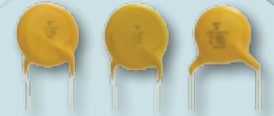




Vishay Intertechnology, Inc.

Ceramic Capacitors



VY1, VY1 COMPACT, AND VY2

VY1, VY1 Compact*: X1/Y1 Class, 10 pF (470 pF)* to 4.7 nF



HIGH-VOLTAGE SMD CAPACITORS

Up to 5 kV



SMD SAFETY CERTIFIED CAPACITORS

COG (NPO) and X7R Dielectrics



GA...31G, GA...34G, VJ...31X, VJ...31, VJ...34

AEC-Q200-Qualified



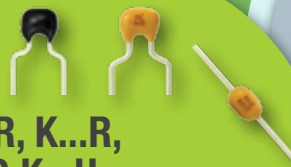
715C

High Voltage Up to 50 kV_{DC}



AY2

X1/Y2 Class
AEC-Q200-Qualified

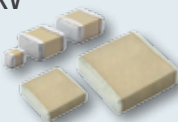


A...R, K...R, AND K...H

Rated Voltage of 50 V, 100 V, and 200 V, AEC-Q200-Qualified, 160 °C / 175 °C

HIFREQ AND QUAD HIFREQ

Up to 7.2 kV

















CERAMIC CAPACITORS

Focus Products




Leaded Ceramic Safety Capacitors

Series	Voltage		Capacitance	Tolerance	Temperature Characteristics
	Y Rating	X Rating			
 VY1 Series	500 V _{AC}	760 V _{AC}	10 pF to 4.7 nF	± 10 % / ± 20 %	U2J / Y5S / Y5U / Y5V
AC-line-rated ceramic disc capacitors; class X1: 760 V _{AC} ; class Y1: 500 V _{AC} ; this Series includes Mini Sized VY1...Y5V					
 VY1 Compact Series	500 V _{AC}	760 V _{AC}	470 pF to 4.7 nF	± 20 %	Y5U
Compact size and high pulse strength; AC-line-rated ceramic disc capacitors; class X1: 760 V _{AC} ; class Y1: 500 V _{AC}					
 VY2 Series	300 V _{AC}	440 V _{AC}	10 pF to 10 nF	± 10 % / ± 20 %	U2J / Y5S / Y5U / Y5V
AC-line-rated ceramic disc capacitors; class X1: 440 V _{AC} ; class Y2: 300 V _{AC} ; this Series includes Mini Sized VY2...Y5V					
 AY2 Series	300 V _{AC}	440 V _{AC}	10 pF to 4.7 nF	± 10 % / ± 20 %	U2J / Y5S / Y5U
AC-line-rated ceramic disc capacitors for automotive applications; class X1: 440 V _{AC} ; class Y2: 300 V _{AC}					
 WKP Series	500 V _{AC}	760 V _{AC}	33 pF to 4.7 nF	± 10 % / ± 20 %	U2J / Y5S / Y5T / Y5U
AC-line-rated ceramic disc capacitors; class X1: 760 V _{AC} ; class Y1: 500 V _{AC}					
 WYO Series	250 V _{AC}	440 V _{AC}	1.0 nF to 12 nF	± 20 %	Y5U
AC-line-rated ceramic disc capacitors; class X1: 440 V _{AC} ; class Y2: 300 V _{AC}					
 440L Series	500 V _{AC}	760 V _{AC}	10 pF to 20 nF	± 10 % / ± 20 %	C0G / U2J / P3K / R3L
AC-line-rated ceramic disc capacitors; class X1: 760 V _{AC} ; class Y1: 500 V _{AC}					




High-Voltage Ceramic Capacitors

Series	Voltage	Capacitance	Tolerance	Temperature Characteristics	Dissipation Factor	Terminal
 715 Series	10 kV _{DC} to 50 kV _{DC}	100 pF to 10 nF	± 20 % / +80 %, -20 %	T3M / S3N / Y5U	0.2 % (Class 1) / 2.0 % (Class 2)	Screw
High-voltage class 1 and class 2 ceramic DC disc capacitors; screw terminal mounting; 15 kV _{DC} to 50 kV _{DC}						
 HPD Series	20 kV _{DC}	350 pF to 5.0 nF	± 20 %	Z5U	0.5 %	Screw
High-voltage disc capacitors; 20 kV _{DC} ; screw mounting; class 2 ceramic						
 660 Series	10 kV _{DC} to 30 kV _{DC}	180 pF to 10 nF	± 20 % / +80 %, -20 %	T3M / X7R / Y5U / Z5U	0.2 % (Class 1) / 2.0 % (Class 2)	Axial leaded
High-voltage ceramic DC disc capacitors with axial leads; 10 kV _{DC} to 30 kV _{DC}						
 615 Series	10 kV _{DC} to 20 kV _{DC}	100 pF to 3.3 nF	± 20 % / +80 %, -20 %	T3M / X5F / Y5R / Y5U / Z5U	0.2 % (Class 1) / 2.0 % (Class 2)	Radial leaded
High-voltage ceramic DC disc capacitors; 10 kV _{DC} and 15 kV _{DC}						
 HIK Series	15 kV _{DC}	100 pF to 1.5 nF	± 20 %	Y5T	0.5 %	Radial leaded
High-voltage ceramic single-layer DC disc capacitors; class 2; low loss (0.5 %); 15 kV _{DC}						

Leaded MLCCs For Automotive Applications

Series	Voltage	Capacitance	Tolerance	Temperature Characteristics	Terminal
 A...R Series	50 V _{DC} to 200 V _{DC}	100 pF to 1.0 μF	± 5 % / ± 10 % / ± 20 %	C0G / X7R	Axial leaded
Axial-leaded multilayer ceramic capacitors for automotive applications; class 1 and class 2; 50 V _{DC} , 100 V _{DC} , 200 V _{DC} , 160 °C					
 K...R Series	50 V _{DC} to 200 V _{DC}	100 pF to 1.0 μF	± 5 % / ± 10 % / ± 20 %	C0G / X7R	Radial leaded
Radial-leaded multilayer ceramic capacitors for automotive applications; class 1 and class 2; 50 V _{DC} , 100 V _{DC} , 200 V _{DC} , 160 °C					
 K...H Series	50 V _{DC} to 200 V _{DC}	100 pF to 1.0 μF	± 5 % / ± 10 % / ± 20 %	C0G / X0U	Radial leaded
High operating temperature to 175 °C; radial-leaded multilayer ceramic capacitors for automotive applications; class 1 and class 2; 50 V _{DC} , 100 V _{DC} , 200 V _{DC}					




Ceramic SMD Capacitors for General Applications


Series	Capacitance	Voltage	Sizes	Dielectric	Process
 VJ Commercial Series	1 pF to 6.8 μF	16 V to 1000 V	0402, 0603, 0805, 1206, 1210, 1808, 1812, 1825, 2220, 2225, 3640	C0G (NP0), X7R	Wet sheet, noble metal electrode
Excellent ESD performance; robust design due to wet build process; polymer (flexible) termination available					
 VJ...W1BC Basic Commodity	0.5 pF to 100 μF	10 V to 100 V	0201, 0402, 0603, 0805, 1206, 1210	C0G (NP0), X5R, X7R, Y5V	Dry sheet, base metal electrode
High capacitance values; ultra-small 0201 size					
 VJ06C4...W1BC Chip Array	10 pF to 100 nF	16 V and 50 V	0612 (4 x 0603 capacitors inside)	C0G (NP0), X7R, Y5V	Dry sheet, base metal electrode
Four capacitors in one array; reduces mounting costs and saves board space					















CERAMIC CAPACITORS

Focus Products

Ceramic SMD Capacitors for Special Applications						
Series	Capacitance	Voltage	Sizes	Dielectric	Process	
 VJ...31/VJ...34, VJ...31X, GA...31G Automotive Series, GA...34G Automotive Series	1 pF to 1 µF	16 V to 3000 V	0402, 0603, 0805, 1206, 1210, 1812	C0G (NP0), X7R, X8R	Wet sheet, noble metal electrode	AgPd termination for epoxy bonding; polymer (flexible) termination available; excellent ESD performance; robust design due to wet build process
 VJ X8R	330 pF to 220 nF	25 V to 100 V	0402, 0603, 0805, 1206, 1210	X8R		
 Non-Magnetic Series	1 pF to 6.8 µF	6.3 V to 3000 V	0402, 0603, 0805, 1206, 1210, 1808, 1812, 1825, 2220, 2225, 3640, 0505, 1111, 2525, 3838	C0G (NP0), X5R, X7R		
Non-magnetic safety screened; copper termination; also see HIFREQ and QUAD HIFREQ series						

Ceramic SMD Capacitors for MIL and Hi-Reliability Applications								
Series	Capacitance	Voltage	Sizes	Dielectric	Process			
 Hi-Rel Series	1 pF to 6.8 µF	6.3 V to 600 V	0402, 0603, 0805, 1206, 1210, 1808, 1812, 1825, 2220, 2225, 3640	C0G (NP0), X5R, X7R	Wet sheet, noble metal electrode	MIL-PRF-55681 group testing (A only, full A and C); several life test and voltage conditioning options; customer-specific requirements		
CDR	10 pF to 470 nF	50 V to 100 V	CDR01 (0805), CDR02 (1805), CDR03 (1808), CDR04 (1812), CDR06 (2225), CDR31 (0805), CDR32 (1206), CDR33 (1210), CDR34 (1812), CDR35 (1825)	BP, BX				
DSCC 03028 / 03029 / 05006 / 05007	1 pF to 470 nF	6.3 V to 200 V	0402, 0603, 0805, 1206	BP, BR, BX				
DSCC 05001 / 05002 / 05003	1 pF to 100 pF	50 V to 250 V	0402, 0603, 0805	High Q				
MIL-PRF-123	1 pF to 470 pF	50 V to 100 V	CKS51 (0805), CKS55 (1206), CKS52 (1210), CKS53 (1808), CKS56 (1812), CKS57 (1825), CKS54 (2225)	BP, BX				
Space-level reliability tested per MIL-PRF-123, tin / lead and guarded terminations, CAGE CODE 2770A								
Several failure rate options; high reliability tested per MIL-PRF-55681; CAGE CODE 2770A								

RF - High-Frequency SMD Capacitors						
Series	Capacitance	Voltage	Sizes	Dielectric / DF	Process	
 HIFREQ Series	0.1 pF to 1.5 nF	25 V to 250 V	0402, 0603, 0805	Q: > 2000 (at 1 MHz)	Wet sheet, noble metal electrode	Highest Q factor; "GREEN" available, in addition to tin / lead and copper terminations
 QUAD HiFREQ Series	0.1 pF to 5.1 nF	200 V to 7200 V	0505, 1111, 2525, 3838	Q: > 2000 (at 1 MHz)		
 Leaded QUAD HiFREQ Series	1 pF to 5100 pF	300 V to 7200 V	1111, 2525, 3838	Q: > 2000 (at 1 MHz)		
 VJ High Q Series	1 pF to 220 pF	50 V to 200 V	0603, 0805	Q: > 1400		
 VJ...W1BC High Q	0.5 pF to 3.3 nF	16 V to 100 V	0402, 0603	Q: > 1000	Dry sheet	High Q; stable dielectric
 VJ...W1BC Ultra High Q/Low ESR	0.1 pF to 100 pF	10 V to 250 V	0201, 0402, 0603, 0805	Q: > 1400	Dry sheet	High Q; low ESR; stable dielectric; ultra-small 0201 size; BME electrode system

High-Voltage and Safety-Certified Ceramic SMD Capacitors						
Series	Capacitance	Voltage	Sizes	Dielectric	Process	
 HV ArcGuard Series	10 pF to 270 nF	250 V to 2500 V	0805, 1206, 1210, 1808, 1812, 2220, 2225	C0G (NP0), X7R	Wet sheet, noble metal electrode	Prevents arcing over; polymer (flexible) termination available for X7R
 Open Mode Design Series	10 pF to 1.8 µF	16 V to 3000 V	0805, 1206, 1210, 1808, 1812, 1825, 2220, 2225	C0G (NP0), X7R		
 Safety-Certified Capacitors	10 pF to 12 nF	250 V _{AC}	2008, 2012, 2220	C0G (NP0), X7R		
 Source Energy Capacitor	4.7 nF to 560 nF	1000 V, 1500 V	1812, 1825, 2225, 3040, 3640, 4044	X7R (Y5P)		
 HV High-Voltage Series	180 pF to 15 nF	3000 V, 4000 V, 5000 V	1812, 1825, 2220, 2225	X7R		
 Controlled Discharge Capacitor	33 nF to 560 nF	1000 V, 1500 V	3040, 3640, 4044	X7R (Y5P)		
500 MΩ integrated resistor; low electrostrictive ceramic						

WIDE RANGE OF CERAMIC CAPACITORS (SMD AND LEADED) WITH STABLE CHARACTERISTICS FOR VARIOUS APPLICATIONS

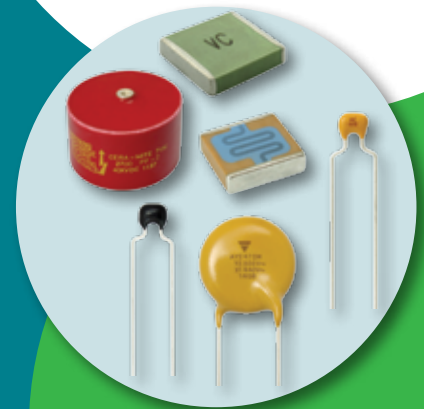


Advantages of Vishay Ceramic Capacitors

- Wide range of sizes and voltages
- Several termination options
- Robust and reliable design with high stability
- Customized options available

For the Following Applications

- High voltage generation, and AC mains filtering
- High frequency and high voltage / power
- High-reliability, medical, military, and space
- Automotive



Go "GREEN" with our halogen-free, AEC-Q200-approved AY2 safety capacitors for AC line filtering in onboard chargers



Vishay's QUAD HIFREQ series of MLCCs offer high voltages and high Q for RF applications



Useful Links

- Ceramic multilayer SMD capacitors overview www.vishay.com/capacitors/ceramic/ceramic-multilayer-smd/
- Ceramic single-layer capacitors overview www.vishay.com/capacitors/ceramic/ceramic-singlelayer/
- Ceramic multilayer leaded capacitors overview www.vishay.com/capacitors/ceramic/ceramic-multilayer-leaded/

HALOGEN FREE ISO9001 / ISO/TS16949 / OHSAS18001 / ISO14001
ISO 13485:2003
IEC 60384-14, CAN/CSA-E60384-14:09, ANSI/UL 60384-14-2009
AEC-Q200 Qualified and MIL-PRF-55681 (CAGE CODE SHV71)
See specific datasheets if applicable

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SOLUTIONS