

Protec GmbH

High-Rel Electronic Components

since 1976



Space Linecard

RENESAS
intersil

NX
NanoXplore

VPT
COMPONENTS

VPT

EPC · SPACE

Q-TECH
CORPORATION

AirBorn

SEMICOA
A DIVISION OF OSI OPTOELECTRONICS

TELEDYNE e2V
HIREL ELECTRONICS
Everywhere you look™

smiths
interconnect

AEM

avalanche technology
Spin Programmable Solutions

FLUX

SKYWORKS

BAE SYSTEMS
INSPIRED WORK

VMI
VOLTAGE MULTIPLIERS INC.

micross
one source. one solution.®

CALRAMIC
TECHNOLOGIES LLC

Honeywell

Protec GmbH is specialized in the distribution of high quality products for the electronics industry, particularly for the Space, Avionic, High Voltage, High Temperature and niche industrial markets.

We are supporting customers and 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.

Responsibilities by Country

	DACH			Nordic									BeNeLux						
	Germany	Austria	Switzerland	Denmark	Sweden	Norway	Finland	France	Italy	Spain	Portugal	UK & Ireland	Belgium	Luxembourg	Netherlands	Czech Republic	Hungary	Poland	Romania
AEM Inc.	•	•	•	•	•	•	•	•		•	•		•	•	•	•	•	•	•
AirBorn	•	•	•	•	•	•	•			•		•							
Avalanche Techn.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
BAE Systems	•	•	•	•	•	•	•												
FLUX	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Honeywell	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Micross	•	•	•	•	•	•	•									•	•	•	•
NanoXplore	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•				
Q-Tech	•	•	•	•	•	•	•					•	•	•	•	•	•	•	•
Reflex Photonics	•	•	•	•	•	•	•												
Renesas / Intersil	•	•	•	•	•	•	•					•	•	•	•	•	•	•	•
Skyworks DS	•	•	•	•	•	•	•									•	•	•	•
Smith Intercon.	•	•	•	•	•	•	•					•							
Semicoa	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Teledyne e2v	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
VMI / CalRamic	•	•													•	•	•	•	•
VPT Components	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
VPT / EPC Space	•	•	•																





Analog OpAmps, Temp. Sensor, ADC & DAC, Voltage References, Multiplexer, RS422, CAN Bus

Power LDOs, PoL, PWM, MosFet Driver, Supervisory, Linear Regulator, Source Driver

Discrete MosFETs, GaNFets

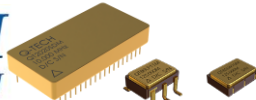
Digital PROM, μ Controller

RF SP2T, Beamforming

Low Power Rad Hard FPGAs (for GEO, LEO, MEO and Constellations)



	kLUTs	RAM Mb	DSPs	HSSL	
NG-medium	34	3	122		
NG-large	137	10	384	24x 6Gbps	ARM Cortex R5
NG-ultra	537	32	1344	32x 12Gbps	4x ARM Cortex R52



	Freq. Range	Vdd	min	Package
B+ Products	15kHz - 250MHz	1.8V - 5V	± 25 ppm	TO, DIP, FP, SMD
XO	15kHz - 250MHz	1.8V - 5V	± 25 ppm	TO, DIP, FP, SMD
TCXO	3MHz - 100MHz	3.3V - 15V	$\pm 0,5$ ppm	24 pin DIL or FP
VCXO	3MHz - 100MHz	3.3V - 5V	± 30 ppm	20 pin FP
SAW	400MHz - 1,5GHz	3,3V - 12V	± 50 ppm	20 pin FP
MCXO	5MHz - 100MHz	3,3V	± 5 ppb	38 pin DIL
OCXO	1MHz - 125MHz	3,3V - 15V	± 10 ppb	custom

New Space Variants also available QT780, QT735, QT723
or Multiple Output XO's, TCXO locked to PLL and many more



DCDC	30/60/100krad	1,5 - 120W	Single and Dual
POL	100krad	20-50W	

Transistors	RadHard & qualified to MIL-PRF-19500
Diodes	Qualified to MIL-PRF-19500
MosFETs	RadHard & acc. to MIL-PRF-19500
GaN FETs	RadHard & acc. to MIL-PRF-19500

Radiation test Services



ADCs and DACs	up to 12 GSps
Digital	Processors, Memory, SiP
RF components	DAS, Multiplier, Gain Blocks, Limiters, Mixers, PLL
Dosimeters	

Most Teledyne e2v parts can also be delivered in lower Qualification Grades for "New Space" Applications



	Gbps	Channel	Package	
SpaceABLE SM	12,5		Pluggable	LEO & GEO (20 year lifetime) versions
SpaceABLE SL	12,5	4TRx or 12Tx / 12Rx	LGA / interposer	
SpaceABLE28 SL	28		LGA / interposer	
SpaceCONEX	12,5		LGA / interposer	

RF Connectors, Cable Assemblies, Filters, Resistors and Terminations, Attenuators, Equalizers

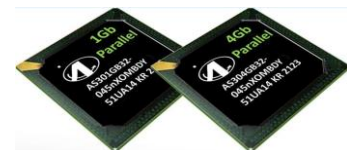


Connectors (Micro D, Nano D, & many others)

Cable Assemblies (including other manufacturers)

Harness (Internal or External Harness)

Flex Assemblies (Box Internal including Connectors)



MRAMs Parallel (75krad)	16M, 32M, 64M, 1G, 4G
MRAMs Serial (75krad)	4M, 8M, 16M, 32M, 64M, 256M, 1G,
nvDDR3 (75krad)	4G and 8G

Products by Manufacturer



HighRel Fuses	50 - 125 V	125mA - 20A
HighRel Chip Beads	30 - 1000Ω	200mA - 4A
TWM	RoHs to Tin Lead Conversion not another solder dipping process	



SEMICOA
A DIVISION OF OSI OPTOELECTRONICS

Transistors	RadHard & qualified to MIL-PRF-19500
Diodes	Qualified to MIL-PRF-19500 UMC Package

BAE SYSTEMS
INSPIRED WORK

PROM	256k	3,3 & 5V
SRAMs	4M - 320M	



Honeywell

MRAMs	1M / 4M / 16M	
SRAMs	265k - 64M	
ADC	12-bit	25 MSps
Comperator	Rail to Rail	



FLUX

ESCC Qualified Magnetics
Transformer, Coils, Chokes.....



VOLTAGE MULTIPLIERS INC.



CALRAMIC
TECHNOLOGIES LLC

Cap. Radial Leaded	500V to 10kV	NP0 / X7R
Cap. Leaded Disc	3kV to 20kV	NP0 / X7R / X5R / X5U / Z5U
HV Diodes	2kV to 20kV	Axial, SMD



one source. one solution.®

RadHard MRAMs	1Mx16 / 2Mx8 / 4Mx16	16 & 64Mb
Colum Attach / Solder Bumps		
Chip & Die		



SKYWORKS

Optocouplers	acc. to JANS	with Rad Data
RF Semiconductors	Limiters, PIN Diodes, Schottky Filter, Varactor Diodes, Gain Blocks Switches, Mixer, GPS Modules	

Additional Partners for Space Parts



4Links



ARQUIMEA



Offices & Contacts by Region

Protec GmbH
High-Rel Electronic Components

and

pro nova
ELEKTRONIK

Cooperation in RF

Christian Mayer
General Manager

Direct: +49 89 660292-46

c.mayer@protec-semi.com



www.protec-semi.com

Protec GmbH
High-Rel Electronic Components

Rosenheimer Landstraße 117
D-85521 Ottobrunn-Riemerling
Phone: +49 89 6602923

Trygve Stafne
Sales Manager NORDIC

Direct: +47 483 21 558

t.stafne@protec-semi.com



www.protec-semi.com

Protec GmbH
Vertrieb elektronischer Bauteile

Rosenheimer Landstraße 117
D-85521 Ottobrunn-Riemerling

Hermann Lindbüchl
GM & Sales Manager

Phone: +49 89 6602923

Fax: +49 89 6098170

h.lindbuechl@protec-semi.de

www.protec-semi.de

Protec GmbH
High-Rel Electronic Components

Rosenheimer Landstraße 117
85521 Ottobrunn-Riemerling
Germany

Gary Rose

Technical Sales Manager UK

Direct: +44 (0)7517 929063

Office Munich: +49 89 6692923

g.rose@protec-semi.com



www.protec-semi.com

Protec GmbH
High-Rel Electronic Components

Rosenheimer Landstraße 117
D-85521 Ottobrunn-Riemerling

Alan Perry

Technical Sales Manager UK

Direct: +44 7377 511302

a.perry@protec-semi.com



www.protec-semi.com

Protec GmbH
High-Rel Electronic Components

Rosenheimer Landstraße 117
D-85521 Ottobrunn-Riemerling
Phone: +49 89 6602923

Shlomo Manheim
Sales Manager Space DACH

Direct: +49 89 660292-48

s.manheim@protec-semi.com



www.protec-semi.com

Protec GmbH
Vertrieb elektronischer Bauteile

Rosenheimer Landstraße 117
D-85521 Ottobrunn-Riemerling
Phone: +49 89 6602923
Fax: +49 89 6098170

Phil Abbott

Sales Manager Avionic & Space UK / Nordic

Direct: +49 89 660292-45

p.abbott@protec-semi.de

www.protec-semi.de

Protec GmbH
High-Rel Electronic Components

Rosenheimer Landstraße 117
D-85521 Ottobrunn-Riemerling
Phone: +49 89 6602923

Simon Schiller
Sales Manager

Direct: +49 89 660292-42

s.schiller@protec-semi.de

www.protec-semi.de

Protec GmbH
High-Rel Electronic Components

Rosenheimer Landstraße 117
D-85521 Ottobrunn-Riemerling
Phone: +49 (0)89 6602923

Joël Le Mauff

Sales Manager France, Spain,
Portugal, Belgium, Switzerland

Direct: +33 (0)6 7581 8215

j.leMauff@protec-semi.com



www.protec-semi.com

Protec GmbH
Distribution of electronic Components

Rosenheimer Landstraße 117
85521 Ottobrunn-Riemerling
Germany

Phone: +49 89 6602923

Fax: +49 89 6098170

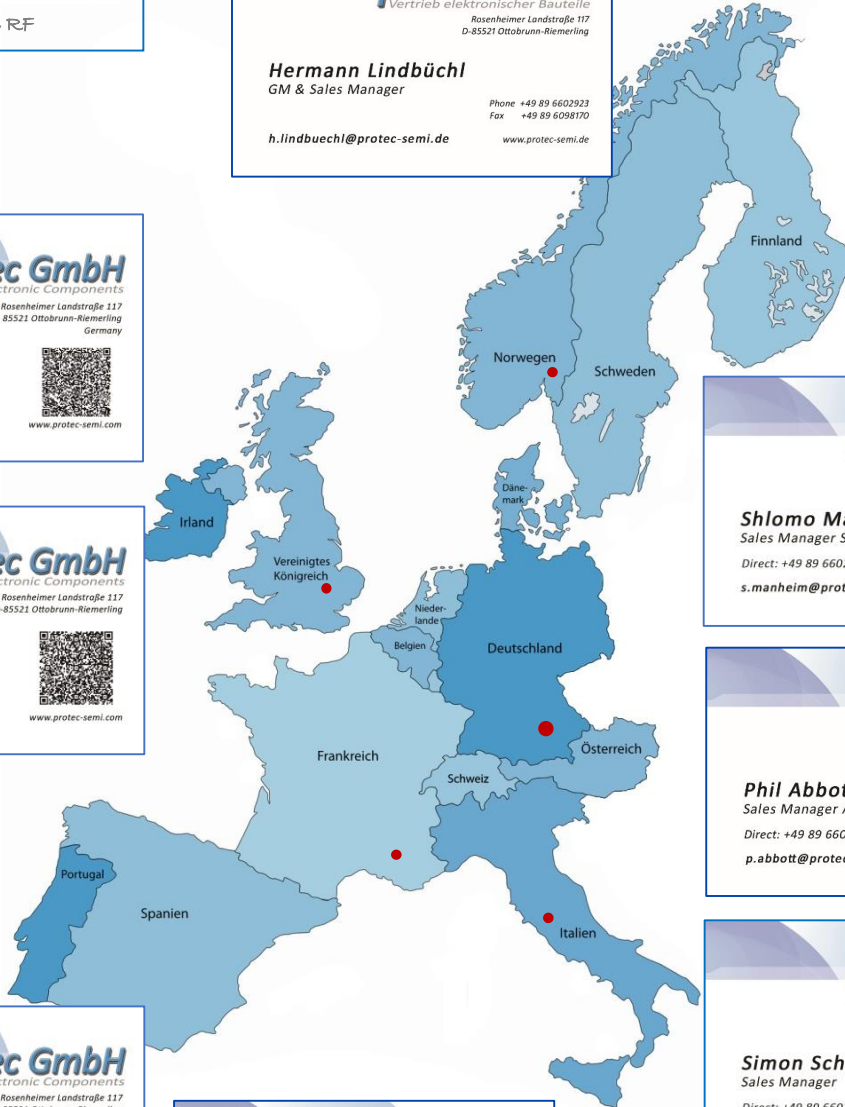
Danilo Lautä

Sales Manager Italy

Mobile: +3x x xxxx xxxx

d.lautä@protec-semi.com

www.protec-semi.de



Other Business Areas & Territories

Protec GmbH
High-Rel Electronic Components

Protec GmbH
High-Rel Electronic Components
since 1976



UK and Ireland Linecard









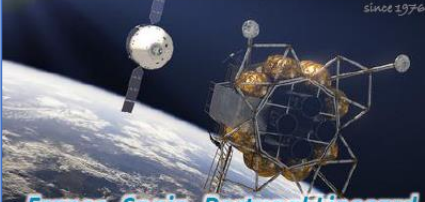






Protec GmbH - Rosenheimer Landstrasse 117 - 85521 Ottobrunn - Germany
Phone: +49 89 6602923 - eMail: sales@protec-semi.com - http://www.protec-semi.com

Protec GmbH
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since 1976



France, Spain, Portugal Linecard










Protec GmbH - Rosenheimer Landstrasse 117 - 85521 Ottobrunn - Germany
Phone: +49 89 6602923 - eMail: sales@protec-semi.com - http://www.protec-semi.com

Protec GmbH
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Avionic & Industrial Linecard












Protec GmbH - Rosenheimer Landstrasse 117 - 85521 Ottobrunn - Germany
Phone: +49 89 6602923 - eMail: sales@protec-semi.com - http://www.protec-semi.com

Historical Brand Names of Suppliers

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

