



**THE DATASHEET OF
600S390JT250XT**



RF/Microwave Capacitors

RF/Microwave Multilayer Capacitors (MLC)

600S Ultra-Low ESR, High Q, NPO Capacitors



FEATURES

- Lowest ESR in Class
- Highest Working Voltage in Class - 250 V
- Standard EIA Size: 0603
- Laser Marking (Optional)
- High Self-Resonance Frequencies

600 SERIES OVERVIEW

| Series | Case Size | EIA Case Size |
|--------|-----------|---------------|
| 600 | L | 0402 |
| 600 | S | 0603 |
| 600 | F | 0805 |

APPLICATIONS

- Cellular Base Stations
- Broadband Wireless Services
- Satellite Communications
- Subscriber-based Wireless Devices
- WiFi (802.11)
- Public Safety Radio

CIRCUIT APPLICATIONS

- Filter Networks
- High Q Frequency Sources
- Matching Networks
- Tuning, Coupling, Bypass and DC Blocking

ELECTRICAL SPECIFICATIONS

| | |
|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Capacitance | 0.1 to 100 pF |
| Tolerances | See Cap Value Chart |
| Working Voltage (WVDC) | 250 V |
| Quality Factor | Greater than 2,000 at 1 MHz (Cap Values $\leq 10\text{pf}$.0010 Max. @ 1MHz Cap Values $> 10\text{pf}$.0005 Max. @ 1MHz) |
| Operating Temperature Range | -55°C to +125°C (no derating of working voltage) |
| Temperature Coefficient of Capacitance (TCC) | 0 ± 30 ppm/°C, -55°C to +125°C 10^5 MΩ min. at +25°C at rated WVDC 10^4 MΩ min. at +125°C at rated WVDC |
| Dielectric Withstanding Voltage (DWV) | 2.5 x WVDC for 5 seconds |
| Aging | None |
| Piezo Effects | None |

PACKAGING OPTIONS



Tape & Reel



Vertical Orientation Tape & Reel



ENVIRONMENTAL CHARACTERISTICS

| | |
|----------------------------|------------------------------------------|
| Thermal Shock | 5 Cycles, -55°C to 125°C |
| Moisture Resistance | Mil-STD-202, Method 106 |
| Life Test | 2000 hours at 125°C at 2X WVDC |
| Solderability | Solder Coverage > 90% of end termination |
| Terminal Strength | 4 lbs. typ., 2 lb. min. |
| Military Approval | DSCC Drawing Number 05002 |

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CAPACITANCE VALUES

| Value (pF) | Cap Code | Marking | Tolerances | Value (pF) | Cap Code | Marking | Tolerances | Value (pF) | Cap Code | Marking | Tolerances |
|------------|----------|---------|------------|------------|----------|---------|---------------|------------|----------|---------|---------------|
| 0.1 | 0R1 | A9 | A, B | 2.7 | 2R7 | L0 | A, B, C, D | 20 | 200 | H1 | F, G, J, K, M |
| 0.2 | 0R2 | H9 | A, B | 3.0 | 3R0 | M0 | A, B, C, D | 22 | 220 | J1 | F, G, J, K, M |
| 0.3 | 0R3 | M9 | A, B, C | 3.3 | 3R3 | N0 | A, B, C, D | 24 | 240 | K1 | F, G, J, K, M |
| 0.4 | 0R4 | d9 | A, B, C | 3.6 | 3R6 | P0 | A, B, C, D | 27 | 270 | L1 | F, G, J, K, M |
| 0.5 | 0R5 | f9 | A, B, C | 3.9 | 3R9 | Q0 | A, B, C, D | 30 | 300 | M1 | F, G, J, K, M |
| 0.6 | 0R6 | m9 | A, B, C | 4.3 | 4R3 | R0 | A, B, C, D | 33 | 330 | N1 | F, G, J, K, M |
| 0.7 | 0R7 | n9 | A, B, C | 4.7 | 4R7 | S0 | A, B, C, D | 36 | 360 | P1 | F, G, J, K, M |
| 0.8 | 0R8 | t9 | A, B, C | 5.1 | 5R1 | T0 | A, B, C, D | 39 | 390 | Q1 | F, G, J, K, M |
| 0.9 | 0R9 | y9 | A, B, C | 5.6 | 5R6 | U0 | A, B, C, D | 43 | 430 | R1 | F, G, J, K, M |
| 1.0 | 1R0 | A0 | A, B, C, D | 6.2 | 6R2 | V0 | A, B, C, D | 47 | 470 | S1 | F, G, J, K, M |
| 1.1 | 1R1 | B0 | A, B, C, D | 6.8 | 6R8 | W0 | B, C, J, K | 51 | 510 | T1 | F, G, J, K, M |
| 1.2 | 1R2 | C0 | A, B, C, D | 7.5 | 7R5 | X0 | B, C, J, K | 56 | 560 | U1 | F, G, J, K, M |
| 1.3 | 1R3 | D0 | A, B, C, D | 8.2 | 8R2 | Y0 | B, C, J, K | 62 | 620 | V1 | F, G, J, K, M |
| 1.5 | 1R5 | E0 | A, B, C, D | 9.1 | 9R1 | Z0 | B, C, J, K | 68 | 680 | W1 | F, G, J, K, M |
| 1.6 | 1R6 | F0 | A, B, C, D | 10 | 100 | A1 | F, G, J, K, M | 75 | 750 | X1 | F, G, J, K, M |
| 1.8 | 1R8 | G0 | A, B, C, D | 11 | 110 | B1 | F, G, J, K, M | 82 | 820 | Y1 | F, G, J, K, M |
| 2.0 | 2R0 | H0 | A, B, C, D | 12 | 120 | C1 | F, G, J, K, M | 91 | 910 | Z1 | F, G, J, K, M |
| 2.2 | 2R2 | J0 | A, B, C, D | 15 | 150 | E1 | F, G, J, K, M | 100 | 101 | A2 | F, G, J, K, M |
| 2.4 | 2R4 | K0 | A, B, C, D | 18 | 180 | G1 | F, G, J, K, M | | | | |

HOW TO ORDER

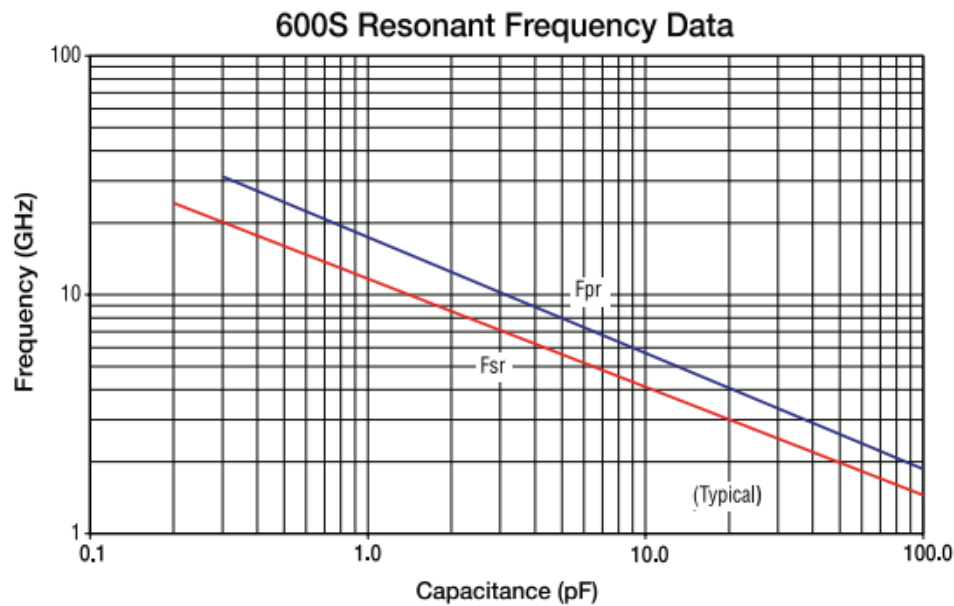
Series 600
Case Size S
 See mechanical dimensions below
Capacitance Code 0R2
 EIA Capacitance Code in pF.
 Third digit = number of zeros or after "R" significant figures
Capacitance Tolerance Code B

| Code | A | B | C | D | F | G | J | K | M |
|------|----------|---------|----------|---------|-----|-----|-----|------|------|
| Tol. | ±0.05 pF | ±0.1 pF | ±0.25 pF | ±0.5 pF | ±1% | ±2% | ±5% | ±10% | ±20% |

 The above part number refers to a 600F Series (case size F) 10 pF capacitor, J tolerance (±5%), 250 WVDC, with T termination (Tin Plated over Nickel Barrier, RoHS Compliant), Laser Marking and Tape and Reel packaging.
Termination Style Code T
 T = Tin Plated over Nickel Barrier (RoHS Compliant)
 TN = Tin Plated Non-Magnetic Barrier
 W = Tin/Lead Solder Nickel Barrier
Voltage Rating 250
Laser Marking (Optional) X**
Packaging T
 T = Tape and Reel, 500 pcs
 T4K = Tape and Reel, 4000 pcs
 TV = Vertical Tape and Reel, 500 pcs

**Laser Marking is optional





600F Series Data Sheet Condition Description

Capacitors horizontally mounted on 13.3-mil thick Rogers R0435® softboard 29-mils wide 1/2 oz. Cu traces
FSR = lowest frequency at which S₁₁ response, referenced at capacitor edge, crosses real axis on Smith Chart.
FPR = lowest frequency at which there is a notch in S₂₁ magnitude response.

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OUTLINE DIMENSIONS



| | | |
|-----------------|--------------------------------------|--------------------------------------|
| S (0603) | L: $.063 \pm .006$ (1.60 \pm 0.15) | T: $.035$ max (0.89 max) |
| | W: $.032 \pm .006$ (.81 \pm 0.15) | Y: $.014 \pm .006$ (0.36 \pm 0.15) |

inches (mm)

SUGGESTED MOUNTING PAD DIMENSIONS



Case Size L, S, and F

| Case Size | A Min. | B Min. | C Min. | D Min. |
|--------------------|-----------------|-----------------|-----------------|-----------------|
| 0402 (1005) | .0275 (0.70) | .0354 (0.90) | .0157 (0.40) | .0866 (2.20) |
| 0603 (1608) | .0393 (1.00) | .0433 (1.10) | .0236 (0.60) | .110 (2.80) |
| 0805 (2012) | .0590 (1.50) | .0512 (1.30) | .0236 (0.60) | .1259 (3.20) |

inches (mm)

DESIGN KITS

| Kit # | RoHS Compliant | Item # | Description | Cap. Value Range (pF) | Cap. Value (pF) | Tol. (pF) | Price |
|---------|----------------|---------|----------------------------------------------------------------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------|-----------|----------|
| Kit 25T | | DK0025T | 600S Series Ultra-low ESR, High Q Microwave Capacitors 16 different values, 15 pcs. min. per value | 0.1 to 2.0 | 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.1, 1.2, 1.5 \pm 0.1% 1.6, 1.8, 2.0 \pm 0.25% | | \$100.00 |
| Kit 26T | | DK0026T | 600S Series Ultra-low ESR, High Q Microwave Capacitors 16 different values, 15 pcs. min. per value | 0.1 to 10 | 1.0, 1.2, 1.5, 1.8, 2.0, 2.2, 2.4, 2.7, 3.0, 3.3 \pm 0.1% 3.9, 4.7, 5.6, 6.8, 8.2 \pm 0.25% 10 \pm 5% | | \$100.00 |
| Kit 27T | | DK0027T | 600S Series Ultra-low ESR, High Q Microwave Capacitors 16 different values, 15 pcs. min. per value | 10 to 100 | 10, 12, 15, 18, 20, 22, 24, 27, 30, 33, 39, 47 56, 68, 82, 100 \pm 5% | | \$100.00 |

For Online Kit Orders, Catalog & Application Notes, Visit: www.avx.com

Looking for pricing, stock, or lifecycle information?

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