

# High-Reliability Capabilities

Optoelectronics



## Who We Are

TT Electronics is a global provider of engineered electronics for performance critical applications. With around 4,800 employees operating from 29 key locations around the world, TT designs and manufactures a wide range of electronics for sensing, power management and connectivity primarily for applications in the industrial, medical and aerospace and defence sectors.

Our experience and understanding of highly regulated markets enables us to develop and deliver reliable products to help solve our customers' toughest challenges.



### **TT Electronics is a leading manufacturer of customisable, highly reliable components and assemblies.**

We supply a comprehensive range of high reliability assemblies and advanced sensor technology through our OPTEK Technology brand, designed for demanding industrial, aerospace and defence applications.

Our customised, commercial Off-the-Shelf (COTS) and MIL-spec products – including innovative discrete semiconductors, microelectronics, sensors and optoelectronics are supported by a wealth of technical expertise and application experience in high-reliability, extreme performance designs.

Our accreditations include QML and QPL certification for JAN/JANTX level , Nadcap, IPC-A-610D, J-STD-00.

TT Electronics plays a role in many major current defence and aerospace programmes, and our team works closely with contractors at every level to help them meet the demanding challenges of the industry.

# Our design engineering teams work closely with you on complex applications to meet your requirements.

TT Electronics offers a wide range of expertise in the design and manufacture of optoelectronic and magnetic sensor components and assemblies, as well as solid state lighting solutions serving the high technology electronics industry. We specialise in providing leading edge solutions for medical, military, avionics, test & measurement, industrial and specialty commercial applications. With our on-site engineering and R&D department located in the United States and our world-class manufacturing facility in Mexico, we are able to meet the increased technology demands for a higher level of quality, reliability and performance

We offer screened high-reliability products in classifications of “TX”, “TXV”, “B”, “S” and “ESA” levels, and for various COTS custom requirements tailored to suit customer needs. Our quality system is centered on our [ISO/TS 16949:2002](#) and [BS EN ISO 9001:2000](#) certifications. TT Electronics operates to [TSAT](#), [MIL-PRF-19500](#), [MIL-PRF-38535](#) and [MIL-STD-750/883](#) performance requirements. We are also [ITAR](#) registered. By performing 100% test and inspection, we assure quality products every time.



## High-Reliability Assemblies

TT Electronics' high-reliability assemblies are custom devices designed to meet military and aerospace applications. They offer superior reliability and hermetic components.

### Product Highlights

- Hermetic chip & wire microelectronic assemblies
- Encapsulated chip & wire microelectronic assemblies
- Optoelectronic assemblies

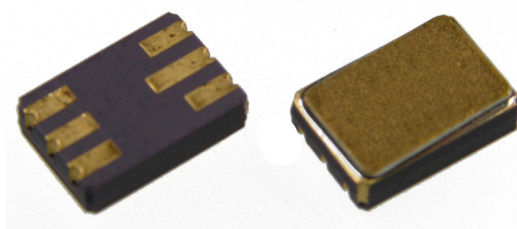


### Technical Capabilities

- Conductive systems include Au, Ag and PdAg
- Clean rooms to 10,000 ppm
- Die attach (conductive/non-conductive epoxy, eutectic, solder)
- Hermetic and local encapsulation
- Multi-site manufacturing
- Lead-free and 63/37 solder capability
- Extended temperature operation (-55 °C to + 150 °C)

### Qualifications / Certifications

- MIL-PRF-19500
- MIL-PRF-38534/38535
- MIL-STD-883/750
- TX, TXV, B, S and ESA Level
- ISO/TS16949
- ISO9001



# Advanced Sensor Technology

TT Electronics provides a wide range of sensor technologies uniquely suited to the rigorous requirements of military and aerospace applications, including optoelectronics and Hall Effect **S-level** sensors.

With the assistance of TT Electronics' design engineering teams, these technologies have the capability to be engineered to the high-reliability performance standards demanded by customer specifications while surviving the harshest environmental, temperature and mechanical stresses.

## Product Highlights

- Infrared LED and VCSEL optosensors and assemblies
- Surface mount optocouplers / optoisolators
- Hall-effect sensors and assemblies - through hole
- LED and sensor "pill packs"



## Technical Capabilities

- Infrared LED and VCSEL, 850nm to 940nm wavelengths
- Silicon and III-V design capability
- Reflective and interruptor optical sensor designs
- Hall-effect magnetic sensing (bipolar, unipolar, ratiometric)
- Comprehensive in-house group testing
- 100% parametric test capabilities



## Qualifications / Certifications

- 100% in-house screening and QCI testing
- (Group A, B, C, D) per MIL-PRF-19500 method of
- MIL-STD-750 and per MIL-PRF-38535
- MIL-STD-833, method 5005
- TX, TXV, B, S, and ESA-level process capabilities
- ISO9001
- ISO/TS16949
- TSAT

We offer discrete products that can be screened 100% and QCI tested (Group A, B, C, & D) per MIL-PRF-19500 to MIL-STD-750 for TX and TXV, and per MIL-PRF-38535 to MIL-STD-883 method 5004/5005 for B & S process levels.

Process	TX	TXV	B	S	ESA
<b>Bond Pull</b>	Sample	Sample	Sample	100% Non-Destruct	Sample
<b>Die Shear</b>	Sample	Sample	Sample	Sample	Sample
<b>Ball Shear</b>	Sample	Sample	Sample	Sample	Sample
<b>Pre-Cap Visual</b>	100%	100%	100%	100%	100%
<b>Electrical Test</b>	100%	100%	100%	100%	100%
<b>High Temp. Storage</b>	100%	100%	100%	100%	100%
<b>Temp Cycle</b>	100%	100%	100%	100%	100%
<b>Constant Acceleration</b>	100%	100%	100%	100%	100%
<b>Visual Inspect</b>	N/A	N/A	100%	100%	100%
<b>PIND</b>	Optional	N/A	N/A	100%	100%
<b>Fine &amp; Gross Leak</b>	100%	100%	100%	100%	100%
<b>HTRB</b>	100%	100%	N/A	100%	100%
<b>Burn-in &amp; Test</b>	100%	100%	100%	100%	100%
<b>X-Ray</b>	N/A	100%	N/A	100%	100%
<b>External Visual</b>	N/A	N/A	100%	100%	100%
<b>Lot Acceptance</b>	Yes	Yes	Yes	Yes	Yes
<b>Group-A</b>	Sample	Sample	Sample	Sample	Sample
<b>Group-B</b>	Sample	Sample	Sample	Sample	Sample
<b>Group-C</b>	Sample	Sample	Sample	N/A	Sample
<b>Group-D</b>	N/A	N/A	Sample	Sample	Sample
<b>Paperwork</b>	Customer Specified	Customer Specified	Customer Specified	Customer Specified	Customer Specified

# Success Stories

## Bipolar Hall Effect Sensors Utilised for Brushless DC Motors in Electronic-Controlled Communication Systems



**Part Number:** [OMH3075S](#)

A satellite actuation system required a combination of linear and rotary actuators to perform the necessary motion controlled functions.

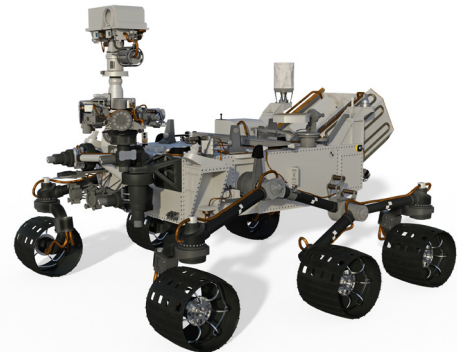
Our bi-polar Hall Effect sensor was utilised to determine the precise position and speed of the linear actuator shaft.

## Robust Hall Effect Sensors Used in Control Systems for Mars Rover Robotic Arm

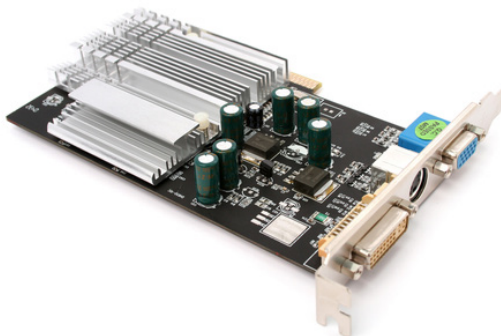
**Part Number:** [OMH3040S](#)

TT Electronics' Hall-Effect sensors are key components in NASA's Mars Rover.

These sensors detect magnetic fields in motors that control the speed and movement of the satellite's robotic arms.



## RAD Capable Optically Coupled Isolator for Electrical Isolation Between Circuits



**Part Number:** [HCC1001](#)

The HCC1001 Optically Coupled Isolator is utilised to supply close-loop feedback signals by feeding analog information from the output to the input control circuit in a space-level Un-interruptible Power Supply (UPS).



TT Electronics  
2900 E. Plano Parkway  
Floor 1, Suite 100  
Plano, TX 75074

[sensors@ttelectronics.com](mailto:sensors@ttelectronics.com)

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