Surface Mount Multilayer Ceramic Chip Capacitors
DSCC Qualified Type 05006

FEATURES

- US defense supply center approved
- Federal stock control number, CAGE CODE 2770A
- Case size 0805
- Stable BP, BR and BX dielectrics
- Excellent aging characteristics
- Lead (Pb)-free termination code “M”
- Tin / lead termination code “Z” and “U”
- Wet build process
- Reliable Noble Metal Electrode (NME) system
- Made with a combination of design, materials and tight process control to achieve very high field reliability
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Available

RoHS* Available

HALOGEN FREE

Note

* This datasheet provides information about parts that are RoHS-compliant and / or parts that are non RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details

APPLICATIONS

- Avionic application
- Sonar applications
- Satellite systems
- Missiles applications
- Geographical information systems
- Global positioning systems

ELECTRICAL SPECIFICATIONS

Note

- Electrical characteristics at +25 °C unless otherwise specified

Operating Temperature: -55 °C to +125 °C

Capacitance Range:

BP: 1.0 pF to 3.3 nF

BR: 100 pF to 220 nF

BX: 100 pF to 180 nF

Voltage Range: 10 V_{DC} to 200 V_{DC}

Temperature Coefficient of Capacitance (TCC):

BP: 0 ppm/°C ± 30 ppm/°C from -55 °C to +125 °C with zero (0) V_{DC} applied

BP: 0 ppm/°C ± 30 ppm/°C from -55 °C to +125 °C with 100 % rated V_{DC} applied

BR: ± 15 % from -55 °C to +125 °C with zero (0) V_{DC} applied

BR: +15 %, -40 % from -55 °C to +125 °C with 100 % rated V_{DC} applied

BX: ± 15 % from -55 °C to +125 °C with zero (0) V_{DC} applied

BX: +15 %, -25 % from -55 °C to +125 °C with 100 % rated V_{DC} applied

Dissipation Factor (DF):

BP:

0.15 % max. at 1.0 V_{RMS} and 1 MHz for values ≤ 1000 pF

0.15 % max. at 1.0 V_{RMS} and 1 kHz for values > 1000 pF

BR and BX:

≤ 25 V: 3.5 % max. at 1.0 V_{RMS} and 1 kHz

≥ 50 V: 2.5 % max. at 1.0 V_{RMS} and 1 kHz

Aging Rate:

BP: 0 % maximum per decade

BR, BX: 1 % maximum per decade

Insulation Resistance (IR):

at +25 °C and rated voltage 100 000 MΩ minimum or 1000 ΩF, whichever is less

at +125 °C and rated voltage 10 000 MΩ minimum or 100 ΩF, whichever is less

Dielectric Strength Test:

performed per method 103 of EIA-198-2-E.

Applied test voltages

≤ 200 V_{DC}-rated: 250 % of rated voltage

QUICK REFERENCE DATA

DIELECTRIC	CASE	MAXIMUM VOLTAGE (V)	CAPACITANCE	
			MINIMUM	MAXIMUM
BP	0805	200	1.0 pF	3.3 nF
BR	0805	100	100 pF	220 nF
BX	0805	100	100 pF	180 nF

Note

- Detail ratings see “Selection Chart”

ORDERING INFORMATION

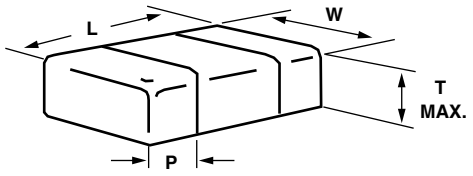
05006-	BP	101	B	J	Z	-	T
DSCC NUMBER	DIELECTRIC	CAPACITANCE NOMINAL CODE	DC VOLTAGE RATING (1)	CAPACITANCE TOLERANCE	TERMINATION	GROUP C TESTING OPTION (2)	PACKAGING
Case code 0805	BP BR BX	Expressed in picofarads (pF). The first two digits are significant, the third is a multiplier. An “R” indicates a decimal point. Examples: 1R8 = 1.8 pF 101 = 100 pF	X = 10 V Y = 16 V Z = 25 V A = 50 V B = 100 V C = 200 V	C = ± 0.25 pF D = ± 0.5 pF F = ± 1 % G = ± 2 % J = ± 5 % K = ± 10 % M = ± 20 % **Note:** C, D < 10 pF (BP) F, G, J, K, M ≥ 10 pF (BP) J, K, M (BR, BX)	M = silver palladium Z = Ni barrier with tin / lead plate min. 4 % lead U = Ni barrier solder coated (min. of 4 % lead)	C = full group C L = 2000 h life test only M = 1000 h life test only H = low voltage humidity test only - = no group C testing	T = 7" reel / plastic tape C = 7" reel / paper tape O = 7" reel / flamed paper tape J = 7" reel (low quantity) 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 **Note:** “I” and “O” are used for “M” termination code

Notes

(1) DC voltage rating should not be exceeded in application. Other application factors may affect the MLCC performance. Consult for questions: mlcc@vishay.com

(2) To receive data package, add “P” to the end of the part number. For example, 05006-BP101BJZCTP. Group C will be completed and data included with shipment.

DIMENSIONS in inches (millimeters)



PART ORDERING NUMBER	LENGTH (L)	WIDTH (W)	MAXIMUM THICKNESS (T)	TERMINATION PAD (P)	
				MINIMUM	MAXIMUM
05006-	0.080 ± 0.008 (2.03 ± 0.20)	0.050 ± 0.008 (1.27 ± 0.20)	0.055 (1.40)	0.012 (0.30)	0.028 (0.71)

Note

- Metric equivalents are given for general information only

SELECTION CHART

DIELECTRIC		BP						BR					BX				
STYLE		05006															
CASE CODE		0805															
VOLTAGE (V_{DC})		10	16	25	50	100	200	10	16	25	50	100	10	16	25	50	100
VOLTAGE CODE		X	Y	Z	A	B	C	X	Y	Z	A	B	X	Y	Z	A	B
CAP. CODE	CAP.																
1R0	1.0 pF	•	•	•	•	+	•										
1R2	1.2 pF	•	•	•	•	+	•										
1R5	1.5 pF	•	•	•	•	+	•										
1R8	1.8 pF	•	•	•	•	+	•										
2R2	2.2 pF	•	•	•	•	+	•										
2R7	2.7 pF	•	•	•	•	+	•										
3R3	3.3 pF	•	•	•	•	+	•										
3R9	3.9 pF	•	•	•	•	+	•										
4R7	4.7 pF	•	•	•	•	+	•										
5R6	5.6 pF	•	•	•	•	+	•										
6R8	6.8 pF	•	•	•	•	+	•										
8R2	8.2 pF	•	•	•	•	+	•										
100	10 pF	•	•	•	•	+	•										
120	12 pF	•	•	•	•	+	•										
150	15 pF	•	•	•	•	+	•										
180	18 pF	•	•	•	•	+	•										
220	22 pF	•	•	•	•	+	•										
270	27 pF	•	•	•	•	+	•										
330	33 pF	•	•	•	•	+	•										
390	39 pF	•	•	•	•	+	•										
470	47 pF	•	•	•	•	+	•										
560	56 pF	•	•	•	•	+	•										
680	68 pF	•	•	•	•	+	•										
820	82 pF	•	•	•	•	+	•										
101	100 pF	•	•	•	•	+	•	•	•	•	•	•	•	•	•	•	•
121	120 pF	•	•	•	•	+	•	•	•	•	•	•	•	•	•	•	+
151	150 pF	•	•	•	•	+	•	•	•	•	•	•	•	•	•	•	+
181	180 pF	•	•	•	•	+	•	•	•	•	•	•	•	•	•	•	+
221	220 pF	•	•	•	•	+	•	•	•	•	•	•	•	•	•	•	+
271	270 pF	•	•	•	•	+	•	•	•	•	•	•	•	•	•	•	+
331	330 pF	•	•	•	•	+	•	•	•	•	•	•	•	•	•	•	+
391	390 pF	•	•	•	•	+	•	•	•	•	•	•	•	•	•	•	+
471	470 pF	•	•	•	•	+	•	•	•	•	•	•	•	•	•	•	+
561	560 pF	•	•	•	+	•	•	•	•	•	•	•	•	•	•	•	+
681	680 pF	•	•	•	+	•	•	•	•	•	•	•	•	•	•	•	+
821	820 pF	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	+
102	1.0 nF	•	•	•	•	•		•	•	•	•	•	•	•	•	•	+
122	1.2 nF	•	•	•	•	•		•	•	•	•	•	•	•	•	•	+
152	1.5 nF	•	•	•	•	•		•	•	•	•	•	•	•	•	•	+
182	1.8 nF	•	•	•	•			•	•	•	•	•	•	•	•	•	+
222	2.2 nF	•	•	•	•			•	•	•	•	•	•	•	•	•	+
272	2.7 nF	•	•	•				•	•	•	•	•	•	•	•	•	+
332	3.3 nF	•	•					•	•	•	•	•	•	•	•	•	+
392	3.9 nF							•	•	•	•	•	•	•	•	+	+
472	4.7 nF							•	•	•	•	•	•	•	•	+	+
562	5.6 nF							•	•	•	•	•	•	•	•	+	•
682	6.8 nF							•	•	•	•	•	•	•	•	+	•
822	8.2 nF							•	•	•	•	•	•	•	•	+	•

Notes

RoHS-compliant except when supplied with lead (Pb)-containing terminations, codes “Z” and “U”

Not RoHS-compliant

\+ Use MIL-PRF-55681 (CDR) instead, part numbers removed from DSCC listing

SELECTION CHART

DIELECTRIC		BP						BR					BX				
STYLE		05006															
CASE CODE		0805															
VOLTAGE (V_{DC})		10	16	25	50	100	200	10	16	25	50	100	10	16	25	50	100
VOLTAGE CODE		X	Y	Z	A	B	C	X	Y	Z	A	B	X	Y	Z	A	B
CAP. CODE	CAP.																
103	10 nF							•	•	•	•	•	•	•	•	+	•
123	12 nF							•	•	•	•	•	•	•	•	+	
153	15 nF							•	•	•	•	•	•	•	•	+	
183	18 nF							•	•	•	•	•	•	•	•	+	
223	22 nF							•	•	•	•	•	•	•	•	•	
273	27 nF							•	•	•	•	•	•	•	•	•	
333	33 nF							•	•	•	•		•	•	•	•	
393	39 nF							•	•	•	•		•	•	•		
473	47 nF							•	•	•	•		•	•	•		
563	56 nF							•	•	•	•		•	•	•		
683	68 nF							•	•	•	•		•	•	•		
823	82 nF							•	•	•	•		•	•	•		
104	100 nF							•	•	•	•		•	•	•		
124	120 nF							•	•	•							
154	150 nF							•	•	•							
184	180 nF							•	•								
224	220 nF							•	•								
274	270 nF																
334	330 nF																
394	390 nF																
474	470 nF																
564	560 nF																
684	680 nF																
824	820 nF																
105	1.0 µF																

Notes

RoHS-compliant except when supplied with lead (Pb)-containing terminations, codes “Z” and “U”

Not RoHS-compliant

\+ Use MIL-PRF-55681 (CDR) instead, part numbers removed from DSCC listing

DSCC PACKAGING QUANTITIES (1)(2)

CASE CODE	TAPE SIZE	7" REEL QUANTITIES		11 1/4" AND 13" REEL QUANTITIES	BULK
		PACKAGING CODE		PACKAGING CODE	VIAL PACKAGING CODE
		“C” / “O” / “T”	“J”	“P” / “I” / “R”	“B”
0805	8 mm	3000	1000	10 000	100

Notes

(1) Vishay Vitramon uses embossed plastic carrier tape and punch paper carrier tape

(2) Reference: EIA standard RS 481 - “Taping of Surface Mount Components for Automatic Placement”

STORAGE AND HANDLING CONDITIONS

(1) Store the components at 5 °C to +40 °C ambient temperature and ≤ 70 % relative humidity conditions.

(2) The product is recommended to be used within a time-frame of 2 years after shipment.
Check solderability in case extended shelf life beyond the expiry date is needed.

Precautions:

a. Do not store products in an environment containing corrosive elements, especially where chloride gas, sulfide gas, acid, alkali, salt or the like are present. This may cause corrosion or oxidization of the terminations, which can easily lead to poor soldering.

b. Store products on the shelf and avoid exposure to moisture or dust.

c. Do not expose products to excessive shock, vibration, direct sunlight and so on.

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