

SCA Series

High-stability, cost-effective capacitance standards with low temperature coefficients, low losses, and a wide range of values.

- High-accuracy and stability
- Capacitance values from 1 pF to 10,000 μ F
- Custom values available
- Mechanically stabilized capacitors
- Stability: <100 ppm/year
- Excellent TC: as low as 10 ppm/ $^{\circ}$ C
- Low loss: D as low as 20 ppm
- SCA-1nF-8588A available for direction connection to the Fluke 8588A to calibrate the 1 nF capacitance range



SCA Capacitance Standard

Specifications

| Nominal value | Model | Adjustment to nominal | Temperature coefficient (ppm/ $^{\circ}$ C) | Calibration Conditions | Dissipation (typical) | Stability (per year) | Max voltage | | Terminals | Capacitor type |
|----------------|-------------------|--|---|---|-----------------------|----------------------|-------------|---------------|------------------------|---|
| | | | | | | | Peak (V) | Max Frequency | | |
| 1 pF | SCA-1pF | ± 0.1 pF | +20 to +40 | ≤ 15 Vac Parallel Model 1 kHz AH2700A or equivalent | 0.002 | ± 0.1 pF | 500 | 10 kHz | 2 bnc connectors + gnd | Air capacitors |
| 1.9 pF | SCA-1.9pF | ± 0.1 pF | +20 to +40 | | 0.002 | ± 0.1 pF | 500 | 10 kHz | | |
| 10 pF | SCA-10pF | ± 0.1 pF | +20 to +40 | | 0.002 | ± 0.1 pF | 500 | 10 kHz | | |
| 19 pF | SCA-19pF | ± 0.1 pF | +20 to +40 | | 0.001 | ± 0.1 pF | 500 | 10 kHz | | |
| 100 pF | SCA-100pF | ± 0.1 pF | 20 | | 0.0005 | ± 0.1 pF | 500 | 10 kHz | 2 binding posts + gnd | Silvered mica mechanically stabilized hermetically sealed |
| 190 pF | SCA-190pF | ± 0.1 pF | 20 | | 0.0005 | ± 0.1 pF | 500 | 10 kHz | | |
| 1.0 nF | SCA-1nF | $\pm 0.02\%$ | 20 | | 0.0003 | ± 100 ppm | 500 | 10 kHz | | |
| 1.9 nF | SCA-1.9nF | $\pm 0.02\%$ | 20 | | 0.0003 | ± 100 ppm | 500 | 10 kHz | | |
| 10 nF | SCA-10nF | $\pm 0.02\%$ | 20 | | 0.0003 | ± 100 ppm | 500 | 10 kHz | | |
| 19 nF | SCA-19nF | $\pm 0.02\%$ | 20 | | 0.0003 | ± 100 ppm | 500 | 10 kHz | | |
| 100 nF | SCA-100nF | $\pm 0.02\%$ | 20 | | 0.0003 | ± 100 ppm | 500 | 10 kHz | | |
| 190 nF | SCA-190nF | $\pm 0.02\%$ | 20 | | 0.0003 | ± 100 ppm | 500 | 10 kHz | | |
| 1 μ F | SCA-1 μ F | $\pm 0.02\%$ | 20 | | 0.0002 | ± 100 ppm | 500 | 10 kHz | | |
| 1.9 μ F | SCA-1.9 μ F | $\pm 0.02\%$ | 20 | | 0.0002 | ± 100 ppm | 100 | 10 kHz | | |
| 5 μ F | SCA-5 μ F | $\pm 0.02\%$ | ± 50 | 1 Vac Series Model 1 kHz | 0.0005 | ± 200 ppm | 50 | 10 kHz | 4 binding posts + gnd | Metallized polypropylene sulfide hermetically sealed |
| 10 μ F | SCA-10 μ F | $\pm 0.04\%$ | ± 50 | 1 Vac | 0.0005 | ± 200 ppm | 22 Vrms† | 1 kHz | | |
| 19 μ F | SCA-19 μ F | $\pm 0.04\%$ | ± 50 | | 0.0005 | ± 200 ppm | 44 Vrms† | 1 kHz | | |
| 100 μ F | SCA-100 μ F | $\pm 0.05\%$ | ± 50 | Series Model 100 Hz (1 kHz data included) | 0.001 | ± 500 ppm | 22 Vrms† | 1 kHz | | |
| 190 μ F | SCA-190 μ F | $\pm 0.05\%$ | ± 50 | | 0.001 | ± 500 ppm | 22 Vrms† | 1 kHz | | |
| 1,000 μ F | SCA-1000 μ F | $\pm 0.4\%$ | -150 | | 0.001 | ± 500 ppm | 22 Vrms† | 1 kHz | | |
| 5,000 μ F | SCA-5000 μ F | $\pm 2\%$ | -150 | | 0.001 | -- | 22 Vrms† | 1 kHz | | |
| 10,000 μ F | SCA-10000 μ F | $\pm 2\%$ | -150 | 0.001 | -- | 22 Vrms† | 1 kHz | Polypropylene | | |
| SCA-8588A | SCA-XXX-8588 | $\pm 5\%$ | -150 | ≤ 15 Vac 50 Hz and 1 kHz | 0.0003 | ± 100 ppm | 500 | | 1 kHz | Polystyrene or PTFE hermetically sealed |
| XXX F | SCA-XXX | customer-selected value and power specifications | | | | | | | | |

† Maximum allowable Vrms; subject to maximum Vdc = 50 V and max Vrms = (39000/f) for C = 10 μ F; (26000/f) for C = 19 μ F; (13000/f) for C $\leq 100\mu$ F, where f = frequency (in Hz).

Environment:

Operating: +10 to +40 $^{\circ}$ C, <80% RH
Storage: -20 to +65 $^{\circ}$ C

Calibration Conditions:

Calibrated at 23 $^{\circ}$ C, <50% RH, Traceable to SI

Transit Case:

(see page 3)

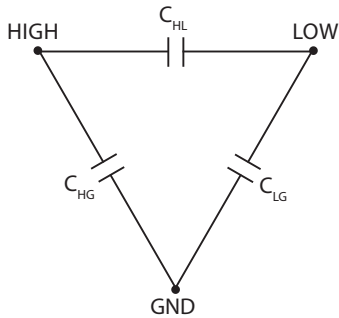
Mechanical:

| Nominal Values | Dimensions | Weight |
|-------------------------------|---|------------------|
| 1 pF < 1 μ F | 8.6 cm H x 10.5 cm W x 12.7 cm D (3.4" x 4.15" x 5") | 0.73 kg (1.6 lb) |
| 1 μ F (only) | 14.3 cm H x 8.3 cm W x 6.9 cm D (5.6" x 3.2" x 2.7") | 1.1 kg (2.25 lb) |
| >1 μ F \leq 190 μ F | 8.6 cm H x 10.5 cm W x 12.7 cm D (3.4" x 4.15" x 5") | 0.73 kg (1.6 lb) |
| 1,000 μ F | 31 cm W x 8.9 cm H x 10.2 cm D (12.2" x 3.5" x 4") | 1.7 kg (3.8 lb) |
| 5,000 μ F | 53.3 cm W x 27.3 cm H x 44.5 cm D (21" x 10.75" x 17.5") | 27.2 kg (60 lb) |
| 10,000 μ F | | 36.3 kg (80 lb) |
| SCA-XXX-8588A | 12 cm H x 8.6 cm W x 9.5 cm D (4.75" x 3.4" x 3.75") | 0.73 kg (1.6 lb) |



Connection Schematics for Low Values

Low-value SCA's have 3 terminals -- **HI** and **LO**, and **GND**. The capacitance of the unit is shown as **CHL**. There is additional capacitance to the case shown by **CHG** and **CLG**. These capacitances will add to **CHL** unless the 3rd terminal, **GND**, is connected to the **GUARD** of the measuring instrument.



SCA-1nF
(values ≤ 1.9 nF)



SCA-100nF
(1.9 nF < values < 1μF)

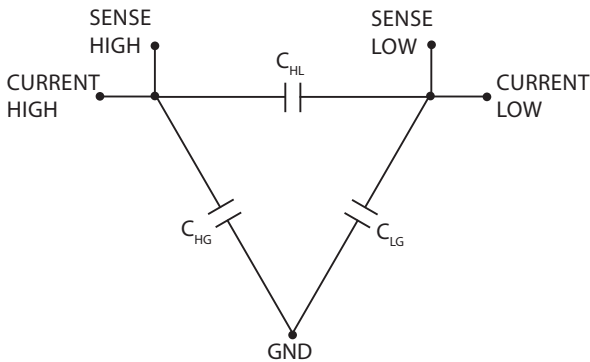


SCA-1μF

Low Value SCA Units

Connection Schematics for High Values

High-value SCA's have 5 binding posts -- **HI CURRENT**, **HI SENSE**, **LO CURRENT**, **LO SENSE**, and **GND**. This 4-terminal connection circuit has special wiring and low-resistance conductors to minimize dissipation and parasitic inductance, and improve frequency characteristics.



SCA-100μF
(values > 1μF)



SCA-10000μF



SCA-1000μF





SCA-1nF-8588A Direct Connection

Ordering Information

Capacitance Standard *Select from table above*
Custom value **SCA-XXX**
Transit case for SCA units SRC-100, for 2 units; SRC-10-n, for n units
For deleted case version, add " - DC" at the end of the part number

Transit cases

Optional **Model SRC-100 or SRC-10-n** lightweight transit cases provides mechanical protection and insulation from temperature

changes during transportation or shipping. It is suitable for transporting and storing two or more units.



SRC-100 Transit Case for 2 units



SRC-10-n Transit Case for n units (5 units shown)

