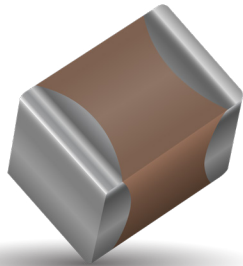


NASA Space Level BME X7R MLCC

S311-P838 Approved



AVX is the first company to be awarded the NASA S311-P838 specification for its Space BME X7R MLCC technology. This technology delivers an advanced capacitance voltage capability compared to conventional PME (Precious Metal Electrode) technologies while meeting the reliability levels demanded by NASA's space industry. The technology has several key benefits, downsizing case sizes, reducing weight and allowing more efficient use of the PCB area available. The range is tested using Mil spec standards and methods including 100% ultrasonic examination in compliance with the NASA space specification. These surface mount components also incorporate Flexitem[®], which greatly enhances resistance to any of the mechanical stress experienced by MLCCs during PCB assembly and in operation.

FEATURES

- Higher CV capability than standard capacitors resulting in reduced size / weight of components and saving in PCB space required.
- Every production lot will have a C of C, DPA and a summary data package.
- Use of Flexitem[®] technology for enhanced mechanical stress resistance.
- Case sizes: 0603 - 1812, cap values 2.2nF - 8.2uF available.
- Voltages: 16 - 100 Volts

HOW TO ORDER

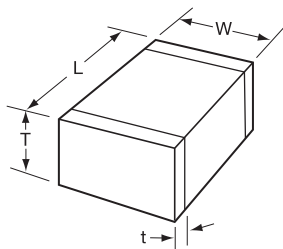
| | | | | | | | | |
|------------------------|---|--|-----------------------------------|---|---|---|--|---|
| G311P838 | A | F | X | 825 | J | 1 | R | 3 |
| ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| GSFC Identifier | Ultrasonic Examination A = 100% | Size Code A = 0402 B = 0603 C = 0805 D = 1206 E = 1210 F = 1812 | Dielectric Type X = X7R | Capacitance in pF 2 significant digits + number of zeros e.g. 103 = 10nF 225 = 2.2μF | Tolerance J = ±5% K = ±10% M = ±20% | Voltage 1 = 25Vdc 2 = 50Vdc 3 = 100Vdc 6 = 16Vdc | Termination R = Sn/Pb plated | Packaging/ Marking 1 = T/R unmarked capacitors 2 = T/R marked capacitors 3 = Waffle Pack, unmarked capacitors 4 = Waffle Pack, marked capacitors |

Please note all parts are terminated with a minimum 10% Pb plating.

DIMENSIONS

mm (inches)

| Size | 0603 | | 0805 | | 1206 | | 1210 | | 1812 | |
|---------------|-------------------|-----------------|-------------------|-----------------|-------------------|-----------------|-------------------|-----------------|-------------------|-----------------|
| | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. |
| (L) Length | 1.48 (0.058) | 1.75 (0.069) | 1.79 (0.070) | 2.29 (0.090) | 3.00 (0.118) | 3.40 (0.134) | 3.00 (0.118) | 3.40 (0.134) | 4.19 (0.165) | 4.95 (0.195) |
| (W) Width | 0.66 (0.026) | 0.97 (0.038) | 1.01 (0.040) | 1.45 (0.057) | 1.40 (0.055) | 1.80 (0.071) | 2.25 (0.088) | 2.70 (0.108) | 2.79 (0.115) | 3.56 (0.140) |
| (T) Thickness | 1.02 (0.040) Max. | | 1.52 (0.060) Max. | | 1.80 (0.071) Max. | | 2.80 (0.110) Max. | | 2.80 (0.110) Max. | |
| (t) terminal | 0.20 (0.008) | 0.50 (0.020) | 0.25 (0.010) | 0.75 (0.030) | 0.25 (0.010) | 0.75 (0.030) | 0.25 (0.010) | 0.75 (0.030) | 0.25 (0.010) | 0.95 (0.037) |



The Important Information/Disclaimer is incorporated in the catalog where these specifications came from or available online at www.avx.com/disclaimer/ by reference and should be reviewed in full before placing any order.

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PREFERRED SIZES ARE SHADED

| Case Sizes | | B (0603) | | | | C (0805) | | | | D (1206) | | | | E (1210) | | | | F (1812) | | | |
|------------|----------|----------|--------|--------|--------|----------|--------|--------|--------|----------|--------|--------|--------|----------|--------|--------|--------|----------|--------|--------|--------|
| Code | Value | 16V | 25V | 50V | 100V | 16V | 25V | 50V | 100V | 16V | 25V | 50V | 100V | 16V | 25V | 50V | 100V | 16V | 25V | 50V | 100V |
| 222 | 2.2 (nF) | Shaded | Shaded | Shaded | Shaded | | | | | | | | | | | | | | | | |
| 272 | 2.7 | Shaded | Shaded | Shaded | Shaded | | | | | | | | | | | | | | | | |
| 332 | 3.3 | Shaded | Shaded | Shaded | Shaded | | | | | | | | | | | | | | | | |
| 392 | 3.9 | Shaded | Shaded | Shaded | Shaded | | | | | | | | | | | | | | | | |
| 472 | 4.7 | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | | | | | | | | | | | | |
| 562 | 5.6 | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | | | | | | | | | | | | |
| 682 | 6.8 | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | | | | | | | | | | | | |
| 822 | 8.2 | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | | | | | | | | | | | | |
| 103 | 10 | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | | | | | | | | | | | | |
| 123 | 12 | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | | | | | | | | | | | | |
| 153 | 15 | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | | | | | | | | | | | | |
| 183 | 18 | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | | | | | | | | |
| 223 | 22 | Shaded | Shaded | Shaded | White | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | | | | | | | | |
| 273 | 27 | Shaded | Shaded | Shaded | White | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | | | | | | | | |
| 333 | 33 | Shaded | Shaded | Shaded | White | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | | | | | | | | |
| 393 | 39 | Shaded | Shaded | Shaded | White | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | | | | | | | | |
| 473 | 47 | Shaded | Shaded | Shaded | White | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | | | | |
| 563 | 56 | Shaded | Shaded | Shaded | White | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | | | |
| 683 | 68 | Shaded | Shaded | Shaded | White | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | | | |
| 823 | 82 | Shaded | Shaded | Shaded | White | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | | | |
| 104 | 100 | Shaded | Shaded | Shaded | White | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | | | |
| 124 | 120 | Shaded | Shaded | Shaded | White | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | | | |
| 154 | 150 | Shaded | Shaded | Shaded | White | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded |
| 184 | 180 | Shaded | Shaded | Shaded | White | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded |
| 224 | 220 | White | White | White | White | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded |
| 274 | 270 | White | White | White | White | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded |
| 334 | 330 | White | White | White | White | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded |
| 394 | 390 | White | White | White | White | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded |
| 474 | 470 | White | White | White | White | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded |
| 564 | 560 | White | White | White | White | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded |
| 684 | 680 | White | White | White | White | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded |
| 824 | 820 | White | White | White | White | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded |
| 105 | 1 (µF) | White | White | White | White | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded | Shaded |
| 125 | 1.2 | White | White | White | White | White | White | White | White | Shaded | Shaded | White | White | White | White | White | White | White | White | White | White |
| 155 | 1.5 | White | White | White | White | White | White | White | White | Shaded | Shaded | White | White | White | White | White | White | White | White | White | White |
| 185 | 1.8 | White | White | White | White | White | White | White | White | Shaded | Shaded | White | White | White | White | White | White | White | White | White | White |
| 225 | 2.2 | White | White | White | White | White | White | White | White | Shaded | Shaded | White | White | White | White | White | White | White | White | White | White |
| 275 | 2.7 | White | White | White | White | White | White | White | White | Shaded | Shaded | White | White | White | White | White | White | White | White | White | White |
| 335 | 3.3 | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White |
| 395 | 3.9 | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White |
| 475 | 4.7 | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White |
| 565 | 5.6 | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White |
| 685 | 6.8 | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White |
| 825 | 8.2 | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White |
| 106 | 10 | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White | White |

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ELECTRICAL MEASUREMENTS AT ROOM TEMPERATURE

| Charateristics | Symbol | Test Method and Conditions | Tolerance (± %) | Limits | | Unit |
|-----------------------|----------------|---|-----------------|--------------------|--------------------|-------|
| | | | | Min. | Max. | |
| Capacitance | C _A | MIL-STD-202 Method 305 25°C, 1KHz, 1Vrms | 5 | 0.95C _n | 1.05C _n | pF |
| | | | 10 | 0.9C _n | 1.1C _n | |
| | | | 20 | 0.8C _n | 1.2C _n | |
| Insulation Resistance | R _I | MIL-STD-202 Method 302 120 sec, 25°C For C _n ≤ 10000pF: For C _n > 10000pF: | All | 100 | – | GΩ |
| | | | | 1000 | – | GΩ nF |
| Dissipation Factor | Df | Measured 25°C, 1KHz, 1Vrms, 16-25 Volts > 25 Volts | All | | 3.5 | % |
| | | | | | 2.5 | % |
| Voltage Proof | VP | MIL-STD-202 Method 301 60 sec | All | 2.5U _R | – | V |

ELECTRICAL MEASUREMENTS AT HIGH AND LOW TEMPERATURE

| Charateristics | Symbol | Test Method and Conditions (Note 1) | Limits | | Unit |
|-----------------------|----------------|--|--------|------|-------|
| | | | Min. | Max. | |
| Insulation Resistance | R _I | MIL-STD-202 Method 302 For C _n ≤ 10000pF: For C _n > 10000pF: | 100 | – | GΩ |
| | | | 1000 | | GΩ nF |