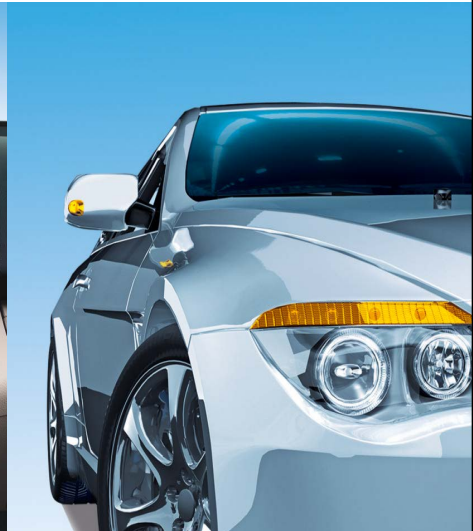
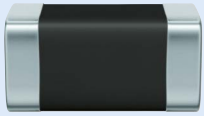


EPCOS Sample Kit 2015

Ceramic Transient Voltage Suppressors

E Series of Multilayer Varistors for ESD and High-Energy
Transient Protection in Automotive Applications



Enhanced ESD protection and high-energy transients for automotive applications

TDK Corporation has developed the new E series of EPCOS multilayer varistors, which sets a new standard in ESD and transient voltage protection for automotive applications. Based on its optimized set of materials and new coating technology the E series ensures a high level of protection and enhanced performance.

- Very low leakage current
- Enlarged operating temperature range of up to +150 °C
- No derating up to +150 °C
- Available in EIA case sizes 0402 up to 2220 with operating voltage ranges of 14 V up to 40 V

Benefits for customer applications

- Bidirectional protection for ESD and high-energy transients
- Low capacitance types for bus systems
- EMI/RFI attenuation
- High signal integrity due to low non-linearity → no signal distortion
- High energy handling capability
- Low parasitic inductance
- Short response time of < 0.5 ns

Qualification and protection standards

- Qualification based on AEC-Q200 Rev-D
- ESD protection up to 25 kV according to IEC 61000-4-2 and ISO 10605
- Transient protection according to ISO 7637-2
- Load dump protection according to ISO 16750-2
- Jump start capability

Applications

- Data bus systems
- Infotainment
- Safety
- Body control and comfort
- Battery lines

More details and applications under www.epcos.com/mlv_automotive

Important information: Some parts of this publication contain statements about the suitability of our products for certain areas of application. These statements are based on our knowledge of typical requirements that are often placed on our products. We expressly point out that these statements cannot be regarded as binding statements about the suitability of our products for a particular customer application. It is incumbent on the customer to check and decide whether a product is suitable for use in a particular application. This publication is only a brief product survey which may be changed from time to time. Our products are described in detail in our data sheets. The *Important notes* (www.epcos.com/ImportantNotes) and the product-specific *Cautions and warnings* must be observed. All relevant information is available through our sales offices.

Components

B72510 E1140S262	B72510 E1250K062	B72520 E1140S262	B72520 E1200K062	B72520 E1250K062	B72530 E1140S262	B72530 E1170K062	B72530 E1200K062	B72530 E1250K062
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B72580 E1140S262	B72580 E3140S272	B72540 E1140S262	B72540 E3140S272	B72540 E1300K062	B72540 E3300K072	B72590 E0170S160	B72590 E8140S160	B72500 E0250K060
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B72500 E2170K060	B72500 E5170S260	B72500 E2170S160	B72500 E0140K060	B72500 E8140S160	B72500 E8250L060	B72510 E0170K062	B72510 E0250K062	B72812 Q1120S160
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Electrical specifications and ordering codes

EIA case size	Ordering code	V _{DC} [V]	I _{surge, max} @ 8/20 µs [A]	W _{max} @ 2 ms [mJ]	P _{diss, max} [mW]	V _v @ 1 mA [V]	V _{jump} @ 5 min [V]	V _{clamp, max} [V]	C _{typ} [pF]
High-energy transient protection in battery lines									
0805	B72510E1140S262	16	120	300	8	22	24.5	42	400
0805	B72510E1250K062	31	80	300	5	35	–	67	250
1206	B72520E1140S262	16	200	600	8	22	24.5	40	800
1206	B72520E1200K062	26	200	700	8	33	27.0	54	600
1206	B72520E1250K062	31	200	1000	8	35	29.0	65	550
1210	B72530E1140S262	16	400	1600	10	22	24.5	40	2000
1210	B72530E1170K062	22	400	1700	10	27	26.5	44	2000
1210	B72530E1200K062	26	400	1900	10	33	27.0	54	1500
1210	B72530E1250K062	31	300	1700	10	39	29.0	65	1500
1812	B72580E1140S262	16	800	2400	15	22	24.5	40	5600
1812	B72580E3140S272	16	800	2400	15	22	24.5	40	7000
2220	B72540E1140S262	16	1200	5800	30	22	24.5	40	9500
2220	B72540E3140S272	16	1200	5800	30	22	24.5	40	15000
2220	B72540E1300K062	34	1200	12000	30	42	45.0	77	4000
2220	B72540E3300K072	34	1200	12000	30	47	45.0	45	10000
ESD protection of bus systems and data lines									
0402	B72590E0170S160	19	6	10	3	25	–	59	15
0402	B72590E8140S160	16	2	300	3	23	–	66	10
0603	B72500E0250K060	31	30	300	3	39	–	67	90
0603	B72500E2170K060	22	10	100	1	27	–	50	30
0603	B72500E5170S260	22	30	75	3	25	–	50	53
0603	B72500E2170S160	22	30	75	3	25	–	50	< 75
0603	B72500E0140K060	18	30	200	3	22	–	40	100
0603	B72500E8140S160	16	5	30	3	23	–	66	15
0603	B72500E8250L060	32	5	–	–	52	–	120	10
0805	B72510E0170K062	22	120	300	5	24	–	46	400
0805	B72510E0250K062	31	80	300	5	39	–	67	250
Integrated ESD/EMI filter array									
0508	B72812Q1120S160	12	5	10	3	22	–	60	10

Application matrix for high-runner types



Typical applications	Power window	Mirror control	Door locking	Sun roof	Rain sensor	Wiper	Seat adjustment	Airbag	Powertrain	ABS	ESP	Gearbox	Brake by wire	Steer by wire	Shift by wire	Navigation	Car entertainment	Driver assistance	Active brake
Ordering code																			

High-energy transient protection in battery lines

B72510E1140S262					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B72510E1250K062					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B72520E1140S262					X	X	X		X	X	X	X	X	X	X				
B72520E1200K062					X	X	X		X	X	X	X	X	X	X				
B72520E1250K062					X	X	X		X	X	X	X	X	X	X				
B72530E1140S262	X	X	X	X	X	X	X		X	X	X	X	X	X	X				
B72530E1170K062	X	X	X	X	X	X	X		X	X	X	X	X	X	X				
B72530E1200K062	X	X	X	X	X	X	X		X	X	X	X	X	X	X				
B72530E1250K062	X	X	X	X	X	X	X		X	X	X	X	X	X	X				
B72580E1140S262	X	X	X	X	X	X	X		X	X	X	X	X	X	X				
B72580E3140S272	X	X	X	X	X	X	X		X	X	X	X	X	X	X				
B72540E1140S262	X	X	X	X	X	X	X		X	X	X	X	X	X	X				
B72540E3140S272	X	X	X	X	X	X	X		X	X	X	X	X	X	X				
B72540E1300K062	X	X	X	X	X	X	X		X	X	X	X	X	X	X				
B72540E3300K072	X	X	X	X	X	X	X		X	X	X	X	X	X	X				

ESD protection of bus systems and data lines

Bus system	LIN							CAN A/B	CAN C				Flex Ray			MOST	Ethernet	
Data rate	20 kbit/s							100 kbit/s	1 Mbit/s				10 Mbit/s			50 Mbit/s	100 Mbit/s	
B72590E0170S160	X	X	X	X	X	X	X	X	X	X	X	X						
B72590E8140S160	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B72000E0250K060	X	X	X	X	X	X	X	X										
B72500E2170K060	X	X	X	X	X	X	X	X	X	X	X	X				X	X	
B72500E5170S260	X	X	X	X	X	X	X	X										
B72500E2170S160	X	X	X	X	X	X	X	X										
B72500E0140K060	X	X	X	X	X	X	X	X										
B72500E8140S160	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B72500E8250L060	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B72510E0170K062	X	X	X	X	X	X	X	X										
B72510E0250K062	X	X	X	X	X	X	X	X										

Integrated ESD/EMI filter array for bus systems

Bus system	LIN							CAN A/B	CAN C				Flex Ray			MOST	Ethernet	
Data rate	20 kbit/s							100 kbit/s	1 Mbit/s				10 Mbit/s			50 Mbit/s	100 Mbit/s	
B72812Q1120S160	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

