

## Spotlight on: MS Kennedy Corp.

**Location: Liverpool, NY**



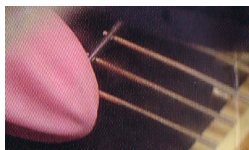
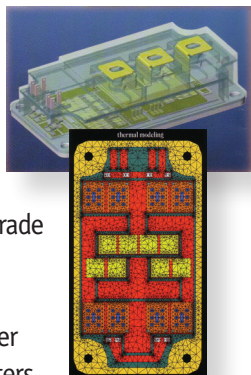
Founded in 1971, added to Anaren's Space & Defense Group in 2008, and headquartered in its sophisticated, 43,000 sq. ft. manufacturing facility — MS Kennedy Corp. is a supplier of high-performance analog microelectronics to the world's Tier-1 military and aerospace contractors

Armed with an impressive arsenal of design, manufacturing, and testing capabilities, MSK offers a wide array of time-tested, standard products (ranging from operational and video amplifiers, DC-DC converters, voltage regulators, and a new generation of RAD-hard components). Additionally, the company provides a fast-growing list of custom hybrids, power hybrids, and multi-chip modules applying robust circuit design and versatile packaging techniques — including advanced SMT pick and place, automatic wire and die bond, and automatic test, all in accordance with applicable military certifications.

### Core competencies

#### High-performance, high-reliability components modules (standard or custom):

- > combined with high thermal conductivity packages in a wide variety of configurations, MSK provides military- and/or aerospace-grade power modules and hybrids for use in motor control, actuators, power supplies, inverters, switches, and other power control applications.

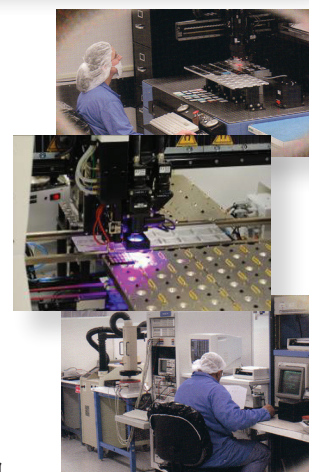


- > when provided with a schematic, parts list, and performance/configuration goals, MSK generally produces a hybrid or MCM design for customer approval and prototyping in 12 weeks or less.
- > production quantities can be scheduled over 12-18 months based on customer needs.
- > all above resources available at highly cost-competitive basis

### Capabilities

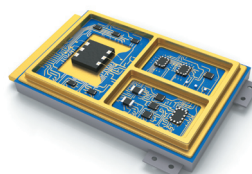
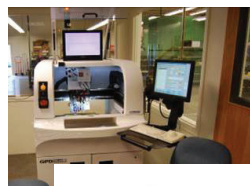
#### Microelectronics engineering:

- > Circuit Design Group — segmented by major product groups (e.g. motor controls and drivers, DC-DC converters, voltage regulators, etc.)
- > Layout Design Group — utilizing AutoCAD, SolidWorks, Electronic Packaging Designer software for schematic capture and physical layout of each hybrid circuits or power module
- Mechanical/Process Engineering Group — employs software in support of the design/



processes used in production; includes mechanical stress analysis (ANSYS), thermal analysis (TAS), and reliability predictions (Relax)

- > Test Engineering Group — uses a variety of software to support generation of test programs, including C++, Visual Basic, and JTAG (testing of complex IC)



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### State-of-the-art build-to-print/manufacturing:

- > automated wire bonding
- > automated die bonding & deep cavity die attach
- > precision fluid dispense
- > cleaning, hermetic sealing & leak detection
- > proprietary stacking
- > state-of-the-art chip & wire

### Robust testing:

- > All Class K screening and most QC functions are performed in-house, including:
  - burn-in
  - bond pull
  - die shear
  - thermal cycling
  - constant acceleration
  - hermeticity
  - PIND
  - electrical test

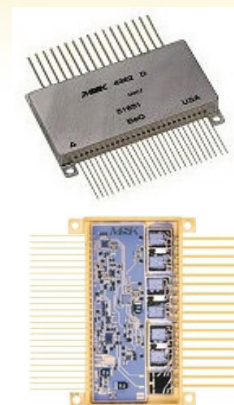
### Wide range of materials:

- > proven expertise in direct-bond or actively brazed copper on ceramic (Alumina, Beryllium Oxide, Aluminum Nitride, or Silicon Nitride) for power semiconductor substrates — and multilayer thick film on ceramic for the small, signal-control substrates
- > experienced with multilayer thick film, co-fired ceramic, thin film, and chip-on-board techniques

- > linear regulators
- > switching voltage regulators
- > DC-DC converters
- > filters
- > RAD-hard components & modules

### Custom products:

- > hybrids
- > power hybrids
- > multichip module
- > RF multi-chip modules



## Certifications & qualifications

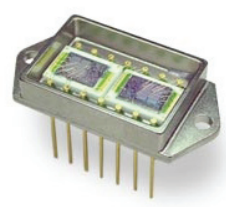
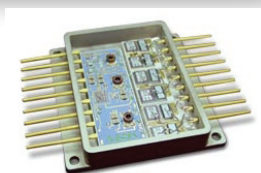
In addition to offering one of the highest QML (Qualified Manufacturer Listing) processes in our industry, MSK offers the following credentials:

- > Class H and Class K MIL-STD-1722 certified
- > Class H and Class K MIL-STD-38534 certified
- > ISO 9001 certified (by the Defense Supply Center Columbus, DSCC)
- > AS 9100
- > ISO 9001

## Specialty products

### Standard products:

- > operational amplifiers
- > video amplifiers
- > motor drives & controllers
- > high-power encapsulated modules (PEMs)



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Anaren Space & Defense Group  
c/o MS Kennedy Corp —  
a subsidiary of Anaren Microwave, Inc.  
4707 Dey Road  
Liverpool, NY 13088  
T: 315.701.6751  
F: 315.701.6752  
email: space&defensemktg@anaren.com  
or c.taylor@mskennedy.com\  
www.anaren.com or www.mskennedy.com