



SHAPING THE FUTURE WITH ELECTRONICS



Hi-Rel Business | Power Management | E-Mobility
Obsolescence Solutions | Displays & Control Elements

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



HI-REL BUSINESS

Manufacturers	Products	Applications
	Highest Energy and Power Density Capacitors with MTBF>5.000.000 hours, product range 22 to 1.000.000 μ F (5,5 to 125V) +70°C, +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	Power Hold-up Avionics, Laser Pulse Power, Phased Array Radar Pulse Power, Replacement of Batteries, Oil & Gas Exploration, New Space
	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!	Space Heritage, Satellite Programs, Microwave Applications, RF-Foundry Services, New Space

HI-REL BUSINESS

Manufacturers	Products	Applications
 <p>TOR HiRel An Infineon Technologies Company</p>	<p>Hi-Rel Radiation Hardened & Hermetic Military MOSFETs, N- & P-CH, Schottky & Ultra-Fast Rectifiers, DC/DC-Converters including custom Hybrids, EMI Filters, Hi-Rel & Rad-Hard Power ICs, Rad-Hard Solid-State Relays, Hybrids & Modules, MIL-PRF-19500 & MIL-PRF-38534 qualified parts</p>	<p>Deep Space Heritage, Aerospace, Defense, Aviation, Aircraft, New Space</p>
 <p>ISOCOM LIMITED</p>	<p>Rad-Hard Space qualified Optocouplers & Optoelectronic Components, High Gain-, High Speed-, High Voltage Optocouplers, Rad-Hard & Military Solid-State Relays, Voltage Regulators, Manufacturing, screening & testing of Hi-Rel optoelectronic components, ITAR free products</p>	<p>Space Heritage, Defense, Aerospace, Avionics, New Space</p>
 <p>micross 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 & Assembly, Electrical & Environment Testing</p>	<p>Aerospace, Defense, Aviation, Space, Marine, Industrial-Embedded Products</p>
 <p>Nanoramic 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 & 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 & Gas Exploration, Harsh Environments</p>
 <p>Netzer 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 & ISO 13485:2016, ROHS, REACH</p>	<p>Harsh Environments, Defense, Robotics, Space, Industrial Automation, Unmanned Vehicles, Aerospace, New Space</p>
 <p>SPACE IC</p>	<p>Rad-Hard POL Converters 2 A, 24 V & 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 & testing of SPACE IC products to the ESCC 9000 requirements</p>	<p>Space Missions, Satellite Business, Harsh Environments, New Space</p>
 <p>State of the Art, Inc.</p>	<p>MIL-PRF-55342, MIL-PRF-914, MIL-PRF-32159 Thin & 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>Thermexit A Nanoramic™ Labs Division</p>	<p>Nanoramic Thermexit™ is a line of high-end thermal interface gap filler pads. The gap fillers are a non-reactive, non-silicon, no cure system featuring high thermal conductivity and high thermal stability. High Performance TIM Gap Filler with high thermal conductivity >40W/mK Electrically Insulating TIM Gap Filler with high thermal conductivity >15W/mK High thermal stability, with continuous operation over +150°C</p>	<p>High Power Density Semiconductors, Power Supplies, Motor Controls, High Power Cooling Systems</p>
 <p>Xsis</p>	<p>Hi-Rel & High Temperature Hybrid Microcircuit Crystal Oscillators & 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 & 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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POWER MANAGEMENT

Manufacturers	Products	Applications
	Isolated Single, Dual & Triple Output DC/DC-Converters up to 3000W, High Performance DC/DC-Bricks, high efficiency operation up to 97%, Railway conform with the input battery voltage transient ranges of EN50155 up to 10:1 ratio input voltage range, High Power DC/DC-Converters 500W, 1000W, Mid-Range Power DC/DC-Converters 100 to 500W, Low Power DC/DC-Converters 1 to 75W, Chassis Mount Converters, SMT&THT Modules, Brick Assembly Modules, AC/DC-Power Supplies 250W, 300W and 600W with 90-264VAC input, operating temperature range -40 to +105°C Baseplate, up to 5-year warranty	Industrial Applications, Transportation, Medical Industry, Avionics, Railway
	Low Power Single and Dual Output DC/DC Converters from 1 to 75W, Industry Standard Footprints SIP, DIP, SMT, 1x1 and 1x2 Thru Hole Patterns, Switch mode AC/DC Supplies, 15 to 150W chassis, encapsulated PCB mount from 2 to 60W, 2-year warranty	Commercial, Industrial Applications, Medical Industry, Railway
	Power Management ICs (PMICs) for energy harvesting applications, Harvesting from Photovoltaic Cells and Thermo-Electric Generators, Ultra-Low-Power-Start-up, Ultra-Low-Power Boost Regulator, The RF AEM30330, Vibration AEM30330 and solar AEM10330 PMICs both utilize a buck-boost architecture. This enables them to cover a greater range of input voltage levels from 100mV to 4.5V, low and High-Power sources can be addressed, AEM30330 is targeted at RF/vibration-oriented deployments including industrial equipment, home automation systems, healthcare monitoring, AEM10330 is for solar deployments to manage up to 7 connected photovoltaic cells	IoT Applications, Energy Harvesting, Wireless Sensors, Industry 4.0, Home Automation, Smart Metering, Smart Agriculture, Wearables, E-Health, E-Mobility
	Highest Energy and Power Density Capacitors with MTBF>5.000.000 hours, product range 22 to 1.000.000µF (5,5 to 125V) +70°C, +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	Power Hold-up Avionics, Laser Pulse Power, Phased Array Radar Pulse Power, Replacement of Batteries, Oil & Gas Exploration, New Space
	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 & 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	Energy Storage Devices, Harsh Environments, Hi-Rel Avionics, High Temperature Products, Oil & Gas Exploration
	Isolated and non-isolated DC/DC-Converters 1W to 1000W, efficiency up to 96%, over-voltage, over-current, short-circuit and over-temperature protection, input voltage range 2,5V – 650V with 10:1, 8:1, 4:1, 2:1 ratios, Railway DC/DC-Converters: 10 to 160VDC input, 5 to 56VDC output voltage, 50 to 800W, High Voltage DC/DC-Converters: 180 to 650VDC, 300 to 800W, AC/DC-Converters 85 to 305V input, 3,3 to 48V output voltage, 5 to 350W, VPX Power Supply 3U 500W and 6U 1000W, VITA 62	Railway, Industrial Applications
	Nanoramic Thermexit™ is a line of high-end thermal interface gap filler pads. The gap fillers are a non-reactive, non-silicon, no cure system featuring high thermal conductivity and high thermal stability. High Performance TIM Gap Fillers with high thermal conductivity >40W/mK, Electrically Insulating TIM Gap Filler with high thermal conductivity >15W/mK, High thermal stability, with continuous operation over +150°C	Thermal Management, High Power Density Semiconductors, Power Supplies, High Power Cooling Systems
	Single and Dual Output DC/DC Converters from 0.1 to 50W, Industry Standard Footprints SIP, DIP, SMT, 1x1 and 1x2 Thru Hole Patterns, Switch mode AC/DC Supplies; encapsulated PCB mount from 1 to 30W, AC/DC power supplies 25 to 1200W Enclosed/Open frame type, 2-year warranty	Commercial, Industrial Applications, Medical Industry, Railway

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E-MOBILITY

Manufacturers	Products	Applications
	<p>Powering the Future of Transportation DC/DC-Converters from 300 to 3000W for 12, 24, 28, 48, 400VDC Battery Voltages; 3000W BCA Series Bi-directional DC/DC-Converters, High efficiency up to 97%; Ruggedized Enclosed 3000W BCE Series Bi-directional DC/DC-Converters; 1500 & 3000 W Bi-directional Non-Isolated DC/DC-Converters 12V/48V Battery with an efficiency up to 97% and CAN 2.0b interface including remote ON/OFF; 1000 Watt Full-Bricks with wide input range at 9 to 36VDC, efficiency up to 95%; 300W AC/DC Li-ion Battery Chargers for E-mobility and Battery Applications; 7kW Liquid Cooled AC/DC Bi-directional Converters that convert AC voltage to an adjustable nominal 800VDC or 400VDC to charge E-Mobility Li-ion batteries; Protection degree IP6K9K rated</p> <p>Battery Management Systems Standard brick size DC/DC-Converters 50 to 1000W, Single modules with 9 to 160VDC input & 5 to 57VDC output voltage, Option: Chassis mount and DIN-rail version, High Efficiency >95% good shock and vibration dampening, temperature range -40 to +105°C, up to 5-year warranty</p>	Battery Management Systems, Mild Hybrid Vehicles, Autonomous Vehicles, Recreation Vehicles, Electric industrial Vehicles, Agriculture Vehicles, Last mile transit, Automatic Guided Vehicles, Fork Lifts
	<p>Electric Vehicle On-Board Chargers and DC/DC-Converters 2-in-1 On Board-Chargers 6.6KW & DC/DC-Converters 2.5KW, Liquid-cooling, Single 6.6KW EV On-Board-Chargers with 85 to 265VAC input voltage & 200 to 420VDC output voltage, CAN Bus Interface, Air-cooling, 11KW On-Board-Charger with 380VAC input voltage & 36A output current & 200 to 480VDC output voltage, capable of parallel operation, Liquid-cooling, 2 to 3KW DC/DC-Converters: 400 to 800VDC input & 13.8 to 28VDC output voltage, 5KW On-Board-Charger with 400 to 800VDC input & 14VDC output, Height: 60mm, 2,2 to 3,3KW DC/DC-Converters: 200 to 420VDC input & 14 to 28VDC output voltage, 3 to 4,2KW DC/DC-Converters: 65 to 120VDC input & 14 to 55VDC output voltage, Liquid or conduction cooling, Programmable CV/CC Output, IP67 Enclosure, CAN Communication, compliance with SAE J1772/IEC 61851, Automotive quality standard, Lifecycle traceability</p>	Automotive, Electric Vehicles, Hybrid Vehicles, Marine & Yacht Applications
	<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 & ISO 13485:2016, ROHS, REACH</p>	Automotive, E-Motor Applications
	<p>Nanoramic Thermexit™ is a line of high-end thermal interface gap filler pads. The gap fillers are a non-reactive, non-silicon, no cure system featuring high thermal conductivity and high thermal stability. High Performance TIM Gap Fillers with high thermal conductivity >40W/mK Electrically Insulating TIM Gap Fillers with high thermal conductivity >15W/mK High thermal stability, with continuous operation over +150°C</p>	EVC Products, High Temperature Products, High Power Cooling Systems, Motor Controls, Power Supplies



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OBSOLESCENCE SOLUTIONS

Manufacturers	Products	Applications
	<p>Counterfeit Mitigation Services: IC Counterfeit Detection Testing</p> <p>Component Modification: Robotic Hot Solder Dip – Compliance with RoHS directive</p> <p>lead-free Solder Alloy, grid failure <1%</p> <p>Elimination of Tin-Whiskers through tin-lead-alloy</p> <p>Component Obsolescence Challenges, Non-availability of tin-lead components</p> <p>Life-time buy opportunity (Long Term Packaging)</p> <p>BGA Reballing for the Conversion of tin-lead, Component Harvesting</p> <p>Lead Reconditioning, Lead Attach Coplanarity and Compression Bond</p> <p>Forming and Cutting of Pins</p> <p>Gold Mitigation, column grid array (CGA) interconnect technology</p> <p>Packaging & Assembly, Electrical & Environment Testing</p>	<p>Aerospace & Defense, Space,</p> <p>Industrial Applications, Implantable Medical Industry,</p> <p>Transportation</p>
	<p>Design & manufacture for the electronic system lifecycle</p> <p>Custom solutions for mitigating Device Obsolescence and Board Re-Design</p> <p>Adapter Products, Interconnect Pitch Adapters, Programming Adapters,</p> <p>Allocation & Obsolescence</p> <p>ASIC / FPGA Adapters to include code reconstruction and re-targeting; Package/ 1:1 Footprint Conversion, Device Re-targeting, Connectors; Reverse Engineering of Small Plastic & Metal Parts; Atmel AVR Adapters for Micro Controllers</p> <p>Test & Development</p> <p>Production & Test Sockets, Prototyping Adapters/Interposers, Emulation & Test Interface, Programming Adapters, Voltage Regulation, Test Clips & Modules, Custom Development</p> <p>Interconnect</p> <p>Screw Machine/ Turn Pin Sockets, Dual Row Component Header, PCB Connectors, Single Row High Profile IC Sockets, Stamped Pin IC Sockets , Wire Wrap</p> <p>Jermyn Semiconductor Hardware</p> <p>Mounting Pads, Transistor & Circular IC Sockets, Opto/Diode Display Sockets, Insulators, Panel Washers, Bushes and Covers, Component Carriers, Heatsinks,</p> <p>Precision Engineering</p> <p>Reverse Engineering Solutions; Injection Moulding , CNC Machining, Toolmaking</p>	<p>Adapter Solutions, Aviation, Defense, Space, Automotive, Medical Industry, Industrial Applications, Railway, Package Conversions</p>
	<p>High Reliability Hybrid Microcircuit Crystal Oscillators & Crystal Units</p> <p>Crystal Oscillators: Standard, Military, MIL-PRF-55310, MIL-PRF-38534, MIL-883B</p> <p>Technology: TTL-LVTTL-CMOS-HC/ACMOS-ECL; Lowest voltage is 1.8V, SMD-Packag-es 5x7mm; Crystal Units: QPL Crystal Units, Custom Crystal Units; Obsolete Through Hole packages, Custom Solutions; High Temperatures up to +230°C</p> <p>High Shock & Vibration Designs, Up-Screening Program</p>	<p>Defense, Space, Aircraft, Hi-Rel Applications, Industrial Products, Telecommunications, High Temp. Products</p>

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DISPLAYS & CONTROL ELEMENTS

Manufacturers	Products	Applications
	<p>Touch Metal Piezo Switches & Keypads, Non-Touch Infrared Metal Switches</p> <p>Piezo Electric Pushbutton Switches: Ring-, Point- and Non-illuminated from 16mm to 28mm diameters. Piezo Electric Keypads, Access Control Stand Alone, Access Control Keypads with communication protocol, Access Control Keypad Readers, Industrial Solutions and Custom Designs, all products are in Aluminum or Stainless Steel with an operation temperature from -40 to +125°C and IP68/69K protection</p> <p>Tested for 50,000,000 cycles including vibration and impact tests, Non-Touch Infrared Metal Switches with detection range 5 to 80cm</p> <p>Piezo Technology Pushbuttons work reliably under a glass thickness of 3 mm</p>	<p>Access Control Panels, Fuel dispensing e-Car Charging, Underwater, Submarines, Oil and Gas, Parking Systems, Rail Traffic & Public Transport, Emergency Switches</p>
	<p>Character Displays of 8x1, 10x4, 16x1, 16x4, 20x2, 20x4, 24x2, 40x2, 40x4, 68x4</p> <p>Graphic LCDs (TN/ STN/ FSTN/ DFSTN) Displays with or w/o backlight, COG Displays, TFT-, LCD-Modules, HMI Modules, UART TFT Displays, Touch Panels, OLED Character & Graphic Displays, OLED Modules, OLED Switches</p>	<p>Industrial Measuring Instruments, Control Devices</p>

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OUR SERVICES

KAMAKA - ESTABLISHED IN 1992 AUTHORIZED DISTRIBUTOR & SOLUTION PROVIDER

- ▶ Strategic Obsolescence Management
- ▶ Anti-Counterfeiting Program
- ▶ Life Cycle Management
- ▶ Long Lifetime Program up to 25 years
- ▶ Last Time Buy, EOL-, PCN-Service
- ▶ Requirement Engineering
- ▶ Custom Multi Chip Modules
- ▶ Supplier Risk Management
- ▶ Worldwide Access to Allocation & Obsolete Products
- ▶ Hi-Rel: Screening & Procedure Service
- ▶ Qualified Visual & Electrical Test Reports
- ▶ Monitoring of Critical Components
- ▶ Quality Inspection
- ▶ Qualified Visual & Electrical Test Reports
- ▶ Traceability is guaranteed
- ▶ AQL Spot Checks according to DIN/ISO 2859-1
- ▶ Total Quality Management:
DIN EN 9120:2018 (technically equivalent to AS 9120B and SJAC 9120A); DIN EN ISO 9001:2015;
DIN EN 61340-5-1: ESD compliant storage & handling process
- ▶ ITAR Free Products available

MEMBERSHIPS



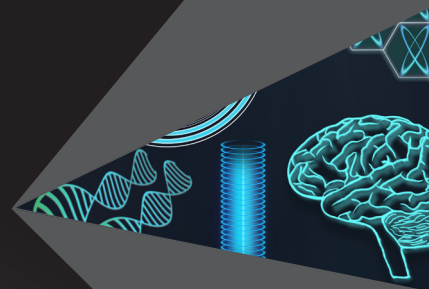
Notice: A link is provided behind the manufacturer logos. If you follow this link, you will get to the respective manufacturer information on our KAMAKA Company homepage.



ABOUT US

SINCE 1992, KAMAKA ELECTRONIC BAUELEMENTE VERTRIEBS GMBH HAS GLOBALLY ACTED AS ESTABLISHED AUTHORIZED DISTRIBUTOR AND SOLUTION PROVIDER FOR WELL-KNOWN MANUFACTURERS.

CUSTOMER SATISFACTION IS OUR PRIORITY. WE DO NOT ONLY PROVIDE YOU WITH COMPETENT AND QUALIFIED CONSULTATION BUT ALSO WITH A RELIABLE APPLICATION SUPPORT TO ALL OUR PRODUCTS.



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HEADQUARTERS

Ulmer Strasse 130
73431 Aalen
Germany
Phone +49-7361-9662-0

SALES OFFICE NORTH

Robert-Bosch-Strasse 25
25335 Elmshorn
Germany
Phone +49-4121-463-900

www.kamaka.de

