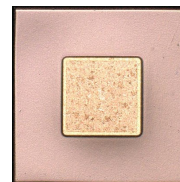


Features

- High Working Voltage: 200 V
- Wide Range of Capacitance: 2.7 - 2700 pF
- Excellent Stability
- RoHS* Compliant

Applications

- MACOM KV CAPS™ are suitable for use in resonant circuits, as DC blocks and as RF bypass capacitors.



Description

The MACOM KV CAPS™ Si high voltage capacitors feature very high working voltage ratings, very low loss and excellent stability by virtue of their novel internal construction and very high quality dielectric layers. These capacitors are available as unpackaged chips. The chips have gold bonding surfaces on both terminals to enable excellent bonding and minimum contact resistance.

The capacitance tolerance is $\pm 5\%$ of nominal value. Contact the factory for other tolerance values.

These capacitors have high insulation resistance, low dissipation factor and low temperature coefficient, as well as excellent long term stability.

Electrical Specifications:

Working Voltage = 200 V @ T_A = 25 °C

Part Number	Capacitance (pF)	Package Style
MKVC-2A02R7	2.7	1438
MKVC-2A03R0	3.0	1438
MKVC-2A03R3	3.3	1438
MKVC-2A03R6	3.6	1438
MKVC-2A03R9	3.9	1438
MKVC-2A04R3	4.3	1438
MKVC-2A04R7	4.7	1438
MKVC-2A05R1	5.1	1438
MKVC-2A05R6	5.6	1438
MKVC-2A06R2	6.2	1438
MKVC-2A06R8	6.8	1438
MKVC-2A07R5	7.5	1438
MKVC-2A08R2	8.2	1438

Electrical Specifications: Working Voltage = 200 V @ T_A = 25 °C

Part Number	Capacitance (pF)	Package Style
MKVC-2A09R1	9.1	1439
MKVC-2A10R0	10	1439
MKVC-2A11R0	11	1439
MKVC-2A12R0	12	1439
MKVC-2A13R0	13	1439
MKVC-2A15R0	15	1439
MKVC-2A16R0	16	1439
MKVC-2A18R0	18	1439
MKVC-2A20R0	20	1439
MKVC-2A22R0	22	1439
MKVC-2A24R0	24	1439
MKVC-2A27R0	27	1439
MKVC-2A30R0	30	1439
MKVC-2A33R0	33	1439
MKVC-2A36R0	36	1439
MKVC-2A39R0	39	1439
MKVC-2A43R0	43	1439
MKVC-2A47R0	47	1439
MKVC-2A51R0	51	1439
MKVC-2A56R0	56	1439

Part Number	Capacitance (pF)	Package Style
MKVC-2A62R0	62	1440
MKVC-2A68R0	68	1440
MKVC-2A75R0	75	1440
MKVC-2A82R0	82	1440
MKVC-2A91R0	91	1440
MKVC-2A0100	100	1440
MKVC-2A0110	110	1440
MKVC-2A0120	120	1440
MKVC-2A0130	130	1440
MKVC-2A0150	150	1440
MKVC-2A0160	160	1440
MKVC-2A0180	180	1440
MKVC-2A0200	200	1440
MKVC-2A0220	220	1440
MKVC-2A0240	240	1440

Part Number	Capacitance (pF)	Package Style
MKVC-2A0270	270	1441
MKVC-2A0300	300	1441
MKVC-2A0330	330	1441
MKVC-2A0360	360	1441
MKVC-2A0390	390	1441
MKVC-2A0430	430	1441
MKVC-2A0470	470	1441

Electrical Specifications: Working Voltage = 200 V @ T_A = 25 °C

Part Number	Capacitance (pF)	Package Style
MKVC-2A0510	510	1442
MKVC-2A0560	560	1442
MKVC-2A0620	620	1442
MKVC-2A0680	680	1442
MKVC-2A0750	750	1442
MKVC-2A0820	820	1442
MKVC-2A0910	910	1442

Part Number	Capacitance (pF)	Package Style
MKVC-2A1800	1800	1444
MKVC-2A2000	2000	1444
MKVC-2A2200	2200	1444
MKVC-2A2400	2400	1444
MKVC-2A2700	2700	1444

Part Number	Capacitance (pF)	Package Style
MKVC-2A1000	1000	1443
MKVC-2A1100	1100	1443
MKVC-2A1200	1200	1443
MKVC-2A1300	1300	1443
MKVC-2A1500	1500	1443
MKVC-2A1600	1600	1443

Absolute Maximum Ratings^{3,4}

Parameter	Absolute Maximum
Operating Temperature	-55°C to +175°C
Storage Temperature	-65°C to +200°C

- Exceeding any one or more of these limits may cause permanent damage to this device.
- MACOM does not recommend sustained operation near these survivability limits.

Assembly Instructions

MACOM KV CAPS™ may be attached to a circuit substrate using solder or conductive epoxy.

Solder Die Attach

Solder die attach may be accomplished using a eutectic solder, such as Au(80)/Sn(20), leaded solders such as Sn63Pb37 or with any of several RoHS-compatible solders such as Sn96.53Ag0.5Cu(SAC305), etc. For leaded or RoHS solder pastes it is recommended that a no-clean solder paste be used to prevent trapped fluxes which cannot be cleaned, as recommended by IPC-7093.

Conductive Epoxy Die Attach

MACOM recommends that the surface preparation and curing profiles provided by the manufacturer of the conductive epoxy should be followed. The typical epoxy bondline thickness is 0.0005 to 0.001 inches (12.5 to 25 µm). The curing temperature shall not exceed 350°C.

Refer to MACOM application note M541 for more information.

Handling Procedures

Please observe the following precautions to avoid damage:

Static Sensitivity

These electronic devices are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.

Radiation Hardness

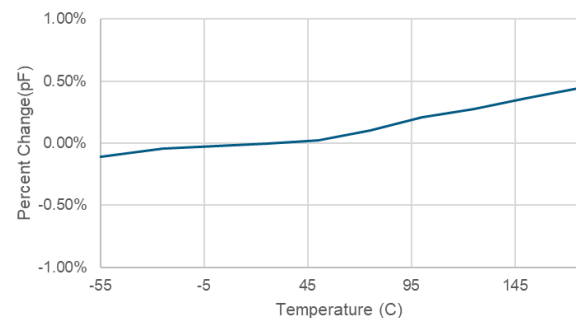
MACOM KV CAPS™ have been qualified to survive 300 krad(Si) total dose irradiation per MIL-STD-750 Method 1019.5, condition A.

Wire/Ribbon Bonding

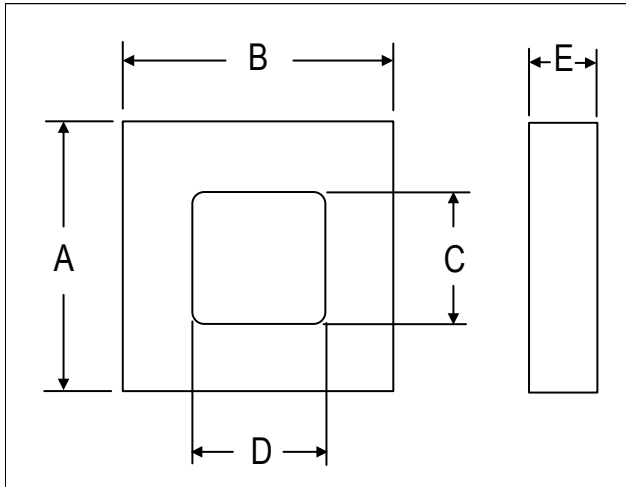
While the construction of the MACOM KV CAPS™ is very robust, it is recommended that wires or ribbons should be attached near to the center of the top contact to prevent mechanical damage, such as micro cracking, to the die which could degrade the working voltage capability of the die. Thermo-compression or ultrasonic bonding can be used. For most capacitance values, the top contact of the capacitor is sufficiently large to accept the attachment of multiple wires or ribbons. The top contact of the capacitor has a gold plating. Prior to wire or ribbon bonding, plasma cleaning may be required to remove any organic contaminants that could affect the quality of the bond interface.

Typical Performance Curves

Percent Change vs. Temperature



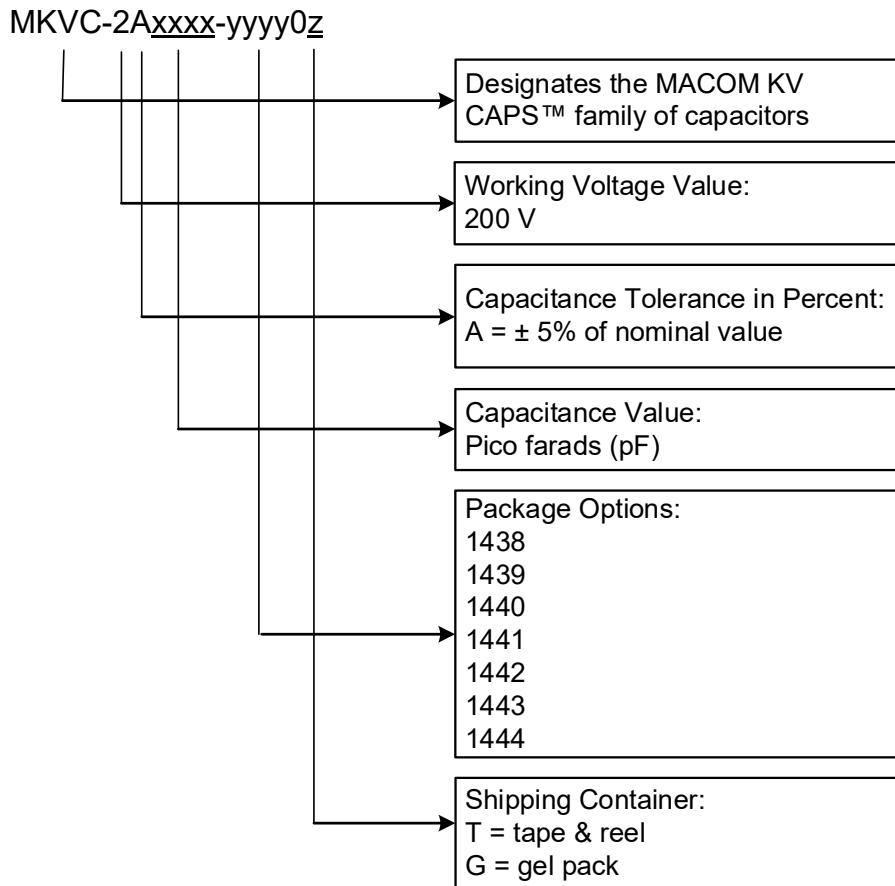
Outline Drawing (ODS 1438 - ODS 1444)



Dimensions (mils)

ODS#	A & B	C & D	E
1438	15	6	10
1439	21	12	10
1440	32	22	10
1441	40	30	10
1442	50	40	10
1443	64	54	10
1444	100	90	10

Ordering Information:



Example: MKVC-2A09R1-14390G specifies a particular part from the MACOM KV CAPS™ Series

- whose working voltage is 200 V
- whose capacitance tolerance is ± 5%,
- whose capacitance is 9.1 pF,
- whose die outline is ODS-1439
- which is shipped in a gel pack.

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