

**api**   
technologies corp.

**MICROELECTRONICS  
CAPABILITIES & PRODUCTS**

# COMPANY SNAPSHOT



- Dominant technology provider of RF/microwave, microelectronics, and security products for critical and high-reliability applications
- Deliver high performance, innovative products and services for critical space, defense, aerospace and commercial applications
- 50% Defense / 50% Commercial
- Publicly traded (NASDAQ: ATNY)
- 2,000+ Employees
- Annual revenues of over \$325 million
- Company behind some of the most well-known product brands in the industry

Featured  
Product  
Brands



# ADDING CAPABILITIES EVERY DAY

## 2007

- Data Bus Products
- Analog Mixed Signal Products
- Components

### Key Acquisitions:



1981: Founded

## 2009-2010

- TEMPEST & Emanation Security, Encryption & Ruggedized Systems
- 1553 Data Bus
- Sys & Subsys Solutions
- Build-to-Print Services

### Key Acquisitions:



June 2011: NASDAQ Listed

## 2011

- Integrated & Multi-Funct RF Assemblies
- Microwave Filters
- Oscillators
- Power Management
- Sensors
- Hybrids
- Active/Passive Compnts
- EMI Filters
- Class K (Space)
- Secure Communications
- EMS

### Key Acquisitions:



## 2012-Present

- Radar Subsystem Solutions
- RF Systems
- RF/Microwave Modules
- Integrated & Multi-function RF Assemblies
- RF Silicon & RF Components
- Power Amplifiers
- Microelectronics
- Custom Magnetics
- Specialty Connectors
- Rugged Power Rectifiers
- Power Distribution Units
- Secure Mobility Solutions

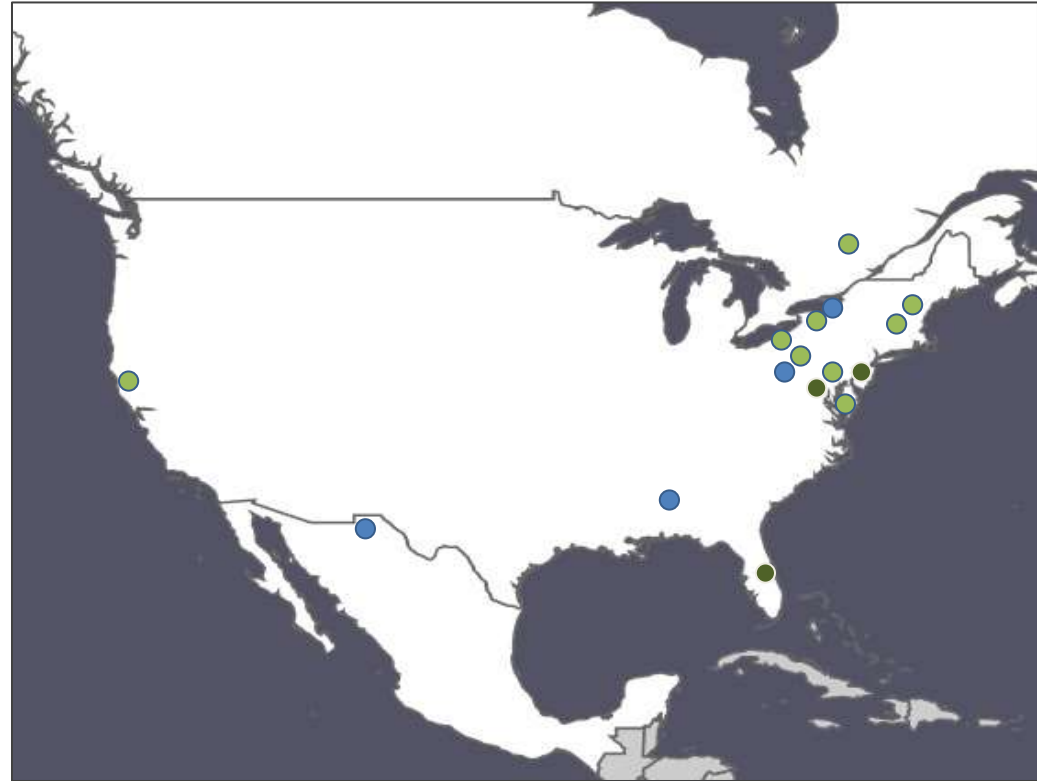
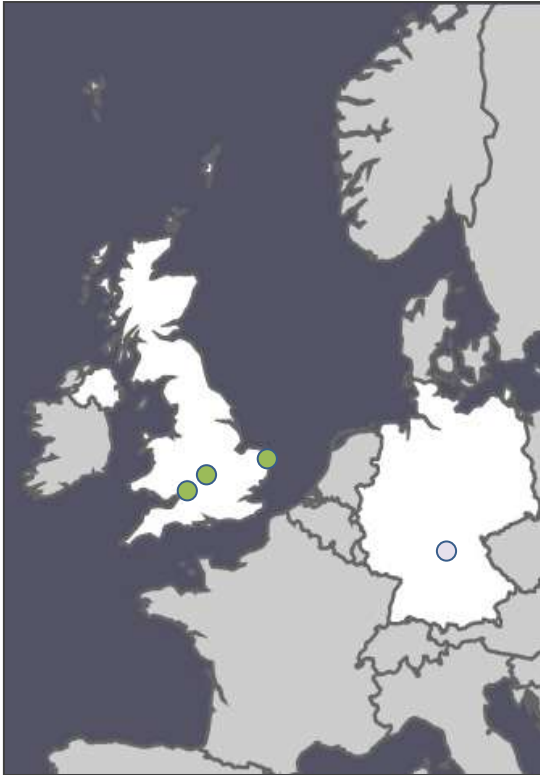
### Key Acquisitions:



 New/Expanded Products & Capabilities

# API TECHNOLOGIES LOCATIONS

● Design & Manufacturing    
 ● Design Center    
 ● Manufacturing Center    
 ○ Sales Office



- Domestic & International Footprint
- Trusted facilities & personnel
  - 12 Trusted facilities (US, UK, and Canada)
  - High barriers to entry*
- Certified facilities, including:
  - MIL-PRF-38534 (Class H and K)
  - AS9100 Rev C
  - ISO 13485:2003
  - ISO 9001:2008 (All manufacturing facilities)
- International manufacturing locations are API companies and not subcontractors; same equipment and processes as U.S. facilities
- Global Sales Presence

# WORLD-CLASS FACILITY

API Technologies has outfitted a 45,000 ft<sup>2</sup> facility to support the combined manufacturing and engineering operations of our Worcester and Marlborough facilities. Located in Marlborough Massachusetts Technology Park, the facility is AS9100 registered and fully certified to MIL-PRF-38534 Class H and Class K standards.

API is a designer and manufacturer of RF/microwave and hybrid components, microwave, MMW, and microelectronic assemblies for defense, space systems, satellite, high-rel commercial, communications, avionics and ruggedized industrial applications.



## API Benefits

- 30,000 square feet of Class 100,000 Clean Room
- Prototypes, Production and Qualification
- Reduce Size/Lower Weight
- Improve Performance and Reliability
- Full Temperature Testing
- Environmental Stress Screening
- MIL-PRF-38534 Class H / K

# COMPLETE SOLUTION PROVIDER

## Technologies

- Mixed Signal & Power
- RF, Microwave & MMW
- Optoelectronics
- Space
- Thin Film / SAW Wafer
- Power Conversion / Regulation

## Markets

- Defense (MIL-PRF-38534 Class H)
- Space (MIL-PRF-38534 Class K)
- Avionics
- Hi-Rel Commercial
- Ruggedized Industrial
- Secure Communications

## Capabilities

- Advanced Engineering
- High Density Manufacturing
- DC-50 GHz
- High Reliability
- Class K Certified Facility
- Thin Film / SAW Wafer Fab



# CERTIFICATIONS & QUALIFICATIONS

- Manufacturing Facilities Certified to ISO 9001:2008
- EN/JISQ/AS9100:2009 certified
- 6 Certified AS9100 Facilities
- ANSI 20.20 Compliant Facilities
- Department of State ITAR Compliant
- Cleared Facilities & Personnel
- Six Sigma Greenbelts
- Certified Facilities to MIL-PRF-38534 (Class H and K)
  - Certified and Qualified by the Defense Logistics Agency
- QPL MIL-PRF-15733 & MIL-PRF-28861 (Selected Products)
- MIL-STD 790 (DSCC), MIL-STD 1553 (Data Bus), MIL-STD 883 (Hybrid), MIL-STD 202 (Passive), MIL-STD-810 (Systems), MIL-STD 461 A/B/C/D/E (EMC), MIL-STD 1399 Surge (EMC)
- Solder/Assembly J-STD-001 Class 3 and IPC-A-610
- NEBS Approved (Selected Products)
- RoHS Compliant (Selected Products)

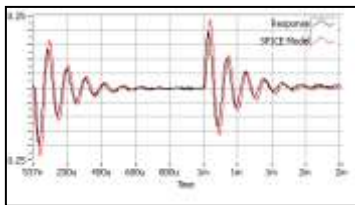


# ENGINEERING CAPABILITIES

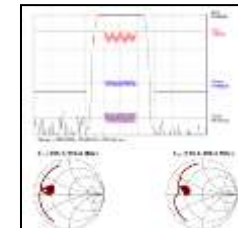
## State-of-the-Art Engineering

Using state-of-the-art software and simulation tools, our experience engineering team is able to quickly take a requirement from concept to production.

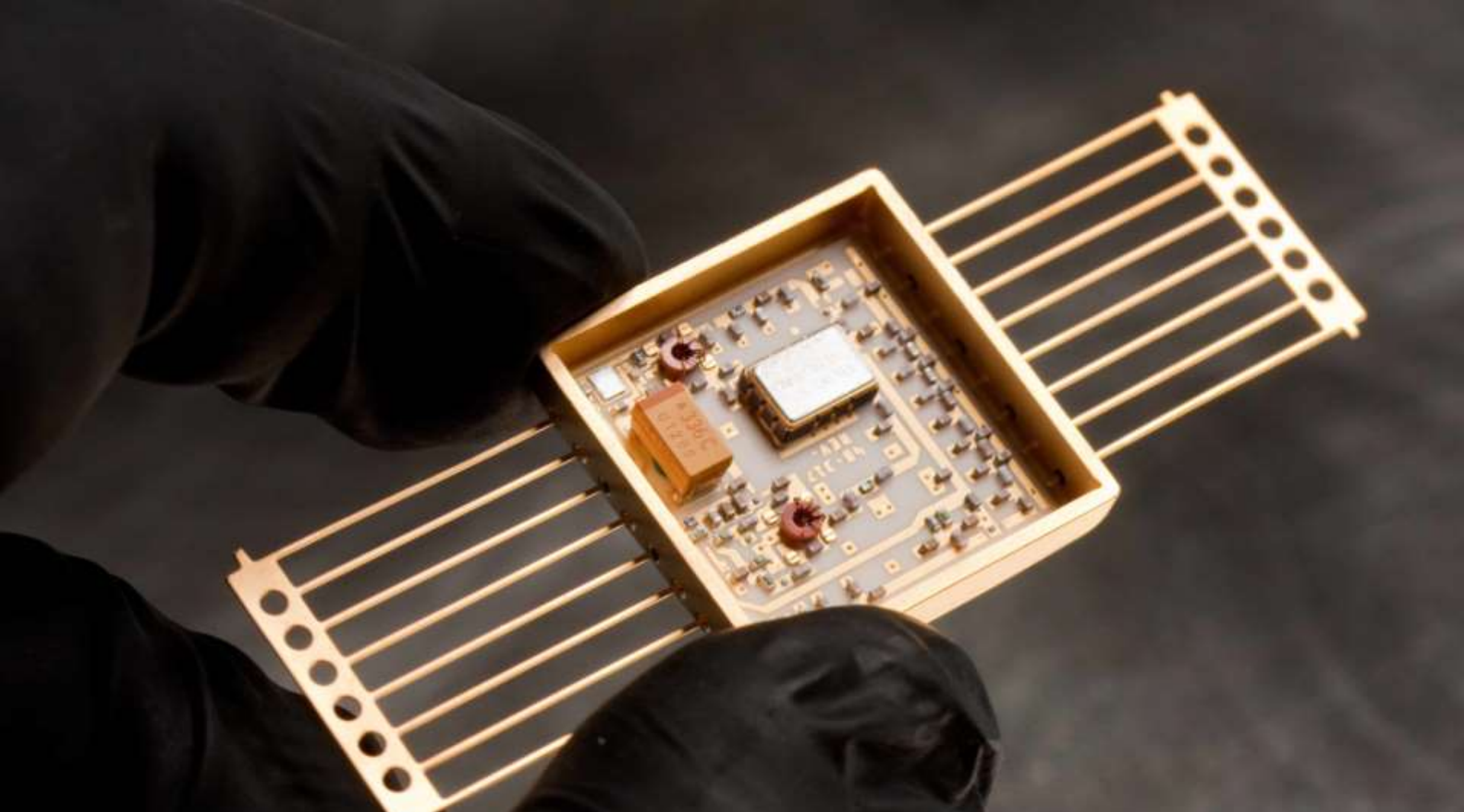
- Ansoft HFSS
- Ansoft Designer
- Microwave Office
- Agilent ADS Design Suite
- SolidWorks
- Labview
- Agilent Genesys
- AutoCAD
- Cadence Allegro
- Sonnet EM Simulator
- PSpice
- PCad
- Or Cad
- Finite Element Analysis for Thermals



**orcad**  
a Cadence product family





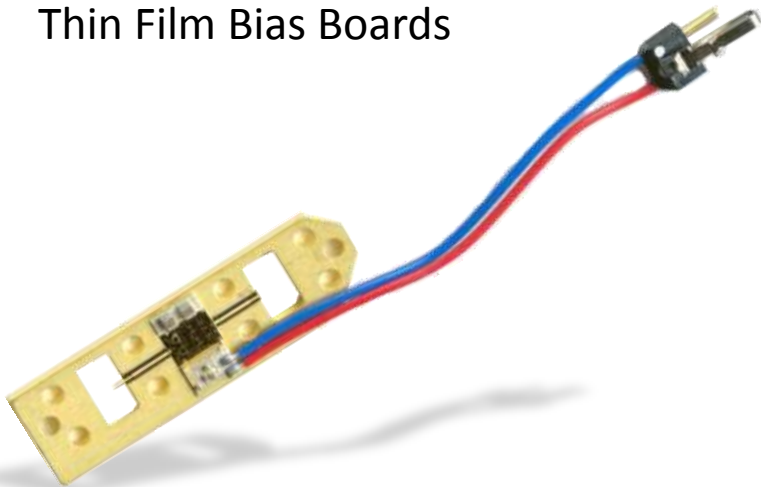


RF, Microwave & MMW

## STANDARD PRODUCTS

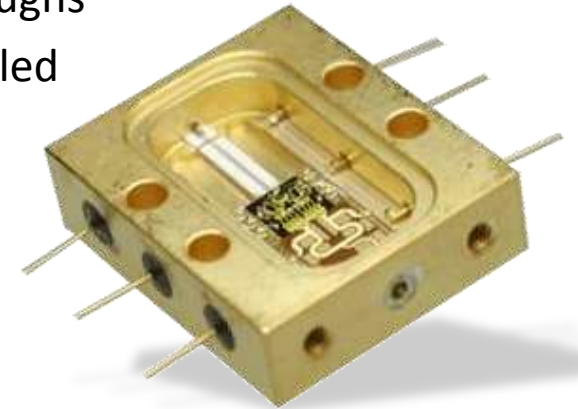
### Q Band Power MMIC Amplifier

- Power MMIC
- Micro Strip to Waveguide Launches
- Proprietary MMIC Attach
- Thin Film Bias Boards



### S Band SiC/GaN MMIC Amplifier

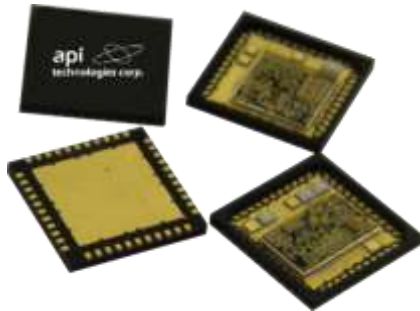
- High power RF amplifier using SOA III-V compound semiconductor and high dielectric barium titanate thin film
- Custom Package with Hermetic Feedthroughs
- Laser Sealed



# STANDARD PRODUCTS

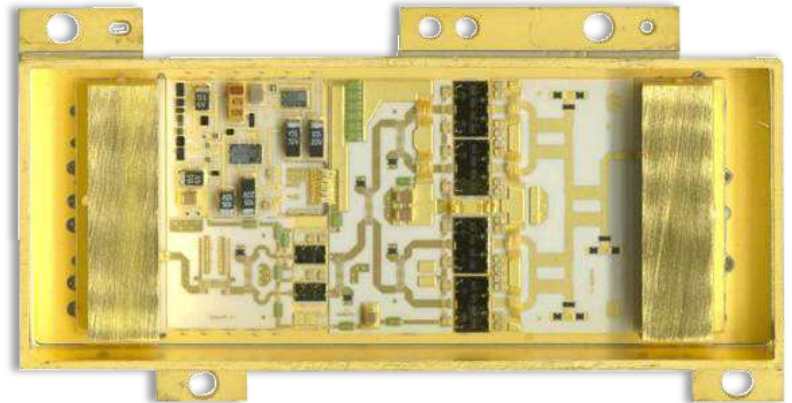
## QFN (Quad Flat No-lead) “Air Cavity” Package

- Proprietary Void Free Solder Die Attach
- MIL Temp Cycle Range
- Micro Strips
- Chip Caps
- Matched CTE
- Static Burn-in



## High Power Radar (X Band) Amplifier

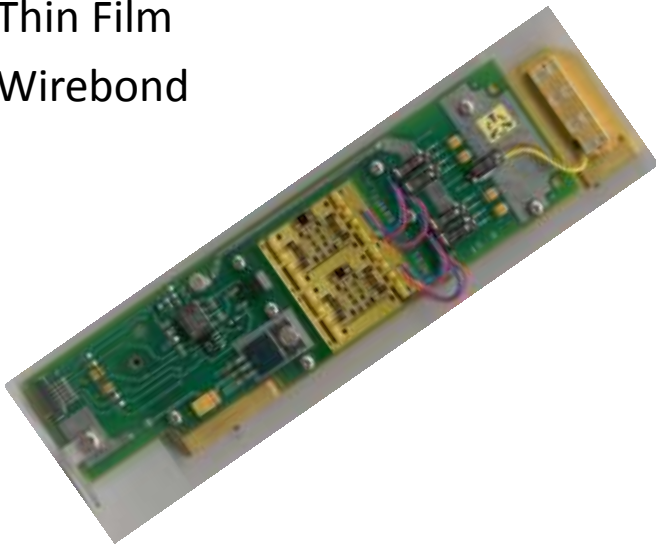
- Microstrip to Waveguide Launches
- Proprietary MMIC Attach
- On-board Power Supply



# STANDARD PRODUCTS

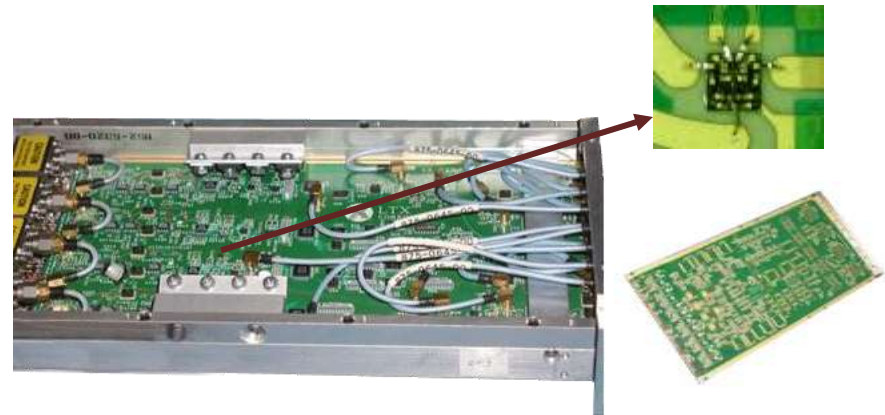
## 16-way Power Amplifier

- Vertical Integration
- Proprietary Die Attach
- Full Test of MMIC and Combiner Level
- Thin Film
- Wirebond



## Mixed SMT & Chip on Board (COB)

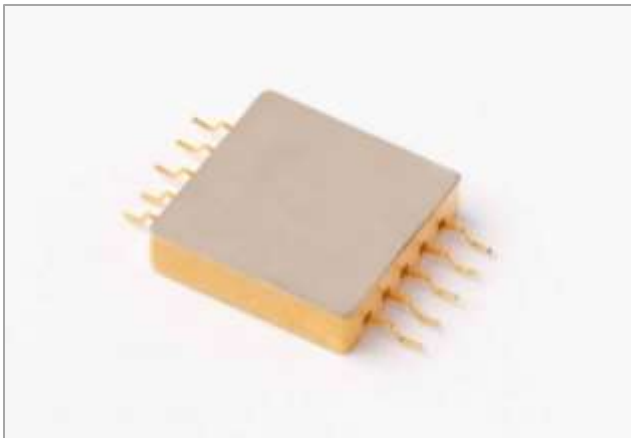
- Complex High Frequency Multi-Layer Board
- Surface Mount, Thru-hole Bare Die and Wire/Ribbon Bonding Used
- Full Functional Testing



## STANDARD PRODUCTS

### PIN Diode Drivers

- MIL-STD-883 Level B Screening
- Inverting and Non-inverting Modes
- Positive and Negative Output Currents
- $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$  Operating Temp

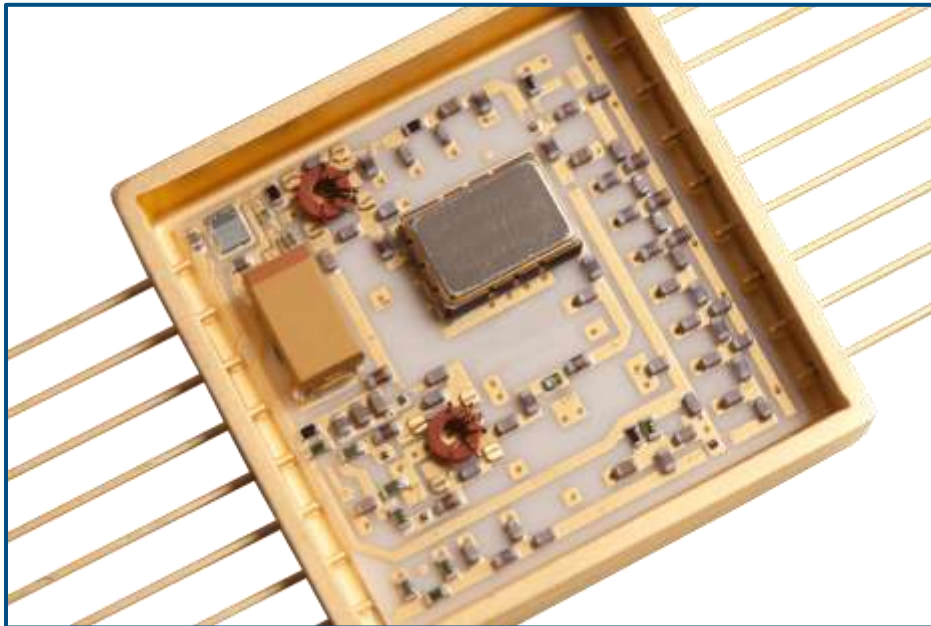


### 1090 MHz SAW Oscillator Build-to-Print

- MIL-PRF-38534 Class H Assembly
- Complete Microwave Testing Capability
- API SAW Wafer Fab
- Engineering Support for Process Design Testing



## SAW Controlled Voltage Oscillators



- Exceptionally Low Phase Noise (Less Than  $-124$  dBc/Hz at 1 kHz Offset)
- Linear Tuning
- Available From 100 MHz to 2 GHz Fundamental
- Frequency Multiply Option for Higher Frequencies
- Suitable for Applications with High Vibration Environments

# MICROELECTRONICS - POINTS OF CONTACT

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