

Product Description: Substrate Electrical Specifications

Materials: TnM uses a variety of dielectric materials categorized as Class I and Class II dielectrics.

- Our Class I materials have dielectric constants ranging from 3.8 to 93.

Class 1 materials are highly stable and exhibit minimal losses and high Insulation Resistance. Temperature coefficient is linear, and aging is minimal. Typical applications include resonator circuitry and other types of demanding filter circuits.

- Our Class II materials have dielectric constants ranging from 1.5k to 35k.

Class II material is a category of high K dielectrics that present a higher capacitance value as compared to the same size Class I capacitor. These dielectrics exhibit higher losses and have a non-linear Temperature Coefficient. Typical applications include coupling, bypass and DC blocking.

Class I Dielectrics

TnM Material Type	Material	Dielectric Constant (κ)	Rated Voltage (WVdc)	T/C PPM/ $^{\circ}$ C (-55/+125 $^{\circ}$ C)	Dissipation Factor (@ 10 GHz)	IR Meg-Ohms (100Vdc @ 25 $^{\circ}$ C)
C20	Quartz	3.8	100	Negligible	0.0001	10 ⁶
C28	ALN	8.7	100	P120 $\pm$ 25	0.0001	10 ⁶
C30	Alumina 96	9.6	100	P180 $\pm$ 50	0.0006	10 ⁶
C35	Alumina 99.6	9.8	100	P180 $\pm$ 50	0.0006	10 ⁶
C37	Titanate	13	100	0 $\pm$ 30	0.0001	10 ⁶
C52 (50)*	Titanate	40	100	0 $\pm$ 30	0.002	10 ⁶
C58	Titanate	93	100	150 $\pm$ 30	0.005	10 ⁶

* C50 material no longer available; replaced with C52.

Class II Dielectrics

TnM Material Type	Material	Dielectric Constant (κ)	Rated Voltage (WVdc)	T/C (-55/+125 $^{\circ}$ C)	Dissipation Factor (1 KHz / 1 MHz)	IR @ 25 $^{\circ}$ C (Meg-Ohms)
C90	Titanate	1500	100	+10/-20%	0.025	10 ⁵ @100Vdc
C100	Titanate	2500	100	$\pm$ 15%	0.025	10 ⁵ @100Vdc
C120	Titanate	4000	100	+5/-20%	0.025	10 ⁵ @100Vdc
C150	Titanate	9000	100	0/-82%	0.025	10 ⁵ @100Vdc
C200	Titanate	25k	**	+25/-15%	0.035	10 ⁴ **
C400	Titanate	35k	**	+25/-15%	0.035	10 ⁴ **

** Contact the factory for voltage rating.

