

Type CD4 High-Frequency, Mica Capacitors

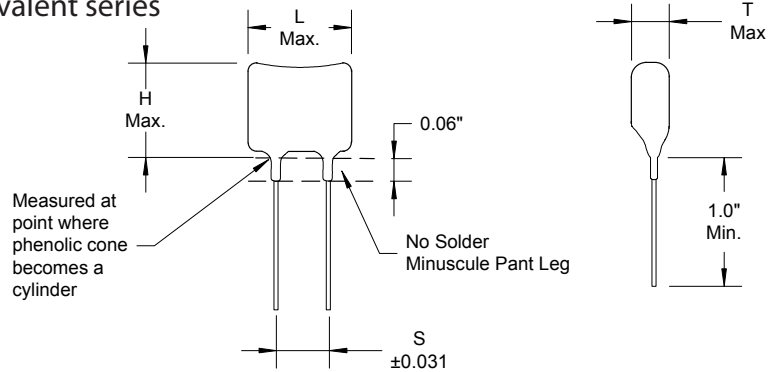
Ultra-High-Frequency Capacitor for CATV and RF Applications 0.1" Lead Spacing



Nearly the textbook ideal capacitor for high-frequency applications, Type CD4 is rock stable over its full temperature and voltage range. Higher self-resonant frequency and lower equivalent series inductance makes CD4 even better than CD17 and CD18 for high-frequency applications. 0.1" lead spacing means CD4 can replace ceramic capacitors on printed circuit boards.

Highlights

- Higher self-resonant frequency and lower equivalent series inductance than CD17 and CD18
- Low impedance to beyond 1 GHz
- Replaces other 0.1" lead-spacing capacitors
- Cool operation—Typical Qs > 2000
- Shockproof and delamination free
- Near zero capacitance change with frequency and temperature
- 100,000 V/μs dV/dt capability minimum
- Zero capacitance change with voltage



Specifications

- Voltage Range:** 100 Vdc to 500 Vdc
- Capacitance Range:** 1 pF to 1,500 pF
- Capacitance Tolerance:** ±½ pF (D), ±1 pF (C), ±1/2% (E), ±1% (F), ±1% (F), ±2% (G), ±5% (J)
- Temperature Range:** -55 °C to +125 °C

Ratings

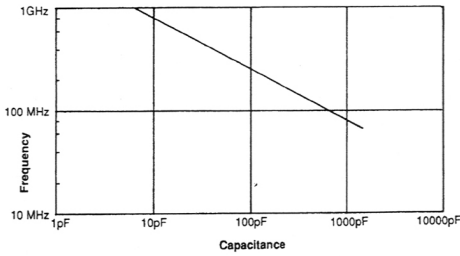
For RoHS compliant add the letter F at the end of the part number.

| (pF) | Catalog Part Number | L In (mm) | H In (mm) | T In (mm) | S In (mm) | d In (mm) | (pF) | Catalog Part Number | L In (mm) | H In (mm) | T In (mm) | S In (mm) | d In (mm) |
|----------------|---------------------|------------|------------|------------|------------|-----------|------|---------------------|------------|------------|------------|------------|-----------|
| 100 Vdc | | | | | | | 39 | CD4ED390J03 | .290 (7.4) | .220 (5.6) | .110 (2.8) | .100 (2.5) | .020 (.5) |
| 910 | CD4FA911J03 | .340 (8.6) | .310 (7.9) | .160 (4.1) | .100 (2.5) | .020 (.5) | 43 | CD4ED430J03 | .290 (7.4) | .220 (5.6) | .110 (2.8) | .100 (2.5) | .020 (.5) |
| 1000 | CD4FA102J03 | .340 (8.6) | .310 (7.9) | .160 (4.1) | .100 (2.5) | .020 (.5) | 47 | CD4ED470J03 | .290 (7.4) | .220 (5.6) | .110 (2.8) | .100 (2.5) | .020 (.5) |
| 1100 | CD4FA112J03 | .340 (8.6) | .310 (7.9) | .160 (4.1) | .100 (2.5) | .020 (.5) | 50 | CD4ED500J03 | .290 (7.4) | .220 (5.6) | .110 (2.8) | .100 (2.5) | .020 (.5) |
| 1200 | CD4FA122J03 | .340 (8.6) | .310 (7.9) | .170 (4.3) | .100 (2.5) | .020 (.5) | 51 | CD4ED510J03 | .290 (7.4) | .220 (5.6) | .110 (2.8) | .100 (2.5) | .020 (.5) |
| 1500 | CD4FA152J03 | .340 (8.6) | .310 (7.9) | .180 (4.6) | .100 (2.5) | .020 (.5) | 56 | CD4ED560J03 | .290 (7.4) | .220 (5.6) | .110 (2.8) | .100 (2.5) | .020 (.5) |
| 300 Vdc | | | | | | | 62 | CD4ED620J03 | .290 (7.4) | .220 (5.6) | .110 (2.8) | .100 (2.5) | .020 (.5) |
| 560 | CD4FC561J03 | .340 (8.6) | .310 (7.9) | .160 (4.1) | .100 (2.5) | .020 (.5) | 68 | CD4ED680J03 | .290 (7.4) | .220 (5.6) | .110 (2.8) | .100 (2.5) | .020 (.5) |
| 620 | CD4FC621J03 | .340 (8.6) | .310 (7.9) | .160 (4.1) | .100 (2.5) | .020 (.5) | 75 | CD4ED750J03 | .290 (7.4) | .220 (5.8) | .110 (2.8) | .100 (2.5) | .020 (.5) |
| 680 | CD4FC681J03 | .340 (8.6) | .310 (7.9) | .160 (4.1) | .100 (2.5) | .020 (.5) | 82 | CD4ED820J03 | .290 (7.4) | .220 (5.8) | .110 (2.8) | .100 (2.5) | .020 (.5) |
| 750 | CD4FC751J03 | .340 (8.6) | .310 (7.9) | .160 (4.1) | .100 (2.5) | .020 (.5) | 91 | CD4FD910J03 | .290 (7.4) | .220 (5.8) | .110 (2.8) | .100 (2.5) | .020 (.5) |
| 820 | CD4FC821J03 | .340 (8.6) | .310 (7.9) | .160 (4.1) | .100 (2.5) | .020 (.5) | 100 | CD4FD101J03 | .290 (7.4) | .240 (6.1) | .110 (2.8) | .100 (2.5) | .020 (.5) |
| 500 Vdc | | | | | | | 110 | CD4FD111J03 | .290 (7.4) | .240 (6.1) | .110 (2.8) | .100 (2.5) | .020 (.5) |
| 1 | CD4CD010D03 | .290 (7.4) | .220 (5.6) | .110 (2.8) | .100 (2.5) | .020 (.5) | 120 | CD4FD121J03 | .290 (7.4) | .240 (6.1) | .110 (2.8) | .100 (2.5) | .020 (.5) |
| 2 | CD4CD020D03 | .290 (7.4) | .220 (5.6) | .110 (2.8) | .100 (2.5) | .020 (.5) | 130 | CD4FD131J03 | .340 (8.6) | .310 (7.9) | .160 (4.1) | .100 (2.5) | .020 (.5) |
| 3 | CD4CD030D03 | .290 (7.4) | .220 (5.6) | .110 (2.8) | .100 (2.5) | .020 (.5) | 150 | CD4FD151J03 | .340 (8.6) | .310 (7.9) | .160 (4.1) | .100 (2.5) | .020 (.5) |
| 4 | CD4CD040D03 | .290 (7.4) | .220 (5.6) | .110 (2.8) | .100 (2.5) | .020 (.5) | 160 | CD4FD161J03 | .340 (8.6) | .310 (7.9) | .160 (4.1) | .100 (2.5) | .020 (.5) |
| 5 | CD4CD050D03 | .290 (7.4) | .220 (5.6) | .110 (2.8) | .100 (2.5) | .020 (.5) | 180 | CD4FD181J03 | .340 (8.6) | .310 (7.9) | .160 (4.1) | .100 (2.5) | .020 (.5) |
| 6 | CD4CD060D03 | .290 (7.4) | .220 (5.6) | .110 (2.8) | .100 (2.5) | .020 (.5) | 200 | CD4FD201J03 | .340 (8.6) | .310 (7.9) | .160 (4.1) | .100 (2.5) | .020 (.5) |
| 7 | CD4CD070D03 | .290 (7.4) | .220 (5.6) | .110 (2.8) | .100 (2.5) | .020 (.5) | 220 | CD4FD221J03 | .340 (8.6) | .310 (7.9) | .160 (4.1) | .100 (2.5) | .020 (.5) |
| 8 | CD4CD080D03 | .290 (7.4) | .220 (5.6) | .110 (2.8) | .100 (2.5) | .020 (.5) | 240 | CD4FD241J03 | .340 (8.6) | .310 (7.9) | .160 (4.1) | .100 (2.5) | .020 (.5) |
| 10 | CD4CD100J03 | .290 (7.4) | .220 (5.6) | .110 (2.8) | .100 (2.5) | .020 (.5) | 250 | CD4FD251J03 | .340 (8.6) | .310 (7.9) | .160 (4.1) | .100 (2.5) | .020 (.5) |
| 12 | CD4CD120J03 | .290 (7.4) | .220 (5.6) | .110 (2.8) | .100 (2.5) | .020 (.5) | 270 | CD4FD271J03 | .340 (8.6) | .310 (7.9) | .160 (4.1) | .100 (2.5) | .020 (.5) |
| 15 | CD4CD150J03 | .290 (7.4) | .220 (5.6) | .110 (2.8) | .100 (2.5) | .020 (.5) | 300 | CD4FD301J03 | .340 (8.6) | .310 (7.9) | .160 (4.1) | .100 (2.5) | .020 (.5) |
| 18 | CD4CD180J03 | .290 (7.4) | .220 (5.6) | .110 (2.8) | .100 (2.5) | .020 (.5) | 330 | CD4FD331J03 | .340 (8.6) | .310 (7.9) | .160 (4.1) | .100 (2.5) | .020 (.5) |
| 20 | CD4ED200J03 | .290 (7.4) | .220 (5.6) | .110 (2.8) | .100 (2.5) | .020 (.5) | 360 | CD4FD361J03 | .340 (8.6) | .310 (7.9) | .160 (4.1) | .100 (2.5) | .020 (.5) |
| 22 | CD4ED220J03 | .290 (7.4) | .220 (5.6) | .110 (2.8) | .100 (2.5) | .020 (.5) | 390 | CD4FD391J03 | .340 (8.6) | .310 (7.9) | .160 (4.1) | .100 (2.5) | .020 (.5) |
| 24 | CD4ED240J03 | .290 (7.4) | .220 (5.6) | .110 (2.8) | .100 (2.5) | .020 (.5) | 430 | CD4FD431J03 | .340 (8.6) | .310 (7.9) | .160 (4.1) | .100 (2.5) | .020 (.5) |
| 27 | CD4ED270J03 | .290 (7.4) | .220 (5.6) | .110 (2.8) | .100 (2.5) | .020 (.5) | 470 | CD4FD471J03 | .340 (8.6) | .310 (7.9) | .160 (4.1) | .100 (2.5) | .020 (.5) |
| 30 | CD4ED300J03 | .290 (7.4) | .220 (5.6) | .110 (2.8) | .100 (2.5) | .020 (.5) | 500 | CD4FD501J03 | .340 (8.6) | .310 (7.9) | .160 (4.1) | .100 (2.5) | .020 (.5) |
| 33 | CD4ED330J03 | .290 (7.4) | .220 (5.6) | .110 (2.8) | .100 (2.5) | .020 (.5) | 510 | CD4FD511J03 | .340 (8.6) | .310 (7.9) | .160 (4.1) | .100 (2.5) | .020 (.5) |
| 36 | CD4ED360J03 | .290 (7.4) | .220 (5.6) | .110 (2.8) | .100 (2.5) | .020 (.5) | | | | | | | |

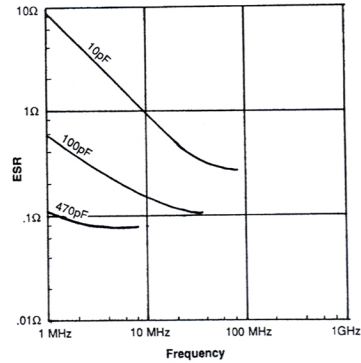
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Typical Performance Curves

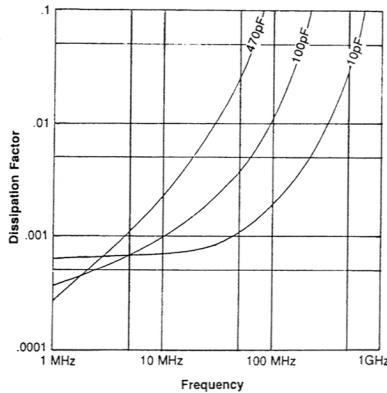
Self-Resonant Frequency vs. Capacitance



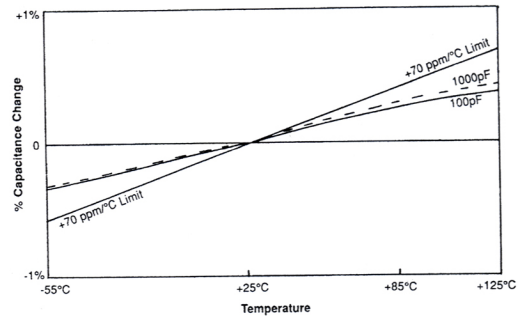
ESR vs. Frequency



Dissipation Factor vs. Frequency



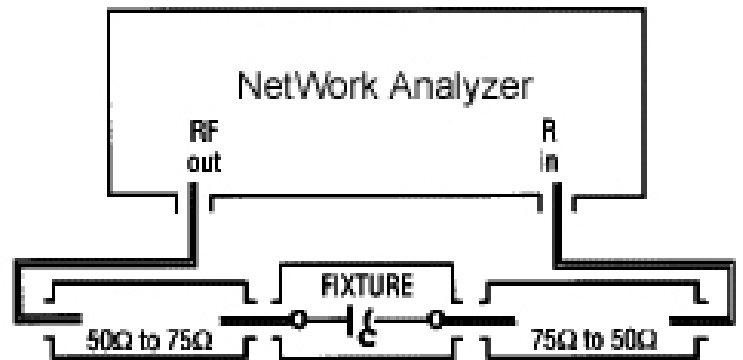
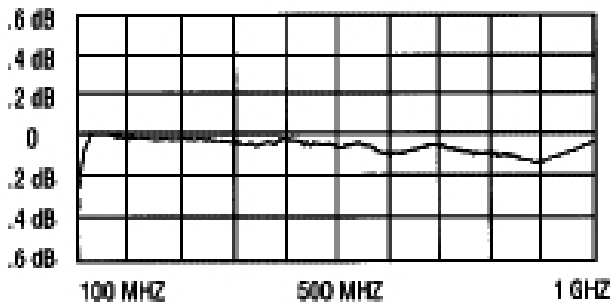
Capacitance Change (%) vs. Temperature



Insertion Loss

Over the frequency range of 100 MHz to 1 GHz the insertion loss in a balanced 50 Ω or 75 Ω system is flat ± 0.2 dB. A typical test setup is below.

Insertion Loss vs. Frequency for CD17FC621J03, 75 Ω System



Choosing CD4, CD16, CDV16, CD18 or CDV18

While insertion loss is flat within ± 0.2 dB through 1 GHz, you may be able to avoid the small notch by changing the capacitor type to fit your capacitance. See table at right.

| TYPE | Flat to Above 1 GHz |
|-------|---------------------|
| CD17 | 470 pF max |
| CD4 | 620 pF max |
| CD16 | 870 pF |
| CDV16 | 870 pF |
| CD18 | 660 pF max |
| CDV18 | 1000 pF max |

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