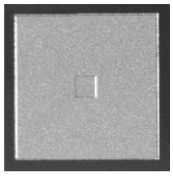
Thin Film Single Value Chip and Wire Capacitors



Product may not be to scale

The NC series of thin film capacitors has the advantage of increased performance and smaller size when compared with its thick film counterparts. These chips are available in sizes down to 20 mil square and in capacitances up to 1000 pF.

Parts require epoxy or eutectic die attach to substrate and one wire bond.

These chips are manufactured using Vishay Electro-Films (EFI) sophisticated thin film equipment and manufacturing technology. The NC's are 100 % electrically tested and visually inspected to MIL-STD-883.

FEATURES

- Wire bondable
- Small size: 0.020 inches square to 0.060 inches square
- Substrate: silicon with gold backing
- Dielectric: silicon dioxide / silicon nitride
- Capacitance range: 0.5 pF to 1000 pF
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free

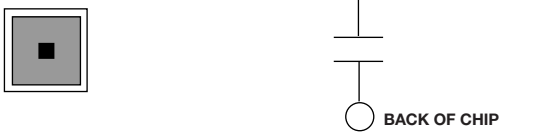
RoHS COMPLIANT

HALOGEN FREE GREEN (5-2008)

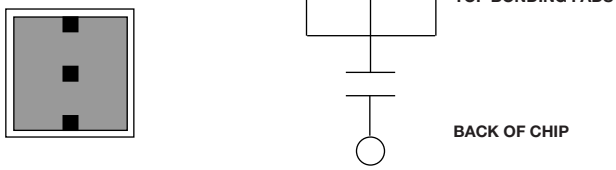
APPLICATIONS

The NC series of capacitor chips are designed for assembly in hybrid circuits using conventional wire-bonding techniques. They provide excellent stability and performance, and their small size gives the hybrid designer greater layout flexibility. They are available as MNOS or MOS capacitors. The MOS version is to be preferred when low dielectric absorption is required.

ELECTRICAL SCHEMATIC NCAA, NCBB, NCCC



ELECTRICAL SCHEMATIC NCDD, NCEE



WV (DC) VALUES AND TOLERANCES

CAPACITOR MODEL	NCAA	NCBB	NCCC	NCDD	NCEE	UNIT
Case Size	0202	0303	0404	0505	0606	
Capacitance Values	0.5 to 51	33 to 100	56 to 220	150 to 510	360 to 1000	pF
Tolerance	± 2.5, ± 5, ± 10, ± 20, ± 25	± 2.5, ± 5, ± 10, ± 20	± 2.5, ± 5, ± 10, ± 20	± 2.5, ± 5, ± 10, ± 20	± 2.5, ± 5, ± 10, ± 20	%
DC Working Voltage	200	150	190	140	See section "DC Working Voltages and Tolerances"	V

STANDARD ELECTRICAL SPECIFICATIONS

PARAMETER	VALUE	UNIT
Capacitance Range	0.5 to 1000	pF
Maximum Working Voltage	200	V
Peak Voltage at +25 °C	1.5 x working voltage	
Dissipation Factor, 1 kHz, 1 V_{RMS}, +25 °C	0.05 MNOS 0.1 MOS	%
Q at 1 mHz, 50 mV_{RMS}, +25 °C	1000 min.	
TCC, -55 °C to +150 °C	+45 ± 25 MNOS +15 ± 25 MOS	ppm/°C
Insulation Resistance at Working Voltage, +25 °C	10^9 min.	Ω
Operating Temperature Range	-55 to +125	°C
Thermal Shock	± 0.25 + 0.25 pF max. ΔC/C	%
Moisture Resistance, MIL-STD-202, Method 106	± 1.0 + 0.25 pF max. ΔC/C	%
Short Time Overload, +25 °C, 5 s, 1.5 x Working Voltage	± 0.25 + 0.25 pF max.	%
High Temperature Exposure, 100 h at 150 °C Ambient	± 0.25 + 0.25 pF max. ΔC/C	%
Life, MIL-STD-202, Method 108 Condition D, +125 °C Ambient, 1000 h at Working Voltage	± 0.25 + 0.25 pF max. ΔC/C	%

For technical questions, contact: efi@vishay.com

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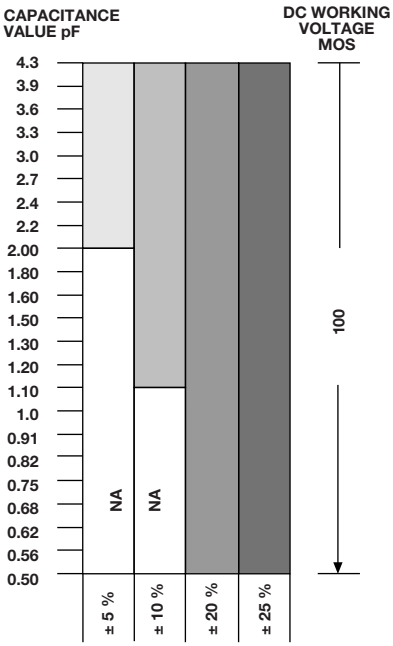
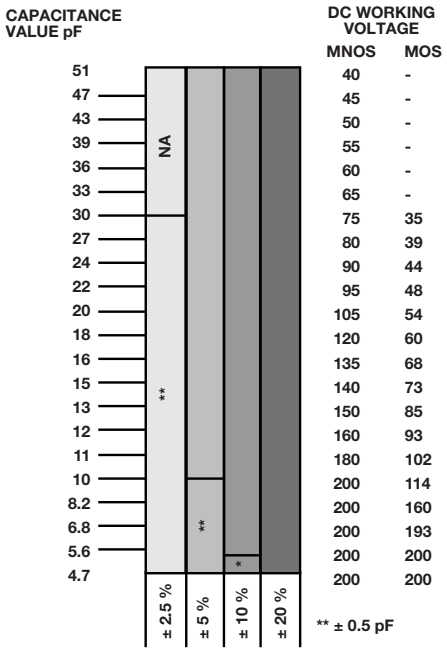
DC WORKING VOLTAGES VALUES AND TOLERANCES

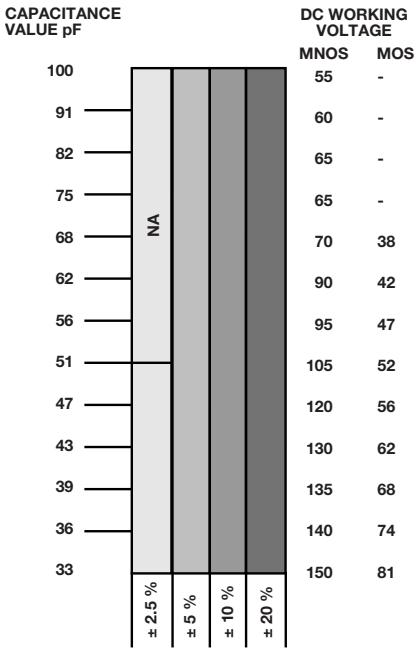
NCAA 0.020 inches square



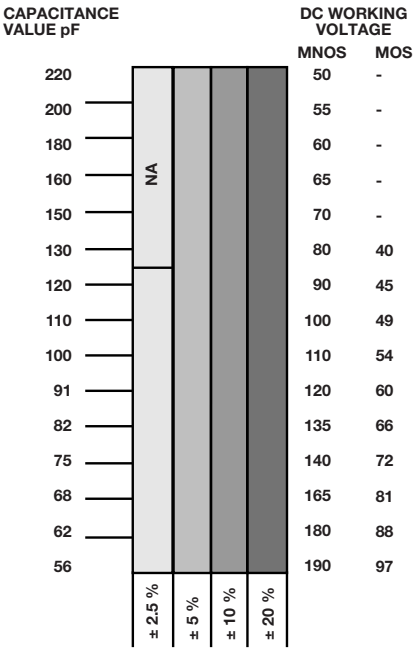


NA = NOT AVAILABLE

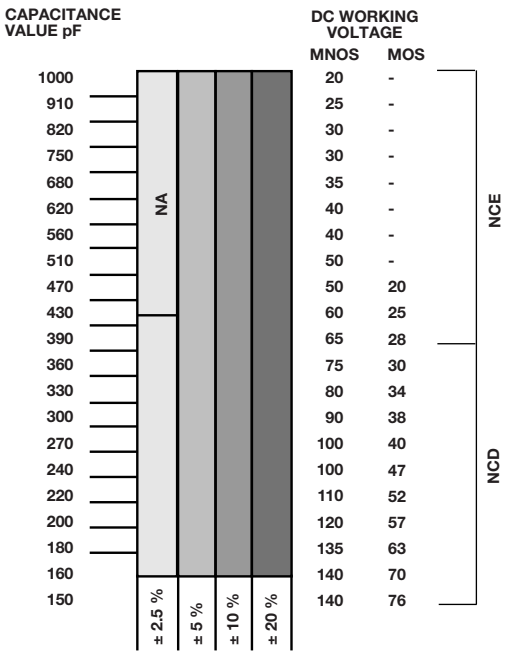
NCBB 0.030 inches square



NCCC 0.040 inches square



NCEE 0.060 inches square
NCDD 0.055 inches square



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DIMENSIONS

0.5 pF to 1.3 pF | **1.4 pF to 3.9 pF** | **4 pF to 9.1 pF** | **10 pF to 51 pF**

NCAA
0.020 ± 0.003 inches square

33 pF to 100 pF | **56 pF to 220 pF** | **150 pF to 510 pF** | **360 pF to 1000 pF**

NCBB
0.030 ± 0.003 inches square

NCCC
0.040 ± 0.003 inches square

NCDD
0.055 ± 0.003 inches square

NCEE
0.060 ± 0.003 inches square

Note

- Due to VEFI standard trim-etch process, exposed dielectric may be observed. This feature shall not be considered metal mis-alignment and is deemed acceptable

MECHANICAL SPECIFICATIONS

PARAMETER	VALUE
Chip Size	Per diagrams
Chip Thickness	0.010" ± 0.002" (0.25 mm ± 0.05 mm)
Chip Substrate Material	Semiconductor silicon
Dielectric	Silicon dioxide/silicon nitride
Bond Pad	0.005" x 0.005" min., 10 kÅ aluminum
Backing	3 kÅ min. gold

Options: gold bond pads 15 kÅ; lower profile version is available, consult applications engineer

GLOBAL PART NUMBER INFORMATION

SAP Part Number: NCAA4700CKMAHWS
SAP Description: NCAA 4.7 pF 10 % MOS Al H WS

NCEE10000KNGKWS
NCEE 1000 pF 10 % MNOS Au K WS

N	C	A	A	4	7	0	0	C	K	M	A	H	W	S

MODEL	CAPACITANCE (pF)	CAPACITANCE MULTIPLIER CODE	TOLERANCE CODE	DIELECTRIC	TERMINATION	VISUAL CLASS	PACKAGING CODE
NCAA **NCBB** **NCCC** **NCDD** **NCEE**	First 4 digits are significant figures of capacitance	**D** = 0.0001 **C** = 0.001 **B** = 0.01 **A** = 0.1 **0** = 1	**D** = ± 0.5 pF **H** = 2.5 % **J** = 5.0 % **K** = 10 % **M** = 20 %	**M** = MOS **N** = MNOS	**G** = Au **A** = Al	**H** = class H **K** = class K	**WS** = waffle pack 100 min., 1 mult.

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