

D. CAPACITANCE

The principal characteristic of a capacitor is that it can store an electric charge (Q), which is directly proportional to the capacitance value (C) and the voltage applied (V).

$$Q = CV$$

The charging current I is therefore defined as

$$I = dQ/dt = CdV/dt.$$

The value of capacitance is defined as one Farad when the voltage across the capacitor is one volt, and a charging current of one ampere flows for one second.

$$C = Q/V = \text{Coulomb/Volt} = \text{Farad}$$

Because the Farad is a very large unit of measurement, and is not encountered in practical applications, fractions of the Farad are commonly used, namely:

picofarad (pF)	= 10^{-12} Farad
nanofarad (nF)	= 10^{-9} Farad
microfarad (μ F)	= 10^{-6} Farad