

# Advanced Materials and Solutions



# About CTS Advanced Materials and Solutions (AMS)

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CTS strives to deliver innovative solutions to enable an intelligent and seamless world. Our solutions enhance the body, home, and connections from deep sea to deep space.

## Piezoelectric Components and Devices

Piezoelectric materials convert a mechanical signal into an electrical signal and vice versa. They are used as actuators, sensors or transducers.

## Temperature Sensors

Temperature sensors monitor and control temperatures in critical applications where failure is not an option.

## Radio Frequency Filters

RF filters are ceramic components that pass a specific range of signal frequencies (0.2 to 40GHz) and block out undesired frequencies commonly used in wireless communications or for sensing applications such as GPS or RADAR. Can support ITAR and cleared projects.

## Electromagnetic Compatibility (EMC)

EMC products help block unwanted electrical signals from electronic equipment to ensure proper performance.

## Sensors and Controls

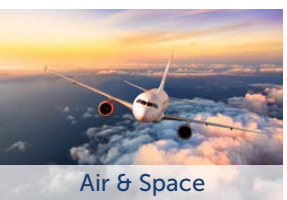
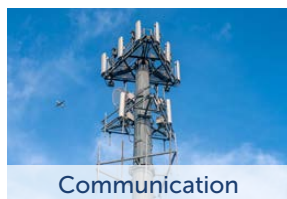
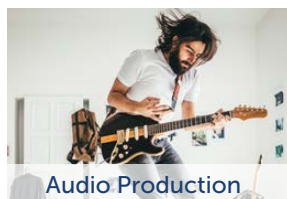
Sensor and Control products provide information related to status, position, angle, speed or other data to a system.

## Frequency Control Products

Electronic devices used for data stream clocking through systems requiring precision radio frequency (RF) generation.

## Our Applications

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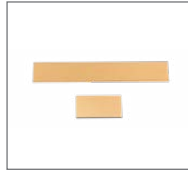


# Piezoelectric Components and Devices



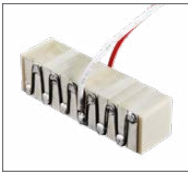
## Bulk Ceramics

- Geometries for specific applications
- >30 materials
- Textured and lead-free options



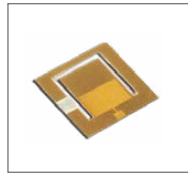
## Single Crystal

- High performance materials
- Advanced shaping, etching
- Ø100mm boule



## Multilayer

- High strain actuators
- Wide standard range
- Customizable



## Thick Film

- Printed piezo
- Flexible composite
- Additive manufactured



## Piezo Devices

- Custom assemblies
- Composites
- Additional functions



## Transducers

- In-house design or build-to-print
- Volume assembly
- Specialized solutions

# Frequency Control Products



## Crystals

- AEC-Q200,
- Temp: -40°C to +105°C
- Rugged design
- Wide frequency range



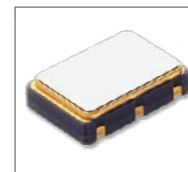
## VCXO

- PLL reference
- Data stream modulation
- High Fundamental Frequency (HFF) options



## OCXO

- Low phase noise floor
- Lowest power
- High shock survivability
- Precision RF source



## Clock Oscillators (XOs)

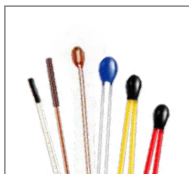
- AEC-Q200 qualified
- Industrial-grade,
- Wide frequency range



## TCXO/VCTCXO

- IEEE 1588 Timing
- 3GPP performance
- Meets GPS timing requirement

# Temperature Sensors



## Leaded Thermistors

- High Precision NTC or PTC
- Epoxy & Glass coating
- Commercial/ Mil Aero grades



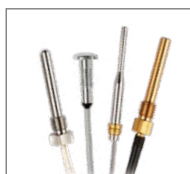
## SMD Thermistors

- Sizes Available: 0402, 0603, 0805
- Tin / Tin-lead / Gold plating options
- Board level mounting



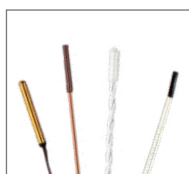
## IP68 TPE Probe Assemblies

- IP68 compliant
- Waterproof
- Thermistor /Pt RTD sensor elements



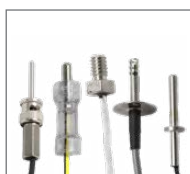
## Temperature Probe Assemblies

- Thermistor or Pt RTD
- Customizable housings and cable/connector options.



## Miniature/Micro

- Small size down to 0.020"
- +/-0.05C° accuracy
- Bare thermistor or probe



## Medical Products

- Disposable or Reusable
- +/-0.05C° accuracy
- YSI 400 series

# RF Filters



## Duplexers

- Freq (GHz): 0.3 – 2.7
- Average Power (W): 1 – 20



## Bandpass Filters

- Freq (GHz): 0.3 – 40.0 GHz
- Average Power (W): 1 - 32



## Diplexers

- Freq (GHz): 0.3 – 6.0
- Average Power (W): 1 - 20



## Delay Line Filters

- Freq 1.7 – 2.7 GHz
- Delay 5 – 18 nS
- Power 10W peak
- Universal footprint families



## Triplexers/Multiplexers

- Freq (GHz): 0.6 – 6.0
- Average Power (W): 1 - 18 W



## Low Pass Filters

- Cut-off frequency: 0.5 – 5.0 GHz
- Average Power 6 - 20 W
- Harmonic suppression

# Sensors and Controls



## Rotary Position Sensors

- Single & Multi-Turn
- Hall-effect & mechanical
- Mounting/sealing options



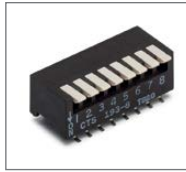
## Rotary Potentiometers

- Single & Multi-Turn
- Multiple sizes
- Customizable
- IP67 available



## Encoders

- Mechanical & Optical
- Ring encoders
- Shaft or bushing



## DIP Switches

- Pitch 0.100" & 0.050"
- Slide, toggle, piano
- Bottom seal or top tape
- Customizable



## Tactile & Pushbutton Switches

- Multiple operating forces and sizes
- LED illuminated versions
- IP67 available



## Joystick

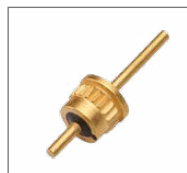
- 4-Directional Joystick
- Optical Encoder with 20 positions
- Integrated Pushbutton Switch
- Wire Option

# Electromagnetic Compatibility (EMC)



## Threaded Filters

- Highly Customizable
- L,C, Pi Available
- High Attenuation



## Mini & Sub-mini Filters

- Press-in and Solder mount styles
- Hermetically Sealed (optional)
- Light weight



## Filter Terminal Blocks

- UL Recognized
- Custom positions (2-8)
- 12 AWG pins for high power
- Rated to -55C to 105C



## Surface Mount Filters

- High power (20A)
- Round and Square Body
- Excellent Solderability



## Filter Assemblies

- Custom positions (up to 2 rows)
- Custom assembly (Plate) design
- Custom capacitance and lead length per pin

# About CTS Corporation

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CTS is a leading designer and manufacturer of products that Sense, Connect, and Move. We manufacture sensors, actuators, and electronic components in North America, Europe, and Asia, and provide solutions to OEMs in the aerospace & defense, medical, industrial, communications, information technology, and transportation industries.

## Contact

For more information visit:

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## For More Resources:

Educational Content: <https://learn.ctscorp.com/Educational-Literature>

Datasheet Lookup: <https://learn.ctscorp.com/datasheets>

