

06031C391MAT2A Datasheet



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| | |
|------------------------------|---|
| DiGi Electronics Part Number | 06031C391MAT2A-DG |
| Manufacturer | KYOCERA AVX |
| Manufacturer Product Number | 06031C391MAT2A |
| Description | CAP CER 390PF 100V X7R 0603 |
| Detailed Description | 390 pF ±20% 100V Ceramic Capacitor X7R 0603 (1608 Metric) |

This model 06031C391MAT2A is available at DiGi Electronics.

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Purchase and inquiry

Manufacturer Product Number:

06031C391MAT2A

Series:

-

Capacitance:

390 pF

Voltage - Rated:

100V

Operating Temperature:

-55°C ~ 125°C

Ratings:

-

Failure Rate:

-

Package / Case:

0603 (1608 Metric)

Height - Seated (Max):

-

Lead Spacing:

-

Manufacturer:

KYOCERA AVX

Product Status:

Active

Tolerance:

±20%

Temperature Coefficient:

X7R

Features:

-

Applications:

General Purpose

Mounting Type:

Surface Mount, MLCC

Size / Dimension:

0.063" L x 0.032" W (1.60mm x 0.81mm)

Thickness (Max):

0.035" (0.90mm)

Lead Style:

-

Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8532.24.0020

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99

X7R Dielectric

General Specifications



X7R formulations are called “temperature stable” ceramics and fall into EIA Class II materials. X7R is the most popular of these intermediate dielectric constant materials. Its temperature variation of capacitance is within ±15% from -55°C to +125°C. This capacitance change is non-linear.

Capacitance for X7R varies under the influence of electrical operating conditions such as voltage and frequency.

X7R dielectric chip usage covers the broad spectrum of industrial applications where known changes in capacitance due to applied voltages are acceptable.

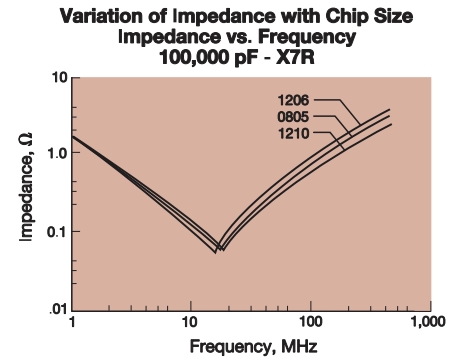
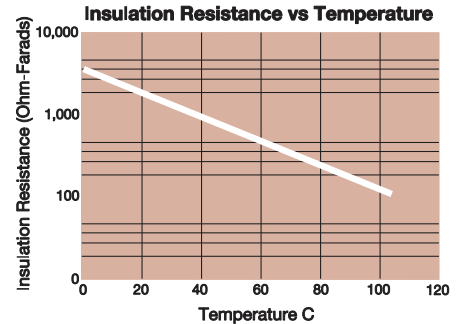
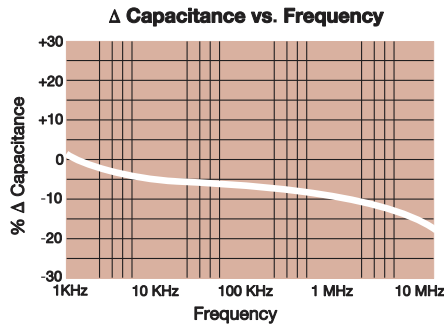


PART NUMBER (SEE PAGE 4 FOR COMPLETE PART NUMBER EXPLANATION)

| | | | | | | | | |
|--------------------------|--|------------------------------|--|--|---|--|---|---|
| 0805 | 5 | C | 103 | M | A | T | 2 | A |
| Size (L" x W") | Voltage 4V = 4 6.3V = 6 10V = Z 16V = Y 25V = 3 50V = 5 100V = 1 200V = 2 500V = 7 | Dielectric X7R = C | Capacitance Code (In pF) 2 Sig. Digits + Number of Zeros | Capacitance Tolerance J = ± 5%* K = ±10% M = ± 20% | Failure Rate A = Not Applicable | Terminations T = Plated Ni and Sn Z = FLEXITERM®** *Optional termination **See FLEXITERM® X7R section | Packaging 2 = 7" Reel 4 = 13" Reel Contact Factory For Multiples | Special Code A = Std. Product |

*≤1μF only, contact factory for additional values

NOTE: Contact factory for availability of Termination and Tolerance Options for Specific Part Numbers. Contact factory for non-specified capacitance values.



X7R Dielectric

Specifications and Test Methods

| Parameter/Test | | X7R Specification Limits | Measuring Conditions | |
|---------------------------------------|-----------------------|---|--|--------------------|
| Operating Temperature Range | | -55°C to +125°C | Temperature Cycle Chamber | |
| Capacitance | | Within specified tolerance | | |
| Dissipation Factor | | $\leq 10\%$ for $\geq 50V$ DC rating $\leq 12.5\%$ for 25V DC rating $\leq 12.5\%$ for $\leq 10V$ DC rating Contact Factory for DF by PN | Freq.: 1.0 kHz $\pm 10\%$ Voltage: 1.0Vrms $\pm .2V$ For Cap > 10 μ F, 0.5Vrm @ 120Hz | |
| Insulation Resistance | | 10,000M Ω or 500M Ω - μ F, whichever is less | Charge device with rated voltage for 120 \pm 5 secs @ room temp/humidity | |
| Dielectric Strength | | No breakdown or visual defects | Charge device with 250% of rated voltage for 1-5 seconds, w/ charge and discharge current limited to 50 mA (max) Note: Charge device with 150% of rated voltage for 500V devices. | |
| Resistance to Flexure Stresses | Appearance | No defects | Deflection: 2mm Test Time: 30 seconds | |
| | Capacitance Variation | $\leq \pm 12\%$ | | |
| | Dissipation Factor | Meets Initial Values (As Above) | | |
| | Insulation Resistance | \geq Initial Value x 0.3 | | |
| Solderability | | $\geq 95\%$ of each terminal should be covered with fresh solder | Dip device in eutectic solder at 230 \pm 5°C for 5.0 \pm 0.5 seconds | |
| Resistance to Solder Heat | Appearance | No defects, <25% leaching of either end terminal | Dip device in eutectic solder at 260°C for 60 seconds. Store at room temperature for 24 \pm 2 hours before measuring electrical properties. | |
| | Capacitance Variation | $\leq \pm 7.5\%$ | | |
| | Dissipation Factor | Meets Initial Values (As Above) | | |
| | Insulation Resistance | Meets Initial Values (As Above) | | |
| | Dielectric Strength | Meets Initial Values (As Above) | | |
| Thermal Shock | Appearance | No visual defects | Step 1: -55°C $\pm 2^\circ$ | 30 \pm 3 minutes |
| | Capacitance Variation | $\leq \pm 7.5\%$ | Step 2: Room Temp | ≤ 3 minutes |
| | Dissipation Factor | Meets Initial Values (As Above) | Step 3: +125°C $\pm 2^\circ$ | 30 \pm 3 minutes |
| | Insulation Resistance | Meets Initial Values (As Above) | Step 4: Room Temp | ≤ 3 minutes |
| | Dielectric Strength | Meets Initial Values (As Above) | Repeat for 5 cycles and measure after 24 \pm 2 hours at room temperature | |
| Load Life | Appearance | No visual defects | Pre-treatment: After mounting, perform heat treatment 150+0/-10C for 2 hour, then stabilise for 24+/-2 hour at room temp, then measure. Charge device with \geq rated voltage in test chamber set at 125°C $\pm 2^\circ$ C for 1000 hours (+48, -0). Pre-treatment: After remove from test chamber, perform heat treatment 150+0/-10C for 2 hour, then stabilise for 24+/-2 hour at room temp, then measure. Contact KYOCERA AVX for datasheet of specific parts. | |
| | Capacitance Variation | $\leq \pm 12.5\%$ | | |
| | Dissipation Factor | \leq Initial Value x 2.0 (See Above) | | |
| | Insulation Resistance | \geq Initial Value x 0.3 (See Above) | | |
| | Dielectric Strength | Meets Initial Values (As Above) | | |
| Load Humidity | Appearance | No visual defects | Pre-treatment: After mounting, perform heat treatment 150+0/-10C for 2 hour, then stabilise for 24+/-2 hour at room temp, then measure. Store in a test chamber set at 85°C $\pm 2^\circ$ C/ 85% $\pm 5\%$ relative humidity for 1000 hours (+48, -0) with rated voltage applied. Pre-treatment: After remove from test chamber, perform heat treatment 150+0/-10C for 2 hour, then stabilise for 24+/-2 hour at room temp, then measure. | |
| | Capacitance Variation | $\leq \pm 12.5\%$ | | |
| | Dissipation Factor | \leq Initial Value x 2.0 (See Above) | | |
| | Insulation Resistance | \geq Initial Value x 0.3 (See Above) | | |
| | Dielectric Strength | Meets Initial Values (As Above) | | |



X7R Dielectric Capacitance Range

PREFERRED SIZES ARE SHADED

| SIZE | 1210 | | | | | | | 1812 | | | | | 1825 | | | 2220 | | | | 2225 | | | | | |
|--------------|-------------------------------|-----------------------------|-----|----|----|-----|-----|-----------------------------|-----------------------------|----|----|-----|-----------------------------|-----------------------------|----|-----------------------------|-----------------------------|----|----|-----------------------------|-----------------------------|-----|----|-----|-----|
| | Reflow Only Paper/Embossed | | | | | | | Reflow Only All Embossed | | | | | Reflow Only All Embossed | | | Reflow Only All Embossed | | | | Reflow Only All Embossed | | | | | |
| (L) Length | mm (in.) | 3.30 ± 0.4 (0.130 ± 0.016) | | | | | | | 4.50 ± 0.40 (0.177 ± 0.016) | | | | | 4.50 ± 0.40 (0.177 ± 0.016) | | | 5.70 ± 0.50 (0.224 ± 0.020) | | | | 5.70 ± 0.40 (0.224 ± 0.016) | | | | |
| (W) Width | mm (in.) | 2.50 ± 0.30 (0.098 ± 0.012) | | | | | | | 3.20 ± 0.40 (0.126 ± 0.016) | | | | | 6.40 ± 0.40 (0.252 ± 0.016) | | | 5.00 ± 0.40 (0.197 ± 0.016) | | | | 6.30 ± 0.40 (0.248 ± 0.016) | | | | |
| (t) Terminal | mm (in.) | 0.50 ± 0.25 (0.020 ± 0.010) | | | | | | | 0.61 ± 0.36 (0.024 ± 0.014) | | | | | 0.61 ± 0.36 (0.024 ± 0.014) | | | 0.64 ± 0.39 (0.025 ± 0.015) | | | | 0.64 ± 0.39 (0.025 ± 0.015) | | | | |
| WVDC | | 10 | 16 | 25 | 50 | 100 | 200 | 500 | 16 | 25 | 50 | 100 | 200 | 500 | 50 | 100 | 200 | 25 | 50 | 100 | 200 | 500 | 50 | 100 | 200 |
| Cap (pF) | | 100 | 101 | | | | | | | | | | | | | | | | | | | | | | |
| | | 150 | 151 | | | | | | | | | | | | | | | | | | | | | | |
| | | 220 | 221 | | | | | | | | | | | | | | | | | | | | | | |
| | | 330 | 331 | | | | | | | | | | | | | | | | | | | | | | |
| | | 470 | 471 | | | | | | | | | | | | | | | | | | | | | | |
| | | 680 | 681 | | | | | | | | | | | | | | | | | | | | | | |
| | | 1000 | 102 | | | | | | | | | | | | | | | | | | | | | | |
| | | 1500 | 152 | | | | | | | | | | | | | | | | | | | | | | |
| | | 2200 | 222 | | | | | | | | | | | | | | | | | | | | | | |
| | | 3300 | 332 | | | | | | | | | | | | | | | | | | | | | | |
| | | 4700 | 472 | | | | | | | | | | | | | | | | | | | | | | |
| | | 6800 | 682 | | | | | | | | | | | | | | | | | | | | | | |
| Cap (µF) | | 0.01 | 103 | | | | | | | | | | | | | | | | | | | | | | |
| | | 0.015 | 153 | | | | | | | | | | | | | | | | | | | | | | |
| | | 0.022 | 223 | | | | | | | | | | | | | | | | | | | | | | |
| | | 0.033 | 333 | | | | | | | | | | | | | | | | | | | | | | |
| | | 0.047 | 473 | | | | | | | | | | | | | | | | | | | | | | |
| | | 0.068 | 683 | | | | | | | | | | | | | | | | | | | | | | |
| | | 0.1 | 104 | | | | | | | | | | | | | | | | | | | | | | |
| | | 0.15 | 154 | | | | | | | | | | | | | | | | | | | | | | |
| | | 0.22 | 224 | | | | | | | | | | | | | | | | | | | | | | |
| | | 0.33 | 334 | | | | | | | | | | | | | | | | | | | | | | |
| | | 0.47 | 474 | | | | | | | | | | | | | | | | | | | | | | |
| | | 0.68 | 684 | | | | | | | | | | | | | | | | | | | | | | |
| | | 1.0 | 105 | | | | | | | | | | | | | | | | | | | | | | |
| | | 1.5 | 155 | | | | | | | | | | | | | | | | | | | | | | |
| | | 2.2 | 225 | | | | | | | | | | | | | | | | | | | | | | |
| | | 3.3 | 335 | | | | | | | | | | | | | | | | | | | | | | |
| | | 4.7 | 475 | | | | | | | | | | | | | | | | | | | | | | |
| | | 10 | 106 | | | | | | | | | | | | | | | | | | | | | | |
| | | 22 | 226 | | | | | | | | | | | | | | | | | | | | | | |
| | | 47 | 476 | | | | | | | | | | | | | | | | | | | | | | |
| | | 100 | 107 | | | | | | | | | | | | | | | | | | | | | | |
| WVDC | | 10 | 16 | 25 | 50 | 100 | 200 | 500 | 16 | 25 | 50 | 100 | 200 | 500 | 50 | 100 | 200 | 25 | 50 | 100 | 200 | 500 | 50 | 100 | 200 |
| SIZE | | 1210 | | | | | | | 1812 | | | | | 1825 | | | 2220 | | | | 2225 | | | | |



| Letter | A | B | C | E | G | J | K | M | N | P | Q | X | Y | Z | 7 | |
|----------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--|
| Max. Thickness | 0.33 (0.013) | 0.22 (0.009) | 0.56 (0.022) | 0.71 (0.028) | 0.90 (0.035) | 0.94 (0.037) | 1.02 (0.040) | 1.27 (0.050) | 1.40 (0.055) | 1.52 (0.060) | 1.78 (0.070) | 2.29 (0.090) | 2.54 (0.100) | 2.79 (0.110) | 3.30 (0.130) | |
| | PAPER | | | | | | EMBOSSED | | | | | | | | | |

NOTE: Contact factory for non-specified capacitance values

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