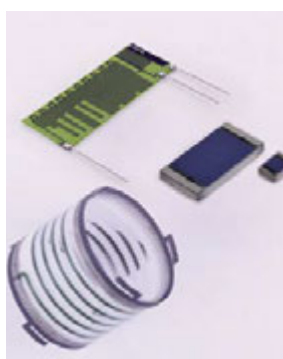


PRODUCTS & Solutions

May 2021



INDUSTRY SPECIALIST

EXXELIA is a manufacturer of High-Rel passive components and precision subsystems focusing on demanding end-markets and applications, intended to critical functions.

EXXELIA is valued for its ability to meet complex specifications and develop catalog and custom products complying with the most demanding qualification standards (MIL, ESA...).



COMPLETE HIGH-REL COMPONENTS PORTFOLIO

CAPACITORS



MAGNETICS



RESISTORS & SUBSYSTEMS



DEMANDING MARKETS



Civil aviation



Space



Defense



Transport & Energy



Telecom



Medical



Industry



Test & Measurement



EXXELIA AT A GLANCE

1900



Employees

13

Manufacturing Locations



ISO 9001
EN 9100
AS 9100
Certified



In more than
30 countries

1

Stop Shop



EXXELIA WORLDWIDE

EXXELIA is a global company with manufacturing sites strategically located to cover all continents. Four assembly plants are established in competitive manufacturing countries, enabling the group to provide cost-effective solutions.

Thanks to an extensive sales network covering more than 30 countries, EXXELIA is able to provide prompt in-depth technical expertise throughout a project and remain close to its clients at all stages from design to production.

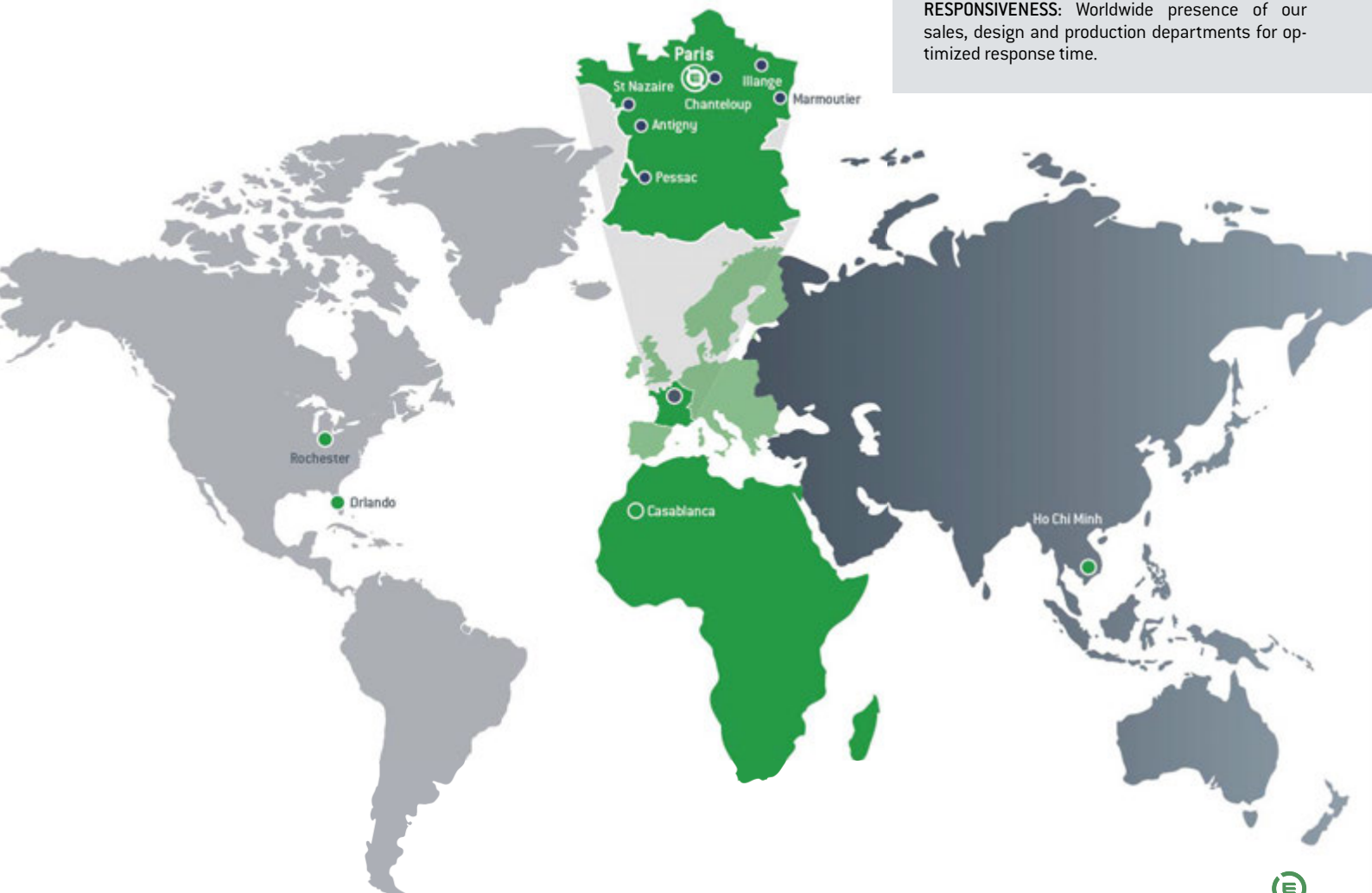
OUR APPROACH

EXXELIA focuses its know-how on challenging markets that require high level of technicity and reliability. Our approach is based on three key principles:

FOCUS: Serving a limited number of defined markets to better serve our customers.

INNOVATION: Provide new and creative value propositions to positively impact our customers' growth.

RESPONSIVENESS: Worldwide presence of our sales, design and production departments for optimized response time.

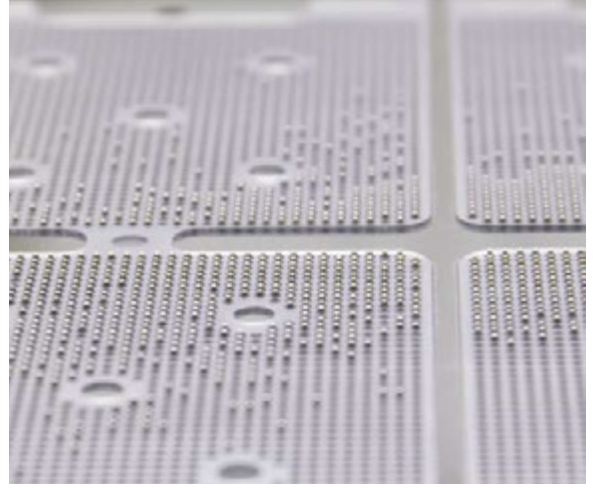


CERAMIC CAPACITORS

EXXELIA multi-layer ceramic capacitors offer excellent temperature resistance, high volume/capacitance ratio, and high reliability. With over 50 years experience, EXXELIA has acquired a comprehensive knowledge of the materials properties and performances enabling the company offer porcelain, NPO, BX, 2C1, X7R, C4xx and -2200 ppm/°C dielectrics.

Their excellent properties make EXXELIA MLCCs ideal for a wide range of applications including aircraft flight controls, switch-mode power supply in harsh environments, charge/discharge applications, medical implants, drilling tools for oil exploration and satellite platforms.

EXXELIA offers one of the most extensive ESA QPL portfolio and is embedded into numerous space programs (exploration, satellites, constellations, launchers). For requirements that cannot be met by catalog products, EXXELIA offers state-of-the-art custom designs in terms of compactness, packaging and performance.



T°	Product range (space grade available in green)	Size	Dielectric material	Capa.	Voltage	For space grade		Tolerance	Use
						Capa.	Voltage		
Standard -55°C/+125°C	CEC / CNC Series	 0402 ⇕ 3040	NPO BX 2C1 X7R	1 pF ⇕ 12 μF	10 V ⇕ 1 000 V	1 pF ⇕ 3.9 μF	10 V ⇕ 1 000 V	±0,25 ⇕ ±1 pF ±1% ⇕ ±20%	Precision, stability, decoupling.
	NON MAGNETIC Series	 0505 ⇕ 2220	NPO X7R	10 pF ⇕ 1 μF	50 V ⇕ 500 V	—	—	±1% ⇕ ±20%	
	OP Series	 0805 ⇕ 2220	NPO X7R	1 pF ⇕ 4.7 μF	10 V ⇕ 100 V	—	—	±0,25 ⇕ ±1 pF ±1% ⇕ ±20%	Precision, stability, decoupling. Significantly reduce risk of short circuit.
	CER / CNR Series	 0306 ⇕ 0612	NPO X7R	1 pF ⇕ 270 nF	16 V ⇕ 100 V	—	—	±1% ⇕ ±20%	Decoupling, low ESL, medical embedded.
	C3N - C4N - C3E - C4E Series	 —	NPO X7R	4.7 pF ⇕ 33 nF	25 V ⇕ 200 V	—	—	±0,25 ⇕ ±1 pF ±1% ⇕ ±20%	Medical embedded, miniaturization.
	30 S4 Series	 —	NPO X7R	470 pF ⇕ 820 nF	40 V ⇕ 100 V	—	—	±1% ⇕ ±20%	Railway.
	TCE / TCX / TCN / TXR Molded Series	 —	NPO BX 2C1 X7R	1 pF ⇕ 4.7 μF	25 V ⇕ 500 V	—	—	±0,25 ⇕ ±1 pF ±1% ⇕ ±20%	Precision, stability, decoupling.
	LA Series	 —	NPO Temp. coeff.	1 pF ⇕ 680 nF	25 V ⇕ 63 V	—	—	±0,25 ⇕ ±1 pF ±1% ⇕ ±20%	Decoupling.
	TCE / TCX / TCN / TXR Axial Series	 —	NPO BX 2C1 X7R	1 pF ⇕ 3.9 μF	25 V ⇕ 500 V	—	—	±0,25 ⇕ ±1 pF ±1% ⇕ ±20%	Precision, stability, decoupling.
	TCE / TCX / TCN / TXR Conformal Coated Series	 —	NPO BX 2C1 X7R	1 pF ⇕ 6.8 μF	25 V ⇕ 500 V	—	—	±0,25 ⇕ ±1 pF ±1% ⇕ ±20%	Precision, stability, decoupling.
	NON MAGNETIC Conformal Coated Series	 —	NPO X7R	180 pF ⇕ 1 μF	63 V ⇕ 500 V	—	—	±1% ⇕ ±20%	Precision, stability, decoupling.
	CK Series	 —	BX	10 pF ⇕ 1.5 μF	25 V ⇕ 250 V	—	—	±10% ⇕ ±20%	Decoupling.

	T°	Product range (space grade available in green)	Size	Dielectric material	Capa.	Voltage	For space grade		Tolerance	Use
							Capa.	Voltage		
High voltage	-55°C +125°C	C Series 	1515 ⇕ 16080	NPO C4xx X7R	10 pF ⇕ 39 μF	200 V ⇕ 10 000 V	10 pF ⇕ 6.8 μF	250 V ⇕ 10 000 V	±1% ⇕ ±20%	Power supply, voltage multiplier, radars. • aeronautic • space • defense • railways
		TCK Series 	-	NPO C4xx X7R	10 pF ⇕ 39 μF	200 V ⇕ 10 000 V	10 pF ⇕ 6.8 μF	250 V ⇕ 10 000 V	±1% ⇕ ±20%	
		TCL Series 	-	NPO C4xx X7R	10 pF ⇕ 39 μF	200 V ⇕ 10 000 V	-	-	±1% ⇕ ±20%	
		TCF Series 	-	NPO C4xx X7R	10 pF ⇕ 39 μF	200 V ⇕ 10 000 V	10 pF ⇕ 6.8 μF	250 V ⇕ 5 000 V	±1% ⇕ ±20%	
		TKD Series 	-	NPO C4xx X7R	10 pF ⇕ 39 μF	200 V ⇕ 10 000 V	10 pF ⇕ 2.7 μF	250 V ⇕ 5 000 V	±1% ⇕ ±20%	
		CF/CFS Series NEW 	1812 ⇕ 16080	C4xx	27 pF ⇕ 15 μF	500 V ⇕ 10 000 V	-	-	±2% ⇕ ±20%	
		CS Series 	2020 ⇕ 16080	NPO C4xx X7R	220 pF ⇕ 15 μF	1 000 V ⇕ 10 000 V	-	-	±1% ⇕ ±20%	
High capacitance	-55°C +125°C	R Series (chips) 	2225 ⇕ 45107	X7R	47 nF ⇕ 27 μF	50 V ⇕ 500 V	-	-	±10% ⇕ ±20%	Switch Mode Power Supply, filtering, smoothing, decoupling. • aeronautic • space • defense
		R Series (leaded) 	-	X7R	47 nF ⇕ 27 μF	50 V ⇕ 500 V	-	-	±10% ⇕ ±20%	
		TEF series 	-	NPO	10 nF ⇕ 680 nF	63 V ⇕ 500 V	-	-	±1% ⇕ ±20%	
		SV / SC Series 	2225 ⇕ 125205	X7R	47 nF ⇕ 390 μF	50 V ⇕ 500 V	-	-	±10% ⇕ ±20%	
		CNC3X Series 	2220 ⇕ 4040	X7R	1.2 μF ⇕ 68 μF	16 V ⇕ 25 V	1.2 μF ⇕ 68 μF	16 V ⇕ 25 V	±10% ⇕ ±20%	
		CNC5X Series 	-	-	-	-	100 nF ⇕ 180 μF	50 V ⇕ 500 V	-	
		CEC5X Series 	3033 ⇕ 80150	NPO	10 nF ⇕ 6.8 μF	63 V ⇕ 500 V	-	-	±1% ⇕ ±20%	
		TEP / TEV series 	-	NPO	10 nF ⇕ 6.8 nF	63 V ⇕ 500 V	-	-	±1% ⇕ ±20%	
		TCN8X Series 	-	X7R	0.47 μF ⇕ 120 μF	63 V ⇕ 500 V	-	-	±10% ⇕ ±20%	
High temperature	-55°C +250°C	CE / CN Series 	0402 ⇕ 3040	NPO X7R	1 pF ⇕ 8.2 μF	16 V ⇕ 100 V	-	-	±0,25 ⇕ ±1pF ±1% ⇕ ±20%	Oil drilling, motor control, braking systems.
		SCT Series 	2225 ⇕ 25205	X7R	47 nF ⇕ 390 μF	50 V ⇕ 500 V	-	-	±10% ±20%	
	-55°C +220°C	TCE/TCN Molded Series HT 	-	NPO X7R	1 pF ⇕ 10 μF	16 V ⇕ 100 V	-	-	±0,25 ⇕ ±1pF ±1% ⇕ ±20%	
		TCE / TCN Self protected Series 	-	NPO X7R	10 pF ⇕ 3.9 μF	25 V ⇕ 500 V	-	-	±0,25 ⇕ ±1pF ±1% ⇕ ±20%	
		TCH Series 	-	NPO X7R	10 pF ⇕ 15 μF	200 V ⇕ 10 000 V	-	-	±1% ⇕ ±20%	
Feed-thru	-55°C +125°C	TBC series 	-	NPO X7R	10 pF ⇕ 5600 pF	25 V ⇕ 1 000 V	-	-	±1% ⇕ ±20%	Very low ESL
		BPM Series 	-	X7R	330 pF ⇕ 68 nF	25 V ⇕ 200 V	-	-	±10% ⇕ ±20%	Very low ESL, miniaturization










RF CAPACITORS

High-Q CAPACITORS:

EXXELIA High-Q MLCC capacitors are designed to handle high power and high voltage ratings (from 1000 V to 7000 V) for applications in RF power amplifiers, base stations, filters, broadcasting, medical MRIs and industrial electronics. All series are RoHS with non-magnetic terminations available.

BROADBAND CAPACITORS:

EXXELIA Broadband capacitors allow a flat insertion loss up to 35 GHz, ideal for high-end optical network infrastructure.

	T°	Product range (space grade available in green)	Size	Dielectric material	Capacitance	Voltage	For space grade		Tolerance	Use
							Capacitance	Voltage		
High Q	Classic -55+175°C	CH Series 	0505 ⇕ 1111	P100	0.1 pF ⇕ 1 nF	50 V ⇕ 1 500 V	0.1 nF ⇕ 1 nF	50 V ⇕ 1 500 V	±0.05 pF ⇕ ±0.5 pF ±1% ⇕ ±10%	Cellular base station amplifier, MRI.
		SH series 	0402 ⇕ 1210	NPO	0.2 pF ⇕ 1 nF	25 V ⇕ 1 500 V	—	—		
	reverse geometry -55+175°C	SHD / SHR-Series 	0709 ⇕ 0711	NPO	0.5 pF ⇕ 100 pF	500 V	—	—		
		NHB Series 	1111	NPO	0.3 pF ⇕ 100 pF	500 V	—	—		
	High Power -55°C +125°C	CP Series 	2225 ⇕ 4040	P100	1 pF ⇕ 10 nF	200 V ⇕ 7 000 V	—	—		RF power amplifier Plasma chamber MRI coils
		CL Series 	2225 ⇕ 7065	NPO	1 pF ⇕ 10 nF	200 V ⇕ 7 000 V	—	—		
Broadband	eXtra -55°C +125°C	XBL Series NEW 	EIA 0402	X7R	100 nF	16 V	—	—	±10% ±10% ±10%	Optoelectronics / High-speed data Broadband test equipment & applications Broadband microwave/ millimeter wave amplifiers & oscillators
	Ultra -55+105°C	UBL Series NEW 	EIA 0402	X7R	100 nF	16 V	—	—		
	UBZ Series NEW 	EIA 0201	X5R X6T	100 nF	10 V	—	—			

MICROWAVE COMPONENTS

TRIMMER CAPACITORS

EXXELIA is one of the few suppliers in the world able to offer a wide range of RoHS trimmer capacitors using ceramic, air or sapphire as dielectrics. A broad range of capacitances, voltages and temperature coefficients are available.



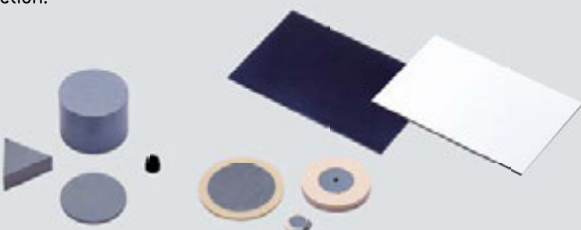
TUNING ELEMENTS

Frequency Tuning Elements with self locking mechanism are high precision crews for cavity filter tuning. INVAR versions are available (space applications).



FERRITE MATERIALS

Mostly intended for isolators and circulators sub-systems used in radiocommunication systems, ferrite materials from EXXELIA are offered in disks, triangles and special custom designed dimensions. They are all based on EXXELIA own fomulation providing low ΔH propitious to IMD reduction.



DIELECTRIC & COAXIAL RESONATORS

EXXELIA offers a wide range of dielectric resonators with high "Q" factor and dielectric constant from 24 to 78. The coaxial resonators products can be used between 300 MHz and 6 GHz and are available in dimensions from 2 x 2 to 12 x 12 mm, allowing the best compromise between impedance, "Q" factor and resonant frequency.




TANTALUM CAPACITORS

Tantalum capacitors offer the highest charge per unit of volume combined with extremely high reliability and durability. EXXELIA manufactures an extensive range of solid (MnO₂ and polymer technologies) and wet tantalum capacitors for demanding applications such as satellites, aircraft

and defense electronics through MIL and DSCC-qualified series.

Specific interfaces, package size and characteristics are available upon request.

	Product range		Detail specification	Capacitance	Voltage	Operating Temperature	Main features		
Wet tantalum capacitors	Tantalum cases - Axial	CT79 / CT79 SMD CT79E / CT79E SMD		CECC 30202-005/001/801 ESCC 3003/005	1.7 μF ⇒ 2 200 μF	6 V ⇒ 150 V	-55°C+125°C	Reverse voltage - High ripple current	
		ST79 / ST79 SMD		According to DSCC 93026 ESCC 3003/006	10 μF ⇒ 1 800 μF	25 V ⇒ 125 V	-55°C+125°C	High capacitance	
		CT79 HT200 - CT79E HT200 ST79 HT200		According to CECC 30202-005/001/801	1.7 μF ⇒ 2 200 μF	6 V ⇒ 150 V	-55°C+200°C	High capacitance. High Temperature.	
		WT83 / WS83		According to DSCC 10004	150 μF ⇒ 10 000 μF	10 V ⇒ 125 V	-55°C+125°C	Very high capacitance Enhanced performances	
		DSCC 10004 NEW		DWG N°10004	220 μF ⇒ 10 000 μF	10 V ⇒ 125 V	-55°C+125°C	Very high capacitance Enhanced performances	
		DSCC 93026 NEW		DWG N°93026	10 μF ⇒ 1 800 μF	6 V ⇒ 125 V	-55°C+125°C	Very high capacitance	
		MIL 39006/22 NEW		MIL-PRF-39006/22 Failure rate Level M, P	1.7 μF ⇒ 1 200 μF	6 V ⇒ 125 V	-55°C+125°C	MIL OPL High Vibration option (H) - High ripple current	
		MIL 39006/25 NEW		MIL-PRF-39006/25 Failure rate Level M	6.8 μF ⇒ 680 μF	25 V ⇒ 125 V	-55°C+125°C	MIL OPL High Vibration option (H) - High ripple current Extended range	
		Silver case Axial	CT9 / CT9E		According to CECC 30202-004	3 μF ⇒ 2 200 μF	6.3 V ⇒ 150 V	-55°C+125°C	Silver case. Glass metal seal. Hermetical Extended range (CT9E)
			CT4 / CT4E		CECC 30202-003 (CT4) According to BS 9073 F008/F032 (CT4E)	1.7 μF ⇒ 2 200 μF	6 V ⇒ 150 V	-55°C+125°C	Silver case. Seal and resin sealing Extended range (CT4E)
Stackable moulded cases	SPE0844 / SPE0844S		-	27 μF ⇒ 6 000 μF	6 V ⇒ 375 V	-55°C+125°C	Parallel and serial assemblies of capacitors Reverse voltage - High ripple current		
	AP31 / AP41 / AS31		-	27 μF ⇒ 40 000 μF	10 V ⇒ 450 V	-55°C+125°C	Parallel and serial assemblies of capacitors Very High Capa/Voltage. High reliability design		
Polymer caps. Moulded cases SMD	CTP21		-	47 μF ⇒ 560 μF	16 V ⇒ 75 V	-55°C+105°C	Very low ESR. High ripple current High surge current		
	CTP42		-	68 μF ⇒ 1 200 μF	16 V ⇒ 75 V	-55°C+105°C	Assembly of 2 CTP21 in parallel Ultra low ESR. Extended Capacitance		
Solid tantalum capacitors	Hermetically sealed metal cases - Axial	CTS1 / CTS1M		CECC 30201-001/002/801 MIL-PRF 39003/01 (CTS1M)	0.1 μF ⇒ 330 μF	6.3 V ⇒ 125 V	-55°C+125°C	Standard range. General purpose +125°C	
		CTS13		CECC 30201-005	0.1 μF ⇒ 330 μF	6.3 V ⇒ 63 V	-55°C+85°C	Standard range. General purpose +85°C	
		CTS32		CECC 30201-019	1 μF ⇒ 330 μF	6.3 V ⇒ 63 V	-55°C+125°C	Standard range. High surge current Reverse voltage	
		CTS23		-	0.1 μF ⇒ 1 200 μF	6.3 V ⇒ 63 V	-55°C+125°C	Extended range. General purpose	
		CTS33		-	0.1 μF ⇒ 1 000 μF	6.3 V ⇒ 63 V	-55°C+125°C	Extended range. Low leakage current	
		CTS21 / CTS21E / CTS1M		CECC 30201-040 According to MIL-PRF 39003/09 (CTS21M)	5.6 μF ⇒ 1 000 μF	6.3 V ⇒ 63 V	-55°C+125°C	Low ESR. High ripple current High surge current	
		Moulded cases	CTS41 / CTS41RSE		CECC 30201-037	0.1 μF ⇒ 150 μF	6.3 V ⇒ 50 V	-55°C+125°C	High surge current. Reverse voltage Low ESR (CTS41 RSE)
	CTS4			CECC 30201-003	0.1 μF ⇒ 150 μF	6.3 V ⇒ 50 V	-55°C+85°C	General purpose	
	Moulded cases - SMD surface mount	CTC3 / CTC3E		-	0.1 μF ⇒ 680 μF	4 V ⇒ 50 V	-55°C+125°C	Standard chip size. General purpose Extended range (CTC3E)	
		CTC4		-	0.1 μF ⇒ 100 μF	6.3 V ⇒ 50 V	-55°C+125°C	Standard chip size. General purpose High surge current	
		CTC4RSE		-	4.7 μF ⇒ 1 000 μF	6.3 V ⇒ 50 V	-55°C+125°C	Low ESR. High ripple current High surge current	
		CTC21 / CTC21E		CECC 30801-013 ESCC 3012/002 (CTC 21) ESCC 3012/003 (CTC 21E)	5.6 μF ⇒ 680 μF	6.3 V ⇒ 100 V	-55°C+125°C	Low ESR. High ripple current High surge current	
		SMT47 NEW		-	47 μF ⇒ 1 500 μF	6.3 V ⇒ 63 V	-55°C+125°C	Extended Capacitance - Low ESR Enhanced performance	
		CTC42 / CTC42E		-	12 μF ⇒ 1 500 μF	6.3 V ⇒ 80 V	-55°C+125°C	Assembly of 2 CTC21 / CTC21E in parallel.	

FILM CAPACITORS

FILM CAPACITORS:















EXXELIA manufactures a versatile range of rugged, metalized film and film foil capacitors with high-temperature (up to +200°C), low-loss, long life and stability characteristics.

By using a wide range of dielectrics (PET, PPS, PP, reconstituted mica...) EXXELIA is able to cover the majority of technical needs.

Most common configurations are available (wrap & fill, axial, hermetic tubular, radial, bath tub, lugs, brackets, feed through, glass tube...) and custom designs is one of EXXELIA's recognized strengths.

MICA CAPACITORS:

Capacitors with mica dielectric are noted for their excellent temperature performance, low loss at all frequencies and high dielectric strength and stability over time. They are particularly recommended for use in filtering circuits, delay line circuits, oscillators, pulse circuits etc...

	T (°C)	Product range (space grade available in green)	Dielectric	Capacitance	Tolerance	Voltage	Qualification	Use	
High Temperature	-55°C +200°C	253P NEW 	PTFE	22 nF ⇕ 1 μF	±5% ±10%	50 V	-	Oil & Gas Aerospace & Defense High Temperature Modules	
	-55°C +180°C	560P NEW 	Metalized Polymer	0.1 μF ⇕ 10 μF	±5% ±10%	320 V	-	Aerospace & Defense High Temperature Modules Industrial	
Polyester for S.M.P.S.	-55°C +125°C (+155°C)	PM 90 (S) PM 94 (S) 	Metalized polyester (P.E.T.)	8.2 nF ⇕ 150 μF	±5% ⇕ ±20%	50 V ⇕ 630 V	ESA/ESCC (EPPL, QPL)	High frequency switch mode power supplies, SMD. • defense • aeronautic • space	
		PM 96 (S) PM 96 T (S) MKT (S) 		33 nF ⇕ 100 μF	±5% ⇕ ±20%	25 V ⇕ 630 V	Acc. ESA		
		PM 948 (S) PM 907 (S) 		22 nF ⇕ 180 μF	±10% ±20%	63 V ⇕ 1250 V	ESA / ESCC		
		PHM 912 PHM 912 S NEW (on going) 		1.8 μF ⇕ 68 μF	±10% ±20%	250 V ⇕ 1000 V	in house		
Polyester	-55°C +125°C	PM 50 - PM 60 	Metalized polyester	1 nF ⇕ 22 μF	±5% ⇕ ±20%	40 V ⇕ 630 V	CECC / IEC	Standard applications.	
		PM 7 - PM 12 PM 720 - PM 730 		82 pF ⇕ 10 μF	±5% ⇕ ±20%	63 V ⇕ 630 V	CECC / IEC		
		MPA HT MRA HT 		1 nF ⇕ 4.7 μF	±5% ⇕ ±20%	1000 V ⇕ 15000 V	in house		
		BIK-X2/Y BIK P-X/Y BIK CR 	Metalized polyester. Metalized polypropylene	1 nF ⇕ 6.8 μF	±5% ⇕ ±20%	400 V _{DC} 250 V _{AC}	in house		
		218P 	Polyester (P.E.T.)	1 nF ⇕ 12.0 μF	±20% ⇕ ±5%	100 ⇕ 400 V	MIL QPL		
		410P 		1 nF ⇕ 5.0 μF	+20% -10% ⇕ ±10%	50 ⇕ 600 V	-		
		430P 		1 nF ⇕ 10.0 μF	±20% ⇕ ±5%	63 ⇕ 16 000 V	-		High Voltage
		431P 		10 nF ⇕ 15.0 μF	±20% ⇕ ±5%	63 ⇕ 630 V	-		
		442P 		10 nF ⇕ 10.0 μF	±20% ⇕ ±5%	63 ⇕ 400 V	-		AC / DC Current
		132P 		1 nF ⇕ 1.0 μF	+20% -10% ⇕ ±10%	100 ⇕ 1 000 V	MIL QPL		

T (°C)	Product range (space grade available in green)	Dielectric	Capacitance	Tolerance	Voltage	Qualification	Use				
-55°C +125°C	Polycarbonate / Polyphenylene Sulfide (P.P.S. suffix T)	A 64 S4 (T) - A 74 S4 (T) PMR 4 (T)		Metalized polycarbonate P.P.S.	1 nF ⇔ 33 μF	±1% ⇔ ±20%	40 V ⇔ 630 V	NF F 62 102	Safety capacitors for signalling and others railways applications.		
		KCP 4 UA T		Film-foil P.P.S.	7.5 nF ⇔ 77.7 nF	±2% ±5%	630 V ⇔ 1000 V	Acc. NF F 62 102			
		K1PE T		Metalized P.P.S.	10 nF ⇔ 3.3 μF	±1% ⇔ ±20%	400 V ⇔ 630 V	NF F 62 102			
		-55°C +125°C	Polycarbonate / Polyphenylene Sulfide (P.P.S. suffix T)	KM 501-601(T) KM 50-60(T)		Metalized polycarbonate P.P.S.	1 nF ⇔ 22 μF	±1% ⇔ ±20%	40 V ⇔ 630 V	CECC	Precision capacitors (Capacitance stability, low tolerance) Measurement, control electronics. AC filtering (400 Hz and others).
				KM 111 (T)(S)			1 nF ⇔ 10 μF	±1% ⇔ ±20%	40 V ⇔ 400 V	ESA (EPPL) / CECC	
				KM 311-KM 21 (T) KM 711-KM 7 (T)			1 nF ⇔ 22 μF	±1% ⇔ ±20%	40 V ⇔ 630 V	CECC	
				KM 78 - 82 - 90 - 97 (T)			1 nF ⇔ 10 μF	±1% ⇔ ±20%	40 V ⇔ 208 V	in house	
				PMR 64 (T) PMA 64 (T)			470 pF ⇔ 22 μF	±1% ⇔ ±20%	40 V ⇔ 630 V	in house	
				PM 67 (T) PM 72 (T)			1 nF ⇔ 15 μF	±1% ⇔ ±20%	40 V ⇔ 208 V	in house	
				KM 94 (S)			Metalized P.P.S.	1 nF ⇔ 1.2 μF	±1% ⇔ ±20%	40 V ⇔ 100 V	
KM 915		Metalized P.P.S.	1.5 nF ⇔ 2.7 μF	±5% ⇔ ±20%	250 V _{DC} ⇔ 630 V _{DC} 150 V _{AC} ⇔ 400 V _{AC}	-	AC Filtering (400 Hz)				
-55°C +125°C	Polyphenylene Sulfide (P.P.S.)	810P		Polyphenylene Sulfide (P.P.S.)	1 nF ⇔ 1.0 μF	±20% ⇔ ±5%	50 ⇔ 400 V	-	Precision capacitors Low TCC		
		820P			10 nF ⇔ 15.0 μF	±10% ⇔ ±1%	50 ⇔ 400 V	MIL QPL			
		832P			1 nF ⇔ 10.0 μF	±10% ⇔ ±2%	63 ⇔ 400 V	-			
		842P			10 nF ⇔ 15.0 μF	±10% ⇔ ±2%	50 ⇔ 200 V	-			
		859P			10 nF ⇔ 10.0 μF	±20% ⇔ ±5%	80 ⇔ 440 V _{RMS}	MIL QPL			
		860P			10 nF ⇔ 10.0 μF	±20% ⇔ ±5%	126 ⇔ 250 V _{RMS}	MIL QPL			
		882P			1 nF - 0.22 μF	±10% ⇔ ±2%	200 V	-			
		PRF-83421/06			1 nF ⇔ 22 μF	±10% ⇔ ±0.25%	30 ⇔ 400 V	MIL QPL			
		880P			4.7 nF ⇔ 10.0 μF	±10% ⇔ ±2%	50 ⇔ 400 V	-			
-55°C +85°C	Polystyrene	PLS 3 - PLS 5 PLS 7 - PLS 8		Polystyrene + foil	10 pF ⇔ 1 μF	±1% ⇔ ±5%	63 V ⇔ 500 V	CCTU/CECC	Filtering, frequency tuning.		
		-55°C +125°C	High voltage	HT 72		Reconstituted mica, resin impregnated	100 pF ⇔ 4.7 μF	±5% ⇔ ±20%	630 V ⇔ 25 000 V	in house	High voltage filtering. (defense, aeronautic, space) TWT Radar, Ignition System, Firing Capacitors, Oil and Gaz.
HT 96				100 pF ⇔ 2.2 μF	±5% ⇔ ±20%		630 V ⇔ 20 000 V	ESA/ESCC(QPL HT96) Acc. ESA/ESCC (HT97)			
HT 78(P/S) - HT 86 (P/S) HT 97(P/S)											
(-55) -40°C +95°C (+105)	Metalized polypropylene	PRA HT		Metalized polypropylene	1 nF ⇔ 10 μF	±5% ±10%	1000 V ⇔ 30 000 V	in house	High voltage		
		PP 3 A - PP 3 M PR 3 A - PR 3 M		Metalized polypropylene +foil	680 pF ⇔ 1 μF	±5% ⇔ ±20%	630 V ⇔ 3 500 V 350 V _{AC} ⇔ 1 400 V _{AC}	in house	AC and pulse current		
		PM 98 - PM 980		Metalized plastic film	25 μF ⇔ 1 600 μF	±10% ±20%	300 V ⇔ 1 200 V	in house	Filtering, energy storage, flash		
		PP 78 A - PP 78 R PP 78 S		Metalized polypropylene	1 nF ⇔ 10.2 μF	±1% ⇔ ±20%	160 V ⇔ 630 V	UTECC/NFC	AC/DC current, standard applications		
		PPS 13 PPS 16 A - PPS 16 R PP 318 - PP 418		Polypropylene + foil	100 pF ⇔ 603 nF	±1% ⇔ ±20%	63 V ⇔ 1000 V	in house	AC/DC and pulse current		
		RA ... - PS ...		Metalized polypropylene +foil	100 pF ⇔ 1 μF	±1% ⇔ ±20%	630 V ⇔ 2 000 V	in house	AC and pulse current		

FILM CAPACITORS

	Product range	Dielectric	Capacitance	Tolerances	Voltage range	Qualification	Use
Polypropylene (P.P)	682P	Polypropylene (P.P)	5.0 μF ⇔ 100 μF	+20% -10%, ±10%	800 ⇔ 1 200 V	-	Energy storage
	684P		5.0 μF ⇔ 175 μF	+20% -10%, ±10%	400 ⇔ 1 000 V	-	
	730G		0.01 μF ⇔ 2.5 μF	±20% ⇔ ±5%	850 ⇔ 3 000 V	-	AC / & Snubber
	781P		18.0 μF ⇔ 400.0 μF	±20% ⇔ ±10%	600 ⇔ 1 800 V	-	
	700P		0.01 μF ⇔ 1.0 μF	±20% ⇔ ±5%	200 ⇔ 800 V	-	
	709G		1 nF ⇔ 4.7 μF	±20% ⇔ ±5%	160 ⇔ 2 000 V	-	AC / DC & Pulse current
	710P		1 nF ⇔ 1.0 μF	±20% ⇔ ±5%	200 ⇔ 800 V	MIL QPL	
	730P / 731P		22 nF ⇔ 10.0 μF	±20% ⇔ ±5%	160 ⇔ 630 V	-	AC / DC & Pulse current
	734G		0.47 μF ⇔ 10.0 μF	±20% ⇔ ±5%	400 ⇔ 600 V	-	Low inductance
	735P		1.0 μF ⇔ 30.0 μF	±20% ⇔ ±5%	100 ⇔ 400 V	MIL QPL	SMPS
	744G		0.47 μF ⇔ 3.5 μF	±20% ⇔ ±5%	600 V	-	
	752P		0.10 μF ⇔ 2.5 μF	±20% ⇔ ±5%	800 ⇔ 3 000 V	-	IGBT Snubber
	Paper / Foil	118P	Paper / Foil	1 nF ⇔ 12.0 μF	±20% to ±5%	200 ⇔ 1 000 V	MIL QPL
103P			1 nF ⇔ 1.0 μF	±20% to ±10%	200 ⇔ 600 V	MIL QPL	RFI
911P			0.10 μF ⇔ 2.7 μF	10%	400 V	-	
131P			1 nF ⇔ 1.0 μF	±20% to ±5%	200 ⇔ 1 000 V	MIL QPL	
681P			5.0 μF ⇔ 100 μF	+20% -10%, ±10%	1 000 ⇔ 2 500 V	-	Energy storage
Power electronics	PPA - PPA FR PPA M	Metalized polypropylene	1.5 μF ⇔ 260 μF	±5% ⇔ ±20%	260 V _{AC} ⇔ 900 V _{AC}	in house	Motor run, fluorescence, compensation
	PP 44 A2 PP 44 R5		0.1 μF ⇔ 300 μF	±5% ⇔ ±20%	300 V ⇔ 2 400 V 250 V _{AC} ⇔ 1 200 V _{AC}	in house	Medium power capacitor, semi-conductor protection, high current filtering, medium frequency tuning, decoupling.
	PP 88 - IGB 99		47 nF ⇔ 7.5 μF	±5% ⇔ ±20%	800 V ⇔ 3 000 V 1.5kV _{GTO} ⇔ 5.6kV _{GTO}	in house	IGBT capacitors, protection / turn off thyristors GTO, medium frequency tuning.
	BI 73 A - BI 73 R R 73 A - R 73 R	Bi-film Polyester + foil	1 nF ⇔ 2.2 μF	±5% ⇔ ±20%	1 000 V ⇔ 2 200 V Ucrete ⇔ 5 000 V	in house	Filtering, protection
Mica	CA 1 - CA 2 CA 17 to CA 19	Silvered mica	4.7 pF ⇔ 100 nF	±0.5 pF or ±1% ⇔ ±10%	500 V ⇔ 5 000 V	CECC Acc. MIL C 5	Filtering circuits, delay line circuits, oscillators, pulse circuits, H.F. generators, emission lines, D.C. blocking circuits, coupling, measurement...
	CA 15 - 20 - 30 - 40 CA 152 to 158		4.7 pF ⇔ 15 nF	±1 pF or ±1% ⇔ ±10%	63 V ⇔ 500 V		
	CM 04 to CM12 CMR 04 to CMR 07		200 pF ⇔ 1200 pF	±0.5 pF or ±1% ⇔ ±5%	100 V ⇔ 500 V		

ELECTROLYTIC ALUMINUM CAPACITORS

EXXELIA is the only manufacturer who develops its own electrolytes, enabling to achieve the longest lifetime of the market. EXXELIA aluminum electrolytic capacitors provide high capacitance values (up to 2.2 F), long lifetime and can support extreme temperatures, including the only Snap range operating to $-55^{\circ}\text{C} / +125^{\circ}\text{C}$.

They are particularly suitable for D.C voltage applications in energy storage (lighting flash lamps, welding machines, radiology, radars) and time delay devices.

		Product range	Sizes $\varnothing \times h$ (mm)	Capacitance	Voltage	Main characteristics
Screw terminals	-55°C $+125^{\circ}\text{C}$	FELSIC 125FRS	36x52 to 90x145	220 μF to 150 000 μF	16 V to 350 V	Low ESR, $+125^{\circ}\text{C}$
		FELSIC 105FRS	36x47 to 77x144	470 μF to 68 000 μF	10 V to 100 V	Very low ESR
		FELSIC HV	51x81 to 90x200	1 000 μF to 47 000 μF	160 V to 450 V	Extreme Long life, High ripple
		FELSIC 105	36x52 to 90x200	100 μF to 470 000 μF	16 V to 450 V	Extreme Long life
	-55°C + $+105^{\circ}\text{C}$	FELSIC 105 LP	90x67	1 500 μF to 220 000 μF	10 V to 450 V	105 with Low Profile can
		FELSIC HC NEW	36x44 to 90x220	100 μF to 2.7 F	10 V to 500 V	High energy density achieve the same capacitance with twice as less capacitors
		FELSIC 85	36x52 to 90x200	68 μF to 680 000 μF	10 V to 630 V	Standard 85°C
		FELSIC 85M	36x52 to 90x200	68 μF to 680 000 μF	10 V to 630 V	Standard $85^{\circ}\text{C} \pm 20\%$ tolerance
		FELSIC 039 FELSIC 037	36x47 to 77x144	100 μF to 150 000 μF	10 V to 400 V	Standard C039 type (railway maintenance standard)
Radial leaded type	-55°C + $+105^{\circ}\text{C}$	CUBISIC	35x35x16 to 35x50x16	100 μF to 33 000 μF	10 V to 450 V	Flatpack, Withstand 20 g vibrations, High energy density
		CUBISIC LP	45x35x12 to 45x75x12	220 μF to 68 000 μF	10 V to 400 V	Flatpack, Withstand 20 g vibrations, High energy density
	-55°C $+85^{\circ}\text{C}$	CUBISIC SLP NEW	45x38x12 to 45x76x12	220 μF to 68 000 μF	10 V to 450 V	Flatpack, Withstand 20 g vibrations, High energy density Switch mode power supplies, impulse current. Withstands more than 92,000 feet altitude
	-55°C $+105^{\circ}\text{C}$	ALSIC 20g	18x20 to 35.5x25	110 μF to 68 000 μF	10 V to 500 V	Withstand 20 g vibrations
	-55°C $+145^{\circ}\text{C}$	ALSIC 145 20g	18x20 to 22.5x25	470 μF to 2 200 μF	10 V to 115 V	High temp. range, Long life, withstand 20 g vibrations
Snap in type	-55°C $+125^{\circ}\text{C}$	Snapsic 125	22x25 to 35x50	470 μF to 47 000 μF	16 V to 100 V	High temperature range, Long Life
		Snapsic HV	22x25 to 35x50	47 μF to 2 200 μF	160 V to 500 V	Long Life, High ripple current
	-55°C + $+105^{\circ}\text{C}$	Snapsic 105	22x25 to 35x50	22 μF to 68 000 μF	16 V to 500 V	Standard 105°C type
		Snapsic HC NEW	22x25 to 35x50	47 μF to 47 000 μF	25 to 450 V	High energy density
		Snapsic	22x25 to 35x50	22 μF to 47 000 μF	16 V to 500 V	Standard 85°C type
	-55°C + $+105^{\circ}\text{C}$	Snapsic 105 4P	35x50 to 45x75	330 μF to 150 000 μF	16 V to 550 V	Standard 105°C type with 4 Pins
		Snapsic 105 LP	45x21 to 45x40	150 to 68 000 μF	16 V to 500 V	Low Profile 105°C with 4 Pins
-55°C $+85^{\circ}\text{C}$	Snapsic 4P	35x50 to 45x100	330 to 150 000 μF	16 V to 500 V	Standard 85°C type with 4 Pins	
Axial type	-55°C + $+150^{\circ}\text{C}$	Prorelsic 145	14x30 to 25x75	6.8 to 10 000 μF	16 V to 450 V	High temperature Long life
		Vacsic 150	14x30 to 16x30	6.8 to 3 300 μF	16 V to 450 V	High temperature Long life, Withstand 45 g vibrations
	-55°C $+125^{\circ}\text{C}$	Prorelsic 125	12x25 to 25x75	1 to 15 000 μF	10 V to 350 V	125°C Long life
		Vacsic 105	12x25 to 16x30	15 to 4 700 μF	10 V to 450 V	Standard 105°C type; Withstand 45 g vibrations.
	-55°C $+85^{\circ}\text{C}$	Sical /Sical C042	6.5x19 to 25x75	6.8 to 47 000 μF	10 V to 630 V	Standard 85°C type

MAGNETIC CATALOG PRODUCTS

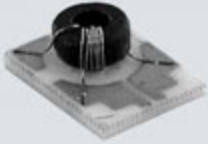
EXXELIA designs and manufactures magnetic components including wound magnetics, inductors, transformers, motors, sensors and actuators for high voltage, high temperature and power applications.

EXXELIA offers high-grade and standard technologies for high power or low power applications. Both technologies are available either as catalog product series (already developed) or as technologies for custom products (with engineering support from EXXELIA).

	Product Series	Current	Inductance	Temperature Range	Frequency	Notes	
HIGH GRADE PRODUCTS	Chips Inductors	MPCI/MSCI 10000, 12000, 20000	15 mA to 1 000 mA	0.010 μ H to 1 000 μ H	-55°C to +125°C	7.9 MHz to 500 MHz	QPL, Space Qualified
		MPCI/MSCI H01	100 mA to 1 500 mA	0.38 μ H to 100 μ H	-55°C to +125°C	-	QPL, Space Qualified
		MPCI 233	25 mA to 114 mA	18 μ H to 1 000 μ H	Up to +175°C	-	High Temperature
		MPCI 233 H01	100 mA to 1 500 mA	0.38 μ H to 100 μ H	Up to +175°C	-	High Temperature
	Wide Band RF	WRFT 4x	-	-	-55°C to +125°C	Bandwidth 100 kHz to 400 MHz	Generic specification ECSS, ESCC, MIL for Space
		HCESC	0.4 A to 2.5 A	15 μ H to 470 μ H	-55°C to +125°C	Up to 100 MHz	Generic specification ECSS, ESCC, MIL for Space
		DLEF 42	Up to 100 mA	5 μ H at 15 MHz	-55°C to +100°C	15 MHz to 300 MHz	Generic specification ECSS, ESCC, MIL for Space
	Data Line Filters	MTLM 1234 MIL	-	Up to 5.5 μ H	-55°C to +125°C	100 Hz to 10 kHz	Line isolation Impedance matching
		DBIT / SBIT	MIL-STD-1553 Data Bus Transformer		-55°C to +125°C	75 kHz to 1 MHz	Aerospace, ESA / EPPL
	Ethernet Transfo.	2 ways digital block	NEW		-40°C to +125°C		Mechanical withstanding Very hash environment
		ESI 01	0.26 A to 2.1 A	1.72 μ H to 106.45 μ H	-55°C to +125°C	Up to 1 MHz	Generic specification ECSS, ESCC, MIL for Space
	SMD Power Inductors	ESI 7	1.4 A to 6 A	0.42 μ H to 8.42 μ H	-55°C to +125°C	Up to 1 MHz	Generic specification ECSS, ESCC, MIL for Space
		CCM 4, CCM 5, CCM 6 CCM 20, CCM 25	0.33 A to 17.7 A	1 μ H to 4680 μ H	-55°C to +125°C	Up to 1 MHz	High Reliability Compliant ESA, ECSS, MIL
		SESI 9.1, 14, 15, 18, 22, 32	0.045 A to 24 A	1 μ H to 6 800 μ H	-55°C to +125°C	Up to 1 MHz	QPL, Space Qualified
		HTSE xx WR/SR	0,36 A to 16.4 A @ 25°C 0,2 A to 10,2 A @ 155°C	3 to 2041,3 μ H no load 2.7 to 1837,2 μ H @ 155°C	-55°C to +180°C	Up to 1 MHz	High Temperature QPL, Space Qualified
		HTSE 47 SR	1 A to 20 A @ 25°C 0,6 A to 12 A @t 155°C	1.3 to 5593.2 μ H no load 1.2 to 5033.9 μ H @ 155°C	-55°C to +180°C	Up to 1 MHz	High Temperature QPL, Space Qualified
	Dif. Mode Choke	DMC 22 xxx 1WR	4 A	25 μ H @ 25°C	-55°C to +125°C	-	Aeronautic, Space
		Common Mode Choke	CMC 15, CMC 18, CMC 22	0.55 A to 14.3 A	60 μ H to 4 900 μ H	-55°C to +125°C	-
	CMC 14, CMC 17		1.1 A to 11.7 A	140 μ H to 69 200 μ H	-55°C to +125°C	-	ESA Generic Specification
	Current sense Transformer CT 10		NEW		2 mH	-55°C to +125°C	Compliant with ESCC3201 Generic
Current (sense) Transformers	CT 01 100 261 x	3.5 A	3.9 μ H	-55°C to +125°C	10 kHz to 250 kHz	Aeronautic, Space	
	CT 08 200 221 PR	8 A _{Peak} / 3.6 A max.	-	-40°C to +110°C	100 kHz to 200 kHz	Aeronautic, Space	
	CT 91	10 A pk max. Turn ratio 1:50/1:200	0.4 μ H to 6.4 μ H	-55°C to +125°C	6 kHz to 500 kHz	Aeronautic, Space	
	CT 15 200 231 WR	-	6.4 μ H	-55°C to +125°C	6 kHz to 100 kHz	Aeronautic, Space	
Gate drive transformers	GDT 15	ET: 60/80 V μ s Turn ratio 1:1.52/1:1:1	-	-55°C to +125°C	Up to 500 kHz	Aeronautic, Space	
	GDT 91	ET: 50/135 V μ s Turn ratio 1:1/1:1:1	-	-55°C to +125°C	Up to 500 kHz	Aeronautic, Space	
STANDARD PRODUCTS	Common Mode Chokes	TCM Series	0.3 A to 4 A	0,7 mH to 47 mH	0.15 m Ω to 1750 m Ω	-55°C to +125°C	Aeronautic, Industry, Defense, Railway
		CMESC Series	1.1 A to 11.7 A	0.45 mH to 69.2 mH	5 m Ω to 500 m Ω	-40°C to +125°C	Defense, Industry
	Current transfo.	CT 05 xxx 231 W	2.2 A (1.5 A TYP)	1.2 mH to 540 mH	6 m Ω [A-B] 1 m Ω to 9.6 m Ω [1-3]	-40°C to +100°C	Defense, Industry

HIGH GRADE, HIGH POWER TECHNOLOGIES

HIGH GRADE TECHNOLOGIES



Custom Design Technologies
Hybrid Magnetics Transfer-Molded Components



CCM Technology
ESA ESCC 3201011 Technology Flow Certificate for custom designs.
Replace wire leads by regular output pins



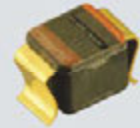
SESI Custom Technologies
Custom transformers and inductors in the standard
SESI 9, 15, 18, 22 and 32 packages



Custom Packages with Additional Terminations
Shielded versions of SESI



Toroidal Transfer Custom Magnetics TT and TO Toroidal
Pick and place custom toroidal magnetic components from leaded
toroids to pick and place components



High Temperature Inductors and Transformers
High Temperature products withstanding up to 230°C

HIGH POWER TECHNOLOGIES



**Aluminium and Copper Foil
Technologies**



**High Grade Custom Planar
Magnetics**



U Shaped Ferrite assembly



Overmolded U Cores Assembly



**Nanocrystalline Toroidal Cores
Assembly**



Overmolded Nanocrystallin Toroids



C Cores Assemblies



EI, U, ... Lamination assemblies



Water Cooling



Sensor : Current transformer



Sensor : Voltage transformer



Integrated subassemblies



Winding flat wire on range

STANDARD TECHNOLOGY / BUILT TO PRINT

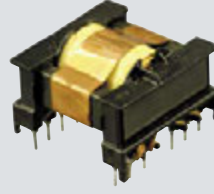
STANDARD TECHNOLOGIES



Toroidal Magnetic Core Platform
Power conversion
in electronic applications



RM Platform
Power Transformers
and Inductors in SMP power supplies



ETD Platform
Transformers in forward
and push-pull SMPS



EFD Platform
DC-DC converters, isolation
and pulse application



EQ Platform
Power transformers in
SMP power supplies



ER and EP Platform
Design know how
and manufacturing capabilities



Custom Power Magnetics
Powerful magnetics
for a wide range of applications

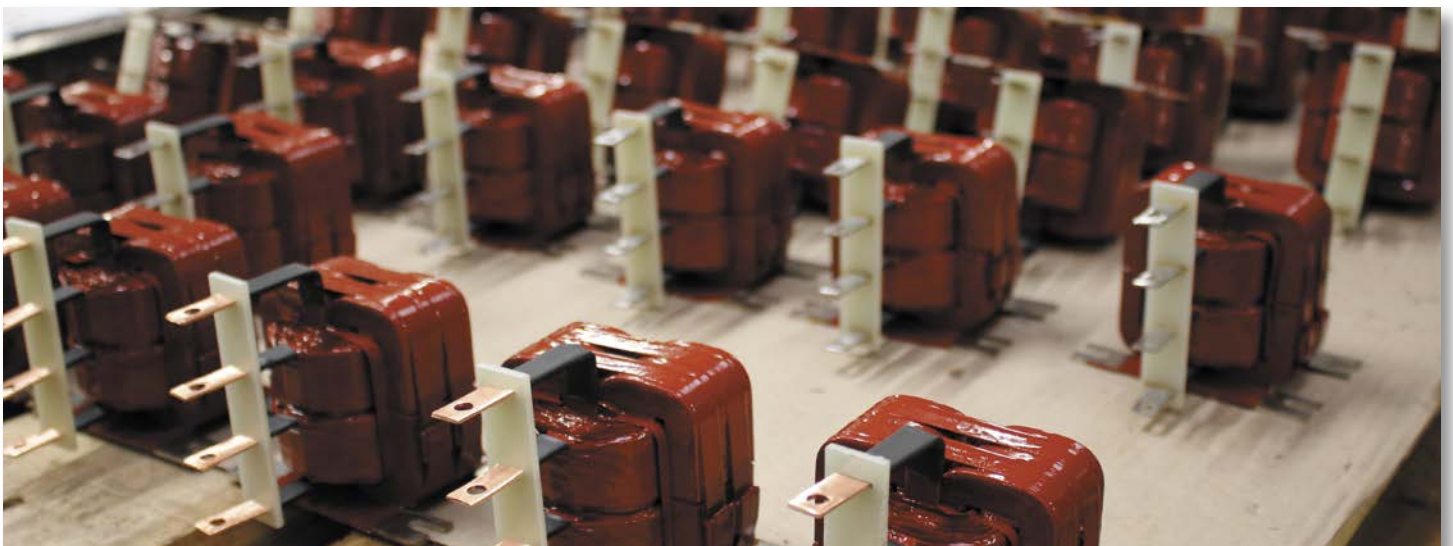
BUILT-TO-PRINT



Bobbins
For Actuators, Antennas & Sensors



Rotors & Stators
Stators diameter from 10 to 500 mm and weight up to 250 kg
Up to high temperature 220°C products:



ENGINEERING SUPPORT

Our Engineers use advanced finite-elements simulation software to model and analyse electromagnetic behavior. EXXELIA can provide the experience and the expertise of its technical team to:

- Full design, starting from the functional specifications, EXXELIA can explore different kind of topologies, with respect to the request.
- Optimization of an existing design (example: weight reduction, torque increase, losses reduction, etc...)

CAD geometry and circuit import/export (*.step, Catia, Spice, ...)

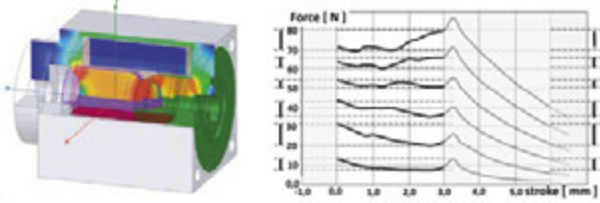
We can do for you the following analysis:

- Optimization under constraints
- Parametric analysis
- Sensitivity analysis

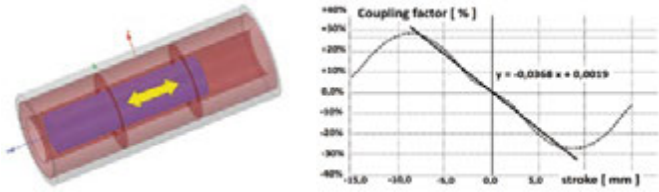
Some calculations: Torque [N.m], Force [N], Resistance [Ω], Losses[W], L matrix [H], C matrix [F]

Some applications: linear or angular electric motor, electromagnet, linear or angular actuator, proportional valves, position sensor, etc...

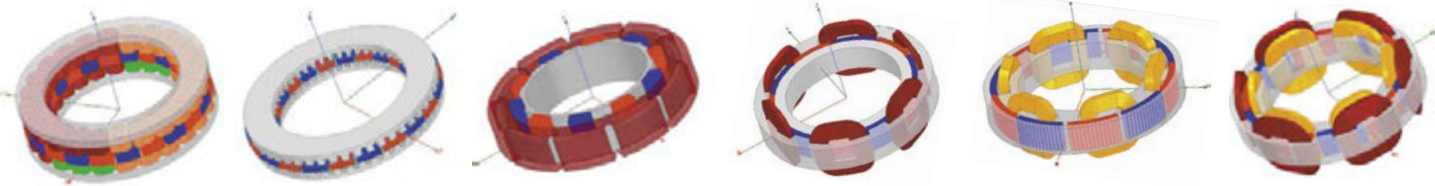
Proportional Hydraulic Valve






Linear Position Sensor



Design and Support for Electrical Motor Design

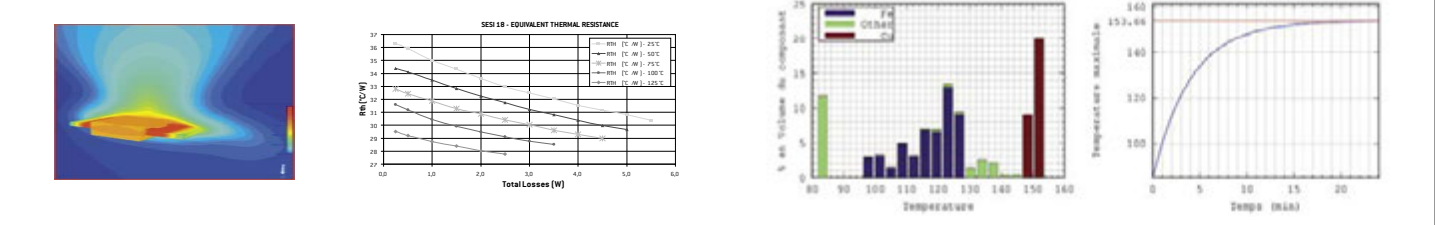


A FEW CUSTOM PRODUCTS

 <p>Flyback Transformers FLYT Series MIL, ECSS Compliant</p>	 <p>Push Pull Transformers FL Serie</p>	 <p>400 Hz Current Measurement Transformer Custom Designs</p>	 <p>400 Hz Current Measurement Transformer Custom Designs</p>
 <p>400 Hz Voltage Measurement Transformer Custom Designs</p>	 <p>Magnetic Design Support for Multi pulses Transformers</p>	 <p>Design Support for Parallel Multicellular Converters Inductors</p>	 <p>Design Support for Integrated Magnetics</p>

THERMAL MANAGEMENT

EXXELIA invests in R&D and makes extensive studies on the thermal management of magnetics, including loss calculations, design rules, thermal resistance and thermal modeling. We have available, a complete database of thermal resistances for all standard magnetics packages and have developed specific software for designing optimized compact components.



POSITION SENSORS & SLIP RINGS

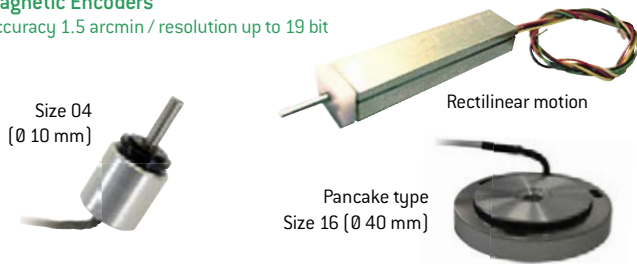
EXXELIA designs and manufactures contact and contactless Position Sensors, Slip Rings and Hybrid Systems.

HIGH PERFORMANCE CONTACTLESS POSITION SENSORS

High accurate Optical Encoders
Accuracy 20 arcsec / resolution 21 bit



Magnetic Encoders
Accuracy 1.5 arcmin / resolution up to 19 bit



SLIP RINGS

Diameter from 20 mm to 1 200 mm
and more on request

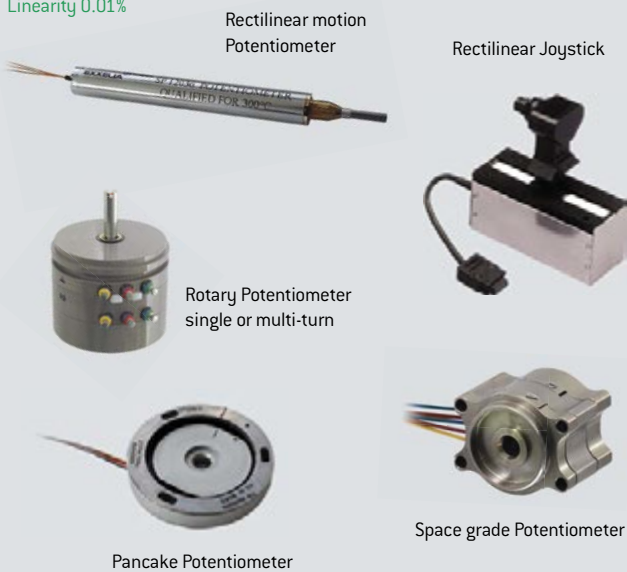


FORJ's

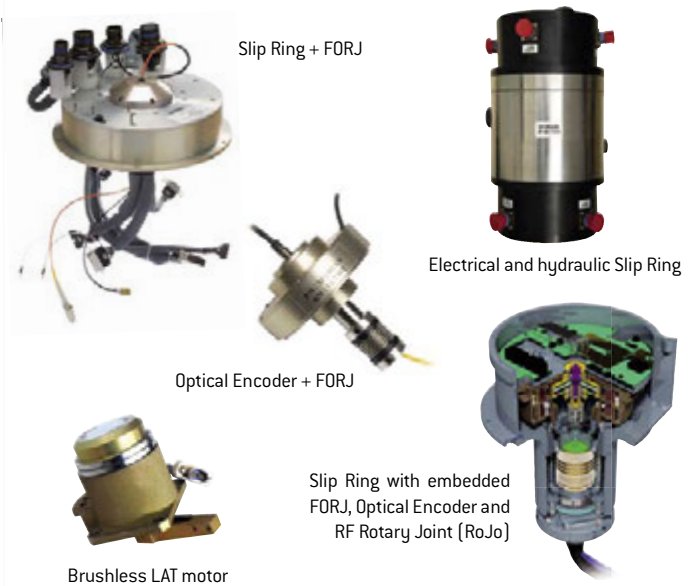


PRECISION POTENTIOMETERS

Linearity 0.01%



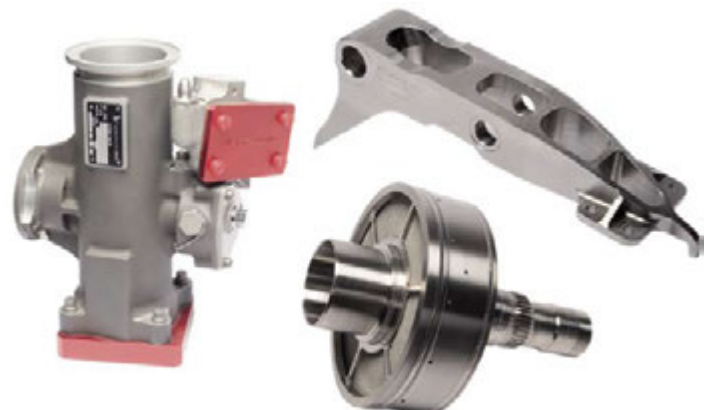
HYBRID SYSTEMS



PRECISION MECHANICS

EXXELIA's Precision Mechanics division specializes in machining complex parts, from prototypes to medium series. Our best-in-class palletized-5-axis turning and milling equipment enable us to work with all types of material including titanium, inconel, 35NCD4 etc...

Assembly, high precision manual deburring and hydraulic tests can be carried out in our workshop.

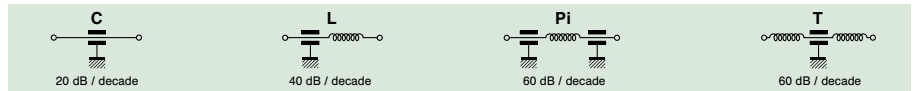


EMI-RFI FILTERS



EXXELIA, is the only manufacturer in the world of ESA QPL EMI-RFI filters in different low pass configurations (C, L, Pi, T, 2 x Pi, 2 x L and 2 x T) intended to protect electronic equipment from interferences for aerospace, telecom and medical markets..

Capacitors are a key components in a filter and thanks to its expertise in the field, EXXELIA is able to manufacture high-end solutions combining performance and reliability.



T	Model	Current	Voltage	Performance	Qualification	Use
EMI-RFI Filters -55°C +125°C (up to 175°C)	Feed through Ø 3 - Ø 4 - Ø 6 - Ø 10 (mm)	Up to 15 A	Up to 500 V _{DC} and 115 V _{AC} 400 Hz	Up to 80dB from 10 kHz to 10 GHz	AIR Qualified Compliant MIL 461, D0160	Space, Aeronautic, Defense, Industry.
	Feed through Ø 17 (mm)	Up to 30 A	Up to 3 000 V _{DC} and 200 V _{AC} 400 Hz	Up to 80dB from 10 kHz to 10 GHz	AIR qualified, Compliant MIL 461, D0160	Aeronautic, Defense, Industry.
	Multi ways Filters	Up to 15 A	Up to 500 V _{DC} and 115 V _{AC} 400 Hz	Up to 80dB from 10 kHz to 10 GHz	in house	Aeronautic, Defense, Industry.
	Surface mount FCMS - CFCMS	10 A (20 A for HI version)	Up to 500 V _{DC} and 115 V _{AC} 400 Hz	Up to 70 dB from 10 kHz to 10 GHz	In house	Space, Aeronautic, Defense, Industry.
	SPF...	Up to 500 A	Up to 3 000 V eff.	Up to 10 GHz	in house	Custom design

ENERGY FILTERS

Following 50 years heritage in Defense market, EXXELIA offers highly performant] robust and reliable solutions to protect from different EMC phenomenon all kind of signal such as:

- Power supply,
- Control lines,
- Data communication...

Asymmetric design available for optimized leakage current and size.



T	Model	Current	Voltage	Performance	Qualification	Use
EMC Filters -55°C +85°C	Feedthrough Tube filters	Up to 500 A	Up to 1 000 V _{DC} and 400 V _{AC}	Up to 100 dB Up to 18 GHz*	-	Single lines power supply.
	Power cabinets	Up to 2 500 A	Up to 440 V _{AC} (50-800Hz)	Up to 100 dB from 10 kHz to 18 GHz*	TEMPEST: MIL-HDBK-1195 HEMP: MIL-STD-188-125-1 & 2	Three or single phase power supply for TEMPEST and HEMP
	Data communication	Up to 1A	-	Up to 100 dB Up to 18 GHz*	TEMPEST: MIL-HDBK-1195 HEMP: MIL-STD-188-125-1 & 2	Up to 100 MHz bandwidth data signal for TEMPEST and HEMP
	Custom filters	Additional protection for energy and signal filtering.				

* Up to 40 GHz on request.

COMPONENTS & SUB-ASSEMBLIES MANUFACTURING



With two production units located in competitive manufacturing countries, EXXELIA can provide cost-effective sub-assembly capabilities with high technology processes: wire bonding, vacuum metallization, overmolding, harnessing, RF tests, reliability tests.

EXXELIA OHMCRAFT RESISTORS

Precision Resistors for Demanding Applications where Reliability is Essential





EXXELIA Ohmcraft's thick-film, surface mount resistors are engineered to meet application specific needs. Our proprietary EXXELIA Micropen® electronic printing technology is the foundation for EXXELIA Ohmcraft's family of resistor products. Our technology utilizes the proprietary EXXELIA Micropen® electronic printing system to "print" precise, narrow,

serpentine lines with resistive ink on a ceramic substrate producing higher performance resistors over a wider range of values on a smaller surface area than is possible with conventional film resistor technology.

Common attributes for ALL EXXELIA Ohmcraft Resistors: High Stability, Low Noise, Low TCR, Low VCR & Custom Configurations.

	T	Series	Case Size	Voltage Rating	Resistance Values	Ratio Tolerances	Advantages	Note
Surface Mount Resistors	-55°C +150°C	UHVC Series Ultra High Voltage Chip Resistors	 2010 to 5020	Up to 20 kV	Up to 50 GΩ	to 1%	Ultra High Voltage	The highest voltage ratings available in the WORLD
		HVC Series High Voltage Chip Resistors	 0402 to 5020	Up to 5 kV	Up to 50 GΩ	to 0.1%	High Voltage	EXXELIA Ohmcraft's flagship high voltage chip series
		HVCD Series High Voltage Chip Dividers	 3512, 4020, 5020	Up to 4 kV	Up to 10 GΩ	to 1%	Surface Mount Divider	Replaces larger leaded divider
		SM Series High Resistance Chip Resistors	 0402 to 3512	Up to 600 V	Up to 50 GΩ	to 0.1%	Ultra High Resistance	Excellent for high gain amplifier circuit
		MCH Series Military Grade High Voltage Chip Resistors	 0402 to 5020	Up to 5 kV	Up to 50 GΩ	to 0.1%	Military Grade Inspection	Optionally tested to MIL-PRF-55342 MIL-PRF-49462 NASA EEE-INST-002 [Level 1 & 2]
		HC Series Hybrid Chip Series	 0202 to 0505	Up to 100 V	Up to 50 GΩ	to 0.1%	Wire Bondable	Excellent for Shock & Vibration Sensors

Precision Leaded Through Hole Resistors

	T	Series	Case Size	Voltage Rating	Resistance Values	Ratio Tolerances	Advantages	Note
LEADED RESISTORS	-55°C +225°C	HVA Series High Voltage Axial Resistors	 05 to 50	Up to 50 kV	Up to 10 GΩ	to 0.1%	Non-Inductive	High precision, thick-film axial through hole resistors
		HVR Series High Voltage Radial Leaded Resistors	 21 to 56	Up to 40 kV	Up to 4 TΩ	to 0.1%	High Voltage	High precision, thick-film radial through hole resistors
		HVD Series High Voltage Radial Leaded Dividers	 04 to 50	Up to 50 kV	Up to 2 TΩ	to 0.1%	Excellent TCR Tracking	High precision, thick-film radial through hole resistor dividers
		CN Series Custom Leaded Resistor Networks	 Custom	Up to 100 kV	Up to 2 GΩ	to 0.1%	Customized Solution	Wide range of customization options available

Custom Solutions

Every day, we receive a phone call or email that starts out with, "We have an idea..." Many of the world's most respected and innovative companies, research institutions and government agencies have chosen EXXELIA Ohmcraft as a

trusted collaborator, working with us to explore new possibilities for custom solutions.

EXAMPLES

Low Energy Neutral Atom Imager (LENA)

539 MΩ to 11.138 GΩ ± 1%
Missiles & Space use



Custom Size for Handheld Application

50 kV Low V_{CR}
76,2 mm x 2,032 mm [3" x 0.080"]



1G Seven Decade Divider

20 GΩ to 20 kΩ
Ratio Tol.: 0.25%
TCR Tracking: 25 PPM/°C



EXXELIA MICROPEN® TECHNOLOGY

EXXELIA Micropen®'s proprietary printing technology enables product designers to bring forth their groundbreaking ideas or explore new possibilities that they once thought out of reach. Designers can DREAM BIGGER and DESIGN BETTER.

Our EXXELIA Micropen® printing process has pioneered additive printing from its early days. We take a substrate, any substrate, and print electronically

conductive patterns, transforming the substrate into a critically important component that can sense, heat, detect, ablate or cauterize.

Our technology is the key to making materials more functional, more reliable and more customized.

In today's 3D printing world, our technology turns static into smart by printing on virtually any 3D ceramic, metal or polymeric substrate.

MEDICAL DEVICE

Today's medical device market requires precision durable technology able to withstand a rugged environment without affecting performance. EXXELIA Micropen® printing is the most precise and cost effective way of printing fine line, conformal traces of functional materials directly onto medical devices and 3D geometries.



Endotracheal Tubes



Electrosurgical Devices



Radiopaque Markers



Ablation & Catheter Balloons

TEST & MEASUREMENT

EXXELIA Micropen® Technologies has material science and design engineering expertise along with a proven track record resulting in high-precision, robust, smaller, and smarter instrumentation devices.

EXXELIA Micropen®'s printing technology enables precision and repeatability required by modern measurement and detection equipment. A component designed from scratch, new versions with increased functionality, or becoming a second source provides a level of service and performance unmatched in the instrumentation market. Products features may include: Unmatched Design Flexibility, Superior Linearity and Stability, Robustness and Ruggedness, High Ohmic Values, Low Noise, Shrink product footprint, TCR tuning, Built-in feedback.



Laboratory Equipment



Thick Film Heater



Temperature Sensor



Precision Gauge

SECURITY & DETECTION

We recognize innovation as an essential element of successful military and space programs. EXXELIA Ohmcraft has served markets in electronic warfare, weapons platforms, force protection, intelligence and space programs for over two decades, reliably supporting a wide range of products, programs, and applications. Our custom resistors are designed to support the rigorous specifications required by military and space suppliers who depend on the precision and reliability of our products. EXXELIA Ohmcraft is able to screen and qualify our resistors to the following specifications: MIL-PRF-55342, MIL-PRF-49462, NASA EEE-INST-002 (Level 1 & 2).

Trace Detection Drift Tube



Mass Spectrometry

	Substrate	Common Tradenames*	Material applied by EXXELIA Micropen	Function Added	Applications Demonstrated
Polymers	Polyethylene Terephthalate (PET)	Mylar®, Melinex®	Ag, W	Conductivity, Radiopacity	Cardiac ablation balloon, lead on cardiac ablation wire guide
	Polyurethane	Texin®, Desmopan®, Tecothane®, Estane®, Pellethane®	Ag, TiO2	Conductivity, Opacity	Capsule antenna, electrode on sheath, visualization
	Silicone	SilMedic®, BioSil™, Silikophen®, Nusil™	Ag, W	Conductivity, Radiopacity	Atrial ablation balloon, flexible brain stimulation electrode
	Silicone-Urethane Copolymer	Elast-Eon™	Ag, W	Conductivity, Radiopacity	Visualization
	Polyamide (Nylon)	Vestamid®, Grilamid®	Ag, W	Conductivity, Radiopacity	Sensing on balloon catheter
	Polyetheramide	PEBAX®	Ag, W	Conductivity, Radiopacity	Catheter stimulation and sensing, ablation catheter
	Polyetherimide	Ultem®	Ag	Conductivity	Stimulation
	Polyetherether Ketone	Vestakeep®, PEEK-Optima®	Ag, W	Conductivity, Radiopacity	Heater
	Polysulfone	Radel®, Udel®, Fortron®	Ag	Conductivity	Sensing
	Polytetrafluoroethylene (Etched)	Teflon®	Ag, W	Conductivity, Radiopacity	Visualization
	Polycarbonate	Makrolon®, Calibre™, Lexan®	Ag, W	Radiopacity, Conductivity	Sensing on surgical device
	Polyvinylidene Fluoride	Dyflor®, Kynar®	W	Radiopacity	Visualization
	Polyvinyl Chloride	Nakan®, Chlorite™	Ag	Conductivity	Sensing on endotracheal tube
	Polyhydroxyalkanoate	Biopol™, Mirel™	W	Radiopacity	Visualization
	Liquid Crystal Polymer	Vectra®	Ag	Conductivity	Heater, thermistor
Poly(P-Xylylene)	Parylene™	Ag	Conductivity	Balloon electroporation	
Styrene-Butadiene	Styrolux®	Ag	Conductivity	Ophthalmic electroporation	
Metals	Stainless Steel	316SS, 304SS, 420SS	Various polymers, Ag	Dielectrics, Conductors	Heaters
	Titanium	—	Au	Conductor	Sensing
	Silicon	—	Various polymers, Ag	Dielectrics, Conductors	Sensing
Ceramic	Alumina	—	Ag, Au, Pd, Pt	Conductor, Capacitor,	Electrocauterization, heaters, sensors
	Silica	Pyrex®, Glass, Quartz	Ag, Various polymers	Conductors, Protective layers	Heaters

*All registered trademarks and tradenames are the property of their respective owners.



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