SPECTRUM CONTROL INC.

Dielectric Resonators
Disc and Cylinder Type

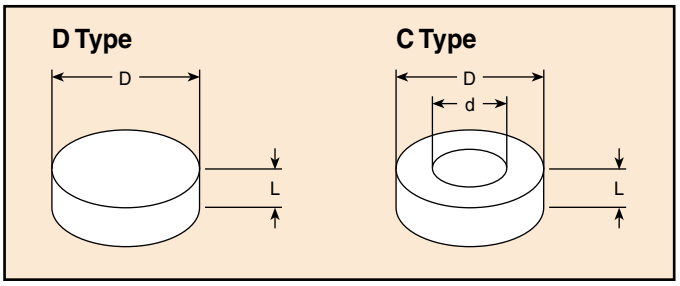
Features

- Available in disc and cylinder designs
- Various sizes available
- High dielectric constant
- High Q factor (6,000 to 35,000)
- Wide frequency range (800 MHz to 12.4 GHz)
- Temperature range (-55°C to +125°C)
- Linear frequency stability vs. temperature
- Repeatability of design
- Minimal aging effects

Applications

- Microwave filters
- Military radar/ECM
- Satellite communications
- Repeaters
- Base stations
- Oscillators
- Combiners
- Duplexers
- TVRO/DBS
- Telemetry

Configurations



Note: Consult the factory for mechanical dimensions.

Part Numbering System

Example: **RCB-10000-C1UA**

R	C	B	-	10000	-	C	1	U	A
Class Resonators	**Type** **D** = Disc **C** = Cylinder	**Material Series** **A** = 20 **B** = 35 **C** = 50 **D** = 90		**Resonant Frequency** f_0 (MHz) Use 5 digits		**Temperature Coefficient** **A** = -6 **B** = -3 **C** = 0 **D** = 3 **E** = 6 **F** = 9	**Temperature Coefficient Tolerance** **1** = ±1 **2** = ±2	**Metallization** **S** = Silvered **U** = Unsilvered	**Series** Assigned by factory

TE Mode Resonators

Electrical and Physical Characteristics

Material Series	20	35	50	90
Dielectric Constant (ε)	20.5±1	35.5±1	50.5±1	89.0±1
Temp. Coefficient (ppm/°C)	0±6	0±6	0±5	1±5
Q (1/tanδ)	>7,000 (at 10 GHz)	>7,000 (at 7 GHz)	>6,000 (at 5 GHz)	>1,500 (at 3 GHz)
Density (g/cm³)	6.0	5.2	6.5	5.8
Water Absorption (%)	0.01 max.	0.01 max.	0.01 max.	0.01 max.
Frequency Range (GHz)	2.5~8.5	1.5~12.4	1.5~11.0	1.2~3.5

Temperature Coefficient

Series	Temperature Coefficient (ppm/°C)
A	-6
B	-3
C	0
D	3
E	6
F	9

Temperature Coefficient Tolerance

Type	Tolerance (ppm/°C)
1	±1
2	±2

Dielectric Resonators for Base Stations

Electrical and Physical Characteristics

Material Series	35
Dielectric Constant (ε)	35.5±1
Temp. Coefficient (ppm/°C)	-3 to +6
Q (1/tanδ)	9,600 (at 5 GHz) 35,000 (at 850 MHz)
Density (g/cm³)	5.2
Water Absorption (%)	0.01 max.
Frequency Range (GHz)	1.5~12.4

Temperature Characteristics

Temperature Coefficient	Dielectric Constant	Temperature Coefficient	Q at 5 GHz
B	35.0±1	-3±1 ppm/°C	>9,500
C	35.5±1	0±1 ppm/°C	>9,400
D	36.0±1	+3±1 ppm/°C	>9,300
E	36.5±1	+6±1 ppm/°C	>9,300