

# HIGH FREQUENCY DEVICES

## TEM MODE RESONATORS

### COPPER PLATED-DRR

## DRR Series



### FEATURES

- High Q
- IR reflowable
- Surface mountable
- Low cost copper plating

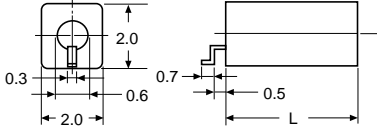
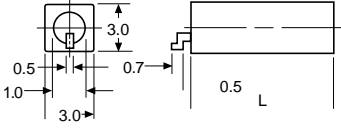
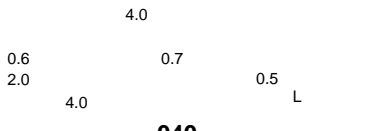
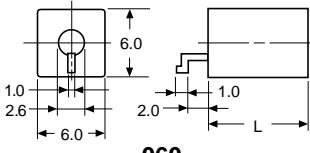
### APPLICATIONS

- Radio telephone VCO
- Measuring instruments OSC
- G.P.S. or Geostar OSC
- HDTV tuner OSC

### PART NUMBERING SYSTEM

<b>DRR</b>	<b>020</b>	<b>KE</b>	<b>1R600</b>	<b>T</b>	<b>C</b>
<b>DRR</b>	<b>030</b>	<b>KE</b>	<b>1R510</b>	<b>T</b>	<b>C</b>
<b>DRR</b>	<b>040</b>	<b>KE</b>	<b>R900</b>	<b>T</b>	<b>C</b>
<b>DRR</b>	<b>060</b>	<b>KE</b>	<b>1R150</b>	<b>P</b>	<b>C</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
Configuration: DRR = TEM Mode Resonator	Size: 020 = 2.0mm sq.* 030 = 3.0mm sq.* 040 = 4.0mm sq. 060 = 6.0mm sq.	Material: KE = K-Series	Resonant Freq: Specified in GHz. Rounded to 10MHz steps. R = Decimal Point Position.	Type of TEM: T = $\lambda/4$ TEM P = $\lambda/2$ TEM	Plating Code: C = Copper

### DIMENSIONS: mm

 <p><b>020</b></p>	 <p><b>030</b></p>	
 <p><b>040</b></p>	 <p><b>060</b></p>	
<b>Resonator Type</b>	<b>Wavelength Type</b>	<b>Length (mm)</b>
020, 030, 040, 060	$\lambda/4$	$L = 7.819/fo^*$
040, 060	$\lambda/2$	$L = 15.639/fo^*$

\*fo in GHz

### MATERIAL CHARACTERISTICS

Type		DRR020	DRR030	DRR040	DRR060
Material		KE			
Dielectric Constant		92 ± 1			
Frequency Range in MHz ± 0.6%	T( $\lambda/4$ )	900 to 2600	900 to 1600	500 to 1800	440 to 1300
	P( $\lambda/2$ )	—	—	1000 to 3000	1000 to 2200
Unloaded Q	$\lambda/4$	150 min. (900 to 1590MHz) 190 min. (1600 to 2600MHz)	230 min. (900 to 1490MHz) 250 min. (1500 to 1600MHz)	200 min.(500 to 540MHz) 220 min.(550 to 640MHz) 240 min.(650 to 790MHz) 260 min.(800 to 890MHz) 270 min.(900 to 1490MHz) 290 min.(1500 to 1800MHz)	330 min.(440 to 490MHz) 350 min.(500 to 790MHz) 400 min.(800 to 1300MHz)
	$\lambda/2$	—	—	300 min.(1000 to 1390MHz) 340 min.(1400 to 1890MHz) 370 min.(1900 to 3000MHz)	470 min.(1000 to 1690MHz) 510 min.(1700 to 2200MHz)
Characteristic Impedence		8.0 $\Omega$	7.4 $\Omega$	4.8 $\Omega$	5.7 $\Omega$
Frequency Temperature Characteristic		3 ± 2ppm/°C			

Tape and Reel Packaging: DRR020KE\*R\*\*\*TCT = 2500 pieces/reel  
 DRR030KE\*R\*\*\*TCT = 2000 pieces/reel  
 DRR040KE\*R\*\*\*TCT = 1500 pieces/reel

Bulk Packaging: DRR060KE\*R\*\*\*TC = Bulk packaging only.

# HIGH FREQUENCY DEVICES

## TEM MODE RESONATORS

### COPPER PLATED-DRR

## DRR Series



### FEATURES

- High Q
- IR reflowable
- Surface mountable
- Low cost copper plating

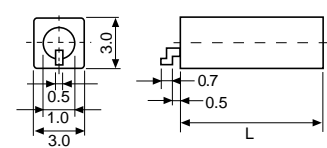
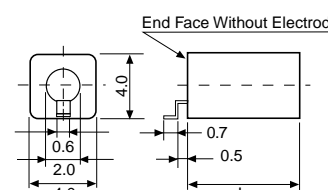
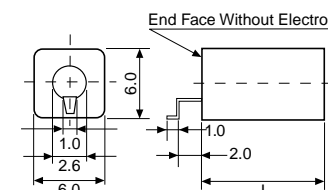
### APPLICATIONS

- Radio telephone VCO
- Measuring instruments OSC
- G.P.S. or Geostar OSC
- HDTV tuner OSC

### PART NUMBERING SYSTEM

<b>DRR</b>	<b>030</b>	<b>PE</b>	<b>3R000</b>	<b>T</b>	<b>C</b>
<b>DRR</b>	<b>040</b>	<b>PE</b>	<b>2R500</b>	<b>P</b>	<b>C</b>
<b>DRR</b>	<b>060</b>	<b>PE</b>	<b>2R220</b>	<b>P</b>	<b>C</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
Configuration: DRR = TEM Mode Resonator	Size: 030 = 3.0mm sq. 040 = 4.0mm sq. 060 = 6.0mm sq.	Material: PE = P-Series	Resonant Freq: Specified in GHz. Rounded to 10MHz steps. R = Decimal Point Position.	Type of TEM: T = $\lambda/4$ TEM P = $\lambda/2$ TEM	Plating Code: C = Copper

### DIMENSIONS: mm

 <p><b>030</b></p>	 <p><b>040</b></p>	 <p><b>060</b></p>
Resonator Type	Wavelength Type	Length (mm)
030, 040, 060	$\lambda/4$	$L = 16.175/fo^*$
040, 060	$\lambda/2$	$L = 32.350/fo^*$

\*fo in GHz

### MATERIAL CHARACTERISTICS

Type	DRR030	DRR040	DRR060
Material	PE		
Dielectric Constant	21.4 ± 0.2		
Frequency Range in MHz ± 0.6%	T( $\lambda/4$ )	1900 to 3000	1000 to 2700
	P( $\lambda/2$ )	—	2000 to 3000
Unloaded Q	$\lambda/4$	380 min. (1900 to 2490MHz) 400 min. (2500 to 3000MHz)	550 min. (1000 to 1190MHz) 600 min. (1200 to 1790MHz) 650 min. (1800 to 2700MHz)
	$\lambda/2$	—	800 min. (2000 to 2490MHz) 850 min. (2500 to 3000MHz)
Characteristic Impedence	15.4 $\Omega$	10.0 $\Omega$	11.9 $\Omega$
Frequency Temperature Characteristic	4 ± 2ppm/°C		

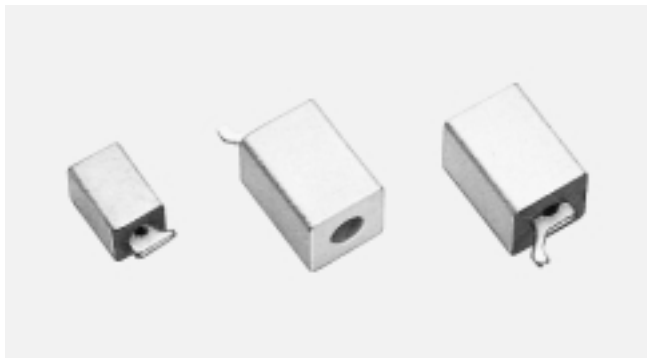
Tape and Reel Packaging: DRR030PE\*R\*\*\*TCT = 2000 pieces/reel  
DRR040PE\*R\*\*\*TCT = 1500 pieces/reel

Bulk Packaging: DRR060PE\*R\*\*\*T = Bulk packaging only.

# HIGH FREQUENCY DEVICES

## TEM MODE RESONATOR

### SILVER PLATED – DRR



### FEATURES

- High Q
- IR reflowable
- Surface mountable

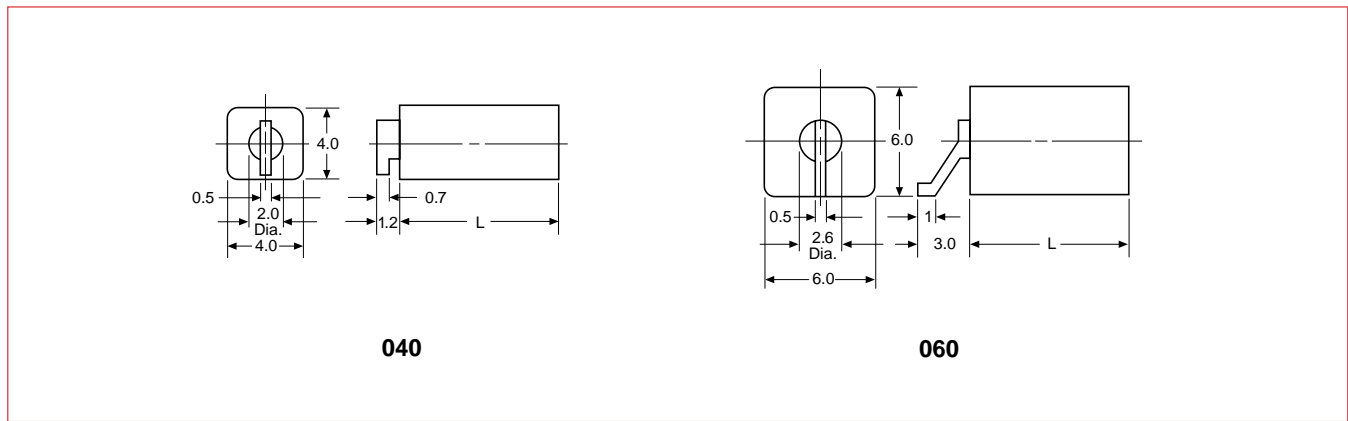
### APPLICATIONS

- Radio telephone VCO
- Measuring instruments OSC
- G.P.S. or Geostar OSC
- HDTV tuner OSC

### PART NUMBERING SYSTEM

<div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">DRR</div> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">DRR</div> <p style="text-align: center;">①</p>	<div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">040</div> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">060</div> <p style="text-align: center;">②</p>	<div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">UE</div> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">UE</div> <p style="text-align: center;">③</p>	<div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">2R330</div> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">1R180</div> <p style="text-align: center;">④</p>	<div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">PS</div> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">T</div> <p style="text-align: center;">⑤</p>
<p>Configuration: DRR = TEM Mode Resonator</p>	<p>Size: 040 = 4.0mm sq. 060 = 6.0mm sq.</p>	<p>Material: UE = U-Series</p>	<p>Resonant Freq: Specified in GHz. Rounded to 10MHz steps. R = Decimal Point Position.</p>	<p>Type of TEM: T = <math>\lambda/4</math> TEM Mode in 060 Type P = <math>\lambda/2</math> TEM Mode in 060 Type TS = <math>\lambda/4</math> TEM Mode in 040 Type PS = <math>\lambda/2</math> TEM Mode in 040 Type</p>

### DIMENSIONS: mm



Resonator Type	Wavelength Type	Length (mm)
040, 060	$\lambda/4$	$L = 12.17/fo^*$
	$\lambda/2$	$L = 24.33/fo^*$

\*fo in GHz

### MATERIAL CHARACTERISTICS

Type	DRR040	DRR060
Material	UE	
Dielectric Constant	$38 \pm 1$	
Frequency Range in MHz $\pm 0.5\%$	T( $\lambda/4$ )	1000 to 2700
	P( $\lambda/2$ )	2000 to 4800
Unloaded Q	$\lambda/4$	360 min. (1000 to 1990MHz) 400 min. (2000 to 2700MHz)
	$\lambda/2$	480 min. (2000 to 2900MHz) 520 min. (3000 to 4800MHz)
Characteristic Impedence	7.4 $\Omega$	8.8 $\Omega$
Frequency Temperature Coefficient	$3 \pm 2$ ppm/ $^{\circ}$ C (TE Mode)	

Tape and Reel Packaging: DRR040UE\*R\*\*\*TCT = 1500 pieces/reel

Bulk Packaging: DRR060UE\*R\*\*\*T = Bulk packaging only.

HIGH FREQUENCY DEVICES

# HIGH FREQUENCY DEVICES

## TEM MODE RESONATOR – COPPER & SILVER PLATED – DRR

### SOLDERING & HANDLING CONDITIONS

#### I. Soldering Conditions

1. Preheat from room temperature to 150°C within 120 seconds (see item ① Fig. 1).
2. Soldering: 3 & 4mm resonators can be soldered between 210 to 250°C (see Fig. 2).  
6mm resonators can be soldered between 210 to 230°C (see Fig. 3).

The resonator must be kept at a temperature greater than (Peak –30°C) for more than 30 seconds (see ② Fig. 1).

3. Cooling: Gradual cool down suggested (see ③ Fig. 1).

4. Suggested Solder: Eutectic cream containing RMA flux.
5. Land Pattern: It is suggested to use the full width and 3/4 the length of the resonator for grounding (see Fig. 4).

#### II. Handling & Storage

1. Avoid contact with hands as body oils promote oxidation.
2. Store at <50°C and <80% relative humidity.
3. Avoid excessive force on the resonator terminal.

