

## Leaded Varistors

### AdvanceD Series

#### Construction

- Round varistor element, leaded
- Coating: epoxy resin, flame-retardant to UL 94 V-0
- Terminals: tinned copper wire

#### Features

- High-energy AdvanceD series E2
- High surge current ratings up to 10 kA
- High energy ratings up to 325 J
- Wide operating voltage range 130 ... 510 V<sub>RMS</sub>
- PSpice models

#### Approvals

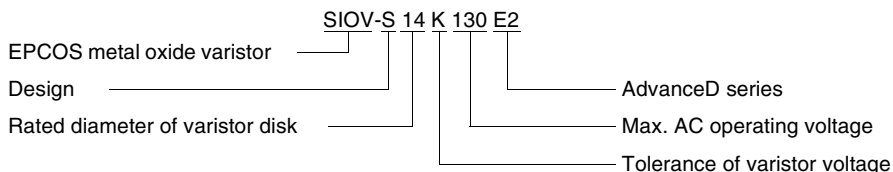
- UL
- CSA
- VDE
- CECC

#### Taping

- For ordering information see page 206 ff, chapter “Leaded Varistors: Taping”

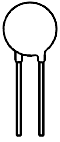
#### Type designation

Detailed description of coding system on page 39, chapter “General Technical Information”



#### General technical data

Climatic category	40/85/56	in accordance with IEC 60068-1
LCT	- 40 °C	
UCT	+ 85 °C	
Damp heat, steady state (93 % r.h., 40 °C)	56 days	in accordance with IEC 60068-2-3
Operating temperature	- 40 ... + 85 °C	in accordance with CECC 42 000
Storage temperature	- 40 ... + 125 °C	
Electric strength	≥ 2,5 kV <sub>RMS</sub>	in accordance with CECC 42 000
Insulation resistance	≥ 10 MΩ	in accordance with CECC 42 000
Response time	< 25 ns	

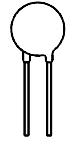


Leaded Varistors

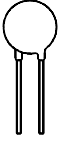
Advanced Series

Maximum ratings ( $T_A = 85\text{ °C}$ )

Type (untaped) SIOV-	Ordering code	$V_{RMS}$ V	$V_{DC}$ V	$i_{max}$ 8/20 $\mu$ s A	$W_{max}$ (2 ms) J	$P_{max}$ W
S05K130E2	B72205S2131K101	130	170	800	6,0	0,10
S07K130E2	B72207S2131K101	130	170	1750	12,5	0,25
S10K130E2	B72210S2131K101	130	170	3500	25,0	0,40
S14K130E2	B72214S2131K101	130	170	6000	50,0	0,60
S20K130E2	B72220S2131K101	130	170	10000	100,0	1,00
S05K140E2	B72205S2141K101	140	180	800	6,5	0,10
S07K140E2	B72207S2141K101	140	180	1750	13,5	0,25
S10K140E2	B72210S2141K101	140	180	3500	27,5	0,40
S14K140E2	B72214S2141K101	140	180	6000	55,0	0,60
S20K140E2	B72220S2141K101	140	180	10000	110,0	1,00
S05K150E2	B72205S2151K101	150	200	800	7,5	0,10
S07K150E2	B72207S2151K101	150	200	1750	15,0	0,25
S10K150E2	B72210S2151K101	150	200	3500	30,0	0,40
S14K150E2	B72214S2151K101	150	200	6000	60,0	0,60
S20K150E2	B72220S2151K101	150	200	10000	120,0	1,00
S05K175E2	B72205S2171K101	175	225	800	8,0	0,10
S07K175E2	B72207S2171K101	175	225	1750	17,0	0,25
S10K175E2	B72210S2171K101	175	225	3500	35,0	0,40
S14K175E2	B72214S2171K101	175	225	6000	70,0	0,60
S20K175E2	B72220S2171K101	175	225	10000	135,0	1,00
S05K210E2	B72205S2211K101	210	270	800	9,5	0,10
S07K210E2	B72207S2211K101	210	270	1750	20,0	0,25
S10K210E2	B72210S2211K101	210	270	3500	42,0	0,40
S14K210E2	B72214S2211K101	210	270	6000	80,0	0,60
S20K210E2	B72220S2211K101	210	270	10000	160,0	1,00


**Characteristics** ( $T_A = 25\text{ }^\circ\text{C}$ )

Type (untaped) SIOV-	$V_V$ (1 mA) V	$\Delta V_V$ (1 mA) %	Max. clamping voltage		$C_{typ}$ (1 kHz) pF	Derating curve Page	V/I char- acteristic Page
			$v$ V	$i$ A			
S05K130E2	205	$\pm 10$	340	5,0	100	253	274
S07K130E2	205	$\pm 10$	340	10,0	200	254	275
S10K130E2	205	$\pm 10$	340	25,0	400	254	276
S14K130E2	205	$\pm 10$	340	50,0	650	255	277
S20K130E2	205	$\pm 10$	340	100,0	1340	256	278
S05K140E2	220	$\pm 10$	360	5,0	95	253	274
S07K140E2	220	$\pm 10$	360	10,0	180	254	275
S10K140E2	220	$\pm 10$	360	25,0	370	254	276
S14K140E2	220	$\pm 10$	360	50,0	610	255	277
S20K140E2	220	$\pm 10$	360	100,0	1240	256	278
S05K150E2	240	$\pm 10$	395	5,0	90	253	274
S07K150E2	240	$\pm 10$	395	10,0	170	254	275
S10K150E2	240	$\pm 10$	395	25,0	350	254	276
S14K150E2	240	$\pm 10$	395	50,0	570	255	277
S20K150E2	240	$\pm 10$	395	100,0	1160	256	278
S05K175E2	270	$\pm 10$	455	5,0	75	253	274
S07K175E2	270	$\pm 10$	455	10,0	150	254	275
S10K175E2	270	$\pm 10$	455	25,0	300	254	276
S14K175E2	270	$\pm 10$	455	50,0	490	255	277
S20K175E2	270	$\pm 10$	455	100,0	1000	256	278
S05K210E2	330	$\pm 10$	545	5,0	65	253	274
S07K210E2	330	$\pm 10$	545	10,0	125	254	275
S10K210E2	330	$\pm 10$	545	25,0	250	254	276
S14K210E2	330	$\pm 10$	545	50,0	410	255	277
S20K210E2	330	$\pm 10$	545	100,0	835	256	278

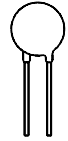


Leaded Varistors

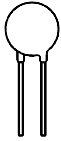
Advanced Series

Maximum ratings ( $T_A = 85\text{ °C}$ )

Type (untaped) SIOV-	Ordering code	$V_{RMS}$ V	$V_{DC}$ V	$i_{max}$ 8/20 $\mu$ s A	$W_{max}$ (2 ms) J	$P_{max}$ W
S05K230E2	B72205S2231K101	230	300	800	11,0	0,10
S07K230E2	B72207S2231K101	230	300	1750	23,0	0,25
S10K230E2	B72210S2231K101	230	300	3500	45,0	0,40
S14K230E2	B72214S2231K101	230	300	6000	90,0	0,60
S20K230E2	B72220S2231K101	230	300	10000	180,0	1,00
S05K250E2	B72205S2251K101	250	320	800	12,0	0,10
S07K250E2	B72207S2251K101	250	320	1750	25,0	0,25
S10K250E2	B72210S2251K101	250	320	3500	50,0	0,40
S14K250E2	B72214S2251K101	250	320	6000	100,0	0,60
S20K250E2	B72220S2251K101	250	320	10000	195,0	1,00
S05K275E2	B72205S2271K101	275	350	800	13,5	0,10
S07K275E2	B72207S2271K101	275	350	1750	27,5	0,25
S10K275E2	B72210S2271K101	275	350	3500	55,0	0,40
S14K275E2	B72214S2271K101	275	350	6000	110,0	0,60
S20K275E2	B72220S2271K101	275	350	10000	215,0	1,00
S05K300E2	B72205S2301K101	300	385	800	15,0	0,10
S07K300E2	B72207S2301K101	300	385	1750	30,0	0,25
S10K300E2	B72210S2301K101	300	385	3500	60,0	0,40
S14K300E2	B72214S2301K101	300	385	6000	125,0	0,60
S20K300E2	B72220S2301K101	300	385	10000	250,0	1,00
S07K320E2	B72207S2321K101	320	420	1750	32,0	0,25
S10K320E2	B72210S2321K101	320	420	3500	67,0	0,40
S14K320E2	B72214S2321K101	320	420	6000	136,0	0,60
S20K320E2	B72220S2321K101	320	420	10000	273,0	1,00


**Leaded Varistors**
**AdvanceD Series**
**Characteristics** ( $T_A = 25\text{ }^\circ\text{C}$ )

Type (untaped) SIOV-	$V_V$ (1 mA) V	$\Delta V_V$ (1 mA) %	Max. clamping voltage		$C_{typ}$ (1 kHz) pF	Derating curve Page	V/I char- acteristic Page
			$v$ V	$i$ A			
S05K230E2	360	$\pm 10$	595	5,0	60	253	274
S07K230E2	360	$\pm 10$	595	10,0	115	254	275
S10K230E2	360	$\pm 10$	595	25,0	230	254	276
S14K230E2	360	$\pm 10$	595	50,0	380	255	277
S20K230E2	360	$\pm 10$	595	100,0	760	256	278
S05K250E2	390	$\pm 10$	650	5,0	55	253	274
S07K250E2	390	$\pm 10$	650	10,0	105	254	275
S10K250E2	390	$\pm 10$	650	25,0	215	254	276
S14K250E2	390	$\pm 10$	650	50,0	350	255	277
S20K250E2	390	$\pm 10$	650	100,0	700	256	278
S05K275E2	430	$\pm 10$	710	5,0	50	253	274
S07K275E2	430	$\pm 10$	710	10,0	95	254	275
S10K275E2	430	$\pm 10$	710	25,0	195	254	276
S14K275E2	430	$\pm 10$	710	50,0	320	255	277
S20K275E2	430	$\pm 10$	710	100,0	630	256	278
S05K300E2	470	$\pm 10$	775	5,0	45	253	274
S07K300E2	470	$\pm 10$	775	10,0	90	254	275
S10K300E2	470	$\pm 10$	775	25,0	180	254	276
S14K300E2	470	$\pm 10$	775	50,0	300	255	277
S20K300E2	470	$\pm 10$	775	100,0	580	256	278
S07K320E2	510	$\pm 10$	840	10,0	85	254	275
S10K320E2	510	$\pm 10$	840	25,0	170	254	276
S14K320E2	510	$\pm 10$	840	50,0	280	255	277
S20K320E2	510	$\pm 10$	840	100,0	540	256	278

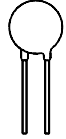


**Leaded Varistors**

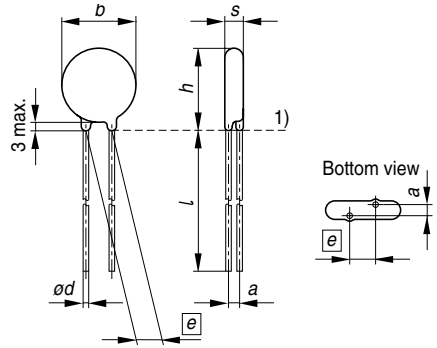
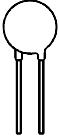
**Advanced Series**

**Maximum ratings** ( $T_A = 85\text{ °C}$ )

Type (untaped) SIOV-	Ordering code	$V_{RMS}$ V	$V_{DC}$ V	$i_{max}$ 8/20 $\mu$ s A	$W_{max}$ (2 ms) J	$P_{max}$ W
S10K385E2	B72210S2381K101	385	505	3500	67,0	0,40
S14K385E2	B72214S2381K101	385	505	5000	136,0	0,60
S20K385E2	B72220S2381K101	385	505	10000	273,0	1,00
S10K420E2	B72210S2421K101	420	560	3500	67,0	0,40
S14K420E2	B72214S2421K101	420	560	5000	136,0	0,60
S20K420E2	B72220S2421K101	420	560	10000	273,0	1,00
S10K460E2	B72210S2461K101	460	615	3500	70,0	0,40
S14K460E2	B72214S2461K101	460	615	5000	150,0	0,60
S20K460E2	B72220S2461K101	460	615	10000	300,0	1,00
S10K510E2	B72210S2511K101	510	670	3500	80,0	0,40
S14K510E2	B72214S2511K101	510	670	5000	165,0	0,60
S20K510E2	B72220S2511K101	510	670	10000	325,0	1,00


**Characteristics** ( $T_A = 25\text{ °C}$ )

Type (untaped) SIOV-	$V_V$ (1 mA) V	$\Delta V_V$ (1 mA) %	Max. clamping voltage		$C_{typ}$ (1 kHz) pF	Derating curve Page	V/I char- acteristic Page
			$v$ V	$i$ A			
S10K385E2	620	± 10	1025	25,0	150	255	276
S14K385E2	620	± 10	1025	50,0	240	256	277
S20K385E2	620	± 10	1025	100,0	450	257	278
S10K420E2	680	± 10	1120	25,0	135	255	276
S14K420E2	680	± 10	1120	50,0	220	256	277
S20K420E2	680	± 10	1120	100,0	420	257	278
S10K460E2	750	± 10	1240	25,0	120	255	276
S14K460E2	750	± 10	1240	50,0	200	256	277
S20K460E2	750	± 10	1240	100,0	380	257	278
S10K510E2	820	± 10	1355	25,0	110	255	276
S14K510E2	820	± 10	1355	50,0	180	256	277
S20K510E2	820	± 10	1355	100,0	340	257	278



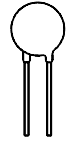
1) Seating plane according to IEC 60717

VAR0408-C

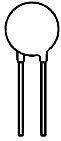
**Dimensions**

Type	$e \pm 1$ mm	$a \pm 1$ mm	$b_{\max}$ mm	$s_{\max}$ mm	$h_{\max}$ mm	$l_{\min}$ mm	$d \pm 0,05$ mm
SIOV-S05K130E2	5,0	1,6	7,0	3,9	8,5	30,0	0,6
SIOV-S07K130E2	5,0	1,6	9,0	3,9	11,0	30,0	0,6
SIOV-S10K130E2	7,5	1,8	12,0	4,5	14,5	30,0	0,8
SIOV-S14K130E2	7,5	1,9	15,5	4,6	18,5	30,0	0,8
SIOV-S20K130E2	10,0	2,0	21,5	5,0	25,5	30,0	1,0
SIOV-S05K140E2	5,0	1,7	7,0	4,0	8,5	30,0	0,6
SIOV-S07K140E2	5,0	1,7	9,0	4,0	11,0	30,0	0,6
SIOV-S10K140E2	7,5	1,9	12,0	4,6	14,5	30,0	0,8
SIOV-S14K140E2	7,5	2,0	15,5	4,7	18,5	30,0	0,8
SIOV-S20K140E2	10,0	2,1	21,5	5,1	25,5	30,0	1,0
SIOV-S05K150E2	5,0	1,8	7,0	4,1	8,5	30,0	0,6
SIOV-S07K150E2	5,0	1,8	9,0	4,1	11,0	30,0	0,6
SIOV-S10K150E2	7,5	2,0	12,0	4,7	14,5	30,0	0,8
SIOV-S14K150E2	7,5	2,1	15,5	4,8	18,5	30,0	0,8
SIOV-S20K150E2	10,0	2,2	21,5	5,2	25,5	30,0	1,0
SIOV-S05K175E2	5,0	2,0	7,0	4,3	8,5	30,0	0,6
SIOV-S07K175E2	5,0	2,0	9,0	4,3	11,0	30,0	0,6
SIOV-S10K175E2	7,5	2,2	12,0	4,9	14,5	30,0	0,8
SIOV-S14K175E2	7,5	2,2	15,5	4,9	18,5	30,0	0,8
SIOV-S20K175E2	10,0	2,3	21,5	5,3	25,5	30,0	1,0




**Leaded Varistors**
**AdvanceD Series**
**Dimensions**

Type	$e \pm 1$ mm	$a \pm 1$ mm	$b_{\max}$ mm	$s_{\max}$ mm	$h_{\max}$ mm	$l_{\min}$ mm	$d \pm 0,05$ mm
SIOV-S05K210E2	5,0	1,7	7,0	4,2	8,5	30,0	0,6
SIOV-S07K210E2	5,0	1,7	9,0	4,2	11,0	30,0	0,6
SIOV-S10K210E2	7,5	1,9	12,0	5,0	14,5	30,0	0,8
SIOV-S14K210E2	7,5	1,9	15,5	5,0	18,5	30,0	0,8
SIOV-S20K210E2	10,0	2,2	21,5	5,4	25,5	30,0	1,0
SIOV-S05K230E2	5,0	1,8	7,0	4,4	8,5	30,0	0,6
SIOV-S07K230E2	5,0	1,8	9,0	4,4	11,0	30,0	0,6
SIOV-S10K230E2	7,5	2,0	12,0	5,0	14,5	30,0	0,8
SIOV-S14K230E2	7,5	2,0	15,5	5,1	18,5	30,0	0,8
SIOV-S20K230E2	10,0	2,3	21,5	5,5	25,5	30,0	1,0
SIOV-S05K250E2	5,0	1,9	7,0	4,5	8,5	30,0	0,6
SIOV-S07K250E2	5,0	1,9	9,0	4,5	11,0	30,0	0,6
SIOV-S10K250E2	7,5	2,1	12,0	5,2	14,5	30,0	0,8
SIOV-S14K250E2	7,5	2,1	15,5	5,2	18,5	30,0	0,8
SIOV-S20K250E2	10,0	2,4	21,5	5,7	25,5	30,0	1,0
SIOV-S05K275E2	5,0	2,0	7,0	4,6	8,5	30,0	0,6
SIOV-S07K275E2	5,0	2,0	9,0	4,6	11,0	30,0	0,6
SIOV-S10K275E2	7,5	2,2	12,0	5,4	14,5	30,0	0,8
SIOV-S14K275E2	7,5	2,2	15,5	5,4	18,5	30,0	0,8
SIOV-S20K275E2	10,0	2,6	21,5	5,8	25,5	30,0	1,0
SIOV-S05K300E2	5,0	2,1	7,0	4,7	8,5	30,0	0,6
SIOV-S07K300E2	5,0	2,1	9,0	4,7	11,0	30,0	0,6
SIOV-S10K300E2	7,5	2,3	12,0	5,6	14,5	30,0	0,8
SIOV-S14K300E2	7,5	2,3	15,5	5,6	18,5	30,0	0,8
SIOV-S20K300E2	10,0	2,8	21,5	6,1	25,5	30,0	1,0
SIOV-S07K320E2	5,0	2,3	9,0	4,6	11,0	30,0	0,6
SIOV-S10K320E2	7,5	2,4	12,0	5,8	15,0	30,0	0,8
SIOV-S14K320E2	7,5	2,4	15,5	5,8	19,0	30,0	0,8
SIOV-S20K320E2	10,0	2,9	21,5	6,2	25,5	30,0	1,0
SIOV-S10K385E2	7,5	3,3	12,0	7,1	15,0	30,0	0,8
SIOV-S14K385E2	7,5	3,4	15,5	7,1	19,0	30,0	0,8
SIOV-S20K385E2	10,0	3,9	21,5	7,6	26,0	30,0	1,0
SIOV-S10K420E2	7,5	3,5	12,0	7,4	15,0	30,0	0,8
SIOV-S14K420E2	7,5	3,6	15,5	7,5	19,0	30,0	0,8
SIOV-S20K420E2	10,0	4,2	21,5	7,9	26,0	30,0	1,0



## Leaded Varistors

### Advanced Series

#### Dimensions

Type	$e \pm 1$ mm	$a \pm 1$ mm	$b_{\max}$ mm	$s_{\max}$ mm	$h_{\max}$ mm	$l_{\min}$ mm	$d \pm 0,05$ mm
SIOV-S10K460E2	7,5	3,7	12,0	7,7	15,0	30,0	0,8
SIOV-S14K460E2	7,5	3,8	15,5	7,8	19,0	30,0	0,8
SIOV-S20K460E2	10,0	4,5	21,5	8,2	26,0	30,0	1,0
SIOV-S10K510E2	7,5	4,0	12,0	8,0	15,0	30,0	0,8
SIOV-S14K510E2	7,5	4,0	15,5	8,1	19,0	30,0	0,8
SIOV-S20K510E2	10,0	4,6	21,5	8,6	26,0	30,0	1,0

#### Weight

Size	approx.	
S05K130 ... 300E2	0,4 ... 0,5 g	The weight of varistors in between these voltage classes can be interpolated.
S07K130 ... 320E2	0,6 ... 0,8 g	
S10K130 ... 510E2	1,2 ... 2,4 g	
S14K130 ... 510E2	1,8 ... 4,1 g	
S20K130 ... 510E2	3,3 ... 7,7 g	

**Herausgegeben von EPCOS AG**

**Unternehmenskommunikation, Postfach 80 17 09, 81617 München, DEUTSCHLAND**

**☎ ++49 89 636 09, FAX (0 89) 636-2 26 89**

© EPCOS AG 2002. Vervielfältigung, Veröffentlichung, Verbreitung und Verwertung dieser Broschüre und ihres Inhalts ohne ausdrückliche Genehmigung der EPCOS AG nicht gestattet.

Bestellungen unterliegen den vom ZVEI empfohlenen Allgemeinen Lieferbedingungen für Erzeugnisse und Leistungen der Elektroindustrie, soweit nichts anderes vereinbart wird.

Diese Broschüre ersetzt die vorige Ausgabe.

Fragen über Technik, Preise und Liefermöglichkeiten richten Sie bitte an den Ihnen nächstgelegenen Vertrieb der EPCOS AG oder an unsere Vertriebsgesellschaften im Ausland. Bauelemente können aufgrund technischer Erfordernisse Gefahrstoffe enthalten. Auskünfte darüber bitten wir unter Angabe des betreffenden Typs ebenfalls über die zuständige Vertriebsgesellschaft einzuholen.

**Published by EPCOS AG**

**Corporate Communications, P.O. Box 80 17 09, 81617 Munich, GERMANY**

**☎ ++49 89 636 09, FAX (0 89) 636-2 26 89**

© EPCOS AG 2002. Reproduction, publication and dissemination of this brochure and the information contained therein without EPCOS' prior express consent is prohibited.

Purchase orders are subject to the General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry recommended by the ZVEI (German Electrical and Electronic Manufacturers' Association), unless otherwise agreed.

This brochure replaces the previous edition.

For questions on technology, prices and delivery please contact the Sales Offices of EPCOS AG or the international Representatives.

Due to technical requirements components may contain dangerous substances. For information on the type in question please also contact one of our Sales Offices.