

S.O.S. Short on MLCCs? Choose Panasonic Polymer Series!



DROP-IN REPLACEMENT FOR MLCC IF:

- > Voltage 2 – 35V
- > Capacitance required $\geq 47\mu\text{F}$
- > B and D case sizes
- > Non AECQ-200 compliant

2 EASY STEPS TO IDENTIFY YOUR RIGHT FIT ...

1. VOLTAGE NO DERATING REQUIRED

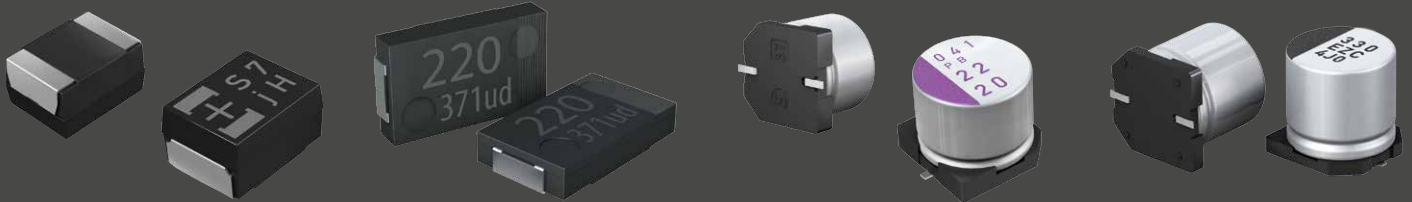
| MLCC with derating | Conductive Polymer Capacitor Voltage |
|--------------------|--------------------------------------|
| 6.3V or 10V | ~3V, 5V |
| 10V or 16V | ~8V, 9V |
| 16V or 25V | ~12V, 15V |
| 25V or 50V | ~18V, 20V |

2. SMOOTHING CIRCUITS DEPENDENT UP ON:

| Choose | Size | Capacitance | Low ESR | Ripple Current | Temperature | Automotive |
|---------|------|-------------|---------|----------------|-------------|------------|
| SP-Cap | ✓ | ✓✓ | ✓✓✓ | ✓✓✓ | ✓ | – |
| POSCAP | ✓✓✓ | ✓✓✓ | ✓✓ | ✓✓ | ✓✓ | ✓* |
| OS-CON | ✓✓ | ✓✓✓ | ✓✓ | ✓✓✓ | ✓✓ | ✓* |
| HYBRIDS | ✓✓ | ✓✓ | ✓✓ | ✓✓ | ✓✓✓ | ✓✓✓ |
| MLCC | ✓✓ | ✓ | ✓✓✓ | ✓✓✓ | – | ✓✓ |

* Only infotainment or non-safety critical circuits

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SP-Cap

- > Voltage: 2 to 35 VDC
- > Cap: 2.2 μF to 560 μF
- > Ripple up to 10.2Arms
- > Lowest ESL/ESR: 1nH/3m Ω

POSCAP

- > Voltage: 2 to 35 VDC
- > Cap: 3.9 μF to 1500 μF
- > Size: 2.0x1.25 to 7.3x4.3mm
- > ESR: as low as 5m Ω

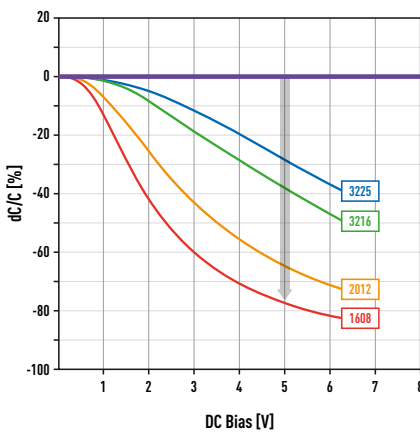
OS-CON

- > Voltage: 2 to 100 VDC
- > Cap: 3.3 μF to 2700 μF
- > Ripple up to 7.2Arms
- > ESR: as low as 5m Ω

Hybrid

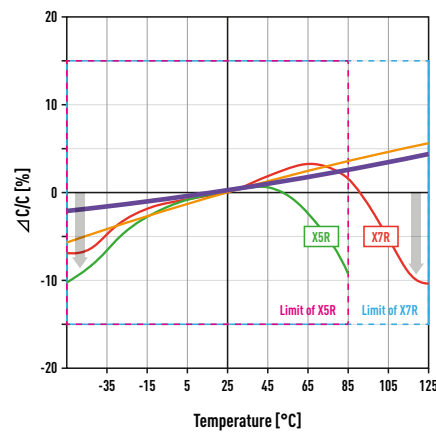
- > Voltage: 25 to 80 VDC
- > Temp: Up to 145 $^{\circ}\text{C}$
- > Ripple up to 4.0Arms
- > AECQ-200 Compliant

DC BIAS BEHAVIOUR OF POLYMER VS. MLCC



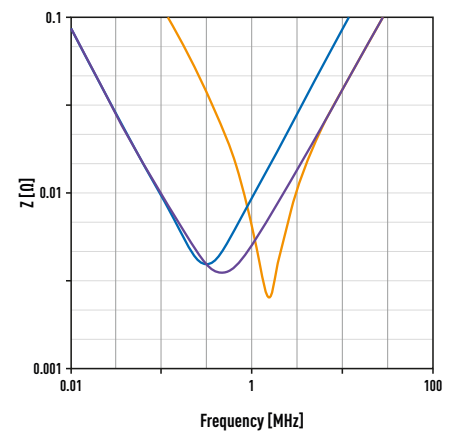
■ SP-Cap / POSCAP / OS-CON / Hybrid
■ ■ ■ MLCC (6.3V 22 μF , X5R)

TEMPERATURE BEHAVIOUR OF POLYMER VS. MLCC



■ SP-Cap / POSCAP / OS-CON ■ Hybrid
■ ■ MLCC (16V 4.7 μF , 3216, X5R / X7R)

IMPEDANCE BEHAVIOUR OF POLYMER VS. MLCC



■ SP-Cap LS series 2.5V 180uF
■ SP-Cap SX series 2.5V 180uF
■ MLCC 0603 X5R 6.3V 22uF

PANASONIC OFFERS :

- > Four variations in Polymer dielectric capacitors
- > Including chip and can-type (SMD & THT).
- > No derating and DC bias unlike MLCCs
- > Physically more robust, longer lifetimes and safe-failure modes (no-burning)

With higher ripple current, stable ESR and capacitance across broad temperature and frequency spectrum, Polymer capacitors also offer value against Electrolytics for efficient designs.