

Microwave Ceramics



FERRITE DOMEN Co.
Since 1959



Ferrite Domen Company presents the wide choice of high-Q ceramics with dielectric constant 4 up to 140 for microwave products operational in wide frequency and temperature ranges.

CONTENTS

Microwave Ceramics	Page
1. High-Q microwave ceramics	9-2
2. Thermostable microwave ceramics	9-3
Standard form factors of microwave material parts	9-4

SYMBOLS

ϵ'	Dielectric constant	—
$tg\delta_\epsilon$	Dielectric loss tangent	—
ρ	Bulk density	g/cm ³
τ_f	Temperature coefficient of f_r	ppm/°C
W	Water absorption	%

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1. High-Q microwave ceramics

These ceramic materials give wide choice of applications addressing everything from substrates to microwave ferrite devices such as circulators, isolators, phase shifters. Dielectric substrates are used in hybrid IC, filters, delay lines, etc.

Material grade	ϵ'	$tg\delta_\epsilon \cdot 10^4$ no more	ρ g/cm ³	TK ϵ ppm/°C	W % no more	Composition
5 K	4.7 \pm 0.3	3	2.4	+55	0.1	Mg-Al-Si-O
6.5 F	6.5 \pm 0.3	3	2.8	+107	0.2	Mg-Si-O
7.4 MTK	7.4 \pm 0.2	3	3.0	+100	0.1	Mg-Si-Ti-O
8 ML	8.5 \pm 0.3	3	3.3	+9	0.2	Mg-Al-O
9.5 MTK	9.5 \pm 0.3	2	3.2	+100	0.1	Mg-Si-Ti-O
10.3 MTK	10.3 \pm 0.3	2	3.3	+100	0.1	Mg-Si-Ti-O
12 MTK	12 \pm 0.4	2	3.3	+100	0.1	Mg-Si-Ti-O
13 MT	13 \pm 0.5	2	3.4	+100	0.1	Mg-Ti-O
15 MT	15 \pm 0.5	2	3.5	+100	0.1	Mg-Ti-O
16 MT	16 \pm 0.5	2	3.6	+100	0.1	Mg-Ti-O
18 MCT	18 \pm 0.5	2	3.5	-70	0.1	Mg-Ca-Ti-O
20 MCT	20 \pm 1.0	3	3.5	-130	0.1	Mg-Ca-Ti-O
30 MCT	30 \pm 1.5	3	3.6	-370	0.1	Mg-Ca-Ti-O
40 MCT	40 \pm 2.0	3	3.65	-580	0.1	Mg-Ca-Ti-O
50 MCT	50 \pm 2.5	3	3.68	-730	0.1	Mg-Ca-Ti-O
80 MCT	80 \pm 4.0	3	3.70	-1050	0.1	Mg-Ca-Ti-O
100 MCT	100 \pm 5.0	3	3.75	-1120	0.1	Mg-Ca-Ti-O
120 MCT	120 \pm 6.0	3	3.80	-1170	0.1	Mg-Ca-Ti-O
140 MCT	140 \pm 7.0	3	3.85	-1200	0.1	Ca-Ti-O

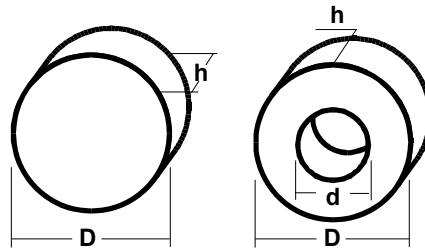
2. Thermostable microwave ceramics

This sort of ceramics was developed for realization of dielectric resonators featuring high quality factor (Q) and excellent stability of temperature coefficient of frequency. These devices are widely used in low-noise frequency converters, dielectric high-stable oscillators of communication equipment, detectors of radar radiation, microwave filters, generators of microwave signals, etc.

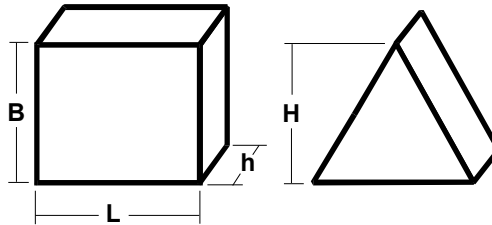
Material grade	ε' *		$tg\delta_\varepsilon \cdot 10^4$ *	τ_f ppm/°C in temperature range (20-60) °C	ρ g/cm ³		W % no more
	nominal	max. deviation %			nominal	max. deviation	
KT-10	7...11	± 2	3	0 ± 6	3.2	± 0.2	0.05
KT-24	22...26	± 2	3	0 ± 6	7.3	± 0.3	0.05
KT-37	34...40	± 2	3	0 ± 9	4.8	± 0.3	0.05
KT-75	70...80	± 2	8	0 ± 9	5.5	± 0.3	0.05
KT-90	80...90	± 2	10	0 ± 15	5.0	± 0.3	0.05

Note. *- measured at 4.5 GHz

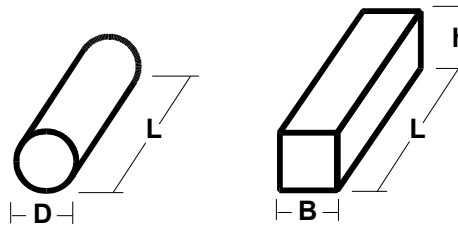
Disks and Rings



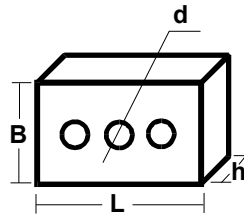
Plates and triangles



Rods and bars



Multiple-aperture prisms



Dimensions of ceramics, mm

	Disks	Plates and triangles	Rods and bars	Rings	Multiple-aperture prisms
D	10...120		5...40	5...100	
L		15...120	20...120		7; 14
B		5...60	5...30		3.5; 4.5
H		≤90			Calculated value (4...10)
h	3...10	3...10	5...15	2.5...15	
d				2...70	1...1.5

Standard surface finish of parts: $\pm 0,02$ mm

Standard surface roughness: $R_a \geq 0,6$ mm

Fabrication of customized parts is being provided.