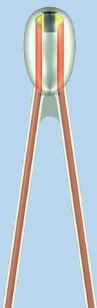


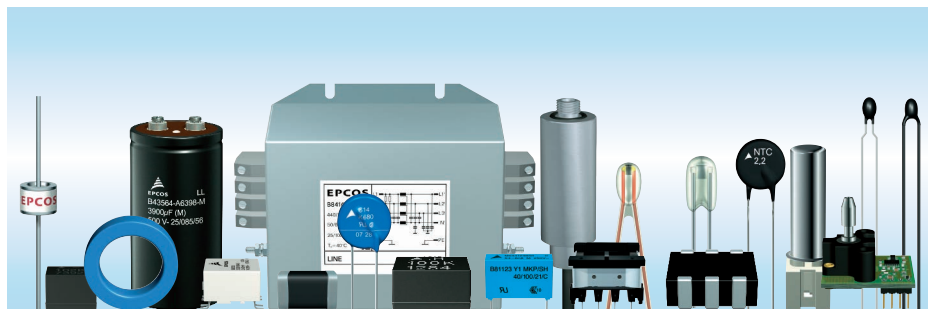
EPCOS Application Guide

Industrial

Electronic Components for Medical Appliances



EPCOS Components for Medical Appliances



Medical technology is one of the most challenging markets for electronics. The demands placed on the precision, reliability and long-term stability of electronic systems are very high. The same also applies to the electronic components as well. Based on its recognized high level of quality EPCOS is able to meet these requirements.

For example, the pressure sensors used in anesthesia apparatus are designed to be very reliable and extremely precise. Special probes for long-term temperature monitoring – for example in incubators for neonates – can withstand at least 100 sterilization cycles at 134 °C.

Power supplies for medical devices must also be extremely reliable. For such applications EPCOS manufactures aluminum electrolytic capacitors, for example, that can be operated at temperatures of up to 125 °C and offer high long-term stability and a long useful life. EPCOS has also developed large-volume ferrite cores especially for the high-performance and high-voltage power supplies in X-ray, CT and MRI equipment.

Film capacitors designed by EPCOS also feature very high long-term stability for use in high-voltage power supplies, as well as in the PFC, snubbing or EMI filtering stages of medical devices.

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Special Features



Aluminum Electrolytic Capacitors

- Long-term stability
- High ripple current capability
- Operating temperature up to +125 °C
- Very low ESR and ESL
- Long useful life
- High vibration resistance
- Self-extinguishing electrolyte upon request
- Compact can size

CeraDiodes

- Bidirectional ESD protection acc. to IEC 61000-4-2, level 4
- Operating temperature up to +85 °C without temperature derating
- Short response time < 0.5 ns
- Replacement of semiconductor diodes

Ceramic Transient Voltage Suppressors (CTVS)

- Multilayer varistors (MLVs) with case sizes 0402 to 2220
- Protection against wide overvoltage range
- Bidirectional components
- No temperature derating up to +125 °C/+150 °C (depending on type)
- Low leakage current

EMC Filters

- Wide current range of standard filters up to 2500 A
- Rated voltage up to 760 V AC and 1500 V DC
- Various terminal styles
- Medical versions with low leakage current
- UL/CSA/ENEC approval
- Customer-specific solutions upon request
- EPCOS also runs its own accredited EMC laboratory in Regensburg/Germany which can perform all relevant tests and issue the necessary documentation to obtain CE-conformity

Ferrites

- Large-volume cores can be manufactured in customized shapes on special production equipment, such as a 400 t press

Film Capacitors

- High reliable DC-link and snubber capacitors
- Power supplies for workstations, imaging power systems and LCDs
- Power supplies for critical systems e.g. X-ray, CT
- Highly reliable power converters for pumps and motors
- High safety level due to self-healing capability

Inductors

Powerline chokes

Common-mode chokes

- High current handling capability
- Housing design up to 16 A
- High temperature stability up to +125 °C
- Suppression of asymmetrical interference coupled onto lines
- Design complies with EN 60938-2

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Special Features



Differential-mode chokes

- High current handling capability
- High temperature stability
- Suppression of symmetrical interference coupled onto lines
- Double chokes: approx. 50% of rated inductance for common-mode interference suppression

SIMID

- High current handling capability
- Wide temperature range from -55 °C to $+150\text{ °C}$
- Energy storage in DC/DC converters
- Resonance circuits and impedance matching in control units
- Suppression of electromagnetic interferences
- Suitable for lead-free soldering profiles acc. JEDEC J-STD 020D

NTC Thermistors

- NTC thermistors as inrush current limiters
- Long-term stability
- High measuring accuracy
- Fast response time
- Temperature measurement up to $+260\text{ °C}$
- Heat resistant and highly stable
- High insulation voltage
- Rugged design
- Compact dimensions
- Suitable for steam sterilization
- SMD NTC case size 0402 ... 0805
- SMD NTC with high accuracy ($\Delta R = \pm 1\%$)
- SMD NTC for application up to $+150\text{ °C}$
- Customer-specific solutions upon request

Pressure Sensors

- Piezo-resistive dies and transmitters
- High accuracy and media resistance
- Operating temperature -25 °C up to $+85\text{ °C}$
- Small dimensions for portable devices

SAW Components

- Long-term stability
- AEC-Q200 qualified parts available
- High operable temperature range from -45 °C up to $+125\text{ °C}$
- Small SMD package size

Surge Arresters, Switching Spark Gaps

- Very reliable
- Protection of AC/DC converters
- Fast response time
- Low breakdown voltage

Varistors

- Leaded disks 5 to 20 mm
- Square disks 14 and 20 mm
- ThermoFuse varistors
- Operating temperature up to $+105\text{ °C}$

EPCOS Components for Medical Appliances





Overview												
	Anesthesia equipment	Cleaning equipment	Clinical thermometers	Computed tomography	Defibrillation devices	Glucose meters	Lithotripsy	Magnetic resonance imaging	Patient care monitoring	Respiration technology	Ultrasound imaging systems	X-ray equipment
Aluminum electrolytic capacitors												
4-/5-pin snap-in terminals/ solder pins		•		•				•				•
Capacitors for pulse applications												•
Screw terminals				•				•				•
Snap-in		•		•				•				•
CeraDiodes and Ceramic transient voltage suppressors (CTVS)												
CeraDiodes		•	•	•	•	•		•	•	•	•	•
Multilayer varistors (MLV)		•	•	•	•	•		•	•	•	•	•
EMC filters												
1-line filters	•			•				•	•			•
2-line filters	•	•	•	•	•	•		•	•	•	•	•
3-line filters, 4-line filters	•			•				•				•
IEC inlet filters	•	•	•	•	•	•		•	•	•	•	•
Ferrites												
E, EFD, ETD cores	•	•	•	•	•	•		•		•		•
ELP, ER, EQ cores	•	•	•	•	•	•		•		•		•
Large volume cores (customized)				•				•		•		•
PM cores				•				•		•		•
PQ cores	•	•	•	•	•	•		•		•		•
Ring cores	•	•		•	•			•		•		•
U cores				•				•		•		•
Film capacitors												
MFP capacitors for snubbing, resonance				•				•				•
MKP capacitors for DC-link/ DC filtering				•	•			•				•
MKP capacitors for snubbing, resonance, PFC				•				•	•		•	•
MKT capacitors for general purpose applications	•	•		•	•			•	•	•	•	•
X2/X1 capacitors	•	•		•	•			•	•	•	•	•
Y2/Y1 capacitors	•	•		•	•			•	•	•	•	•

EPCOS Components for Medical Appliances

Overview												
	Anesthesia equipment	Cleaning equipment	Clinical thermometers	Computed tomography	Defibrillation devices	Glucose meters	Lithotripsy	Magnetic resonance imaging	Patient care monitoring	Respiration technology	Ultrasound imaging systems	X-ray equipment
Inductors												
Ring core chokes, common-mode (power line)												•
SIMID 0603 ... 2220		•		•		•		•	•	•	•	•
NTC thermistors												
SMD NTCs	•	•	•	•	•	•		•	•	•	•	•
G15*	•	•	•	•	•	•		•	•	•	•	•
Inrush current limiters	•	•		•	•			•	•	•	•	•
K276, Z276, Z278		•										
S8*	•	•	•	•	•	•		•	•	•	•	•
Pressure sensors												
Anesthesia/ respiration transmitters	•									•		
AVR pressure transmitters	•									•		
CAU pressure transmitters, output current	•	•										
CAU pressure transmitters, output voltage	•	•										
SAW components												
SAW filters									•			
Surge arresters, switching spark gaps												
EC					•							
EF				•	•			•				•
TF							•					
Varistors												
Q14, Q20	•	•		•	•			•	•	•	•	•
S05 ... 20	•	•		•	•			•	•	•	•	•
T14K, T20K	•	•		•	•			•	•	•	•	•

EPCOS Components for Medical Appliances



Characteristics			
Series	Technical data	Features	Ordering code/ type
Aluminum electrolytic capacitors			
4-/5-pin snap-in terminals and solder pins	 <p>High voltage V_R: 350 ... 500 V DC C_R: 220 ... 3300 μF</p>	Useful life up to +105 °C, 3000 h +85 °C, 10000 h B43512 \varnothing 50 mm with 5-pin available	B43512/B43522
			B43513/B43523
			B43516/B43526
Capacitors for pulse applications	 <p>Solder lug and snap-in V_R: 300 ... 500 V DC C_R: 200 ... 6600 μF</p> <p>Customized screw terminal product V_R: 300 ... 500 V DC C_R: up to 44000 μF</p>	Useful life up to +60 °C, 100000 discharges	Solder lug and snap-in B43415
			B43416
Screw terminals	 <p>Low voltage V_R: 16 ... 100 V DC C_R: 1500 ... 680000 μF</p> <p>High voltage V_R: 200 ... 600 V DC C_R: 560 ... 33000 μF</p>	Useful life up to +125 °C, 2500 h +105 °C, 10000 h +85 °C, 12000 h Useful life up to +105 °C, 8000 h +85 °C, 15000 h	Low voltage B41456/B41458
			B41550/B41570
Snap-in	 <p>Low voltage V_R: 10 ... 100 V DC C_R: 560 ... 68000 μF</p> <p>High voltage V_R: 200 ... 600 V DC C_R: 47 ... 3300 μF</p>	Useful life up to +105 °C, 5000 h +85 °C, 2000 h Useful life up to +105 °C, 8000 h +85 °C, 8000 h	Low voltage B41231/B41252
			B41505
			High voltage B43630
			B43624
			B43634
			B43541
			B43640
			B43509
			B43642
			B43644
			B43544
			B43545
B43547			

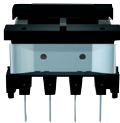





EPCOS Components for Medical Appliances



Characteristics				
Series		Technical data	Features	Ordering code/ type
CeraDiodes and ceramic transient voltage suppressors (CTVS)				SMD
CeraDiodes		C_{typ} : 0.6 ... 470 pF EIA case sizes single components: 01005, 0201, 0402 (SOD-723), 0603 (SOD-523), 1003 (SOD-323) EIA case sizes array components: 0508, 0612	Ultra low capacitance down to 0.6 pF for ESD protection of high-speed data lines such as USB, Ethernet, video Specific arrays for ESD protection of USB and Ethernet	B725**D... B725**A...
Multilayer varistors (MLV)		Operating voltage V_{RMS} : up to 150 V Surge current capability (8/20 μ s): up to 6000 A Operating temperature: up to +150 °C EIA case sizes 0402 ... 2220	Bidirectional multilayer protection components with very short response time < 0.5 ns Protection against ESD, surge, burst, switching inductive load, temporary overvoltage (depending on type) UL approved	B725**T... B725**V... B725**E...
EMC filters				
1-line filters Feedthrough capacitors Feedthrough filters		V_R : 250 ... 600 V AC / V DC I_R : 16 ... 500 A Feedthrough capacitors C_R : 0.5 ... 4.7 μ F Feedthrough filters C_R : 0.0025 ... 2 x 4.7 μ F	MKP technology (dry, self-healing) Solderless production technology Terminals as axial leads, screw connectors, soldering tags or tab connectors Metal case, polyurethane potting (UL 94 V-0)	B85121 B85321
2-line filters SIFI		V_R : 250 V AC / V DC I_R : 2 ... 36 A	Modular SIFI filter system with various cases and insertion losses Medical versions with very low leakage current Suppression of differential and common-mode interference Ambient temperature up to +100 °C 1 or 2 stage filters UL/CSA/ENEC approved	B84111F... B84112G... B84113H... B84142
3-line filters 4-line filters		V_R : 440 ... 760 V AC I_R : 3 ... 2500 A	Wide range of 3-line and 4-line filters High insertion loss Optimized leakage current Compact design Customer specific types upon request	B84143 B84144
IEC inlet filters		V_R : 250 V AC / V DC I_R : 1 ... 15 A	EMC filters with integrated IEC connector Medical versions with very low leakage current Versions with fuse or fuse and switch available	B8477...








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Characteristics				
Series		Technical data	Features	Ordering code/ type
Ferrites				
E cores EFD cores ETD cores		Material: N30, N87, N97 A _L : 50 ... 9700 nH	Wide range of core shapes, sizes and accessories Ferrite cores for power transformers and chokes	E5 ... E100 EFD10 ... EFD30 ETD29 ... ETD59
ELP cores ER cores EQ cores		Material: N49, N87, N92, N95, N97 A _L : 800 ... 14000 nH	Flat mounting height Integrated board Ferrite cores for power transformers and chokes	ELP14 ... ELP102 ER9.5 ... ER54 EQ13 ... EQ30
PM cores		Material: N87, N97 A _L : 250 ... 16000 nH	Large volume cores Compact design Accessories available	PM50 ... PM114
PQ cores		Material: N49, N87, N92, N95, N97 A _L : 1900 ... 8200 nH	Compact design Ferrite cores for power transformers and chokes	PQ16 ... PQ50
Ring cores		Material: K10, N30, N87, T35, T36, T37, T38 A _L : 70 ... 21300 nH	Ferrite cores for power transformers and chokes Epoxy-coated versions are standard	R2.5 ... R202
U cores		Material: N87, N97 A _L : 2900 ... 8900 nH	Different combinations possible Large volume cores Ferrite cores for HV power transformers	U93 ... U141






EPCOS Components for Medical Appliances



Characteristics				
Series	Technical data	Features	Ordering code/ type	
Film capacitors				
MFP capacitors		V_R : 400 ... 2500 V DC C_R : 0.47 nF ... 1.5 μ F (max. 39000 V/ μ s) V_{RMS} : 250 ... 750 V AC	Very high dv/dt and frequency for MFP technology Operating temperature up to +110 °C Service life 200000 h at rated voltage	B32682 ... B32686
		V_{RMS} : 400 ... 500 V AC V_R : 1000 ... 2000 V DC C_R : 22 nF ... 0.68 μ F (max. 4500 V/ μ s)	Strap terminals Service life 200000 h at V_R Operating temperature up to +110 °C	B32686S...
MKP DC link		V_R : 450 ... 1300 V DC C_R : 1.5 ... 480 μ F	High-density series, compact Operating temperature up to +105 °C Service life 100000 h at 1.0 • V_R , +70 °C High vibration resistance due to 4-pin terminals 2 and 4-pin versions Lead spacing 27.5 ... 52.5 mm	B32774 ... B32778
		V_R : 300 ... 875 V DC C_R : 0.47 ... 270 μ F	High power: higher RMS current capability than B3277x Operating temperature up to +105 °C Service life 200000 h at 1.0 • V_R , +85 °C High vibration resistance due to 4-pin terminals 2 and 4-pin versions Lead spacing 27.5 ... 52.5 mm	B32674 ... B32678
MKP snubber		V_R : 850 ... 2000 V DC C_R : 0.068 ... 5.6 μ F	High dv/dt and current/frequency capability Operating temperature up to +110 °C Service life 200000 h at 1.0 • V_R , +85 °C 17 different terminal versions	B32656S ... B32658S
MKP general purpose		V_R : 250 ... 2000 V DC C_R : 1 nF ... 40 μ F	For snubber, resonant or switching High dv/dt and RMS current capability Operating temperature up to +110 °C Lead spacing 10 ... 37.5 mm Possibility of AC and/or DC operation	B32652 ... B32658
				B32671L ... B32672L





EPCOS Components for Medical Appliances



Characteristics				
Series		Technical data	Features	Ordering code/ type
Film capacitors				
MMKP		V_R : 400 ... 2000 V DC C_R : 2.2 ... 560 nF	Operating temperature up to +110 °C Double sided metallized For snubber, resonant or switching High dv/dt and I_{RMS}	B32641 ... B32643
MKP PFC		V_R : 450 ... 630 V DC C_R : 0.068 ... 2.2 μF	Operating temperature up to +125 °C Super miniaturized For power factor connection High current, power factor connection	B32671P ... B32673P
		V_R : 220 ... 310 V AC C_R : 10 nF ... 22 μF		B32671Z ... B32676Z
MKT capacitors for general purpose applications		V_R : 63 ... 630 V DC C_R : 1 nF ... 220 μF	General purpose: e.g. blocking, coupling, decoupling, bypassing High-reliable DC-link capacitors for low voltage power supplies and converters Operating temperature up to +125 °C Service life 200000 h at 1.0 · V_R , +85 °C	B32520 ... B32529
MKT AC X2 heavy duty		V_{RMS} : 305 V AC C_R : 47 nF ... 2.2 μF	+85 °C/85% RH/1000 h/240 V AC +40 °C/93% RH/2000 h/305 V AC For severe ambient conditions Between the lines and series application X2 safety class per UL/IEC High stability on capacitance	B32932 ... B32936
X2 humidity		V_{RMS} : 305 V AC C_R : 0.1 ... 15 μF	+85 °C/85% RH/1000 h/240 V AC +60 °C/95% RH/1000 h/240 V AC For severe ambient conditions Between the lines and series application X2 safety class per UL/IEC High stability on capacitance	B32922H/J ... B32926H/J

EPCOS Components for Medical Appliances



Characteristics				
Series		Technical data	Features	Ordering code/ type
Film capacitors				
X2		V_{RMS} : 305 V AC C_R : 10 nF ... 30 μ F	X2 class for interference suppression and EMC Approved acc. to international standards Across the line connection Lead spacing 10 ... 52.5 mm	B32921 ... B32928
X1		V_{RMS} : 330 V AC C_R : 10 nF ... 6.8 μ F V_{RMS} : 530 V AC C_R : 6.8 nF ... 5.6 μ F	X1 class for interference suppression and EMC Approved acc. to international standards Across the line connection Lead spacing 10 ... 52.5 mm	B32911 ... B32918
Y2		V_{RMS} : 300 V AC C_R : 1 nF ... 1 μ F	Y2 class for interference suppression and EMC Approved acc. to international standards Line to ground connection Lead spacing 10 ... 37.5 mm	B32021 ... B32026
Y1		V_{RMS} : 500 V AC C_R : 1 ... 10 nF	Y1 class for interference suppression and EMC Approved acc. to international standards Line to ground connection Lead spacing 15 ... 22.5 mm	B81123

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Characteristics				
Series		Technical data	Features	Ordering code/ type
Inductors				
Ring core chokes, double	   	$L_R:$ 0.19 ... 100 mH $I_R:$ 0.25 ... 62 A $V_R:$ up to 1000 V DC	High resonance frequency owing to special winding technique Approx. 1% stray inductance for symmetrical interference suppression Plastic case with terminals Higher current chokes on baseplate, winding wire serves as solder terminal	B8272... B82791G2... B82791H2...
SMD				
Ring core chokes, triple/quad	 	$L_R:$ 0.12 ... 6 mH $I_R:$ 6 ... 62 A	High power handling	B8274... B8276...

EPCOS Components for Medical Appliances



Characteristics				
Series		Technical data	Features	Ordering code/ type
Inductors				
SMD				
SIMID 0603-C		L_R : 1 ... 220 nH I_R : 110 ... 1800 mA EIA case size: 0603	Copper plated ceramic core Laser cut winding Epoxy coated	B82496C...
SIMID 0805-F		L_R : 2.7 ... 6800 nH I_R : 80 ... 1000 mA EIA case size: 0805	Cubic coil with ceramic or ferrite core Epoxy molded flat top for vacuum pickup Winding ends welded to the terminals	B82498F...
SIMID 1210-100		L_R : 0.0082 ... 100 μ H I_R : 65 ... 800 mA EIA case size: 1210	Ceramic or ferrite drum core Laser welded winding Flame retardant molding	B82422-100
SIMID 1210-H		L_R : 1 ... 680 μ H I_R : 61 ... 1150 mA EIA case size: 1210	Ferrite drum core Laser welded winding Flame retardant molding	B82422H...
SIMID 1812-T/C		L_R : 1 ... 1000 μ H I_R : 55 ... 1300 mA EIA case size: 1812	Ferrite drum core Laser welded winding Flame retardant molding	B82432C...
				B82432T...
SIMID 2220		L_R : 1 μ H ... 10 mH I_R : 25 ... 3510 mA EIA case size: 2220	Ferrite drum core Laser welded winding Flame retardant molding	B82442







EPCOS Components for Medical Appliances



Characteristics				
Series		Technical data	Features	Ordering code/ type
NTC thermistors				
SMD NTC SMD		Temperature range: $-40 \dots +150 \text{ }^\circ\text{C}$ Rated resistance at $+25 \text{ }^\circ\text{C}$: $100 \text{ } \Omega \dots 680 \text{ k}\Omega$ Resistance tolerance: $\pm 1\%, \pm 3\%, \pm 5\%$; EIA case sizes: 0402, 0603, 0805	Multilayer SMD NTC with inner electrodes and AgNiSn termination High long-term aging stability in high-temperature environments Very good resistance stability during soldering UL approval (E69802)	B572**V... B573**V... B574**V...
G1540 G1550 G1560		Temperature range: $-55 \dots +300 \text{ }^\circ\text{C}$ (G1540: $+250 \text{ }^\circ\text{C}$) Rated resistance at $+25 \text{ }^\circ\text{C}$: $2 \dots 230 \text{ k}\Omega$ Resistance tolerance: $+1 \dots +3\%$ Head diameter: 0.9 mm (G1540)	High-temperature resistant Very small head diameter Non-standard wire configurations	B57540G1... B57550G1... B57560G1...
G1541 G1551 G1561		Temperature range: $-55 \dots +260 \text{ }^\circ\text{C}$ (G1541: $+250 \text{ }^\circ\text{C}$) Rated resistance at $+25 \text{ }^\circ\text{C}$: $2 \dots 230 \text{ k}\Omega$ Resistance tolerance: $+1 \dots +5\%$ Insulation resistance: $> 100 \text{ M}\Omega$ Insulation voltage: 500 V DC (1 s) Head diameter: 1.4 mm (G1541)	High-temperature resistant Insulated wires with high insulation voltage Very small head diameter Non-standard wire configurations	B57541G1... B57551G1... B57561G1...
Inrush current limiters P11 P13 P27 S153 S235 S236 S237 S238 S364 S464		Rated resistance at $+25 \text{ }^\circ\text{C}$: $1 \dots 80 \text{ } \Omega$ I_{max} : up to 20 A V_{RMS} : 265 V	Limiting of inrush current Taped versions for automatic processing UL approval (E69802) available High accuracy and easy mounting Lead spacing 5 and 7.5 mm	B57***S****M...

EPCOS Components for Medical Appliances



Characteristics				
Series		Technical data	Features	Ordering code/ type
NTC thermistors				
K276		Temperature range: -10 ... +100 °C Typical R ₂₅ value: 4.8, 12 kΩ Resistance tolerance: 2% Insulation voltage: 3750 V AC Thermal time constant τ _a water approx. 20 s	NTC thermistor potted in a compact stainless steel case Suitable for purifier Suitable for use in corrosive environments Cost-optimized ready to use solution	B57276K...
Z276		Temperature range: -10 ... +100 °C Typical R ₂₅ value: 4.8 kΩ Resistance tolerance: 2% Insulation voltage: 3750 V AC Thermal time constant τ _a water approx. 10 s	UL approval (E69802) RAST 2.5 and 5-plug terminals available VDE protection class II (K276) Variety of R/T characteristics and tolerances available	B57276Z...
Z278		Temperature range: -10 ... +100 °C Typical R ₂₅ value: 20 kΩ Resistance tolerance: 2% Insulation voltage: 500 V DC Thermal time constant τ _a water approx. 4 s		B57278Z...
S86*		Temperature range: -55 ... +155 °C Rated resistance at +25 °C: 2 ... 100 kΩ Resistance tolerance: +1 ... +5%	Taped versions for automatic processing UL approval (S86*) Lead spacing 2.5 and 5.0 mm (S87*, S88*) Non-standard lead configurations	B5786*S...
S87*				B5787*S...
S88*				B5788*S...
Pressure sensors				
Anesthesia/ respiration transmitters		Pressure range: 0 ... 100 mbar Supply voltage: 4.75 ... 5.50 V Output voltage: 0.5 ... 4.5 V Pressure interface: Tube fitting, diameter 4.8 and 14 mm long PCB size: 30 × 30 mm Height: approx. 34 mm	Other pressure ranges upon request Media (typ.): O ₂ , CO ₂ , N ₂ , N ₂ O, He 0 ... 100 vol. % Halothan, Sevofluran, Enfluran, Isofluran 0 ... 10 vol. % Desfluran 0 ... 20 vol. % Humidity 0 ... 95%	B58621N2111A076
AVR pressure transmitters		Pressure range: 0 ... 16 mbar, 0 ... 100 mbar, 0 ... 7 bar Supply voltage: 2.7 ... 5.5 V Digital output: I ² C, SPI Pressure interface: 2 ports (diam. 1 mm) PCB size: 24.5 × 26 mm Height: approx. 6.5 mm	Other pressure ranges upon request Media port A: Air, Non-aggressive fluids and gases Media port B: Air, Non-aggressive gases	B58621U4100B327 B58621U2700B033 B58621U2894B034

EPCOS Components for Medical Appliances



Characteristics					
Series		Technical data	Features	Ordering code/ type	
Pressure sensors					
CAU pressure transmitters, output current		Pressure range:	0 ... 0.1 up to 0 ... 25 bar	Other pressure ranges upon request	B58621H5820A040
		Supply voltage:	10 ... 30 V	Media:	B58621H5820A041
		Output current:	4 ... 20 mA	Non-aggressive fluids and gases	B58621H5820A042
		Pressure interface:	Thread G 1/8", 6.5 mm long	Stainless steel case	B58621H5820A043
		Total length without cable:	approx. 66 mm		B58621H5820A046
CAU pressure transmitters output voltage		Pressure range:	0 ... 0.1 up to 0 ... 25 bar	Other pressure ranges upon request	B58621H5810A023
		Supply voltage:	7.5 ... 30 V	Media:	B58621H5810A024
		Output voltage:	0.5 ... 4.5 V	Non-aggressive fluids and gases	B58621H5810A025
		Pressure interface:	Thread G 1/8", 6.5 mm long	Stainless steel case	B58621H5810A026
		Total length without cable:	approx. 66 mm		B58621H5810A027
		Cable length:	2 m	B58621H5810A029	
		Case diameter:	22 mm	B58621H5810A030	
SAW components					
Ceramic		$F_c = 315$ MHz, usable BW 1 MHz	50 Ω terminating impedance	B39321B3722U410	
		$F_c = 433.92$ MHz, usable BW 1.6 MHz Small SMD package size: 3.0 x 3.0 x 1.1 mm (typ.)	Operating temperature -40 ... +125 °C US and Europe ISM bands	B39431B3721U410	
CSSP3		$F_c = 869$ MHz, usable BW 2 MHz	50 Ω terminating impedance	B39871B4316P810	
		$F_c = 915$ MHz, usable BW 26 MHz Small SMD package size: 1.4 x 1.1 x 0.4 mm (typ.)	Operating temperature -40 ... +85 °C US and Europe ISM bands	B39921B4301F210	
CSSP3		$F_c = 2442$ MHz, usable BW 79 MHz Small SMD package size: 1.1 x 0.9 x 0.41 mm (typ.)	WLAN/BT BAW filter for co-existence with LTE	B39242B8840P810	
		$F_c = 2442$ MHz, usable BW 79 MHz	WLAN/BT BAW filter for co-existence with LTE	B39242B8328P810	
		$F_c = 2446.5$ MHz, usable BW 93 MHz Small SMD package size: 1.4 x 1.1 x 0.41 mm (typ.)	WLAN/BT SAW filter for co-existence with 3G	B39252B8312P810	
CSSP3		$F_c = 2442$ MHz, usable BW 79 MHz Small SMD package size: 1.4 x 1.1 x 0.41 mm (typ.)	WLAN/BT BAW filter for co-existence with LTE industrial grade	B39242B9634P810	

EPCOS Components for Medical Appliances



Characteristics				
Series		Technical data	Features	Ordering code/ type
Surge arresters, switching spark gaps				
EC		DC breakdown voltage: 90 V Nominal impulse discharge current: 5 kA	High insulation resistance	B88069X0720S102
EF		DC breakdown voltage: 470, 800, 1000 V Nominal impulse discharge current: 5 kA	High insulation resistance Short response time Follow current limiting	B88069X2641... B88069X5080... B88069X6451...
TF		Slef-breakdown voltage 25 kV, 28 kV Triggered breakdown voltage during lifetime 10 ... 22 kV	Long lifetime Stable function over lifetime Very short breakdown time	B88069X3523B011 B88069X9091B011 B88069X1093B011
Varistors				
Q14		I_{max} 8/20 μ s: 8 kA	Operating voltage V_{RMS} : 11 ... 1100 V Maximum load capacity at minimum component size Height miniaturization	B72214Q...
Q20		I_{max} 8/20 μ s: 15 kA		B72220Q...
S05		I_{max} 8/20 μ s: up to 800 A	Operating voltage V_{RMS} : 11 ... 1100 V High surge current ratings up to 12 kA High energy ratings (2 ms) up to 595 J	B72205S...
S07		I_{max} 8/20 μ s: up to 1750 A		B72207S...
S10		I_{max} 8/20 μ s: up to 3.5 kA		B72210S...
S14		I_{max} 8/20 μ s: up to 6 kA		B72214S...
S20		I_{max} 8/20 μ s: up to 12 kA		B72220S...
T14K		I_{max} 8/20 μ s: 6 kA	Operating voltage V_{RMS} T14K: 130 ... 420 V T20K: 130 ... 1000V Disk varistor and fuse in one housing Space saving Monitoring option with 3 rd lead UL approval (1449)	B72214T...
T20K		I_{max} 8/20 μ s: 10 kA		B72220T...

EPCOS Components for Medical Appliances

Accredited EMC laboratory



The EPCOS EMC Laboratory in Regensburg offers comprehensive, in-depth EMC services: from consulting and pre-compliance investigations on prototypes to conformity testing of series-production equipment.

The excellently equipped laboratory, combined with many years' experience and EMC expertise, as well as active participation in national and international standardization bodies, provides a solid foundation for meeting customers' requirements. Investigations performed side by side with the development process determine the measures required to observe the EMC limits: these measures are documented in the measurement report in a manner that is transparent for the developers.

A test report provides proof of compliance with the relevant standards and is the basis for the customer's declaration of conformity.

The EMC laboratory in Regensburg has been an accredited test laboratory since October 1994. Accreditation in accordance with the guidelines of the Deutsche Akkreditierungsstelle GmbH (DAkkS) now meets the current EN ISO IEC 17025 quality standard for laboratories as the basis for the guaranteed independence, impartiality and integrity of its measurement and test results.

Installations

The EMC laboratory has a semi-anechoic chamber for field-strength measurements in accordance with the relevant standards at a measurement distance of 10 m between the antenna and the equipment under test. Special facilities such as large entrances, exhaust gas extraction, power supplies up to 100 A as well as resistive and inductive (motor) loads even permit the testing of bulky or high-powered equipment.

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Get in Contact

Europe

Austria

TDK Austria GesmbH
T +43 1 25 63 630 56 39
F +43 1 25 63 630 56 44
sales.austria@eu.tdk.com

Bulgaria, Greece, Macedonia

TDK Austria GesmbH
T +43 1 25 63 630 56 30
F +43 1 25 63 630 56 44
sales.csee@eu.tdk.com

Czech Republic

TDK Czech s.r.o.
T +420 2 33 03 22 81
F +420 2 33 03 22 89
sales.czech@eu.tdk.com

Finland, Estonia

TDK Nordic OY
T +358 9 54 80 70 00
F +358 9 54 80 70 01
sales.nordic@eu.tdk.com

France, Belgium, Luxembourg, Malta

TDK Electronics France SAS
T +33 1 49 46 67 89
F +33 1 49 46 67 67
sales.france@eu.tdk.com

Germany, Liechtenstein, Netherlands, Switzerland

TDK Europe GmbH
T (D) 0180 500 33 48
(0.14 Euro/min.)
(NL) +31 70 33 10 611
(CH) +49 89 54020 2691
F +49 89 54020 2913
sales.germany@eu.tdk.com

Hungary

TDK Electronics Hungary Ltd.
T +36 1 436 07 20
F +36 1 436 07 21
sales.hungary@eu.tdk.com

Italy

TDK Italy S.r.l.
T +39 02 50 99 54 25
F +39 02 50 99 54 55
sales.italy@eu.tdk.com

Poland, Latvia, Lithuania

TDK Polska Sp. z o.o.
T +48 22 24 60 409
F +48 22 24 60 400
sales.poland@eu.tdk.com

Portugal

TDK Electronics Spain S.L.U.
T +34 93 480 42 92
+34 93 480 42 68
F +34 93 480 42 31
sales.iberia@eu.tdk.com

Romania

TDK Austria GesmbH
T +43 1 25 63 630 56 30
F +43 1 25 63 630 56 44
sales.romania@eu.tdk.com

Russia, Belarus, Kazakhstan, Moldavia, Ukraine

TDK CIS LLC
T +7 495 663 21 00
+7 495 663 21 22
sales.cis@eu.tdk.com

Slovakia

TDK Austria GesmbH
T +43 1 25 63 630 56 30
F +43 1 25 63 630 56 44
sales.slovakia@eu.tdk.com

Bosnia and Herzegovina, Croatia, Montenegro, Serbia, Slovenia

TDK Austria GesmbH
T +43 1 25 63 630 56 30
F +43 1 25 63 630 56 44
sales.slovenia@eu.tdk.com

Spain

TDK Electronics Spain S.L.U.
T +34 93 480 42 92
+34 93 480 43 33
F +34 91 514 70 14
sales.iberia@eu.tdk.com

Sweden, Iceland, Denmark, Norway

TDK Nordic AB
T +46 8 4 77 27 00
F +46 8 4 77 27 01
sales.nordic@eu.tdk.com

Turkey

TDK Europe GmbH
T +90 216 5 69 81 01
F +90 216 4 64 07 56
sales.turkey@eu.tdk.com

United Kingdom, Ireland

TDK UK Limited
T +44 13 44 38 15 10
F +44 13 44 38 15 12
sales.uk@eu.tdk.com

Asia

Afghanistan, Iran, Iraq, Jordan, Lebanon, Pakistan, Syria

TDK Europe GmbH
T +90 216 5 69 81 01
F +90 216 4 64 07 56
sales.turkey@eu.tdk.com

China

EPCOS (Shanghai) Ltd.
T +86 21 22 19 15 00
F +86 21 22 19 15 99
sales.cn@epcos.com

Hong Kong

EPCOS Limited
T +852 36 69 82 00
F +852 36 69 82 56
sales.cn@epcos.com

India, Bahrain, Bangladesh, Kuwait, Nepal, Oman, Qatar, Saudi Arabia, Sri Lanka, United Arab Emirates

EPCOS India Private Ltd.
T +91 80 40 39 06 00
F +91 80 40 39 06 03
sales.in@epcos.com

Israel

TDK Sales Representative
T +972 73 2676 317
sales.israel@eu.tdk.com

Japan

TDK Corporation
T +81 3 68 52 73 00
inquiry@jp.tdk.com

Korea

EPCOS Korea LLC
T +82 2 21 56 68 18
F +82 2 21 56 68 98
sales.kr@epcos.com

Malaysia

EPCOS RDC SDN. BHD.
T +60 6 79 98 168
F +60 6 79 98 162
sales.asean@epcos.com

Philippines

c/o TDK Electronics Philippines Corporation
T +63 49 541 31 41 66 30
+63 49 541 31 41 66 31
F +63 49 541 31 40
sales.asean@epcos.com

Singapore, Indonesia, Thailand, Vietnam

EPCOS Pte., Ltd.
T +65 68 41 20 11
F +65 67 44 69 92
sales.asean@epcos.com

Taiwan

EPCOS Taiwan Co. Ltd.
T +886 2 26 55 76 76
F +886 2 27 82 03 89
sales.tw@epcos.com

Americas

USA, Canada, Mexico

EPCOS Inc.
T +1 732 9 06 43 00
F +1 732 9 06 43 95
sales.usa@epcos.com

South America

EPCOS do Brasil Ltda.
T +55 11 32 89 95 99 Ext. 6851
F +55 11 32 89 99 40
sales.br@epcos.com

Australia

Australia, New Zealand

TDK Sales Representative
T +61 3 95 66 72 17
F +61 3 95 66 72 99
sales.au@epcos.com

Africa

Egypt

TDK Europe GmbH
T +90 216 5 69 81 01
F +90 216 4 64 07 56
sales.turkey@eu.tdk.com

Morocco, Tunisia

TDK Electronics France SAS
T +33 1 49 46 67 89
F +33 1 49 46 67 67
sales.france@eu.tdk.com

South Africa

TDK Sales Representative
T +27 11 458 90 00 32
F +27 11 458 90 34
sales.southernafrica@epcos.com

