

# OUR SERVICES AT A GLANCE

## Hi-Rel Business

New Space, Aerospace, Avionics, Defense, Hybrid Capacitors, High-Temperature Devices, Motion Controllers, Rad Hard Space Products, Rad Hard MOSFETs, Rad Hard DC/DC Converters, Electrical Encoders, Mil & Space Chip Resistors

## E-Mobility

EV On-Board Chargers, AC/DC- & DC/DC Battery Chargers, Smart Electronic Circuit Breakers, Motion Controllers, Bi-Directional DC/DC-Converters, 2-in-1 On-Board Chargers & DC/DC-Converters, EV On-Board DC/DC Converters

## Displays & Control Elements

High-quality LCD Modules, TFT-LCD-, OLED- Displays, Access Control Keypads, Piezo Switches, Non-touch Metal IR Switches

## Power Management



Backup Ultracapacitors, AC/DC- & DC/DC-Converters, Ultra Low Power Energy Harvesting Products, TIM Gap Fillers, POL-Converters

## Obsolescence Solutions

Adapter Solutions, Anti-Counterfeiting Program, BGA Reballing, Long Lifetime Program, Requirement Engineering, Re-Tinning, Multi Chip Modules, Replacement of obsolete FPGAs



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Manufacturers	Products	Applications
	<p>Highest Energy and Power Density Capacitors with MTBF&gt;5.000.000 hours, product range 22 to 500.000µF (10 to 125V) +85°C, +125°C and +200°C, very low ESR, very high current handling capability, highest levels of quality, Qualified to NASA INST-002, ISO 9001 and AS9100 registered</p>	<p>Power Hold-up Avionics, Laser Pulse Power, Phased Array Radar Pulse Power, Replacement of Batteries, Oil &amp; Gas Exploration, New Space</p>
	<p>ESA Space Qualified ESCC 5000 and 5010 Hi-Rel components, Hi-Rel Radiation Hardened Power MOS Transistors from 60V up to 650V, N-CH, Based on the unique CoolMOS™ superjunction technology, Hi-Rel Silicon Bipolar Microwave Transistors, Hi-Rel Silicon PN-, PIN- and Schottky-Diodes for Microwave RF Applications, Bare Dies (Chips) No export license required!</p>	<p>Space Heritage, Satellite Programs, Microwave Applications, RF-Foundry Services, New Space</p>

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Manufacturers	Products	Applications
 <p><b>TOR HiRel</b> An Infineon Technologies Company</p>	<p>Hi-Rel Radiation Hardened &amp; Hermetic Military MOSFETs, N- &amp; P-CH, Schottky &amp; Ultra-Fast Rectifiers, DC/DC-Converters including custom Hybrids, EMI Filters, Hi-Rel &amp; Rad-Hard Power ICs, Rad-Hard Solid-State Relays, Hybrids &amp; Modules, MIL-PRF-19500 &amp; MIL-PRF-38534 qualified parts</p>	<p>Deep Space Heritage, Aerospace, Defense, Aviation, Aircraft, New Space</p>
 <p><b>ISOCOM</b> LIMITED</p>	<p>Rad-Hard Space qualified Optocouplers &amp; Optoelectronic Components, High Gain-, High Speed-, High Voltage Optocouplers, Rad-Hard &amp; Military Solid-State Relays, Voltage Regulators, Manufacturing, screening &amp; testing of Hi-Rel optoelectronic components, <b>ITAR free products</b></p>	<p>Space Heritage, Defense, Aerospace, Avionics, New Space</p>
 <p><b>micross</b> one source. one solution.™</p>	<p>Component Modification: Robotic Hot Solder Dip - compliance with RoHS directive Elimination of Tin-Whiskers through tin-lead-alloy, Lead Attach Coplanarity and Compression Bond, lead-free Solder Alloy, Gold Mitigation, Forming and Cutting of Pins, BGA Reballing for the Conversion of tin-lead, column grid array (CGA) interconnect technology; Packaging &amp; Assembly, Electrical &amp; Environment Testing</p>	<p>Aerospace, Defense, Aviation, Space, Marine, Industrial-Embedded Products</p>
 <p><b>Nanoramic</b> LABORATORIES</p>	<p>FastCap® Ultracapacitors for energy storage applications of operating in temperatures up to 150°C and under conditions of high shock 500G peak and vibration 20G rms. Lithium free - no risk of explosions, 20+ year shelf life, Hermetic Ultra-Capacitor Technology D &amp; AA size cells, 35 to 340F capacitance Voltage 1 to 2V, very low ESR 15 to 32 mohm, Low Temperature Ultracapacitors from -55 to +85°C, 35F, 40mohm</p>	<p>Hi-Rel Avionics, Space Missions, High Temperature Products, Oil &amp; Gas Exploration, Harsh Environments</p>
 <p><b>Netzer</b> Precision Position Sensors</p>	<p>High-end absolute position encoders, based on the Electric Encoder™ technology COTS and customized Electric Encoders™, Zero magnetic signature, Insensitivity to EMI/RFI and magnetic fields, low weight, low inertia and narrow profile (≤10 mm) Ring Encoders - DS, Two-Plate Encapsulate - DF, Two-Plate Ring - VL, Shaft - DL ISO 9001:2015 &amp; ISO 13485:2016, ROHS, REACH</p>	<p>Harsh Environments, Defense, Robotics, Space, Industrial Automation, Unmanned Vehicles, Aerospace, New Space</p>
 <p><b>SPACE IC</b></p>	<p>Rad-Hard POL Converters 2 A, 24 V &amp; 8 A, 40 V, Voltage Clamp 10 A, 40 V, DC/DC Converter PWM Controllers, Quad LVDS Line Receivers with Extended Common Mode, Quad LVDS Line Drivers, 1:4 LVDS Fanout Buffers with Extended Common Mode, Screening &amp; testing of SPACE IC products to the ESCC 9000 requirements</p>	<p>Space Missions, Satellite Business, Harsh Environments, New Space</p>
 <p><b>State of the Art, Inc.</b></p>	<p>MIL-PRF-55342, MIL-PRF-914, MIL-PRF-32159 Thin &amp; Thick Film Chip Resistors, Mission critical Precision Chip Resistors, Chip Resistor Networks, High Frequency Products, Silicon Chip Resistors, Chip Attenuators, Current Sense Resistors, High Power Chip Resistors, High Voltage Chip Resistors, Power Moisture Compliant Chip Resistors, Zero Ohm Chip Resistors (Jumpers)</p>	<p>Space, Defense, Aviation Hybrid Modules, Medical, Biomedical, New Space</p>
 <p><b>Xsis</b></p>	<p>Hi-Rel &amp; High Temperature Hybrid Microcircuit Crystal Oscillators &amp; Crystal Units, MIL-PRF-55310, MIL-PRF-38534, MIL-883B, TTL-LVTTL-CMOS-HC/ACMOS-ECL, Lowest voltage is 1.8V, SMD-Packages 5x7mm, High Shock &amp; Vibration Designs, High operating temperatures up to +230°C</p>	<p>Space Heritage, Aircraft, Hi-Rel Defense, Aerospace, High Temperature Products, New Space</p>

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Notice: A link is provided behind the manufacturer logos. If you follow this link, you will get to the respective manufacturer information on our KAMAKA Company homepage.