

## Voltage protection devices

### Compact high reliability chip varistors for automotive

- 75 percent smaller than existing components with comparable performance
- High operating temperatures up to 150 °C
- Qualified to AEC-Q200

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TDK Corporation announced the expansion of its lineup of chip varistors for automotive applications. The AVRH series offers a maximum operating voltage of 19 V to 70 V and a capacitance ranging from 4.7 to 50 pF. The miniature voltage protection device is available in IEC case 1005 (EIA 0402) with compact dimensions of just 1.0 mm x 0.5 mm x 0.5 mm, which makes the new component 75 percent smaller than existing components with comparable performance. The high reliability AVRH series, which also features a wide operating temperature range of -55 to 150 °C, can withstand contact discharges of 25 kV to IEC 61000-4-2 and are qualified to AEC-Q200.

The new AVRH series uses TDK's unique coating technology to achieve the high reliability required in automobiles. The AVRH series is thus suitable for use in various automotive ECUs and bus systems such as LIN, CAN, CAN-FD, and FlexRay. Moreover, the chip varistors can be used in systems that use BroadR-Reach, MOST or automotive Ethernet.

In recent years, as cars have become equipped with many additional functions such as advanced driver assistance systems (ADAS) and in-vehicle infotainment (IVI) networks, the downsizing of the ECUs and increased reliability have become even more important. As a result, ESD and surge protection devices also need to be smaller and offer higher reliability. TDK will further increase the product lineup in terms of compactness, operating voltage and capacitance to support a wide range of automotive device designs.

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#### Main applications

- Various automotive ECUs
- Automotive bus systems such as LIN, CAN, CAN-FD, and FlexRay
- Advanced driver assistance systems (ADAS) and in-vehicle infotainment (IVI) applications that use BroadR-Reach, MOST or automotive Ethernet

#### Main features and benefits

- Miniature dimensions of 1.0 mm x 0.5 mm x 0.5 mm
- 75% smaller than existing components with comparable performance
- High operating temperatures up to 150 °C
- Qualified to AEC-Q200

## Key data

Type	Dimensions [mm]	Max. operating voltage [V DC]	Capacitance [pF]
AVRH10C101KT4R7FA8	1.0 x 0.5 x 0.5	70	4.7 *
AVRH10C270KT150NA8		19	15 **
AVRH10C390KT500NA8		28	50 **

\* At 1 MHz

\*\* At 1 kHz

## Product portfolio / Application overview (TDK and EPCOS brand products)

	Case size [EIA]	N° lines	V <sub>DC</sub> [V]	V <sub>BR</sub> [V]	C <sub>Typ</sub> [pF]	C <sub>Max</sub> [pF]	Automotive Bus & Data Line					
							LIN	CAN	CAN-FD	MOST	FlexRay	Ethernet
AVRH10C390KT500NA8	0402	1	28	39	50	65						
CT0402S14AHSG	0402	1	16	28	10	15						
CT0402V150RFG	0402	1	16	175	2	-						
AVRH10C270KT150NA8	0402	1	19	27	15	19.5						
CT0402S17AG	0402	1	19	32.5	15	-						
AVRH10C101KT4R7FA8	0402	1	70	100	4.7	5.7						
CT0603S14AHSG	0603	1	16	28	15	30						
CT0603V150RFG	0603	1	16	150	3	5						
AVRM1608C270MTAAB	0603	1	17	27	30	-						
AVRM1608C270MTABB	0603	1	17	27	15	-						
CT0603K14G	0603	1	18	22	100	-						
AVRM1608C270KT221M	0603	1	19	27	220	264						
AVRM1608C270KT2AB	0603	1	19	27	160	-						
AVRM1608C270KTACB	0603	1	19	27	60	-						
CT0603K17LCG	0603	1	22	27	30	50						
CT0603K25G	0603	1	31	39	90	-						
CT0603L25HSG	0603	1	32	61	10	15						
CA05M2S10T100HG	0508	2	12	26	10	15						

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## About TDK Corporation

TDK Corporation is a leading electronics company based in Tokyo, Japan. It was established in 1935 to commercialize ferrite, a key material in electronic and magnetic products. TDK's portfolio includes passive components, such as ceramic, aluminum electrolytic and film capacitors, ferrites and inductors, high-frequency products, and piezo and protection components, as well as sensors and sensor systems and power supplies. These products are marketed under the product brands TDK, EPCOS, InvenSense, Micronas, Tronics and TDK-Lambda. TDK's further main product groups include magnetic application products, energy devices, and flash memory application devices. TDK focuses on demanding markets in the areas of information and communication technology and automotive, industrial and consumer electronics. The company has a network of design and manufacturing locations and sales offices in Asia, Europe, and in North and South America. In fiscal 2017, TDK posted total sales of USD 10.5 billion and employed about 100,000 people worldwide.

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