Panasonic
INDUSTRY

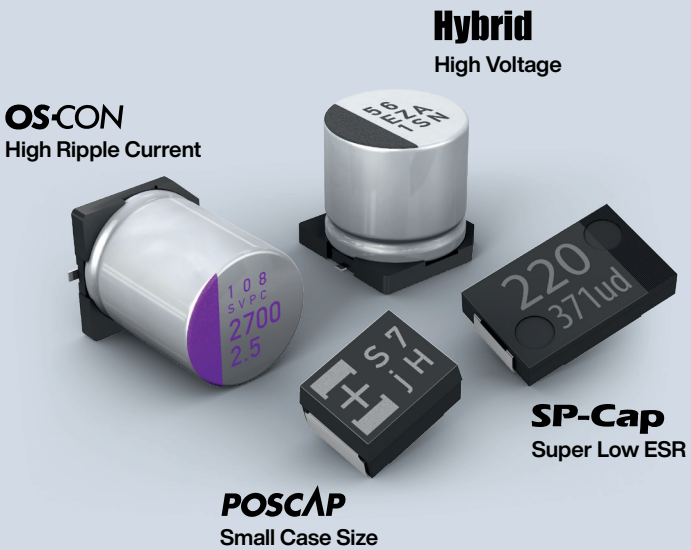
IN Your Future

Polymer Capacitors

Speed Up Your Design - The Next Stage of Low ESR

Key benefits:

- High Miniaturization Potential
- No DC Bias Effect & No Voltage Derating
- No Capacitance Drift
- Long Lifetime & High Reliability



Automotive

LED Lighting

Power Management

Smart Home

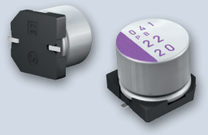
Your Committed Enabler

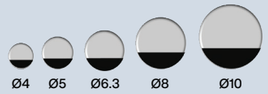
Polymer Capacitors

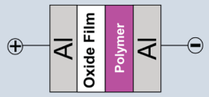
Polymer Aluminum Cap.

OS-CON is a solid capacitor using polymer + Aluminum

OS-CON







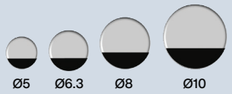
- Low ESR
- High ripple current: up to 7.5Arms
- Large capacitance: up to 2700µF
- Long lifetime: up to 20,000 hours

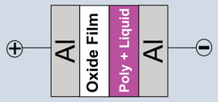
- Size: Ø4-10mm/H 4.4 - 12.9mm
- ESR: 5 - 260mΩ
- Capacitance: 3.3 to 2700µF
- Rated Voltage: 2 to 100V

Hybrid Aluminum Cap.

Hybrid capacitors have mixed characteristics of E-Cap & OS-CON.

Hybrid





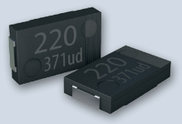
- Low ESR
- Low leakage current: 0.01CV µA
- High ripple current/large capacitance: 6100mA / 1000µF
- Good temperature characteristics: -55°C/+150°C

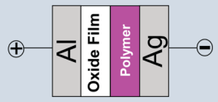
- Size: Ø5-10mm/H 5.8 - 16.8mm
- ESR: 8 - 120mΩ
- Capacitance: 10 to 1000µF
- Rated Voltage: 25 to 80V

Polymer Aluminum Cap.

SP-CAP is a solid capacitor using polymer + Aluminum

SP-Cap





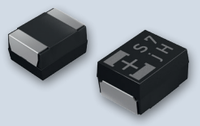
- Super low ESR: 3mΩ
- High ripple current
- Good temperature characteristics: up to 135°C
- Long lifetime: up to 5500 hours

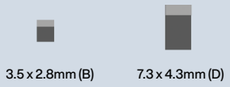
- Size: 7.3 x 4.3 x (H1-2.8)mm
- ESR: 3 - 15mΩ
- Capacitance: 68 to 820µF
- Rated Voltage: 2 to 6.3V

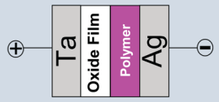
Polymer Tantalum Cap.

POSCAP is a solid capacitor using polymer + Tantalum

POSCAP







- Small size: B case (3.5 x 2.8mm)
- Low ESR: 5mΩ
- Large capacitance/size

- Size: 3.5 x 2.8 & 7.3 x 4.3 x (H1.1-3.8)mm
- ESR: 5 - 200mΩ
- Capacitance: 10 to 1500µF
- Rated Voltage: 2 to 35V

Features

	Lytic	POLYMER Hybrid		SP-Cap & POSCAP		OS-CON		MLCC	MnO2 Tantalum
Ripple Current	medium	high	✓	high	✓	high	✓	high	medium
ESR	medium	low	✓	low	✓	low	✓	low	medium
Voltage Derating	no	no	✓	no	✓	no	✓	not specified	yes
DC Bias Characteristic	stable	stable	✓	stable	✓	stable	✓	decrease	stable
Frequency Characteristic	decrease	stable	✓	stable	✓	stable	✓	stable	decrease
Temperature Characteristic	less stable	stable	✓	stable	✓	stable	✓	decrease	stable
Estimated Lifetime	limited	long	✓	long	✓	long	✓	long	long
Initial Leakage Current	low	low	✓	low	✓	medium		low	low
e.g.: Input, 28V line, 100kHz → capacitor requirements: 35V, 22uF, 2Arms ripple	2pcs Ø10x10.2mm	1pc Ø5x5.8mm		1pc 7.3x4.3x1.9mm		1pc Ø5x5.9mm		4pcs 6.1x5.3mm	4pcs 7.3x4.3x4.3mm

Endurance - Long lifetime & high reliability

Hybrid

125°C	4,000h	→	0.5 years
115°C	8,000h	→	0.9 years
105°C	16,000h	→	1.8 years
95°C	32,000h	→	3.7 years
85°C	64,000h	→	7.3 years
75°C	128,000h	→	14.6 years

OS-CON

125°C	1,000h	→	0.1 years
105°C	10,000h	→	1.1 years
85°C	100,000h	→	11.4 years

Arrhenius formula 10°C temperature reduction, lifetime is 2x longer

$$Lx = Lo \times 2^{\frac{To - Tx}{10}}$$

20°C temperature reduction, lifetime is 10x longer

$$Lx = Lo \times 10^{\frac{To - Tx}{20}}$$

The above are reference examples.
For detailed lifetime calculation, please contact Panasonic.

To : Maximum operating temperature (°C)
Tx : Temperature in actual use (°C)
Lo : Guaranteed life at maximum temperature in use (h)
Lx : Life expectance in actual use (temperature Tx) (h)
* With max. Ripple Current applied *

Anti-Vibration - SMD Hybrid & Lytic Capacitors

Features:

- Excellent Anti-Vibration Performance withstands 30G
- Available for all SMD Hybrid & Lytic Capacitor series with ≥ Ø 6mm

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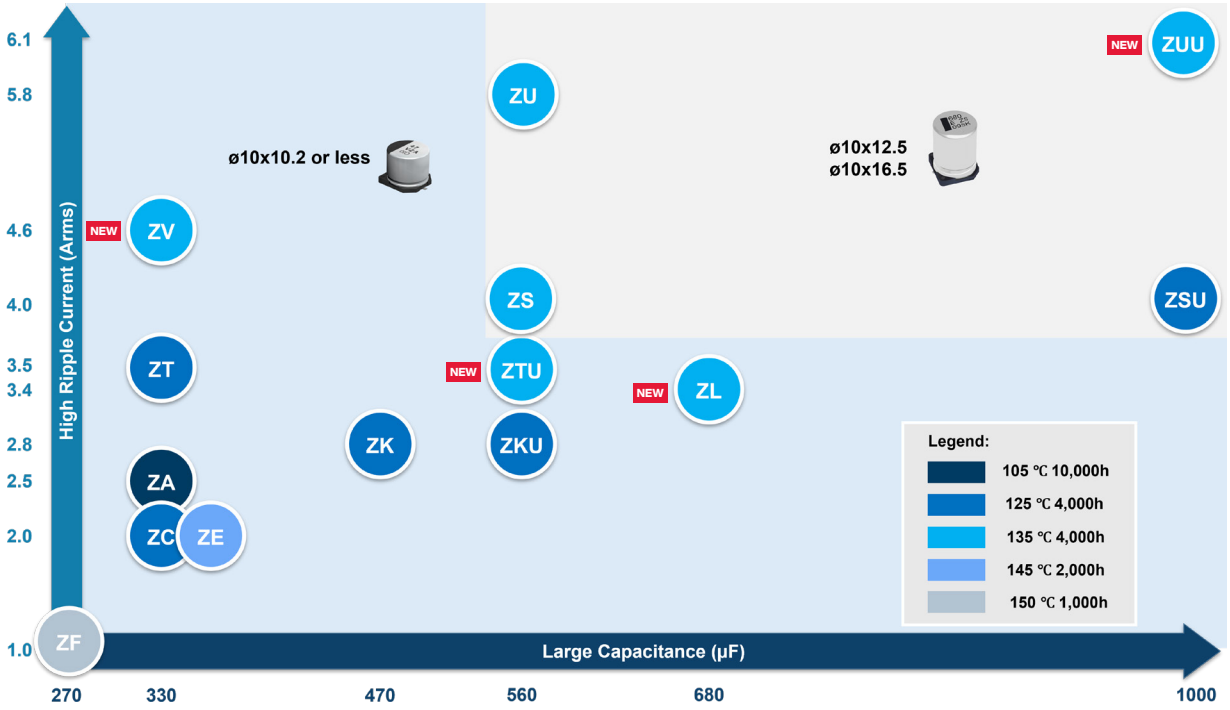
Hybrid Capacitors Series Overview



Hybrid Capacitors Lineups

Series	Endurance	Rated voltage range (V)	Capacitance range (µF)	ESR (mΩ)	Ripple current (mA rms)*1	Sizes (mm)
ZA	105 °C 10000 h	25 - 80	10 - 330	20 - 120	750 - 2500	ø5x5.8 - ø10x10.2
ZC	125 °C 4000 h	25 - 80	10 - 330	20 - 120	500 - 2000	ø5x5.8 - ø10x10.2
ZK	125 °C 4000 h	25 - 35	33 - 470	20 - 100	750 - 2800	ø5x5.8 - ø10x10.2
ZKU	125 °C 4000 h	25 - 35	39 - 560	20 - 100	750 - 2800	ø5x5.8 - ø10x10.2
NEW ZL	125 °C 4000 h 135 °C 4000 h	25 - 35	47 - 680	14 - 60	900 - 3400 (at 125 °C) 550 - 2300 (at 135 °C)	ø5x5.8 - ø10x10.2
ZT	125 °C 4000 h	25 - 63	33 - 330	16 - 32	2400 - 3500	ø8x10.2 and ø10x10.2
NEW ZTU	125 °C 4000 h 135 °C 4000 h	25 - 35	220 -560	16 - 22	2900 - 3500 (at 125 °C) 1800 - 2200 (at 135 °C)	ø8x10.2 and ø10x10.2
NEW ZV	125 °C 4000 h 135 °C 4000 h	25 - 63	33 - 330	12 - 22	3300 - 4600 (at 125 °C) 2300 - 3400 (at 135 °C)	ø8x10.2 and ø10x10.2
ZS	125 °C 4000 h 135 °C 4000 h	25 - 63	100 - 560	11 - 19	3000 - 4000 (at 125 °C) 2100 - 2900 (at 135 °C)	ø10x12.5 and ø10x16.5
ZSU	125 °C 4000 h	25 - 63	120 - 1000	11 - 19	3500 - 4000	ø10x12.5 and ø10x16.5
ZU	"125°C 4000h 135°C 4000h	25 - 63	100 - 560	8 - 12	4600 - 5800 (at 125 °C) 3200 - 4000 (at 135 °C)	ø10x12.5 and ø10x16.5
NEW ZUU	125 °C 4000 h 135 °C 4000 h	25 - 63	120 - 1000	8 - 12	4800 - 6100 (at 125 °C) 3400 - 4300 (at 135 °C)	ø10x12.5 and ø10x16.5
ZE	135°C 4000h 145°C 2000h	25 - 63	33 - 330	20 - 40	1100 - 2000 (at 135 °C) 600 - 900 (at 145 °C)	ø8x10.2 and ø10x10.2
ZF	150 °C 1000 h	25 - 63	33 - 270	20 - 40	650 - 1000	ø8x10.2 and ø10x10.2

*1: Ripple Current (100 kHz) is based on the temperature used for the endurance test, unless stated otherwise.

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Or contact us for technical support:
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