

# High Frequency - VJ HiFreq, and VJ HiFreq HT Series

## Market Segments

- Telecommunications
- Industrial
- Medical
- Automotive



## Applications

- 5G base stations; small cell stations
- Satellite communications
- Medical instrumentation and tes
- MRI coils
- ADAS
- Navigation / infotainment



## Features

- Industry first Hi-Temp (HT) solution up to **200°C**
- Non-magnetic termination option
- Combination of HF with voltages up to 7.2 kV
- Automotive qualified series available

## Key Advantages

- High Q
- High dielectric withstanding voltage
- Design Kits available
- Technical support via Design Resources (S-Parameter, Simulation Tool, etc.)

Datasheet: [vjhifreqseries.pdf \(vishay.com\)](#); [vjhifreqht.pdf \(vishay.com\)](#)

# High Frequency Caps

Copper termination

- Non-magnetic

High Temp Capability

- High reliability

High power handling


Design support

Wireless  
Communication

- Implanted
- External
- Instrumentation

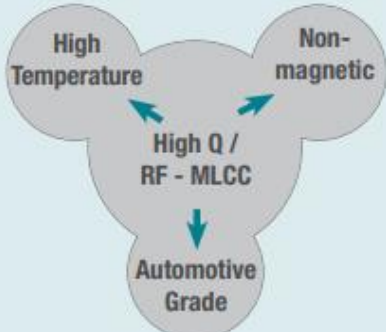
MRI


- Power supplies
- Sensing coils




## MULTILAYER CERAMIC CHIP

### HIGH FREQUENCY RF & MICROWAVE CAPACITORS







VISHAY HIFREQ SERIES CAPABLE OF GREATER OUTPUT POWER LEVELS





**HIGH TEMPERATURE OPERATION**





**APPLICATIONS**


  
MILITARY RADIOS


  
WIRELESS POWER

  
5G NETWORKS


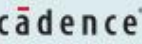
  
INSTRUMENTATION




  
DEVICE AND CLOUD CONNECTIVITY

  
ADAS TO AUTONOMOUS

  
TELECOMMUNICATIONS

**DESIGN RESOURCES**

**TERMINATION OPTIONS**

- Lead (Pb)-free, RoHS-compliant: "X"
- Tin / lead (min. 4 % Pb): "L"
- Non-magnetic copper: "C"

**Case Size Legend**

	0402	0603	0805	0505	1111	2525	3838
Standard	✓	✓	✓	✓	✓	✓	✓
Hi-Temp	✓	✓	✓	✓	✓		
Automotive Grade	✓	✓	✓	✓	✓		

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# MLCC RF Simulation Tool

- Circuit Simulation help to shorten the design cycle time.
- Simulation Tool available on Vishay website  
[RFMLCC Simulation Tool | Vishay](#)
- Frequency characteristics view and downloadable data for analysis.

## Select:

1. Case size
2. Voltage
3. Capacitance

Case Size	Voltage (V)	Capacitance (pF)
0402	25	0.1
0505	50	0.2
0603	100	0.3
0805	200	0.4
	250	0.5
		0.6
		0.7
		0.8
		0.9
		1
		1.1
		1.2

Reset      Reset      Reset

## Select:

Simulation Type

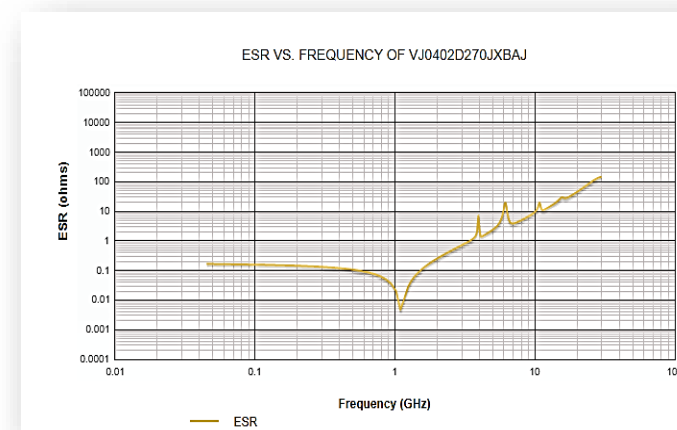
Performance Data

Select Performance Data... ▼

- Select Performance Data...
- ESR vs. Frequency
- Z vs. Frequency
- Insertion loss
- Reflection coefficient
- Series inductance
- Cap vs. Frequency

## Output:

View and Download Data





## “VJ HIFREQ”: SURFACE MOUNT MLCCs FOR HIGH FREQUENCY APPLICATIONS

### Features

- Class 1 NP0 Noble Metal Electrodes
- High Q: > 2000 (at 1MHz)
- Ultra-low ESR
- Case sizes: 0402, 0603, 0805
- Tight tolerance ( $\pm 0.05\text{pF}$ ) up to industry leading 10pF cap nominal
- Ultra-stable dielectric material (zero aging)
- Operating temperature range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$

### Applications

- RF and Microwave
- Broadband communication
- Satellite communication
- Base stations
- Medical instrumentation and test
- Military devices (radar, communications, etc.)
- Wireless devices



Voltage	Cap Range (pF)		
	0402	0603	0805
25	0.1 – 82	0.1 – 470	0.1 – 1500
50	0.1 – 56	0.1 – 330	0.1 – 1000
100	0.1 – 27	0.1 – 150	0.1 – 680
200	0.1 – 27	0.1 – 100	0.1 – 390
250		0.1 – 100	0.1 – 330

For cap values <10pF, tolerance as tight as  $\pm 0.05\text{pF}$   
For cap values  $\geq 10\text{pF}$ , tolerance as tight as  $\pm 1\%$

<http://www.vishay.com/docs/45071/vjhifreq.pdf>

## “QUAD HIFREQ”: SURFACE MOUNT MLCCs FOR HIGH VOLTAGE, HIGH FREQUENCY APPLICATIONS

### Features

- Class 1 NP0 Noble Metal Electrodes
- High Q: > 2000 (at 1MHz)
- Ultra-low ESR
- Case sizes: 0505, 1111, 2525 and 3838
- Tight tolerance ( $\pm 0.05\text{pF}$ ) up to industry leading 10pF cap nominal
- Ultra-stable dielectric material (zero aging)
- Operating temperature range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$



### Applications

- Magnetic Resonance Imaging (MRI)
- UHF / Microwave RF power amplifiers
- Filter networks, timing circuits
- Mixers, oscillators
- Impedance matching networks



Voltage	Cap Range (pF)			
	0505	1111	2525	3838
200	0.1 – 100	0.2 – 1000	1 – 2700	1 – 5100
250	0.1 – 56		1 – 2000	
300				
500		0.2 – 470	1 – 2000	
630		0.2 – 180		
800			1 – 1200	1 – 680
1000		0.2 – 110		
1500			1 – 470	
2000			1 – 270	1 – 360
2500				
3000			1 – 100	
3600				1 – 180
5000				1 – 100
7200				

For cap values <10pF, tolerance as tight as  $\pm 0.1\text{pF}$   
For cap values  $\geq 10\text{pF}$ , tolerance as tight as  $\pm 1\%$

<http://www.vishay.com/docs/45221/quadhifreq.pdf>



# HIFREQ MLCC “D Dielectric” Cross Reference

Vishay Cross			Competitors' Series					
Vishay Product Series	Vishay Part Number	ATC	AVX	Temex	Novacap	DLI	Johanson	
VJ HIFREQ Series	0402	VJ0402D...	600L	UQCL	SHL		C04	R07S
	0603	VJ0603D...	600S	UQCS	SHS		C06	R14S
	0805	VJ0805D...	600F	UQCF	SHF		C08	R15S
QUAD HIFREQ Series	0505	VJ0505D...	100A	SQCA	CHA/SHA	RF0505	C11	-
	1111	VJ1111D...	100B	SQCB	CHB/ NHB/SHB	RF1111	C17/C18	S42E
	2525	VJ2525D...	100C		CPX / CLX	RF2525	C22	S48E
	3838	VJ3838D...	100E		CPE / CLE		C40	S58E