

# Material Driven Solutions For RF & Microwave Applications

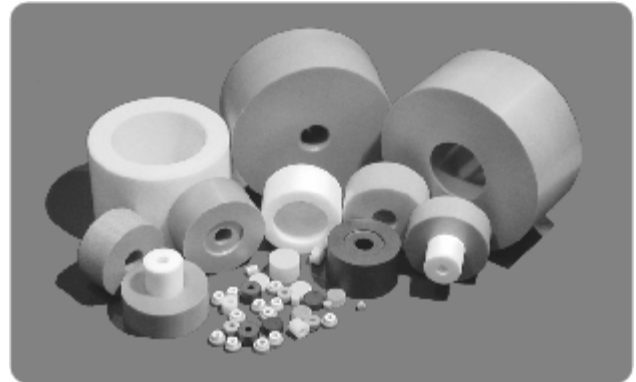
## DIELECTRIC RESONATORS

### OVERVIEW

MCV Technologies, Inc., a volume supplier of dielectric resonators with a 45,000 square foot manufacturing facility to provide its customers with technically advanced high quality products at competitive prices. Our facilities have been ISO 9001, ISO 9002, and ISO 14001 certified.

MCV's TE dielectric resonators (DR) are available in a wide range of dielectric constants, disk and cylinder type, exhibiting exceptionally high Q and temperature stability. These components are typically used in oscillators, satellite-based communication equipment, microwave filters and combiner ranging in frequency from 800MHz to 17 GHz.

Dielectric standoffs are also available for cylinder type dielectric resonators to improve coupling, temperatures stability, while minimizing cavity losses. These dielectric supports have high thermal connectivity, high Q, providing excellent long-term reliability and performance.



### APPLICATIONS

- Dielectric Resonating Oscillator (DRO)
- Global Positioning Systems (GPS)
- Base Station DR filters and combiners
- Satellite communication
- Direct Broadcast System (DBS)
- Radar detectors
- AMPS / GSM / PCS / WLL / Wireless
- LAN / MMDS

### FEATURES

- High dielectric constant
- High quality factor (Q)
- High frequency stability
- Low temperature coefficient
- Low cost materials
- Tight tolerance in dielectric constant

### MATERIAL AVAILABILITY

SERIES	$\epsilon'$	$\tau_f$ (ppm/°C)	Q Values
MDR20	19 - 21	-3 to +3	> 6,000 @ 10 GHz
MDR24	23 - 25	-3 to +3	> 16,000 @ 10 GHz
MDR30	29 - 31	-2 to +4	> 10,000 @ 10 GHz
MDR30TF	29 - 31	-2 to +4	> 9,000 @ 10 GHz
MDR38	37 - 39	-3 to +3	> 4,000 @ 10 GHz
MDR45	44 - 46	-6 to +6	> 10,000 @ 4 GHz

### FREQUENCY

0.3	0.8	1.0	2.0	4.0	8.0	12.0	18.0	26.5	40
			MDR20 SERIES						
			MDR24 SERIES						
			MDR30 and MDR30TF SERIES						
			MDR38 SERIES						
			MDR45 SERIES						
UHF	L-BAND	S-BAND	C-BAND	X-BAND	Ku-BAND	K-BAND	Ka-BAND		



### Headquarters

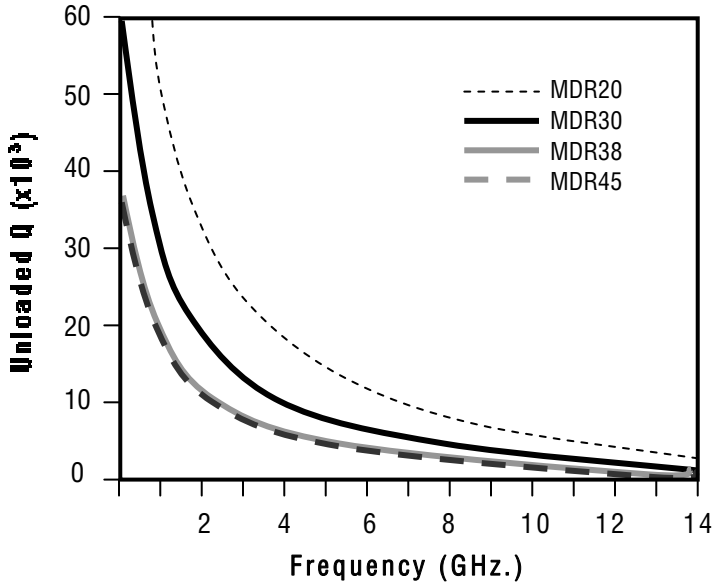
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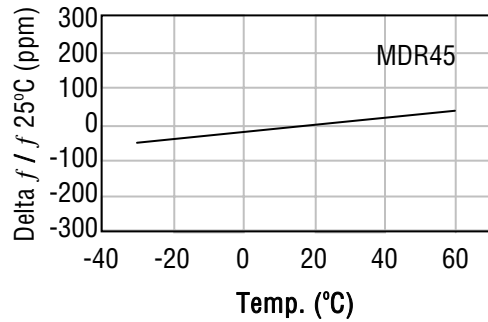
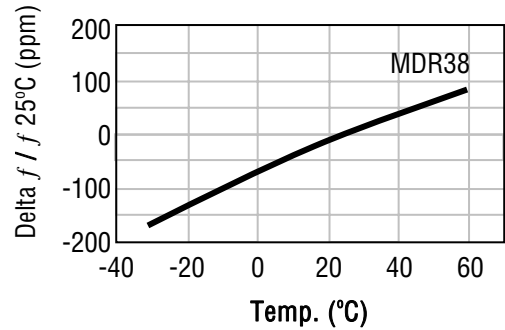
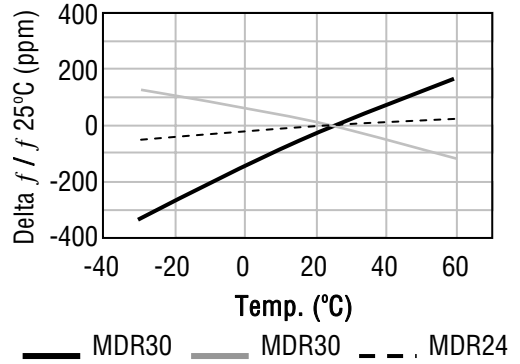
## PERFORMANCE

Unloaded Q (minimum) vs. Frequency



## MATERIAL PROPERTIES

### Temperature Characteristics



## ALUMINA SUPPORT MATERIAL

- High Q Factor
- High Thermal Conductivity
- Excellent Long Term Reliability

Characteristics	Std. Alumina Support	MCV Alumina Support
$\epsilon'$	9.8	9.8
Tan $\delta$	$3.0 \times 10^{-4}$	$1.0 \times 10^{-4}$
Density (g/cm <sup>3</sup> )	3.75	3.90
Measuring Freq. (GHz.)	10	10

## ORDERING INFORMATION

MDR	38	03	N	108	40	50
MCV Dielectric Resonator	Material Dielectric	Temperature Coefficient	Temperature Coefficient Tolerance	Outer Diameter (x10 <sup>-1</sup> mm)	Inner Diameter (x10 <sup>-1</sup> mm)	Height (x10 <sup>-1</sup> mm)
	20 24 30 30TF 38 45	00=Special request 01=+6 ppm/°C 02=+3 ppm/°C 03= 0 ppm/°C 04=-3 ppm/°C 05=-6 ppm/°C	P = ±0.5 ppm/°C S = ±1.0 ppm/°C N = ±2.0 ppm/°C	108 = 10.8 mm	40 = 4 mm 00 = disc	50 = 5 mm



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