

High frequency capacitance standards

Features:

- High frequency capacitance standard
- Air capacitor
- Available in 0.001 pF to 1000 pF
- 500 ppm/year stability
- Extremely low dissipation factor



Model 1403 1 pF Standard Capacitor

DESCRIPTION

For measurement at 100 pF and below, a three terminal connection increases the accuracy by eliminating the uncertainty in the measurement introduced by the capacitances between the capacitor terminals and ground. The type 1403 Standard Air Capacitors are stable, three-terminal standards in decimal values from 0.001 to 1000 pF. Their terminals are arranged to plug directly into the UNKNOWN terminals of the Type 1620 Capacitance Bridge or equivalent.

The three largest sizes are similar in construction to the Type 1404. The smaller capacitance units are made up of two plates, with a grounded plate between them; an aperture in the grounded plate determines the magnitude of the direct capacitance. Dielectric losses are not detectable; there is no solid dielectric in the direct-capacitance field. All have shielded terminals, both of which are insulated from the case.

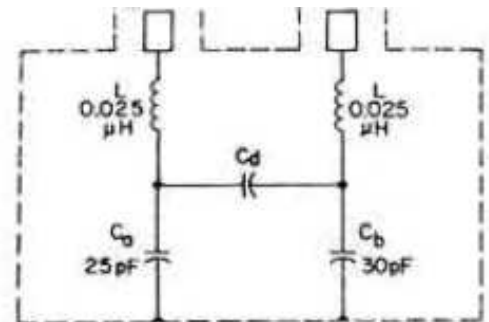


Figure 1

Equivalent circuit showing direct capacitance, C_D , and average values of residual inductance, L , and terminal capacitances, C_a and C_b .



SPECIFICATIONS

Calibration: An certificate of calibration is supplied with each capacitor traceable to the SI through an NMI, giving the measured direct capacitance at 1 kHz, 30 Vac and 23° ±1°C.

Model	Nominal Capacitance	Adjustment Accuracy	Maximum Voltage	Dissipation Factor
1403-A	1000 pF	±0.1%	700 V peak	< 20 x10 ⁻⁶
1403-D	100 pF		1500 V peak	< 20 x10 ⁻⁶
1403-G	10 pF			< 30 x10 ⁻⁶
1403-K	1 pF			< 20 x10 ⁻⁶
1403-N	0.1pF			< 20 x10 ⁻⁶
1403-R	0.01 pF	±0.3%		< 20 x10 ⁻⁶
1403-V	0.001 pF	±1%	< 20 x10 ⁻⁶	

Temperature Coefficient of Capacitance:

Typically ±(20 to 40) ppm/°C, between 20°C and 70°C

Stability: Capacitance change is less than 0.05% per year.

Residual impedance: See equivalent circuit and plot on page 1

Terminals: Two G874 coaxial connectors

Outer shell of connectors are connected to case ground to provide complete shielding of the leads.

Mechanical:

Diameter 3.0625 in (78 mm), height 4.875 in (125 mm), over-all.

Net weight: 1 lbs (0.5 kg)

Shipping weight: 4 lbs (1.9 kg)

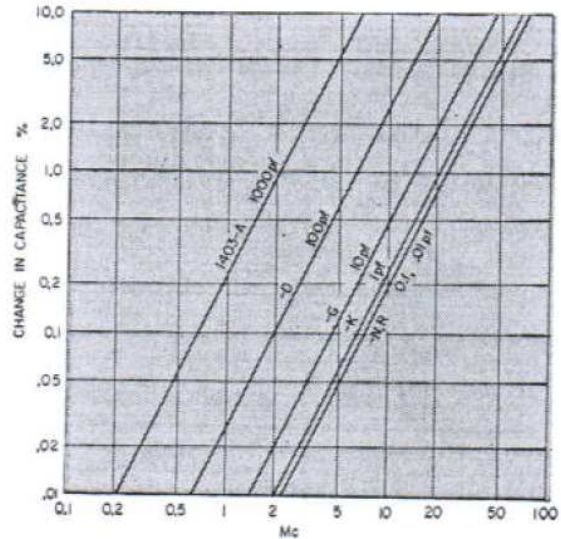


Figure 2
Percentage change in effective capacitance, with frequency produced by residual inductance.

ORDERING INFORMATION

1403-9701 1403-A, 1000 pF
 1403-9704 1403-D, 100 pF
 1403-9707 1403-G, 10 pF
 1403-9711 1403-K, 1 pF

1403-9714 1403-N, 0.1 pF
 1403-9718 1403-R, 0.01 pF
 1403-9722 1403-V, 0.001 pF

