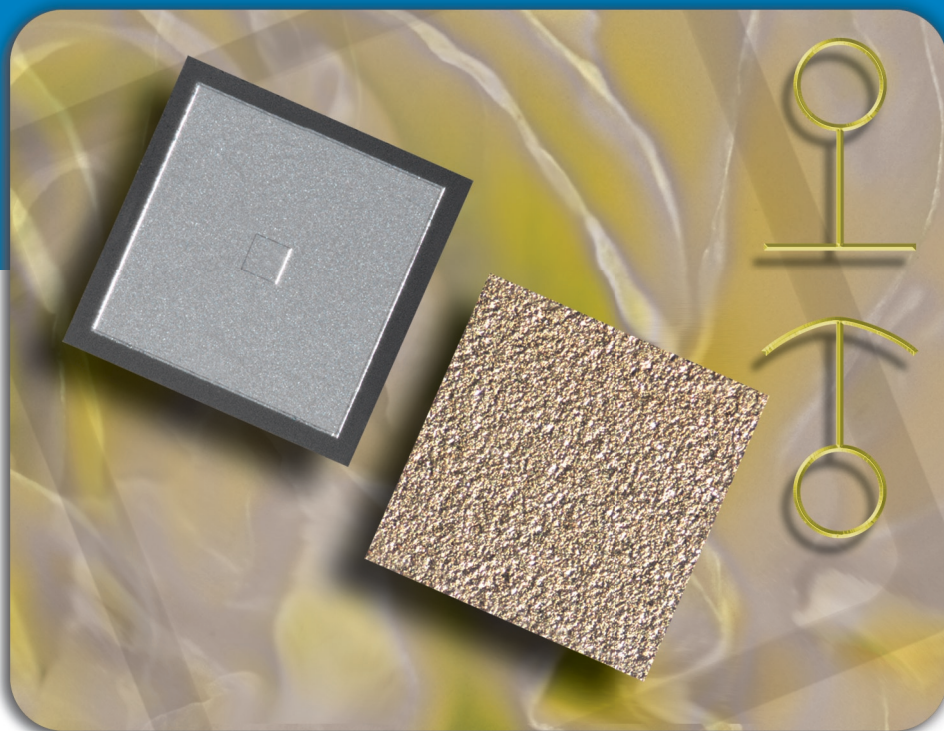




CAPACITORS – NC Series



Thin Film Single-Value Chip and Wire Capacitors

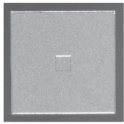
FEATURES

- **Die sizes:** 0.020 x 0.020 to 0.060 x 0.060
- **Capacitance values:** 0.50 pF to 1000 pF
- **Tightest tolerance:** 2.5%
- **Dielectrics:** Silicon dioxide (MOS) or silicon dioxide/silicon nitride (MNOS), depending on the performance parameters required
- Silicon dioxide/silicon nitride combination provides maximum value per size; Silicon dioxide alone provides the lowest dielectric absorption for critical microwave and high-frequency applications
- NCA, NCB, and NCC versions have a single top contact. NCD and NCE versions have three parallel, connected top contacts for bonding convenience

APPLICATIONS

- Hybrid applications where epoxy attach and one wire bond are required, RFI and EMI filters, bypass capacitors, CMOS digital filters, low pass filters

Thin Film Single Value Chip and Wire Capacitors



Product may not be to scale

FEATURES

- Small size: 0.020 to 0.060 inches square
- Substrate: silicon with gold backing
- Dielectric: silicon dioxide/silicon nitride
- Capacitance range: 0.5pF to 1000pF

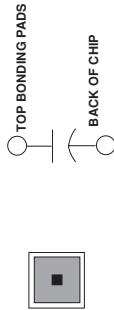
The NC series of thin film capacitors has the advantage of increased performance and smaller size when compared with its thick film counterparts. These chips are available in sizes down to 20 mil square and in capacitances up to 1000pF. Parts require epoxy or eutectic die attach to substrate and one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

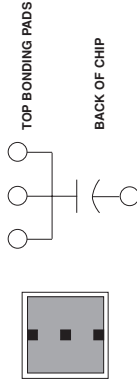
APPLICATIONS

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 NCA/NCB/NCC



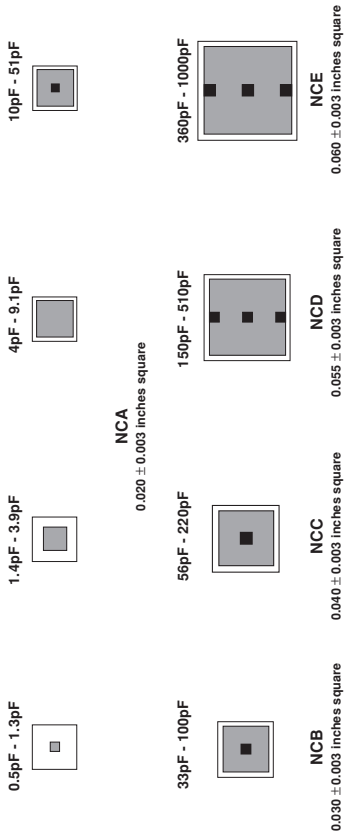
ELECTRICAL SCHEMATIC NCD/NCE



STANDARD ELECTRICAL SPECIFICATIONS

PARAMETER	
Peak voltage at + 25°C	1.5 x working voltage
Dissipation factor	0.05% MNOS 0.1% MOS
Q at 1kHz, 1V _{rms} , + 25°C	1000 minimum
TCC, - 55°C to + 150°C	+ 45 ± 25ppm/°C MNOS + 15 ± 25ppm/°C MOS
Insulation resistance at working voltage, + 25°C	10 ⁹ minimum
Operating temperature range	- 55°C to + 125°C
Thermal shock	± 0.25% + 0.25pF maximum ΔC/C
Moisture resistance, MIL-STD-202 Method 106	± 1.0% + 0.25pF maximum ΔC/C ± 0.25% + 0.25pF maximum ΔC/C
Short time overload, + 25°C, 5 seconds, 1.5 x working voltage	± 0.25% + 0.25pF maximum ΔC/C
High temperature exposure 100 hours at 150°C ambient	± 0.25% + 0.25pF maximum ΔC/C
Life, MIL-STD-202, Method 108 Condition D, + 125°C ambient, 100 hours at working voltage	± 0.25% + 0.25pF maximum ΔC/C

DIMENSIONS



MECHANICAL SPECIFICATIONS in inches

PARAMETER	
Chip size	Per Diagrams
Chip thickness	0.010 ± 0.002 (0.25 ± 0.05mm)
Chip substrate material	Semiconductor silicon
Dielectric	Silicon dioxide/Silicon nitride
Bond pad	0.005 x 0.005 minimum, 10kÅ aluminum
Backing	3kÅ minimum gold

OPTIONS: Gold bond pads 15kÅ

Lower profile version is available. Consult Applications Engineer

ORDERING INFORMATION

Example: 100% visualised, 2pF, ± 5%, 20 mil MOS capacitor, Aluminum Pads, Class H

P/N:	W	INSPECTION /PACKAGING	NCA PRODUCT FAMILY	017 PROCESS CODE	2000 CAPACITANCE VALUE (pF)	C MULTIPLIER CODE	J TOLERANCE CODE
	W = 100% visually inspected parts in matrix tray per MIL-STD-883		NCA	017 = MOS Aluminum 000 = MNOS Aluminum	Use first 4 significant digits of capacitance	C = 0.001 B = 0.01 A = 0.1 0 = 1	D = ± 0.5pF H = ± 2.5%* J = ± 5.0% K = ± 10% M = ± 20% L = ± 25% N = ± 50% * MOS only

Revision 28-Mar-03

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