



MULTILAYER CERAMIC CHIP CAPACITORS

Multilayer Ceramic Chip Capacitors



PRODUCTS:

- Basic Commodity (BME Technology)
- Commercial (NME Technology)
- Automotive
- Board Flex Sensitive, Including Polymer Termination
- Surface Arc-Over Prevention for High Voltages
- Non-Magnetic Series
- High Reliability, Medical, and Military/Aerospace
- RF Capacitors

RESOURCES

- For more information please visit <http://www.vishay.com/capacitors/ceramic-multilayer-smd/>
- For technical questions email mlcc@vishay.com

A **WORLD OF**
SOLUTIONS

MULTILAYER CERAMIC CHIP CAPACITORS



Series	Description	Case Size	TC and Dielectric	Voltage		Capacitance			
				[Min. V]	[Max. V]	[Min.]	[Max.]		
Capacitors - MLCC									
VJ HVArc Guard®	FEATURES <ul style="list-style-type: none"> • Surface-mount multilayer ceramic chip capacitors • Prevents surface arc-over in high-voltage applications • Higher capacitance and smaller case sizes • Voltage breakdown as much as twice that of competitors' products • Available with polymer terminations in X7R for increased resistance to board flex cracking • Wet build process • Reliable Noble Metal Electrode (NME) system • Worldwide patent technology APPLICATIONS <ul style="list-style-type: none"> • DC/DC converters (buck and boost) • Voltage multipliers for flyback converters • Power supplies 	0805	COG (NP0)	1000	1500	10 pF	390 pF		
		1206					1.5 nF		
		1210					2.7 nF		
		2220				470 pF	5.6 nF		
		2225					8.2 nF		
		0805	X7R	250	1000	220 pF	470 pF	3.3 nF	
		1206					47 nF		
		1210					82 nF		
		1808					100 nF		
		1812					270 nF		
		VJ Non-Magnetic	FEATURES <ul style="list-style-type: none"> • Surface-mount multilayer ceramic chip capacitors • Manufactured with non-magnetic materials: Copper / AgPd • Safety screened for magnetic properties • Wet build process • Reliable Noble Metal Electrode (NME) system APPLICATIONS <ul style="list-style-type: none"> • Magnetic resonance imaging (MRI) • Medical test and diagnostic equipment • Navigation and electronic test equipment • Audio amplifiers 	0402	COG (NP0)	10	100	0.5 pF	180 pF
				0603			200		1.8 nF
0805	500			3.3 nF					
1206	16			600			10 nF		
1210				500			12 nF		
1808	25			3000			10 pF	10 nF	
1812							22 nF		
1825				1000			15 pF	39 nF	
2220							100 pF	47 nF	
2225							120 pF	56 nF	
0402	X5R			6.3	16	27 nF	100 nF		
0603					6.3	120 nF	150 nF		
0402	X7R			6.3	100	100 pF	22 nF		
0603						270 pF	100 nF		
0805						390 pF	390 nF		
1206				16	500	680 pF	1.0 μF		
1210						1.0 nF	1.0 μF		
1808				25	3000	220 pF	270 nF		
1812						270 pF	1.0 μF		
1825					1000	10 nF	2.7 μF		
2220						3000	1.0 nF	2.2 μF	
2225						2000	5.6 nF	4.7 μF	
3640					500	15 nF	6.8 μF		

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				[Min. V]	[Max. V]	[Min.]	[Max.]			
VJ HIFREQ Series	FEATURES <ul style="list-style-type: none"> Surface-mount multilayer ceramic chip capacitor Made with a combination of design, materials, and tight process control to achieve very high field reliability Available with tin-lead terminations (min.4 % lead) Available with AgPd terminations for silver epoxy bonding Available with non-magnetic copper terminations for reflow soldering Excellent aging characteristics Wet build process Reliable Noble Metal Electrode (NME) system APPLICATIONS <ul style="list-style-type: none"> Broadband wireless communication Satellite communication WiFi (802.11) and WiMax (802.16) VoIP networks and cellular base stations Subscriber-based wireless devices 	0402	HIFREQ COG (NP0)	25	200	0.1 pF	82 pF			
		0603					470 pF			
		0805					1.5 nF			
VJ QUAD HIFREQ Series	FEATURES <ul style="list-style-type: none"> Surface-mount multilayer ceramic chip capacitor for high-frequency applications Case sizes 0505, 1111, 2525, and 3838 Lead (Pb)-free termination code "X" Available with tin-lead termination code "L" Available with non-magnetic copper termination code "C" for reflow soldering Excellent aging characteristics Ultra-stable, high-Q dielectric material Reliable Noble Metal Electrode (NME) system APPLICATIONS <ul style="list-style-type: none"> MRI coils and generators RF instruments Lasers, CATV, UHF / microwave RF power amplifiers Filter networks, timing circuits Mixers, oscillators, impedance matching networks 	0505	HIFREQ COG (NP0)	200	250	0.1 pF	100 pF			
		1111					300	1500	0.2 pF	1000 pF
		2525					300	3600	1.0 pF	2700 pF
		3838					500	7200	1.0 pF	5100 pF
VJ Safety Certified Capacitors	FEATURES <ul style="list-style-type: none"> Surface-mount multilayer ceramic chip capacitor, safety certified Qualified to IEC 60384-14 Wet build process Reliable Noble Metal Electrode (NME) system APPLICATIONS <ul style="list-style-type: none"> Power supplies Facsimile and telephone AC equipment and appliances Lighting strike and voltage surge protection EMI and AC line filtering Isolators 	2008	COG (NP0) (X1 / Y2)	250	250	10 pF	220 pF			
		2012					18 pF	470 pF		
		2220					47 pF	1.0 nF		
		2008	COG (NP0) (X2)				10 pF	390 pF		
		2012					18 pF	470 pF		
		2008	X7R (X1 / Y2)				82 pF	1.0 nF		
		2012					150 pF	1.2 nF		
		2220					270 pF	4.7 nF		
		2008	X7R (X2)				82 pF	2.7 nF		
		2012					150 pF	5.6 nF		
		2220					270 pF	12 nF		



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				[Min. V]	[Max. V]	[Min.]	[Max.]		
VJ...SE Source Energy Capacitor (SEC)	FEATURES <ul style="list-style-type: none"> Surface-mount multilayer ceramic chip capacitor Low-electrostrictive ceramic formulation for repeated charge and discharge cycles High pulse discharge currents Made with a combination of design, materials, and tight process control to achieve very high field reliability Available with tin-lead terminations (min. 4% lead) Excellent reliability and high-voltage performance Wet build process Reliable Noble Metal Electrode (NME) system APPLICATIONS <ul style="list-style-type: none"> Power supplies Converter Voltage multiplier 	1812	X7R	1000	1500	4.7 nF	27 nF		
		1825				10 nF	56 nF		
		2225				18 nF	100 nF		
		3040				33 nF	220 nF		
		3640				47 nF	330 nF		
		4044				100 nF	560 nF		
VJ Controlled Discharge Capacitor (CDC)	FEATURES <ul style="list-style-type: none"> Surface-mount multilayer ceramic chip capacitor with integrated resistor Low-electrostrictive ceramic formulation for repeated charge and discharge cycles High pulse discharge currents Made with a combination of design, materials, and tight process control to achieve very high field reliability Available with tin-lead terminations (min. 4% lead) Excellent reliability and high-voltage performance Wet build process Reliable Noble Metal Electrode (NME) system APPLICATIONS <ul style="list-style-type: none"> Detonation devices (munitions, pyrotechnic, blasting) Down hole drilling Electronic fuzing 	3040	X7R (Y5P)	1000	1500	33 nF	220 nF		
		3640				47 nF	330 nF		
		4044				100 nF	560 nF		
VJ 31/34 Automotive Series	FEATURES <ul style="list-style-type: none"> Surface-mount multilayer ceramic chip capacitors AEC-Q200-qualified with PPAP available C0G (NP0) offers ultra-stable dielectric and low power dissipation factor X7R operating temperature up to +150 °C, above +125 °C with derating X8R maintains capacitance at high temperature AgPd terminations available for silver epoxy bonding Polymer terminations in C0G (NP0)/X7R/X8R available for increased resistance to board flex cracking for size 0603 and larger Wet build process Reliable Noble Metal Electrode (NME) system APPLICATIONS <ul style="list-style-type: none"> Timing and tuning circuits Filtering and decoupling Sensor and scanner applications Power supplies 	0402	C0G (NP0)	25	100	1.0 pF	220 pF		
		0603					200	1.0 nF	
		0805					500	3.9 nF	
		1206					50	630	10 nF
		1210						100 pF	12 nF
		1812					3000	12 pF	22 nF
		0402	X7R	16	100	330 pF	120 pF	47 nF	
		0603					200	150 nF	
		0805					500	470 nF	
		1206					630	220 pF	1.0 µF
		1210						390 pF	
		1812						10 nF	
		0402	X8R	25	100	330 pF	330 pF	6.8 nF	
		0603					470 pF	33 nF	
		0805					50	100 nF	
		1206						1.0 nF	220 nF
1210	10 nF	390 nF							

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				[Min. V]	[Max. V]	[Min.]	[Max.]
VJ 31X RoHS Automotive Series	FEATURES <ul style="list-style-type: none"> Surface-mount multilayer ceramic chip capacitors AEC-Q200-qualified with PPAP available Compliant with ELV directive C0G (NP0) offers ultra-stable dielectric and low power dissipation factor X7R operating temperature up to +150 °C, above +125 °C with derating X8R maintains capacitance at high temperature Polymer terminations in C0G(NP0)/X7R/X8R available for increased resistance to board flex cracking for size 0603 and larger Wet build process Reliable Noble Metal Electrode (NME) system APPLICATIONS <ul style="list-style-type: none"> Timing and tuning circuits Filtering and decoupling Sensor and scanner applications Power supplies 	0402	C0G (NP0)	25	100	1.0 pF	220 pF
		0603			200		1.0 nF
		0805		50	500		3.9 nF
		1206			630		10 nF
		1210			100 pF		12 nF
		1812			3000		12 pF
		0402	X7R	16	100	120 pF	47 nF
		0603			200	330 pF	150 nF
		0805			250	470 nF	
		1206			1000	220 pF	1.0 μF
		1210		50	630	390 pF	
		1812			10 nF		
		0402	X8R	25	100	330 pF	6.8 nF
		0603				470 pF	33 nF
		0805				100 nF	
		1206			50	1.0 nF	220 nF
		1210				10 nF	220 nF
		GA.. 34G Automotive Series AgPd Termination	FEATURES <ul style="list-style-type: none"> Surface-mount multilayer ceramic chip capacitors AgPd termination for conductive epoxy assembly AEC-Q200-qualified with PPAP available Compliant with ELV directive Vishay “Green” product C0G (NP0) offers ultra-stable dielectric and low power dissipation factor X7R operating temperature up to +150 °C, above +125 °C with derating X8R maintains capacitance at high temperature Wet build process Reliable Noble Metal Electrode (NME) system APPLICATIONS <ul style="list-style-type: none"> Timing and tuning circuits Filtering and decoupling Sensor and scanner applications Power supplies 	0402	C0G (NP0)	25	100
0603	200			1.0 nF			
0805	50			500		3.9 nF	
1206				630		10 nF	
1210				100 pF		12 nF	
1812				3000		12 pF	22 nF
0402	X7R			16	100	120 pF	47 nF
0603					200	330 pF	150 nF
0805					250	470 nF	
1206					50	220 pF	1.0 μF
1210				630		390 pF	
1812				10 nF			
0402	X8R			25	100	330 pF	6.8 nF
0603						470 pF	33 nF
0805						100 nF	
1206					50	1.0 nF	220 nF
1210						10 nF	220 nF

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				[Min. V]	[Max. V]	[Min.]	[Max.]	
VJ OMD (Open-Mode Design) Commercial Series	FEATURES <ul style="list-style-type: none"> Surface-mount multilayer ceramic chip capacitors Reduce risk of shorts or leakage in board-flex-sensitive applications Polymer terminations available for intensive board flex requirements AgPd terminations available for silver epoxy bonding High voltage breakdown compared to standard design Wet build process Reliable Noble Metal Electrode (NME) system APPLICATIONS <ul style="list-style-type: none"> Demanding boardflex applications Input/output filter capacitors Snubber capacitor applications Power supplies 	1206	COG (NP0)	50	1500	10 pF	4.7 nF	
		1210			2000		8.2 nF	
		1808			3000		18 nF	
		1812			1000		15 pF	33 nF
		1825			270 pF	39 nF		
		2220			47 nF			
		2225						
		0805			X7R	16	630	470 pF
		1206	2000	270 pF			680 nF	
		1210	390 pF	1.0 μF				
		1808	630	3000			220 pF	18 nF
		1812	50	100 pF			1.2 μF	
		1825	100	2000			5.6 nF	1.5 μF
		2220	50	3000			1.0 nF	1.8 μF
		2225	100	2000			5.6 nF	
		HV...HV High-Voltage Series	FEATURES <ul style="list-style-type: none"> Surface-mount multilayer ceramic chip capacitor Excellent reliability and thermal shock performance High voltage breakdown compared to standard design High-reliability serial electrode design Protective surface coating may be required to prevent arcing over Wet build process Reliable Noble Metal Electrode (NME) system APPLICATIONS <ul style="list-style-type: none"> Input filter capacitors Output filter capacitors Snubber capacitors reduce MOSFET voltage spikes Filtering for switching power supplied For lighting and other AC applications please contact : mlcc@vishay.com 	1812	X7R	3000	5000	180 pF
1825	330 pF			10 nF				
2220	390 pF							
2225	470 pF			15 nF				



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				[Min. V]	[Max. V]	[Min.]	[Max.]			
VJ Commercial Series	FEATURES <ul style="list-style-type: none"> Surface-mount multilayer ceramic chip capacitors C0G (NP0) offers ultra-stable dielectric and low power dissipation Polymer terminations available with C0G (NP0)/X7R for board flex requirements for size 0603 and larger AgPd terminations available for silver epoxy bonding Wet build process Reliable Noble Metal Electrode (NME) system APPLICATIONS <ul style="list-style-type: none"> Timing and tuning circuits Filtering and decoupling Sensor and scanner applications Surge suppression Power supplies 	0402	C0G (NP0)	50	25	100	1.0 pF	220 pF		
		0603						1.0 nF		
		0805						4.7 nF		
		1206						10 nF		
		1210					56 pF	12 nF		
		1808					18 pF	10 nF		
		1812					39 pF	22 nF		
		1825					500	100 pF	39 nF	
		2220					1000	270 pF	47 nF	
		2225					56 nF			
		0402	X7R	16	100	120 pF	47 nF			
		0603					150 nF			
		0805					330 pF	470 nF		
		1206					1.0 μF			
		1210					390 pF	1.0 μF		
		1808					470 pF	270 nF		
		1812					1.0 nF	1.0 μF		
		1825					10 nF	2.7 μF		
		2220					50	500	15 nF	2.2 μF
		2225					25	1000	33 nF	4.7 μF
3640	25	500	27 nF	6.8 μF						
VJ High Q Dielectric Commercial Series	FEATURES <ul style="list-style-type: none"> Surface-mount multilayer ceramic chip capacitors High Q at high frequencies Low ESR and dissipation factor AgPd terminations available for silver epoxy bonding Wet build process Reliable Noble Metal Electrode (NME) system APPLICATIONS <ul style="list-style-type: none"> Timing and tuning circuits Filtering and decoupling Sensor applications 	0603	High-Q C0G (NP0)	50	100	1.0 pF	100 pF			
		0805					200	220 pF		
X8R Dielectric VJ High Temperature	FEATURES <ul style="list-style-type: none"> Surface-mount multilayer ceramic chip capacitors High-operating-temperature dielectric Maintains capacitance at high temperature AgPd terminations available for silver epoxy bonding Wet build process Reliable Noble Metal Electrode (NME) system APPLICATIONS <ul style="list-style-type: none"> High-temperature modules 	0402	X8R	25	100	470 pF	330 pF	6.8 nF		
		0603					33 nF			
		0805					100 nF			
		1206				50	1.0 nF	220 nF		
		1210					10 nF	220 nF		



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				[Min. V]	[Max. V]	[Min.]	[Max.]
VJ Hi-Rel Series	FEATURES <ul style="list-style-type: none"> MIL-PRF-55681-qualified production line Available with group A and C screening Available with only group A screening Available with only voltage conditioning Available with tin-lead terminations (min. 4 % lead) AgPd terminations available for silver epoxy bonding Customized testing and certification available Wet build process Reliable Noble Metal Electrode (NME) system APPLICATIONS <ul style="list-style-type: none"> System-critical medical applications Mission-critical military and aerospace applications 	0402	COG (NP0)	10	100	1.0 pF	180 nF
		0603			200		1.5 nF
		0805			500		3.3 nF
		1206		16	600	10 nF	
		1210					
		1808		25	500		22 pF
		1812					39 pF
		1825				100 pF	33 nF
		2220				120 pF	39 nF
		2225					
		0402	X5R	6.3	16	27 nF	47 nF
		0603			6.3	120 nF	150 nF
		0402	X7R	100	100 pF	22 nF	
		0603					270 pF
		0805		10	200	150 pF	
		1206		16	500	680 pF	1.0 μF
		1210				1.0 nF	
		1808		25	500	3.3 nF	1.0 μF
		1812				2.7 μF	
		1825				10 nF	2.2 μF
2220	4.7 μF						
2225							
3640	15 nF	6.8 μF					
MIL-PRF-55681 (CDR)	FEATURES <ul style="list-style-type: none"> Surface-mount multilayer ceramic chip capacitors Federal stock control number CAGE CODE 2770A MIL-PRF-55681-qualified products High reliability tested per MIL-PRF-55681 Available with tin-lead terminations (min. 4 % lead) Available with lead (Pb)-free terminations Available with AgPd terminations for silver epoxy bonding Wet build process Reliable Noble Metal Electrode (NME) system APPLICATIONS <ul style="list-style-type: none"> Avionic systems Sonar systems Satellite systems Missiles applications Geographical information systems Global positioning systems 	CDR01 (0805)	BP	100	100	10 pF	180 pF
			BX	50		120 pF	4.7 nF
		CDR02 (1805)	BP	100	220 pF	270 pF	
			BX	50	3.9 nF	22 nF	
		CDR03 (1808)	BP	100	330 pF	1.0 nF	
			BX	50	12 nF	68 nF	
		CDR04 (1812)	BP	100	1.2 nF	3.3 nF	
			BX	50	39 nF	180 nF	
		CDR06 (2225)	BX	50	50	390 nF	470 nF
		CDR31 (0805)	BP	50	100	1.0 pF	680 pF
			BX			470 pF	18 nF
		CDR32 (1206)	BP			1.0 pF	2.2 nF
			BX			4.7 nF	39 nF
		CDR33 (1210)	BP			1.0 nF	3.3 nF
			BX			15 nF	100 nF
		CDR34 (1812)	BP			2.2 nF	10 nF
	BX	27 nF	180 nF				
CDR35 (1825)	BP	4.7 nF	22 nF				
	BX	56 nF	470 nF				

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				[Min. V]	[Max. V]	[Min.]	[Max.]
MIL-PRF-123	FEATURES <ul style="list-style-type: none"> Space-level reliability Military-qualified products Federal stock control number, CAGE CODE 2770A High reliability tested per MIL-PRF-123 Lead-bearing (min. 4 %) termination finish "Z" Guarded termination finish "S" Wet build process Reliable Noble Metal Electrode (NME) system Material categorization: for definitions of compliance APPLICATIONS <ul style="list-style-type: none"> Space systems Satellite systems Avionic systems Sonar systems Missiles applications Global positioning systems 	CKS51 (0805)	BP		100	1.0 pF	680 pF
		CKS55 (1206)	BP		100	1.0 pF	2200 pF
		CKS52 (1210)	BP		100	300 pF	3300 pF
		CKS53 (1808)	BP		100	300 pF	1000 pF
		CKS56 (1812)	BP		100	1200 pF	10 000 pF
		CKS57 (1825)	BP		100	3600 pF	22 000 pF
		CKS54 (2225)	BP		50	1100 pF	10 000 pF
		CKS51 (0805)	BX		100	330 pF	18 000 pF
		CKS55 (1206)	BX		100	4700 pF	39 000 pF
		CKS52 (1210)	BX		100	5600 pF	100 000 pF
		CKS53 (1808)	BX		100	5600 pF	100 000 pF
		CKS56 (1812)	BX		100	27 000 pF	56 000 pF
		CKS57 (1825)	BX		100	56 000 pF	470 000 pF
		DSCC 03029	FEATURES <ul style="list-style-type: none"> Surface-mount multilayer ceramic chip capacitors Made with a combination of design, materials, and tight process control to achieve very high field reliability US defense supply center approved Federal stock control number CAGE CODE 2770A Available with tin-lead terminations (min. 4 % lead) Available with AgPd terminations for silver epoxy bonding Excellent aging characteristic Wet build process Reliable Noble Metal Electrode (NME) system APPLICATIONS <ul style="list-style-type: none"> Broadband wireless communication Satellite communication WiFi (802.11) and WiMax (802.16) Subscriber-based wireless devices Microwave systems 	0402	BP	6.3	100
BR	50				100 pF		
BX							8.2 nF



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Series	Description	Case Size	TC and Dielectric	Voltage		Capacitance	
				[Min. V]	[Max. V]	[Min.]	[Max.]
DSCC 03028	FEATURES <ul style="list-style-type: none"> Surface-mount multilayer ceramic chip capacitors Made with a combination of design, materials, and tight process control to achieve very high field reliability US defense supply center approved Federal stock control number CAGE CODE 2270A Available with tin-lead terminations (min. 4 % lead) Available with AgPd terminations for silver epoxy bonding Excellent aging characteristic Wet build process Reliable Noble Metal Electrode (NME) system APPLICATIONS <ul style="list-style-type: none"> Broadband wireless communication Satellite communication WiFi (802.11) and WiMax (802.16) Subscriber-based wireless devices Microwave systems 	0603	BP	6.3	100	1.0 pF	1.0 nF
			BR			100 pF	100 nF
			BX				
DSCC 05001	FEATURES <ul style="list-style-type: none"> Surface-mount multilayer ceramic chip capacitors Made with a combination of design, materials, and tight process control to achieve very high field reliability US defense supply center approved Federal stock control number CAGE CODE 2270A Available with tin-lead terminations (min. 4 % lead) Available with AgPd terminations for silver epoxy bonding Excellent aging characteristic Wet build process Reliable Noble Metal Electrode (NME) system APPLICATIONS <ul style="list-style-type: none"> Broadband wireless communication Satellite communication WiFi (802.11) and WiMax (802.16) Subscriber-based wireless devices Microwave systems 	0805	BP	50	250	1.0 pF	100 pF
DSCC 05002	FEATURES <ul style="list-style-type: none"> Surface-mount multilayer ceramic chip capacitors Made with a combination of design, materials, and tight process control to achieve very high field reliability US defense supply center approved Federal stock control number CAGE CODE 2270A Available with tin-lead terminations (min. 4 % lead) Available with AgPd terminations for silver epoxy bonding Excellent aging characteristic Wet build process Reliable Noble Metal Electrode (NME) system APPLICATIONS <ul style="list-style-type: none"> Broadband wireless communication Satellite communication WiFi (802.11) and WiMax (802.16) Subscriber-based wireless devices Microwave systems 	0603	BP	50	250	1.0 pF	100 pF



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Series	Description	Case Size	TC and Dielectric	Voltage		Capacitance	
				[Min. V]	[Max. V]	[Min.]	[Max.]
DSCC 05003	FEATURES <ul style="list-style-type: none"> • Surface-mount multilayer ceramic chip capacitors • Made with a combination of design, materials, and tight process control to achieve very high field reliability • US defense supply center approved • Federal stock control number CAGE CODE 2270A • Available with tin-lead terminations (min. 4 % lead) • Available with AgPd terminations for silver epoxy bonding • Excellent aging characteristic • Wet build process • Reliable Noble Metal Electrode (NME) system APPLICATIONS <ul style="list-style-type: none"> • Broadband wireless communication • Satellite communication • WiFi (802.11) and WiMax (802.16) • Subscriber-based wireless devices • Microwave systems 	0402	BP	50	100	1.0 pF	27 pF
DSCC 05006	FEATURES <ul style="list-style-type: none"> • Surface-mount multilayer ceramic chip capacitors • Made with a combination of design, materials, and tight process control to achieve very high field reliability • US defense supply center approved • Federal stock control number CAGE CODE 2270A • Available with tin-lead terminations (min. 4 % lead) • Available with AgPd terminations for silver epoxy bonding • Excellent aging characteristic • Wet build process • Reliable Noble Metal Electrode (NME) system APPLICATIONS <ul style="list-style-type: none"> • Broadband wireless communication • Satellite communication • WiFi (802.11) and WiMax (802.16) • Subscriber-based wireless devices • Microwave systems 	0805	BP	10	200	1.0 pF	3.3 nF
			BR		100	100 pF	220 nF
DSCC 05007	FEATURES <ul style="list-style-type: none"> • Surface-mount multilayer ceramic chip capacitors • Made with a combination of design, materials, and tight process control to achieve very high field reliability • US defense supply center approved • Federal stock control number CAGE CODE 2270A • Available with tin-lead terminations (min. 4 % lead) • Available with AgPd terminations for silver epoxy bonding • Excellent aging characteristic • Wet build process • Reliable Noble Metal Electrode (NME) system APPLICATIONS <ul style="list-style-type: none"> • Broadband wireless communication • Satellite communication • WiFi (802.11) and WiMax (802.16) • Subscriber-based wireless devices • Microwave systems 	1206	BP	10	200	1.0 pF	6.8 nF
			BR		100	820 pF	560 nF

MULTILAYER CERAMIC CHIP CAPACITORS



Series	Description	Case Size	TC and Dielectric	Voltage		Capacitance		
				[Min. V]	[Max. V]	[Min.]	[Max.]	
VJ....W1BC Basic Commodity	FEATURES <ul style="list-style-type: none"> Surface-mount multilayer ceramic chip capacitors Ultra-stable dielectric C0G (NP0) High capacitance per unit volume X5R/X7R/Y5V 100 % matte tin terminations Dry sheet technology process Base Metal Electrode system (BME) APPLICATIONS <ul style="list-style-type: none"> Consumer electronics Telecommunications Mobile applications Data processing 	0402	C0G (NP0)	10	100	0.5 pF	1.0 nF	
		0603					3.3 nF	
		0805					12 nF	
		1206					39 nF	
		0402	X5R	6.3	50	1.5 pF	47 nF	10 µF
		0603					220 nF	22 µF
		0805					47 µF	
		1206					100 µF	
		1210					220 µF	
		0402	X7R	6.3	50	100 pF	1.0 µF	2.2 µF
		0603					10 µF	
		0805					10 µF	
		1206					22 µF	
		1210					47 µF	
		0402	Y5V	6.3	50	10 nF	1.0 µF	4.7 µF
		0603					10 µF	
0805	10 µF							
1206	22 µF							
1210	100 µF							
VJ....W1BC High Q, Basic Commodity	FEATURES <ul style="list-style-type: none"> Surface-mount multilayer ceramic chip capacitors Ultra-stable dielectric C0G (NP0) High Q and low ESR at high frequency 100 % matte tin terminations Dry sheet technology process Base Metal Electrode system (BME) APPLICATIONS <ul style="list-style-type: none"> Mobile telecommunications WLAN applications RF modules Tuner 	0402	High Q C0G (NP0)	16	50	0.5 pF	470 pF	
		0603					100	3.3 nF
VJ....W1BC Ultra-High Q/ Low ESR, Basic Commodity	FEATURES <ul style="list-style-type: none"> Surface-mount multilayer ceramic chip capacitors Ultra stable dielectric C0G (NP0) High Q and low ESR at high frequency 100 % matte tin terminations Dry sheet technology process Base Metal Electrode system (BME) APPLICATIONS <ul style="list-style-type: none"> Mobile telecommunications WLAN applications RF modules Tuner 	0201	Ultra- High Q C0G (NP0)	10	25	0.1 µF	33 pF	
		0402					100	22 pF
		0603		50	250	0.3 pF	47 pF	
		0805					100 pF	



MULTILAYER CERAMIC CHIP CAPACITORS

Series	Description	Case Size	TC and Dielectric	Voltage		Capacitance	
				[Min. V]	[Max. V]	[Min.]	[Max.]
VJ0201...W1BC Ultra-Small Series, Basic Commodity	FEATURES <ul style="list-style-type: none"> Surface-mount multilayer ceramic chip capacitors Ultra-small size High capacitance per unit volume 100 % matte tin terminations Dry sheet technology process Base Metal Electrode system (BME) APPLICATIONS <ul style="list-style-type: none"> Microwave modules Portable equipment (mobile phone, PDA) RF modules 	0201	C0G (NP0)	16	50	0.5 pF	120 pF
			X5R	6.3		100 pF	2.2 μF
			X7R	10		10 nF	
VJ06C4...W1BC MLCC Chip Array, Basic Commodity	FEATURES <ul style="list-style-type: none"> Surface-mount multilayer ceramic chip capacitors 4 capacitors per unit 100 % matte tin terminations Dry sheet technology process Base Metal Electrode system (BME) APPLICATIONS <ul style="list-style-type: none"> Bypass for digital and analog signal lines Computer motherboards and peripherals 	0612	C0G (NP0)	50	50	10 pF	470 pF
			X7R	16		180 pF	100 nF
			Y5V	50		10 nF	



MULTILAYER CERAMIC CHIP CAPACITORS

PART NUMBERING / ORDERING INFORMATION ⁽⁷⁾									
VJ	0805	Y	102	K	X	A	A	C	2L
SERIES ID	CASE CODE ⁽⁵⁾	DIELECTRIC	CAPACITANCE NOMINAL CODE	TOLERANCE CODE ⁽¹⁾	TERMINATION	DC VOLTAGE RATING	MARKING OPTION ⁽²⁾	PACKAGING	PROCESS CODE ⁽⁶⁾
VJ HV GA	0201 0402 0505 0603 06C4 ⁽³⁾ 0805 1111 1206 1210 1808 1812 1825 2008 2012 2220 2225 2525 3040 3640 3838 4044	A = C0G (NP0) Y = X7R G = X5R H = X8R Q = high Q V = Y5V L = ultra-high Q, low ESR D = HIFREQ	Expressed in picofarad (pF). The first two digits are significant, the third is a multiplier. An "R" indicates a decimal point. Example: 0R3 = 0.3 pF 4R7 = 4.7 pF 102 = 1000 pF 473 = 47 000 pF	V = ± 0.05 pF B = ± 0.10 pF C = ± 0.25 pF D = ± 0.50 pF F = ± 1 % G = ± 2 % H = ± 3 % J = ± 5 % K = ± 10 % M = ± 20 % Z = - 20 %/+ 80 %	X = Ni barrier 100 % matte tin plate finish B = polymer 100 % matte tin plate finish F, E = AgPd ⁽⁴⁾ L = Ni barrier tin / lead plate min. 4 % lead N = non-magnetic ⁽⁷⁾ C = copper barrier 100 % matte tin plate finish (non-magnetic) ⁽⁷⁾	Y = 6.3 V _{DC} Q = 10 V _{DC} J = 16 V _{DC} X = 25 V _{DC} Z = 35 V _{DC} A = 50 V _{DC} B = 100 V _{DC} K = 150 V _{DC} C = 200 V _{DC} P = 250 V _{DC} D = 300 V _{DC} T = 400 V _{DC} E = 500 V _{DC} L = 630 V _{DC} I = 800 V _{DC} G = 1000 V _{DC} R = 1500 V _{DC} F = 2000 V _{DC} O = 2500 V _{DC} H = 3000 V _{DC} W = 3600 V _{DC} V = 4000 V _{DC} M = 5000 V _{DC} S = 7200 V _{DC} S = 4 V _{DC} only for VJ...W1BC series U = 250 V _{AC}	A = unmarked M = marking vendor ID + 2-character cap. code (size 0805 / 1206) B = marking for automotive VJ...31 / VJ...31X vendor ID + date code (size 0805 / 1206) Q = marking vendor ID + tolerance + 3-character cap. code (size 0505 / 1111 / 2525 / 3838) S = marking for safety caps	T = 7" reel / plastic tape C = 7" reel / paper tape O = 7" reel / flamed paper tape used for AgPd termination 0402 / 0603 / 0805 J = 7" reel (low quantity) E = 7" reel / plastic tape only used automotive VJ...31 / VJ...34 R = 11 1/4" / 13" reel / plastic tape P = 11 1/4" / 13" reel / paper tape I = 11 1/4" / 13" reel / flamed paper tape used for AgPd termination 0402 / 0603 / 0805 M = 11 1/4" / 13" reel / plastic tape only used automotive VJ...31 / VJ...34 W = waffle pack	00, 54 = standard 31, 34, 31X, 34G = automotive 4X, 5H = open mode HV = high voltage 5Z, 5ZL = HVArc Guard® X1, X2 = safety caps SE = Source Energy Capacitor (SEC) 8R = Controlled Discharge Capacitor (CDC) 2L, 2M, 2MP, 68, 5G = high-rel. W1BC = basic commodity

Notes

- (1) For details see individual datasheets
- (2) Marking option is not available in process code W1BC
- (3) Chip array size 0612 including 4 capacitors VJ06C4...W1BC, only Basic Commodity Series
- (4) Termination code "E" for conductive epoxy assembly, contact mlcc@vishay.com for availability
- (5) Case size designator may be replaced by a four-digit drawing number
- (6) Customer-specific process codes are also possible
- (7) For non-magnetic termination, "C" is recommended for solder assembly, and "N" for conductive epoxy assembly



MULTILAYER CERAMIC CHIP CAPACITORS

PART NUMBERING/ORDERING INFORMATION MILITARY PRODUCTS ⁽¹⁾

CDR31	BX	103	A	K	Z	P	A	T
MILITARY STYLE	DIELECTRIC	CAPACITANCE	DC VOLTAGE RATING	TOLERANCE CODE	TERMINATION	FAILURE RATE	MARKING OPTION	PACKAGING
CDR01 CDR02 CDR03 CDR04 CDR06 CDR31 CDR32 CDR33 CDR34	BP BX	Expressed in picofarad (pF). The first two digits are significant, the third is a multiplier. An "R" indicates a decimal point. Example: 4R7 = 4.7 pF 102 = 1000 pF	A = 50 V B = 100 V	C = ± 0.25 pF D = ± 0.50 pF F = ± 1 % J = ± 5 % K = ± 10 % M = ± 20 %	M = Silver palladium Y = Ni barrier 100 % tin plate matte finish W = Ni barrier 100 % tin plate matte finish Z = Ni barrier 100 % tin/lead plate min. 4 % U = Ni barrier - solder coated min. 4 % lead	M = 1.0 % P = 0.1 % R = 0.01 % S = 0.001 % Consult factory for failure rate status	A = Unmarked	T = 7" reel / plastic tape J = 7" reel (low qty.) C = 7" reel / paper tape R = 11 1/4" / 13" reel / plastic tape P = 11 1/4" / 13" reel / paper tape B = bulk

Notes

- For details of ratings, see individual datasheet

PART NUMBERING/ORDERING INFORMATION DSCC PRODUCTS ⁽¹⁾

03028-	BX	102	A	K	Z	C	J
DSCC STYLE	DIELECTRIC	CAPACITANCE	DC VOLTAGE RATING	TOLERANCE CODE	TERMINATION	GROUP TESTING	PACKAGING
03028- 03029- 05006- 05007-	BP BX BR	Expressed in picofarad (pF). The first two digits are significant, the third is a multiplier. An "R" indicates a decimal point. Example: 4R7 = 4.7 pF 102 = 1000 pF	X = 10 V Y = 16 V Z = 25 V A = 50 V B = 100 V C = 200 V	C = ± 0.25 pF D = ± 0.50 pF F = ± 1 % G = ± 2 % J = ± 5 % K = ± 10 % M = ± 20 %	M = silver palladium Z = Ni barrier tin / lead plate min. 4 % lead U = Ni barrier - solder coated min. 4 % lead	C = Full group C L = 2000 h life test only M = 1000 h life test only H = Low-voltage humidity test only - = Group A test only	T = 7" reel / plastic tape J = 7" reel (low qty.) C = 7" reel / paper tape O = 7" reel / flamed paper tape R = 11 1/4" / 13" reel / plastic tape P = 11 1/4" / 13" reel / paper tape I = 11 1/4" / 13" reel / flamed paper tape B = bulk

Notes

- For details of ratings, see individual datasheet



MULTILAYER CERAMIC CHIP CAPACITORS

PART NUMBERING/ORDERING INFORMATION DSCC PRODUCTS ⁽¹⁾

05001-	4R7	A	C	Z	C	J
DSCC STYLE	CAPACITANCE	DC VOLTAGE RATING	TOLERANCE CODE	TERMINATION	GROUP TESTING	PACKAGING
05001- 05002- 05003-	Expressed in picofarad (pF). The first two digits are significant, the third is a multiplier. An "R" indicates a decimal point. Example: 4R7 = 4.7 pF	A = 50 V B = 100 V C = 200 V K = 250 V	B = ± 0.10 pF C = ± 0.25 pF D = ± 0.50 pF F = ± 1 % G = ± 2 % J = ± 5 % K = ± 10 % M = ± 20 %	M = Silver palladium Z = Ni barrier tin/lead plate min. 4 % lead	C = full group C L = 2000 h life test only M = 1000 h life test only H = low-voltage humidity test only - = group A test only	T = 7" reel/plastic tape J = 7" reel/(low qty.) C = 7" reel/paper tape O = 7" reel/flamed paper tape R = 11 1/4"/13" reel/plastic tape P = 11 1/4"/13" reel/paper tape I = 11 1/4"/13" reel/flamed paper tape B = Bulk

Notes

- For details of ratings, see individual datasheet
- Contact mlcc@vishay.com for availability

PART NUMBERING / ORDERING INFORMATION MIL-PRF-123

M123A	10	BX	B	103	K	Z	T
MILITARY STYLE	SLASH SHEET	DIELECTRIC	DC VOLTAGE RATING	CAPACITANCE	TOLERANCE CODE	TERMINATION	PACKAGING
MIL-PRF-123	10: CKS51 (0805) 11: CKS52 (1210) 12: CKS53 (1808) 13: CKS54 (2225) 21: CKS55 (1206) 22: CKS56 (1812) 23: CKS57 (1825)	BP BX	B = 50 V C = 100 V	Expressed in picofarad (pF). The first two digits are significant, the third is a multiplier. "R" denotes decimal place. Examples: 1R0 = 1.0 pF 103 = 10 000 pF 104 = 100 000 pF	B = ± 0.10 pF C = ± 0.25 pF D = ± 0.50 pF F = ± 1 % J = ± 5 % K = ± 10 % M = ± 20 % For BP: B, C, D, J, K For BX: K, M	Z = Ni barrier with tin / lead plate min. 4 % lead S = guarded termination	Plastic tape: T = 7" reel R = 11 1/4" / 13" reel Low quantity: J = 7" reel Bulk packaging: B = bulk

Notes

- For details of ratings, see individual datasheet
- Contact mlcc@vishay.com for availability

Notes

- (1) For details of ratings, see individual datasheet



MULTILAYER CERAMIC CHIP CAPACITORS

Links and Promotional Information

PRODUCT SHEETS

RF Applications

- HiFREQ: www.vishay.com/doc?45071
- QUAD HiFREQ: www.vishay.com/doc?45221

COMMODITY APPLICATIONS:

- VJ...W1BC High Q: www.vishay.com/doc?49751
- VJ...W1BC Ultra-High Q/Low ESR: www.vishay.com/doc?49022
- VJ0201...W1BC: www.vishay.com/doc?49706
- VJ06C4...W1BC Chip Array: www.vishay.com/doc?49714

HIGH-VOLTAGE APPLICATIONS:

- HVArc Guard®: www.vishay.com/doc?49667

BOARDFLEX SENSITIVE APPLICATIONS:

- VJ OMD Series: www.vishay.com/doc?49614

AUTOMOTIVE APPLICATIONS:

- Automotive Instructional Guide: www.vishay.com/doc?49794

TECH NOTES

VISHAY BASIC COMMODITY SERIES:

- Test procedures and requirements: www.vishay.com/doc?28545
- Soldering and footprint: www.vishay.com/doc?45017

VISHAY VITRAMON:

- End Terminations: www.vishay.com/doc?45063
- Soldering recommendations: www.vishay.com/doc?45034

LEAD (PB)-FREE INFORMATION

- How to get lead (Pb)-free: www.vishay.com/how/leadfree
- Capacitor lead (Pb)-free matrix: www.vishay.com/doc?49322

MULTILAYER CERAMIC CHIP CAPACITORS



SEMICONDUCTORS

MOSFETs Segment

MOSFETs

- Low-Voltage TrenchFET® Power MOSFETs
- Medium-Voltage Power MOSFETs
- High-Voltage Planar MOSFETs
- High-Voltage Superjunction MOSFETs
- Automotive-Grade MOSFETs

ICs

- Power Management and Power Control ICs
- Smart Load Switches
- Analog Switches and Multiplexers

Diodes Segment

Rectifiers

- Schottky Rectifiers
- Ultrafast Recovery Rectifiers
- Standard and Fast Recovery Rectifiers
- High-Power Rectifiers/Diodes
- Bridge Rectifiers

Small-Signal Diodes

- Schottky and Switching Diodes
- Zener Diodes
- Tuner/Capacitance Diodes
- Bandswitching Diodes
- RF PIN Diodes

Protection Diodes

- TVS Diodes or TRANSZORB®
(unidirectional, bidirectional)
- ESD Protection Diodes (including arrays)

Thyristors/SCRs

- Phase-Control Thyristors
- Fast Thyristors

IGBTs

Power Modules

- Input Modules (diodes and thyristors)
- Output and Switching Modules (contain MOSFETs, IGBTs, and diodes)
- Custom Modules

Optoelectronic Components Segment

Infrared Emitters and Detectors

Optical Sensors

Infrared Remote Control Receivers

Optocouplers

- Phototransistor, Photodarlington
- Linear
- Phototriac
- High-Speed
- IGBT and MOSFET Driver

Solid-State Relays

LEDs and 7-Segment Displays

Infrared Data Transceiver Modules

Custom Products

PASSIVE COMPONENTS

Resistors and Inductors Segment

Film Resistors

- Metal Film Resistors
- Thin Film Resistors
- Thick Film Resistors
- Power Thick Film Resistors
- Metal Oxide Film Resistors
- Carbon Film Resistors

Wirewound Resistors

- Vitreous, Cemented, and Housed Resistors
- Braking and Neutral Grounding Resistors
- Custom Load Banks

Power Metal Strip® Resistors

- Battery Management Shunts
- Crowbar and Steel Blade Resistors

Thermo Fuses

Chip Fuses

Pyrotechnic Initiators/Igniters

Variable Resistors

- Cermet Variable Resistors
- Wirewound Variable Resistors
- Conductive Plastic Variable Resistors
- Contactless Potentiometers
- Hall Effect Position Sensors
- Precision Magnetic Encoders

Networks/Arrays

Non-Linear Resistors

- NTC Thermistors
- PTC Thermistors
- Varistors

Magnetics

- Inductors
- Wireless Charging Coils
- Transformers

Connectors

Capacitors Segment

Tantalum Capacitors

- Molded Chip Tantalum Capacitors
- Molded Chip Polymer Tantalum Capacitors
- Coated Chip Tantalum Capacitors
- Solid Through-Hole Tantalum Capacitors
- Wet Tantalum Capacitors

Ceramic Capacitors

- Multilayer Chip Capacitors
- Multilayer Chip RF Capacitors
- Disc Capacitors

Film Capacitors

Power Capacitors

Heavy-Current Capacitors

Aluminum Capacitors

ENYCAP™ Energy Storage Capacitors