

***ATC RF/Microwave Capacitors:  
Military Products***

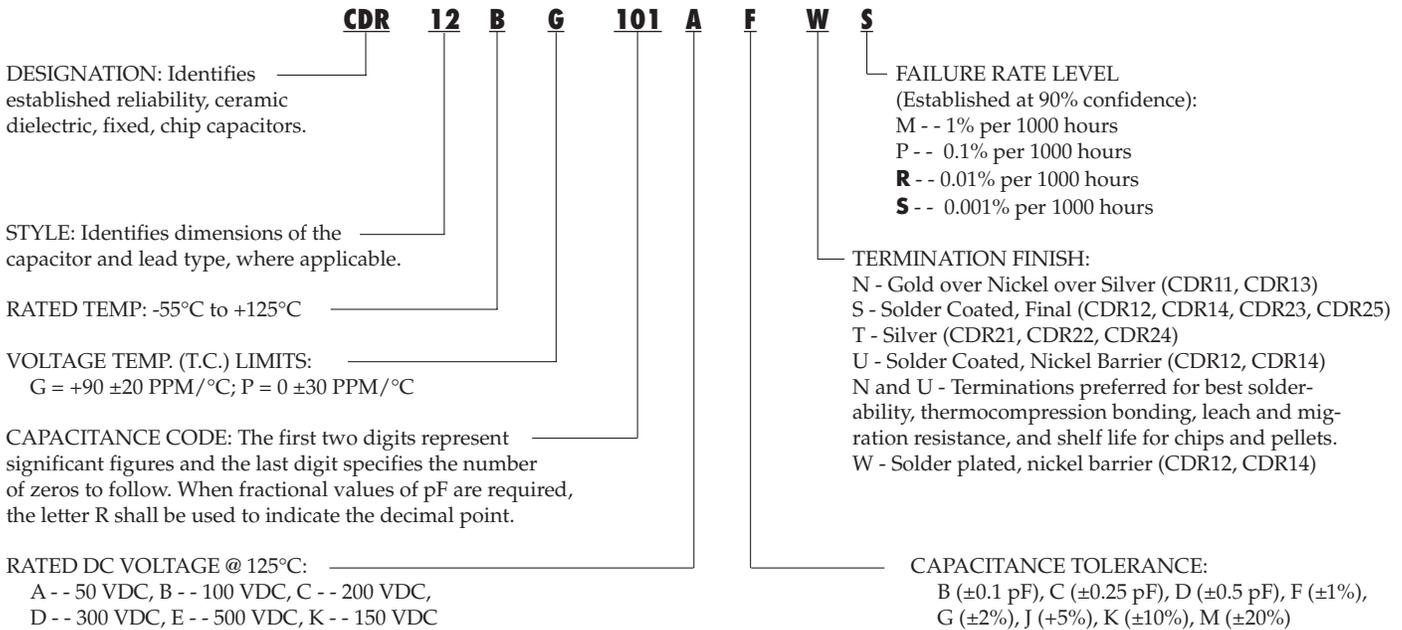


*American Technical Ceramics*

# ATC is a QPL Approved Supplier for MIL-PRF-55681/4 and /5 Products Listed Below

This manual covers the general requirements for established reliability fixed, multilayer, unencapsulated, monolithic porcelain and ceramic dielectric capacitors. These capacitors are intended for use in RF solid state circuitry up to and including 25 gigahertz and cannot be replaced in the field. The porcelain dielectric (Characteristic BG) has a temperature coefficient of  $+90 \pm 20$  PPM/ $^{\circ}$ C over the temperature range of  $-55^{\circ}$ C to  $+125^{\circ}$ C. The ceramic dielectric (Characteristic BP) has a temperature coefficient of  $0 \pm 30$  PPM/ $^{\circ}$ C over the temperature range of  $-55^{\circ}$ C to  $+125^{\circ}$ C. The minimum, self-resonant frequencies of the capacitors are specified. For example, a 1 pF size B is specified as 6 GHz. minimum.

## ATC PART NUMBER CODE:



**TABLE I - STYLES CDR11 AND CDR12 CAPACITOR CHARACTERISTICS**

TYPE DESIGNATION*	CAPACITANCE RANGE (pF)	CAPACITANCE TOLERANCE AVAILABLE	RATED TEMP. AND VOLTAGE-TEMP. LIMITS	RATED DC VOLTAGE
CDR1-B-0R1AB-- to CDR1-B-0R2AB--	0.1 pF to 0.2 pF	B	Characteristic BG ( $+90 \pm 20$ PPM/ $^{\circ}$ C) and Characteristic BP ( $0 \pm 30$ PPM/ $^{\circ}$ C)	150 = K
CDR1-B-0R3A--- to CDR1-B-0R4A---	0.3 pF to 0.4 pF	B, C		
CDR1-B-0R5A--- to CDR1-B-2R2A---**	0.5 pF to 2.2 pF	B, C, D		
CDR1-B-2R4A--- to CDR1-B-6R2A---***	2.4 pF to 6.2 pF	B, C, D		
CDR1-B-6R8A--- to CDR1-B-9R1A---***	6.8 pF to 9.1 pF	B, C, J, K, M		
CDR1-B-100A--- to CDR1-B-101A---***	10 pF to 100 pF	F, G, J, K, M		
CDR1-BP111A--- to CDR1-BP102A---***	110 pF to 1000 pF	F, G, J, K, M	BP	50 = A

**TABLE II - STYLES CDR13 AND CDR14 CAPACITOR CHARACTERISTICS**

TYPE DESIGNATION*	CAPACITANCE RANGE (pF)	CAPACITANCE TOLERANCE AVAILABLE	RATED TEMP. AND VOLTAGE-TEMP. LIMITS	RATED DC VOLTAGE
CDR1-B-0R1EB-- to CDR1-B-0R2EB--	0.1 pF to 0.2 pF	B	Characteristic BG ( $+90 \pm 20$ PPM/ $^{\circ}$ C) and Characteristic BP ( $0 \pm 30$ PPM/ $^{\circ}$ C)	500 = E
CDR1-B-0R3E--- to CDR1-B-0R4E---	0.3 pF to 0.4 pF	B, C		
CDR1-B-0R5E--- to CDR1-B-2R2E---**	0.5 pF to 2.2 pF	B, C, D		
CDR1-B-2R4E--- to CDR1-B-6R2E---***	2.4 pF to 6.2 pF	B, C, D		
CDR1-B-6R8E--- to CDR1-B-9R1E---***	6.8 pF to 9.1 pF	B, C, J, K, M		
CDR1-B-100E--- to CDR1-B-101E---***	10 pF to 100 pF	F, G, J, K, M		
CDR1-B-111D--- to CDR1-B-201D---***	110 pF to 200 pF			
CDR1-B-221C--- to CDR1-B-471C---***	220 pF to 470 pF			
CDR1-B-511B--- to CDR1-B-621B---***	510 pF to 620 pF			
CDR1-B-681A--- to CDR1-B-102A---***	680 pF to 1000 pF			
CDR1-BP112A--- to CDR1-BP512A---***	1100 pF to 5100 pF			
			BP	50 = A

\* Complete type designation will include additional symbols to indicate style, voltage-temperature limits, capacitance tolerance (where applicable), termination finish, and failure rate level.

\*\* Intermediate values in this category are in 0.1 pF steps.

\*\*\* Intermediate values in each category are given by the RETMA 5% Table as follows: 10, 11, 12, 13, 15, 16, 18, 20, 22, 24, 27, 30, 33, 36, 39, 43, 47, 51, 56, 62, 68, 75, 82, 91.

## A M E R I C A N T E C H N I C A L C E R A M I C S

ATC North America  
631-622-4700 sales@atceramics.com

ATC Europe  
+46 8 6800410 sales@atceramics-europe.com

ATC Asia  
+86-755-8366-4318 sales@atceramics-asia.com

**TABLE III - STYLES CDR21 TO CDR25 CAPACITOR CHARACTERISTICS**

TYPE DESIGNATION*	CAPACITANCE RANGE (pF)	CAPACITANCE TOLERANCE AVAILABLE	RATED TEMP. AND VOLTAGE-TEMP. LIMITS	RATED DC VOLTAGE
CDR2-B-0R1EB-- to CDR2-B-0R2EB--	0.1 pF to 0.2 pF	B	Characteristic BG (+90 ±20 PPM/°C) and Characteristic BP (0 ±30 PPM/°C)	500 = E
CDR2-B-0R3E--- to CDR2-B-0R4E---	0.3 pF to 0.4 pF	B, C		
CDR2-B-0R5E--- to CDR2-B-2R2E---**	0.5 pF to 2.2 pF	B, C, D		
CDR2-B-2R4E--- to CDR2-B-6R2E---***	2.4 pF to 6.2 pF	B, C, D		
CDR2-B-6R8E--- to CDR2-B-9R1E---***	6.8 pF to 9.1 pF	B, C, J, K, M		
CDR21-B-100E--- to CDR2-B-101E---***	10 pF to 100 pF	F, G, J, K, M		300 = D
CDR2-B-111D--- to CDR2-B-201D---***	110 pF to 200 pF			200 = C
CDR2-B-221C--- to CDR2-B-471C---***	220 pF to 470 pF			100 = B
CDR2-B-511B--- to CDR2-B-621B---***	510 pF to 620 pF			50 = A
CDR2-B-681A--- to CDR2-B-102A---***	680 pF to 1000 pF			
CDR2-BP112A--- to CDR2-BP512A---***	1100 pF to 5100 pF		BP	

\* Complete type designation will include additional symbols to indicate style, voltage-temperature limits, capacitance tolerance (where applicable), termination finish (T for styles CDR21, CDR22 and CDR24, and S for styles CDR23 and CDR25), and failure rate level. **Please note:** Leaded devices CDR 21 through CDR 25 are available to the R Failure Rate Level only.

\*\* Intermediate values in this category are in 0.1 pF steps.

\*\*\* Intermediate values in each category are given by the RETMA 5% Table as follows: 10, 11, 12, 13, 15, 16, 18, 20, 22, 24, 27, 30, 33, 36, 39, 43, 47, 51, 56, 62, 68, 75, 82, 91.

**MECHANICAL CONFIGURATIONS**

MIL-PRF-55681 STYLES	CASE SIZE	TYPE	OUTLINES	BODY DIMENSIONS			LEAD AND TERMINATION DIMENSIONS AND MATERIALS					
				LENGTH	WIDTH	THICKNESS	LENGTH	WIDTH	THICKNESS			
CDR 11	A	Chip CA		.055 ±.015 (1.4 ±0.38)		.020/.057 (0.51/1.45)	N - Gold Over Nickel Over Silver					
CDR 13	B	Chip CA		.110 ±.020 (2.79 ±0.51)		.030/.102 (0.76/2.59)	N is ATC's UNI-TERM®					
CDR 12	A	Pellet P		.055 ±.025 (1.4 ±0.63)	.055 ±.015 (1.4 ±0.38)	.020/.057 (0.51/1.45)	S - Solder Coated, Final U - Solder Coated, Nickel Barrier					
CDR 14	B	Pellet P		.110 ±.035 - .020 (2.79 +0.89 -0.51)	.110 ±.020 (2.79 ±0.51)	.030/.102 (0.76/2.59)	U is ATC's BARRIER/CAP®					
CDR 12	A	Solder Plate W		.055 ±.015 (1.4 ±0.38)		.020/.057 (0.51/1.45)	W - Nickel Barrier, Solder Plate.					
CDR 14	B	Solder Plate W		.110 ±.020 (2.79 ±0.51)		.030/.102 (0.76/2.59)						
CDR 21	B	Microstrip MS		.135 ±.015 (3.43 ±0.38)	.110 ±.015 (2.79 ±0.38)	.060/.100 (1.52/2.54)	LENGTH	WIDTH	THICKNESS			
CDR 22	B	Axial Ribbon AR					.250 (6.35) min.	.093 ±.005 ±0.13	.004 ±.001 ±0.03	(Termination T - Silver)		
CDR 24	B	Radial Ribbon RR										
CDR 23	B	Radial Wire RW										
CDR 25	B	Axial Wire AW										

All dimensions are in inches, except those in parentheses which are in millimeters. All leads and ribbon are silver and are attached with high temperature solder.

STYLE	EQUIV. ATC PART NO. CHARACTERISTICS		STYLE	EQUIV. ATC PART NO. CHARACTERISTICS	
	BG	BP		BG	BP
CDR11	100A	700A	CDR21	100B ----- MS	700B ----- MS
CDR12	100A	700A	CDR22	100B ----- AR	700B ----- AR
CDR13	100B	700B	CDR23	100B ----- RW	700B ----- RW
CDR14	100B	700B	CDR24	100B ----- RR	700B ----- RR
			CDR25	100B ----- AW	700B ----- AW

**A M E R I C A N T E C H N I C A L C E R A M I C S**

ATC North America 631-622-4700 sales@atceramics.com      ATC Europe +46 8 6800410 sales@atceramics-europe.com      ATC Asia +86-755-8366-4318 sales@atceramics-asia.com

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**A M E R I C A N   T E C H N I C A L   C E R A M I C S**

**ATC North America**  
631-622-4700  
[sales@atceramics.com](mailto:sales@atceramics.com)

**ATC Europe**  
+46 8 6800410  
[sales@atceramics-europe.com](mailto:sales@atceramics-europe.com)

**ATC Asia**  
+86-755-8366-4318  
[sales@atceramics-asia.com](mailto:sales@atceramics-asia.com)

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