

Linecard Italy 2023

Protec GmbH
High-Rel Electronic Components

Protec GmbH was founded in 1976 and is successful in the sales of High Reliability components.

We are particularly specialised in highly qualified components for industrial, military and space applications.

In instances of obsolescence and supply problems, we can also offer our customers effective solutions with our extensive product and market knowledge.

Our customer orientated warehouse, equipped with a modern ESD protection system, guarantees reliable component supply.

With our design-in and market orientated expertise, we can provide long term support for your projects and applications.

Through our distributor and rep strategy, we are the "extended arm" of our Manufacturers. When required we will put you directly in touch with our manufacturer's specialists.

Our first priority is a long term, successful partnership with our customers and manufacturers.



We support customers & manufacturers with our expertise in:

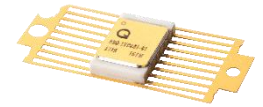
- EUS requirements and licensing processes
- CoC requirements
- Design in support
- Export classifications and rules
- Product trainings

Support and understanding of terms like SLDC, LOT acceptance, PIND, TID, ELDRS, SEE, SEU, SEL, Proton testing and many more industry specific terms.

ARQUIMEA

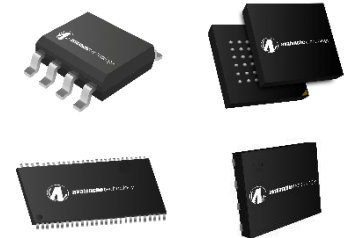


LVDS	EPPL → Quad Driver / Receiver and Dual Transceiver	ESA Qualified
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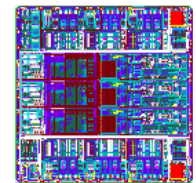
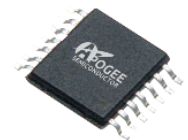
avalanche technology

Parallel x32 (Gen 3)	1Gb / 4Gb	75krad
Serial D-QSPI (Gen 3)	1Gb / 2Gb / 4Gb / 8Gb	75krad
Serial QSPI (Gen 1)	4Mb / 8Mb	75krad
Serial (Gen 2)	16Mb	75krad
Parallel x16 (Gen 2)	16MB / 32Mb / 64Mb	75krad



APOGEE
SEMICONDUCTOR

Logic - AND	Quad 2-input / Triple 3-input	30kRad / 80MeV
Logic - NAND	Quad 2-input / Quad Schmitt 2-input / Triple 3-input	30 Krad / 80MeV
Logic - OR	Quad 2-input	30 Krad / 80MeV
Logic - NOR	Quad 2-input / Triple 3-input	30 Krad / 80MeV
Logic - XOR	Quad 2-input	30 Krad / 80MeV
Logic - Inverter	Hex Inverter / Hex Schmitt Inverter / Hex Open-drain Inverter	30 Krad / 80MeV
Logic - Voter	Dual 3-input Majority Voter with Error Output	30 Krad / 80MeV
Logic – Flip-Flop	Dual D Flip-Flop with Async. Clear	30 Krad / 80MeV



VPT
COMPONENTS

Transistors	NPN and PNP Small Single and Power BJTs	up to JANSR/F
Diodes	Zener, TC Zener, Schottky, Ultra Fast, Rectifier	up to JANS
MosFets	RadHard 100V, 150V, 200V, 250V	up to 84MeV

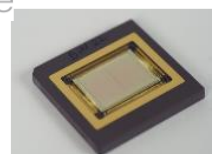


NanoXplore



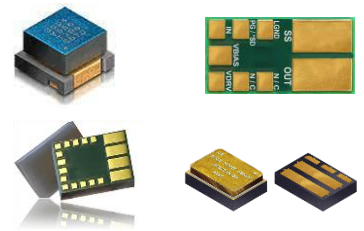
NG-Medium	SpW & DDR 2 PHY	34KLUT
NG-Ultra	Quadcore ARM R52 @ 600MHz 32 HSSL @ 12.5 Gbps / SpW & DDR 3&4 PHY	500KLUT
NG-Ultra300	16 HSSL @ 12.5 Gbps / SpW & DDR 3&4 PHY Embedded ADCs & DACs	290KLUT

Impulse



EPC · SPACE

GaN FETs	40V to 300V	R_{on} 4 to 400m Ω
GaN Driver		
GaN Power Stages		



FLUX

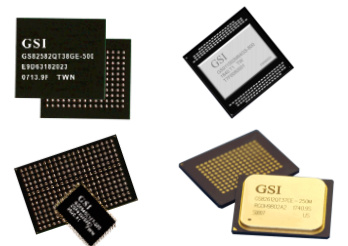


Chokes	ESA Technology Flow Qualified	
Transformers	ESA Technology Flow Qualified	
Inductors	ESA Technology Flow Qualified	



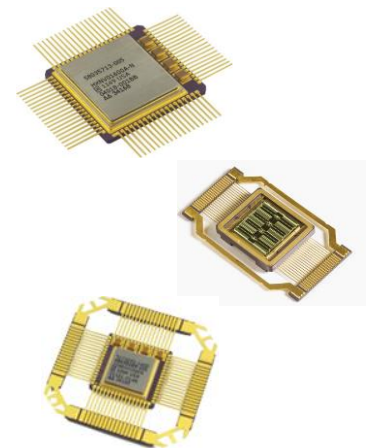
GSI TECHNOLOGY

SRAM also RadTolerant	SigmaQuad-II+ (x18 / x32 configuration) 350 MHz	288M / 144M / 72M
SRAM also RadTolerant	SyncBurst & NBT (x18 / x32 configuration) 333 MHz	144M / 72M / 36M
APU	High Speed Paralell Computing for SAR, Imaging and AI Applications	



Honeywell

SRAM	QML-Q and V (x8 or x32 configurations)	256k to 64M
MRAM	QML-Q and V (x8 or x16 configuration)	16M / 1M
SER/DES	1-4 Lines or 1-8 Lines	up to 3,125GB/s
RS422	Quad Driver and Reciever	20Mb/s
LVDS	Quad Driver and Reciever	100MHz
Processors	HX1750 & HXRHPPC Microprocessor	
Logic	Quad 2-input NAND	
ADC	12 Bit Monolithic / Low Power	20 MSPS
DAC	12 Bit Monolithic	
Comparator	Common mode 0V to 5V / Input Offset Voltage +/-24mV	
Analog MUX	8-Channel	$R_{ON} < 60\Omega$



dpc
Digital Programmable Controller

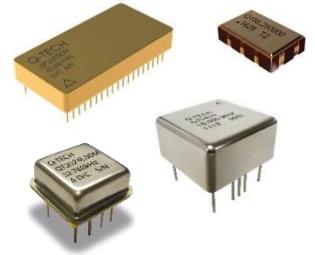


DPC G1	16bit openMSP430 – Digital Programmable Controller >60krad / SEL >72.2MeV / SEU >40MeV 16 ADCs / 3DAC / 108 IO / PLL / PWM / Low Power 3x 30MIPS / MIL-1553 / CAN / UART / -55 to 125°C	μ Controller
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XO	CMOS, TTL, LVDS, LVPECL	Single & Multiple Outputs
TCXO	HCMOS, Sine	±0,5ppm
VCXO	HCMOS, Sine	
OCXO	CMOS, Sine	±10ppb
SAW	Sine 400MHz to 1,3GHz - low phase noise	300krad
MCXO	CMOS or Sine 5 to 80MHz 1pps	50krad
New Space XO	QT780, QT723 and QT735 Series	50krad
Specialty Oscillators	combined OCXO, MCXO, TCXO, SO, VCXO, PLL & crystal filters in modules	



ADC	Base-Band up to Ka-Band	35GHz 12.8GSps
DAC	Base-Band up to Ka-Band	12b 12GSps
DDR4	4GB and 8GB, 100krad >60MeV	Up to ECSS Class 1
Processors	LS1046-Space (ARM A72 @ 1.8GHz) Power PC P2020 and P8548	
SiP Modules	QLS1046 and DDR4 Module	



Transistors	2N3810, 2N2920, 2N2857, 2N2369, 2N3637 and more	up to JANSR/F
Diodes	1N5802, 1N5804, 1N5806, 1N5614, 1N5615	JANS & HC / KC die

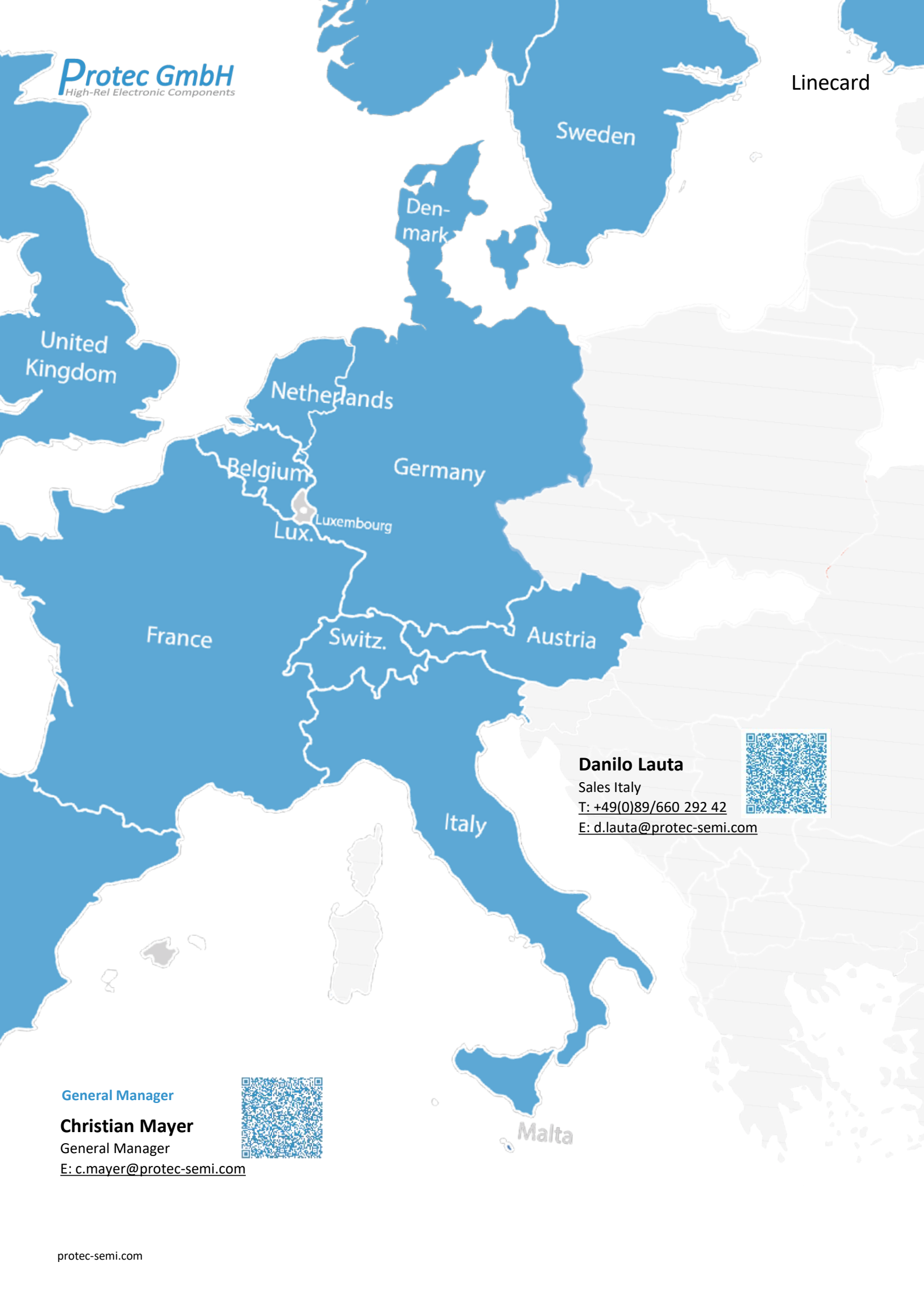


(Non Space only no radiation guarantee)

DRAM Modules	DDR5 (coming soon), DDR4, DDR3, DDR2, DRAM	up to 32GB
STORAGE (Flash/SSD)	2.5 in. SSD, 1.8 in. SSD, M.2 SSD, slimSATA, etc.	
Rugged Memory	ParallelCell MCP, ParallelSSD	
Persistent Memory	DDR4 NVDIMM, Energy SubSystems (ESS)	



Service Provider	Final Source Inspection or Pre-Cap Inspection	To combine with PO
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**UK & IRELAND
LINECARD**

available here

WWW.PROTEC-SEMI.COM



**DACH SPACE
LINECARD**

available here

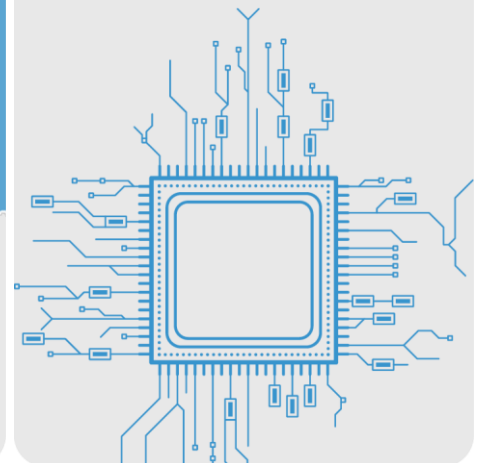
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**AVIONIC &
INDUSTRIAL LINECARD**

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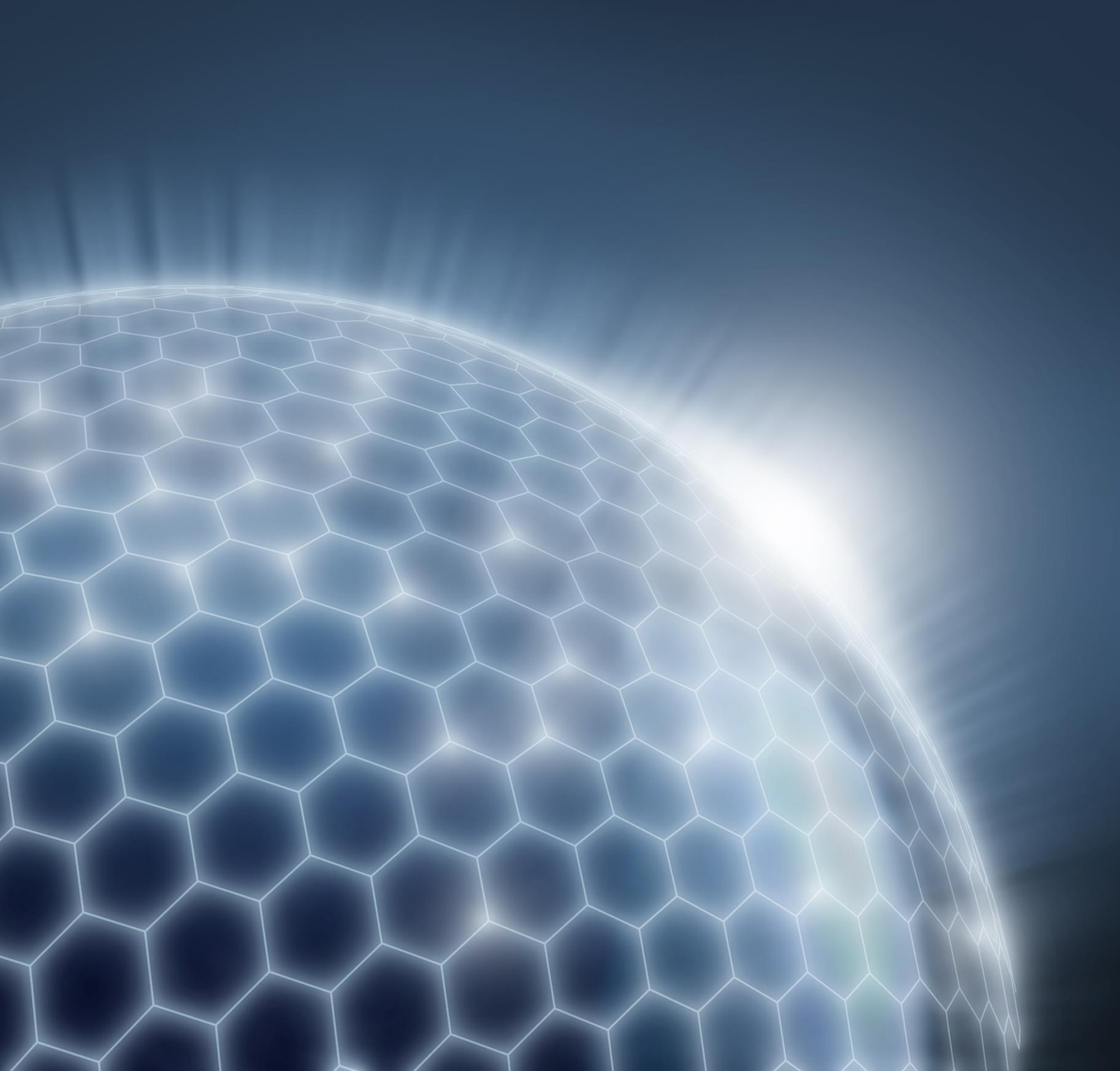
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HISTORICAL BRAND NAMES OF SUPPLIERS

following Brands are still known, either sold or renamed, we might be able to help you





Protec GmbH

High-Rel Electronic Components

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