



# RADIAL-LEADED MULTILAYER CERAMIC CAPACITORS

## K...H Series

High Operating Temperature, Radial-Leaded Multilayer Ceramic Capacitors for Automotive Applications, 50 V<sub>DC</sub>, 100 V<sub>DC</sub>, 200 V<sub>DC</sub>



### KEY BENEFITS

- AEC-Q200 qualified with PPAP available
- High reliability MLCC insert with wet build process and noble metal electrodes
- High operating temperature up to 200 °C
- Temperature characteristics:  
C0G ( $\pm 30$  ppm/K within -55 °C to +175 °C), and  
X0U (+22 % / -56 % within -55 °C to +175 °C)
- High capacitance with small size
- Crimp and straight lead styles

### APPLICATIONS

#### EMI filtering in:

- Automotive sensors (Hall sensors, exhaust gas sensors...)
- Cable harnesses
- Automotive DC motors / actuators (throttle valve motor, brake systems, turbo charger, air management)

### RESOURCES

- Datasheet: K...H Series - [www.vishay.com/doc?45211](http://www.vishay.com/doc?45211)
- For technical questions, contact [cmll@vishay.com](mailto:cmll@vishay.com)
- Material categorization: for definitions, please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RADIAL-LEADED MULTILAYER CERAMIC CAPACITORS**

K...H Series

**High Operating Temperature, Radial-Leaded Multilayer Ceramic Capacitors for Automotive Applications, 50 V<sub>DC</sub>, 100 V<sub>DC</sub>, 200 V<sub>DC</sub>****FEATURES**

- Registered trademark HOTcap®
- AEC-Q200 qualified with PPAP available
- High reliability MLCC insert with wet build process
- High operating temperature up to 200 °C <sup>(1)</sup>
- Available in class 1 and class 2
- High capacitance with small size
- Radial mounting style
- Crimp and straight leadstyles
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

AUTOMOTIVE  
GRADERoHS  
COMPLIANT  
HALOGEN  
FREE**APPLICATIONS**

- Automotive applications up to 200 °C <sup>(1)</sup>

**Note**<sup>(1)</sup> 200 °C for max. 500 hours and 175 °C unlimited time**QUICK REFERENCE DATA**

DESCRIPTION	VALUE					
	1			2		
Ceramic Class	C0G			X0U		
Ceramic Dielectric	C0G			X0U		
Voltage (V <sub>DC</sub> )	50	100	200	50	100	200
Min. Capacitance (pF)	100	100	100	10 000	10 000	10 000
Max. Capacitance (pF)	12 000	12 000	8200	1 000 000	470 000	180 000
Mounting	Radial					

**MARKING**

Marking indicates capacitance value and tolerance in accordance with "EIA 198".

**OPERATING TEMPERATURE RANGE**

-55 °C to +175 °C unlimited time  
-55 °C to +200 °C for max. 500 hours  
Voltage derating above 150 °C

**TEMPERATURE CHARACTERISTICS**

Class 1: C0G (± 30 ppm/K within -55 °C to +200 °C)  
Class 2: X0U also fulfilling X7R and X9V criteria  
X7R (+15 % / -15 % within -55 °C to +125 °C)  
X0U (+22 % / -56 % within -55 °C to +175 °C)  
X9V (+22 % / -82 % within -55 °C to +200 °C)

**SECTIONAL SPECIFICATIONS**

Climatic category (acc. to EN 60058-1)  
55 / 125 / 21

**APPROVALS**

EIA 198  
IEC 60384-8  
IEC 60384-9  
AEC-Q200

**DISSIPATION FACTOR**

Class 1: 0.1 % max.  
(C ≤ 1000 pF, at 1 MHz, 1 V; C > 1000 pF, at 1 kHz, 1 V)  
Class 2: 2.5 % max. (at 1 kHz, 1 V)

**DESIGN**

- The capacitors consist of a high reliability MLCC
- Leads wires are 0.5 mm or 0.6 mm and are made of 100 % tinned copper clad steel wire
- The capacitors may be supplied with straight or kinked leads having a lead spacing of 2.5 mm and 5.0 mm
- Coating is made of flame retardant epoxy resin in accordance with UL 94 V-0

**CAPACITANCE RANGE**

100 pF to 1 μF

**TOLERANCE ON CAPACITANCE**

± 5 %, ± 10 %, ± 20 %

**RATED VOLTAGE**50 V<sub>DC</sub>, 100 V<sub>DC</sub>, 200 V<sub>DC</sub>**TEST VOLTAGE**

- 50 V<sub>DC</sub> and 100 V<sub>DC</sub>: 250 % of rated voltage
- 200 V<sub>DC</sub>: 200 % of rated voltage

**INSULATION RESISTANCE**

- 50 V<sub>DC</sub>, 100 V<sub>DC</sub>: 100 GΩ or 1000 ΩF whichever is less at rated voltage within 2 min of charging
- 200 V<sub>DC</sub>: 10 GΩ or 100 ΩF whichever is less at rated voltage within 2 min of charging

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