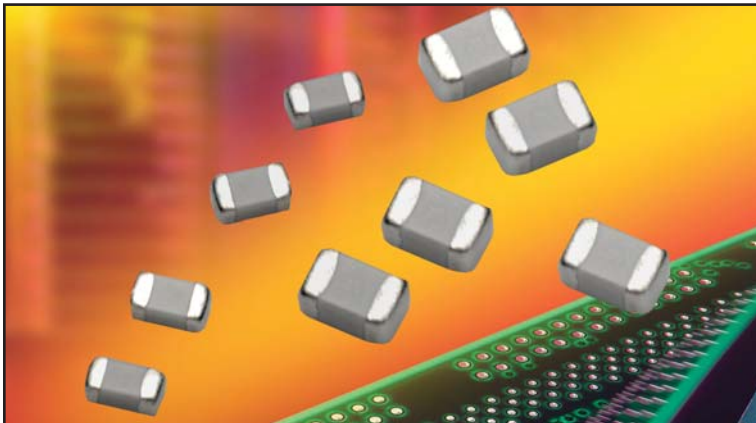


# Microwave MLC's

SQCS (0603) SQCF (0805) Ultra Low ESR MLC



## FEATURES:

- Low ESR
- High Q
- High Self Resonance
- Capacitance Range 0.1 pF to 240 pF
- EIA Size

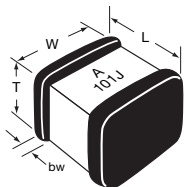
## APPLICATIONS:

- RF Power Amplifiers
- Low Noise Amplifiers
- Filter Networks
- Point to Point Radios

## HOW TO ORDER

|                  |                                            |                                 |                                                       |                                                                                                                                                                                          |                                                                                                                              |                                                |                                                                                                                  |                                                                                                                                      |
|------------------|--------------------------------------------|---------------------------------|-------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| <b>SQ</b>        | <b>CS</b>                                  | <b>V</b>                        | <b>A</b>                                              | <b>100</b>                                                                                                                                                                               | <b>J</b>                                                                                                                     | <b>A</b>                                       | <b>T</b>                                                                                                         | <b>1A</b>                                                                                                                            |
| <b>AVX Style</b> | <b>Case Size</b><br>CS = 0603<br>CF = 0805 | <b>Voltage Code</b><br>V = 250V | <b>Temperature Coefficient Code</b><br>A = 0±30ppm/°C | <b>Capacitance</b><br>EIA Capacitance Code in pF.<br>First two digits = significant figures or "R" for decimal place.<br>Third digit = number of zeros or after "R" significant figures. | <b>Capacitance Tolerance Code</b><br>A = ±.05 pF<br>B = ±.1 pF<br>C = ±.25 pF<br>D = ±.5 pF<br>F = ±1%<br>G = ±2%<br>J = ±5% | <b>Failure Rate Code</b><br>A = Not Applicable | <b>Termination Style Code</b><br>**7 = Ag/Ni/Au<br>J = Nickel Barrier Sn/Pb (60/40)<br>**T = 100% Tin (Standard) | <b>Packaging Code</b><br>1A = 7" Reel Unmarked<br>ME = 7" Reel Marked<br><br>* Vertical T&R available<br>* 500 piece reels available |

\*\*RoHS compliant



## MECHANICAL DIMENSIONS: inches (millimeters)

| Case | Length (L)               | Width (W)                | Thickness (T)       | Band Width (bw)          |
|------|--------------------------|--------------------------|---------------------|--------------------------|
| SQCS | .063±.006<br>(1.60±.152) | .032±.006<br>(.813±.152) | .030 Max.<br>(.762) | .014±.006<br>(.357±.152) |
| SQCF | .079±.008<br>(2.01±.200) | .049±.008<br>(1.24±.200) | .045 Max.<br>(1.14) | .014±.006<br>(.357±.152) |

**TAPE & REEL:** All tape and reel specifications are in compliance with EIA RS481 (equivalent to IEC 286 part 3).

- 8mm carrier
- 7" reel = 4000 pcs (500 piece options)

**Not RoHS Compliant**



For RoHS compliant products, please select correct termination style.

### ELECTRICAL SPECIFICATIONS

|                                       |                                                                                                                             |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Temperature Coefficient (TCC)         | (A) 0 $\pm$ 30 PPM/°C                                                                                                       |
| Operating Temperature                 | -55°C to +125°C                                                                                                             |
| Quality Factor (Q)                    | Greater than 10,000 at 1 MHz                                                                                                |
| Insulation Resistance (IR)            | 0.1 pF to 240 pF<br>10 <sup>5</sup> Megohms min. @ 25°C at rated WVDC<br>10 <sup>4</sup> Megohms min. @ 125°C at rated WVDC |
| Working Voltage (WVDC)                | See Capacitance Values table                                                                                                |
| Dielectric Withstanding Voltage (DWW) | 250% of rated WVDC for 5 secs                                                                                               |
| Aging Effects                         | None                                                                                                                        |
| Piezoelectric Effects                 | None                                                                                                                        |
| Capacitance Drift                     | $\pm$ (0.02% or 0.02 pF), whichever is greater                                                                              |

### ENVIRONMENTAL CHARACTERISTICS

AVX SQ will meet and exceed the requirements of EIA-198, MIL-PRF-55681 and MIL-PRF-123

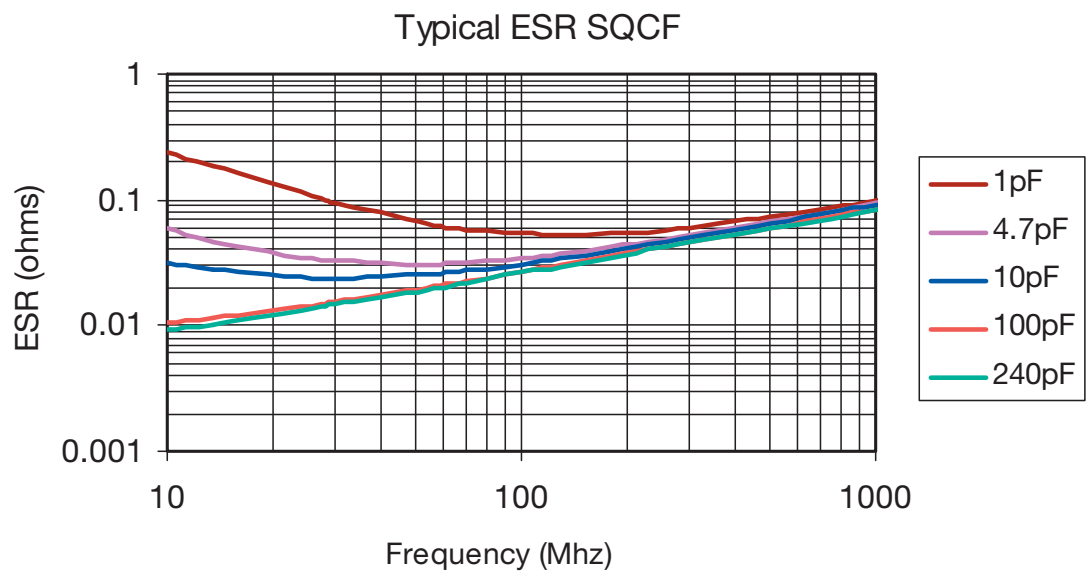
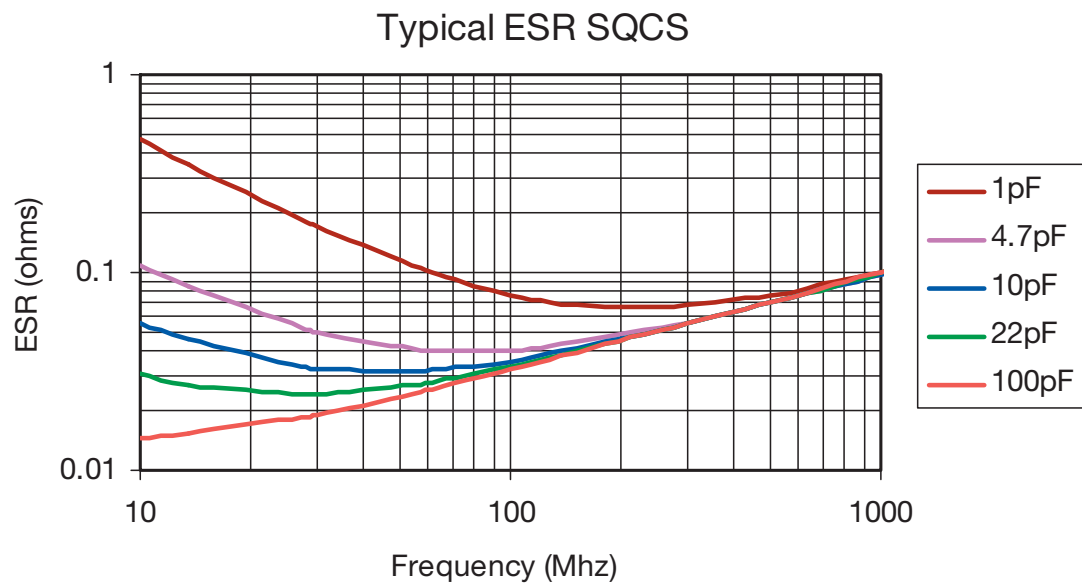
|                           |                                                                                                                                               |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Thermal Shock             | Mil-STD-202, Method 107, Condition A                                                                                                          |
| Moisture Resistance       | Mil-STD-202, Method 106                                                                                                                       |
| Low Voltage Humidity      | Mil-STD-202, Method 103, condition A, with 1.5 VDC applied while subjected to an environment of 85°C with 85% relative humidity for 240 hours |
| Life Test                 | Mil-STD-202, Method 108, for 2000 hours at 125°C                                                                                              |
| Shock                     | Mil-STD-202, Method 213, Condition J                                                                                                          |
| Vibration                 | Mil-STD-202, Method 204, Condition B                                                                                                          |
| Immersion                 | Mil-STD-202, Method 104, Condition B                                                                                                          |
| Salt Spray                | Mil-STD-202, Method 101, Condition B                                                                                                          |
| Solderability             | Mil-STD-202, Method 208                                                                                                                       |
| Terminal Strength         | Mil-STD-202, Method 211                                                                                                                       |
| Temperature Cycling       | Mil-STD-202, Method 102, Condition C                                                                                                          |
| Barometric Pressure       | Mil-STD-202, Method 105, Condition B                                                                                                          |
| Resistance to Solder Heat | Mil-STD-202, Method 210, Condition C                                                                                                          |

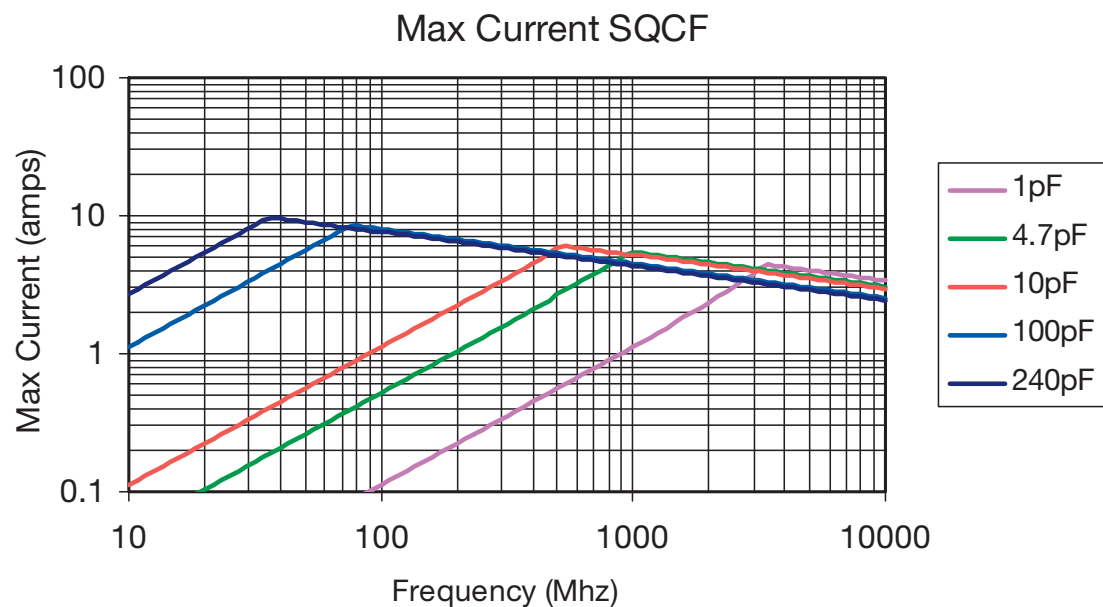
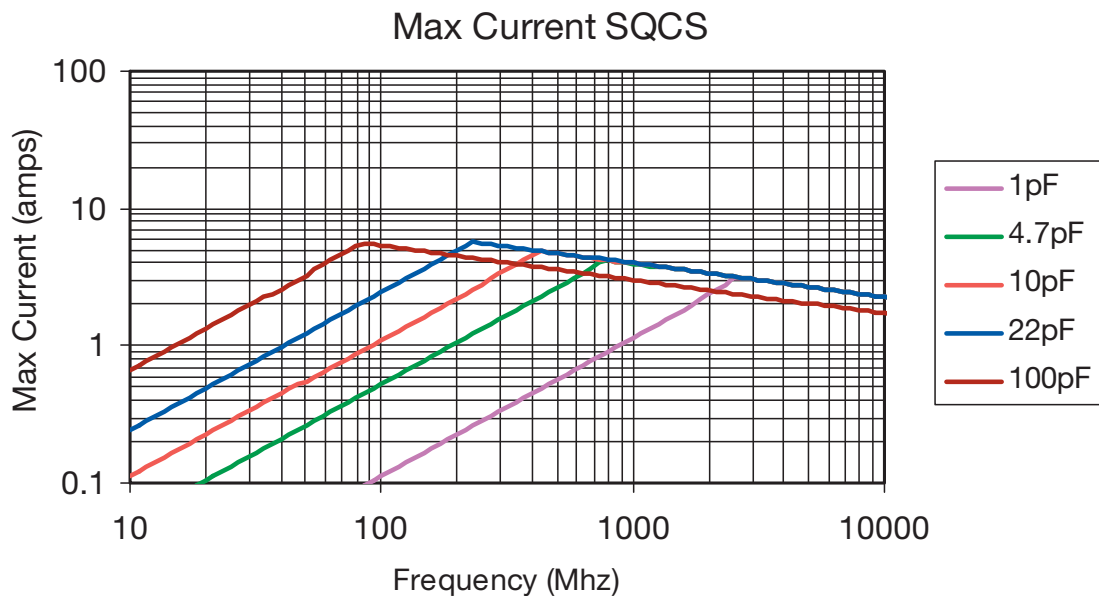
**TABLE I: TC: A (0±30PPM/°C) CASE SIZE S**

| Cap. pF | Cap. Tol. | WVDC | Cap. pF | Cap. Tol. | WVDC | Cap. pF | Cap. Tol. | WVDC |
|---------|-----------|------|---------|-----------|------|---------|-----------|------|
| 0.1     | A, B      | 250  | 2.4     | A, B, C   | 250  | 18      | F, G, J   | 250  |
| 0.2     | A, B      | 250  | 2.7     | A, B, C   | 250  | 20      | F, G, J   | 250  |
| 0.3     | A, B      | 250  | 3.0     | A, B, C   | 250  | 22      | F, G, J   | 250  |
| 0.4     | A, B      | 250  | 3.3     | A, B, C   | 250  | 24      | F, G, J   | 250  |
| 0.5     | A, B, C   | 250  | 3.6     | A, B, C   | 250  | 27      | F, G, J   | 250  |
| 0.6     | A, B, C   | 250  | 3.9     | A, B, C   | 250  | 30      | F, G, J   | 250  |
| 0.7     | A, B, C   | 250  | 4.3     | A, B, C   | 250  | 33      | F, G, J   | 250  |
| 0.8     | A, B, C   | 250  | 4.7     | A, B, C   | 250  | 36      | F, G, J   | 250  |
| 0.9     | A, B, C   | 250  | 5.1     | A, B, C   | 250  | 39      | F, G, J   | 250  |
| 1.0     | A, B, C   | 250  | 5.6     | A, B, C   | 250  | 43      | F, G, J   | 250  |
| 1.1     | A, B, C   | 250  | 6.2     | A, B, C   | 250  | 47      | F, G, J   | 250  |
| 1.2     | A, B, C   | 250  | 6.8     | B, C, D   | 250  | 51      | F, G, J   | 250  |
| 1.3     | A, B, C   | 250  | 7.5     | B, C, D   | 250  | 56      | F, G, J   | 250  |
| 1.4     | A, B, C   | 250  | 8.2     | B, C, D   | 250  | 62      | F, G, J   | 250  |
| 1.5     | A, B, C   | 250  | 9.1     | B, C, D   | 250  | 68      | F, G, J   | 250  |
| 1.6     | A, B, C   | 250  | 10      | F, G, J   | 250  | 75      | F, G, J   | 250  |
| 1.7     | A, B, C   | 250  | 11      | F, G, J   | 250  | 82      | F, G, J   | 250  |
| 1.8     | A, B, C   | 250  | 12      | F, G, J   | 250  | 91      | F, G, J   | 250  |
| 1.9     | A, B, C   | 250  | 13      | F, G, J   | 250  | 100     | F, G, J   | 250  |
| 2.0     | A, B, C   | 250  | 15      | F, G, J   | 250  |         |           |      |
| 2.2     | A, B, C   | 250  | 16      | F, G, J   | 250  |         |           |      |

**TABLE II: TC: A (0±30PPM/°C) CASE SIZE F**

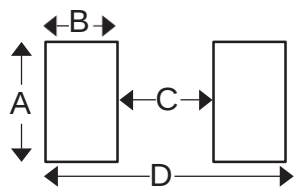
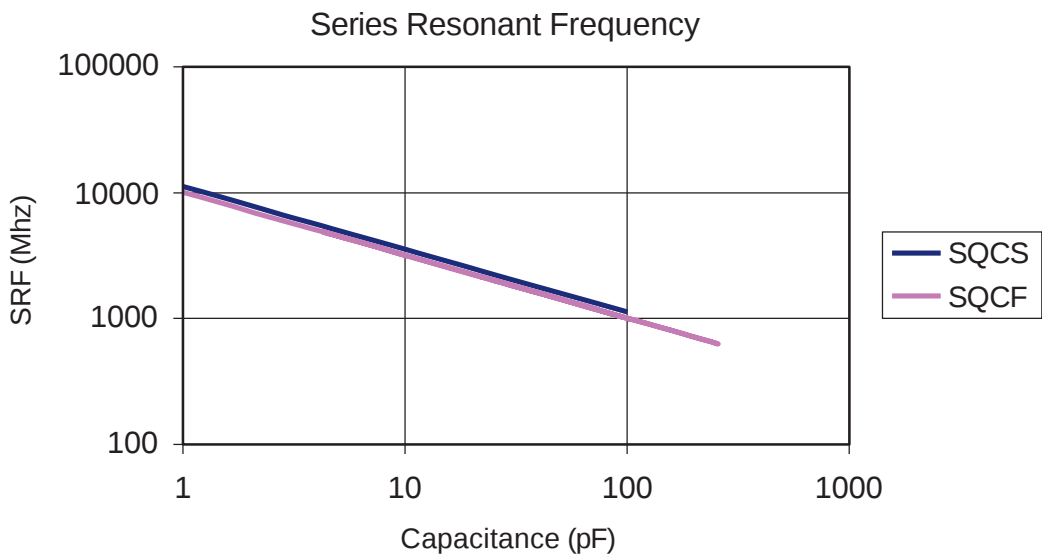
| Cap. pF | Cap. Tol. | WVDC | Cap. pF | Cap. Tol. | WVDC | Cap. pF | Cap. Tol. | WVDC | Cap. pF | Cap. Tol. | WVDC |
|---------|-----------|------|---------|-----------|------|---------|-----------|------|---------|-----------|------|
| 0.1     | A, B      | 250  | 2.4     | A, B, C   | 250  | 18      | F, G, J   | 250  | 150     | F, G, J   | 250  |
| 0.2     | A, B      | 250  | 2.7     | A, B, C   | 250  | 20      | F, G, J   | 250  | 180     | F, G, J   | 250  |
| 0.3     | A, B      | 250  | 3.0     | A, B, C   | 250  | 22      | F, G, J   | 250  | 200     | F, G, J   | 250  |
| 0.4     | A, B      | 250  | 3.3     | A, B, C   | 250  | 24      | F, G, J   | 250  | 220     | F, G, J   | 250  |
| 0.5     | A, B, C   | 250  | 3.6     | A, B, C   | 250  | 27      | F, G, J   | 250  | 240     | F, G, J   | 250  |
| 0.6     | A, B, C   | 250  | 3.9     | A, B, C   | 250  | 30      | F, G, J   | 250  |         |           |      |
| 0.7     | A, B, C   | 250  | 4.3     | A, B, C   | 250  | 33      | F, G, J   | 250  |         |           |      |
| 0.8     | A, B, C   | 250  | 4.7     | A, B, C   | 250  | 36      | F, G, J   | 250  |         |           |      |
| 0.9     | A, B, C   | 250  | 5.1     | A, B, C   | 250  | 39      | F, G, J   | 250  |         |           |      |
| 1.0     | A, B, C   | 250  | 5.6     | A, B, C   | 250  | 43      | F, G, J   | 250  |         |           |      |
| 1.1     | A, B, C   | 250  | 6.2     | A, B, C   | 250  | 47      | F, G, J   | 250  |         |           |      |
| 1.2     | A, B, C   | 250  | 6.8     | B, C, D   | 250  | 51      | F, G, J   | 250  |         |           |      |
| 1.3     | A, B, C   | 250  | 7.5     | B, C, D   | 250  | 56      | F, G, J   | 250  |         |           |      |
| 1.4     | A, B, C   | 250  | 8.2     | B, C, D   | 250  | 62      | F, G, J   | 250  |         |           |      |
| 1.5     | A, B, C   | 250  | 9.1     | B, C, D   | 250  | 68      | F, G, J   | 250  |         |           |      |
| 1.6     | A, B, C   | 250  | 10      | F, G, J   | 250  | 75      | F, G, J   | 250  |         |           |      |
| 1.7     | A, B, C   | 250  | 11      | F, G, J   | 250  | 82      | F, G, J   | 250  |         |           |      |
| 1.8     | A, B, C   | 250  | 12      | F, G, J   | 250  | 91      | F, G, J   | 250  |         |           |      |
| 1.9     | A, B, C   | 250  | 13      | F, G, J   | 250  | 100     | F, G, J   | 250  |         |           |      |
| 2.0     | A, B, C   | 250  | 15      | F, G, J   | 250  | 110     | F, G, J   | 250  |         |           |      |
| 2.2     | A, B, C   | 250  | 16      | F, G, J   | 250  | 120     | F, G, J   | 250  |         |           |      |





# Microwave MLC's

SQCS (0603) SQCF (0805) Ultra Low ESR MLC



## MOUNTING PAD DIMENSIONS: inches (millimeters)

| Case | Amin          | Bmin          | Cmin          | Dmin          |
|------|---------------|---------------|---------------|---------------|
| SQCA | 0.082 (2.083) | 0.051 (1.295) | 0.032 (0.813) | 0.130 (3.302) |
| SQCB | 0.131 (3.327) | 0.051 (1.295) | 0.074 (1.880) | 0.177 (4.496) |
| SQCS | 0.038 (0.965) | 0.043 (1.092) | 0.025 (0.635) | 0.112 (2.845) |
| SQCF | 0.059 (1.499) | 0.051 (1.295) | 0.024 (0.610) | 0.125 (3.175) |

## SQCS & SQCF ENGINEERING KITS

| PN           | Series | Diel | Term             | Range       |
|--------------|--------|------|------------------|-------------|
| Kit SQ1800LF | SQCF   | C0G  | 100% Tin<br>RoHS | .1 to 10pF  |
| Kit SQ1900LF |        |      |                  | 10 to 240pF |
| Kit SQ1500LF | SQCS   | C0G  | 100%Tin<br>RoHS  | .1 to 10pF  |
| Kit SQ1600LF |        |      |                  | 10 to 100pF |

| Tolerance per PF: |                  |
|-------------------|------------------|
| B from .1 to 3.3  | J from 10 to 240 |
| C from 3.9 to 8.2 |                  |



# Mouser Electronics

Authorized Distributor

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[SQCSVA2R2BAT6A](#) [SQCSVA4R7BAT6A](#) [SQCSVA130FAJ1A](#) [SQCSVA220GAJ1A](#) [SQCSVA330GAJ1A](#)  
[SQCSVA4R7CAJ1A](#) [SQCSVA0R2BA16A](#) [SQCFVA3R9CAT1A](#) [SQCFVA3R9CATME](#) [SQCSVA9R1CAT1A](#)  
[SQCSVA5R1CATME](#) [SQCSVA6R2CAT1A](#) [SQCSVA8R2CATME](#) [SQCFVA241FAT1A](#) [SQCFVA221FAT1A](#)  
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[SQCSVA330GAT1A](#) [SQCSVA270JATME](#) [SQCSVA220JATME](#) [SQCSVA200JATME](#) [SQCSVA240JATME](#)  
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[SQCSVA150JATME](#) [SQCSVA100JATME](#) [SQCSVA120JATME](#) [SQCSVA620JAT1A](#) [SQCSVA330JATME](#)  
[SQCSVA300JATME](#) [SQCSVA4R3AAT1A](#) [SQCSVA3R3AAT1A](#) [SQCSVA3R9AAT1A](#) [SQCSVA0R9AAT1A](#)  
[SQCSVA220JAH1A](#) [SQCFVA120GAT1A](#) [SQCSVA2R4AAT1A](#) [SQCSVA1R6BATME](#) [SQCSVA5R6BATME](#)  
[SQCSVA1R6BAT1A](#) [SQCSVA3R6BAT1A](#) [SQCSVA0R6BATME](#) [SQCFVA181JAT1A](#) [SQCFVA181JATME](#)  
[SQCFVA8R2CAT1A](#) [SQCFVA6R2CAT1A](#) [SQCFVA8R2CATME](#) [SQCFVA6R8CAT1A](#) [SQCFVA6R8CATME](#)  
[SQCSVA150GAJ1A](#) [SQCFVA200JAT1A](#) [SQCFVA240JAT1A](#) [SQCFVA220JAT1A](#) [SQCFVA270JAT1A](#)  
[SQCFVA560JATME](#) [SQCFVA120JATME](#) [SQCFVA100JATME](#) [SQCFVA150JATME](#) [SQCFVA680FATME](#)  
[SQCFVA300JATME](#) [SQCFVA330JATME](#) [SQCFVA470JAT1A](#) [SQCFVA820JAT1A](#) [SQCFVA820JATME](#)  
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