Dielectric characteristics

**Typical dielectric temperature characteristics**

Porcelain COG/NP0 & P90

![Graph showing capacitance change vs temperature for COG/NP0 and P90 porcelain.]

**Impedance vs Frequency**

Ultra Stable COG/NP0 dielectric

![Graph showing impedance vs frequency for different values of capacitance.]

Stable X7R dielectric

![Graph showing impedance vs frequency for different values of capacitance.]

Stable X7R dielectric - 10nF

![Graph showing impedance vs frequency for different values of capacitance.]

**ESR vs Frequency - chips**

Ultra Stable COG/NP0 dielectric

![Graph showing ESR vs frequency for different values of capacitance.]

Stable X7R dielectric

![Graph showing ESR vs frequency for different values of capacitance.]

Typical capacitance change curves will lie within the shown limits.