# 96SMF SERIES (2-POLE MCF IN SINGLE 7.0x5.0 mm PACKAGE)

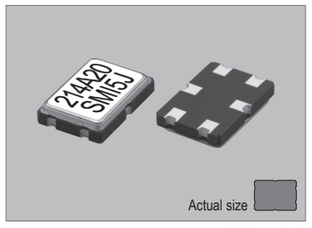
STANDARD SMD MCF

## STANDARD SPECIFICATIONS

- 2-POLE FILTERS
- 21.4 MHz, 21.7 MHz & 45 MHz
- PACKAGE SIZE 7.0x5.0 mm

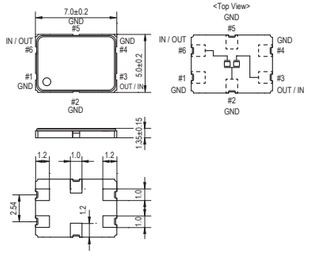
| Part Number | Nominal Frequency fo | Oscillation Mode | Passband min. | | Stopband max. | | Attenuation Guaranteed min. | | Ripple max. | Loss max. | Terminating Impedance | Operating Temperature | No. of Pole |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | | (dB) | (kHz) | (dB) | (kHz) | (dB) | (kHz) | (dB) | (dB) | (Ω // pF) | (˚C) | |
| 96SMF214A7.5A | 21.4 | FUND | 3 | ±3.75 | 18 | ±25.0 | 70 | -910 | 1.0 | 2.0 | 850 // 6.0 | -30 to +80 | 2 |
| 96SMF214A7.5B | 21.4 | FUND | 3 | ±3.75 | 18 | ±14.0 | 70 | -910 | 1.0 | 2.0 | 870 // 6.0 | -30 to +80 | 2 |
| 96SMF214A7.5C | 21.4 | FUND | 3 | ±3.75 | 15 | ±12.5 | 60 | -900 | 1.0 | 2.0 | 870 // 6.0 | -30 to +80 | 2 |
| 96SMF214A12 | 21.4 | FUND | 3 | ±6.0 | 15 | ±20.0 | 70 | -910 | 0.5 | 1.5 | 1200 // 2.0 | -30 to +80 | 2 |
| 96SMF214A15A | 21.4 | FUND | 3 | ±7.5 | 18 | ±25.0 | 70 | -910 | 1.0 | 2.0 | 1500 // 1.5 | -30 to +80 | 2 |
| 96SMF214A15B | 21.4 | FUND | 3 | ±7.5 | 18 | ±25.0 | 70 | -910 | 1.0 | 2.0 | 1500 // 2.0 | -30 to +80 | 2 |
| 96SMF214A15C | 21.4 | FUND | 3 | ±7.5 | 18 | ±25.0 | 70 | -910 | 0.5 | 1.5 | 1500 // 2.5 | -30 to +80 | 2 |
| 96SMF214A20 | 21.4 | FUND | 3 | ±10.0 | 15 | ±30.0 | 70 | -910 | 1.0 | 2.0 | 1800 // 1.0 | -30 to +80 | 2 |
| 96SMF214A30A | 21.4 | FUND | 3 | ±15.0 | 15 | ±45.0 | 70 | -910 | 1.0 | 2.0 | 2000 // 0.5 | -30 to +80 | 2 |
| 96SMF214A30B | 21.4 | FUND | 3 | ±15.0 | 15 | ±45.0 | 60 | -910 | 1.0 | 2.0 | 2000 // 0.5 | -30 to +80 | 2 |
| 96SMF217A7.5A | 21.7 | FUND | 3 | ±3.75 | 20 | ±18.0 | 70 | -910 | 1.0 | 2.0 | 850 // 6.0 | -30 to +80 | 2 |
| 96SMF217A7.5B | 21.7 | FUND | 3 | ±3.75 | 18 | ±14.0 | 70 | -910 | 1.0 | 2.0 | 870 // 6.0 | -30 to +80 | 2 |
| 96SMF217A7.5C | 21.7 | FUND | 3 | ±3.75 | 15 | ±12.5 | 70 | -910 | 1.0 | 2.0 | 850 // 3.5 | -30 to +80 | 2 |
| 96SMF217A7.5D | 21.7 | FUND | 3 | ±3.75 | 18 | ±12.5 | 50 | -910 | 1.0 | 2.0 | 1500 // 6.0 | -30 to +80 | 2 |
| 96SMF217A7.9 | 21.7 | FUND | 3 | ±3.95 | 18 | ±12.5 | 70 | -910 | 1.0 | 2.0 | 850 // 8.0 | -30 to +80 | 2 |
| 96SMF217A15A | 21.7 | FUND | 3 | ±7.5 | 18 | ±25.0 | 70 | -910 | 1.0 | 2.0 | 1500 // 2.5 | -30 to +80 | 2 |
| 96SMF217A15B | 21.7 | FUND | 3 | ±7.5 | 18 | ±25.0 | 70 | -910 | 0.5 | 2.0 | 1500 // 1.5 | -30 to +80 | 2 |
| 96SMF217A15C | 21.7 | FUND | 3 | ±7.5 | 15 | ±25.0 | 70 | -910 | 1.0 | 2.0 | 1500 // 2.0 | -30 to +80 | 2 |
| 96SMF450A7.5A | 45.0 | FUND | 3 | ±3.75 | 10 | ±12.5 | 70 | -910 | 1.0 | 2.0 | 200 // 4.0 | -30 to +80 | 2 |
| 96SMF450A7.5B | 45.0 | FUND | 3 | ±3.75 | 20 | ±25.0 | 70 | -910 | 1.5 | 2.0 | 650 // 3.5 | -30 to +80 | 2 |
| 96SMF450A12 | 45.0 | FUND | 3 | ±6.0 | 15 | ±20.0 | 70 | -910 | 1.0 | 2.0 | 650 // 5.0 | -30 to +80 | 2 |
| 96SMF450A15A | 45.0 | FUND | 3 | ±7.5 | 15 | ±25.0 | 70 | -910 | 1.0 | 2.0 | 560 // 6.0 | -30 to +80 | 2 |
| 96SMF450A15B | 45.0 | FUND | 3 | ±7.5 | 15 | ±25.0 | 70 | -910 | 1.0 | 2.0 | 650 // 3.0 | -30 to +80 | 2 |
| 96SMF450A15C | 45.0 | FUND | 3 | ±7.5 | 15 | ±25.0 | 70 | -910 | 1.0 | 2.0 | 650 // 4.0 | -30 to +80 | 2 |
| 96SMF450A15D | 45.0 | FUND | 3 | ±7.5 | 15 | ±25.0 | 70 | -910 | 1.0 | 2.0 | 650 // 3.5 | -30 to +80 | 2 |
| 96SMF450A15E | 45.0 | 3rd | 3 | ±7.5 | 15 | ±25.0 | 60 | -910 | 0.5 | 1.5 | 2700 // 1.7 | -30 to +80 | 2 |
| 96SMF450A20 | 45.0 | FUND | 3 | ±10.0 | 15 | ±35.0 | 70 | -910 | 1.0 | 2.0 | 800 // 3.0 | -30 to +80 | 2 |
| 96SMF450A25 | 45.0 | FUND | 3 | ±12.5 | 15 | ±50.0 | 70 | -910 | 1.0 | 3.0 | 1000 // 2.0 | -30 to +80 | 2 |
| 96SMF450A30A | 45.0 | FUND | 3 | ±15.0 | 16 | ±60.0 | 70 | -910 | 1.0 | 2.0 | 1100 // 0.0 | -30 to +80 | 2 |
| 96SMF450A30B | 45.0 | FUND | 3 | ±15.0 | 15 | ±60.0 | 65 | -910 | 1.0 | 2.0 | 1200 // 1.8 | -30 to +80 | 2 |
| 96SMF450A40 | 45.0 | FUND | 3 | ±20.0 | 15 | ±70.0 | 70 | -910 | 1.0 | 3.0 | 1000 // 1.0 | -30 to +80 | 2 |
| 96SMF450A48 | 45.0 | FUND | 3 | ±24.0 | - | - | 40 | -910 | 1.0 | 2.0 | 1000 // 0.7 | -30 to +80 | 2 |

### 96SMF




0.116 gm (wt.)

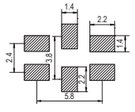
### 96SMF



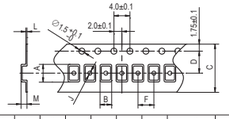

## PACKAGE DATA

| Item \ Package | 96SMF |
|---|---|
| Lid | Metal |
| Base | Ceramic |
| Sealing | Seam |
| Terminal | Tungsten (metalized) |
| Terminal plating | Gold / Nickel (surface) / (under) |
| RoHS | Compliant (Pb-free) |

### SOLDERING PATTERN




### TAPE SPECIFICATIONS




| A | B | C | D | F | J | L | M | Reel Dia. | Qty/Reel |
|---|---|---|---|---|---|---|---|---|---|
| 7.4 | 5.4 | 16.0 | 7.5 | 8.0 | 1.5 | 0.3 | 1.9 | 178 | 1000pcs |





96SMF SERIES (2-POLE MCF IN SINGLE 7.0x5.0 mm PACKAGE)

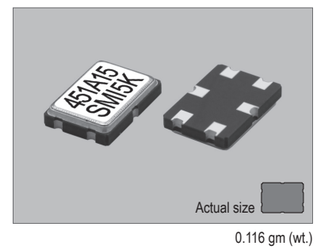
STANDARD SMD MCF

## STANDARD SPECIFICATIONS

- 2- POLE FILTERS
- OTHER FREQUENCIES
- PACKAGE SIZE 7.0x5.0 mm

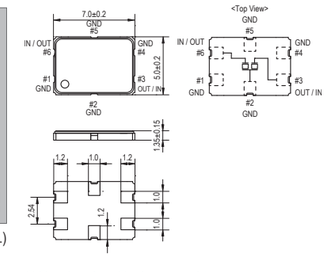
| Part Number | Nominal Frequency fo | Oscillation Mode | Passband min. | | Stopband max. | | Attenuation Guaranteed min. | | Ripple max. | Loss max. | Terminating Impedance | Operating Temperature | No. of Pole |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | | (dB) | (kHz) | (dB) | (kHz) | (dB) | (kHz) | (dB) | (dB) | (Ω // pF) | (˚C) | |
| 96SMF145A15 | 14.575 | FUND | 3.0 | ±7.50 | 13 | ±20.0 | 50 | -910 | 0.5 | 2.0 | 2500 // 1.0 | -30 to +80 | 2 |
| 96SMF204A5 | 20.480 | FUND | 3.0 | ±2.50 | 15 | ±10.0 | 70 | -910 | 1.0 | 2.0 | 850 // 8.0 | -30 to +80 | 2 |
| 96SMF212A15 | 21.250 | FUND | 3.0 | ±7.5 | 19 | ±25.0 | 70 | -910 | 1.0 | 2.0 | 1500 // 2.5 | -30 to +80 | 2 |
| 96SMF213A15 | 21.300 | FUND | 3.0 | ±7.50 | 18 | ±25.0 | 45 | -150 | 1.0 | 2.0 | 1500 // 2.5 | -30 to +80 | 2 |
| 96SMF2132A15 | 21.325 | FUND | 3.0 | ±7.50 | 18 | ±25.0 | 45 | -150 | 1.0 | 2.0 | 1500 // 2.5 | -30 to +80 | 2 |
| 96SMF218A7.5 | 21.800 | FUND | 3.0 | ± 3.75 | 15 | ±12.5 | 70 | -910 | 1.0 | 2.0 | 850 // 6.0 | -30 to +80 | 2 |
| 96SMF241A20 | 24.100 | FUND | 3.0 | ±10.00 | 10 | ±25.0 | 70 | -910 | 1.0 | 2.0 | 1350 // 1.5 | -30 to +80 | 2 |
| 96SMF245A20 | 24.555 | FUND | 3.0 | ±10.00 | 10 | ±25.0 | 70 | -910 | 1.0 | 2.0 | 1350 // 1.5 | -30 to +80 | 2 |
| 96SMF246A47 | 24.600 | FUND | 3.0 | ±23.50 | - | - | 40 | -910 | 1.0 | 1.5 | 5000 // 0.0 | -30 to +80 | 2 |
| 96SMF256A20 | 25.655 | FUND | 3.0 | ±10.00 | 10 | ±25.0 | 70 | -910 | 1.0 | 2.0 | 1350 // 1.5 | -30 to +80 | 2 |
| 96SMF260A20 | 26.000 | FUND | 1.5 | ±10.00 | 10 | ±25.0 | 75 | -910 | 1.0 | 2.0 | 1300 // 1.5 | -30 to +80 | 2 |
| 96SMF264A15 | 26.450 | FUND | 3.0 | ±7.50 | 15 | ±25.0 | 70 | -910 | 1.0 | 2.0 | 1500 // 3.0 | -30 to +80 | 2 |
| 96SMF270A24 | 27.000 | FUND | 3.0 | ±12.00 | 10 | ±25.0 | 70 | -910 | 1.0 | 3.0 | 1000 // 1.6 | -30 to +80 | 2 |
| 96SMF292A20 | 29.250 | FUND | 3.0 | ±10.00 | 10 | ±25.0 | 70 | -910 | 1.0 | 1.5 | 1800 // 1.5 | -30 to +80 | 2 |
| 96SMF300A40 | 30.000 | FUND | 1.0 | ±20.00 | 15 | ±125.0 | 30 | -910 | 1.0 | 3.0 | 3800 // -0.4 | -30 to +80 | 2 |
| 96SMF451A15 | 45.100 | FUND | 3.0 | ±7.50 | 15 | ±25.0 | 65 | -910 | 1.0 | 2.0 | 560 // 6.0 | -30 to +80 | 2 |
| 96SMF4515A15 | 45.150 | FUND | 3.0 | ±7.50 | 13 | ±25.0 | 70 | -910 | 1.0 | 3.0 | 1000 // 4.0 | -30 to +80 | 2 |
| 96SMF499A20 | 49.950 | FUND | 3.0 | ±10.00 | 13 | ±45.0 | 70 | -910 | 1.0 | 3.0 | 800 // 2.0 | -30 to +80 | 2 |
| 96SMF499A25 | 49.950 | FUND | 3.0 | ±12.50 | 13 | ±50.0 | 70 | -910 | 1.0 | 3.0 | 800 // 1.5 | -30 to +80 | 2 |
| 96SMF500A5 | 50.000 | FUND | 3.0 | ±2.50 | 15 | ±10.0 | 40 | -1000 | 1.0 | 5.0 | 200 // 0.9 | -30 to +80 | 2 |
| 96SMF768A8 | 76.800 | 3rd | 3.0 | ±4.00 | 15 | ±13.0 | 50 | -910 | 1.0 | 2.0 | 2000 // 0.4 | -30 to +80 | 2 |
| 96SMF800A24 | 80.000 | 3rd | 3.0 | ±12.00 | 15 | ±35.0 | 50 | -910 | 1.0 | 2.0 | 2500 // -0.8 | -30 to +80 | 2 |
| 96SMF900A30A | 90.000 | 3rd | 3.0 | ±15.00 | 16 | ±50.0 | 30 | -910 | 0.5 | 3.0 | 3000 // -0.5 | -30 to +80 | 2 |
| 96SMF921A6A | 92.160 | 3rd | 3.0 | ±3.00 | 30 | ±30.0 | 50 | -910 | 1.0 | 3.0 | 2000 // 0.4 | -30 to +80 | 2 |
| 96SMF921A6B | 92.160 | 3rd | 3.0 | ±3.00 | 30 | ±30.0 | 50 | -910 | 1.0 | 3.0 | 1000 // -0.2 | -30 to +80 | 2 |
| 96SMF100A20 | 100.000 | 3rd | 3.0 | ±10.00 | 10 | ±28.0 | 50 | -910 | 1.0 | 3.0 | 1500 // -0.8 | -30 to +80 | 2 |
| 96SMF1001A14 | 100.100 | 3rd | 3.0 | ±7.00 | 13 | ±28.0 | 50 | -910 | 1.0 | 3.0 | 1500 // -0.3 | -30 to +80 | 2 |
| 96SMF101A14 | 101.000 | 3rd | 3.0 | ±7.00 | 13 | ±28.0 | 50 | -910 | 1.0 | 3.0 | 1500 // -0.3 | -30 to +80 | 2 |
| 96SMF105A14 | 105.000 | 3rd | 3.0 | ±7.00 | 13 | ±28.0 | 50 | -910 | 1.0 | 3.0 | 1500 // -1.0 | -30 to +80 | 2 |
| 96SMF109A15 | 109.650 | 3rd | 3.0 | ±7.50 | 18 | ±25.0 | 50 | -910 | 1.0 | 3.0 | 1500 // -0.6 | -30 to +80 | 2 |
| 96SMF109A24 | 109.650 | 3rd | 3.0 | ±12.00 | 18 | ±60.0 | 65 | -910 | 1.0 | 2.0 | 2000 // -1.1 | -30 to +80 | 2 |
| 96SMF110A15 | 110.000 | 3rd | 3.0 | ±7.50 | 18 | ±25.0 | 50 | -910 | 1.0 | 3.0 | 1500 // -1.0 | -30 to +80 | 2 |
| 96SMF122A7 | 122.880 | 3rd | 6.0 | ±3.75 | 30 | ±40.0 | 50 | -910 | 2.0 | 3.0 | 1000 // 1.6 | -30 to +80 | 2 |
| 96SMF150A7 | 150.000 | 3rd | 3.0 | ±3.50 | 15 | ±15.0 | 50 | -910 | 1.0 | 7.0 | 1000 // 1.8 | -30 to +80 | 2 |

### 96SMF




0.116 gm (wt.)

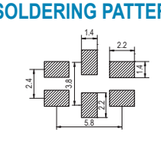
### 96SMF



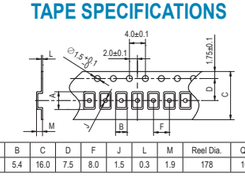

## PACKAGE DATA

| Item \ Package | 96SMF |
|---|---|
| Lid | Metal |
| Base | Ceramic |
| Sealing | Seam |
| Terminal | Tungsten (metalized) |
| Terminal plating | Gold / Nickel (surface) / (under) |
| RoHS | Compliant (Pb-free) |

### SOLDERING PATTERN




### TAPE SPECIFICATIONS




| A | B | C | D | F | J | L | M | Reel Dia. | Qty/Reel |
|---|---|---|---|---|---|---|---|---|---|
| 7.4 | 5.4 | 16.0 | 7.5 | 8.0 | 1.5 | 0.3 | 1.9 | 178 | 1000pcs |