



# tactical communications

Tactical communication involves clear and concise communication between team members to achieve mission objectives, while also ensuring the safety of all involved. Tactical communication includes the use of specific codes, terminology, and protocols to relay information quickly and accurately.

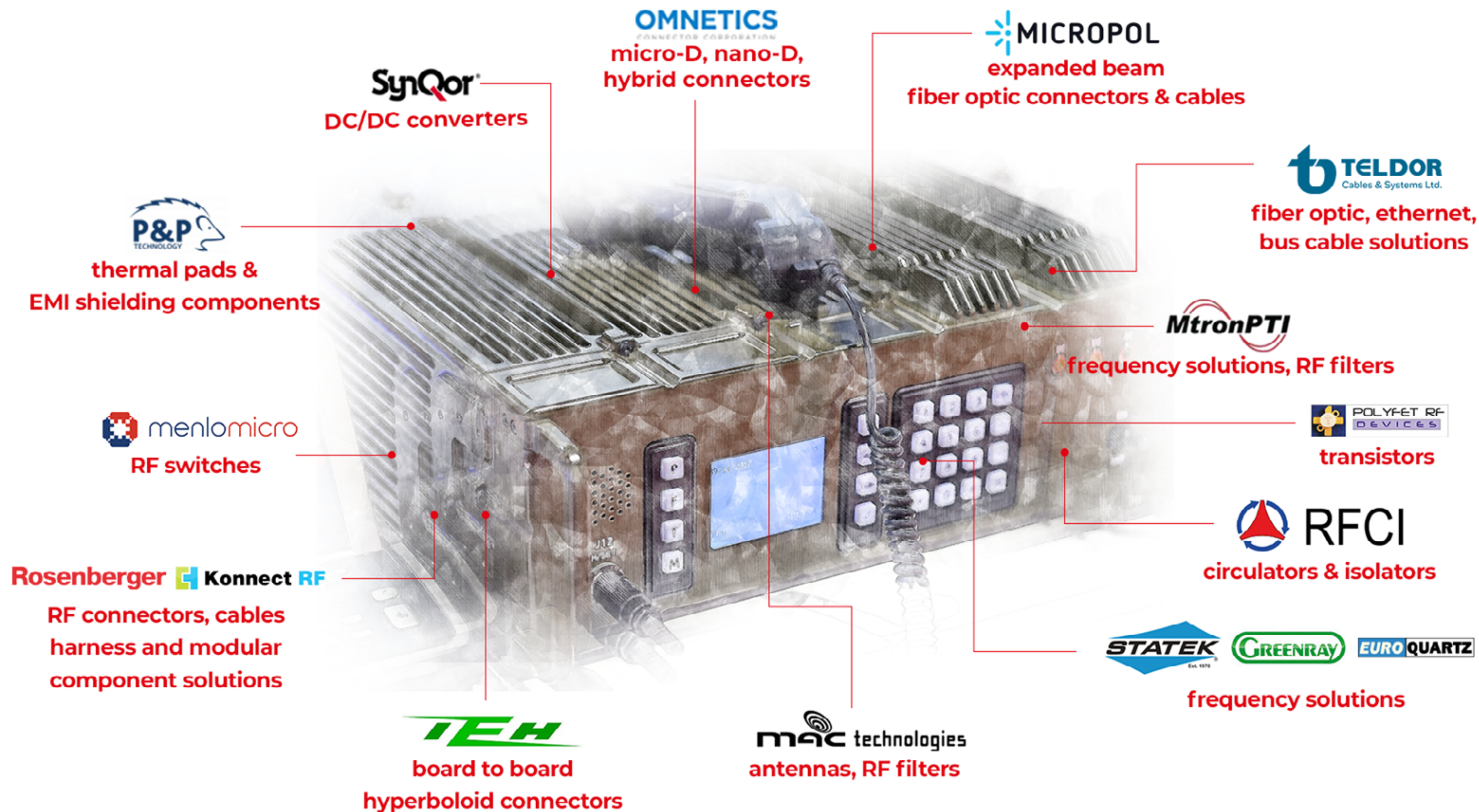
## manufacturers

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# SYNQOR

www.synqor.com

## COMPANY OVERVIEW

SynQor® is a leading supplier of power conversion solutions to the military, industrial, rail transportation, commercial avionics, medical and telecom/datacom markets. SynQor’s innovative products are designed to exceed the demanding performance, quality, and reliability requirements of today’s power electronic engineers and system integrators who develop leading-edge infrastructure hardware.

### MCOTS DC-DC CONVERTER



MCOTS PRODUCT FEATURES	COMPLIANCE FEATURES	PROTECTION/CONTROL FEATURES						
<ul style="list-style-type: none"><li>▶ High efficiency, up to 95% at full rated load current</li><li>▶ Fixed frequency switching provides predictable EMI</li><li>▶ No minimum load requirement</li><li>▶ Rugged design for harsh environments</li><li>▶ Full Feature option on some models</li><li>▶ Flanged baseplate available</li><li>▶ Industry standard pin-out configurations and standard footprints.</li><li>▶ Available: High-capacitance option for very large output capacitance and extreme transient applications</li><li>▶ -55 °C to +100 °C Operating Temperature</li></ul>	<p><b>MilCOTS converters with MilCOTS filters are designed to meet:</b></p> <ul style="list-style-type: none"><li>▶ MIL-HDBK-704</li><li>▶ RTCA/DO-160 Section 16, 17, 18</li><li>▶ MIL-STD-1275</li><li>▶ MIL-STD-461</li><li>▶ DEF-STAN 61-5 (part 6)/(5, 6)</li></ul>	<ul style="list-style-type: none"><li>▶ Input under-voltage lockout</li><li>▶ Output current limit and short circuit protection</li><li>▶ Active back bias limit</li><li>▶ Output over-voltage protection</li><li>▶ Thermal shutdown (not on DM Package Size)</li><li>▶ On/Off control referenced to input side</li><li>▶ (ON/OFF control isolated in Full Bricks)</li><li>▶ Remote sense for the output voltage</li><li>▶ Digital Output Current Sharing (HZ &amp; HY only)</li><li>▶ Output voltage trim range of: <table><tr><td><b>+10% to -20%</b></td></tr><tr><td>(Half-Brick Zeta/Yota)</td></tr><tr><td><b>+10% to -50%</b></td></tr><tr><td>(Quarter-Brick Exa)</td></tr><tr><td><b>+10% to -10%</b></td></tr><tr><td>(Sixteenth Brick)</td></tr></table></li></ul>	<b>+10% to -20%</b>	(Half-Brick Zeta/Yota)	<b>+10% to -50%</b>	(Quarter-Brick Exa)	<b>+10% to -10%</b>	(Sixteenth Brick)
<b>+10% to -20%</b>								
(Half-Brick Zeta/Yota)								
<b>+10% to -50%</b>								
(Quarter-Brick Exa)								
<b>+10% to -10%</b>								
(Sixteenth Brick)								

### INQOR DC-DC CONVERTER



OPERATIONAL FEATURES	PROTECTION/CONTROL FEATURES	EFFICIENCY
<ul style="list-style-type: none"><li>▶ High efficiency up to 95%</li><li>▶ Input voltage ranges from 9 V to 425 V</li><li>▶ Output power up to 600 W</li><li>▶ Fixed frequency switching, low output noise</li><li>▶ No minimum load requirement</li><li>▶ Full Feature option on some models</li><li>▶ Industry standard pin-out configurations and standard footprints</li><li>▶ Operating Temperature -40 °C to +100 °C</li><li>▶ Output Voltage Set Point ±1.0%</li><li>▶ Output Voltage Ripple &lt;1% of Vout (typ.) pk-pk</li><li>▶ Isolation Voltage Up to 4250 Vdc</li></ul>	<ul style="list-style-type: none"><li>▶ Input under-voltage lockout</li><li>▶ Output current limit and short circuit protection</li><li>▶ Active back bias limit prevents damage to converter from external load induced pre-bias</li><li>▶ Digital output current sharing (Half Brick Zeta only)</li><li>▶ Output over-voltage protection</li><li>▶ Thermal shutdown</li><li>▶ Trimmable output voltages</li></ul>	<p>95%</p>

Continuous Input	34-160 V
Output	1.8-48 V
Max Power	120 W
Reinforced Isolation	3000 Vdc
Quarter Brick	DC/DC Converter



ISOLATED DC-DC CONVERTERS													
12 VDC INPUT (9-22 VDC INPUT RANGE, TRANSIENT 25 V)													
	VOUT	1.8 V	3.3 V	5 V	7 V	12 V	15 V	24 V	28 V	30 V	40 V	48 V	
Half Brick	HPC	60 A 108 W	V 50 A 165 W	36 A 180 W		15 A 180 W	12 A 180 W	7.5 A 180 W	6.5 A 182 W		4.5 A 180 W	3.7 A 178 W	
	HTC	50 A 90 W	40 A 132 W	28 A 140 W		12 A 144 W	9.5 A 143 W	6 A 144 W	5 A 140 W		3.5 A 140 W	3 A 144 W	
Quarter Brick	QTC	40 A 72 W	30 A 99 W	20 A 100 W	14 A 98 W	8 A 96 W	7 A 105 W	4 A 96 W		3 A 90 W		2 A 96 W	
	QGC	30 A 54 W	20 A 66 W	15 A 75 W	10 A 70 W	6 A 72 W	5 A 75 W	3 A 72 W		2.4 A 72 W		1.5 A 72 W	
24 VDC INPUT (18-36 VDC INPUT RANGE, TRANSIENT 50 V)													
	VOUT	1.8 V	3.3 V	5 V	7 V	12 V	15 V	24 V	28 V	30 V	40 V	48 V	50 V
Half Brick	HZC			60 A 300 W		42 A 504 W	34 A 510 W	21 A 504 W	18 A 504 W		12.5 A 500 W		10 A 500 W
	HEC								14 A 392 W				8 A 400 W
	HPC	60 A 108 W	50 A 165 W	40 A 200 W		8 A 216 W	8 A 216 W	9 A 216 W	7.5 A 210 W		10 A 500 W	4.5 A 216 W	
	HTC	50 A 90 W	40 A 132 W	30 A 150 W		13 A 156 W	10 A 150 W	6.5 A 156 W	5.5 A 154 W		4 A 160 W	3.3 A 158 W	
Quarter Brick	QTC	40 A 72 W	30 A 99 W	20 A 100 W	14 A 98 W	8 A 96 W	8 A 120 W	5 A 120 W		4 A 120 W		2.5 A 120 W	
	QGC	32 A 58 W	25 A 83 W	18 A 90 W	13 A 91 W	7.5 A 90 W	6 A 90 W	3.7 A 89 W		3 A 90 W		1.8 A 91 W	
	QMC									2 A 60 W		1.2 A 58 W	
Sixteenth Brick	SGC		15 A 50 W	10 A 50 W	7 A 49 W	4 A 48 W	3.3 A 48 W	2 A 48 W	1.8 A 50 W			1 A 48 W	
48 VDC INPUT (34-75 VDC INPUT RANGE, TRANSIENT 100 V)													
	VOUT	1.8 V	3.3 V	5 V	7 V	12 V	15 V	24 V	28 V	30 V	40 V	48 V	50 V
Half Brick	HZC			60 A 300 W		50 A 600 W	40 A 600 W	25 A 600 W	21.5 A 602 W		15 A 600 W		12 A 600 W
	HPC	60 A 108 W	60 A 198 W	46 A 230 W		21 A 252 W	17 A 255 W	10.5 A 252 W	9 A 252 W		6.3 A 252 W	5.2 A 250 W	
	HTC	50 A 90 W	45 A 149 W	34 A 170 W		16 A 192 W	13 A 195 W	8 A 192 W	7 A 196 W		5 A 200 W	4 A 192 W	
Quarter Brick	QTC	40 A 72 W	30 A 99 W	25 A 125 W	20 A 140 W	12 A 144 W	10 A 150 W	6 A 144 W		5 A 150 W		3 A 144 W	
	QGC	32 A 58 W	25 A 83 W	21 A 105 W	15 A 105 W	9 A 108 W	7 A 105 W	4.5 A 108 W		3.5 A 105 W		2.2 A 106 W	
Sixteenth Brick	SGC	28 A 50 W	15 A 50 W	10 A 50 W	7 A 50 W	4.1 A 50 W	3.3 A 50 W		1.8 A 50 W				
72 VDC INPUT (42-110 VDC INPUT RANGE)													
	VOUT	1.8 V	3.3 V	5 V	7 V	12 V	15 V	24 V	28 V	30 V	40 V	48 V	
Half Brick	HPC	60 A 108 W	60 A 198 W	46 A 230 W		21 A 252 W	17 A 255 W	10.4 A 250 W	9 A 252 W		6.3 A 252 W	5.2 A 250 W	
	HTC	50 A 90 W	45 A 149 W	34 A 170 W		16 A 192 W	13 A 195 W	8 A 192 W	7 A 196 W		5 A 200 W	4 A 192 W	
Quarter Brick	QTC		30 A 99 W	25 A 125 W	20 A 140 W	12 A 144 W	10 A 150 W	6 A 144 W		5 A 150 W		3 A 144 W	
	QGC		5 A 83 W	20 A 100 W	15 A 105 W	9 A 108 W	7 A 105 W	4.5 A 108 W		3.5 A 105 W		2 A 96 W	
110 VDC INPUT (66-160 VDC INPUT RANGE, TRANSIENT 170 V)													
	VOUT	3.3 V	5 V	7 V	12 V	15 V	24 V	28 V	30 V	40 V	48 V		
Half Brick	HPC	60 A 198 W	48 A 240 W		21 A 252 W	17 A 255 W	10 A 240 W	9 A 252 W					
	HTC	45 A 149 W	34 A 170 W		16 A 192 W	13 A 195 W	8 A 192 W	7 A 196 W					
Quarter Brick	QTC	30 A 99 W	25 A 125 W	20 A 140 W	12 A 144 W	10 A 150 W	6 A 144 W		5 A 150 W				
	QGC	23 A 76 W	18 A 90 W	15 A 105 W	9 A 108 W	7 A 105 W	4.5 A 108 W		3.5 A 105 W				



Product Family Matrix					
Input Voltage Range	2:1 Input Ratio			8:1 Input Ratio	
	9 V	<b>IQ12</b> Input Range: 34-75 V Transient: 100 V Max Power: 602 W Eff: Up to 95%			
	18 V				
	25 V		<b>IQ24</b> Input Range: 18-36 V Transient: 50 V Max Power: 510 W Eff: Up to 95%		
	34 V				
	75 V				
	100 V				
	170 V	<b>IQ42H</b> Input Range: 90-210 V Transient: 250 V Max Power: 150 W Eff: Up to 90%	<b>IQ1B</b> Input Range: 66-160 V Transient: 170 V Max Power: 255 W Eff: Up to 93%		
475			<b>IQ4H</b> Input Range: 18-36 V Transient: 50 V Max Power: 510 W Eff: Up to 95%		

Product Family Matrix					
Input Voltage Range	4:1 Input Ratio			12:1 Input Ratio	
	9 V	<b>IQ12</b> Input Range: 9-36 V Transient: 40 V Max Power: 182 W Eff: Up to 92%			
	18 V				
	25 V				
	34 V		<b>IQ36</b> Input Range: 18-75 V Max Power: 220 W Eff: Up to 93%		
	75 V		<b>IQ70</b> Input Range: 34-135 V Max Power: 240 W Eff: Up to 93%		
170 V				<b>IQ90</b> Input Range: 34-160 V Max Power: 228 W Eff: Up to 94%	<b>IQ68</b> Input Range: 12-150 V Transient: 170 V Max Power: 53 W Eff: Up to 90%

Input Voltage	Mode	Output Voltage	Package Size	Series	Thermal Design	Maximum Current	Options Description:		
							Enable Logic	Pin Length	Feature Set
IQ	12: 9-22 V	012: 1.2 V	<b>S:</b> Sixteenth Brick <b>Q:</b> Quarter Brick <b>H:</b> Half Brick <b>F:</b> Full Brick	<b>K:</b> Kilo <b>M:</b> Mega <b>G:</b> Giga <b>T:</b> Tera <b>P:</b> Peta <b>E:</b> Exa <b>Z:</b> Zeta	<b>C:</b> Encased <b>D:</b> Encased, Non-threaded Baseplate <b>V:</b> Encased, Flanged Baseplate	<b>60:</b> 60 A <b>50:</b> 50 A <b>30:</b> 30 A <b>10:</b> 10 A <b>06:</b> 6 A <b>02:</b> 2 A (not all shown)	<b>N:</b> Negative	<b>K:</b> 0.110" <b>N:</b> 0.145" <b>R:</b> 0.180" <b>Y:</b> 0.250"	<b>S:</b> Standard (1/8 & ¼ only) <b>C:</b> Current monitor output/trimmable current limit (1/8 & ¼ only) <b>F:</b> Current share/trimmable current limit (half brick only)
	18: 9-36 V	015: 1.5 V							
	24: 18-36 V	018: 1.8 V							
	32: 9-75 V	025: 2.5 V							
	36: 18-75 V	033: 3.3 V							
	48: 34-75 V	050: 5 V							
	64: 18-135 V	070: 7 V							
	68: 12-150 V	120: 12 V							
	70: 34-135 V	150: 15 V							
	72: 42-110 V	240: 24 V							
	90: 34-160 V	280: 28 V							
	1B: 66-160 V	300: 30 V							
	2H: 90-210 V	400: 40 V							
	4H: 180-425 V	480: 48 V							
		500: 50 V							




# MAC TECHNOLOGIES

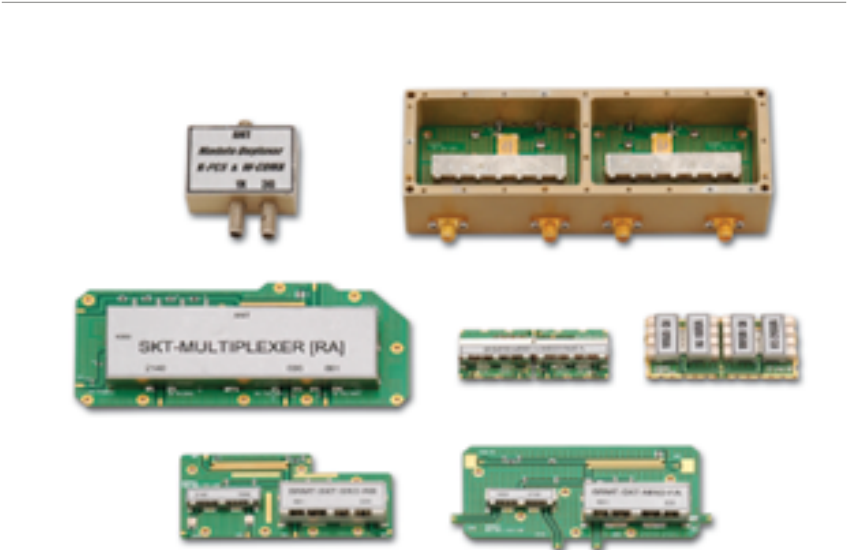
www.mactech.co.kr

## COMPANY OVERVIEW


MAC technologies is a company that develops and produces varied selections of wireless communication components essential in this ever changing high tech era, based on its source technology.



- ▶ Low insertion loss for using high Q-value dielectric resonators
- ▶ Small and light for using high dielectric constant ceramics
- ▶ Excellent temperature stability for temperature
- ▶ Excellent mechanical stability without vibratile structure
- ▶ SMD and reflow soldering available
- ▶ Mountable by automatic placement machine

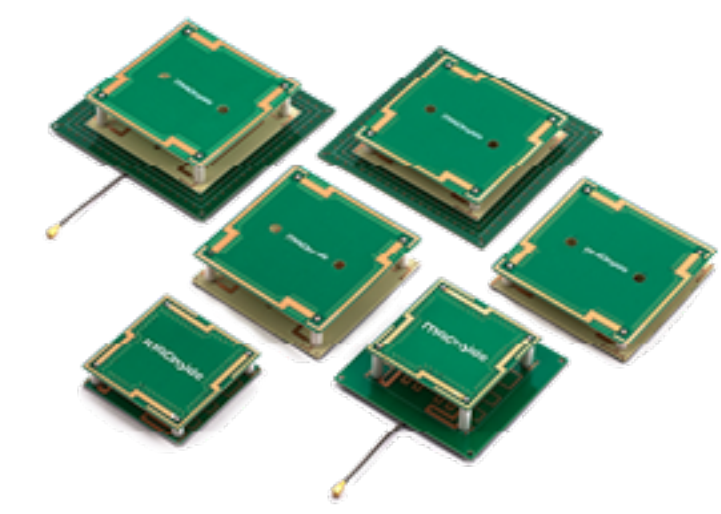


- ▶ Various size & wide frequency
- ▶ Temperture compensated
- ▶ Low insertion loss
- ▶ Low cost & custom design
- ▶ High mechanical stability



- ▶ Low insertion loss for using high Q-value dielectric resonators
- ▶ Small and light for using high dielectric constant ceramics
- ▶ Excellent temperature stability for temperature
- ▶ Excellent mechanical stability without vibratile structure
- ▶ SMD and reflow soldering available
- ▶ Mountable by automatic placement machine

- **QUADRIFILAR WIDE-BAND ANTENNA**
  - Wide-band responsibility
  - Lighter than Ceramic Antennas
  - Circular Polarization Antenna
  - Provide highly stabilized performance
  - Better multi recognition performance
  - 900 MHz ISM Band (FCC, ETSI, KCC, CCC & etc.)



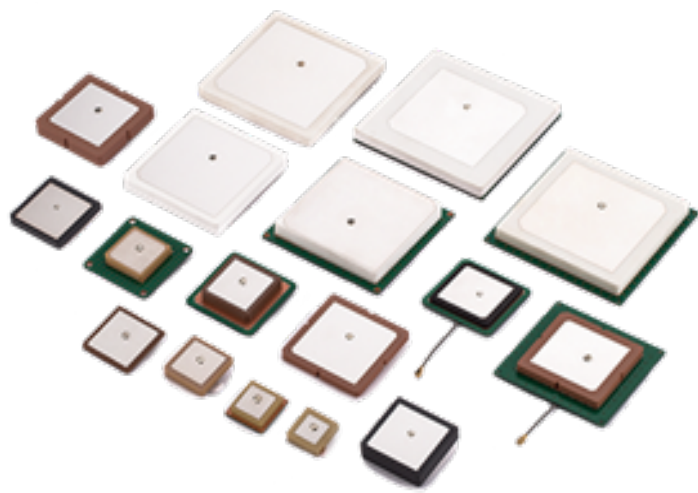
QUADRIFILAR WIDE-BAND ANTENNA GAIN TABLE										
No.	Part No.	Antenna Weight (g)	Dimension (mm²)	Frequency range(MHz)	Measurement Data (MAC technologies Chamber)					
					BandW (-10dB)(MHz)	BeamW (-3dB)(Deg	Hor(dBiL)	Ver(dBiL)	RHCP(dBiC) AR(dB)	AR(dB
1	MQWA45SH915-A	8	45x45x10	FCC ETSI KCC CCC & etc.	200 Typ.	110	-1.63	-0.66	27760	3.0 min
2	MQWA45SM915-A	9	45x45x15		200 Typ.	110	-0.51	0.65	34366	3.0 min
3	MQWA45SP915-A	19	45x45x18		200 Typ.	110	-0.40	0.75	45080	3.0 min
4	MQWA60F45SH915-A	11	60×60×10(F45×45)		200 Typ.	110	-1.25	-1.06	29221	3.0 min
5	MQWA60F45SM915-A	12	60×60×15(F45×45)		200 Typ.	110	-0.08	0.21	3.00	3.0 min
6	MQWA60F45SP915-A	12	60×60×18(F45×45)		200 Typ.	110	-0.16	0.95	11383	3.0 min
7	MQWA60SH915-A	13	60×60×10		200 Typ.	100	0.33	0.10	45202	3.0 min
8	MQWA60SM915-A	14	60x60x15		200 Typ.	100	0.71	0.56	18323	3.0 min
9	MQWA79SH915-A	18	79×79×10(F60×60)		200 Typ.	100	0.32	0.06	43891	3.0 min
10	MQWA79SM915-A	19	79×79×15(F60×60)		200 Typ.	100	1.Eki	0.86	34029	3.0 min



QUADRIFILAR WIDE-BAND RECOGNITION DISTANCE										
No.	Part No.	Dimension (mm²)	Card Tag (m)				Alien Tag (m)			
			Tag(H)	Tag(V)	Best(H)	Best(V)	Tag(H)	Tag(V)	Best(H)	Best(V)
1	MQWA45SH915-A	45x45x10	2.1	3.1	2.8	4.0	2.0	3.6	2.7	4.5
2	MQWA45SM915-A	45x45x15	3.0	4.0	3.0	4.4	2.1	4.4	3.0	6.6
3	MQMA45SP915-A	45x45x18	3.1	4.2	4.3	4.5	3.1	4.4	4.5	6.3
4	MQWA60F45SH915-A	60×60×10(F45×45)	3.1	3.4	4.0	4.2	3.2	4.0	4.8	4.6
5	MQWA60F45SM915-A	60×60×15(F45×45)	3.2	3.6	4.8	4.3	3.3	4.3	5.3	1.7
6	MQMA60F45SP915-A	60×60×18(F45×45)	3.2	4.4	4.6	6.3	3.3	4.6	5.2	6.7
7	MQWA60SH915-A	60x60x10	3.3	4.0	4.9	5.5	3.4	4.3	5.4	6.0
8	MQWA60SM915-A	60x60x15	3.4	4.2	5.3	5.8	4.8	4.4	6.3	6.6
9	MQWA79SH915-A	79×79×10(F60×60)	3.3	3.9	4.8	5.5	3.3	4.3	5.3	6.0
10	MQWA79SM915-A	79×79×15(F60×60)	3.4	4.2	5.8	5.8	4.8	4.4	6.8	6.7

● CERAMIC ANTENNA

- Circular Polarization Antenna
- 900 MHz ISM Band (FCC, ETSI, KCC, CCC & etc.)
- Antenna dimension is as small as Teflon antenna
- Using high quality factor dielectric
- Better multi recognition performance
- Provide highly stabilized performance



CERAMIC ANTENNA GAIN TABLE											
No.	Part No.	Ground Plane (mm)	Antenna Weight (g)	Dimension (mm²)	Frequency range(MHz)	Measurement Data (MAC technologies Chamber)					
						BandW	BeamW	Hor(dBiL)	Ver(dBiL)	RHCP(dBic) AR(dB)	AR(dB)
						10dB (MHz)	(-3dB)(Deg				
1	MPAC18SA915P-TA	50x50	3	18.3x18.3x2	FCC ETSI KCC CCC & etc.	4 Typ.	125	-12.42	-12.01	-10.50	3.0 min
2	MPAC18SC915P-TA	50x50	7	18.3x18.3x4		5 Typ.	125	-9.81	-11.50	-8.77	3.0 min
3	MPAC24SA915P-TA	50x50	6	24.4x24.4x2		4 Typ.	120	-9.54	-8.85	-6.04	3.0 min
4	MPAC24SC915P-TA	50x50	12	24.4x24.4x4		5 Typ.	120	-6.00	-5.67	-2.77	3.0 min
5	MPAC34SA915P-TA	50x50	11	34x34x2		3 Typ.	120	-5.54	-4.46	-1.98	3.0 min
6	MPAC34SC915P-TA	50x50	21	34x34x4		4 Typ.	120	-1.47	-2.16	1.Kas	3.0 min
7	MPAC34SF915P-TA	50x50	37	34x34x7		5 Typ.	120	-0.70	-1.67	Oca.80	3.0 min

CERAMIC ANTENNA RECOGNITION DISTANCE											
No.	Part No.	Ground Plane (mm)	Antenna Weight (g) Dimension (mm²)	Card Tag (m)				Alien Tag (m)			
				Tag(H)	Tag(V)	Best(H)	Best(V)	Tag(H)	Tag(V)	Best(H)	Best(V)
1	MPAC18SA915P-TA	50x50	18.3x18.3x2	0.4	0.7	0.7	1.0	0.3	0.5	0.5	0.6
2	MPAC18SC915P-TA	50x50	18.3x18.3x4	0.6	0.9	0.9	1.2	0.5	0.6	0.7	0.8
3	MPAC24SA915P-TA	50x50	24.4x24.4x2	0.7	0.9	0.8	1.1	0.6	0.8	0.7	1.0
4	MPAC24SC915P-TA	50x50	24.4x24.4x4	1.1	1.3	1.4	1.6	0.8	1.0	1.1	1.4
5	MPAC34SA915P-TA	50x50	34x34x2	1.2	1.6	1.6	2.2	0.9	1.2	1.3	1.7
6	MPAC34SC915P-TA	50x50	34x34x4	1.2	1.6	1.6	2.2	0.9	1.2	1.3	1.7
7	MPAC34SF915P-TA	50x50	34x34x7	1.5	1.9	2.1	2.8	1.2	1.6	1.4	2.0
8	MPAC45SC915P-TA	78x78	45x45x4	1.7	2.2	4.1	4.4	1.6	2.2	4.1	4.4
9	MPAC45SF915P-TA	78x78	45x45x7	2.0	3.1	4.8	5.4	1.9	3.0	4.8	5.4
10	MPAC62SF915P-TA	78x78	61.5x61.5x7	2.4	3.4	5.7	6.0	2.4	3.4	5.7	6.0
11	MPAC79SE915P-TA	78x78	78.7x78.7x6.35	2.9	3.8	6.0	7.0	2.9	3.9	6.2	7.5





Frequency Solutions

RF Filters

MTRON

www.mtronpti.com

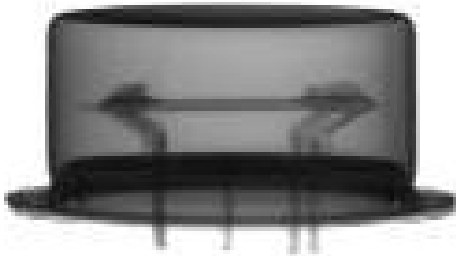
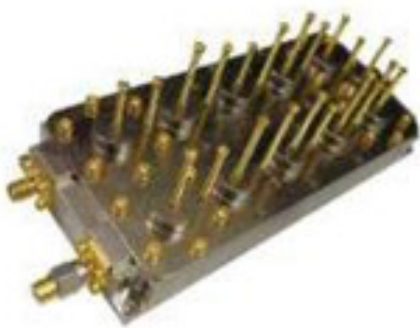
REFERENCES

Northrop Grumman Corporation  
General Dynamics Corporation  
Lockheed Martin Corporation  
L3Harris Technologies Inc.  
Collins Aerospace  
MDA Corporation  
NEC Corporation  
Boeing Co  
ISRO

COMPANY OVERVIEW

MtronPTI has over 70 design wins on satellite platforms and manned spacecraft. From Engineering Design Units to Flight hardware, MtronPTI has a proven team and track record to meet your demanding space needs.

Supporting military, commercial, and scientific space applications, MtronPTI delivers qualified solutions which fully meet the reliability and performance demands of space.



CAPABILITIES

- ▶ In House Crystal Resonator Processing
- ▶ Ultra-Lightweight and Compact Solutions
- ▶ Corona Discharge Analysis / Testing
- ▶ High Power Handling
- ▶ High Channel to Channel Isolation
- ▶ Very Low Insertion Loss

PRODUCT LINES

- ▶ Crystal Filters to 200 MHz
- ▶ LC Filters to 6 GHz
- ▶ Cavity / Waveguide Filters to 20 GHz
- ▶ N-plexers
- ▶ Precision Resonators to 200 MHz

SPACE LEVEL IN HOUSE TESTING

- ▶ Thermal Shock per MIL-STD-202, Method 107
- ▶ Terminal Strength per MIL-STD-202, Method 211
- ▶ Mechanical Shock per MIL-STD-202, Method 213
- ▶ Gross Leak Testing per MIL-STD-202, Method 112
- ▶ Random Vibration per MIL-STD-202, Method 214A
- ▶ Fine Leak Testing - Helium per MIL-STD-202, Method 112
- ▶ Sinusoidal Vibration per MIL-STD-202, Method 201 and 204
- ▶ PIND (Particle Impact Noise Detection) per MIL-STD-202, Method 217
- ▶ Other Miscellaneous Testing including: Life, Immersion, Barometric Pressure, Humidity, Solderability
- ▶ Dielectric withstanding voltage, Insulation Resistance

WORKMANSHIP STANDARTS

- ▶ In-House J-STD-001 Certified Trainer
- ▶ J-STD-001 Class 3 with Space
- ▶ Addendum

PRODUCTION CAPABILITIES

- ▶ Dedicated Clean Room
- ▶ World-class FOD Control
- ▶ In House Crystal Processing
- ▶ Internal Quartz Sweeping
- ▶ Laser Weld

FULL DC and RF TESTING

- ▶ Crystal Filters to 200 MHz
- ▶ LC Filters to 6 GHz
- ▶ Cavity / Waveguide Filters to 20 GHz
- ▶ N-plexers
- ▶ Precision Resonators to 200 MHz





# STATEK

www.statek.com

## COMPANY OVERVIEW

For over 50 years, we have supported military programs with state-of-the-art crystal resonators and oscillators. We offer a complete portfolio of frequency control products manufactured and tested to military standards: oscillators to MIL-PRF-55310 Product Level B and crystals to MIL-PRF-3098. Our dedicated servicing of the demanding requirements of the military market makes us a preferred supplier to most major defense contractors.

### • CXOXLPNR Oscillators

Statek’s ultra-miniature Low Earth Orbit (LEO) applicable oscillators are 100.000 g shock and 30 kRad survivable. These oscillators deliver a low voltage CMOS output with ultra-low phase noise, jitter, and acceleration sensitivity. At 50 MHz the typical RMS phase jitter from 12 kHz to 20 MHz is only 150fs.

Frequency	20 to 125MHz
Supply Voltage	1.8 to 3.3V
Frequency-Temperature Stability <sup>2</sup>	±100 ppm to ±25 ppm (Industrial) ±100 ppm to ±50 ppm (Military)
Calibration Tolerance <sup>1</sup>	±100 ppm to ±50 ppm
Output Load (CMOS)	15 pF
Radiation Tolerance	30 kRad
Temperature Range	-55°C to 125°C



PRODUCT	PACKAGE(MM)	FREQUENCY RANGE	
<b>CXOLHG</b> Shock to 100,000g	3.2 x 1.5	16 kHz to 32.768 kHz	
<b>CXOMKHG</b> Shock to 100,000g	6.5 x 5.0	200 kHz to 200 MHz	
<b>CXOQHG</b> Shock to 75,000g	2.5 x 2.0	16 kHz to 100 MHz	
<b>LHGAT</b> Shock to 30,000g	7.0 x 5.0	320 kHz to 50 MHz	
<b>HGXO</b> Shock to 100,000g	7.0 x 5.0	32.768 kHz to 50 MHz	
<b>STXOHG</b> Shock to 100,000g Tight Frequency Stability	3.2 x 2.5	10 MHz to 70 MHz	
<b>CXOXLPN</b> Shock to 100,000g	3.2 x 2.5	10 MHz to 125 MHz	
<b>CX1HG</b> Shock to 100,000g	8.0 x 3.6	6 MHz to 250 MHz	
<b>CX4HG</b> Shock to 100,000g	5.0 x 1.8	14 MHz to 50 MHz	
<b>CX16HG</b> Shock to 50,000g	2.0 x 1.2	24 MHz to 50 MHz Contact Factory	
<b>CX18HG</b> Shock to 75,000g	1.6 x 1.0	30 MHz to 50 MHz Contact Factory	
<b>CX11HG</b> Shock to 75,000g	3.2 x 1.5	16 MHz to 50 MHz	





# GREENRAY

www.greenrayindustries.com

## COMPANY OVERVIEW

Our quartz crystal oscillators function as stable reference sources for communications, instrumentation and defense applications and offer low phase noise, tight stability and low g-sensitivity. Our products include TCXOs, OCXOs, VCXOs and clock oscillators. Greenray quartz crystal oscillators serve the needs of the communications industry with frequency control products designed for applications including Stratum III and IIIE for telecommunications, as well as for wireless, SATCOM, and today’s emerging technologies.

### ● T1254- Precision Quartz Crystal Oscillators

T1254 Series TCXO Greenray Industries’ T1254 TCXO offers excellent performance in high shock and vibration environments in a rugged, radiation tolerant package. Features Rugged, radiation tolerant 20.3 x 12.7mm package Frequency: 10 to 50MHz Stability: ±1.0ppm (-20 to &#43;70°C) 5 Vdc supply CMOS output Benefits TCXO performance in a rugged, radiation tolerant package.

Frequency	10 to 50MHz
Supply Voltage	5 Vdc
Frequency-Temperature Stability	±1.0 ppM (Industrial) ±3.0 ppM (Military) ±5.0 ppM(55°C to +95°C
Aging	<1 ppM/yr
Output Load (CMOS)	15 pF
Radiation Tolerance	30 kRad





# EUROQUARTZ

www.euroquartz.co.uk

## COMPANY OVERVIEW

For over 50 years, we have supported military programs with state-of-the-art crystal resonators and oscillators. We offer a complete portfolio of frequency control products manufactured and tested to military standards: oscillators to MIL-PRF-55310 Product Level B and crystals to MIL-PRF-3098. Our dedicated servicing of the demanding requirements of the military market makes us a preferred supplier to most major defense contractors.

### Low Current Applications Standard

CLOCKS	
Standard Clock Oscillator – Ultra Low Current	
Frequency Range	156kHz – 160MH
Supply Voltage	1V /2.5V and 3.3V
Current Consumption	1.1mA – 5.0mA
Package Sizes	7x5 mm
XOA Series - Real time clock and precision timing	
Current Consumption	32µA - 36µA
Frequencies	27.3kHz – 100kHz
Package Sizes	3.2x2 /5x3.2mm/7x5mm
XOK Series - Standard Clock Oscillator – Ultra Low Current	
Current Consumption	1.1mA – 5mA
Frequencies	156kHz – 160MHz
Package Sizes	5x3.2mm/7x5mm
TCXO - EME32T - Real time clock, GPS and Smart metering	
Current Consumption	1.5µA
Frequencies	32.768kHz
Package Sizes	3.2x2.5mm

### Differential Outputs

LVPECL VCXO'S	
GPQF Series - Differential LVPECL Output VCXO	
Frequency Range	10 – 1500MHz
Pulling Range	±90ppm min
Current consumption	16mA Typical
Package Sizes	7x5mm
GPQN Series - Differential LVPECL Output VCXO	
Frequency Range	8 – 165MHz
Supply Voltage	10mA - 44mA (Typical)
Current Consumption	-1% Ctre ±0.5%
Package Sizes	Package Sizes 7x5mm and 5x3.2mm

### Low EMI Applications Standard

SPREAD SPECTRUM	
HM R Group - Reduces Electromagnetic Interference	
Frequency Range	3.5 – 165MHz
Spread Down	-0.5% Ctre-±0.25
Current consumption	10mA - 35mA (Typical)
Package Sizes	7x5mm and 5x3.2mm
HM Y Group - Reduces Electromagnetic Interference	
Frequency Range	8 – 165MHz
Supply Voltage	10mA - 44mA (Typical)
Current Consumption	-1% Ctre ±0.5%
Package Sizes	Package Sizes 7x5mm and 5x3.2mm

HM P Group - Reduces Electromagnetic Interference	
Frequency Range	8 – 165MHz
Supply Voltage	10mA - 44mA (Typical)
Current Consumption	-1% Ctre ±0.5%
Package Sizes	7x5mm and 5x3.2mm
HM B Group - Reduces Electromagnetic Interference	
Frequency Range	3.0 – 200MHz
Supply Voltage	-1.0% Ctre ±3.0%
Current Consumption	10 -25mA Typical
Package Sizes	7x5mm and 5x3.2mm

### Differential Outputs

LVDS VCXO	
Differential LVDS VCXO	
Frequency Range	10.0 – 1450MHz
Integrated Jitter	0.2nS Typical
Current consumption	25mA Typical
Package Sizes	7x5 , 5x3.2 and 3.2x2.5
Differential LVDS VCXO	
Frequency Range	10.0 – 1450MHz
Pulling Range	100ppm Min
Current consumption	16mA Typical
Package Sizes	7x5, 5x3.2 and 3.2x2.5

### Voltage Controlled

VCXO SERIES	
G Series - Voltage Controlled Oscillator CMOS Output	
Frequency Range	1.0 – 50.0MHz
Pulling Range	±80ppm Min
Phase Jitter	1.0pS Max
Package Sizes	7x5/ 5x3.2/3x2.2 mm
GTQF Series - Voltage Controlled Oscillator CMOS Output	
Frequency Range	10 – 245.0MHz
Pulling Range	±90ppm Min
Phase Jitter	0.9pS Typical
Package Sizes	7x5and 5x3.2mm
GTQN Series - Voltage Controlled Oscillator CMOS Output	
Frequency Range	10 – 245.0MHz
Pulling Range	±90ppm Min
Phase Jitter	0.6pS Typical
Package Sizes	7x5and 5x3.2mm
GPQN Series - Voltage Controlled Oscillator – PECL Output	
Frequency Range	10MHz – 1450.0MHz
Pulling Range	±90 - 200ppm
Phase Jitter	0.6pS Typical
Package Sizes	7x5 and 5x3.2mm



HDQF Series - Differential LVDS Output Waveform	
Frequency Range	10 – 1450MHz
Integrated Jitter	0.9pS Typical
Current consumption	16mA Typical
Package Sizes	7x5, 5x3.2

GDQF Series - Voltage Controlled Oscillator – LVDS Output	
Frequency Range	10MHz – 1450.0MHz
Pulling Range	±100ppm
Phase Jitter	1.2 pS Typical
Package Sizes	7x5 and 5x3.2mm

GDQN Series - Voltage Controlled Oscillator – LVDS Output	
Frequency Range	10MHz – 1450.0MHz
Pulling Range	±100ppm
Phase Jitter	0.6pS Typical
Package Sizes	7x5 and 5x3.2mm

● Differential Outputs

LVDS CLOCKS

HDK Series - Differential LVDS Output Waveform	
Frequency Range	10 – 220MHz
Integrated Jitter	0.2pS Typical
Current consumption	16mA Typical
Package Sizes	7x5 , 5x3.2 and 3.2x2.5

● Military & Aerospace

1000BM Series - 14 pin DIL Clock CMOS	
Frequency Range	10MHz – 40MHz
Input Voltage	3.3V/5V
Stability	±50ppm
Current Consumption	10 ~ 70 mA

75000 BM Series - 7x5mm smd Clock CMOS	
Frequency Range	1MHz – 60MHz
Input Voltage	1.8V ~ 5V
Stability	±50 ~ ±100ppm
Current Consumption	7mA max (15pF)

STXO Series - 3.2x2.5mm High Shock smd Clock	
Frequency Range	10MHz – 80MHz
Input Voltage	3.3V/5V
Current Consumption	3mA max
Phase Noise	-163 dBc/Hz

CXOLHG Series - 3.2x2.5mm High Shock smd Clock	
Frequency Range	10MHz – 80MHz
Input Voltage	2.5V/3V/3.3V
Current Consumption	3mA max
Phase Noise	-163 dBc/Hz

● Differential Outputs

LVDS CLOCKS

HDQN Series - Differential LVDS Output Waveform	
Frequency Range	10 – 1450MHz
Integrated Jitter	0.6pS Typical
Current consumption	15mA – 31mA
Package Sizes	7x5 , 5x3.2

HCK Series - Non-PLL Differential LVDS Output Waveform	
Frequency Range	13.50 – 220MHz
Integrated Jitter	0.2pS Typical
Current consumption	25mA Typical
Package Sizes	7x5, 5x3.2 and 3.2x2.5



# POLYFET RF DEVICES

www.polyfet.com

## COMPANY OVERVIEW

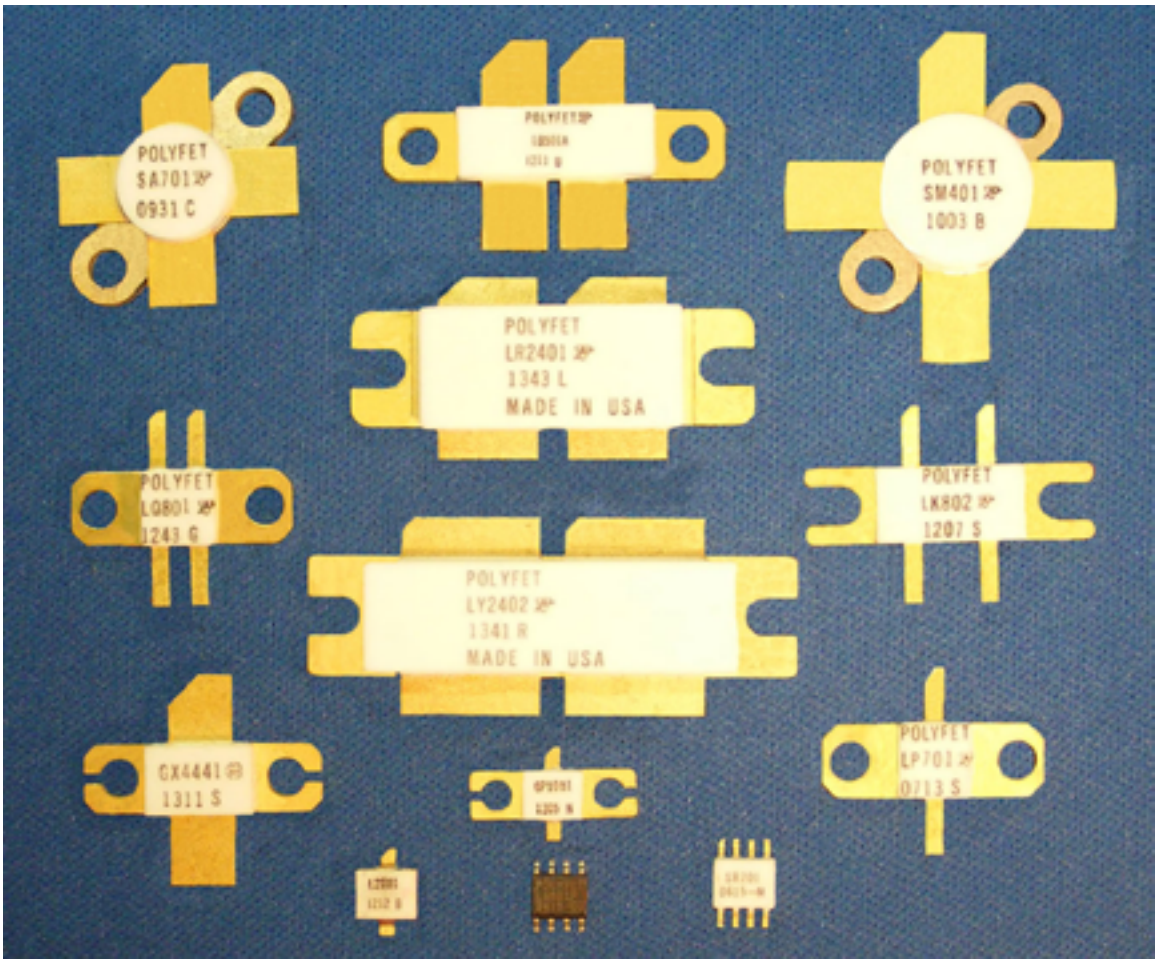
Polyfet RF Devices is a manufacturer of broad band RF power transistors and power modules. They are a private corporation that has been in business since 1988. The devices consist of Gallium Nitride, LDMOS, and VDMOS technologies processed using state of the art Equipment.

LDMOS	FLANGED MOUNT									28 VOLT
Part No	Pout W	Freq Mhz	Gain dB	theta jc	gm mho	Idsat A	Ciss pf	Crss pf	Coss pf	Style
LP701	35	500	12	1,8	1,6	10	60	1,6	30	Single Ended
LC401	60	500	12	1,3	2,7	17	80	4	50	Single Ended
LP702	70	500	12	1	3,2	20	120	3,2	60	Single Ended
LK701	70	500	14	1	1,6	10	60	1,6	30	Push - Pull
LK702	90	500	13	0,6	3,2	20	120	3,2	60	Push - Pull
LX501A	100	500	12	0,75	4,8	30	150	7,5	100	Single Ended
LZ402	125	500	12	0,75	5,4	34	160	8	100	Single Ended
LB2301	125	500	18	0,48	5	15	70	1,4	25	Push - Pull
LR2301	125	500	18	0,48	5	15	70	1,4	25	Push - Pull
LB401	130	500	14	0,75	2,7	17	80	4	50	Push - Pull
LR401	130	500	14	0,75	2,7	17	80	4	50	Push - Pull
LR501A	175	500	13	0,44	4,8	30	150	7,5	100	Push - Pull
LB501A	175	500	13	0,44	4,8	30	150	7,5	100	Push - Pull
LA2541	200	500	16	0,38	7,5	21	122	2	45	Push - Pull
LS2541	200	500	16	0,38	7,5	21	122	2	45	Push - Pull
LR2401	175	500	16	0,48	7	24	110	1,8	40	Push - Pull
LR2501	200	500	16	0,4	7,5	27	122	2,6	45	Push - Pull
LR2541	200	500	16	0,4	7,5	21	122	2	45	Push - Pull
LS2641	250	500	16	0,35	7,8	29	147	1,6	60	Push - Pull
LP801	15	1000	12	3,4	0,8	5,5	30	1	15	Single Ended
LQ2001	20	1000	19	1,5	1	2,8	17	0,3	6	Push - Pull
LQ801	30	1000	12	1,8	0,8	5,5	30	1	15	Push - Pull
LK802	45	1000	12	1,1	1,6	11	60	2	30	Push - Pull
LK2201	50	1000	17	1,2	2,8	7,5	40	0,8	15,2	Push - Pull
LX401	60	1000	10	1,3	2,7	17	80	4	50	Single Ended
LX2401	80	1000	15	0,75	7	24	110	1,8	40	Single Ended
LB2401	125	1000	16	0,48	7	24	110	1,8	40	Push - Pull
LP601	7	1500	10	3,6	0,5	4	16	0,8	13	Single Ended

GALLIUM NITRIDE TRANSISTORS										
GaN	FLANGED MOUNT									28 VOLT
Part No	Pout W	Freq Mhz	Gain dB	theta jc	eff %	Idsat A	Ciss pf	Crss pf	Coss pf	Style
GP1001	10	2500	11	5,45	50	2,4	3	0,17	1,6	Single Ended
G21001	10	2500	11	5,45	50	2,4	3	0,17	1,6	Single Ended
GP2001	20	2000	11	4,2	65	7,2	7,2	0,56	4	Single Ended
G22001	20	2000	11	4,2	65	7,2	7,2	0,56	4	Single Ended
GX2001	20	2000	11	3,5	65	7,2	7,4	0,56	4,5	Single Ended
GX4001	35	2000	11	2,4	60	14,5	13	1,1	7,5	Single Ended
GX4002	70	2000	11	0,9	55	26	26	2,2	15	Single Ended

GaN	FLANGED MOUNT									28 VOLT
Part No	Pout W	Freq Mhz	Gain dB	theta jc	eff %	Idsat A	Ciss pf	Crss pf	Coss pf	Style
GP1441	10	2500	11	5,45	35	2,2	3	0,15	1,5	Single Ended
G21441	10	2500	11	5,45	35	2,2	3	0,15	1,5	Single Ended
GP2441	40	2500	11	4,2	55	6,8	7,2	0,37	3,5	Single Ended
GP3441	50	2500	11	3,6	55	8,5	10	0,45	6	Single Ended
GX2441	50	2000	11	3,5	55	6,8	7,5	0,37	4	Single Ended
GX3441	80	2000	12	3	60	8,5	10	0,45	6	Single Ended
GX4441	100	2000	12	2,4	60	13,5	13	0,8	7	Single Ended
GX3442	120	2000	11	1,8	55	17	20	0,9	12	Single Ended
GX4442	160	2000	12	0,9	55	24	26	1,6	14	Single Ended

LDMOS	SURFACE MOUNT									28 VOLT
Part No	Pout W	Freq Mhz	Gain dB	theta jc	gm mho	Idsat A	Ciss pf	Crss pf	Coss pf	Style
L8701PR	30	500	13	2,5	1,6	10	60	1,6	30	Single Ended
L2701	30	500	13	1,8	1,6	10	60	1,6	30	Single Ended
L2601	7	1500	10	3,6	0,5	4	16	0,8	13	Single Ended
L8801PR	13	1000	10	5	0,8	5,5	30	1	15	Single Ended
L2801	15	1000	12	3,4	0,8	5,5	30	1	15	Single Ended






COMPANY OVERVIEW

RF Circulator Isolator, Inc. (RFCI) was incorporated in September 2012. RFCI acquired CIPL (Circulator/Isolator Product Line) business from RFMD, when RFMD decided to exit the CI business. Management, engineering team, support group, and oversea manufacturing were transferred intact to RFCI.





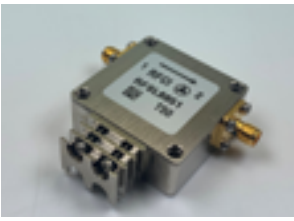
Product Features

- Broad selection of frequency and Bandwidth (48MHz to 20GHz, narrow to 100% Bandwidth)
- High Reliability performance
- High Peak and CW Power Handling capability
- Wide Operation Temperature Range
- Communication Base Station Bands with excellent IMD performance
- Broadband width, Octave and Octave-plus Bandwidth
- Robust Construction
- Standards and Miniature package size
- Magnetically Shield
- RoHS Compliant
- No beryllium Oxide
- Clockwise (CW) and Counter-Clockwise rotation (CCW)
- Reflected power from 1 Watt to 200 Watts pending on Model Number (contact factory) for your particular requirement

DROP-IN CIRCULATORS / ISOLATORS

				
Single Drop-in Circulator, Communication Bands from 300MHz to 18 GHz	Single Drop-in Isolator (5W to 200W Power Handling) from 300MHz to 10 GHz	Dual Drop-in Isolator (5W to 150W Power Handling) from 300MHz to 10 GHz	Drop-in Iso-Attenuator (100W with 20dB, 30dB) from 700MHz to 4 GHz	Broadband, Octave Band Circulator/ Isolator from 500MHz to 20 GHz

COAXIAL CIRCULATORS /ISOLATORS

				
Type N Circulator from 300MHz to 10 GHz	Type N Dual Circulator from 300MHz to 10 GHz	Type N Single and Dual Isolator (10W to 250W Power Handling) from 300MHz to 10 GHz	SMA Circulator from 300MHz to 20 GHz	SMA Single and Dual Isolator (10W to 200W Power Handling) from 300MHz to 20 GHz

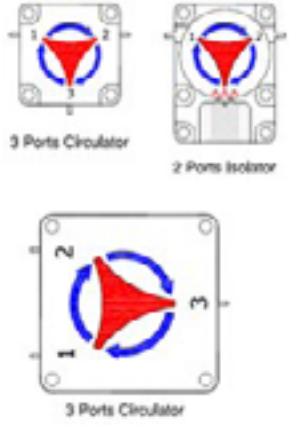
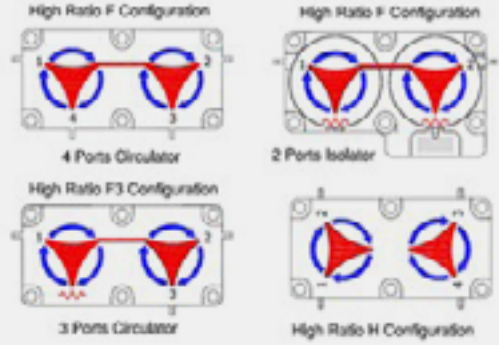
SMD CIRCULATORS/ ISOLATORS

	
SMD Circulator from 700MHz to 3800 MHz	SMD Isolator (10 W to 100W Power Handling) from 700MHz to 3800 MHz

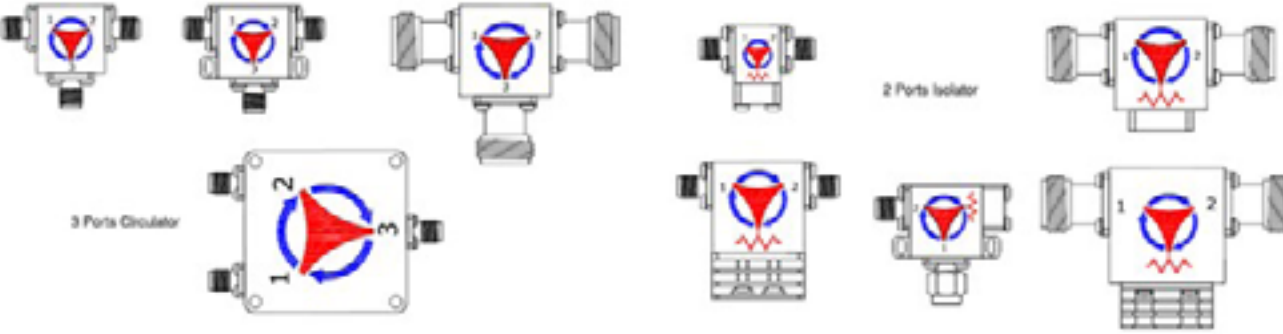
SMD CIRCULATORS/ ISOLATORS

	
Coaxial Type N, SMA Circulator/Isolator (50W to 100W Power Handling) from 49MHz to 174 MHz	Drop-in Circulator/ Isolator (50W to 100W Power Handling) from 49MHz to 174 MHz

DROP-IN FLANGE MOUNT DEVICE

Single Junction	Dual Junction
	

COAXIAL DEVICE

Single Junction




# MENLO MICRO

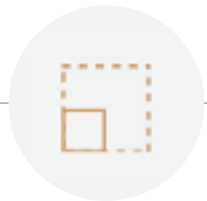
www.menlomicro.com

## COMPANY OVERVIEW

The leading innovator in RF MEMS switch design and fabrication, Menlo Micro has lifted these limitations by developing unique materials, designs, and processing techniques to create the Ideal Switch. Menlo Micro’s Ideal Switch platform is a game-changer. It has the potential to serve multiple industries, including next generation 5G mobile networks, industrial IoT markets, battery management, homeautomation, electronic vehicles, and medical instrumentation.



Weight saved drives increased **agility and energy savings**



Space saved increases room for **added equipment and more functionality.**



Power saved delivers **longer run-time or smaller, lighter power units or batteries.**



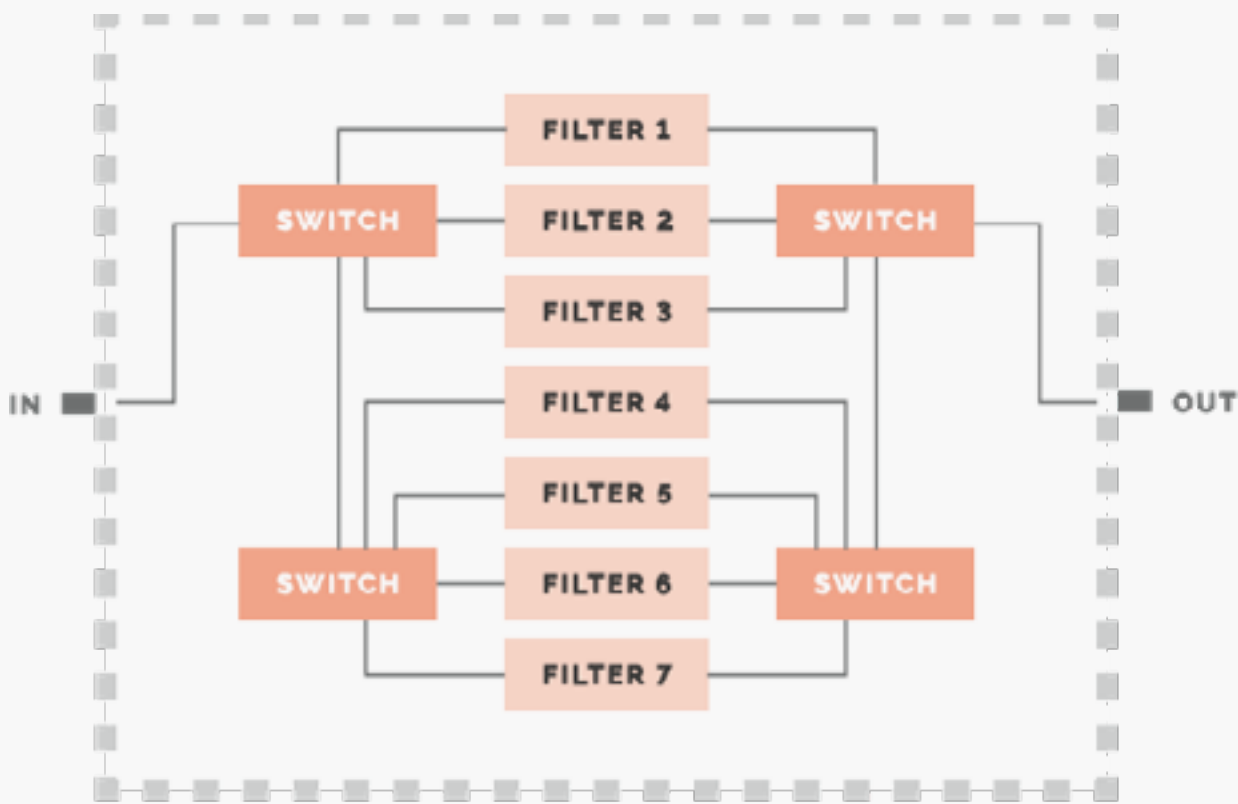
Costs saved frees up **budget for other gains.**

### • Tactical Radios

As switches have improved, tactical radios have gotten smaller, lighter, more efficient, and more capable.

### • Securing field advantages

The Ideal Switch can save over 3dB in high power switched filter banks, enabling truly game-changing form-factors and system integration.



7-Channel Switched Filter Bank with high-power PIN diode switches



MM6005  
7-Channel Reconfigurable Filter

## PRODUCT FAMILY



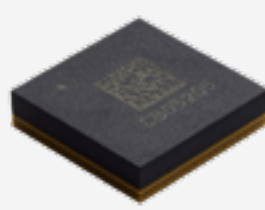
MM5130  
26 GHz SP4T RF Switch



MM5120  
18 GHz SP4T RF Switch



MM5140  
8 GHz SP4T RF Switch




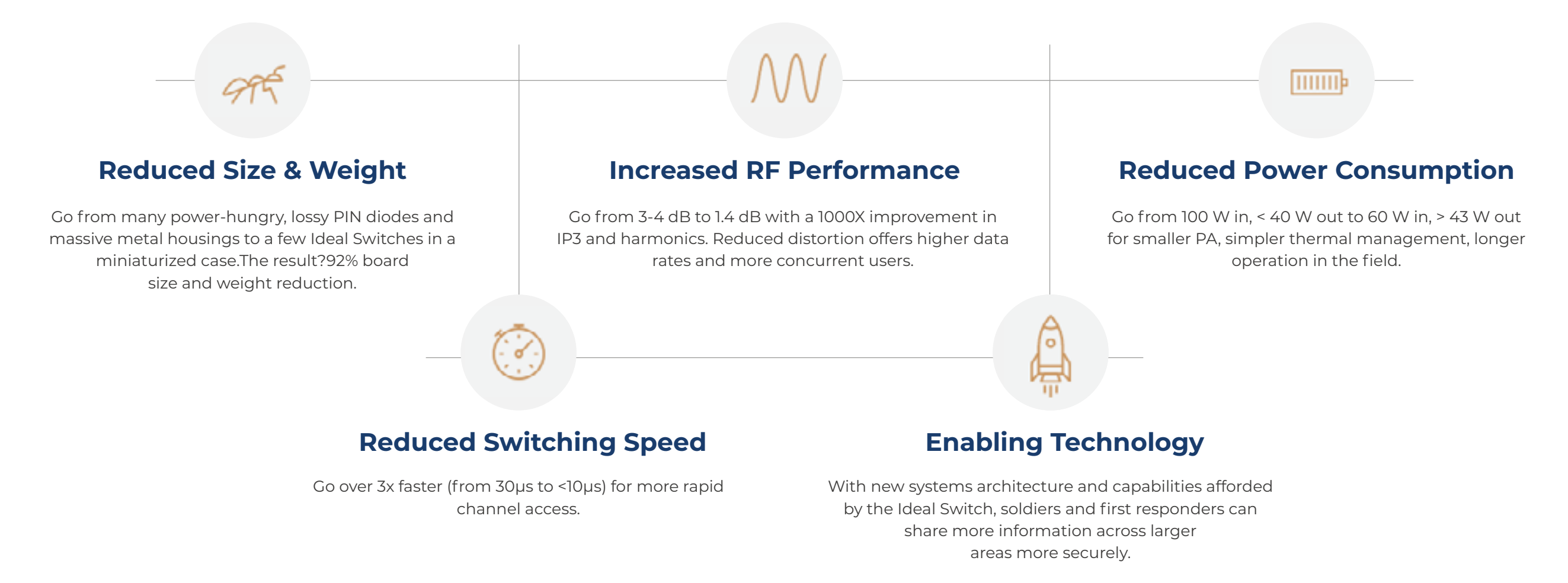
MM5620  
64 Gbps High-Speed  
Differential Switch



MM5600  
40 Gbps High-Speed  
Differential Switch

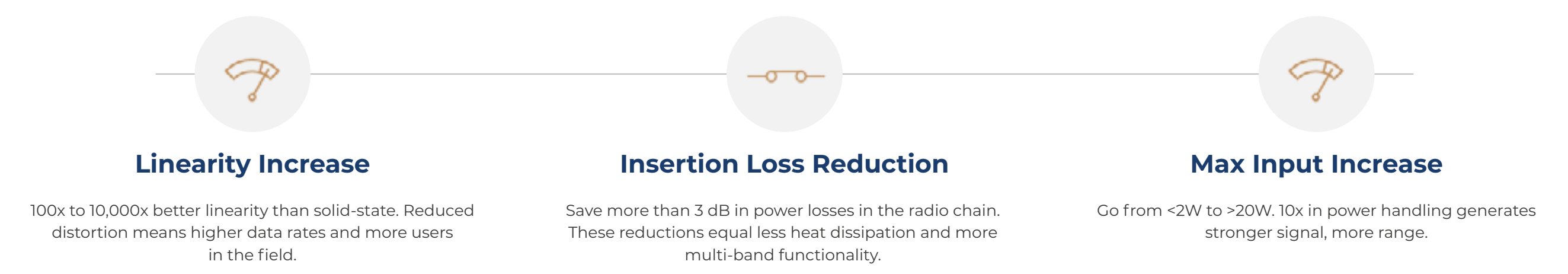
TRADITIONAL FILTER BANKS VS. THE IDEAL SWITCH

	 <b>MM6005 7-Channel Reconfigurable Filter</b>	<b>Traditional 7-Channel Switched Filter Bank</b>	<b>Key Benefits</b>
<b>Size</b>	7 x 4.6 x 1.6 cm = 51.5 cm <sup>3</sup>	20.3 x 20.3 x 2.54 cm = 1,047 cm <sup>3</sup> or greater depending on heat sink needs	95% reduction in size
<b>Weight</b>	106g	>1,000 g	90% reduction in weight
<b># of Components</b>	4 Ideal Switches 30 other components	7 PIN Diodes 150 other components	70% reduction in components
<b>Power</b>	60 W in, >43 W out	100 W in, <40 W out	Greater power efficiency
<b>Speed</b>	<10 μs	30 μs	
<b>RF Perfomance</b>	1.4 dB	3—4 dB	1000x improvement in IP3 harmonics



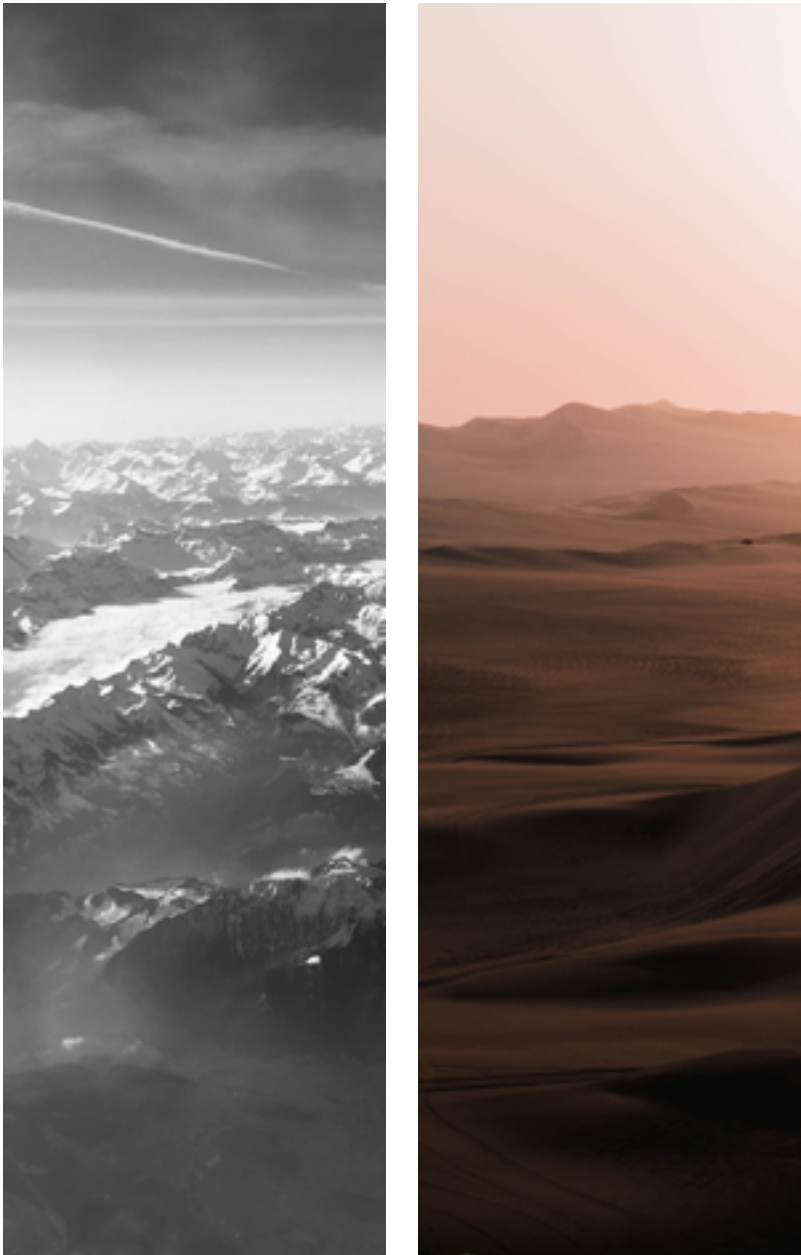
● Switched Filter Bank

The Ideal Switch delivers unprecedented performance across all RF-specific characteristics.



● Extreme Environments

We designed the Ideal Switch to maintain its properties in the most severe circumstances. Whether it is the material or the structure, the Ideal Switch is built to last.





# OMNETICS

www.omnetics.com

## COMPANY OVERVIEW

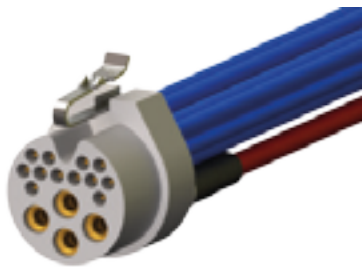
Omnetics is a world-class miniature connector design and manufacturing company with over 30 years of experience, focused on Micro-miniature and Nano-miniature highly reliable electronic connectors and interconnection systems. Our miniature connectors are designed and assembled in a single location at our plant in Minneapolis, Minnesota.

SINGLE ROW NANO-D							
Horizontal SMT (AA)	Vertical SMT (VV)	Straight Tails (DD)	Thru-Hole Horizontal (H2)	Thru-Hole Vertical (V2)	Pre-Wired (W2)	Jumpers (JU)	MILDTL-32139 QPL

LATCHING NANO-D			
Surface Mount (AA)	Flex Mount (FF)	Straight Thru-Hole (DD)	Pre-Wired (WD)

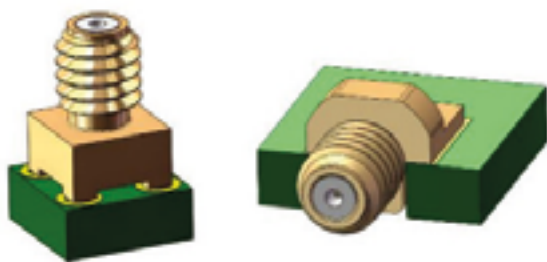
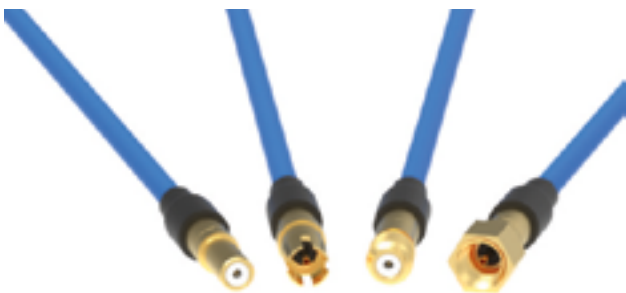
LOW PROFILE MICRO-D				
Discrete Wired (WD)	Right Angle Thru-Hole (H1)	Right Angle Thru-Hole (R2)	Solder Cup (SS)	Straight Thru-Hole (S2)

### ● Power and Signal Micro Hybrids: 10A, 5A, 3A



### ● Nano Coax Connectors

Omnetics Nano Coax contacts are available either in a Hybrid Micro-D or as a standalone contact... The standalone version provides optimal performance in one of the lowest form factors on the market. The Nano Coax contacts are designed to be terminated to a low-loss 29 AWG (.047”) 50 coax cable. Cable-Cable: 20GHz / Edge Launch: 20GHz / Thru Hole: 10GHz



● **Micro 360® Circular Connectors**

Omnetics’ Micro Circular Connector Series utilizes Omnetics’ rugged and reliable Flex-Pin contact system, is spaced on 50 mil (1.27mm) centerlines, features a mated length of less than 12.4 mm, and is specified to MIL-DTL-83513.

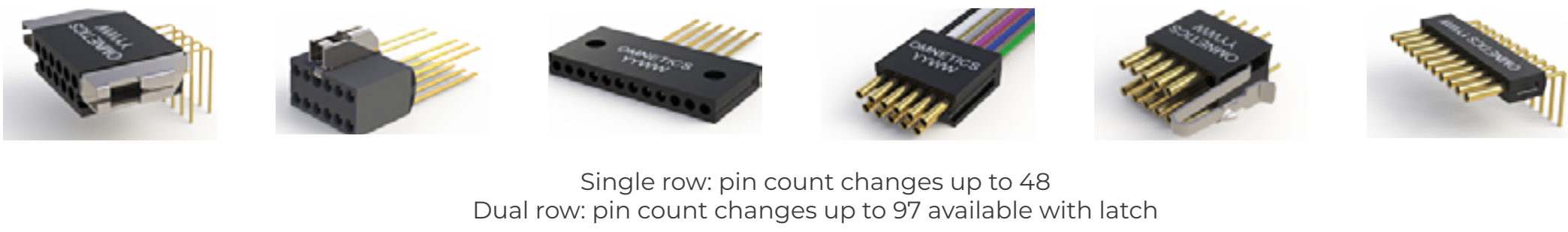


● **IP68 Nano Circulars**

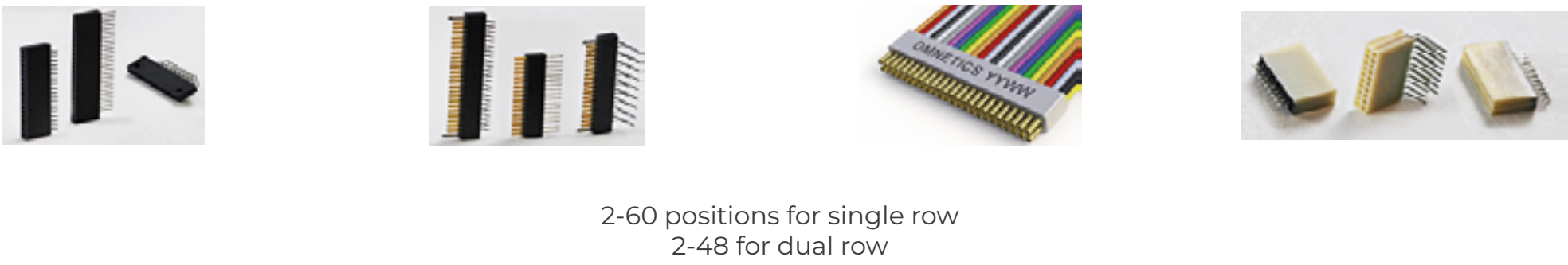
Omnetics’ Micro Circular Connector Series utilizes Omnetics’ rugged and reliable Flex-Pin contact system, is spaced on 50 mil (1.27mm) centerlines, features a mated length of less than 12.4 mm, and is specified to MIL-DTL-83513.



● **Micro Strip Connectors**

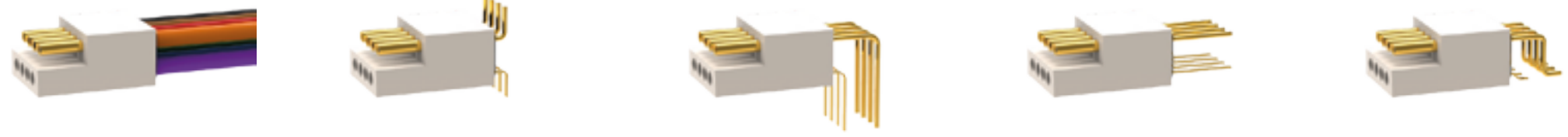


● **Nano Strip Connectors**



● **Polarized Nano Connector (PZN)**

This configuration effectively polarizes the connector without the additional space required for guide pins. Termination options include: Pre-Wiring, Straight tail, Horizontal SMT, and Vertical SMT. Up to 24 positions.



● **Capabilities**

LATCHING NANO-D	EMI SHIELDING	CUSTOM HARNESSING	CUSTOM METAL SHELL





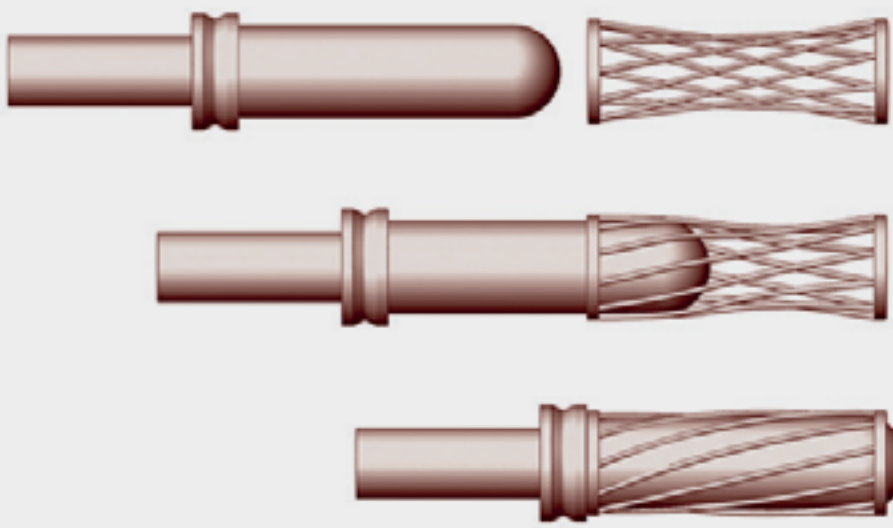
IEH

www.iehcorp.com

COMPANY OVERVIEW

Since 1941, IEH has been manufacturing superior products for demanding applications. Whether it’s printed circuit board connectors, signal or power contacts, or custom interconnects, focus is delivering the right connector solution.

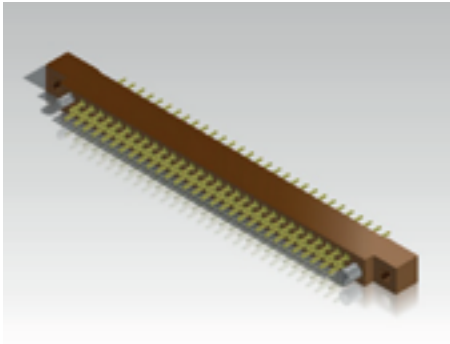
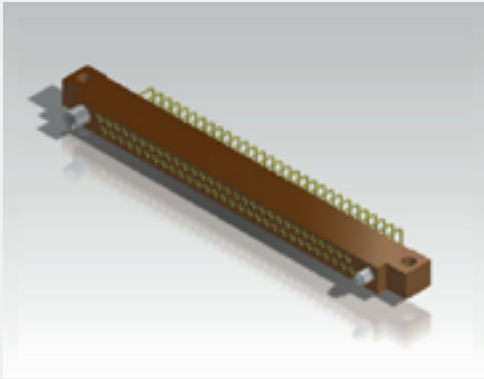
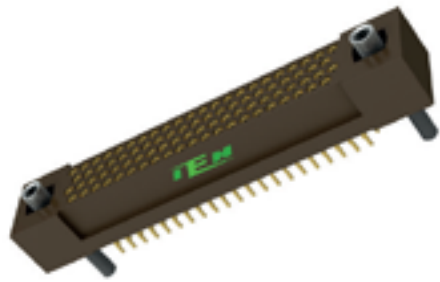


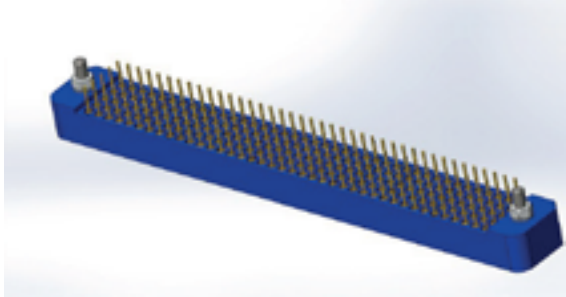
Hyperboloid Technology





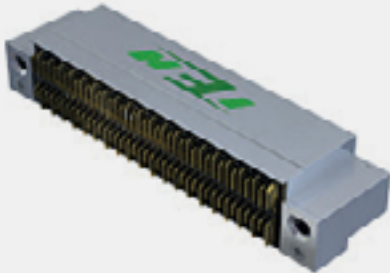
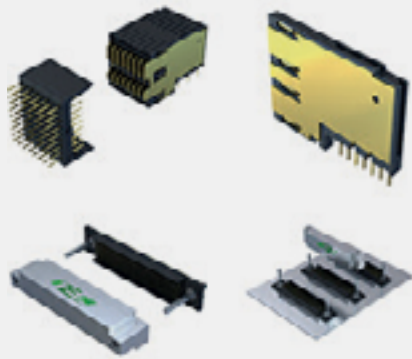
Utilized in all of our receptacle connectors, this unique design offers superior capability in every critical parameter of connector performance:

- ▶ Very low insertion force
- ▶ All but impervious to shock & vibration(Test exceed 300 g's without discontinuity.)
- ▶ 100,000 minimum duty cycles
- ▶ Extremely low contact resistance
- ▶ Improved current carrying capacity (The low contact resistance gives a lower °C rise from ambient under load. This feature often allows the user to operate the same size contact under higher load.)
- ▶ High reliability

PCB CONNECTORS

		
Type N Circulator from 300MHz to 10 GHz	HRM Series - .075" centers 2 & 3 row 10-206pos M55302 /190 /193	HMM Series - .075" centers 4, 6 & 8 row 58-604pos
		
HGC/HGS Series Low-Profile for parallel boards 22-90pos	HVM Series - .050" centers 2-row 10-100pos	HMK Series - .100" centers, 2, 3, 4 & 5 row 17-490pos

HYPERKINETIC® CONNECTORS - HIGH SPEED, HIGH DENSITY MODULAR

			
HKC (cPCI Series)		HKX (VPX-Compatible Series)	
<ul style="list-style-type: none"><li>▶ Interchangeable with COTS board layout but with Hyperboloid Contact System</li><li>▶ 2mm Footprint of cPCI PICMG 2.0</li><li>▶ LCP Insulator Meets Outgassing Requirements</li><li>▶ Press-fit or Solder tail Terminations</li></ul>		<ul style="list-style-type: none"><li>▶ VITA-46 Platform</li><li>▶ Data Rates up to 10 Gbps</li><li>▶ 3U, 6U and Custom Configurations</li><li>▶ Custom Wafer Design for Mixing</li><li>▶ Differential and Single-ended Circuits</li><li>▶ Press-fit or Solder tail Terminations</li></ul>	

MICROPOL

www.micropol.com

COMPANY OVERVIEW

Our name “Micropol” is generated from “micro polishing” which is our mark – we polish fiber at a precision that few can copy. For this reason, our products have lower reflections and losses and can transfer higher data speed than our competitors, without additional cost. We pride ourselves for being the most innovative player in the market. This is why customers from all over the world turn to us for their fiber optical challenges. Micropol’s know-how in micro polishing is also what forms the foundation of our core Areas of Expertise.

FALCON™ Expanded Beam Connector



Micropol was born through innovation and the Swedish Armed Force’s increasing demand for secure, compact and fast communication. One of the results is the FALCON expanded beam technology, which has the best optical performance on the market. Customer ranges from national armed forces to small and to multi national defence material suppliers like Saab, BAE Systems and Diehl Defence to whom we deliver built to specification components and systems. Our products and solutions are present below, on and above the surface.

- Insertion loss <1,2 dB
- Only expanded beam approved for 40G transmission per channel (optional)
- Only 12-channel junior connector in the world with collimated light beam according to MILDTL-83526/20&21
- Temperature range -570C +850C (+1000C optional)
- Rugged connector design
- Keyed boot for ‘blind mating
- No adaptors needed
- Easy clean, no special tools
- FALCONTMMini 1 to 4 channels
- FALCONTMJR 1 to 12 channels
- FALCONTMSR 1 to 16 channels

MECHANICAL

**Coupling Type:** Hermaphroditic  
**Compliant:** ROHS & REACH  
**Material:** Hard anodized aluminum  
**Alternative Material:** Marine bronze & stainless steel or titanium  
**Colour:** Grey  
**Durability:** 3000 mating cycles  
**Free Fall:** 500 falls from 1,2 meters height  
**Vibration:** 5-500Hz, 0,75mm amplitude at 10 g  
**Shaking:** 390 m/S numbers of shakes 3x4000  
**Shock Pulse Lenght:** 11ms, half sine at 35g Numbers of axis: 3 (x, y, z)  
**Recommended wall thickness:** 2-3 mm

ENVIRONMENTAL

**Operating Temperature:** -57°C to +85°C, +100°C optional  
**Water Immersion:** IP67  
**Air Pressure :** <25kPa -550C during 4h  
**Corrosion Resistance:** 500h salt spray  
**Flammability:** DOD-STD-1678, method 5010

OPTICAL

**Type:** Single mode (SM), multimode (MM) or hybrid  
**Transmission:** 10Gbit/s (40Gbit/s optional)  
**Insertion loss (SM):** Typical Insertion Loss -0,8dB (1310 nm)  
Maximum Insertion Loss -1,2dB (1310 nm)  
**Insertion loss (MM):** Typical Insertion Loss -0,8dB (1300 nm)  
Maximum Insertion Loss -1,0dB (1300 nm)  
**Return loss:** >35dB at 1310nm or 1550nm  
Polarization Dependent Loss less than 0,35dB

STANDARD CONFIGURATIONS

**FALCON™ MINI:** 1 to 4 channels  
**FALCON™ JUNIOR:** 1 to 12 channels  
**FALCON™ SENIOR:** 1 to 16 channels

COMPATIBLE CHART

Brand	FALCON™ MINI	FALCON™ JUNIOR	FALCON™ SENIOR
FIBRECO JUNIOR		X	
FIBRECO MINI 2	X		
QPC Q-MICRO	X		
QPC Q-MINI		X	
TE PRO-BEAM	X	X	X
TELECAST MX - MINI	X		
Amphenol TacBeam		X	
Fibreco F900			X
Amphenol TacBeam			X
Stratos HMA		X	



# TEL DOR

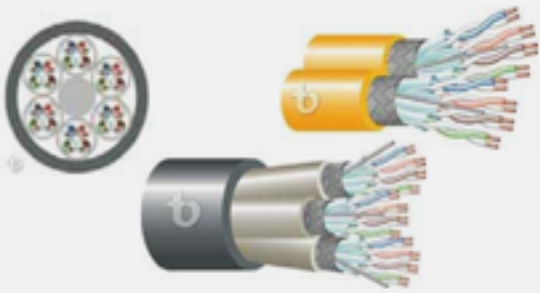
www.teldor.com

## COMPANY OVERVIEW

TELDOR Cables & Systems Ltd. manufactures a wide range of wires and cables for telecommunications, electronics, and electricity, and is a leader in the design and production of high data-rate Copper and Optical LAN cables, Industrial BUS, Instrumentation and Control Cables.

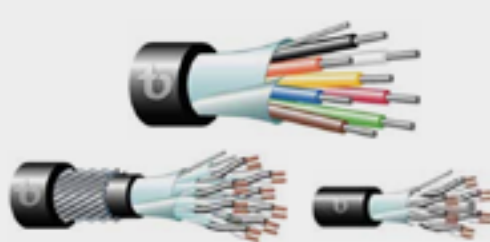
The factory was established in 1966 at Kibbutz Ein-Dor, in Israel’s Lower Galilee. TELDOR is a leading manufacturer in the development and production of advanced electronic, FiberOptic and data communication cables, as well as outside plant Telecom cables.

### Category Cable Data Center Solutions




Cat.5e, Cat.6, Cat.6A, Cat.7, Cat.7A solutions for data centers, patch cords and hybrid cables. Industrial Ethernet Outdoor Data Solutions.

### Instrumentation Cable Solutions



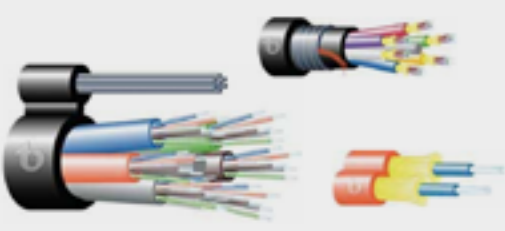
Indoor and Outdoor Cables for the Process Industry, Petrochemical Industry, Unshielded and Shielded, Armored and Unarmored for Automation, Bus Cable and Hazardous Areas.

### Signal & Control Cable Solutions



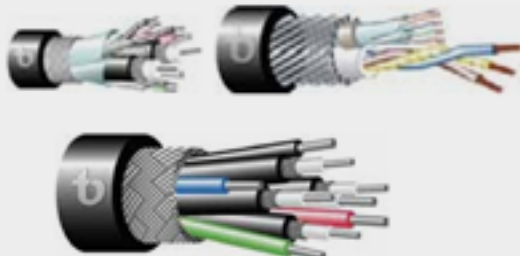
Instrumentation, Thermocouple, Bus Cables and Security Cables.

### Optical Cable Solutions



Optical Cables for Indoor, Outdoor, Distribution, Breakout, Tactical and Jumper Applications. Rus Approved.

### Military & Special Cable Solutions



Tactical Cables, Tailor-Made Cables with Special Armoring and Sheathing Materials for Medical, Oil & Gas, Military and Special Applications with Different Conductor Sizes within the Cable; Composite or Hybrid Cable Design.

MARKET SEGMENTS



Defence Line Overview

- Specialty cables (EPD, Custom Design)
- Tactical Fiber Optic cables
- Tactical Data (Category) cables
- Marine & Underwater Cable
- Hybrid and Composite cables
- Wires

Armoring

- Long life cycle & high reliability
- Designed to fit system and operational needs
- Endurance in harsh environmental conditions
- Excellent mechanical properties
  - Galvanized Steel Wires (SWA)
  - Steel Braid Armor (SBA)
  - Corrugated Steel Armor
  - Copper Braid Armor
  - Bronze Wire Armor
  - Dielectric/Glass Armor

Standards & Certifications

- **MIL-DTL-24643**  
Low Smoke Zero Halogen Shipboard cable
- **MIL-DTL-24640**  
Lightweight, Low Smoke, Electric Cables for Navy Shipboard Applications
- **MIL-DTL-3432**  
Cables (Power and Special Purpose and Wire, Electrical (300 and 600 Volts)
- **MIL-49291/3**  
Performance Specification: Fiber, Optical, General Specification
- **MIL-PRF-85045**  
Performance Specification: Cables, Fiber Optics, General Specification including Tactical
- **MIL-C-17**  
Cable, Radio Frequency, Coaxial
- **MIL-STD-810-F**  
Test Method Standard for Environmental Engineering Considerations and Laboratory Tests

COMPUTER & LAN CABLES

Bandwidth (MHz)	Application	Cat.	Standarts
100	10/100 BaseT 1 GBaseT(1GbE)	5e	ISO/IEC 11801, IEC 61156-5/6, TIA/EIA 568B/C
250	10/100 BaseT 1 GBaseT(1GbE)	6	ISO/IEC 11801, IEC 61156-5/6, TIA/EIA 568B/C
500	10 GBaseT	6A	ISO/IEC 11801, IEC 61156-5/6, TIA/EIA 568C
600	10 GBaseT ++	7	IEC 61156-5/6
1000	10 GBaseT +++	7A	IEC 61156-5/6
1200	Multiservice	N/A	IEC 61156-7/8
2000	40GB/s	8	ISO/IEC 11801, IEC 61156-9/10, TIA/EIA 568C



# KONNECT RF

www.konnectrf.com

## COMPANY OVERVIEW

Konnect RF can provide lower-cost alternatives for almost any part in the industry. Whether you need domestically manufactured mil-spec equivalents or you can use high-quality internationally produced parts, they can save you money and grow your bottom line.


- Founded 2010
- Located in Southeast Florida
- Over 600 customers Worldwide
- Supplying Coaxial Connectors, Adapters, Cable Assemblies and Passive Components
- Global Network of Contract Manufacturers
- All products inspected, packaged, and warehoused in USA
- Rapid and Cost Effective development of
- Custom products

### Connectors



Coaxial cable connectors, PC board receptacles, standard receptacles, field replaceable receptacles, cable terminations.

### Adapters




In-Series, Between-Series

### Cable Assemblies



### RF & Microwave Components



Circulators & isolators, DC blocks, dust caps, power dividers, waveguide products, attenuators

# ROSENBERGER

www.rosenberger.com

## COMPANY OVERVIEW

For more than half a century, the name Rosenberger has been associated with the most advanced technology, quality and creativity. Rosenberger is a world-wide leading manufacturer of connector solutions in the high-frequency and fiber optic technology fields.



### ESCC Space Qualified Products

Nearly all Rosenberger products can be qualified for space application (e.g. acc. to MIL-PRF-39012)

### B2B and Board-to-Cable Connections

Rosenberger provides a wide range of RF coaxial connectors for PCB applications.

#### Features

- Small board-to-board distances
- Equalization of radial and axial misalignments
- Different holding forces
- Fast and cost-effective assembly design



### Test & Measurement Portfolio



### AeroSpace & Defense

Rosenberger is a qualified manufacturer according to

- DIN EN 9100
- ESCC
- MIL-PRF 39012

#### Portfolio

- Cable assemblies
- Board-to-board connections
- Board-to-cable connections



### RF Coaxial Products

- The Rosenberger product range covers RF connectors, components and accessories and cable assemblies
- Portfolio – Standard Series
- SMP, Longwipe SMP, P-SMP, SMP Infinity, Mini-SMP, FMC, MCX, SMA, QMA, SMB, 1.0-2.3, 1.6-5.6, Inserts (Mini-Coax D-Sub), BNC, TNC, UHF, Mini-UHF, N, QN, SnapN, 7-16, 4.3-10, NEX10™)
- Surface mount connectors
- Reverse polarity connectors
- RF test switches
- Adaptors
- In-series adaptors
- Between-series adaptors
- Tools
- Crimping tools, crimp inserts
- Stripping tools





SMP Infinity

Mechanical specification

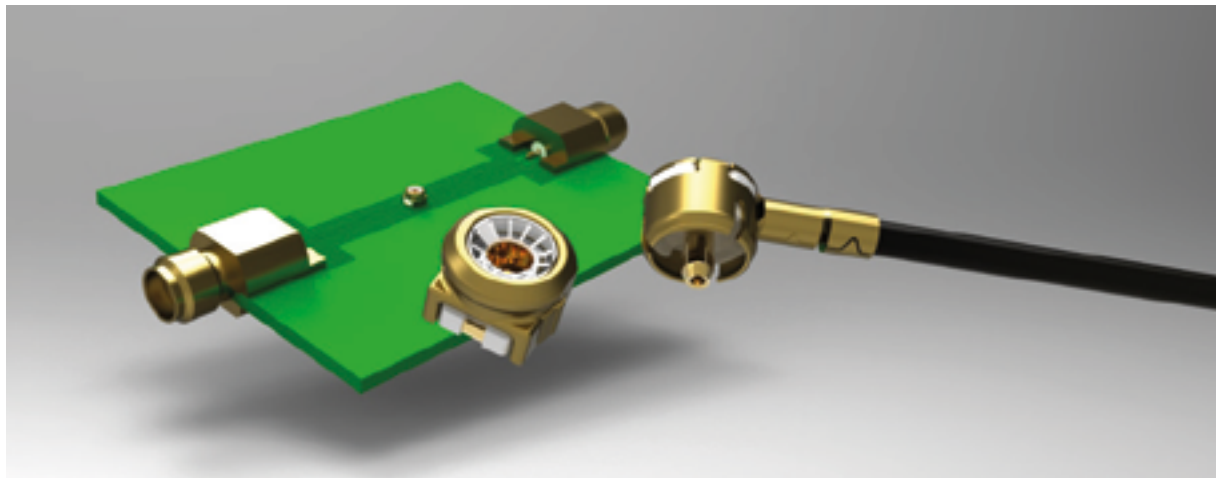
- Reliable connection, low insertion force ( $\leq 45\text{N}$ , like SMP limited detent)
- Locking sleeve: retention force up to 400 N
- One piece connector with pre-assembled inner conductor
- Not intermateable with SMP

Electrical specification

- Return loss  $\geq 25\text{ dB}$  DC-30 GHz for cable HFE100D (tbc)
- Insertion loss typical  $0,05 \times \sqrt{f(\text{GHz})}$  (tbc)
- RF leakage (-92dB @ 18 GHz) (tbc)

Planned variants

- Straight and right angle connectors
- Cable connectors for different cables
- PCB connectors (pin in paste, solder pin, SMD, rear mount)
- Bulkhead connectors



Micro RF

- Height 1,5 mm
- Space on PCB (1,8 x 1,9) mm
- Designed for DC to 6 GHz
- Impedance 50  $\Omega$
- Height switch + cable connector < 2.7mm
- EMI Shielding: > 40 dB up to 3 GHz  
> 35 dB up to 6 GHz
- Mating cycles > 10000

SMP

Frequency range	: - 40 GHz
Power handling	: 65W @ 2.2 GHz
Board to Board distance (min)	: 9.05 mm
Axial misalignment	: +/-0.3mm
Radial misalignment	: 4°
Disengagement forces	:
Full detent	: >22N
Limited Detent	: >9N
Smooth bore	: >2.2N

Rosenberger Non-Magnetic Products

- MRI (Magnetic Resonance Imaging) equipment
- The aerospace industry
- Industrial applications

Features

- Frequency range DC to 18 GHz
- Current rating typical 2 A
- Data rates up to 10 Gbps
- Tolerance compensation > 0.6 mm
- High number of mating cycles up to > 100,000



Long-Wipe SMP

Frequency range	: - 6 GHz
Power handling	: 100 W @ 2,2 GHz
Board to Board distance	: min. 9.35 mm
Axial misalignment	: +/-0.7mm
Radial misalignment	: 4°



P-SMP High Power

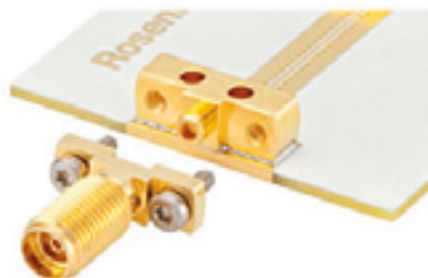
- Frequency range up to 10 GHZ
- Power handling up to 200W @ 2.2GHz
- Board to board distance min. 12.6 mm
- Axial misalignment +/-1mm
- Radial misalignment 4°
- Right angle connectors for cable application

PCB Connections

- Modular connector systems for DC frequencies up to 50 GHz
- Solderless PCB mount connectors for ultra-high frequency up to 110 GHz
- Spring-loaded coax systems (> 2,500 matings, pairwise phase matching 10 ps standard)

Applications

- High volume industrial production of high end PCB up to 50 GHz
- Applications with different interfaces on one board
- Applications with repair friendly products
- Applications where maintenance is important



Modular Connector Systems



Spring-Loaded Coax



Solderless PCB Connectors



RF-PCB Connectors



SMP Non-Magnetic Connectors



QMA Non-Magnetic Connectors



Multi Channel Mini-Coax



Micro-RF Non-Magnetic Products





Thermal Pads

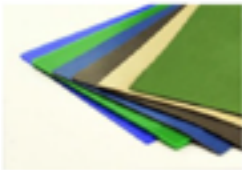


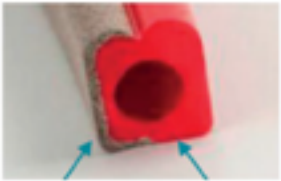






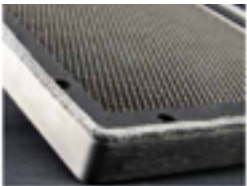







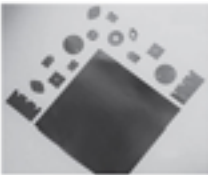
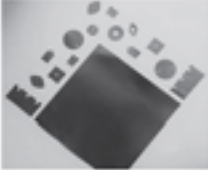








EMI Shielding Components

# P&P TECHNOLOGY

www.p-p-t.co.uk

## COMPANY OVERVIEW

About EMC/EMI shielding solutions EMCEMI Staff have between them, over 50 years’ experience in the manufacturing processes involved in making high quality & reliable EMC & RFI components, while specialising in the manufacture and supply of a wide range of products which are manufactured at our brand new factory in Essex in the United Kingdom. We manufacture components to MIL83528C specification.

			
Conductive Elastomers	Conductive Elastomers	Conductive Elastomers Moulded ‘O’ Rings	Co-extrusion Conductive Gasket
			
Aluminium Honeycomb Vents	Round Aluminium Honeycomb Vents	Steel Honeycomb Vents	Oriented Wires in Silicone
			
Knitted Wire Mesh	Knitted Wire Mesh over Elastomer Core	Knitted Wire Mesh with Enviromental IP Carrier	Knitted Wire Mesh Moulded to Silicon-Fluorosilicone
			
Fabric Over Foam	Neoprene Sponge	Copper & Aluminium Conductive Foil Tape	Shielded Windows
			
Compressed Mesh ‘O’ Rings	Conductive Sponge Material	Thermal Graphite	Composite Wire Mesh
			
Expanded Wire Gasket	Co-extrusion Conductive	Thermal Gap Pad	Connector Gaskets
			
Silicone	Copper Fingerstock	Shielded Windows	Thermal Pad





**[www.sacaeurope.com](http://www.sacaeurope.com)**

**[info@sacaeurope.com](mailto:info@sacaeurope.com)**

**The Netherlands**

**Steenowenweg 5, 5708HN, Helmond**

**+31 492 218 972**

**Poland**

**Wspólna 70, Mazowieckie 00-687, Warsaw**

**+48 221 822 534**