



www.apctech.com

Specialist Electronic Components, RF & Microwave Solutions and Computing Systems for **Space**

Providing more than 40 years' expertise as an AS9120 accredited technical distributor for over 100 specialist technology solutions that meet the demands of modern space flight and ground station applications.

APC partners with leading manufacturers from around the world to offer the latest technologies for mission-critical success in space flight, outer space, NewSpace and ground station projects. Our team of experts are available to offer technical advice and guidance along with access to the right qualified parts to ensure mission success in the harshest of environments.

The latest technologies for space flight and ground station applications

- Qualified components for space and NewSpace
- Up and Downstream projects
- AI and on-board high-level data processing
- Power control, protection and distribution
- Communications systems
- Radiation simulation and testing
- Ka-band and millimetre-wave payload architectures
- Rotating and gimballed antenna systems
- Testing to MIL-STD-461 and SMC-S-008
- EMC compliance testing
- Power integrity and signal fidelity testing
- System debugging across subsystems
- Satellite channel and 5G network emulation

Specialist Electronic Components, Systems and Test Solutions,
Delivered With Technical Expertise

Space Flight Applications



3D PLUS

- Space flight and harsh environment components and Systems in Packages (SiP)
- High density SRAM, SDRAM, DDR2, DDR3 and DDR4 memory stacks, DDR terminal regulators and DDR memory controller IP cores
- PROM, MRAM, NAND, NOR, RTIMS and MNEMOSYNE memory ICs
- SPI, QSPI, OSPI FPGA serial boot memory for processors and FPGAs
- FUSIO SRAM based FPGA inclusive of boot memory and NV memory/SDRAM
- COMBO boot and scrub solutions for SRAM FPGAs
- Camera head and lens options for space 4M, 12M, SWIR
- POL, LCR and SWITCH current limiters
- LVDS, LVT logic 4, 8, 16 bit and majority voter solutions
- High density NAND/NOR/DDR3/DDR4 memories for military avionics and high temperature applications



Advanced Circuit Boards

- Bare PCB, flex and flex rigid military, space, aerospace, high temperature or large test PCBs
- High layer count complex construction
- Space level ESCC or IPC level 3
- High speed and RF boards
- Quick turn options available



Aitech Systems

- High performance processing and connectivity solutions for use in defence, aerospace and space flight applications
- Small form factor standalone SWaP-optimised Ethernet switches and AI supercomputers
- Advanced Intel and PowerPC SBCs and NVIDIA based GPGPU boards
- Rugged, open architecture VME, VPX and high-speed serial fabric-based computers and subsystems

CORNING

Corning

- Miniature RF, compact, low weight coax connector systems for board-to-board and module-to-module connections to 65 GHz
- Down to 3.098mm board-to-board standoff
- Push-on bullets GPO, GPPO, G3PO, G4PO
- Hermetic, edge mount and surface mount options
- Multiway PCB and cable block solutions



DDC-I

- Safety critical real-time embedded operating systems
- Deos™ - a time and space partitioned, multi-core enabled RTOS, verified to DO-178C / ED-12C DAL A
- Multi-language compilers
- Integrated development environments
- Run-time systems
- Custom software development services and legacy software system modernisation



Diamond Antenna and Microwave

- Coaxial and waveguide rotary joints for commercial, satcom, ATC, defence, and space qualified applications
- Single and multichannel versions to 50 GHz
- I, L and U style
- Roll-Rings®, slip-ring assemblies and roll-blocks
- Rotary joint repair and refurbishment available



Erzia Technologies

- Microwave and millimeter wave modules up to 110 GHz for EW, radar, satcom, scientific, telecom, defence, and space applications
- Space and MIL-STD qualified products
- Solid state high power and low noise amplifiers
- Suspended substrate filters
- Integrated microwave assemblies (IMAs)
- Up-down converters, beamformers, RF front ends, switched filter banks and switching matrices



Farran

- mmWave extensions and subsystems to 500 GHz designed to enhance test performance, sensing capability, and measurement confidence across space and emerging technology applications
- Custom mmWave Solutions
- Power Amplifiers (FPA)
- Passive Imaging & Radiometers (PMMW)
- Up/Down Converters (FCE)
- Antenna Measurement Frequency Extenders (AET/AER)



Holt Integrated Circuits Inc

- Rad tolerant MIL-STD 1553 transceivers, suitable for launch vehicles, high altitude aircraft and space



Marki Microwave

- Passive and active components to 140 GHz
- LO drive amplifiers, gain blocks, LNAs to 100 GHz
- Attenuators, die, SMT and precision to 110 GHz
- Baluns, bias tees, DC blocks to 67 GHz
- Couplers and 3dB quad hybrids to 110 GHz
- Filters: Bandpass, Lowpass and Highpass
- Positive gain slope equalizers to 70 GHz
- Diplexers to 20 GHz and limiters to 70 GHz
- MMIC double/triple balanced mixers, bare die and modules to 130 GHz
- T3 high linearity mixers to 40 GHz
- I/Q mixers to 120 GHz, integrated drive
- Active and passive multipliers to 125 GHz
- NLTL comb generators to 85 GHz
- Resistive/Wilkinson power dividers to 110 GHz
- Waveguide components to 140 GHz



Megaphase

- High-performance, flexible RF cables for space and defence
- HyperFlex flexible, solderless coaxial cable to 67 GHz
- AlumiBend cables to 90 GHz, qualified to ESC 3408
- Thermal VAC test cables to 50 GHz (low outgassing)
- Low-loss flexible, armoured, semi-flexible and semi-rigid cable assemblies



Modular Devices Inc

- Rad tolerant, space-grade DC-DC converter and POL 1W to 1kW power rating
- Hybrid chip and wire/GaN FET technology
- Integrated MIL-STD 461 filters
- PCB mount or connectorised
- Solid state power converters and current limiters



Quantic Croven

- Precision quartz crystal resonators (AT, FC, IT, SC cuts) up to 300 MHz in cold or resistance-weld enclosures
- Cold weld crystal holders for cleaner welds, improved aging, and lower phase noise
- Resistance weld holders offering reliable hermetic sealing at lower cost
- QPL crystals qualified to MIL-PRF-3098 covering 2.4–125 MHz for high-reliability use
- Standard SC-cut crystals designed for mission-critical applications



RF Spin

- Broadband RF & Microwave antennas from kHz to 110 GHz
- Horn & ridged antennas covering 0.7 to 110 GHz
- Precision measurement antennas for EMC, R&D and calibration (9 kHz to 40 GHz plus)
- Standard & custom designs available from RF to mmWave
- In-house design, manufacture & calibration



Safran

- Rubidium clocks and oscillators for stable time and frequency reference
- GPS/GNSS-synchronised rubidium modules
- Space-qualified rubidium standards and oscillators
- Active Hydrogen Maser for ultra-high stability timing requirements
- GPS/GNSS rubidium standards



Space IC

- Analogue integrated circuits designed for space applications (ECSS standard)
- Fully isolated SOI technologies which are latch-up immune and known to mitigate Single Event Effects
- ITAR/EAR-free rad hard power management and interface IC products



State of the Art Inc

- MIL QPL certified resistor manufacturer
- MIL PRF-55342, MIL-PRF914 and MIL-PRF 32159 for avionics, military and space applications
- Surface mount chip resistors, high power, high voltage and high frequency (flip chip and wrap around)
- Zero ohm jumpers for space applications
- Resistor arrays
- 4 terminal resistors



Teledyne Hi-Rel (incl. Micropac)

- High-reliability RF signal-chain components for aerospace and defence applications
- GaN power (GaN HEMT & e-HEMPT); Gate drivers and power modules
- Signal chain products: linear and logic, memory products
- Space VPX power supplies
- Fibre optic transceivers
- Power management (SSR and SSPC)
- Sensors - Hall effect and LEDs
- Space ready optocouplers (JANTX, JANSR)



TRAD

- Radiation test specialists for space
- FASTRAD radiation simulation software for space
- R2COTS automotive grade components with guaranteed TiD specification for NewSpace
- Radiation test services TiD and SEU/SEFI/SEL/SEGR/SET



Triad RF Systems

- Bi-directional amplifiers for high performance data and communications links
- Standard products from 20 MHz to 8 GHz
- Tx output powers of 2, 5, 10 or 20W
- GaN and LDMOS technologies as applicable
- Tx/Rx switching times < 1µ second typical
- Dual and quad configurations for MIMO applications



TTM Technologies

- RF and speciality components, advanced technology and PCB fabrication solutions
- RF & microwave and signal integrity solutions
- Multi-chip modules (MCMs) and custom hybrid designs
- Custom integrated circuits (ICs)
- System integration, engineering and design



Vanguard Electronics

- MIL QPL certified supplier of magnetics for defence and space
- RF toroidal/air core inductors, chip inductors and RF beads
- Power common mode chokes and diff mode inductors
- Flyback transformers, gate drive transformers, high current chip and toroidal inductors
- Planar inductors, shielded power inductors
- Signal isolation transformers, pulse and high voltage pulse transformers



Virtium

- Industrial rugged solid state memory solutions
- -40 to 105°C, SATA, NVMe, SFF and memory modules for military applications
- SSD from 1.92TB to 30TB
- 2.5" SATA 2.5" 1.92 to 15TB, 2.5SATA to 6GBs
- U.2 7mm to 8TB and M.2 SATA to 640GB
- mSATA, NVMe, eMMC, NVMe, DIMM, SDRAM and DDR to DDR5
- EMMC 5.1 BGA MLC and pSLC to 64GB
- Space COTS+



Vorago Technologies

- Rad hard microcontrollers for space and avionics
- Rad tolerant Arm® A72 cortex® processor with GPU
- M0/M4 Arm® cortex® based microcontrollers with Ethernet, ADC and DAC options and NV boot memory
- Ceramic and plastic package options
- High temperature 175°C - 200°C



VPT Components

- One of the largest manufacturers of JAN certified semiconductors
- MIL-PRF-19500 qualified Rad Hard NPN and PNP small signal and power switching transistors, SCRs, and MOSFETs
- Extensive offering of Zeners, rectifiers, switching diodes, and Schottky products
- Includes JANHC and JANKC qualified die
- Thousands of DLA and QPL parts
- A wide variety of custom products and packaging services also available



Winchester Interconnect

- Aerospace, defence and space qualified connectors and cables
- Standard and custom RF & microwave connectors, cables and interconnect solutions from DC to 110 GHz and up to 50 kW
- SMA, SMP, SMPM and FMA hermetic connectors as well as custom connectors and configurations
- Fiber optic connectors and cable assemblies



XSIS Electronics Inc

- MIL QPL manufacturer of high reliability hybrid crystal oscillators and crystal units
- Space-qualified, 100krad GEO and 30krad LEO total dose radiation oscillators
- TTL 5V and LVDS 3.3V, 2.5V to 200 MHz
- AC/MOS/HCMOS 1.8V, 2.5V, 3.3V and 5V to 120 MHz
- TCXOs 10-55 MHz
- Multiple SMD and DIL pin options
- HC49 QPL crystals MIL PRF 3098
- DIP, LCC and SMD packaged high temperature oscillators

Ground Station And Teleport Applications



Meinberg

- High capacity PTPv2 Master, with Slave functionality
- High performance and Enterprise grade NTP time servers
- Multi constellation and multi-channel GNSS receivers



OHBAustria

- GNSS jamming and spoofing monitoring and detection
- GNSS signal simulation for optimisation of development, qualification and certification of equipment and applications



Quasar Microwave Technology

- Passive waveguide components and sub-systems to 40 GHz
- WG10/WR284 through to WG22/WR28 inclusive
- Standard rigid, double rigid and flexible waveguide components and assemblies
- High power loads and fixed/variable attenuators
- Terminations, shorts, crossguide and loop couplers
- WG to coaxial adaptors, (N, SMA, K, APC7, TNC, 7-16)
- Horn antennas from WR975 to WR28
- Filters and diplexers, switching networks and OMTs
- Waveguide hardware and calibration kits



Septentrio

- Resilient, high-accuracy GNSS receivers, modules and boards
- Ultra rugged GNSS systems with centimetre RTK positioning accuracy
- Low profile, rugged GNSS antennas



Teletel

- Space domain hardware and software
- iSAFT data front ends/link analysers
- iSAFT power isolation/distribution units
- EGSE electrical ground support equipment
- Specialised spacecraft check-out systems
- Engineering support services (AIT/AIV etc...)



Trenton Systems

- TAA-compliant computing solutions for defence, government, industrial & commercial
- Robust commercial-off-the-shelf (COTS) and modified-off-the-shelf (MOTS) computing solutions
- Rugged storage solutions and rapidly deployable 5G network in a box

EMC And Test Solutions



AE Techron

- High power low frequency linear and switch mode amplifiers covering aerospace and military EMC standards



ETS Lindgren

- EMC test software
- Full range of antennas for EMC and wireless testing



Keysight Technologies

- Digital oscilloscopes for all applications and budgets from 70MHz to 6GHz with touch screen operation and a wide range of decode software option models available
- Benchtop and handheld DMMs, LCR meters, current clamps, cable/antenna testers, spectrum analysers, portable and handheld models available



Lasting Software

- Multi-orbit satellite channel emulation
- All-in-one test solution for 5G network emulation, testing, and validation



Tektronix

- Class leading oscilloscopes from 2 to 8 channels, up to 64 digital channels and up to 70 GHz bandwidth
- 1 GHz to 26.5 GHz portable and desktop real-time spectrum analysers

All of the technologies and components you need in one place



Through our global network of leading manufacturers, we have a comprehensive range of specialist technologies, electronic components and testing solutions designed to ensure mission-critical success.

See all of the products and services we offer online, with detailed specifications and access to the latest data sheets.

Alternatively, start a technical conversation with a member of our team to learn more about our space-qualified solutions

Call 0330 313 3220