Trans-Tech
Ceramics and Advanced Materials

DATA SHEET

3500 Series: Temperature-Stable Resonators

Applications

- Multi-pole filters
- DROs
- Fixed and auto-tuned combiners

Features

- High Q (Qf ⩾70,000) at 1 GHz
- Linear τf
- Low cost
- Potential size reduction
- Temperature stability
- Low loss
- Wide τf range
- Mid-range ε'

Description

Trans-Tech, offers the 3500 series of temperature-stable resonators.
The 3500 series ceramic material is intended primarily for oscillators and multi-pole filters within the 1,500 to 13,800 MHz frequency range. This material typically yields an unloaded Q of 38,000 at 2 GHz.

Tablev 1. Temperature Characteristics

Series	Type	Dielectric Constant	Temperature Coefficient of fo (τf)	Q at 2 GHz
D/C35	16	35.5	+6	>38000
D/C35	13	34.75	+3	
D/C35	00	34.50	0	
D/C35	03	33.50	-3	
D/C35	16	35.5	+6	

Note: *Contact us for custom τf and other tolerances (±1 or ±2 standard available). Other τ_f available on request.*

Table 2. Material Characteristics

Item	Value
Dielectric constant	33.5 to 35.5
Temperature coefficient of resonant frequency (τf) (ppm/°C) (25 to 60 °C)	–3 to +6
Q (1/tan δ) minimum	>38,000 at 2 GHz
Thermal expansion (ppm/°C) (20°C to 200°C)	10
Thermal conductivity (cal/cm-sec °C) at 25°C	~0.006
Non-linearity conefficient ($\tau'f$) (ppm/°C^2	<0.01
Specific heat (cal/g°C)	~0.07
Density (g/cc)	>6.4
Water absorption (%)	<0.01

Trans-Tech products are compliant with all applicable legislation and are halogen-free.

For additional information, refer to *Trans-Tech's* document RFC-F0028, RFC-F0029, and RFC-F0022

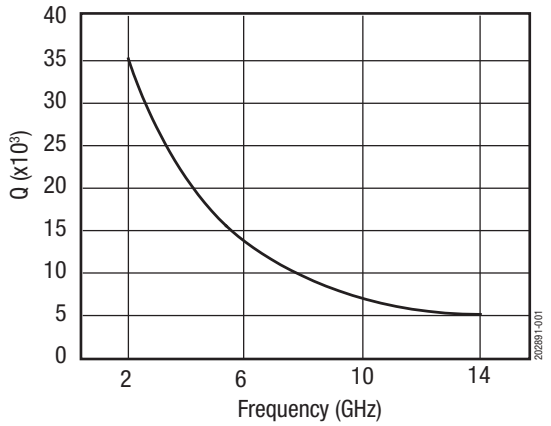

Figure 1. Typical Q vs Frequency

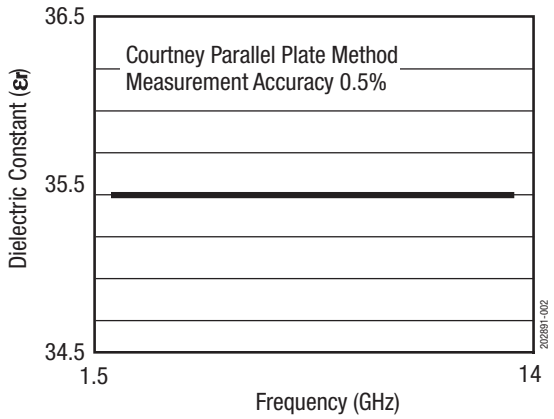

Figure 2. Typical (εr) vs Frequency

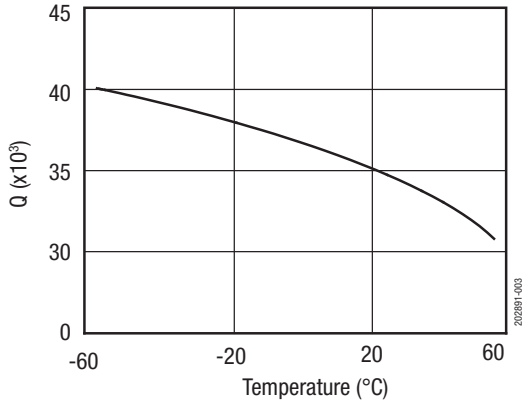

Figure 3. Typical Q vs Temperature