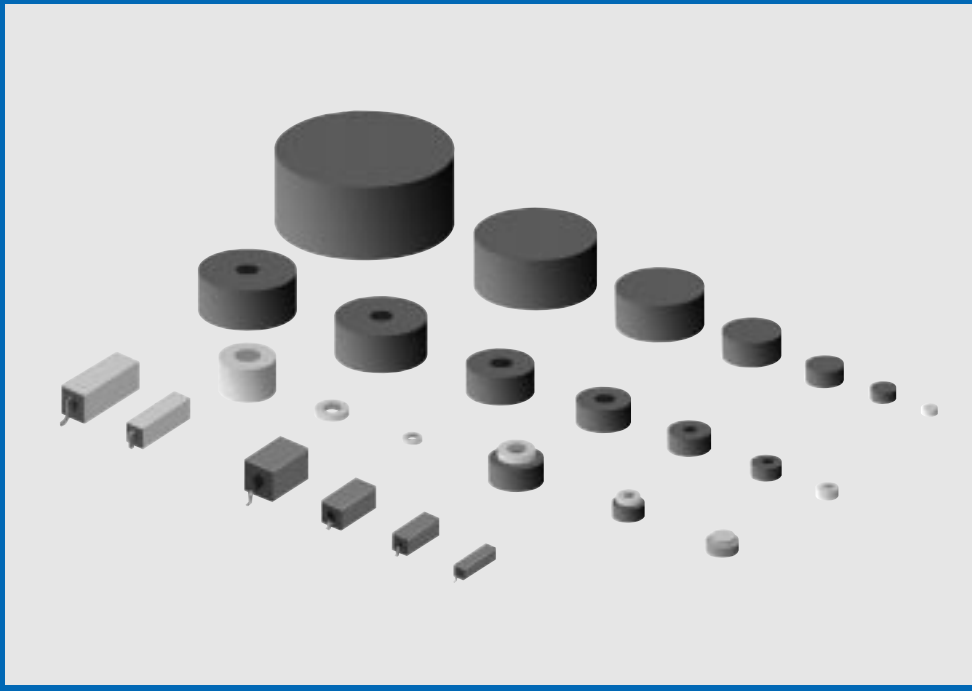
Dielectric Resonators (RESOMICS®)

DIELECTRIC RESONATORS (RESOMICS®)



muRata Innovator in Electronics

Murata
Manufacturing Co., Ltd.

Cat.No.O95E-9

CONTENTS

● Part Numbering

Dielectric Resonators (RESOMICS®) TE Mode

(Part Number) **DR D 055 0244 M 20 B 00 T**
❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾

❶Product ID

Product ID	
DR	Dielectric Resonators (RESOMICS®)

❷Product

Code	Product
D	TE Mode (Disc Type)
T	TE Mode (Coaxial Cylinder Type)

❸Outer Diameter

Code	Outer Diameter
055	Expressed by three figures. The unit is 1/10mm.

❹Thickness

Code	Thickness
0244	Expressed by four figures. The unit is 1/100mm.

❺Materials

Code	Materials	τf Range
U	U Series	-4ppm/˚C to +10ppm/˚C
M	M Series	0ppm/˚C to +6ppm/˚C
V	V Series	0ppm/˚C to +8ppm/˚C
R	R Series	0ppm/˚C to +6ppm/˚C
B	B Series	0ppm/˚C to +6ppm/˚C
E	E Series	0ppm/˚C to +6ppm/˚C
F	F Series	0ppm/˚C to +4ppm/˚C

❻Resonant Frequency Temperature Characteristics (τf)

Expressed by two figures or combination of a letter and a figure.

Ex.)

Code	Resonant Frequency Temperature Characteristics (τf)
E0	-4ppm/˚C
D0	-3ppm/˚C
C0	-2ppm/˚C
B0	-1ppm/˚C
00	0ppm/˚C
10	1ppm/˚C
20	2ppm/˚C
30	3ppm/˚C
40	4ppm/˚C
50	5ppm/˚C
60	6ppm/˚C
70	7ppm/˚C
80	8ppm/˚C
90	9ppm/˚C
P0	10ppm/˚C

❼Resonant Frequency Temperature Characteristics (τf) Tolerance

Code	Resonant Frequency Temperature Characteristics (τf) Tolerance
Z	±2 ppm/˚C
A	±1 ppm/˚C
B	±0.5ppm/˚C

E and F series : Tolerance of Frequency Temperature Coefficient can be chosen only by "**Z**" code (±2ppm/°C) and "**A**" code (±1ppm/°C)

❽Individual Specification Code (Serial)

Code	Individual Specification Code (Serial)
00	Standard Type

❾Packaging

Code	Packaging
T	Tray
R	Taping

Dielectric Resonators (RESOMICS®) TE Mode Support

(Part Number) **DR Z 001 Z T**
❶ ❷ ❸ ❹ ❺

❶Product ID

Product ID	
DR	Dielectric Resonators (RESOMICS®)

❷Product

Code	Product
Z	TE mode (Support Type)

❸Individual Specification Code (Serial)

Code	Individual Specification Code (Serial)
001	Serial code

❹Materials

Code	Materials
Z	Z series

❺Packaging

Code	Packaging
T	Tray

Dielectric Resonators (RESOMICS®) TE Mode [Mono-Block Type]

(Part Number)

DR	U	051	10G32	M	30	B	00	T
❶	❷	❸	❹	❺	❻	❼	❽	❾

❶Product ID

Product ID	
DR	Dielectric Resonators (RESOMICS®)

❷Product

Code	Product
U	TE Mode (Mono-Block Type with no hole)
Y	TE Mode (Mono-Block Type with hole)

❸Outer Diameter

Code	Outer Diameter
051	Expressed by three figures. The unit is 1/10mm.

❹Nominal Center Frequency

Expressed by five figures. If the unit is "GHz", a decimal point is expressed by capital letter "**G**".

Ex.)

Code	Nominal Center Frequency
10G32	10.32GHz

❺Materials

Code	Materials
M	M Series

❻Resonant Frequency Temperature Coefficient (τf)

Expressed by two figures or combination of a letter and a figure.

Ex.)

Code	Resonant Frequency Temperature Coefficient (τf)
E0	-4ppm/˚C
D0	-3ppm/˚C
C0	-2ppm/˚C
B0	-1ppm/˚C
00	0ppm/˚C
10	1ppm/˚C
20	2ppm/˚C
30	3ppm/˚C
40	4ppm/˚C
50	5ppm/˚C
60	6ppm/˚C
70	7ppm/˚C
80	8ppm/˚C
90	9ppm/˚C
P0	10ppm/˚C

❼Resonant Frequency Temperature Coefficient (τf) Tolerance

Code	Resonant Frequency Temperature Coefficient (τf) Tolerance
Z	±2ppm/˚C
A	±1ppm/˚C
B	±0.5ppm/˚C

❽Individual Specification Code (Serial)

Code	Individual Specification Code (Serial)
00	Standard Type

❾Packaging

Code	Packaging
T	Tray
R	Taping

Dielectric Resonators (RESOMICS®) TEM Mode

(Part Number)

DR	R	020	1G590	K	T	C	00	T
❶	❷	❸	❹	❺	❻	❼	❽	❾

❶Product ID

Product ID	
DR	Dielectric Resonators (RESOMICS®)

❷Product

Code	Product
R	TEM Mode

❸Outer Dimension

Code	Outer Dimension
020	2.0×2.0mm
030	3.0×3.0mm
040	4.0×4.0mm
060	6.0×6.0mm

❹Nominal Center Frequency

Expressed by five figures. If the unit is "MHz", it is expressed by three figures plus "**M**". If the unit is "GHz", a decimal point is expressed by capital letter "**G**".

Ex.)

Code	Nominal Center Frequency
900M0	900MHz
1G200	1200MHz

❺Materials

Code	Materials
U	U Series
K	K Series
P	P Series

❻Wave Length

Code	Wave Length
T	λ /4
P	λ /2

❼Electrode

Code	Electrode
C	Copper
S	Silver

❽Individual Specification Code (Serial)

Code	Individual Specification Code (Serial)
00	Standard

❾Packaging

Code	Packaging
T	Tray
R	Taping

Dielectric Resonators (RESOMICS®) Microwave Dielectric Substrate

(Part Number)

DR	P	508	0127	U	N0	G	C	00	T
❶	❷	❸	❹	❺	❻	❼	❽	❾	❿

❶Product ID

Product ID	
DR	Dielectric Resonators (RESOMICS®)

❷Product

Code	Product
P	Substrate

❸Side Length

Code	Side Length
508	Expressed by three figures. The unit is 1/10mm.

❹Thickness

Code	Thickness
0127	Expressed by four figures. The unit is 1/100mm.

❺Material

Code	Materials
U	U series
P	P series
K	K series

❻Dielectric Constant Temperature Characteristics (τε)

Expressed by two figures or combination of a letter and a figure.

Code	Dielectric Constant Temperature Characteristics (τε)
N0	-30ppm/ ˚C

❼Dielectric Constant Temperature Characteristics (τε) Tolerance

Code	Dielectric Constant Temperature Characteristics (τε) Tolerance
G	±30ppm/ ˚C

❽Surface Roughness

Code	Average Surface Roughness Ra (μm)
C	0.1 to 0.8
D	0.05 to 0.40
F	0.004 to 0.040

❾Individual Specification Code (Serial)

Code	Individual Specification Code (Serial)
00	Standard Type (Square Type)

❿Packaging

Code	Packaging
T	Tray

Dielectric Resonator (RESOMICS®) Features/Applications/Characteristics

Reduces the size of microwave devices.
Low loss and high dielectric constant.

■ Features

1. High-purity, high-density ceramics minimize loss.
2. High dielectric constant makes possible the miniaturization of microwave circuits. Temperature-compensated dielectric constant enables stable microwave oscillators.
3. The high purity and smooth surface of the ceramics make them ideal for MIC applications.
4. A variety of shapes are available for custom application requirements.

■ Applications

- Satellite antenna (BS/CS Converters)
- Burglar alarms
- Multi-channel microwave communications systems
- Radar systems
- Speed guns
- Mobile phone systems
- CATV converters
- Measuring equipment

■ Circuit Applications

- Microwave oscillators (DRO)
- MIC (Microwave Integrated Circuits)
- Discriminators
- Filters
- Tank circuits

■ Electrical and Physical Characteristics of Dielectric Resonators (TE Mode)

Material Code	U	M	V	R	B	E	F	Z
Dielectric Constant (εr)	36 to 40	37 to 40	33 to 36	29 to 31	27 to 29	24 to 25	23 to 24	6.4±0.6
Temp. Coefficient (ppm/°C)	τf^{*1}=-4 to 10	τf^{*1}=0 to 6	τf^{*1}=0 to 8	τf^{*1}=0 to 6	τf^{*1}=0 to 6	τf^{*1}=0 to 6	τf^{*1}=0 to 4	$\tau\varepsilon^{*2}$=100±30
Q (=1/tanδ)	6000 min. (at 7GHz)	7000 min. (at 7GHz)	10000 min. (at 10GHz)	12000 min. (at 10GHz)	15000 min. (at 10GHz)	20000 min. (at 10GHz)	35000 min. (at 10GHz)	2000 min. (at 7GHz)
Ins. Resistance (Ω•cm)	1 x 10^{13} min.	1 x 10^{13} min.	1 x 10^{13} min.	1 x 10^{13} min.	1 x 10^{13} min.	1 x 10^{14} min.	1 x 10^{13} min.	1 x 10^{13} min.
Expansion Coefficient (ppm/°C)	6 to 7	6 to 7	12 to 13	10.7	11.0	10.7	11.0	to 10
Thermal Conductivity (W/m•°C)	1.93	1.93	2.81	2.14	2.56	3.23	4.20	1.76
Specific Heat (J/kg•°C)	630	630	382	210	302	323	328	840
Density (g/cm^3)	5.0	5.0	6.5	7.7	7.6	7.5	7.5	2.7
Water absorption (%)	0.01 max.	0.01 max.	0.01 max.	0.01 max.	0.01 max.	0.01 max.	0.01 max.	0.01 max.
Vicker's Hardness Number	900	900	600	700	700	800	700	800
Bend Strength (MPa)	98	98	98	88	108	118	108	147

∗1: τf denotes temperature coefficient of resonant frequency.
∗2: τε denotes temperature coefficient of dielectric constant.

Dielectric Resonator (RESOMICS®) Features/Applications/Characteristics

■ Electrical and Physical Characteristics of Dielectric Resonators (TEM Mode)

Material Code	K	U	P
Dielectric Constant (εr)	92±1	38±1	21.4±0.2
Temp. Coefficient (ppm/°C)	τf*=3±2	τf*=3±2	τf*=4±2
Q (=1/tanδ)	1500 min. (at 3GHz)	8000 min. (at 3GHz)	9000 min. (at 3GHz)
Ins. Resistance (Ω•cm)	1 x 10^{13} min.	1 x 10^{13} min.	1 x 10^{13} min.
Expansion Coefficient (ppm/°C)	8 to 9	6 to 7	8 to 9
Thermal Conductivity (W/m•°C)	1.64	1.93	7.14
Specific Heat (J/kg•°C)	546	630	840
Density (g/cm^3)	5.7	5.0	3.7
Water absorption (%)	0.01 max.	0.01 max.	0.01 max.
Vicker's Hardness Number	700	900	800
Bend Strength (MPa)	147	98	147

*: τf denotes temperature coefficient of resonant frequency.

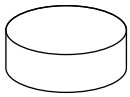
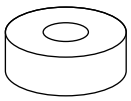
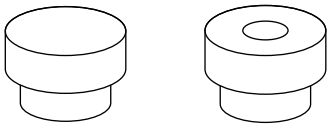
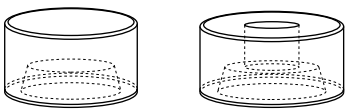
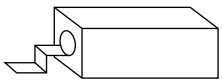
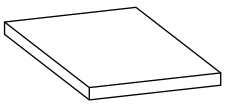
■ Electrical and Physical Characteristics of Dielectric Resonators (Microwave Dielectric Substrate)

Material Code	K	U	P
Dielectric Constant (εr)	92±1	38±1	21.4±1
Temp. Coefficient (ppm/°C)	τε*=–30±30	τε*=–30±30	τε*=–30±30
Q (=1/tanδ)	1500 min. (at 3GHz)	8000 min. (at 3GHz)	9000 min. (at 3GHz)
Ins. Resistance (Ω•cm)	1 x 10^{13} min.	1 x 10^{13} min.	1 x 10^{13} min.
Expansion Coefficient (ppm/°C)	8 to 9	6 to 7	8 to 9
Thermal Conductivity (W/m•°C)	1.64	1.93	7.14
Specific Heat (J/kg•°C)	546	630	840
Density (g/cm^3)	5.7	5.0	3.7
Water absorption (%)	0.01 max.	0.01 max.	0.01 max.
Vicker's Hardness Number	700	900	800
Bend Strength (MPa)	147	98	147

*: τε denotes temperature coefficient of dielectric constant.

Dielectric Element/Configuration

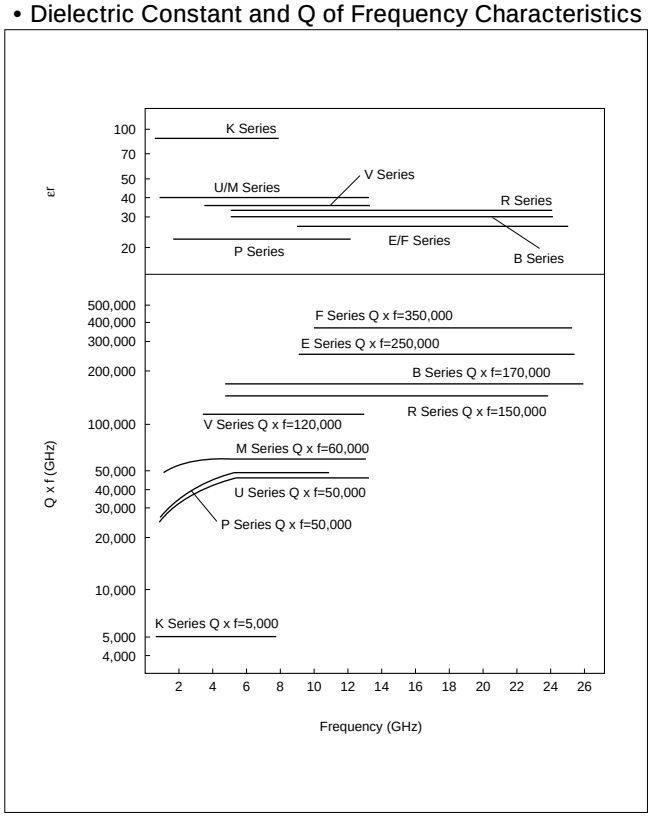
■ Dielectric Element/Configuration

Kind	Types	Configuration	Features and Applications
Dielectric Resonator	DRD	Disc 	TE mode resonator. Disc type with simple configuration. Used for stabilizing frequency in microwave oscillators.
	DRT	Coaxial Cylinder 	TE mode resonator. The resonator with a hole improves spurious response without degrading Q. It can be mounted using a screw.
	DRB DRC	Disc (Coaxial Cylinder) Type with support 	TE mode resonator. Disc type resonator with support. The resonator's Q is not influenced by metal case. DRB means Disc Type, and DRC means Coaxial Cylinder Type with support.
	DRU DRY	Mono-Block Type 	TE mode resonator. Monoblock type of resonator and support. Lower cost than Disc type resonator with support, maintaining high performance. DRU means no hole type, and DRY means hole type.
	DRR	TEM mode Resonator of rod 	TEM mode resonator. High dielectric constant and high Q make possible the miniaturization of microwave circuits (ex. : VCO).
Support	DRZ	Coaxial Cylinder 	The support for TE mode resonator, which has a low dielectric constant and high Q, minimizes induced losses to the resonator.
Dielectric Substrate	DRP	Substrate 	High dielectric constant and high Q reduce the size of MIC. Three grades of surface finish are available.

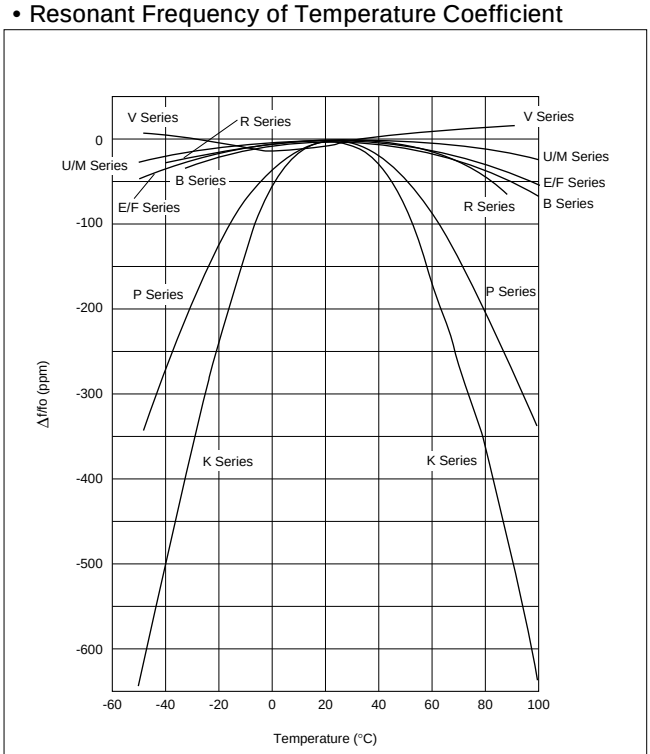
Please contact our sales representatives if you need TE mode resonator with support.

■ Reference Data

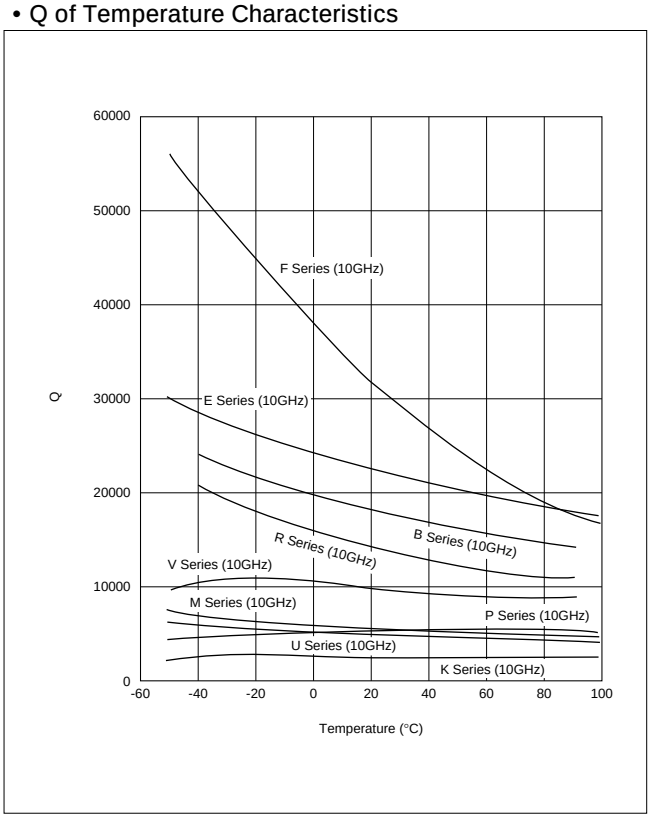
• Dielectric Constant and Q of Frequency Characteristics



• Resonant Frequency of Temperature Coefficient



• Q of Temperature Characteristics

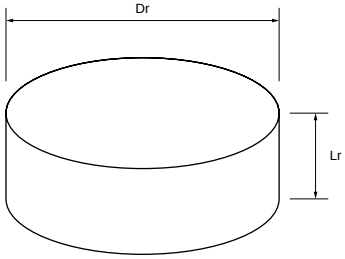


Dielectric Resonators (RESOMICS®)

Dielectric Resonator U Series (DRD Type)

■ Features

1. High Q of 6,000 at 7GHz
2. High dielectric constant : Er=38
3. Resonant frequency temperature coefficient can be chosen from -4 to 10ppm/(degree C). Tolerance of the frequency temperature coefficient can be chosen from +-0.5, +-1, and +-2 ppm/(degree C).
4. Resonant frequency can be chosen from 1.5 to 12.5GHz.
5. Low price



Part Number	Outer Dia. (mm)	Thickness (mm)	Frequency Range
DRD0460206U□□□00T	4.65 ±0.05 mm	2.06 ±0.05 mm	11.46~12.45 GHz
DRD0510224U□□□00T	5.06 ±0.05 mm	2.24 ±0.05 mm	10.54~11.46 GHz
DRD0550244U□□□00T	5.50 ±0.05 mm	2.44 ±0.05 mm	9.69~10.54 GHz
DRD0600265U□□□00T	5.98 ±0.05 mm	2.65 ±0.05 mm	8.91~9.69 GHz
DRD0650288U□□□00T	6.50 ±0.05 mm	2.88 ±0.05 mm	8.20~8.91 GHz
DRD0710314U□□□00T	7.07 ±0.05 mm	3.14 ±0.05 mm	7.54~8.20 GHz
DRD0770341U□□□00T	7.69 ±0.05 mm	3.41 ±0.05 mm	6.93~7.54 GHz
DRD0840371U□□□00T	8.36 ±0.05 mm	3.71 ±0.05 mm	6.38~6.93 GHz
DRD0910403U□□□00T	9.09 ±0.05 mm	4.03 ±0.05 mm	5.87~6.38 GHz
DRD0990438U□□□00T	9.88 ±0.05 mm	4.38 ±0.05 mm	5.40~5.87 GHz
DRD1070477U□□□00T	10.75 ±0.05 mm	4.77 ±0.05 mm	4.96~5.40 GHz
DRD1170518U□□□00T	11.68 ±0.05 mm	5.18 ±0.05 mm	4.56~4.96 GHz
DRD1270563U□□□00T	12.70 ±0.05 mm	5.63 ±0.05 mm	4.20~4.56 GHz
DRD1380613U□□□00T	13.81 ±0.05 mm	6.13 ±0.05 mm	3.86~4.20 GHz
DRD1500666U□□□00T	15.02 ±0.05 mm	6.66 ±0.05 mm	3.55~3.86 GHz
DRD1630724U□□□00T	16.33 ±0.05 mm	7.24 ±0.05 mm	3.27~3.55 GHz
DRD1780788U□□□00T	17.76 ±0.05 mm	7.88 ±0.05 mm	3.00~3.27 GHz
DRD1930856U□□□00T	19.31 ±0.05 mm	8.56 ±0.05 mm	2.76~3.00 GHz
DRD2100931U□□□00T	21.00 ±0.05 mm	9.31 ±0.05 mm	2.54~2.76 GHz
DRD2281013U□□□00T	22.83 ±0.05 mm	10.13 ±0.05 mm	2.34~2.54 GHz
DRD2481101U□□□00T	24.82 ±0.05 mm	11.01 ±0.05 mm	2.15~2.34 GHz
DRD2701197U□□□00T	26.99 ±0.05 mm	11.97 ±0.05 mm	1.98~2.15 GHz
DRD2931302U□□□00T	29.35 ±0.05 mm	13.02 ±0.05 mm	1.82~1.98 GHz
DRD3191415U□□□00T	31.91 ±0.05 mm	14.15 ±0.05 mm	1.67~1.82 GHz
DRD3471539U□□□00T	34.70 ±0.05 mm	15.39 ±0.05 mm	1.54~1.67 GHz

Codes for temperature coefficient of resonant frequency and the tolerance should be put into the three blank boxes of the above Part Numbers.
Please see "Part Numbering" (ex.) 2.0±1.0ppm/°C : 20A.

■ Freq. Temp. Coefficient, Dielectric Constant and Q

• U series

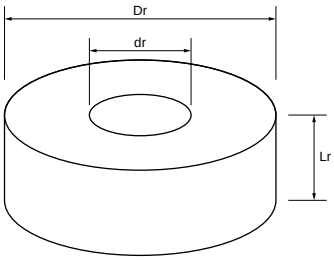
Characteristic Code	Frequency Temperature Coefficient (τf) (ppm/°C)	Dielectric Constant (εr)	Q (at 7GHz)
E0	-4	36.6±0.5	6,000 min.
C0	-2	37.0±0.5	
00	0	37.4±0.5	
20	2	37.7±0.5	
40	4	38.0±0.5	
60	6	38.3±0.5	
80	8	38.6±0.5	
P0	10	38.9±0.5	

Dielectric Resonators (RESOMICS®)

Dielectric Resonator U Series (DRT Type)

■ Features

1. High Q of 6,000 at 7GHz
2. High dielectric constant : Er=38
3. Resonant frequency temperature coefficient can be chosen from -4 to 10ppm/(degree C). Tolerance of the frequency temperature coefficient can be chosen from +-0.5, +-1, and +-2 ppm/(degree C).
4. Resonant frequency can be chosen from 2.7 to 11.5GHz.
5. Low price



Part Number	Outer Dia. (mm)	Inner Dia. (mm)	Thickness (mm)	Frequency Range
DRT0510224U□□□00T	5.06 ±0.05 mm	2.0 ±0.1 mm	2.24 ±0.05 mm	10.54~11.45 GHz
DRT0550244U□□□00T	5.50 ±0.05 mm	2.0 ±0.1 mm	2.44 ±0.05 mm	9.69~10.54 GHz
DRT0600265U□□□00T	5.98 ±0.05 mm	2.0 ±0.1 mm	2.65 ±0.05 mm	8.91~9.69 GHz
DRT0650288U□□□00T	6.50 ±0.05 mm	2.0 ±0.1 mm	2.88 ±0.05 mm	8.20~8.91 GHz
DRT0710314U□□□00T	7.07 ±0.05 mm	2.0 ±0.1 mm	3.14 ±0.05 mm	7.54~8.20 GHz
DRT0770341U□□□00T	7.69 ±0.05 mm	2.0 ±0.1 mm	3.41 ±0.05 mm	6.93~7.54 GHz
DRT0840371U□□□00T	8.36 ±0.05 mm	3.0 ±0.1 mm	3.71 ±0.05 mm	6.38~6.93 GHz
DRT0910403U□□□00T	9.09 ±0.05 mm	3.0 ±0.1 mm	4.03 ±0.05 mm	5.87~6.38 GHz
DRT0990438U□□□00T	9.88 ±0.05 mm	3.0 ±0.1 mm	4.38 ±0.05 mm	5.40~5.87 GHz
DRT1050460U□□□00T	10.50 ±0.05 mm	3.0 ±0.1 mm	4.60 ±0.05 mm	5.08~5.40 GHz
DRT1070477U□□□00T	10.75 ±0.05 mm	4.0 ±0.1 mm	4.77 ±0.05 mm	4.96~5.08 GHz
DRT1170518U□□□00T	11.68 ±0.05 mm	4.0 ±0.1 mm	5.18 ±0.05 mm	4.56~4.96 GHz
DRT1270563U□□□00T	12.70 ±0.05 mm	4.0 ±0.1 mm	5.63 ±0.05 mm	4.20~4.56 GHz
DRT1380613U□□□00T	13.81 ±0.05 mm	4.0 ±0.1 mm	6.13 ±0.05 mm	3.86~4.20 GHz
DRT1500666U□□□00T	15.02 ±0.05 mm	4.0 ±0.1 mm	6.66 ±0.05 mm	3.55~3.86 GHz
DRT1630724U□□□00T	16.33 ±0.05 mm	4.0 ±0.1 mm	7.24 ±0.05 mm	3.27~3.55 GHz
DRT1780788U□□□00T	17.76 ±0.05 mm	4.0 ±0.1 mm	7.88 ±0.05 mm	3.00~3.27 GHz
DRT1930856U□□□00T	19.31 ±0.05 mm	4.0 ±0.1 mm	8.56 ±0.05 mm	2.76~3.00 GHz
DRT2000863U□□□00T	20.00 ±0.05 mm	4.0 ±0.1 mm	8.63 ±0.05 mm	2.67~2.89 GHz
DRT2000863U□□□01T	20.00 ±0.05 mm	6.0 ±0.1 mm	8.63 ±0.05 mm	2.66~2.88 GHz

Codes for temperature coefficient of resonant frequency and the tolerance should be put into the three blank boxes of the above Part Numbers.
Please see "Part Numbering" (ex.) 2.0±1.0ppm/°C : 20A.

■ Freq. Temp. Coefficient, Dielectric Constant and Q

• U series

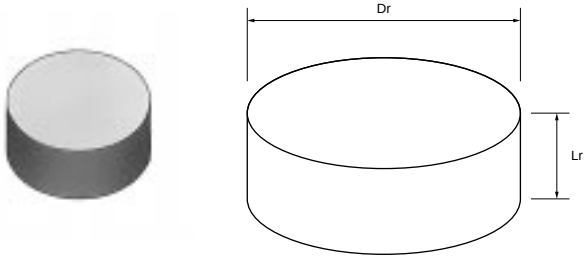
Characteristic Code	Frequency Temperature Coefficient (τf) (ppm/°C)	Dielectric Constant (εr)	Q (at 7GHz)
E0	-4	36.6±0.5	6,000 min.
C0	-2	37.0±0.5	
00	0	37.4±0.5	
20	2	37.7±0.5	
40	4	38.0±0.5	
60	6	38.3±0.5	
80	8	38.6±0.5	
P0	10	38.9±0.5	

Dielectric Resonators (RESOMICS®)

Dielectric Resonator M Series (DRD Type)

■ Features

1. High Q of 7,000 at 7GHz
2. High dielectric constant : Er=38
3. Resonant frequency temperature coefficient can be chosen from 0 to 6ppm/(degree C). Tolerance of frequency temperature coefficient can be chosen from +-0.5, +-1 and +-2ppm/(degree C).
4. Resonant frequency can be chosen from 1.5 to 12.5GHz.



Part Number	Outer Dia. (mm)	Thickness (mm)	Frequency Range
DRD0460206M□□□00T	4.65 ±0.05 mm	2.06 ±0.05 mm	11.46~12.45 GHz
DRD0510224M□□□00T	5.06 ±0.05 mm	2.24 ±0.05 mm	10.54~11.46 GHz
DRD0550244M□□□00T	5.50 ±0.05 mm	2.44 ±0.05 mm	9.69~10.54 GHz
DRD0600265M□□□00T	5.98 ±0.05 mm	2.65 ±0.05 mm	8.91~9.69 GHz
DRD0650288M□□□00T	6.50 ±0.05 mm	2.88 ±0.05 mm	8.20~8.91 GHz
DRD0710314M□□□00T	7.07 ±0.05 mm	3.14 ±0.05 mm	7.54~8.20 GHz
DRD0770341M□□□00T	7.69 ±0.05 mm	3.41 ±0.05 mm	6.93~7.54 GHz
DRD0840371M□□□00T	8.36 ±0.05 mm	3.71 ±0.05 mm	6.38~6.93 GHz
DRD0910403M□□□00T	9.09 ±0.05 mm	4.03 ±0.05 mm	5.87~6.38 GHz
DRD0990438M□□□00T	9.88 ±0.05 mm	4.38 ±0.05 mm	5.40~5.87 GHz
DRD1070477M□□□00T	10.75 ±0.05 mm	4.77 ±0.05 mm	4.96~5.40 GHz
DRD1170518M□□□00T	11.68 ±0.05 mm	5.18 ±0.05 mm	4.56~4.96 GHz
DRD1270563M□□□00T	12.70 ±0.05 mm	5.63 ±0.05 mm	4.20~4.56 GHz
DRD1380613M□□□00T	13.81 ±0.05 mm	6.13 ±0.05 mm	3.86~4.20 GHz
DRD1500666M□□□00T	15.02 ±0.05 mm	6.66 ±0.05 mm	3.55~3.86 GHz
DRD1630724M□□□00T	16.33 ±0.05 mm	7.24 ±0.05 mm	3.27~3.55 GHz
DRD1780788M□□□00T	17.76 ±0.05 mm	7.88 ±0.05 mm	3.00~3.27 GHz
DRD1930856M□□□00T	19.31 ±0.05 mm	8.56 ±0.05 mm	2.76~3.00 GHz
DRD2100931M□□□00T	21.00 ±0.05 mm	9.31 ±0.05 mm	2.54~2.76 GHz
DRD2281013M□□□00T	22.83 ±0.05 mm	10.13 ±0.05 mm	2.34~2.54 GHz
DRD2481101M□□□00T	24.82 ±0.05 mm	11.01 ±0.05 mm	2.15~2.34 GHz
DRD2701197M□□□00T	26.99 ±0.05 mm	11.97 ±0.05 mm	1.98~2.15 GHz
DRD2931302M□□□00T	29.35 ±0.05 mm	13.02 ±0.05 mm	1.82~1.98 GHz
DRD3191415M□□□00T	31.91 ±0.05 mm	14.15 ±0.05 mm	1.67~1.82 GHz
DRD3471539M□□□00T	34.70 ±0.05 mm	15.39 ±0.05 mm	1.54~1.67 GHz

Codes for temperature coefficient of resonant frequency and the tolerance should be put into the three blank boxes of the above Part Numbers.
Please see "Part Numbering" (ex.) 2.0±1.0ppm/°C : 20A.

■ Freq. Temp. Coefficient, Dielectric Constant and Q

• M series

Characteristic Code	Frequency Temperature Coefficient (τf) (ppm/°C)	Dielectric Constant (εr)		Q (at 7GHz)
		①	②	
00	0	38.5±1.0	37.7±1.0	7,400 min.
20	2	38.7±1.0	37.9±1.0	7,200 min.
40	4	38.9±1.0	38.2±1.0	7,100 min.
60	6	39.2±1.0	38.4±1.0	7,000 min.

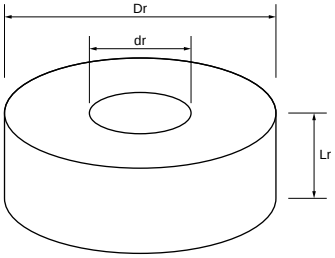
① : DRD046-DRD107 Type
② : DRD117-DRD347 Type

Dielectric Resonators (RESOMICS®)

Dielectric Resonator M Series (DRT Type)

■ Features

1. High Q of 7,000 at 7GHz
2. High dielectric constant : Er=38
3. Resonant frequency temperature coefficient can be chosen from 0 to 6ppm/(degree C). Tolerance of frequency temperature coefficient can be chosen from +-0.5, +-1 and +-2ppm/(degree C).
4. Resonant freguency can be chosen from 2.5 to 11.5GHz.



Part Number	Outer Dia. (mm)	Inner Dia. (mm)	Thickness (mm)	Frequency Range
DRT0510224M□□□00T	5.06 ±0.05 mm	2.0 ±0.1 mm	2.24 ±0.05 mm	10.45~11.45 GHz
DRT0550244M□□□00T	5.50 ±0.05 mm	2.0 ±0.1 mm	2.44 ±0.05 mm	9.69~10.45 GHz
DRT0600265M□□□00T	5.98 ±0.05 mm	2.0 ±0.1 mm	2.65 ±0.05 mm	8.91~9.69 GHz
DRT0650288M□□□00T	6.50 ±0.05 mm	2.0 ±0.1 mm	2.88 ±0.05 mm	8.20~8.91 GHz
DRT0710314M□□□00T	7.07 ±0.05 mm	2.0 ±0.1 mm	3.14 ±0.05 mm	7.54~8.20 GHz
DRT0770341M□□□00T	7.69 ±0.05 mm	2.0 ±0.1 mm	3.41 ±0.05 mm	6.93~7.54 GHz
DRT0840371M□□□00T	8.36 ±0.05 mm	3.0 ±0.1 mm	3.71 ±0.05 mm	6.38~6.93 GHz
DRT0910403M□□□00T	9.09 ±0.05 mm	3.0 ±0.1 mm	4.03 ±0.05 mm	5.87~6.38 GHz
DRT0990438M□□□00T	9.88 ±0.05 mm	3.0 ±0.1 mm	4.38 ±0.05 mm	5.40~5.87 GHz
DRT1070477M□□□00T	10.75 ±0.05 mm	4.0 ±0.1 mm	4.77 ±0.05 mm	4.96~5.40 GHz
DRT1170518M□□□00T	11.68 ±0.05 mm	4.0 ±0.1 mm	5.18 ±0.05 mm	4.56~4.96 GHz
DRT1270563M□□□00T	12.70 ±0.05 mm	4.0 ±0.1 mm	5.63 ±0.05 mm	4.20~4.56 GHz
DRT1380613M□□□00T	13.81 ±0.05 mm	4.0 ±0.1 mm	6.13 ±0.05 mm	3.86~4.20 GHz
DRT1500666M□□□00T	15.02 ±0.05 mm	4.0 ±0.1 mm	6.66 ±0.05 mm	3.55~3.86 GHz
DRT1630724M□□□00T	16.33 ±0.05 mm	4.0 ±0.1 mm	7.24 ±0.05 mm	3.27~3.55 GHz
DRT1780788M□□□00T	17.76 ±0.05 mm	4.0 ±0.1 mm	7.88 ±0.05 mm	3.00~3.27 GHz
DRT1930856M□□□00T	19.31 ±0.05 mm	4.0 ±0.1 mm	8.56 ±0.05 mm	2.76~3.00 GHz
DRT2100931M□□□00T	21.00 ±0.05 mm	4.0 ±0.1 mm	9.31 ±0.05 mm	2.54~2.76 GHz

Codes for temperature coefficient of resonant frequency and the tolerance should be put into the three blank boxes of the above Part Numbers.
Please see "Part Numbering" (ex.) 2.0±1.0ppm/°C : 20A.

■ Freq. Temp. Coefficient, Dielectric Constant and Q

• M series

Characteristic Code	Frequency Temperature Coefficient (τf) (ppm/°C)	Dielectric Constant (εr)		Q (at 7GHz)
		①	②	
00	0	38.5±1.0	37.7±1.0	7,400 min.
20	2	38.7±1.0	37.9±1.0	7,200 min.
40	4	38.9±1.0	38.2±1.0	7,100 min.
60	6	39.2±1.0	38.4±1.0	7,000 min.

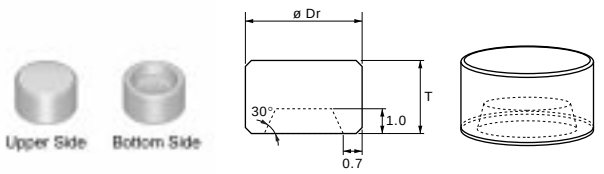
① : DRT051-DRT099 Type
② : DRT107-DRT210 Type

Dielectric Resonators (RESOMICS®)

Dielectric Resonator M Series (DRU Type)

■ Features

1. Designed for local oscillators for BS/CS LNBs.
2. Lower price compared with support glued type.
3. A high unloaded Q resonator using M series (Er=38).
4. Available with an outer diameter from phi 4.8mm, phi 5.06mm and phi 5.6mm.
5. Available with a frequency temperature coefficient from 0 to 10ppm/(degree C) and its tolerance from +-0.5, +-1.0 and +-2.0ppm/(degree C).
6. Angle of support fixed at 30 degree and the height at 1.0mm.



(in mm)

Part Number	Resonant Frequency (MHz)	Outer Dia. (mm)	Thickness (mm)
DRU048□□□□□M□□□00R	10570 to 11690	4.80 ±0.05	2.25 to 3.01 (Typical)
DRU051□□□□□M□□□00R	10060 to 10820	5.06 ±0.05	2.54 to 3.14 (Typical)
DRU056□□□□□M□□□00R	9280 to 9880	5.60 ±0.05	2.77 to 3.31 (Typical)

Part Number: Five blank boxes are filled with resonant frequency codes.
Three bland boxes are filled with temperature coefficient of resonant frequency.
Please see Part Numbering for details.
Standard tolerance of resonant frequency is ±30MHz.
Resonant Frequency: Please consult our sales representatives or engineers regarding products with other frequencies.

■ Freq. Temp. Coefficient, Dielectric Constant and Q

• M series

Characteristic Code	Resonant Frequency Temperature Coefficient (τf) (ppm/°C)	Dielectric Constant (εr)	Q ∗ (at 7GHz)
00	0	38.5±1.0	7,400 min.
20	2	38.7±1.0	7,200 min.
40	4	38.9±1.0	7,100 min.
60	6	39.2±1.0	7,000 min.

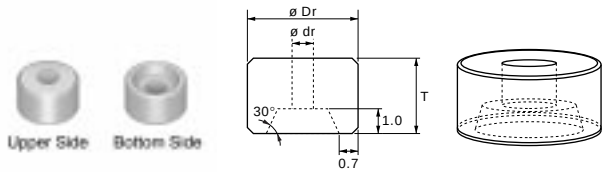
∗ Q value at 7GHz is only for information.
Actual assurance of Q is done by unloaded Q values in our standard test fixture.

Dielectric Resonators (RESOMICS®)

Dielectric Resonator M Series (DRY Type)

■ Features

1. Designed for local oscillators for BS/CS LNBs.
2. Lower price compared with support glued type.
3. A high unloaded Q resonator using M series (Er=38).
4. Available with an outer diameter from phi 4.8mm, phi 5.06mm and phi 5.6mm.
5. Available with a frequency temperature coefficient from 0 to 10ppm/(degree C) and its tolerance from +-0.5, +-1.0 and +-2.0ppm/(degree C).
6. Angle of support fixed at 30 degree and the height at 1.0mm.
7. Excellent spurious characteristics with hole.



(in mm)

Part Number	Resonant Frequency (MHz)	Outer Dia. (mm)	Inner Dia. (mm)	Thickness (mm)
DRY048□□□□□M□□□00R	10570 to 11690	4.80 ±0.05	2.00 ±0.1	2.40 to 3.33 (Typical)
DRY051□□□□□M□□□00R	10060 to 10820	5.06 ±0.05	2.00 ±0.1	2.70 to 3.41 (Typical)
DRY056□□□□□M□□□00R	9280 to 9880	5.60 ±0.05	2.00 ±0.1	2.90 to 3.51 (Typical)

Part Number: Five blank boxes are filled with resonant frequency codes.
Three blank boxes are filled with temperature coefficient of resonant frequency.
Please see Part Numbering for details.
Standard tolerance of resonant frequency is ±30MHz.
Resonant Frequency: Please consult our sales representatives or engineers regarding products with other frequencies.

■ Freq. Temp. Coefficient, Dielectric Constant and Q

• M series

Characteristic Code	Resonant Frequency Temperature Coefficient (τf) (ppm/°C)	Dielectric Constant (εr)	Q ∗ (at 7GHz)
00	0	38.5±1.0	7,400 min.
20	2	38.7±1.0	7,200 min.
40	4	38.9±1.0	7,100 min.
60	6	39.2±1.0	7,000 min.

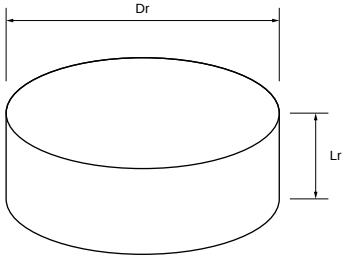
∗ Q value at 7GHz is only for information.
Actual assurance of Q is done by unloaded Q values in our standard test fixture.

Dielectric Resonators (RESOMICS®)

Dielectric Resonator V Series (DRD Type)

■ Features

1. High Q of 12,000 at 10GHz
2. High dielectric constant : Er=34
3. Resonant frequency temperature coefficient can be chosen from 0 to 8ppm/(degree C). Tolerance of frequency temperature coefficient can be chosen from +-0.5, +-1 and +-2ppm/(degree C).
4. Resonant frequency can be chosen from 2.9 to 13.2GHz.



7

Part Number	Outer Dia. (mm)	Thickness (mm)	Frequency Range
DRD0460206V□□□00T	4.65 ±0.05 mm	2.06 ±0.05 mm	12.07~13.24 GHz
DRD0510224V□□□00T	5.06 ±0.05 mm	2.24 ±0.05 mm	11.10~12.07 GHz
DRD0550244V□□□00T	5.50 ±0.05 mm	2.44 ±0.05 mm	10.20~11.10 GHz
DRD0600265V□□□00T	5.98 ±0.05 mm	2.65 ±0.05 mm	9.39~10.20 GHz
DRD0650288V□□□00T	6.50 ±0.05 mm	2.88 ±0.05 mm	8.64~9.39 GHz
DRD0710314V□□□00T	7.07 ±0.05 mm	3.14 ±0.05 mm	7.93~8.64 GHz
DRD0770341V□□□00T	7.69 ±0.05 mm	3.41 ±0.05 mm	7.30~7.93 GHz
DRD0840371V□□□00T	8.36 ±0.05 mm	3.71 ±0.05 mm	6.71~7.30 GHz
DRD0910403V□□□00T	9.09 ±0.05 mm	4.03 ±0.05 mm	6.17~6.71 GHz
DRD0990438V□□□00T	9.88 ±0.05 mm	4.38 ±0.05 mm	5.68~6.17 GHz
DRD1070477V□□□00T	10.75 ±0.05 mm	4.77 ±0.05 mm	5.22~5.68 GHz
DRD1170518V□□□00T	11.68 ±0.05 mm	5.18 ±0.05 mm	4.80~5.22 GHz
DRD1270563V□□□00T	12.70 ±0.05 mm	5.63 ±0.05 mm	4.42~4.80 GHz
DRD1380613V□□□00T	13.81 ±0.05 mm	6.13 ±0.05 mm	4.06~4.42 GHz
DRD1500666V□□□00T	15.02 ±0.05 mm	6.66 ±0.05 mm	3.74~4.06 GHz
DRD1630724V□□□00T	16.33 ±0.05 mm	7.24 ±0.05 mm	3.44~3.74 GHz
DRD1780788V□□□00T	17.76 ±0.05 mm	7.88 ±0.05 mm	3.16~3.44 GHz
DRD1930856V□□□00T	19.31 ±0.05 mm	8.56 ±0.05 mm	2.91~3.16 GHz

Codes for temperature coefficient of resonant frequency and the tolerance should be put into the three blank boxes of the above Part Numbers.
Please see "Part Numbering" (ex.) 2.0±1.0ppm/°C : 20A.

■ Freq. Temp. Coefficient, Dielectric Constant and Q

• V series

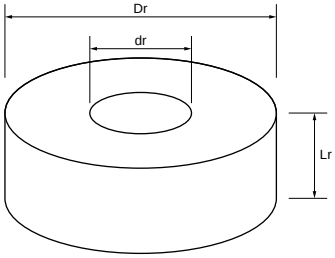
Characteristic Code	Frequency Temperature Coefficient (τf) (ppm/°C)	Dielectric Constant (εr)	Q (at 10GHz)
00	0	33.5±0.5	10,000 min.
20	2	33.9±0.5	
40	4	34.3±0.5	
60	6	34.7±0.5	
80	8	35.1±0.5	

Dielectric Resonators (RESOMICS®)

Dielectric Resonator V Series (DRT Type)

■ Features

1. High Q of 12,000 at 10GHz
2. High dielectric constant : Er=34
3. Resonant frequency temperature coefficient can be chosen from 0 to 8ppm/(degree C). Tolerance of frequency temperature coefficient can be chosen from +-0.5, +-1 and +-2ppm/(degree C).
4. Resonant frequency can be chosen from 2.9 to 12.5GHz.



Part Number	Outer Dia. (mm)	Inner Dia. (mm)	Thickness (mm)	Frequency Range
DRT0510224V□□□00T	5.06 ±0.05 mm	2.0 ±0.1 mm	2.24 ±0.05 mm	11.41~12.52 GHz
DRT0550244V□□□00T	5.50 ±0.05 mm	2.0 ±0.1 mm	2.44 ±0.05 mm	10.42~11.42 GHz
DRT0600265V□□□00T	5.98 ±0.05 mm	2.0 ±0.1 mm	2.65 ±0.05 mm	9.54~10.42 GHz
DRT0650288V□□□00T	6.50 ±0.05 mm	2.0 ±0.1 mm	2.88 ±0.05 mm	8.74~9.54 GHz
DRT0710314V□□□00T	7.07 ±0.05 mm	2.0 ±0.1 mm	3.14 ±0.05 mm	8.00~8.74 GHz
DRT0770341V□□□00T	7.69 ±0.05 mm	2.0 ±0.1 mm	3.41 ±0.05 mm	7.34~8.00 GHz
DRT0840371V□□□00T	8.36 ±0.05 mm	3.0 ±0.1 mm	3.71 ±0.05 mm	6.85~7.34 GHz
DRT0910403V□□□00T	9.09 ±0.05 mm	3.0 ±0.1 mm	4.03 ±0.05 mm	6.27~6.85 GHz
DRT0990438V□□□00T	9.88 ±0.05 mm	3.0 ±0.1 mm	4.38 ±0.05 mm	5.74~6.27 GHz
DRT1070477V□□□00T	10.75 ±0.05 mm	4.0 ±0.1 mm	4.77 ±0.05 mm	5.34~5.74 GHz
DRT1170518V□□□00T	11.68 ±0.05 mm	4.0 ±0.1 mm	5.18 ±0.05 mm	4.89~5.34 GHz
DRT1270563V□□□00T	12.70 ±0.05 mm	4.0 ±0.1 mm	5.63 ±0.05 mm	4.48~4.89 GHz
DRT1380613V□□□00T	13.81 ±0.05 mm	4.0 ±0.1 mm	6.13 ±0.05 mm	4.10~4.48 GHz
DRT1500666V□□□00T	15.02 ±0.05 mm	4.0 ±0.1 mm	6.66 ±0.05 mm	3.76~4.10 GHz
DRT1630724V□□□00T	16.33 ±0.05 mm	4.0 ±0.1 mm	7.24 ±0.05 mm	3.45~3.76 GHz
DRT1780788V□□□00T	17.76 ±0.05 mm	4.0 ±0.1 mm	7.88 ±0.05 mm	3.17~3.45 GHz
DRT1930856V□□□00T	19.31 ±0.05 mm	4.0 ±0.1 mm	8.56 ±0.05 mm	2.91~3.17 GHz

Codes for temperature coefficient of resonant frequency and the tolerance should be put into the three blank boxes of the above Part Numbers.
Please see "Part Numbering" (ex.) 2.0±1.0ppm/°C : 20A.

■ Freq. Temp. Coefficient, Dielectric Constant and Q

• V series

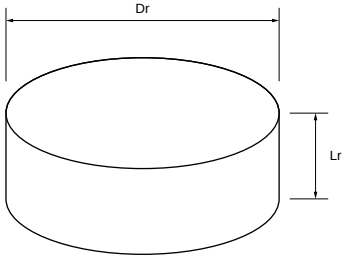
Characteristic Code	Frequency Temperature Coefficient (τf) (ppm/°C)	Dielectric Constant (εr)	Q (at 10GHz)
00	0	33.5±0.5	10,000 min.
20	2	33.9±0.5	
40	4	34.3±0.5	
60	6	34.7±0.5	
80	8	35.1±0.5	

Dielectric Resonators (RESOMICS®)

Dielectric Resonator R Series (DRD Type)

■ Features

1. High Q of 15,000 at 10GHz
2. High dielectric constant : Er=30
3. Resonant frequency temperature coefficient can be chosen from 0 to 6ppm/(degree C). Tolerance of the frequency temperature coefficient can be chosen from +-0.5, +-1 and +-2ppm/(degree C).
4. Resonant frequency can be chosen from 4.6 to 24.2GHz.



Part Number	Outer Dia. (mm)	Thickness (mm)	Frequency Range
DRD0260115R□□□00T	2.59 ±0.05 mm	1.15 ±0.05 mm	22.1~24.2 GHz
DRD0280125R□□□00T	2.82 ±0.05 mm	1.25 ±0.05 mm	20.4~22.1 GHz
DRD0310136R□□□00T	3.06 ±0.05 mm	1.36 ±0.05 mm	18.9~20.4 GHz
DRD0330148R□□□00T	3.33 ±0.05 mm	1.48 ±0.05 mm	17.5~18.9 GHz
DRD0360161R□□□00T	3.62 ±0.05 mm	1.61 ±0.05 mm	16.2~17.5 GHz
DRD0390176R□□□00T	3.94 ±0.05 mm	1.76 ±0.05 mm	15.0~16.2 GHz
DRD0430191R□□□00T	4.28 ±0.05 mm	1.91 ±0.05 mm	13.5~15.0 GHz
DRD0460206R□□□00T	4.65 ±0.05 mm	2.06 ±0.05 mm	12.6~13.5 GHz
DRD0510224R□□□00T	5.06 ±0.05 mm	2.24 ±0.05 mm	11.6~12.6 GHz
DRD0550244R□□□00T	5.50 ±0.05 mm	2.44 ±0.05 mm	10.8~11.6 GHz
DRD0600265R□□□00T	5.98 ±0.05 mm	2.65 ±0.05 mm	9.7~10.8 GHz
DRD0650288R□□□00T	6.50 ±0.05 mm	2.88 ±0.05 mm	9.0~9.7 GHz
DRD0710314R□□□00T	7.07 ±0.05 mm	3.14 ±0.05 mm	8.3~9.0 GHz
DRD0770341R□□□00T	7.69 ±0.05 mm	3.41 ±0.05 mm	7.7~8.3 GHz
DRD0840371R□□□00T	8.36 ±0.05 mm	3.71 ±0.05 mm	6.9~7.7 GHz
DRD0910403R□□□00T	9.09 ±0.05 mm	4.03 ±0.05 mm	6.4~6.9 GHz
DRD0990438R□□□00T	9.88 ±0.05 mm	4.38 ±0.05 mm	5.9~6.4 GHz
DRD1070477R□□□00T	10.75 ±0.05 mm	4.77 ±0.05 mm	5.5~5.9 GHz
DRD1170518R□□□00T	11.68 ±0.05 mm	5.18 ±0.05 mm	5.0~5.5 GHz
DRD1270563R□□□00T	12.70 ±0.05 mm	5.63 ±0.05 mm	4.6~5.0 GHz

Codes for temperature coefficient of resonant frequency and the tolerance should be put into the three blank boxes of the above Part Numbers.
Please see "Part Numbering" (ex.) 2.0±1.0ppm/°C : 20A.

■ Freq. Temp. Coefficient, Dielectric Constant and Q

• R series

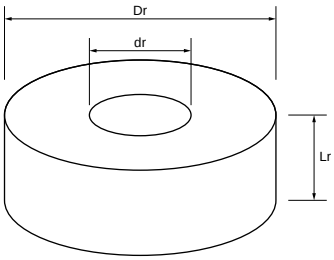
Characteristic Code	Frequency Temperature Coefficient (τf) (ppm/°C)	Dielectric Constant (εr)	Q (at 10GHz)
00	0	29.7±0.8	12,000 min.
20	2	30.3±0.8	
40	4	30.9±0.8	
60	6	31.5±0.8	

Dielectric Resonators (RESOMICS®)

Dielectric Resonator R Series (DRT Type)

■ Features

1. High Q of 15,000 at 10GHz
2. High dielectric constant : Er=30
3. Resonant frequency temperature coefficient can be chosen from 0 to 6ppm/(degree C). Tolerance of the frequency temperature coefficient can be chosen from +-0.5, +-1 and +-2ppm/(degree C).
4. Resonant frequency can be chosen from 5.7 to 13.1GHz.



Part Number	Outer Dia. (mm)	Inner Dia. (mm)	Thickness (mm)	Frequency Range
DRT0510224R□□□00T	5.06 ±0.05 mm	2.0 ±0.1 mm	2.24 ±0.05 mm	11.9~13.1 GHz
DRT0550244R□□□00T	5.50 ±0.05 mm	2.0 ±0.1 mm	2.44 ±0.05 mm	11.0~11.9 GHz
DRT0600265R□□□00T	5.98 ±0.05 mm	2.0 ±0.1 mm	2.65 ±0.05 mm	10.0~11.0 GHz
DRT0650288R□□□00T	6.50 ±0.05 mm	2.0 ±0.1 mm	2.88 ±0.05 mm	9.1~10.0 GHz
DRT0710314R□□□00T	7.07 ±0.05 mm	2.0 ±0.1 mm	3.14 ±0.05 mm	8.4~9.1 GHz
DRT0770341R□□□00T	7.69 ±0.05 mm	2.0 ±0.1 mm	3.41 ±0.05 mm	7.7~8.4 GHz
DRT0840371R□□□00T	8.36 ±0.05 mm	3.0 ±0.1 mm	3.71 ±0.05 mm	7.1~7.7 GHz
DRT0910403R□□□00T	9.09 ±0.05 mm	3.0 ±0.1 mm	4.03 ±0.05 mm	6.5~7.1 GHz
DRT0990438R□□□00T	9.88 ±0.05 mm	3.0 ±0.1 mm	4.38 ±0.05 mm	6.0~6.5 GHz
DRT1050460R□□□00T	10.50 ±0.05 mm	3.0 ±0.1 mm	4.60 ±0.05 mm	5.7~6.0 GHz

Codes for temperature coefficient of resonant frequency and the tolerance should be put into the three blank boxes of the above Part Numbers.
Please see "Part Numbering" (ex.) 2.0±1.0ppm/°C : 20A.

■ Freq. Temp. Coefficient, Dielectric Constant and Q

• R series

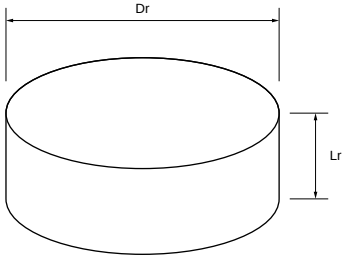
Characteristic Code	Frequency Temperature Coefficient (τf) (ppm/°C)	Dielectric Constant (εr)	Q (at 10GHz)
00	0	29.7±0.8	12,000 min.
20	2	30.3±0.8	
40	4	30.9±0.8	
60	6	31.5±0.8	

Dielectric Resonators (RESOMICS®)

Dielectric Resonator B Series (DRD Type)

■ Features

1. High Q of 18,000 at 10GHz
2. High dielectric constant : Er=27.9
3. Resonant frequency temperature coefficient can be chosen from 0 to 6ppm/(degree C). Tolerance of frequency temperature coefficient can be chosen from +-0.5, +-1 and +-2ppm/(degree C).
4. Resonant frequency can be chosen from 4.8 to 25.9GHz.



Part Number	Outer Dia. (mm)	Thickness (mm)	Frequency Range
DRD0260115B□□□00T	2.59 ±0.05 mm	1.15 ±0.05 mm	23.67~25.94 GHz
DRD0280125B□□□00T	2.82 ±0.05 mm	1.25 ±0.05 mm	21.75~23.67 GHz
DRD0310136B□□□00T	3.06 ±0.05 mm	1.36 ±0.05 mm	20.03~21.75 GHz
DRD0330148B□□□00T	3.33 ±0.05 mm	1.48 ±0.05 mm	18.40~20.03 GHz
DRD0360161B□□□00T	3.62 ±0.05 mm	1.61 ±0.05 mm	16.92~18.40 GHz
DRD0390176B□□□00T	3.94 ±0.05 mm	1.76 ±0.05 mm	15.53~16.92 GHz
DRD0430191B□□□00T	4.28 ±0.05 mm	1.91 ±0.05 mm	14.30~15.53 GHz
DRD0460206B□□□00T	4.65 ±0.05 mm	2.06 ±0.05 mm	13.19~14.30 GHz
DRD0510224B□□□00T	5.06 ±0.05 mm	2.24 ±0.05 mm	12.13~13.19 GHz
DRD0550244B□□□00T	5.50 ±0.05 mm	2.44 ±0.05 mm	11.15~12.13 GHz
DRD0600265B□□□00T	5.98 ±0.05 mm	2.65 ±0.05 mm	10.26~11.15 GHz
DRD0650288B□□□00T	6.50 ±0.05 mm	2.88 ±0.05 mm	9.44~10.26 GHz
DRD0710314B□□□00T	7.07 ±0.05 mm	3.14 ±0.05 mm	8.67~9.44 GHz
DRD0770341B□□□00T	7.69 ±0.05 mm	3.41 ±0.05 mm	7.97~8.67 GHz
DRD0840371B□□□00T	8.36 ±0.05 mm	3.71 ±0.05 mm	7.33~7.97 GHz
DRD0910403B□□□00T	9.09 ±0.05 mm	4.03 ±0.05 mm	6.75~7.33 GHz
DRD0990438B□□□00T	9.88 ±0.05 mm	4.38 ±0.05 mm	6.21~6.75 GHz
DRD1070477B□□□00T	10.75 ±0.05 mm	4.77 ±0.05 mm	5.70~6.21 GHz
DRD1170518B□□□00T	11.68 ±0.05 mm	5.18 ±0.05 mm	5.25~5.70 GHz
DRD1270563B□□□00T	12.70 ±0.05 mm	5.63 ±0.05 mm	4.83~5.25 GHz

Codes for temperature coefficient of resonant frequency and the tolerance should be put into the three blank boxes of the above Part Numbers.
Please see "Part Numbering" (ex.) 2.0±1.0ppm/°C : 20A.

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■ Freq. Temp. Coefficient, Dielectric Constant and Q

• B series

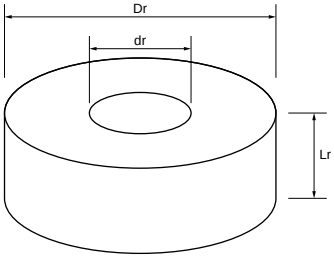
Characteristic Code	Frequency Temperature Coefficient (τf) (ppm/°C)	Dielectric Constant (εr)	Q (at 10GHz)
00	0	27.9±0.5	15,000 min.
20	2		
40	4		
60	6		

Dielectric Resonators (RESOMICS®)

Dielectric Resonator B Series (DRT Type)

■ Features

1. High Q of 18,000 at 10GHz
2. High dielectric constant : Er=27.9
3. Resonant frequency temperature coefficient can be chosen from 0 to 6ppm/(degree C). Tolerance of frequency temperature coefficient can be chosen from +-0.5, +-1 and +-2ppm/(degree C).
4. Resonant frequency can be chosen from 5.9 to 13.7 GHz.



Part Number	Outer Dia. (mm)	Inner Dia. (mm)	Thickness (mm)	Frequency Range
DRT0510224B□□□00T	5.06 ±0.05 mm	2.0 ±0.1 mm	2.24 ±0.05 mm	12.47~13.66 GHz
DRT0550244B□□□00T	5.50 ±0.05 mm	2.0 ±0.1 mm	2.44 ±0.05 mm	11.39~12.47 GHz
DRT0600265B□□□00T	5.98 ±0.05 mm	2.0 ±0.1 mm	2.65 ±0.05 mm	10.42~11.39 GHz
DRT0650288B□□□00T	6.50 ±0.05 mm	2.0 ±0.1 mm	2.88 ±0.05 mm	9.55~10.42 GHz
DRT0710314B□□□00T	7.07 ±0.05 mm	2.0 ±0.1 mm	3.14 ±0.05 mm	8.74~9.55 GHz
DRT0770341B□□□00T	7.69 ±0.05 mm	2.0 ±0.1 mm	3.41 ±0.05 mm	8.02~8.74 GHz
DRT0840371B□□□00T	8.36 ±0.05 mm	3.0 ±0.1 mm	3.71 ±0.05 mm	7.48~8.02 GHz
DRT0910403B□□□00T	9.09 ±0.05 mm	3.0 ±0.1 mm	4.03 ±0.05 mm	6.85~7.48 GHz
DRT0990438B□□□00T	9.88 ±0.05 mm	3.0 ±0.1 mm	4.38 ±0.05 mm	6.28~6.85 GHz
DRT1050460B□□□00T	10.50 ±0.05 mm	3.0 ±0.1 mm	4.60 ±0.05 mm	5.92~6.28 GHz

Codes for temperature coefficient of resonant frequency and the tolerance should be put into the three blank boxes of the above Part Numbers.
Please see "Part Numbering" (ex.) 2.0±1.0ppm/°C : 20A.

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■ Freq. Temp. Coefficient, Dielectric Constant and Q

• B series

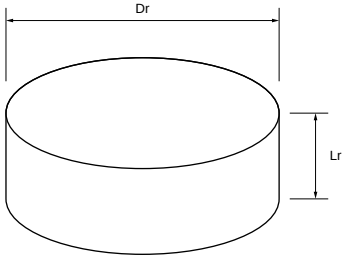
Characteristic Code	Frequency Temperature Coefficient (τf) (ppm/°C)	Dielectric Constant (εr)	Q (at 10GHz)
00	0	27.9±0.5	15,000 min.
20	2		
40	4		
60	6		

Dielectric Resonators (RESOMICS®)

Dielectric Resonator E Series (DRD Type)

■ Features

1. High Q of 24,000 at 10GHz
2. High dielectric constant : Er=24.5
3. Resonant frequency temperature coefficient can be chosen from 0 to 6ppm/(degree C). Tolerance of frequency temperature coefficient can be chosen from +-1, +-2ppm/(degree C).
4. Resonant frequency can be chosen from 8.4 to 25.2GHz.
5. E series is also fit for applications above 25GHz. Please consult us.



Part Number	Outer Dia. (mm)	Thickness (mm)	Frequency Range
DRD0280125E□□□00T	2.82 ±0.05 mm	1.25 ±0.05 mm	23.17~25.15 GHz
DRD0310136E□□□00T	3.06 ±0.05 mm	1.36 ±0.05 mm	21.27~23.17 GHz
DRD0330148E□□□00T	3.33 ±0.05 mm	1.48 ±0.05 mm	19.48~21.27 GHz
DRD0360161E□□□00T	3.62 ±0.05 mm	1.61 ±0.05 mm	17.93~19.48 GHz
DRD0390176E□□□00T	3.94 ±0.05 mm	1.76 ±0.05 mm	16.47~17.93 GHz
DRD0430191E□□□00T	4.28 ±0.05 mm	1.91 ±0.05 mm	15.16~16.47 GHz
DRD0460206E□□□00T	4.65 ±0.05 mm	2.06 ±0.05 mm	13.95~15.16 GHz
DRD0510224E□□□00T	5.06 ±0.05 mm	2.24 ±0.05 mm	12.82~13.95 GHz
DRD0550244E□□□00T	5.50 ±0.05 mm	2.44 ±0.05 mm	11.80~12.82 GHz
DRD0600265E□□□00T	5.98 ±0.05 mm	2.65 ±0.05 mm	10.85~11.80 GHz
DRD0650288E□□□00T	6.50 ±0.05 mm	2.88 ±0.05 mm	9.98~10.85 GHz
DRD0710314E□□□00T	7.07 ±0.05 mm	3.14 ±0.05 mm	9.18~9.98 GHz
DRD0770341E□□□00T	7.69 ±0.05 mm	3.41 ±0.05 mm	8.44~9.18 GHz

Codes for temperature coefficient of resonant frequency and the tolerance should be put into the three blank boxes of the above Part Numbers.
Please see "Part Numbering" (ex.) 2.0±1.0ppm/°C : 20A.

■ Freq. Temp. Coefficient, Dielectric Constant and Q

• E series

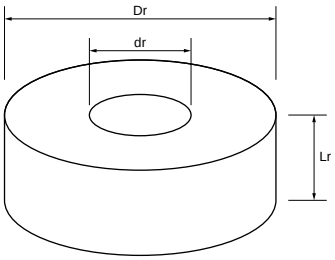
Characteristic Code	Frequency Temperature Coefficient (τf) (ppm/°C)	Dielectric Constant (εr)	Q (at 10GHz)
00	0	24.2±0.4	20,000 min.
20	2	24.4±0.4	
40	4	24.7±0.4	
60	6	24.9±0.4	

Dielectric Resonators (RESOMICS®)

Dielectric Resonator E Series (DRT Type)

■ Features

1. High Q of 24,000 at 10GHz
2. High dielectric constant : Er=24.5
3. Resonant frequency temperature coefficient can be chosen from 0 to 6ppm/(degree C). Tolerance of frequency temperature coefficient can be chosen from +-1, +-2ppm/(degree C).
4. Resonant frequency can be Chosenfrom 8.4 to 19.5GHz.
5. E series is also fit for applications above 25GHz. Please consult us.



Part Number	Outer Dia. (mm)	Inner Dia. (mm)	Thickness (mm)	Frequency Range
DRT0360161E□□□00T	3.62 ±0.05 mm	1.3 ±0.1 mm	1.61 ±0.05 mm	17.93~19.48 GHz
DRT0390176E□□□00T	3.94 ±0.05 mm	1.3 ±0.1 mm	1.76 ±0.05 mm	16.47~17.93 GHz
DRT0430191E□□□00T	4.28 ±0.05 mm	1.3 ±0.1 mm	1.91 ±0.05 mm	15.16~16.47 GHz
DRT0460206E□□□00T	4.65 ±0.05 mm	2.0 ±0.1 mm	2.06 ±0.05 mm	13.95~15.16 GHz
DRT0510224E□□□00T	5.06 ±0.05 mm	2.0 ±0.1 mm	2.24 ±0.05 mm	12.82~13.95 GHz
DRT0550244E□□□00T	5.50 ±0.05 mm	2.0 ±0.1 mm	2.44 ±0.05 mm	11.80~12.82 GHz
DRT0600265E□□□00T	5.98 ±0.05 mm	2.0 ±0.1 mm	2.65 ±0.05 mm	10.85~11.80 GHz
DRT0650288E□□□00T	6.50 ±0.05 mm	2.0 ±0.1 mm	2.88 ±0.05 mm	9.98~10.85 GHz
DRT0710314E□□□00T	7.07 ±0.05 mm	2.0 ±0.1 mm	3.14 ±0.05 mm	9.18~9.98 GHz
DRT0770341E□□□00T	7.69 ±0.05 mm	2.0 ±0.1 mm	3.41 ±0.05 mm	8.44~9.18 GHz

Codes for temperature coefficient of resonant frequency and the tolerance should be put into the three blank boxes of the above Part Numbers.
Please see "Part Numbering" (ex.) 2.0±1.0ppm/°C : 20A.

■ Freq. Temp. Coefficient, Dielectric Constant and Q

• E series

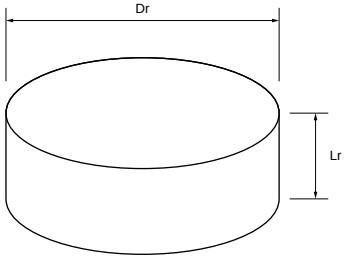
Characteristic Code	Frequency Temperature Coefficient (τf) (ppm/°C)	Dielectric Constant (εr)	Q (at 10GHz)
00	0	24.2±0.4	20,000 min.
20	2	24.4±0.4	
40	4	24.7±0.4	
60	6	24.9±0.4	

Dielectric Resonators (RESOMICS®)

Dielectric Resonator F Series (DRD Type)

■ Features

1. High Q of 35,000 at 10GHz
2. High dielectric constant : Er=24
3. Resonant frequency temperature coefficient can be chosen from 0 to 4ppm/(degree C). Tolerance of frequency temperature coefficient can be chosen from +-1, +-2ppm/(degree C).
4. Resonant frequency can be chosen from 10.0 to 25.2GHz.
5. F series is also fit for applications above 25GHz. Please consult us.



Part Number	Outer Dia. (mm)	Thickness (mm)	Frequency Range
DRD0280125F□□□00T	2.82 ±0.05 mm	1.25 ±0.05 mm	23.17~25.15 GHz
DRD0310136F□□□00T	3.06 ±0.05 mm	1.36 ±0.05 mm	21.27~23.17 GHz
DRD0330148F□□□00T	3.33 ±0.05 mm	1.48 ±0.05 mm	19.48~21.27 GHz
DRD0360161F□□□00T	3.62 ±0.05 mm	1.61 ±0.05 mm	17.93~19.48 GHz
DRD0390176F□□□00T	3.94 ±0.05 mm	1.76 ±0.05 mm	16.47~17.93 GHz
DRD0430191F□□□00T	4.28 ±0.05 mm	1.91 ±0.05 mm	15.16~16.47 GHz
DRD0460206F□□□00T	4.65 ±0.05 mm	2.06 ±0.05 mm	13.95~15.16 GHz
DRD0510224F□□□00T	5.06 ±0.05 mm	2.24 ±0.05 mm	12.82~13.95 GHz
DRD0550244F□□□00T	5.50 ±0.05 mm	2.44 ±0.05 mm	11.80~12.82 GHz
DRD0600265F□□□00T	5.98 ±0.05 mm	2.65 ±0.05 mm	10.85~11.80 GHz
DRD0650288F□□□00T	6.50 ±0.05 mm	2.88 ±0.05 mm	9.98~10.85 GHz

Codes for temperature coefficient of resonant frequency and the tolerance should be put into the three blank boxes of the above Part Numbers.
Please see "Part Numbering" (ex.) 2.0±1.0ppm/°C : 20A.

■ Freq. Temp. Coefficient and Dielectric Constant

• F series

Characteristic Code	Frequency Temperature Coefficient (τf) (ppm/°C)	Dielectric Constant (εr)
00	0	23.8±0.5
10	1	23.9±0.5
20	2	24.0±0.5
30	3	24.1±0.5
40	4	24.2±0.5

■ Unloaded Q Specifications (DRD Type)

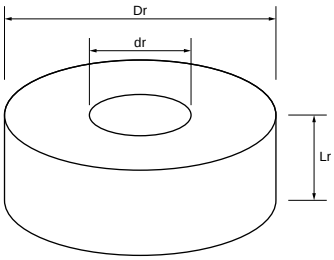
Part Number	Unloaded Q (min.)				
	τf=0	τf=1	τf=2	τf=3	τf=4
DRD0280125F□□□00T	11,000	11,200	11,500	11,700	12,000
DRD0310136F□□□00T	12,500	12,800	13,200	13,600	14,000
DRD0330148F□□□00T	14,000	14,200	14,500	14,700	15,000
DRD0360161F□□□00T	15,500	15,800	16,200	16,600	17,000
DRD0390176F□□□00T	17,000	17,200	17,500	17,700	18,000
DRD0430191F□□□00T	18,000	18,200	18,500	18,700	19,000
DRD0460206F□□□00T	19,000	19,300	19,700	20,100	20,500
DRD0510224F□□□00T	20,000	20,300	20,700	21,100	21,500
DRD0550244F□□□00T	22,000	22,600	23,200	13,800	24,500
DRD0600265F□□□00T	23,500	24,100	24,700	25,300	26,000
DRD0620288F□□□00T	25,000	25,200	25,500	25,700	26,000

Dielectric Resonators (RESOMICS®)

Dielectric Resonator F Series (DRT Type)

■ Features

1. High Q of 35,000 at 10GHz
2. High dielectric constant : Er=24
3. Resonant frequency temperature coefficient can be chosen from 0 to 4ppm/(degree C). Tolerance of frequency temperature coefficient can be chosen from +-1, +-2ppm/(degree C).
4. Resonant frequency can be chosen from 10.0 to 19.5GHz.
5. F-series is also fit for application above 25GHz. Please consult us.



Part Number	Outer Dia. (mm)	Inner Dia. (mm)	Thickness (mm)	Frequency Range
DRT0360161F□□□00T	3.62 ±0.05 mm	1.3 ±0.1 mm	1.61 ±0.05 mm	17.93~19.48 GHz
DRT0390176F□□□00T	3.94 ±0.05 mm	1.3 ±0.1 mm	1.76 ±0.05 mm	16.47~17.93 GHz
DRT0430191F□□□00T	4.28 ±0.05 mm	1.3 ±0.1 mm	1.91 ±0.05 mm	15.16~16.47 GHz
DRT0460206F□□□00T	4.65 ±0.05 mm	2.0 ±0.1 mm	2.06 ±0.05 mm	13.95~15.16 GHz
DRT0510224F□□□00T	5.06 ±0.05 mm	2.0 ±0.1 mm	2.24 ±0.05 mm	12.82~13.95 GHz
DRT0550244F□□□00T	5.50 ±0.05 mm	2.0 ±0.1 mm	2.44 ±0.05 mm	11.80~12.82 GHz
DRT0600265F□□□00T	5.98 ±0.05 mm	2.0 ±0.1 mm	2.65 ±0.05 mm	10.85~11.80 GHz
DRT0650288F□□□00T	6.50 ±0.05 mm	2.0 ±0.1 mm	2.88 ±0.05 mm	9.98~10.85 GHz

Codes for temperature coefficient of resonant frequency and the tolerance should be put into the three blank boxes of the above Part Numbers.
Please see "Part Numbering" (ex.) 2.0±1.0ppm/°C : 20A.

■ Freq. Temp. Coefficient and Dielectric Constant

• F series

Characteristic Code	Frequency Temperature Coefficient (τf) (ppm/°C)	Dielectric Constant (εr)
00	0	23.8±0.5
10	1	23.9±0.5
20	2	24.0±0.5
30	3	24.1±0.5
40	4	24.2±0.5

■ Unloaded Q Specifications (DRT Type)

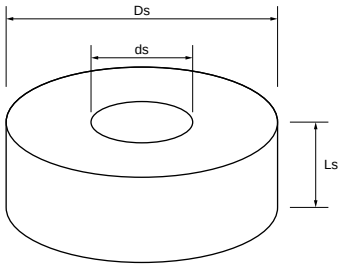
Part Number	Unloaded Q (min.)				
	τf=0	τf=1	τf=2	τf=3	τf=4
DRT0360161F□□□00T	14,500	14,700	15,000	15,200	15,500
DRT0390176F□□□00T	17,000	17,100	17,200	17,300	17,500
DRT0430191F□□□00T	17,500	17,700	18,000	18,200	18,500
DRT0460206F□□□00T	18,000	18,200	18,500	18,700	19,000
DRT0510224F□□□00T	18,500	18,800	19,200	19,600	20,000
DRT0550244F□□□00T	20,500	21,200	22,000	22,700	23,500
DRT0600265F□□□00T	21,000	21,800	22,700	23,600	24,500
DRT0650288F□□□00T	22,000	22,800	23,700	24,600	25,500

Dielectric Resonators (RESOMICS®)

Support of Dielectric Resonator Z Series (DRZ Type)

■ Features

Supports for "RESOMICS" DRD and DRT Type.



Part Number	Outer Dia. (mm)	Inner Dia. (mm)	Thickness (mm)
DRZ001ZT	3.50 ±0.05 mm	2.0 ±0.1 mm	0.60 ±0.05 mm
DRZ002ZT	3.50 ±0.05 mm	2.0 ±0.1 mm	1.50 ±0.05 mm
DRZ003ZT	6.00 ±0.05 mm	3.0 ±0.1 mm	1.20 ±0.05 mm
DRZ004ZT	6.00 ±0.05 mm	3.0 ±0.1 mm	2.50 ±0.05 mm
DRZ005ZT	8.00 ±0.05 mm	4.0 ±0.1 mm	2.00 ±0.05 mm
DRZ006ZT	8.00 ±0.05 mm	4.0 ±0.1 mm	4.00 ±0.05 mm
DRZ007ZT	10.00 ±0.05 mm	4.0 ±0.1 mm	3.50 ±0.05 mm
DRZ008ZT	10.00 ±0.05 mm	4.0 ±0.1 mm	6.00 ±0.05 mm
DRZ009ZT	12.00 ±0.05 mm	4.0 ±0.1 mm	4.00 ±0.05 mm
DRZ010ZT	12.00 ±0.05 mm	4.0 ±0.1 mm	7.00 ±0.05 mm

TE Mode Resonator/Support for Resonator Notice

■ Notice (Storage and Operating Conditions)

Do not store and use components under conditions with high humidity.

■ Notice (Handling)

1. Do not apply excessive force and shock.
2. Do not touch components with bare hands or dirty gloves.

■ Notice (Other)

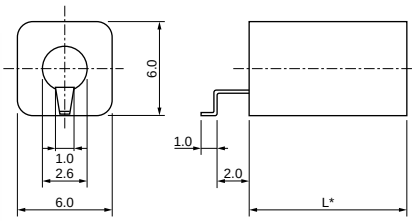
Please make sure that components operate correctly and satisfy your specifications when they are mounted in your actual products.

Dielectric Resonators (RESOMICS®)

Dielectric Resonator K Series (DRR Copper Plated Type)

■ Features

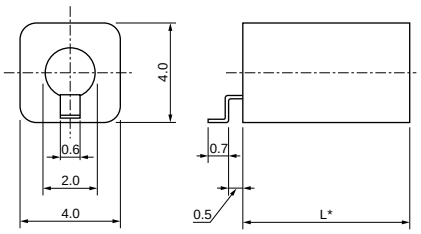
1. High dielectric constant : Er=92
2. Lower price than silver plated type
3. Excellent solderability by copper electrode
4. These resonators cover wide range of resonant frequencies (by 10MHz step).



DRR060 Type

* Dimension L can be calculated by the following, using dielectric constant and resonant frequency.
$L \fallingdotseq 3 \times 10^{11}/(n\sqrt{\varepsilon r} \cdot f_0)$ (f_0 : Hz)
λ / 4 TEM mode : n=4 λ / 2 TEM mode : n=2

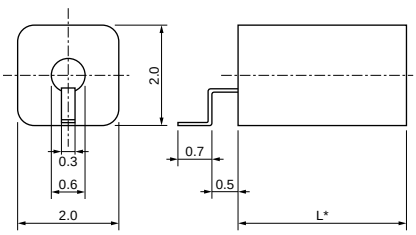
(in mm)



DRR040 Type

* Dimension L can be calculated by the following, using dielectric constant and resonant frequency.
$L \fallingdotseq 3 \times 10^{11}/(n\sqrt{\varepsilon r} \cdot f_0)$ (f_0 : Hz)
λ / 4 TEM mode : n=4 λ / 2 TEM mode : n=2

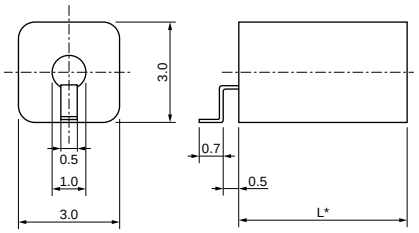
(in mm)



DRR020 Type

* Dimension L can be calculated by the following, using dielectric constant and resonant frequency.
$L \fallingdotseq 3 \times 10^{11}/(n\sqrt{\varepsilon r} \cdot f_0)$ (f_0 : Hz)
λ / 4 TEM mode : n=4 λ / 2 TEM mode : n=2

(in mm)



DRR030 Type

* Dimension L can be calculated by the following, using dielectric constant and resonant frequency.
$L \fallingdotseq 3 \times 10^{11}/(n\sqrt{\varepsilon r} \cdot f_0)$ (f_0 : Hz)
λ / 4 TEM mode : n=4 λ / 2 TEM mode : n=2

(in mm)

Part Number	f0 (MHz)	Unloaded Q (min)	Wavelength	Za (ohm)
DRR060□□□□□KTC00T	440 to 490	330	Lambda/4	5.7 (Nominal Value)
DRR060□□□□□KTC00T	500 to 790	350	Lambda/4	5.7 (Nominal Value)
DRR060□□□□□KTC00T	800 to 1300	400	Lambda/4	5.7 (Nominal Value)
DRR060□□□□□KPC00T	1000 to 1690	470	Lambda/2	5.7 (Nominal Value)
DRR060□□□□□KPC00T	1700 to 2200	510	Lambda/2	5.7 (Nominal Value)
DRR040□□□□□KTC00R	500 to 540	200	Lambda/4	4.8 (Nominal Value)
DRR040□□□□□KTC00R	550 to 640	220	Lambda/4	4.8 (Nominal Value)
DRR040□□□□□KTC00R	650 to 790	240	Lambda/4	4.8 (Nominal Value)
DRR040□□□□□KTC00R	800 to 890	260	Lambda/4	4.8 (Nominal Value)
DRR040□□□□□KTC00R	900 to 1490	270	Lambda/4	4.8 (Nominal Value)
DRR040□□□□□KTC00R	1500 to 1800	290	Lambda/4	4.8 (Nominal Value)
DRR040□□□□□KPC00R	1000 to 1390	300	Lambda/2	4.8 (Nominal Value)

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Part Number	f0 (MHz)	Unloaded Q (min)	Wavelength	Za (ohm)
DRR040□□□□□KPC00R	1400 to 1890	340	Lambda/2	4.8 (Nominal Value)
DRR040□□□□□KPC00R	1900 to 3000	370	Lambda/2	4.8 (Nominal Value)
DRR030□□□□□KTC00R	900 to 1490	230	Lambda/4	7.4 (Nominal Value)
DRR030□□□□□KTC00R	1500 to 1600	250	Lambda/4	7.4 (Nominal Value)
DRR020□□□□□KTC00R	900 to 1590	150	Lambda/4	8.0 (Nominal Value)
DRR020□□□□□KTC00R	1600 to 2600	190	Lambda/4	8.0 (Nominal Value)

Dielectric Constant : 92±1
Temperature coefficient of resonant frequency : 3±2ppm/°C
Tolerance of resonant frequency : ±0.7%max. (Please contact our sales representatives for details.)
Unloaded Q is value at lower limit frequency range.
Five blank boxes of the above Part Numbers are filled with Resonant Frequency codes. Please see Part Numbering for details.

■ Minimum Quantity of Taping

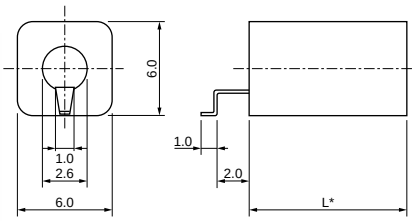
DRR020 type: 2500pcs./phi 330mm reel
DRR030 type: 2000pcs./phi 330mm reel
DRR040 type: 1500pcs./phi 330mm reel

Dielectric Resonators (RESOMICS®)

Dielectric Resonator P Series (DRR Copper Plated Type)

■ Features

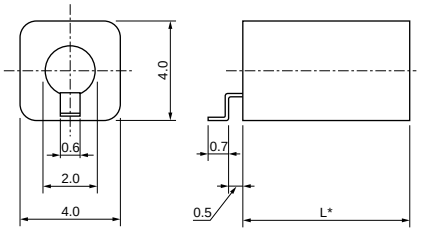
1. High dielectric constant : Er=21
2. Lower price than silver plated type
3. Excellent solderability by copper electrode
4. These resonators cover wide range of resonant frequencies (by 10MHz step).



DRR060 Type

* Dimension L can be calculated by the following, using dielectric constant and resonant frequency.
$L \fallingdotseq 3 \times 10^{11}/(n\sqrt{\varepsilon r} \cdot f0)$ (f0 : Hz)
λ / 4 TEM mode : n=4 λ / 2 TEM mode : n=2

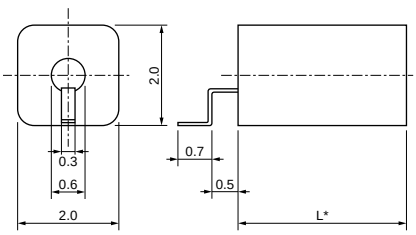
(in mm)



DRR040 Type

* Dimension L can be calculated by the following, using dielectric constant and resonant frequency.
$L \fallingdotseq 3 \times 10^{11}/(n\sqrt{\varepsilon r} \cdot f0)$ (f0 : Hz)
λ / 4 TEM mode : n=4 λ / 2 TEM mode : n=2

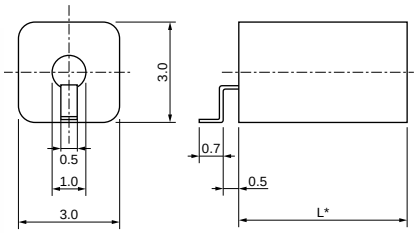
(in mm)



DRR020 Type

* Dimension L can be calculated by the following, using dielectric constant and resonant frequency.
$L \fallingdotseq 3 \times 10^{11}/(n\sqrt{\varepsilon r} \cdot f0)$ (f0 : Hz)
λ / 4 TEM mode : n=4 λ / 2 TEM mode : n=2

(in mm)



DRR030 Type

* Dimension L can be calculated by the following, using dielectric constant and resonant frequency.
$L \fallingdotseq 3 \times 10^{11}/(n\sqrt{\varepsilon r} \cdot f0)$ (f0 : Hz)
λ / 4 TEM mode : n=4 λ / 2 TEM mode : n=2

(in mm)

Part Number	f0 (MHz)	Unloaded Q (min)	Wavelength	Za (ohm)
DRR060□□□□□PTC00T	1000 to 1190	550	Lambda/4	11.9 (Nominal Value)
DRR060□□□□□PTC00T	1200 to 1790	600	Lambda/4	11.9 (Nominal Value)
DRR060□□□□□PTC00T	1800 to 2700	650	Lambda/4	11.9 (Nominal Value)
DRR060□□□□□PPC00T	2000 to 2490	800	Lambda/2	11.9 (Nominal Value)
DRR060□□□□□PPC00T	2500 to 3000	850	Lambda/2	11.9 (Nominal Value)
DRR040□□□□□PTC00R	1300 to 1490	350	Lambda/4	10.0 (Nominal Value)
DRR040□□□□□PTC00R	1500 to 1990	400	Lambda/4	10.0 (Nominal Value)
DRR040□□□□□PTC00R	2000 to 3000	450	Lambda/4	10.0 (Nominal Value)
DRR040□□□□□PPC00R	2500 to 3000	550	Lambda/2	10.0 (Nominal Value)
DRR030□□□□□PTC00R	1900 to 2490	380	Lambda/4	15.4 (Nominal Value)
DRR030□□□□□PTC00R	2500 to 3000	400	Lambda/4	15.4 (Nominal Value)
DRR020□□□□□PTC00R	2800 to 3500	250	Lambda/4	16.7 (Nominal Value)

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Part Number	f0 (MHz)	Unloaded Q (min)	Wavelength	Za (ohm)
DRR020□□□□□PTC00R	3510 to 5000	300	Lambda/4	16.7 (Nominal Value)

Dielectric Constant : 21.4±0.2
Temperature coefficient of resonant frequency : 4±2ppm/°C
Tolerance of resonant frequency : ±0.7%max. (Please contact our sales representatives for details.)
Unloaded Q is value at lower limit of frequency range.
Five blank boxes of the above Part Numbers are filled with Resonant Frequency codes. Please see Part Numbering for details.

■ Minimum Quantity of Taping

DRR020 type: 2500pcs./phi 330mm reel
DRR030 type: 2000pcs./phi 330mm reel
DRR040 type: 1500pcs./phi 330mm reel

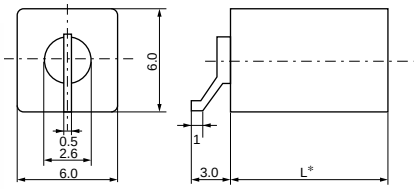
Dielectric Resonators (RESOMICS®)

Dielectric Resonator K Series (DRR Silver Plated Type)

■ Features

1. High dielectric constant : Er=92
2. These resonators cover wide range of resonant frequencies (by 10 MHz step).

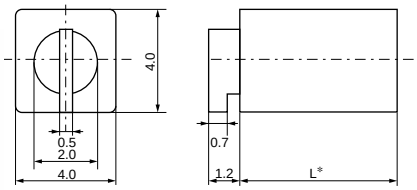
DRR060 Type



* Dimension L can be calculated by the following, using dielectric constant and resonant frequency.
$L \fallingdotseq 3 \times 10^{11}/(n\sqrt{\varepsilon r} \cdot f_0)$ (f_0 : Hz)
λ / 4 TEM mode : n=4 λ / 2 TEM mode : n=2

(in mm)

DRR040 Type



* Dimension L can be calculated by the following, using dielectric constant and resonant frequency.
$L \fallingdotseq 3 \times 10^{11}/(n\sqrt{\varepsilon r} \cdot f_0)$ (f_0 : Hz)
λ / 4 TEM mode : n=4 λ / 2 TEM mode : n=2

(in mm)

Part Number	f0 (MHz)	Unloaded Q (min)	Wavelength	Za (ohm)
DRR060□□□□□KTS00T	440 to 790	350	Lambda/4	5.7 (Nominal Value)
DRR060□□□□□KTS00T	800 to 1300	400	Lambda/4	5.7 (Nominal Value)
DRR060□□□□□KPS00T	1000 to 1690	500	Lambda/2	5.7 (Nominal Value)
DRR060□□□□□KPS00T	1700 to 2200	560	Lambda/2	5.7 (Nominal Value)
DRR040□□□□□KTS00T	660 to 1190	250	Lambda/4	4.8 (Nominal Value)
DRR040□□□□□KTS00T	1200 to 1650	280	Lambda/4	4.8 (Nominal Value)
DRR040□□□□□KPS00T	1300 to 1990	320	Lambda/2	4.8 (Nominal Value)
DRR040□□□□□KPS00T	2000 to 3000	350	Lambda/2	4.8 (Nominal Value)

Dielectric Constant : 92±1
Temperature coefficient of resonant frequency : 3±2ppm/°C
Tolerance of resonant frequency : ±0.7%max. (Please contact our sales representatives for details.)
Unloaded Q is value at lower limit of frequency range.
Five blank boxes of the above Part Numbers are filled with Resonant Frequency codes. Please see Part Numbering for details.

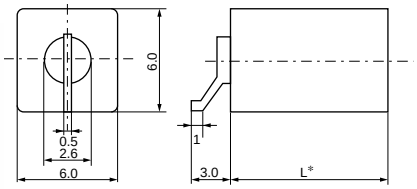
Dielectric Resonators (RESOMICS®)

Dielectric Resonator U Series (DRR Silver Plated Type)

■ Features

1. High dielectric constant : Er=38
2. These resonators cover wide range of resonant frequencies (by 10 MHz step).

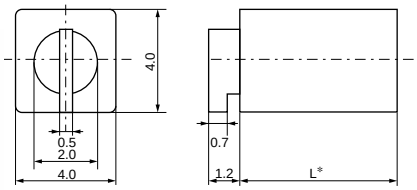
DRR060 Type



* Dimension L can be calculated by the following, using dielectric constant and resonant frequency.
$L \fallingdotseq 3 \times 10^{11}/(n\sqrt{\varepsilon r} \cdot f_0)$ (f_0 : Hz)
λ / 4 TEM mode : n=4 λ / 2 TEM mode : n=2

(in mm)

DRR040 Type



* Dimension L can be calculated by the following, using dielectric constant and resonant frequency.
$L \fallingdotseq 3 \times 10^{11}/(n\sqrt{\varepsilon r} \cdot f_0)$ (f_0 : Hz)
λ / 4 TEM mode : n=4 λ / 2 TEM mode : n=2

(in mm)

Part Number	f0 (MHz)	Unloaded Q (min)	Wavelength	Za (ohm)
DRR060□□□□□UTS00T	680 to 1540	450	Lambda/4	8.8 (Nominal Value)
DRR060□□□□□UTS00T	1550 to 1800	550	Lambda/4	8.8 (Nominal Value)
DRR060□□□□□UPS00T	1600 to 2390	700	Lambda/2	8.8 (Nominal Value)
DRR060□□□□□UPS00T	2400 to 3500	800	Lambda/2	8.8 (Nominal Value)
DRR040□□□□□UTS00T	1000 to 1990	360	Lambda/4	7.4 (Nominal Value)
DRR040□□□□□UTS00T	2000 to 2700	400	Lambda/4	7.4 (Nominal Value)
DRR040□□□□□UPS00T	2000 to 2990	480	Lambda/2	7.4 (Nominal Value)
DRR040□□□□□UPS00T	3000 to 4800	520	Lambda/2	7.4 (Nominal Value)

Dielectric Constant : 38±1
Temperature coefficient of resonant frequency : 3±2ppm/°C
Tolerance of resonant frequency : ±0.5%max. (Please contact our sales representatives for details.)
Unloaded Q is value at lower limit of frequency range.
Five blank boxes of the above Part Numbers are filled with Resonant Frequency codes. Please see Part Numbering for details.

TEM Mode Resonator (DRR Copper Plated Type) Notice

■ Notice (Soldering and Mounting)

> Standard soldering conditions

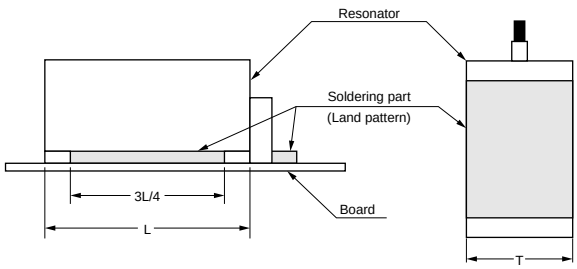
1. Temperature Profile:
   (1) Pre-heating: Heat the resonator for about 120 sec. from room temperature to 150 (degree C).
   (2) Soldering: It is possible to solder at the peak for temperature range from 210 to 250 (degree C) 2mm square, 3mm square and 4mm square, from 210 to 230 (degree C) for 6mm square (standard temperature is 230 (degree C) for 2mm square, 3mm square and 4mm square, 220 (degree C) for 6mm square). But you have to keep the resonator at the temperature range which is higher than the peak temperature minus 30 (degree C) for about 30 sec. (For example, if the peak temperature is 230 (degree C), you have to keep the resonator at the temperature range higher than 200 (degree C) for about 30 sec.)
   (3) Cooling: Spontaneous cooling
2. Board land pattern
   (1) Pattern width is same as resonator width (T).
   (2) Pattern length is 3L/4 against resonator length (L). Recommended soldering position is 3/4 part on the middle of the resonator surface.
3. Solder
   Please use creamed type eutectic solder (flux-RMA type).
   (ex.: RMA390DH3 90-2C-90 made by Japan Alphametals)

> Other

If you are concerned that the products may be affected by corrosive gas or ionic material, you have to keep those products in the completely closed package or container.

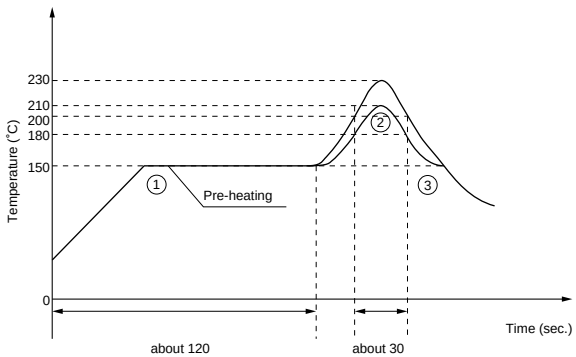
■ Notice (Soldering and Mounting)

Recommended Land Pattern Dimensions

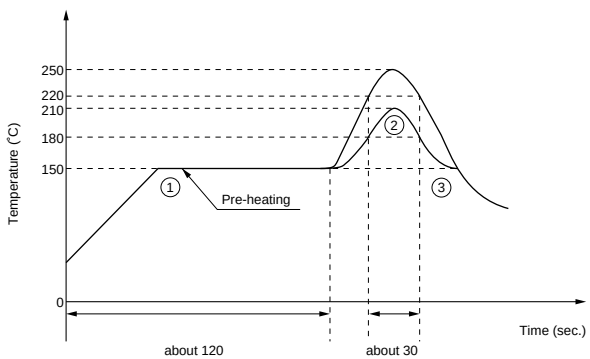


■ Notice (Soldering and Mounting)

Temp. Profile DRR060 Type



Temp. Profile DRR040/030/020 Type



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TEM Mode Resonator (DRR Copper Plated Type) Notice

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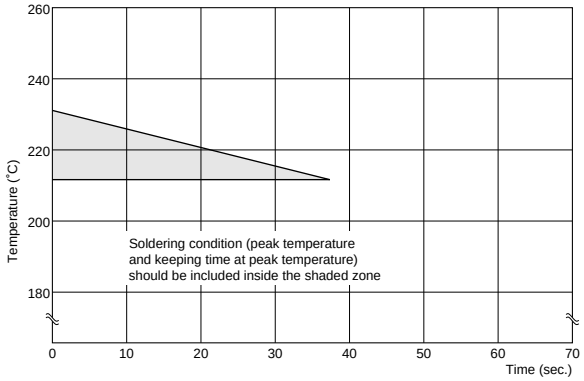
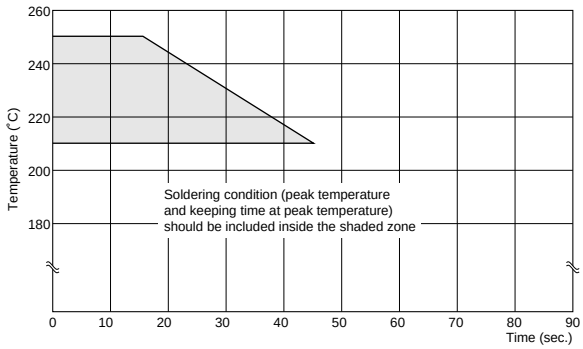
■ Notice (Soldering and Mounting)

Soldering Condition DRR060 Type



Soldering Condition DRR040/030/020 Type



■ Notice (Storage and Operating Conditions)

Please keep the following articles to preserve the solderability and the unloaded Q.

> Storage condition

1. Store the products under the conditions of environmental temperature less than 50 (degree C) and relative humidity less than 80%RH.
2. Do not store the products in an environment of corrosive gas (hydrogen sulfide, NaCl etc.).

■ Notice (Handling)

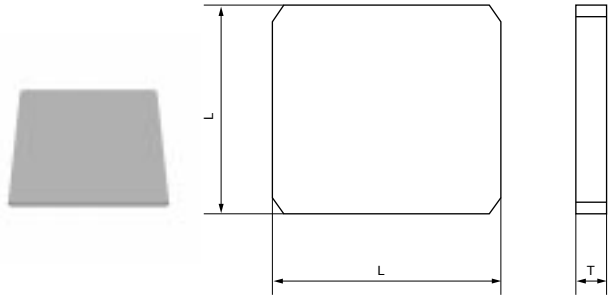
1. Do not apply excessive force onto terminals of the products.
2. The products are made of ceramics and copper electrodes. Rapid heating and cooling may damage the products during soldering. Please refer to our standard soldering conditions when you solder the products.

Dielectric Resonators (RESOMICS®)

Dielectric Resonator Substrates

■ Features

1. High dielectric constant miniaturizes MIC.
2. Provides very high Q-value throughout the microwave bands.
3. Extremely dense ceramic composition provides smooth surfaces.



Part Number*1	Dielectric Constant (er)	Side Length (L)*2 (mm)	Thickness (T) (mm)
DRP508□□□□KN0G□00T	91.0 ±3	50.8 ±0.1 mm	0.20 to 3.00
DRP254□□□□KN0G□00T	91.0 ±3	25.4 ±0.1 mm	0.15 to 3.00
DRP508□□□□UN0G□00T	38.0 ±1	50.8 ±0.1 mm	0.20 to 3.00
DRP254□□□□UN0G□00T	38.0 ±1	25.4 ±0.1 mm	0.15 to 3.00
DRP508□□□□PN0G□00T	21.4 ±1	50.8 ±0.1 mm	0.20 to 3.00
DRP254□□□□PN0G□00T	21.4 ±1	25.4 ±0.1 mm	0.15 to 3.00

Part Number: Four blank boxes are filled with Thickness Codes.
A blank box is filled with Average Surface Roughness Code. Please see table [Surface Finish] below.
Side Length: Chamfers of c0.3-c0.8 (mm) are formed on four corners.

■ Material

Material Code	Dielectric Constant (εr)	Q (at 3GHz)	Expansion Coefficient (ppm/°C)	Dielectric Constant Temperature Coefficient (τε) (ppm/°C)
K	92±1	1,500 min.	8 to 9	-30±30
U	38±1	8,000 min.	6 to 7	-30±30
P	21.4±1	9,000 min.	8 to 9	-30±30

■ Surface Finish

Surface Finish Code	Average Surface Roughness (Ra) (μm)
C	0.1 to 0.8
D	0.05 to 0.40
F	0.004 to 0.040

■ Notice (Storage and Operating Conditions)

Do not store and use components under conditions with high humidity.

■ Notice (Handling)

1. Do not apply excessive force and shock.
2. Do not touch components with bare hands or dirty gloves.

■ Notice (Other)

Please make sure that components operate correctly and satisfy your specifications when they are mounted in your actual products.

⚠Note:

1. Export Control
   〈For customers outside Japan〉
   Murata products should not be used or sold for use in the development, production, stockpiling or utilization of any conventional weapons or mass-destructive weapons (nuclear weapons, chemical or biological weapons, or missiles), or any other weapons.
   〈For customers in Japan〉
   For products which are controlled items subject to the “Foreign Exchange and Foreign Trade Law” of Japan, the export license specified by the law is required for export.
2. Please contact our sales representatives or product engineers before using the products in this catalog for the applications listed below, which require especially high reliability for the prevention of defects which might directly damage to a third party's life, body or property, or when one of our products is intended for use in applications other than those specified in this catalog.
   ① Aircraft equipment ② Aerospace equipment
   ③ Undersea equipment ④ Power plant equipment
   ⑤ Medical equipment ⑥ Transportation equipment (vehicles, trains, ships, etc.)
   ⑦ Traffic signal equipment ⑧ Disaster prevention / crime prevention equipment
   ⑨ Data-processing equipment ⑩ Application of similar complexity and/or reliability requirements to the applications listed in the above
3. Product specifications in this catalog are as of January 2003. They are subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering. If there are any questions, please contact our sales representatives or product engineers.
4. Please read rating and ⚠CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
5. This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.
6. Please note that unless otherwise specified, we shall assume no responsibility whatsoever for any conflict or dispute that may occur in connection with the effect of our and/or a third party's intellectual property rights and other related rights in consideration of your use of our products and/or information described or contained in our catalogs. In this connection, no representation shall be made to the effect that any third parties are authorized to use the rights mentioned above under licenses without our consent.
7. No ozone depleting substances (ODS) under the Montreal Protocol are used in our manufacturing process.

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