectric	.001"	.001"
Minimum Copper	12 $\mu$	9 $\mu$
Minimum Drilled Hole	.006"	< .006"
Minimum Laser Via	.006"	.004"
Aspect Ratio	10:1	> 10:1
Impedance Tolerance	$\pm 10\%$	$\pm 5\%$

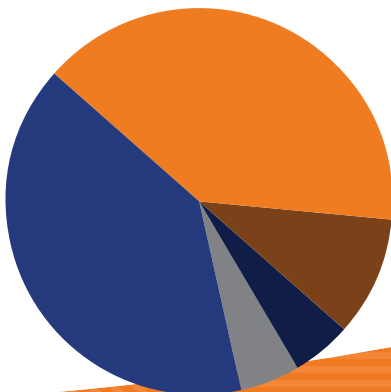


F22 Raptor



"Smart" Weapons

## All Flex Solutions Industries Served



- Medical Devices** 40%
- Military Electronics** 40%
- Aerospace - Avionics** 10%
- Telecommunications** 5%
- Instruments - Industrial** 5%



High Vibration Avionics



## All Flex Solutions Certifications:

Registered with US Department of State for ITAR compliance, Code M13523

US and Canada Joint Certification Number 0040478

ISO 9001:2015 from Det Norske Veritas

The most extensive UL Qualification for Rigid Flex in the World - file number E67398

Cage Code: 65114

SIC Code: 3672

NAICS Code: 334412

Commodity Code: 1784901



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