

DATA SHEET

3500 Series: Temperature-Stable Resonators

Applications

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

Features

- High Q ($Q_f \geq 70,000$)
- Linear τ_f
- Low cost
- Potential size reduction
- Temperature stability
- Low loss
- Wide τ_f range
- Mid-range ϵ'

Description

Skyworks, through its wholly owned subsidiary, 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 35,000 at 2 GHz.



Table 1. Temperature Characteristics

Series	Type	Dielectric Constant	Temperature Coefficient of f_0 (τ_f)	Q at 2 GHz
D/C35	16	35.5	+6	>35000
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 τ_f 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 (τ_f) (ppm/°C) (25 to 60 °C)	-3 to +6
Q (1/tan δ) minimum	>35,000 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 coefficient (τ_f) (ppm/°C ²)	<0.01
Specific heat (cal/g°C)	-0.07
Density (g/cc)	>6.4
Water absorption (%)	<0.01

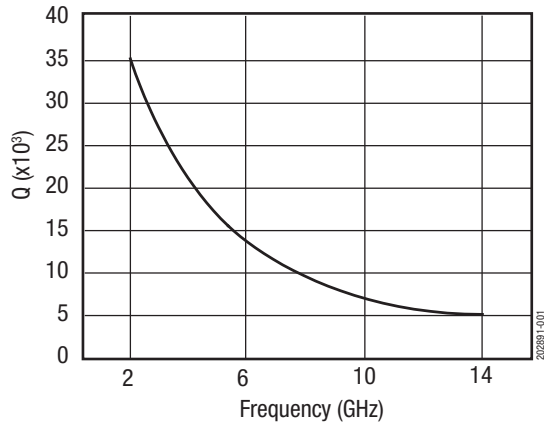


Figure 1. Typical Q vs Frequency

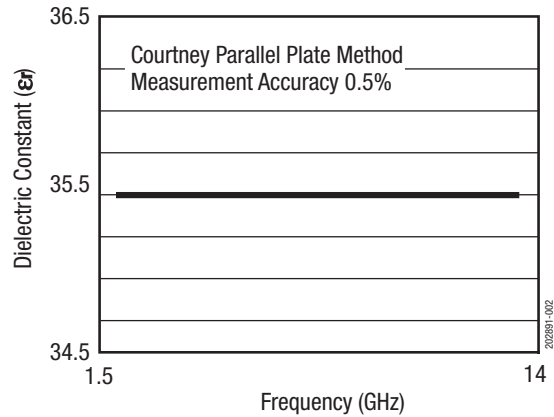


Figure 2. Typical (εr) vs Frequency

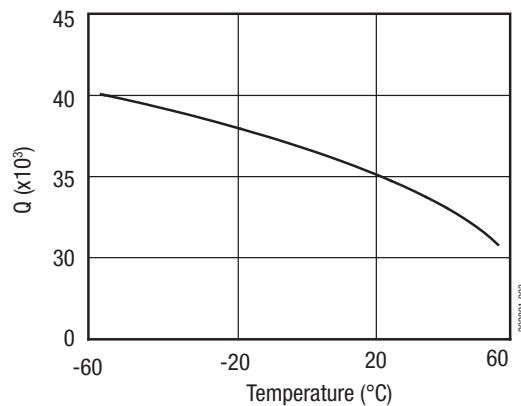


Figure 3. Typical Q vs Temperature

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