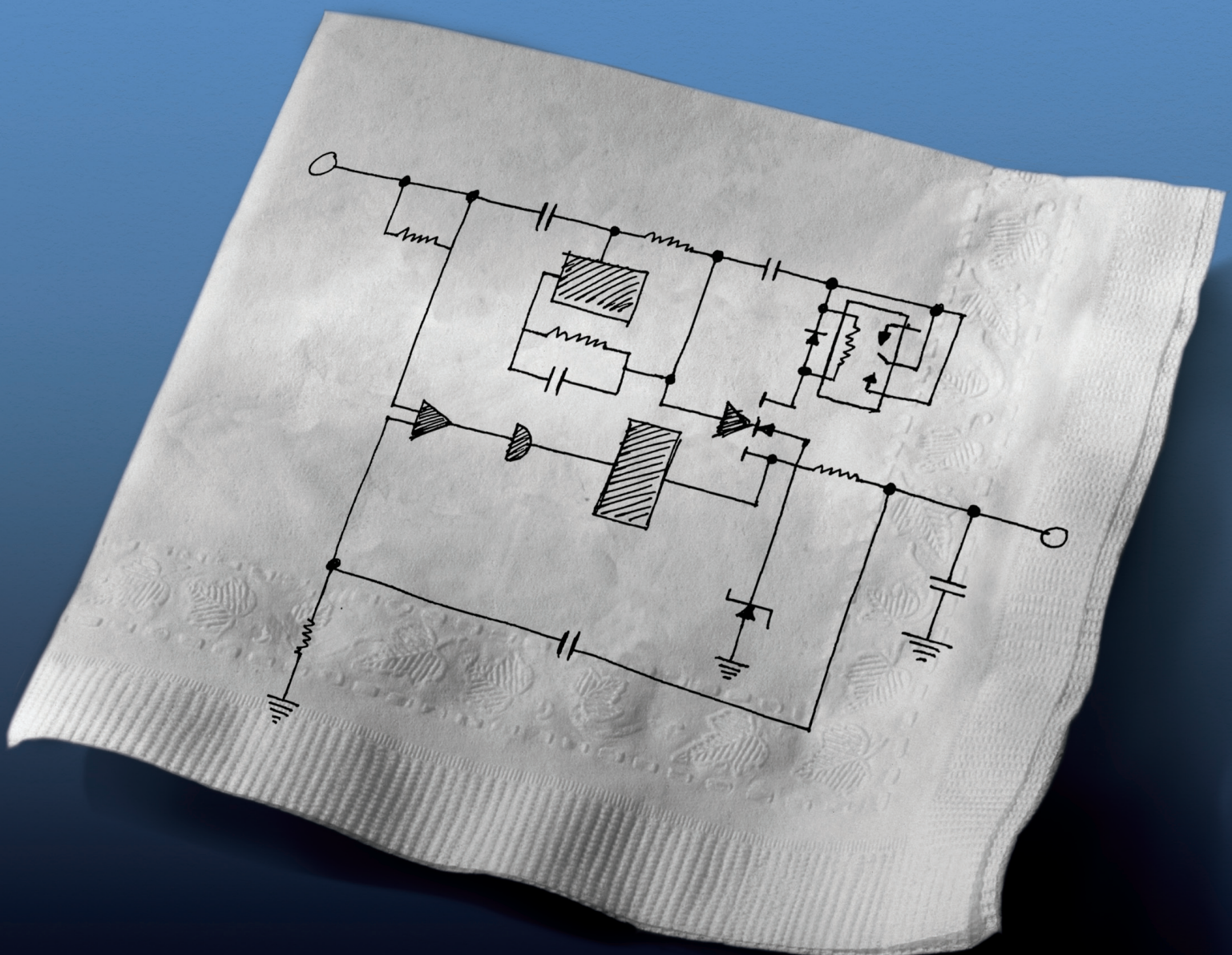

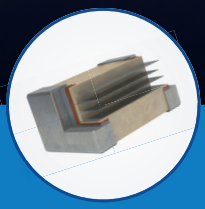

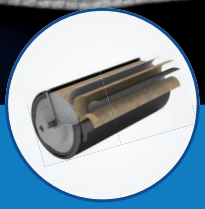

Capacitors for Power Electronics

KEMET makes it possible.

Electronic Components
KEMET
CHARGED.®

Electronic Components

KEMET

CHARGED.®

Why Choose KEMET

KEMET Electronics Corporation is a leading global supplier of electronic components. We offer our customers the broadest selection of capacitor technologies in the industry, along with an expanding range of electromechanical devices, electromagnetic compatibility solutions and supercapacitors. Our vision is to be the preferred supplier of electronic component solutions for customers demanding the highest standards of quality, delivery and service.

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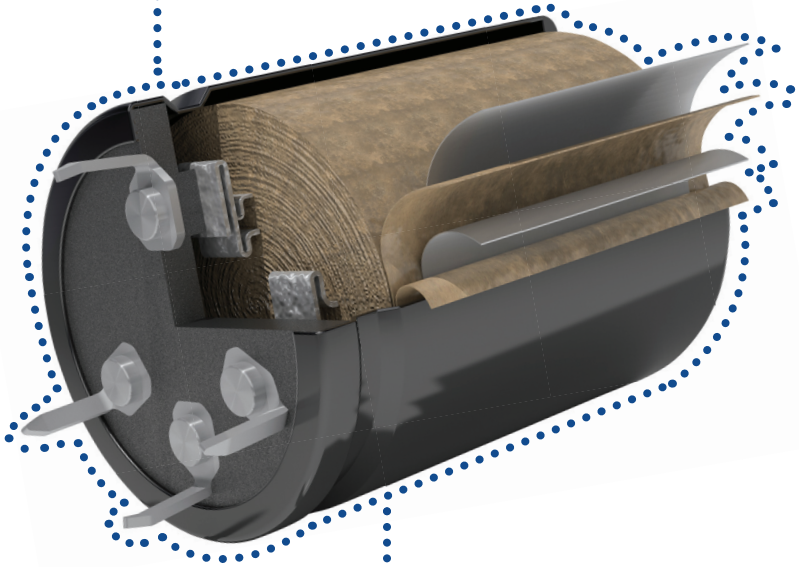
Aluminum Electrolytic



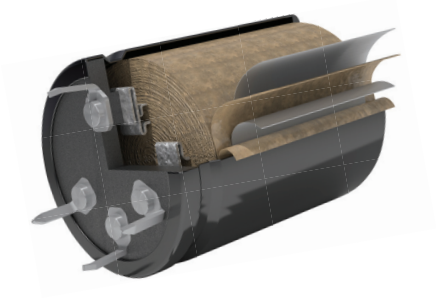
Snap-In Series

Features & Benefits

- Long-life, high-performance specifications for the most demanding applications
- Slit foil design technology produced specifically for audio applications (ALC10S and ALN20S only)
- High vibration capabilities up to 20 g (PEH526 only)
- Low ESR 400 V electrolyte available, reducing ESR by up to 30% and resulting in long-life due to lower heat generation (ALC10 and ALC40 only)
- Wide range of terminals available
- Standard, optimized and custom designs
- Large can and high voltage designs
- Comprehensive technical design and support

Applications

- Solar power, wind power and other alternative energy generation
- Automotive
- Variable speed drives
- High reliability and long-life applications
- Uninterruptible power supplies
- Switch mode power supplies
- Energy storage or pulse operation for telecommunication power supplies
- Frequency inverters
- Laser power supplies
- AC motor control



Electrical/Physical Characteristics

Series	Case Size (mm)		Tolerances	Temperature Range (°C)	Voltage Options (VDC)	Capacitance Values (µF)
	D	L				
ALC10 +85°C	25 – 50	30 – 105	±20%	-40 to +85	35 – 550	56 – 82,000
ALC10S +85°C	35 – 40	50 – 90	±20%	-40 to +85	50 – 100	10,000
ALC40 +105°C	25 – 50	30 – 105	±20%	-40 to +105	25 – 500	47 – 120,000
PEH506 +85°C	22 – 35	25 – 55	±20%	-40 to +85	35 – 450	68 – 27,000
PEH526 +125°C	22 – 30	25 – 35	±20%	-40 to +125	25 – 80	820 – 6,800
PEH532 +105°C	22 – 35	25 – 55	±20%	-40 to +105	35 – 450	68 – 27,000
PEH534 +105°C	22 – 40	30 – 100	±20%	-40 to +105	35 – 450	150 – 22,000
PEH536 +105°C	22 – 40	30 – 100	±20%	-40 to +105	35 – 450	47 – 18,000
ALP20 and ALT20/21 +85°C	25 – 40	45 – 105	±20%, -10/+30%	-40 to +85	40 – 450	22 – 150,000
ALP22 and ALT22/23 +85°C	25 – 40	45 – 105	±20%	-40 to +85	40 – 450	22 – 150,000
ALN20S +85°C	40	55 – 105	±20%, -10/+30%	-40 to +85	50 and 100	10,000
ELH +85ºC	22 – 35	20 – 60	±20%	-40 to +85	6.3 – 450	47 – 120,000
ELG +105ºC	22 – 35	20 – 60	±20%	-40 to +105	6.3 – 450	47 – 82,000

KEMET Products

85°C Electrolytic Capacitors

ALC10
56 – 82,000 µF
35 – 550 VDC
±20% tolerance
High ripple current
Excellent surge capability
Made in Portugal

Reduced Size

PEH506
68 – 27,000 µF
35 – 450 VDC
±20% tolerance
High ripple current
Low ESR construction
Made in China

85°C Audio

ALC10S
10,000 µF
50 – 100 VDC
±20% tolerance
Slit foil technology
Made in Portugal

ALN20S
10,000 µF
50 – 100 VDC
±20%, (-10/+30%) tolerance
Slit foil technology
T-Network Capacitor
Made in Portugal

105°C Electrolytic Capacitors

Increased Temp

ALC40
47 – 120,000 µF
25 – 500 VDC
±20% tolerance
High ripple current
Excellent surge capability
Made in Portugal

Reduced Size

PEH532
68 – 27,000 µF
35 – 450 VDC
±20% tolerance
High ripple current
Low ESR construction
Made in China

Increased Life

PEH534
150 – 22,000 µF
35 – 450 VDC
±20% tolerance
High ripple current
Low ESR construction
Made in China

Increased Life

PEH536
47 – 18,000 µF
35 – 450 VDC
±20% tolerance
Low ESR construction
High ripple current
Made in China

125°C Electrolytic Capacitors

Increased Temp

PEH526
820 – 6,800 µF
25 – 80 VDC
±20% tolerance
High ripple current
High vibration resistant
Made in China

85°C Solder Pin/Tab Terminations
(For maintenance/replacement purposes)

ALP/T 20/21
22 – 150,000 µF
40 – 450 VDC
±20%, (-10/+30%) tolerance
High ripple current
Low ESR construction
Made in Portugal

ALP/T 22/23
22 – 150,000 µF
40 – 450 VDC
±20% tolerance
High ripple current
Low ESR construction
Made in Portugal

General Purpose Capacitors

85°C

ELH
47 – 120,000 µF
6.3 – 450 VDC
±20% tolerance
Made in China

105°C

ELG
47 – 82,000 µF
6.3 – 450 VDC
±20% tolerance
Made in China

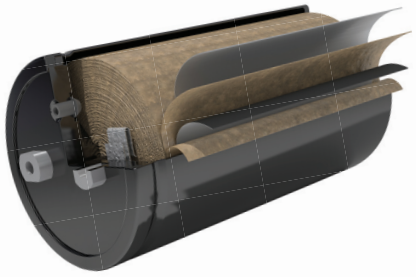
Screw Terminal Series

Features & Benefits

- Long-life, high-performance specifications for the most demanding applications
- High vibration capabilities up to 20 g (ALS32/33 and ALS42/43 only)
- Low inductance option available, reducing inherent inductance by as much as 40% (ALS30/31, ALS32/33 and ALS36/37 only)
- Low ESR 400 V electrolyte available, reducing ESR by up to 30% and resulting in long-life due to lower heat generation (ALS30/31 and ALS40/41 only)
- Wide range of terminals available
- Standard, optimized and custom designs
- Large can and high voltage designs
- Comprehensive technical design and support

Applications

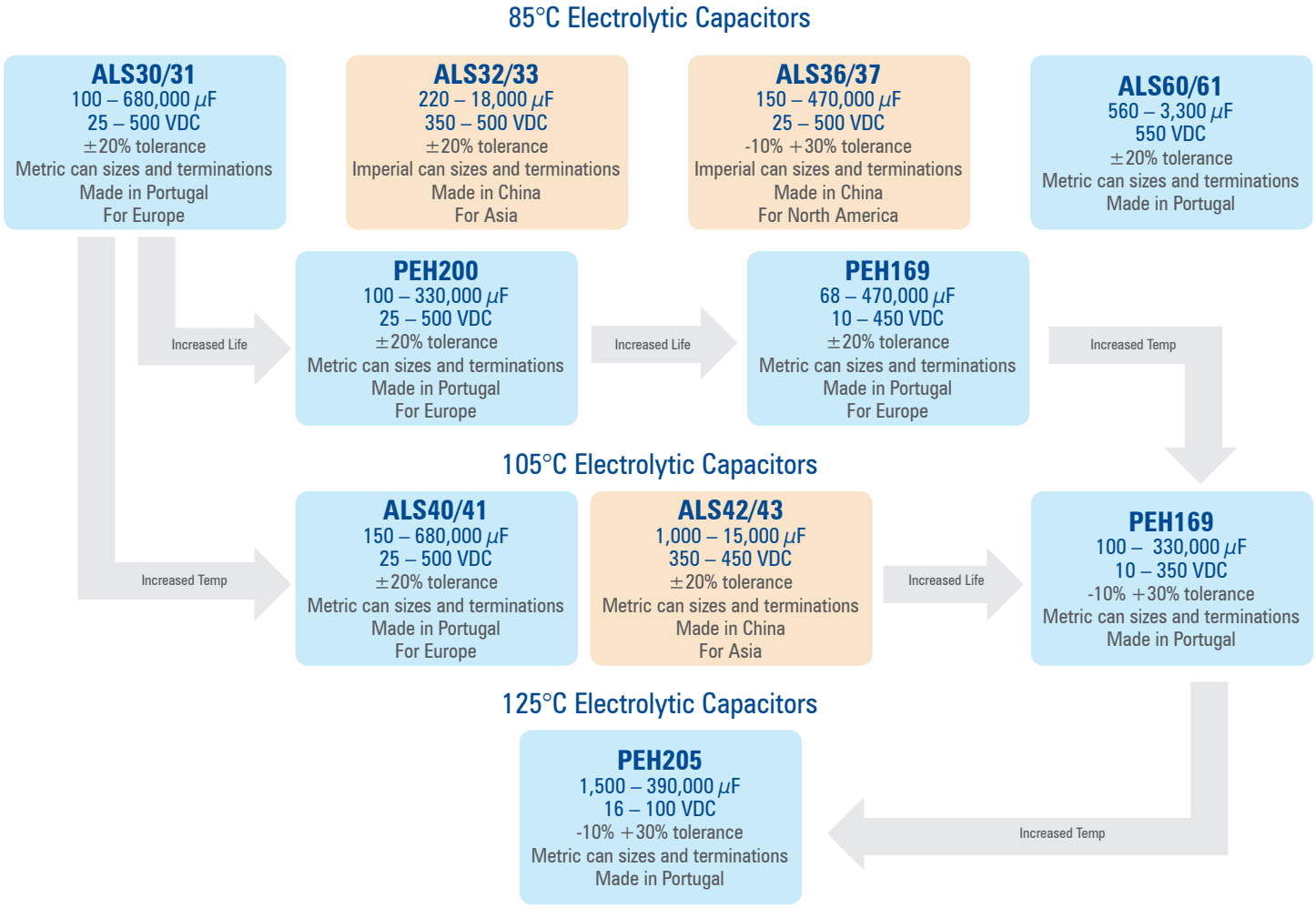
- Solar power, wind power and other alternative energy generation
- Transportation
- Variable speed drives
- High reliability and long-life applications
- Uninterruptible power supplies
- Switch mode power supplies
- Energy storage or pulse operation for telecommunication power supplies
- Frequency inverters
- Laser power supplies
- AC motor control



Electrical/Physical Characteristics

Series	Case Size (mm)		Tolerances	Temperature Range (°C)	Voltage Options (VDC)	Capacitance Values (µF)
	D	L				
ALS30/31 +85°C	36 – 90	52 – 220	±20%	-40 to +85	25 – 500	100 – 680,000
ALS32/33 +85°C	36 – 90	55 – 220	±20%	-40 to +85	350 – 500	220 – 18,000
ALS36/37 +85°C	1.375 – 3 (inches)	2.125 – 8.625 (inches)	-10/+30%	-40 to +85	25 – 500	150 – 470,000
ALS40/41 +105°C	36 – 90	52 – 220	±20%	-40 to +105	25 – 500	150 – 680,000
ALS42/43 +105°C	51 – 90	80 – 220	±20%	-40 to +105	350 – 450	1,000 – 15,000
ALS60/61 +85°C	51 – 90	82 – 146	±20%	-40 to +85	550	560 – 3,300
PEH169 +85°C	35 – 90	51 – 220	±20%, -10/+30%	-40 to +85	10 – 450	68 – 470,000
PEH169 +105°C	35 – 90	51 – 220	-10/+30%	-40 to +105	10 – 350	100 – 330,000
PEH200 +85°C	35 – 90	51 – 220	±20%	-40 to +85	25 – 500	100 – 330,000
PEH205 +125°C	35 – 75	51 – 145	-10/+30%	-55 to +125	16 – 100	1,500 – 390,000

KEMET Products



Axial Leads & Radial Crown Series

Features & Benefits

- Very long operational life
- Outstanding electrical performance
- High vibration capabilities
- Extremely high ripple current
- Operating temperature of +105°C and +150°C
- Polarized all-welded design
- Low ESR and ESL
- Long-life due to minimal heat generation
- Radial crown 16 mm diameter options available, allowing for mounted stand-up designs (PEG126, PEG220, PEG225 and PEG226 only)

Applications

- Smoothing
- Decoupling
- Process control
- High reliability and long-life applications
- Automotive
- Switched mode power supplies
- Energy storage or pulse operation for telecommunication power supplies
- LED/lamp power supplies
- Low voltage power electronic applications

Electrical/Physical Characteristics

Series	Case Size (mm)		Tolerances	Temperature Range (°C)	Voltage Options (VDC)	Capacitance Values (µF)
	D	L				
PEG124 +105°C and +125°C	10 – 20	20 – 46	-10/+30% (-10/+50%, ±20% select values) at 100 Hz/+20°C	-40 to +105 -40 to +125	10 – 450	1 – 4,700
PEG126 +150°C	16 – 20	29 – 46	-10/+30% (±20% select values) at 100 Hz/+20°C	-40 to +150	25 – 63	250 – 4,000
PEG127 +150°C	10 – 13	20 – 37	-10/+30% at 100 Hz/ +20°C	-40 to +150	25 – 63	33 – 1,300
PEG130 +105°C	20	29 – 46	-10/+30% at 100 Hz / +20°C	-40 to +105	25 – 63	900 – 6,300
PEG220 +150°C	16 – 20	26.5 – 42.5	-10/+30% (±20% select values) at 100 Hz/+20°C	-40 to +150	25 – 63	250 – 4,700
PEG225 +125°C and +150°C	16 – 20	26.5 – 42.5	-10/+30% (±20% select values) at 100 Hz/+20°C	-40 to +125 (at UR) -40 to +150 (at reduced voltage)	25 – 63	470 – 6,300
PEG226 +150°C	16 – 20	26.5 – 42.5	-10/+30% (±20% select values) at 100 Hz/+20°C	-40 to +150	25 – 63	250 – 4,700
PEH Radial Crown	16	27 – 39	PEH Radial crown for PEG126, PEG220, PEG225 and PEG226. Radial crown options use for mounted stand-up designs.			

KEMET Products

Axial 105°C Electrolytic Capacitors

PEG124
1 – 4,700 µF
10 – 63 VDC
-10/+30% (-10/+50%, ±20%) tolerance
Very long operational life
Outstanding electrical performance

PEG130
900 – 6,300 µF
25 – 63 VDC
-10/+30% tolerance
Very long operational life
Minimal heat generation

Radial Crown

PEH
PEH radial crown for PEG126, PEG220, PEG225 and PEG226. Radial crown 16 mm diameter options available, allowing for mounted stand-up designs.

Increased Temperature

Axial 125°C Electrolytic Capacitors

PEG124
1 – 470 µF
100 – 450 VDC
-10/+30% (-10/+50%, ±20%) tolerance
Outstanding electrical performance

PEG225
470 – 6,300 µF
25 – 63 VDC
-10/+30% (±20%) tolerance
Vibration resistant
Extremely high ripple current
Voltage derating above 125°C

Increased Temperature

Axial 150°C Electrolytic Capacitors

PEG126
250 – 4,000 µF
25 – 63 VDC
-10/+30% (±20%) tolerance
Vibration resistant
High ripple current
No voltage derating

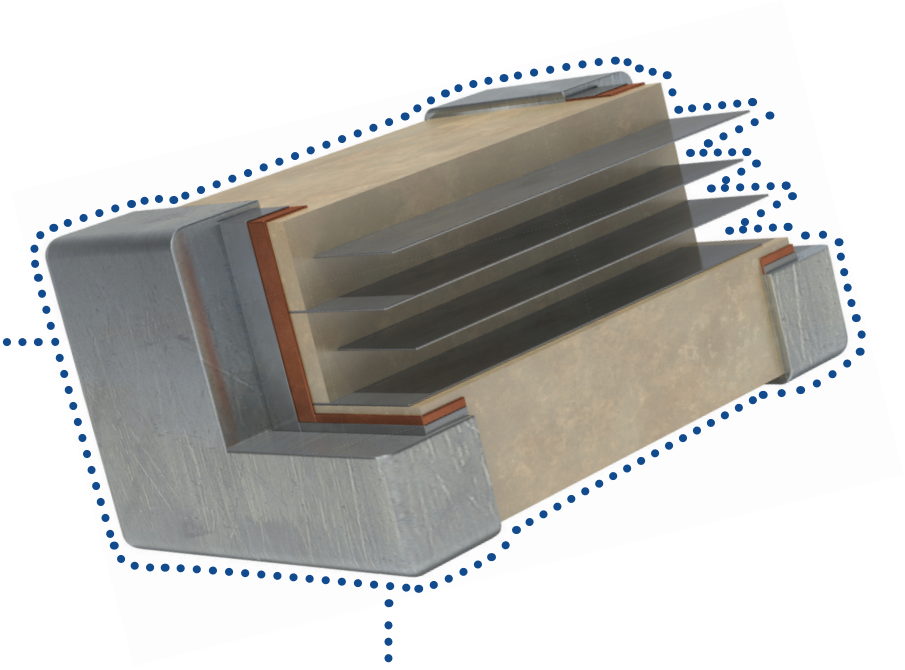
PEG127
33 – 1,300 µF
25 – 63 VDC
-10/+30% tolerance
Vibration resistant
High ripple current
No voltage derating

PEG220
250 – 4,700 µF
25 – 63 VDC
-10/+30% (±20%) tolerance
Vibration resistant
Very high ripple current
No voltage derating

PEG226
250 – 4,700 µF
25 – 63 VDC
-10/+30% (±20%) tolerance
Vibration resistant
Extremely high ripple current
No voltage derating

PEG225
470 – 6,300 µF
25 – 63 VDC
-10/+30% (±20%) tolerance
Vibration resistant
Extremely high ripple current
Voltage derating above 125°C

Ceramic



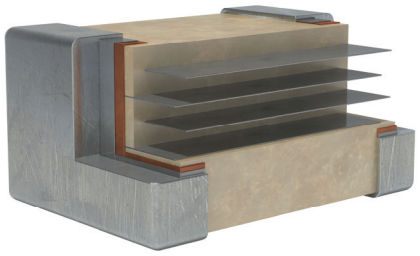
C0G & X7R Dielectrics

Features & Benefits

- Lead (Pb)-free, RoHS and REACH compliant
- High thermal stability
- High ripple current capability
- No capacitance change with respect to applied rated DC voltage (C0G dielectric only)
- Negligible capacitance change with respect to temperature from -55°C to +125°C
- No capacitance decay with time
- Non-polar device, minimizing installation concerns
- 100% pure matte tin-plated termination finish allowing for excellent solderability
- SnPb and Au plated termination finish option available upon request (5% Pb minimum)

Applications

- Critical timing
- Circuits requiring low loss
- Tuning
- Circuits with pulse
- High current
- Decoupling
- Bypass
- Filtering
- Transient voltage suppression
- Blocking and energy storage



Electrical/Physical Characteristics

Case Size	Tolerances	Dielectric Options	Temperature Range	Voltage Options	Capacitance Values
0201 0402 0603 0805 1206 1210 1808 1812 1825 2220 2225	±0.10 pF to ±20%	C0G (0.5 pF – 0.47 µF) X7R (10 pF – 47 µF)	-55°C to +125°C	6.3 V 10 V 16 V 25 V 50 V 100 V 200 V 250 V	Up to 47 µF

C0G Dielectric Ordering Information

C	1206	C	104	J	3	G	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish	Packaging/Grade (C-Spec)
	0201 0402 0603 0805 1206 1210 1808 1812 1825 2220 2225	C = Standard	Two significant digits plus number of zeros. Use 9 for 1.0 – 9.9 pF Use 8 for 0.5 – .99 pF ex., 2.2 pF = 229 ex., 0.5 pF = 508	B = ±0.10 pF C = ±0.25 pF D = ±0.5 pF F = ±1% G = ±2% J = ±5% K = ±10% M = ±20%	8 = 10 4 = 16 3 = 25 5 = 50 1 = 100 2 = 200 A = 250	G = C0G	A = N/A	C = 100% Matte Sn	Blank = Bulk TU = 7" Reel Unmarked

X7R Dielectric Ordering Information

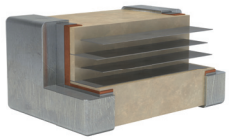
C	1206	C	106	M	4	R	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish	Packaging/Grade (C-Spec)
	0402 0603 0805 1206 1210 1808 1812 1825 2220 2225	C = Standard	Two significant digits plus number of zeros.	J = ±5% K = ±10% M = ±20%	9 = 6.3 8 = 10 4 = 16 3 = 25 6 = 35 5 = 50 1 = 100 2 = 200 A = 250	R = X7R	A = N/A	C = 100% Matte Sn	Blank = Bulk TU = 7" Reel Unmarked TM = 7" Reel Marked

High Voltage C0G & X7R Dielectrics

Features & Benefits

- Industry-leading CV values
- Lead (Pb)-free, RoHS and REACH compliant (when ordered with standard 100% Sn termination finish)
- 100% pure matte tin plated termination finish allowing for excellent solderability
- SnPb and Au plated termination finish option available upon request (5% Pb minimum)
- Rated voltages of 500 V – 3,000 V
- Non-polarized
- High volumetric capacitance with low leakage current
- Extremely low ESR and ESL
- High thermal stability
- High ripple current capability
- Preferred capacitance solution at frequencies exceeding 100 kHz
- Lead-free solder process capability (260°C)
- Automotive Grade (AEC-Q200) available
- Base metal electrode (BME) dielectric available

Applications



- Power supplies
- DC/DC converters
- HID lighting
- Industrial equipment/control
- Computer (LAN/WAN interface)
- Motor control circuits (hybrid automotive, industrial)
- High voltage power supplies
- LCD fluorescent backlight ballast
- Telecommunications equipment
- Medical equipment/control
- Switch mode power supplies
- Input filters
- Resonators
- Tank circuits
- Snubber circuits
- Output filters
- High voltage coupling
- High voltage DC blocking
- Voltage multiplier circuits
- Coupling capacitors/Ćuk converters
- Input protection for LAN/telecom products
- RF antenna transmitter circuits

Electrical/Physical Characteristics

Case Size	Tolerances	Dielectric Options	Temperature Range	Voltage Options	Capacitance Values
0603 0805 1206 1210 1808 1812 1825 2220 2225	± 0.10 pF to ± 20%	C0G (1 pF – 39 nF) X7R (10 pF – 560 nF)	-55°C to +125°C	500 V 630 V 1,000 V 1,500 V 2,000 V 2,500 V 3,000 V	1.0 pF to 560 nF

C0G Dielectric High Voltage Ordering Information

C	1210	C	332	J	C	G	A	C	TU
Ceramic	Case Size (L"x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish[1]	Packaging/ Grade (C-Spec)
	0805 1206 1210 1808 1812 1825 2220 2225	C = Standard X = Flexible Termination	Two significant digits plus number of zeros	B = ±0.10 pF C = ±0.25 pF D = ±0.5 pF F = ±1% G = ±2% J = ±5% K = ±10% M = ±20%	C = 500 B = 630 D = 1,000 F = 1,500 G = 2,000 Z = 2,500 H = 3,000	G = C0G	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	Blank = Bulk TU = 7" Reel Unmarked AUTO = Automotive Grade 7" Reel Unmarked

X7R Dielectric High Voltage Ordering Information

C	1210	C	154	K	C	R	A	C	TU
Ceramic	Case Size (L"x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish[1]	Packaging/ Grade (C-Spec)
	0603 0805 1206 1210 1808 1812 1825 2220 2225	C = Standard X = Flexible Termination	Two significant digits plus number of zeros	J = ±5% K = ±10% M = ±20%	C = 500 B = 630 D = 1,000 F = 1,500 G = 2,000 Z = 2,500 H = 3,000	R = X7R	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	Blank = Bulk TU = 7" Reel Unmarked TM = 7" Reel Marked AUTO = Automotive Grade 7" Reel Unmarked

[1] SnPb termination finish option is not available on Automotive Grade product.

KPS Series X7R Dielectric

Electronic Components
KEMET CHARGED.

Features & Benefits

- Higher capacitance in the same footprint
- Potential board space savings
- Single and double chip options available
- Advanced protection against thermal and mechanical stress
- Provides up to 10 mm of board flex capability
- Reduces audible, microphonic noise
- Extremely low ESR and ESL
- Lead (Pb)-free, RoHS and REACH compliant
- Capable of Pb-free reflow profiles
- Non-polar device, minimizing installation concerns
- Tantalum and electrolytic alternative
- Automotive Grade (AEC-Q200) available

Applications

Demanding alternative energy, industrial/lighting, automotive, defense/aerospace and telecommunications applications:

- Power supplies
- Smoothing circuits
- DC/DC converters
- Input/output filters
- Piezoelectric and mechanical noise reduction
- Improving flex performance in board flex application

Electrical/Physical Characteristics

Case Size	Tolerances	Dielectric	Temperature Range	Voltage Options	Capacitance Values
1210 1812 2220	±10% ±20%	X7R (Temperature characteristic = ±15% capacitance shift from -55° to +125°C)	-55°C to +125°C	10 V 16 V 25 V 50 V 100 V 250 V 500 V 630 V	0.1 µF to 47 µF

Ordering Information

C	2220	C	106	M	5	R	2	C	7186
Ceramic	Case Size (L"x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance[1]	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Leadframe Finish[2]	Packaging/ Grade (C-Spec)
	1210 1812 2220	C = Standard	Two significant digits plus number of zeros	K = ±10% M = ±20%	8 = 10 4 = 16 3 = 25 5 = 50 1 = 100 A = 250 C = 500 B = 630	R = X7R	1 = KPS Single Chip Stack 2 = KPS Double Chip Stack	C = 100% Matte Sn	7186 = 7" Reel Unmarked 7289 = 13" Reel Unmarked

[1] Double chip stacks ("2" in the 13th character position of the ordering code) are only available in M (±20%) capacitance tolerance. Single chip stacks ("1" in the 13th character position of the ordering code) are available in K (±10%) or M (±20%) tolerances.

KPS High Temperature Series 150°C X8L Dielectric

Features & Benefits

- Reliable & robust termination system
- Double the capacitance in the same footprint
- Potential board space savings
- Advanced protection against thermal & mechanical stress
- Provides up to 10 mm of board flex capability
- Reduces audible, microphonic noise
- Extremely low ESR & ESL
- Lead (Pb)-free, RoHS and REACH compliant
- Capable of Pb-Free reflow profiles
- Non-polar device, minimizing installation concerns
- Tantalum & electrolytic alternative
- Automotive Grade (AEC-Q200) available

Applications

Applications subject to extreme environments such as high temperature, high levels of board flexure and/or temperature cycling. Markets include industrial, aerospace, automotive and telecommunications.

- Power supplies
- Smoothing circuits
- DC/DC converters
- Input/output filters
- Piezoelectric and mechanical noise reduction

Electrical/Physical Characteristics

Case Size (L" x W")	Tolerances	Dielectric	Temperature Range	Voltage Options	Capacitance Values
X8L KPS					
1210 2220	± 10% ± 20%	X8L (Temperature Characteristic = ±15% (-55°C to 125°C), +15, -40% (125°C to 150°C)	-55°C to +150°C	10 V 16 V 25 V 50 V	0.47 µF to 47 µF

Ordering Information

C	2220	C	476	M	4	N	2	C	7186
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance[1]	Rated Voltage (VDC)	Dielectric	Design	Leadframe Finish	Packaging/ Grade (C-Spec)
	1210 2220	C = Standard	Two significant digits plus number of zeros	K = ±10% M = ±20%	8 = 10 4 = 16 3 = 25 5 = 50	N = X8L	1 = KPS Single Chip Stack 2 = KPS Double Chip Stack	C = 100% Matte Sn	7186 = 7" Reel Unmarked 7289 = 13" Reel Unmarked AUTO = Automotive Grade 7" Reel Unmarked AUTO7289 = Automotive Grade 13" Reel Unmarked

[1] Double chip stacks ("2" in the 13th character position of the ordering code) are only available in M (±20%) capacitance tolerance.

ArcShield™ Technology

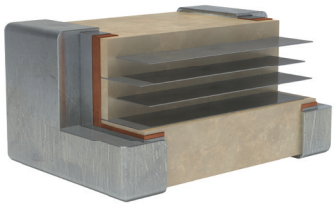
Electronic Components
KEMET CHARGED.

Features & Benefits

- Highly reliable base metal electrode (BME) dielectric system combined with a unique internal shield electrode structure designed to suppress arc-over events while increasing available capacitance
- Developed on the principle of a partial Faraday cage
- Internal system offers unrivaled performance and reliability when compared to external surface coating technologies
- Industry-leading CV values
- Exceptional performance at high frequencies
- Lead (Pb)-free, RoHS and REACH compliant
- Non-polarized
- Low ESR and ESL
- Commercial and Automotive Grades available
- 100% pure matte tin-plated termination finish
- SnPb-plated termination finish option available upon request (5% Pb minimum)
- Flexible termination option available upon request

Applications

- Power supply
- LCD fluorescent backlight ballasts
- HID lighting
- Telecom equipment
- Industrial equipment/control
- Medical equipment/control
- LAN/WAN interface
- Analog modems
- Digital modems
- Automotive charging stations
- Electric and hybrid vehicles
- Input filters
- Resonators
- Tank circuits



- Snubber circuits
- Output filters
- High voltage coupling
- High voltage DC blocking
- Lighting ballast
- Voltage multiplier circuits
- DC/DC converters
- Coupling capacitors/Ćuk converters

Electrical/Physical Characteristics

Case Size	Tolerances	Dielectric	Temperature Range	Voltage Options	Capacitance Values
0603 – 2225	±5% ±10% ±20%	X7R	±15% from -55°C to +125°C	500 VDC 630 VDC 1,000 VDC	1,000 pF to 560 nF

Ordering Information

C	1812	V	334	K	C	R	A	C	TU
Ceramic	Case Size (L"x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish[1]	Packaging/ Grade (C-Spec)
	0603 0805 1206 1210 1808 1812 1825 2220 2225	V = ArcShield W = ArcShield w/ Flexible termination	Two significant digits plus number of zeros	J = ±5% K = ±10% M = ±20%	C = 500 B = 630 D = 1,000	R = X7R	A = N/A	C = 100% Matte Sn L = SnPb (5% minimum)	Blank = Bulk TU = 7" Reel Unmarked TM = 7" Reel Marked AUTO = Automotive Grade 7" Reel Unmarked

[1] SnPb termination finish option is not available on Automotive Grade product.

Film

C4AE Series Box Type for DC Link Applications

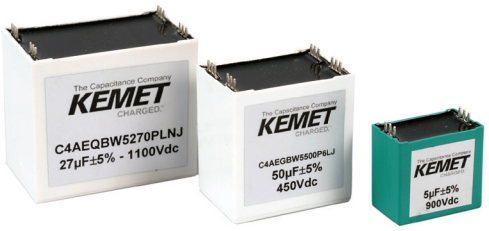
Electronic Components
KEMET CHARGED.

Features & Benefits

- Self-healing
- Low losses
- High ripple current
- High capacitance density
- High contact reliability
- Suitable for high frequency applications
- PCB or press fit mounting available

Applications

- DC filtering
- DC link
- Power supplies
- Consumer electronics applications
- Telecommunications
- Energy conversion
- High frequency applications



Electrical/Physical Characteristics

Case Sizes	Tolerances	Dielectric	Temperature Range	Maximum Operating Temperature	Voltage Options (VDC)	Capacitance Tolerance	Dissipation Factor PP Typical ($tg\delta_0$)
0 A B C D E F G H J L M N W X Y 1 2	J = ±5% K = ±5%	Polypropylene metallized film	-40°C to +85°C	+105°C	300 450 500 600 700 750 800 850 900 1,000 1,100 1,300	±5% at T = 25°C	≤ 0.0002 at 10 kHz with T = 25°C ±5°C

Ordering Information

C4	A	E	G	B	W	4	4	5	0	A	1	W	J
Series			DC Voltage	Case Code	Terminals Code	Capacitance Code (pF)				Variants	Terminals Diameter (mm)	Case Letter	Tolerance
C4 = MKP Power Capacitors	A = Box, wire terminals	E = DC Link	E = 300 V G = 450 V H = 600 V I = 800 V J = 700 V K = 750 V L = 500 V M = 850 V N = 1,000 V O = 900 V Q = 1,100 V U = 1,300 V	B = Box plastic case	U = Single copper wire W = Double copper wire Z = Special wire	Digits 9, 10, & 11 indicate the first three digits of capacitance value. Digit 8 indicates the number of zeros that must be added to obtain rated capacitance in pF.				A = Standard B = Special H = 100°C	1 = 0.8 2 = 1 3 = 1.2	0, A, B, C, D, E, F, G, H, J, L, M, N, W, X, Y, 1, 2	J = 5% K = 10%

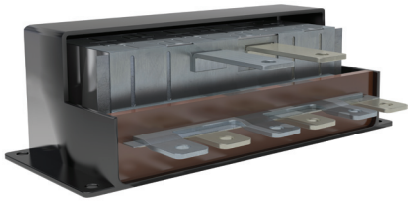
C4E Brick Type Series for DC Link Applications

Features & Benefits

- Metallized self-healing polypropylene
- Soft end-of-life by capacitance decrease
- Capable of withstanding transients up to 675 V
- Plastic case filled with resin for long-term humidity protection
- Meets IEC 61071:2007 & VDE 0560 Part 120/121 Standards

Applications

- Energy conversion
- AC motor drives
- Hybrid/electric vehicles
- Inverter modules
- Radar filtering (28 V/microwave burst)



Electrical/Physical Characteristics

KEMET Part Number	C4EEGMX6500AAUK
Electrical Characteristics	
Rated capacitance	500 μF (±10)%
Rated DC voltage	450 VDC
Peak voltage	675 VDC
Maximum peak current	2,500 Apk
Equivalent series resistance at 1 KHz	< 1 mΩ
Equivalent series inductance	15 nH
Maximum pulse rise time	5 V/μs
Thermal Characteristics	
Minimum operating temperature	-40°C
Maximum operating temperature	+110°C
Storage temperature	-40°C to +85°C
Construction	
Dielectric	Metallized polypropylene, self-healing
Winding	Non-inductive
Filling	Resin
Case construction	Metallic for prototype, plastic for mass production

C4D Low Inductance Series for Gate Turn-Off (GTO) Applications

Electronic Components
KEMET
CHARGED.

Features & Benefits

- Self-healing
- Low losses
- High ripple current
- High capacitance density
- Low inductance

Applications

- High ripple current DC filtering
- Protection of gate turn-off (GTO) applications
- Snubbers
- Medium frequency tuning
- Resonance
- Pulsed lasers

Electrical/Physical Characteristics

Case Type	Tolerances	Dielectric	Temperature Range	Maximum Permissible Ambient Temperature	Voltage Options (VDC)	Capacitance Tolerance	Dissipation Factor PP Typical ($tg\delta_0$)
Cylindrical plastic case	J = ±5% K = ±10%	Polypropylene metallized film	-40°C to +85°C	+70°C	850 to 3,000	4 μF ±5%	≤ 3 x 10^{-4} at 1 kHz and 20°C

Ordering Information

C4D	M	P	Q	4150	AA0	J
Series	Rated Voltage (VDC)	Case	Terminal Style	Capacitance Code (pF)	Internal Code	Tolerance
C4D = MKP, GTO applications	M = 850 N = 1,000 R = 1,400 Y = 3,000	P = Cylindrical plastic case	Q = M8 threaded inserts	Digits 2 – 4 indicate the first three digits of the capacitance value. First digit indicates the number of zeros to be added.	AA0 (Standard)	J = 5% K = 10%

C44H Aluminum Can Series for AC Filtering

Features & Benefits

- Overpressure safety device
- High peak current capability
- Long operational life
- Self-healing

Applications

- AC harmonic filtering
- Power factor conversion
- Consumer electronics applications
- Telecommunications
- Energy conversion

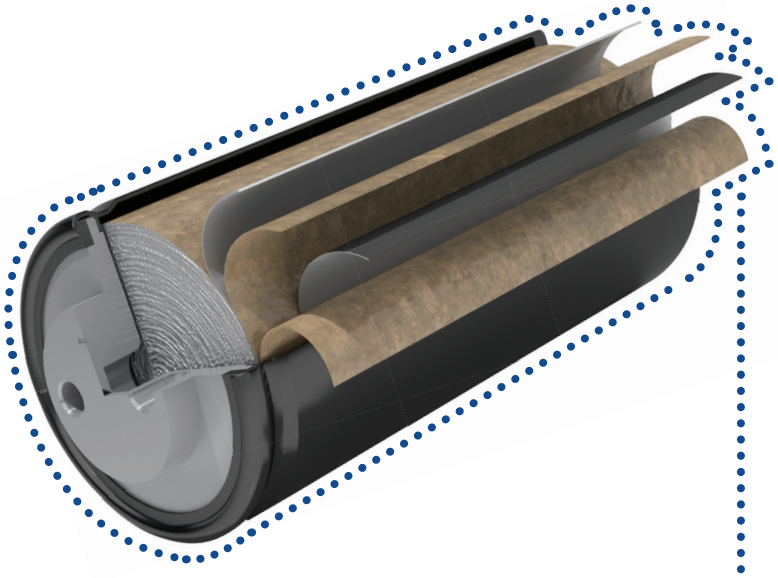
Electrical/Physical Characteristics

Case Size	Tolerances	Dielectric	Temperature Range	Maximum hot spot Temperature	Voltage Options (VDC) / (VAC)	Capacitance Tolerance	Dissipation Factor PP Typical ($tg\delta_0$)
Cylindrical aluminum case	J = ±5%, K = ±10%	Polypropylene film non-inductive type winding	-40°C to +85°C	+75°C	700 to 1,000 / 330 to 440	± 5% or ±10% at T = 25°C	≤ 0.0002 at 25°C

Ordering Information

C44H	L	G	P	6100	A	A	S	J
Series	Rated Voltage (Vrms)	Case & Fixing Bolt Code	Terminal Style	Capacitance Code (pF)	Internal Code	Internal Code		Tolerance
C44H = MKP Capacitors for AC filtering	L = 330 K = 440	G = Cylindrical aluminum case with M12 bolt	P = M6 Threaded Posts R = M10 Threaded Posts	Digits 9 – 11 indicate the first three digits of the capacitance value. Digit 8 indicates the number of zeros to be added.	A = Standard Z = Special			J = 5% K = 10%

Supercapacitors



Small Cell Supercapacitors

Features & Benefits

- Surface mount and radial form factors
- Real-time clock backup
- RAM and flash hold-up
- Motor drivers
- Servo motors, high power LEDs and buzzers
- Maximum operating temperature of + 85°C
- Wide operating voltage range (2.5 V to 12 V)
- Enables backup times from seconds to minutes

Electrical/Physical Characteristics

Series	Output Current	Maximum Operating Temperature	Maximum Operating Voltage	Capacitance	Maximum ESR (Ohms)
FM	100 µA	+ 70°C	3.5 V 5.5 V 6.5 V	0.047 – 0.22 F 0.01 – 0.22 F 0.047 F	200 – 100 300 – 100 200
FMR	100 µA	+ 85°C	3.5 V 5.5 V	0.1 F 0.047 – 0.1 F	200 50
FME	50 mA	+ 70°C	5.5 V	0.022 – 0.047 F	40 – 6.5
FMC	100 µA	+ 70°C	5.5 V	0.047 – 0.33 F	100 – 25
FC	1 mA	+ 70°C	3.5 V 5.5 V	0.1 – 0.47 F 0.047 – 1.0 F	50 – 25 50 – 7
FCS	1 mA	+ 70°C	3.5 V 5.5 V	0.1 – 0.47 F 0.047 – 0.22 F	100 – 50 100 – 50
FG, FGH	1 mA	+ 70°C	3.5 V 5.5 V	1.5 F 0.01 – 4.7 F	65 300 – 35
FGR	1 mA	+ 85°C	5.5 V	0.47 – 2.2 F	120 – 35
FR	1 mA	+ 85°C	5.5 V	0.022 – 1.0 F	220 – 60
FYL	1 mA	+ 70°C	5.5 V	0.01 – 0.047 F	300 – 200
FYD			5.5 V	0.022 – 2.2 F	220 – 35
FYH			5.5 V	0.022 – 1.0 F	200 – 20
FT	50 mA	+ 85°C	5.5 V	0.1 – 5.6 F	16 – 0.6
FS	50 mA	+ 70°C	5.5 V 11 V 12 V	0.022 – 1.0 F 0.47 – 1.0 F 1.0 – 5.0 F	60 – 7 7 7.5 – 4
FA, FE	1 A	+ 70°C	5.5 V 11 V	0.047 – 1.5 F 0.022 – 0.47 F	14 – 0.6 20 – 4
HVZ	5 A	+ 60°C (+ 70°C)	2.7 V (2.5 V)	1 – 200 F	0.3 – 0.03

Ordering Information

FG	0H	223	Z	F
Series	Maximum Operating Voltage	Nominal Capacitance (µF)	Capacitance Tolerance	Environmental Pollutant Reduced
	0E = 2.7 VDC 0V = 3.5 VDC 0H = 5.5 VDC 0J = 6.5 VDC 1A = 11 VDC 1B = 12 VDC	First two digits represent significant figure. Third digit specifies number of zeros to follow microfarad code.	+80%, -20%	

Application Guidelines

Intended Use (Guideline)	Power (Guideline)	Application	Examples of Equipment	Series
Backup for 1 or more hours	500 μA and below	CMOS RAM, IC clocks	Measuring device, control equipment, communication device, automotive power source	FR (+ 85°C)
		CMOS microcomputer, IC for clocks	CMOS microcomputer static RAM/DTS (digital tuning system)	FC FG FY FM
Backup for 1 hour or less	50 mA and below	Embedded memory backup	DVD player, television, game console, set-top box	FT FS
		Motor driver	DVD, printer, projector, camera	
Backup for 10 seconds or less	1 A and below	Power source for toys, LED, buzzer	Toys, display device, alarm device	FA FE
		High current supply for short amount of time	Actuator, relay solenoid, gas igniter	
Power Assist	Up to several A	Power supply, subsidiary power supply	Street sign, display light, UPS	HVZ

FM Series

FC Series

FG, FR, FY, FT, FS, FA, FE Series

HVZ Series

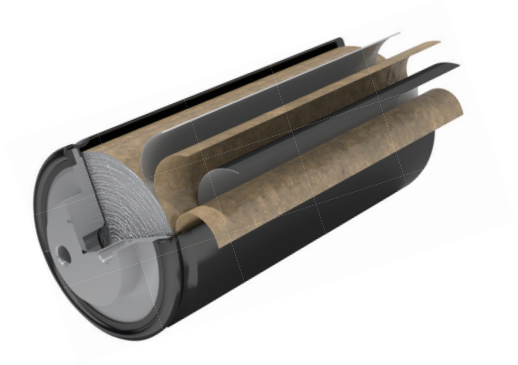
Large Cell Supercapacitors

Features & Benefits

- High cycle life
- Operating temperature range of -40°C to +65°C
- RoHS compliant
- Made in the USA

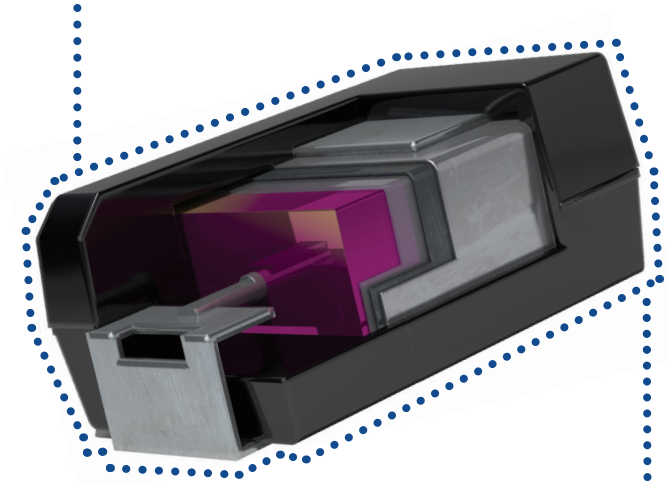
Applications

- Automotive subsystems
- Engine starting
- Rail systems
- Hybrid drive trains
- Material handling/utility vehicles
- Regenerative brake energy capture
- Backup power
- Grid/power correction
- UPS/carry-through power
- Renewable energy systems



Series	Form Factor	Rated Voltage	Capacitance Range	Capacitance Tolerance	Cycle Life	Notes
S301 Series 	Screw termination	2.7 V	1,200 to 3,000 F	-0%	> 1 million cycles	- Proprietary electrode - Very high power density - Weldable axial screw terminals - Highest power performance available - High rate cycling - 2 threaded inserts per end with 20 mm lead spacing (M6)
S501 Series 	Snap-in termination	2.7 V	100 to 350 F	-5/+10% -0/+20% (100 F only)	> 500,000 cycles	- Proprietary electrode - Very high power density - Board mountable - Solderable - High rate cycling - 2 or 4 pin terminations
S02 Series 	Bank modules with cells in extruded metal holder	16 V 48 V	165 to 500 F	-0%	> 500,000 cycles	- Individually balanced cells - IP-65 rated (IP-67 optional) - Threaded, protected terminals - Optional over-voltage and over-temperature monitor

KO-CAP® Polymer Electrolytic



KOCAP Polymer Capacitors

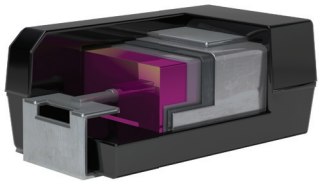
T520 KO-CAP Polymer Electrolytic Series

Features & Benefits

- Extremely low ESR
- Polymer cathode technology
- High-frequency capacitance retention
- Non-ignition failure mode
- 100% accelerated steady state aging
- 100% surge current tested
- Taped and reeled per EIA 481-1
- Volumetric efficiency
- Self-healing mechanism

Applications

- DC/DC converters
- Notebook PCs
- Portable electronics
- Telecommunications
- Displays
- Solid state drives
- Hard disk drives
- USB ports



Electrical/Physical Characteristics

Case Sizes	Tolerances	Temperature Range	Voltage Options	Capacitance Values	Leakage Current
EIA standard case sizes	(±20%)	-55°C to + 105°C	2 – 25 V	10 – 1,500 µF at 120 Hz/25°C	≤ 0.1 CV (µA) at rated voltage after 5 minutes

Ordering Information

T	520	V	157	M	006	A	T	E045	
Capacitor Class	Series	Case Sizes	Capacitance Code (pF)	Capacitance Tolerance	Voltage	Failure Rate/ Design	Termination Finish	ESR Code	Packaging (C-Spec)
T= Tantalum	520 = Polymer	A = 3216-18 B = 3528-21 C = 6032-28 D = 7343-31 H = 7360-20 L = 6032-19 M = 3528-15 T = 3528-12 U = 6032-15 V = 7343-19 W = 7343-15 X = 7343-43 Y = 7343-40	First two digits represent significant figures. Third digit specifies number of zeros.	M = ±20%	002 = 2 V 2R5 = 2.5 V 003 = 3 V 004 = 4 V 006 = 6.3 V 008 = 8 V 010 = 10 V 011 = 11 V 12R=12.5 V 016 = 16 V 020 = 20 V 025 = 25 V	A = N/A	T = 100% Matte Tin (Sn) Plated H = Tin/Lead (SnPb) Solder Coated (5% Pb minimum) N = Non-Magnetic 100% Tin (Sn) M = Non-Magnetic (SnPb)	E = ESR Last three digits specify ESR in mOhms. (045 = 45 mOhms)	Blank = 7" Reel 7280 = 13" Reel

KOCAP Polymer Capacitors

T521 High Voltage KO-CAP Polymer Electrolytic Series

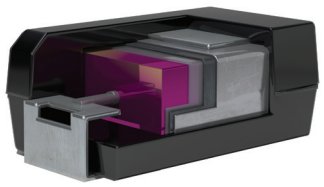
Electronic Components
KEMET CHARGED.

Features & Benefits

- High voltage (16 V – 63 V)
- Replacement for standard (MnO_2) tantalum chips (35 V – 50 V)
- Up to 330 µF capacitance value
- High ripple current capability
- Volumetric efficiency
- Stable temperature characteristics
- Safe failure mode
- Low ESR
- Recommended 10% voltage derating for part types ≤10 V, and 20% for part types > 10 V
- Operating temperature range of +105°C to +125°C
- Lead (Pb)-free, RoHS and REACH compliant and Halogen-free (when ordered with 100% Sn termination finish)

Applications

- Industrial power supplies (to 50 V)
- Medical diagnostics
- Telecommunications
- Computer
- Military grade power supplies (to 50 V)
- Avionics instrumentation (to 50 V)



T521 Series Offerings

	16 V Rating (10 V – 13 V Applications)		20 V Rating (13 V – 16 V Applications)		25 V Rating (16 V – 20 V Applications)		35 V Rating (20 V – 28 V Applications)		50 V Ratings (28 V – 40 V Applications)		63 V Ratings (38 V – 50 V Applications)	
Cap	Std	Low Profile	Std	Low Profile	Std	Low Profile	Std	Low Profile	Std	Low Profile	Std	Low Profile
4.7 µF											7343-31 75 mΩ	
5.6 µF									7343-31 70 mΩ			
6.8 µF									7343-31 7343-43 70 mΩ & 90 mΩ			
10 µF			3528-21 100 mΩ		3528-21 100 mΩ			7343-20 120 mΩ	7343-31 90 mΩ			
15 µF	3528-21 90 mΩ		3528-21 90 mΩ			7343-20 90 mΩ		7343-20 100 mΩ				
18 µF									7343-43 70 mΩ			
22 µF				7343-20 90 mΩ		7343-20 60 mΩ			7343-43 75 mΩ			
33 µF		7343-12 40 mΩ			7343-31 60 mΩ	7343-20 60 mΩ	7343-31 65 mΩ		7343-43 75 mΩ			
47 µF	7343-31 45 mΩ	7343-20 80 mΩ	7343-31 55 mΩ	7343-31 60 mΩ			7343-43 30 mΩ					
68 µF		7343-20 50 mΩ										
100 µF	7343-31 50 mΩ	7343-20 50 mΩ	7343-31 55 mΩ									
150 µF	7343-43 80 mΩ											
220 µF	7343-43 35 mΩ											
330 µF	7343-43 25 mΩ											

T521 Series Ordering Information

T	521	V	226	M	025	A	T	E060	
Capacitor Class	Series	Case Sizes	Capacitance Code (pF)	Capacitance Tolerance	Voltage	Failure Rate/ Design	Lead Material	ESR Code	Packaging (C-Spec)
T = Tantalum	521 = High Voltage Polymer	B D Q V W X	First two digits represent significant figures. Third digit specifies number of zeros.	M = ±20%	016 = 16 V 020 = 20 V 025 = 25 V 035 = 35 V 050 = 50 V 063 = 63 V	A = N/A	T = 100% Matte Tin (Sn) Plated* H = Tin/Lead (SnPb) Solder Coated (5% Pb minimum)	E = ESR Last three digits specify ESR in mΩ (060 = 60 mΩ)	Blank = 7" Reel 7280 = 13" Reel

KOCAP Polymer Capacitors

Electronic Components

KEMET

CHARGED.®

Corporate Headquarters

KEMET Corporation
2835 KEMET Way
Simpsonville, SC 29681
USA
864.963.6300
www.kemet.com

Countries and Areas listed below represent KEMET operations throughout the world.

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