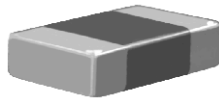


## Surface Mount Multilayer Ceramic Chip Capacitors DSCC Qualified Type 03028



### FEATURES

- US defense supply center approved
- Federal stock control number, CAGE CODE 95275
- Small case size (0603)
- Stable BP, BR and BX dielectrics
- Excellent aging characteristics
- Lead (Pb)-free “M” termination code
- Tin/lead termination code “Z”
- Surface mount, 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
- Compliant to RoHS directive 2002/95/EC
- Halogen-free according to IEC 61249-2-21 definition



### APPLICATIONS

- Broadband wireless communication
- Satellite communication
- WiFi (802.11) and WiMax (802.16)
- Subscriber based wireless devices
- Microwave systems

### ELECTRICAL SPECIFICATIONS

**Note:** Electrical characteristics at + 25 °C unless otherwise specified

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

**Capacitance Range:**

**BP:** = 0.5 pF to 1000 pF

**BR:** = 100 pF to 0.1 μF

**BX:** = 100 pF to 0.1 μF

**Voltage Rating:** 16 Vdc to 100 Vdc

**Temperature Coefficient of Capacitance (TCC):**

**BP:** = 0 ppm/°C ± 30 ppm/°C from - 55 °C to + 125 °C with zero (0) Vdc applied

**BP:** = 0 ppm/°C ± 30 ppm/°C from - 55 °C to + 125 °C with 100 % rated Vdc applied

**BR:** = ± 15 % from - 55 °C to + 125 °C with zero (0) Vdc applied

**BR:** = + 15 %, - 40 % from - 55 °C to + 125 °C with 100 % rated Vdc applied

**BX:** = ± 15 % from - 55 °C to + 125 °C with zero (0) Vdc applied

**BX:** = + 15 %, - 25 % from - 55 °C to + 125 °C with 100 % rated Vdc 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, 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:**

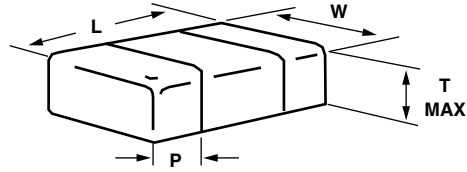
Performed per Method 103 of EIA-198-2-E.

Applied test voltages:

≤ 200 Vdc-rated: 200 % of rated voltage

\* Pb containing terminations are not RoHS compliant, exemptions may apply

**DIMENSIONS** in inches (millimeters)



PART ORDERING NUMBER	LENGTH (L)	WIDTH (W)	MAXIMUM THICKNESS (T)	TERMINATION PAD (P)	
				MINIMUM	MAXIMUM
03028-	0.063 ± 0.005 (1.60 ± 0.12)	0.031 ± 0.005 (0.80 ± 0.12)	0.035 (0.89)	0.012 (0.30)	0.018 (0.46)

**ORDERING INFORMATION**

DSCC NUMBER	DIELECTRIC	CAPACITANCE NOMINAL CODE	DC VOLTAGE RATING (1)	CAPACITANCE TOLERANCE	TERMINATION	GROUP C TESTING OPTION	PACKAGING
03028-	BX	102	B	J	Z	-	T
CASE SIZE 0603	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: 101 = 100 pF 1R8 = 1.8 pF	Y = 16 V Z = 25 V A = 50 V B = 100 V	C = ± 0.25 pF D = ± 0.5 pF F = ± 1 % G = ± 2 % H = ± 3 % J = ± 5 % K = ± 10 % <b>Note</b> C, D < 10 pF (BP) F, G, H ≥ 10 pF (BP) J, K ≥ 10 pF (BP, BR, BX)	M = Silver Palladium Z = Ni barrier with 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 - = 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" reel/plastic tape P = 11 1/4" reel/paper tape I = 11 1/4" reel/flamed paper tape B = Bulk <b>Note</b> "I" and "O" is used for "M" termination

**Note**

(1) DC voltage rating should not be exceeded in application



<b>DIELECTRIC</b>													
<b>STYLE</b>		<b>03028</b>											
<b>EIA TYPE</b>		<b>0603</b>											
<b>DIELECTRIC</b>		<b>BP</b>				<b>BR</b>				<b>BX</b>			
<b>VOLTAGE (Vdc)</b>		16	25	50	100	16	25	50	100	16	25	50	100
<b>CAP. CODE</b>	<b>CAP.</b>												
0R5	0.5 pF	•	•	•	•								
R75	0.75 pF	•	•	•	•								
1R0	1.0 pF	•	•	•	•								
1R2	1.2 pF	•	•	•	•								
1R5	1.5 pF	•	•	•	•								
1R8	1.8 pF	•	•	•	•								
2R2	2.2 pF	•	•	•	•								
2R4	2.4 pF	•	•	•	•								
2R7	2.7 pF	•	•	•	•								
3R0	3.0 pF	•	•	•	•								
3R3	3.3 pF	•	•	•	•								
3R6	3.6 pF	•	•	•	•								
3R9	3.9 pF	•	•	•	•								
4R7	4.7 pF	•	•	•	•								
5R1	5.1 pF	•	•	•	•								
5R6	5.6 pF	•	•	•	•								
6R2	6.2 pF	•	•	•	•								
6R8	6.8 pF	•	•	•	•								
7R5	7.5 pF	•	•	•	•								
8R2	8.2 pF	•	•	•	•								
9R1	9.1 pF	•	•	•	•								
100	10 pF	•	•	•	•								
110	11 pF	•	•	•	•								
120	12 pF	•	•	•	•								
130	13 pF	•	•	•	•								
150	15 pF	•	•	•	•								
160	16 pF	•	•	•	•								
180	18 pF	•	•	•	•								
200	20 pF	•	•	•	•								
220	22 pF	•	•	•	•								
240	24 pF	•	•	•	•								
270	27 pF	•	•	•	•								
300	30 pF	•	•	•	•								
330	33 pF	•	•	•	•								
360	36 pF	•	•	•	•								
390	39 pF	•	•	•	•								
430	43 pF	•	•	•	•								
470	47 pF	•	•	•	•								
510	51 pF	•	•	•	•								
560	56 pF	•	•	•	•								
620	62 pF	•	•	•	•								
680	68 pF	•	•	•	•								
750	75 pF	•	•	•	•								
820	82 pF	•	•	•	•								
910	91 pF	•	•	•	•								



DIELECTRIC													
STYLE		03028											
EIA TYPE		0603											
DIELECTRIC		BP				BR				BX			
VOLTAGE (Vdc)		16	25	50	100	16	25	50	100	16	25	50	100
CAP. CODE	CAP.												
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	1000 pF	•	•			•	•	•	•	•	•	•	•
122	1200 pF					•	•	•	•	•	•	•	•
152	1500 pF					•	•	•	•	•	•	•	•
182	1800 pF					•	•	•	•	•	•	•	•
222	2200 pF					•	•	•	•	•	•	•	•
272	2700 pF					•	•	•	•	•	•	•	•
332	3300 pF					•	•	•	•	•	•	•	•
392	3900 pF					•	•	•	•	•	•	•	•
472	4700 pF					•	•	•	•	•	•	•	•
562	5600 pF					•	•	•	•	•	•	•	•
682	6800 pF					•	•	•	•	•	•	•	•
822	8200 pF					•	•	•	•	•	•	•	•
103	0.010 μF					•	•	•	•	•	•	•	•
123	0.012 μF					•	•	•	•	•	•	•	•
153	0.015 μF					•	•	•	•	•	•	•	•
183	0.018 μF					•	•	•	•	•	•	•	•
223	0.022 μF					•	•	•	•	•	•	•	•
273	0.027 μF					•	•	•	•	•	•	•	•
333	0.033 μF					•	•	•	•	•	•	•	•
393	0.039 μF					•	•	•	•	•	•	•	•
473	0.047 μF					•	•	•	•	•	•	•	•
563	0.056 μF					•	•			•	•		
683	0.068 μF					•	•			•	•		
823	0.082 μF					•	•			•	•		
104	0.10 μF					•	•			•	•		
124	0.12 μF												
154	0.15 μF												
184	0.18 μF												
224	0.22 μF												

**Note**

See soldering recommendations within this data book, or visit [www.vishay.com/doc?45034](http://www.vishay.com/doc?45034)

DSCC PACKAGING QUANTITIES (1)(2)							
		7" REEL QUANTITIES		11 1/4" AND 13" REEL QUANTITIES		BULK QUANTITIES	
BODY SIZE	TAPE SIZE	PAPER TAPE PACKAGING CODE "C"/"O"/"T"	PAPER TAPE PACKAGING CODE "J"	PAPER TAPE PACKAGING CODE "P"/"I"/"R"		VIAL PACKAGING CODE "B"	WAFFLE PACKAGING CODE "W"
0603	8 mm	4000	1000	10 000		100	N/a

**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"



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