ATC RF/Microwave Capacitors for Military and Aerospace Applications

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ATC RF/Microwave Capacitors QPL Approved to MIL-PRF-55681/4 and 5

ATC PART NUMBER CODE:

CDR 12 B G 101 A F W S

DESIGNATION: Identifies established reliability, ceramic dielectric, fixed, chip capacitors.

STYLE: Identifies dimensions of the capacitor and lead type, where applicable.

RATED TEMP: -55°C to +125°C

VOLTAGE TEMP. (TCC) LIMITS:
G = +90 ±20 PPM/°C; P = 0 ±30 PPM/°C

CAPACITANCE CODE: The first two digits represent significant figures and the last digit specifies the number of zeros to follow. When fractional values of pF are required, the letter R shall be used to indicate the decimal point.

RATED DC VOLTAGE @ 125°C:
A - - 50 VDC, B - - 100 VDC, C - - 200 VDC,
D - - 300 VDC, E - - 500 VDC, K - - 150 VDC

CAPACITANCE TOLERANCE:
B (±0.1 pF), C (±0.25 pF), D (±0.5 pF), F (±1%),
G (±2%), J (+5%), K (±10%), M (±20%)

TERMINATION FINISH:
N - Gold over Nickel over Silver (CDR11, CDR13)
S - Solder Coated, Final (CDR12, CDR14, CDR23, CDR25)
T - Silver (CDR21, CDR22, CDR24)
U - Solder Coated, Nickel Barrier (CDR12, CDR14)
N and U - Terminations preferred for best solderability, thermocompression bonding, leach and migration resistance, and shelf life for chips and pellets.
W - Solder plated, nickel barrier (CDR12, CDR14, not for new designs)
Z - Solder plated, nickel barrier (CDR12, CDR14)

FAILURE RATE LEVEL
(Established at 90% confidence):
M - - 1% per 1000 hours
P - - 0.1% per 1000 hours
R - - 0.01% per 1000 hours
S - - 0.001% per 1000 hours

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-0R1KB-- to CDR1-B-0R2---B--	0.1 pF to 0.2 pF	B	Characteristic BG (+90 ±20 PPM/°C) and Characteristic BP (0 ±30 PPM/°C)	A = 50 K = 150
CDR1-B-0R3K--- to CDR1-B-0R4---	0.3 pF to 0.4 pF	B, C		
CDR1-B-0R5K--- to CDR1-B-2R2---**	0.5 pF to 2.2 pF	B, C, D		
CDR1-B-2R4K--- to CDR1-B-6R2---***	2.4 pF to 6.2 pF	B, C, D		
CDR1-B-6R8K--- to CDR1-B-9R1---***	6.8 pF to 9.1 pF	B, C, J, K, M		
CDR1-B-100K--- to CDR1-B-101K---***	10 pF to 100 pF	F, G, J, K, M		
CDR1-BP111K--- to CDR1-BP621---***	110 pF to 620 pF	F, G, J, K, M	BP	A = 50 B = 100
CDR1-BP681A--- to CDR1-BP102---***	680 pF to 1000 pF	F, G, J, K, M		

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-0R2---B--	0.1 pF to 0.2 pF	B	Characteristic BG (+90 ±20 PPM/°C) and Characteristic BP (0 ±30 PPM/°C)	C = 200 E = 500
CDR1-B-0R3E--- to CDR1-B-0R4---	0.3 pF to 0.4 pF	B, C		
CDR1-B--0R5E--- to CDR1-B-2R2---**	0.5 pF to 2.2 pF	B, C, D		
CDR1-B-2R4E--- to CDR1-B-6R2---***	2.4 pF to 6.2 pF	B, C, D		
CDR1-B-6R8E--- to CDR1-B-9R1---***	6.8 pF to 9.1 pF	B, C, J, K, M		
CDR1-B-100E--- to CDR1-B-101---***	10 pF to 100 pF	F, G, J, K, M		C = 200 D = 300
CDR1-B-111D--- to CDR1-B-201---***	110 pF to 200 pF			C = 200
CDR1-B-221C--- to CDR1-B-471C---***	220 pF to 470 pF			A = 50 B = 100
CDR1-B-511B--- to CDR1-B-621---***	510 pF to 620 pF			A = 50
CDR1-B-681A--- to CDR1-B-102A---***	680 pF to 1000 pF			
CDR1-BP112A--- to CDR1-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, 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.

TABLE III - STYLES CDR21 TO CDR25 CAPACITOR CHARACTERISTICS

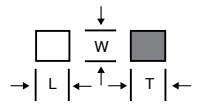
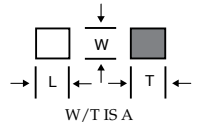
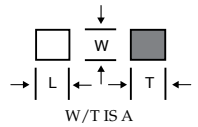
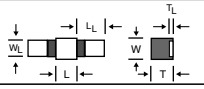
TYPE DESIGNATION*	CAPACITANCE RANGE (pF)	CAPACITANCE TOLERANCE AVAILABLE	RATED TEMP. AND VOLTAGE-TEMP. LIMITS	RATED DC VOLTAGE
CDR2-B-0R1EB-- to CDR2-B-0R2EB--	0.1 pF to 0.2 pF	B	Characteristic BG (+90 ±20 PPM/°C) and Characteristic BP (0 ±30 PPM/°C)	500 = E
CDR2-B-0R3E--- to CDR2-B-0R4E---	0.3 pF to 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 LENGTH	BODY DIMENSIONS WIDTH	BODY DIMENSIONS THICKNESS	LEAD AND TERMINATION DIMENSIONS AND MATERIALS
CDR 11	A	Chip CA	 W/T IS A TERMINATION SURFACE	.055 ±.015 (1.4 ±0.38)		.020/.057 (0.51/1.45)	N - Gold Over Nickel Over Silver N is ATC's UNI-TERM®
CDR 13	B	Chip CA		.110 ±.020 (2.79 ±0.51)		.030/.102 (0.76/2.59)	
CDR 12	A	Pellet P	 W/T IS A TERMINATION SURFACE	.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 U is ATC's BARRIER//CAP®
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)	
CDR 12	A	Solder Plate W	 W/T IS A TERMINATION SURFACE	.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: .250 (6.35) min.; WIDTH: .093 ±.005 (2.36 ±0.13); THICKNESS: .004 ±.001 (0.10 ±0.03) (Termination T - Silver)
CDR 22	B	Axial Ribbon AR					
CDR 24	B	Radial Ribbon RR					
CDR 23	B	Radial Wire RW					.50 (12.7) min.; #26 AWG .016 (.375) dia. nom. (Termination S - Solder Coated)
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 BG	BP
CDR11	100A	700A
CDR12	100A	700A
CDR13	100B	700B
CDR14	100B	700B

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

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