

Opti-Cap®

Discover the advantages of broadband blocking capacitors from Knowles Precision Devices.

Product Overview

Knowles Precision Devices features our Opti-Cap® solution, which is designed to deliver reliable, ultra-low loss operation across a variety of applications including test equipment, fiber optic modules and broadband microwave/millimeter systems. Explore options that offer low frequency stability over extreme temperatures, space-saving footprints and more.

OPTI-CAP

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FEATURES

- X7R temperature and voltage stability
- Resonance free DC blocking to >40GHz
- SMT by solder or epoxy bonding
- Low frequency stability over temperature
- Very low series inductance
- 0201, 0402 and 0602 footprints

FUNCTIONAL APPLICATIONS

- Test Equipment, Photonics, SONET, TOSA/ROSA, High-Speed Data
- Broadband Microwave/Millimeter Wave
- Transimpedance Amplifiers

BENEFITS

- · Eliminates wire bonding
- · Coplanar waveguide
- Low insertion loss

SPECIFICATIONS - OPTI-CAP®

Electrical

Temperature Coefficient of Capacitance	X5R: -55°C to +85°C (TCC ± 15%) X7R: -55°C to +125°C (TCC ± 15%)			
Capacitance Range	1.5nF to 220nF			
Maximum Assembly Process Temperature	250°C			



INSERTION LOSS



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ELECTRICAL CHARACTERISTICS — OPTI-CAP[®]

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DIMENSIONAL SPECIFICATIONS – OPTI-CAP®

	Opti-Cap®			MLC		
Case Size	Length	Width	Thickness	Length	Width	Thickness
P21 (0201)	0.020" ± 0.004"	0.012" ± 0.002"	0.010" ± 0.002"	0.022" ± 0.002"	0.010" ± 0.001"	0.010" ± 0.002"
P42 (0402)	0.038" ± 0.004"	0.020" ± 0.002"	0.020" ± 0.002"	0.040" ± 0.002"	0.020" ± 0.002"	0.020" ± 0.002"
P62 (0602)	0.058" ± 0.004"	0.020" ± 0.002"	0.020" ± 0.002"	0.067" ± 0.004"	0.031" ± 0.004"	0.031" ± 0.005"

ATTACHMENT METHODS — OPTI-CAP®

Recommended attachment to soft or hard substrate using Conductive Epoxy

- Place a single drop of conductive epoxy onto each microstrip as illustrated; the edge of the epoxy shall be at least .003"-.004" back from the edge of the trace to prevent filling the gap with epoxy.
- 2. Centering the termination gap of the capacitor within the gap in the microstrip, press with careful, even pressure onto the microstrip ensuring the terminations make good contact with the epoxy drops.
- 3. Cure according to the epoxy manufacturer's preferred schedule, typically 125°C to 150°C max.
- After curing, inspect joint for epoxy shorts across the termination and microstrip gaps that would cause a short across the cap.

Isopropanol and Methanol are both safe to use to pre-clean Opti-Caps®, Isopropanol, and Methanol are not to be used after mounting with conductive epoxy as they act as a solvent!

Recommended attachment to soft or hard substrate using Solder

- Place a single drop of solder paste onto each microstrip as illustrated; the edge of the solder shall be at least .001"-.002" back from the edge of the trace to prevent filling the gap with solder.
- 2. Centering the termination gap of the capacitor within the gap in the microstrip, press with careful, even pressure onto the microstrip ensuring the terminations make good contact with the drops of solder paste.



- Reflow according to the solder manufacturer's preferred profile, ensuring the reflow temperature does not exceed 250°C.
- 4. After the reflow step is completed, inspect joint for voids or excess flux and non-reflowed solder balls that can degrade performance or cause shorts across the gaps. Proper cleaning after the reflow process is crucial to avoiding performance degradation and discovering poor solder joints.

Isopropanol and Methanol are both safe to use with soldered Opti-Caps®.

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