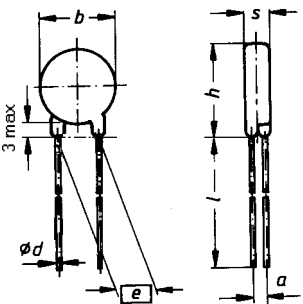
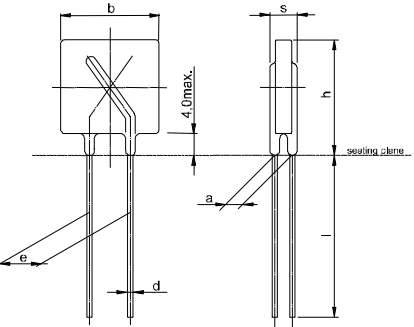


<p><i>Specification available from:</i> Österreichischer Verband für Elektrotechnik (OVE) A-1010 Wien, Eschenbachgasse 9</p>	<p>IEC 61051-2-2 AT0001 Issue 4 / 2010-05</p> <p>QC 420102 AT0001</p>
<p><i>Electronic components of assessed quality in accordance with:</i> IEC 61051-1: 2007-04 QC 420000</p>	<p>IEC 61051-2-2: 1991-01 QC 420102</p>
<p>Outline drawing for S*-,SNF*-types (see 1.2.1)</p>  <p>Outline drawing for Q*-types (see 1.2.1)</p>  <p>Crimp-Type Standard (Q-types)</p>	<p>ZINC OXYDE SURGE SUPPRESSION VARISTORS</p> <p>Insulated</p> <p>Assessment level: E</p>

NOTES

- 1 - Other shapes and crimp styles are permitted within the dimensions given.
- 2 - The undimensioned details do not affect the performance of the device.
- 3 - The terminations are suitable for soldering.
- 4 - The terminations are suitable for printed wiring applications.
- 5 - The terminations are rigid.

Information on the availability of components qualified to this detail specification is given in the Qualified Products List.

SECTION ONE – GENERAL DATA

1 General data

1.1 Recommended method (s) of mounting

The varistors shall be mounted by their normal means in such a manner that there shall be no parasitic vibration.

1.2 Dimensions, ratings and characteristics (see table 1)

1.2.1 Dimensions (All dimensions are in millimeters)

- Body diameter: b see table 1
- Body thickness (including terminations of styles with wire terminations): s see table 1
- Diameter of wire terminations: d see below
- Length of wire termination: l l_{min} = 25 mm
- Distance between wire terminations: e see below

e [mm] ± 1.0	5.0	7.1	7.5	10.0	12.7
φ d [mm] ± 0.05	0.6	0.8	0.8	1.0	1.0
Style S05, S07, SNF05, SNF07	*	---	R7	R10	---
Style S10, S14, SNF10, SNF14,	R5	R7	*	R10	---
Style S20, SNF20	R5	---	R7	*	---
Style Q14, Q20	---	---	R7	*	---
Style S25	---	---	R7	R10	R12

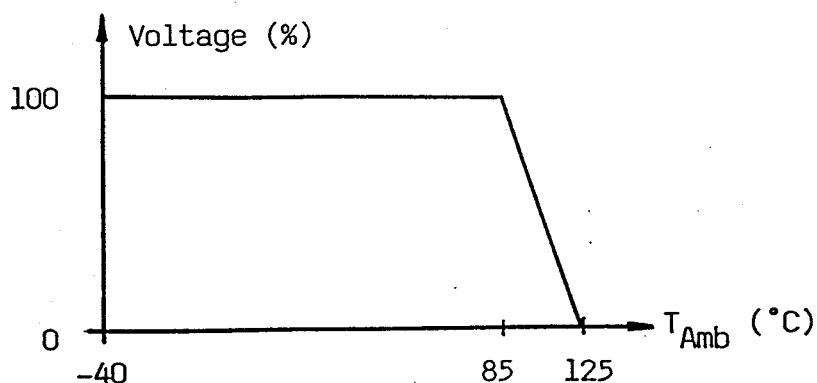
* Default varistor types ("R" is omitted)

1.2.2 Ratings and characteristics

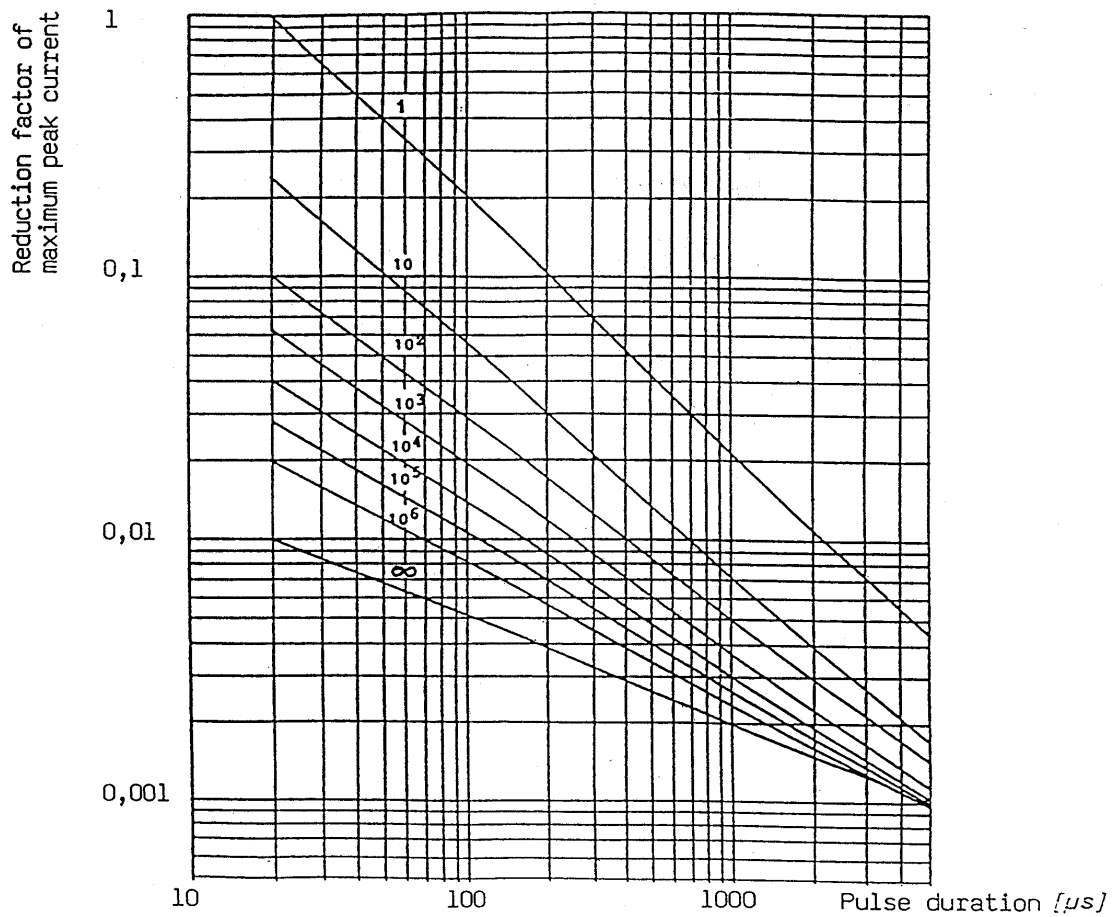
Climatic category:	40/85/56
Maximum continuous a.c. voltage:	see table 1
Maximum continuous d.c. voltage:	see table 1
Supply voltage:	see table 1
Voltage at specified current (1 mA):	
- at 25°C	see table 1
- if applicable, at upper category temperature:	-
- if applicable, at ... °C	-
Maximum peak current:	
- for 10 pulses 8/20 µs at 2 per min:	see table 1 and 1.2.3
- for 10 pulses 10/1 000 µs or 2 ms square wave at 1 every two min:	see table 1 and 1.2.3
Class current:	see table 1
Voltage at class current (protection level):	see table 1
Capacitance:	see table 1
Isolation voltage (insulated varistors only):	2500 V (a.c.)
Maximum temperature coefficient of the voltage at specified current	-(0.09 % / K)max.

1.2.3 Derating curve

Maximum continuous a.c. or d.c. voltage with temperature



Reduction factor of maximum peak current for various numbers of pulses versus pulse duration



1.3 Related documents

Generic specification:

IEC Publication 61051-1: Varistors for Use in Electronic Equipment.
Part 1: Generic Specification.

Sectional specification:

IEC Publication 61051-2: Varistors for Use in Electronic Equipment.
Part 2: Sectional Specification for Surge Suppression Varistors.

Table 1 (1 of 19)

Style (1)	Supply voltage	Maximum continuous voltage		Voltage at 1 mA	Voltage at class current (8/20µs)		Max. peak current (8/20µs, 1 time)	Max. peak current (8/20µs, combination pulse, 10 times)	Energy surge rating (2 ms, 1 time)	Maximum capacitance	Dimensions for S*		Dimensions for SNF*	
		r.m.s. (V)	d.c. (V)		Class current(A)	Max. volt (V)					b _{max}	s _{max}	b _{max}	s _{max}
	(V)			(V)			(A)	(A)	(J)	(pF)	(mm)	(mm)	(mm)	(mm)
S(NF)05K11		11	14	18	1,0	36	100	N/A	0,3	3000	7,0	3,3	9,0	6,3
S(NF)07K11		11	14	18	2,5	36	250	N/A	0,8	7000	9,0	3,4	11,0	6,4
S(NF)10K11		11	14	18	5,0	36	500	N/A	1,7	15000	12,0	4,0	14,0	7,0
S(NF)14K11		11	14	18	10,0	36	1000	N/A	3,2	35000	15,5	4,0	17,5	7,0
S(NF)20K11		11	14	18	20,0	36	2000	N/A	10,0	70000	21,5	4,5	23,5	7,5
S(NF)05K14		14	18	22	1,0	43	100	N/A	0,4	2500	7,0	3,4	9,0	6,4
S(NF)07K14		14	18	22	2,5	43	250	N/A	0,9	5500	9,0	3,8	11,0	6,8
S(NF)10K14		14	18	22	5,0	43	500	N/A	2,0	12000	12,0	4,2	14,0	7,2
S(NF)14K14		14	18	22	10,0	43	1000	N/A	4,0	30000	15,5	4,2	17,5	7,2
S(NF)20K14		14	18	22	20,0	43	2000	N/A	12,0	60000	21,5	4,6	23,5	7,6
S(NF)05K17		17	22	27	1,0	53	100	N/A	0,5	2000	7,0	3,5	9,0	6,5
S(NF)07K17		17	22	27	2,5	53	250	N/A	1,1	4000	9,0	3,6	11,0	6,6
S(NF)10K17		17	22	27	5,0	53	500	N/A	2,5	8000	12,0	4,4	14,0	7,4
S(NF)14K17		17	22	27	10,0	53	1000	N/A	5,0	20000	15,5	4,4	17,5	7,4
S(NF)20K17		17	22	27	20,0	53	2000	N/A	14,0	45000	21,5	4,8	23,5	7,8
S(NF)05K20		20	26	33	1,0	65	100	N/A	0,6	1800	7,0	3,5	9,0	6,5
S(NF)07K20		20	26	33	2,5	65	250	N/A	1,3	3000	9,0	3,6	11,0	6,6
S(NF)10K20		20	26	33	5,0	65	500	N/A	3,1	6000	12,0	4,5	14,0	7,5
S(NF)14K20		20	26	33	10,0	65	1000	N/A	6,0	15000	15,5	4,6	17,5	7,6
S(NF)20K20		20	26	33	20,0	65	2000	N/A	18,0	35000	21,5	5,1	23,5	8,1
S(NF)05K25		25	31	39	1,0	77	100	N/A	0,7	1000	7,0	3,6	9,0	6,6
S(NF)07K25		25	31	39	2,5	77	250	N/A	1,6	2500	9,0	3,7	11,0	6,7
S(NF)10K25		25	31	39	5,0	77	500	N/A	3,7	5000	12,0	4,2	14,0	7,2
S(NF)14K25		25	31	39	10,0	77	1000	N/A	7,0	12000	15,5	4,2	17,5	7,2
S(NF)20K25		25	31	39	20,0	77	2000	N/A	22,0	30000	21,5	4,7	23,5	7,7

(1) For explanation of style reference number, see clause 1.5.

Table 1 (2 of 19)

Style (1)	Supply voltage (V)	Maximum continuous voltage		Voltage at 1 mA (V)	Voltage at class current (8/20µs)		Max. peak current (8/20µs, 1 time) (A)	Max. peak current (8/20µs, combination pulse, 10 times) (A)	Energy surge rating (2 ms, 1 time) (J)	Maximum capacitance (pF)	Dimensions for S*		Dimensions for SNF*	
		r.m.s. (V)	d.c. (V)		Class current(A)	Max. volt (V)					b _{max} (mm)	s _{max} (mm)	b _{max} (mm)	s _{max} (mm)
S(NF)05K30		30	38	47	1,0	93	100	N/A	0,9	1500	7,0	3,6	9,0	6,6
S(NF)07K30		30	38	47	2,5	93	250	N/A	2,0	3000	9,0	3,7	11,0	6,7
S(NF)10K30		30	38	47	5,0	93	500	N/A	4,4	6000	12,0	4,4	14,0	7,4
S(NF)14K30		30	38	47	10,0	93	1000	N/A	9,0	11000	15,5	4,4	17,5	7,4
S(NF)20K30		30	38	47	20,0	93	2000	N/A	26,0	25000	21,5	4,9	23,5	7,9
S(NF)05K35		35	45	56	1,0	110	100	N/A	1,1	1250	7,0	3,7	9,0	6,7
S(NF)07K35		35	45	56	2,5	110	250	N/A	2,5	2300	9,0	3,9	11,0	6,9
S(NF)10K35		35	45	56	5,0	110	500	N/A	5,4	4500	12,0	4,4	14,0	7,4
S(NF)14K35		35	45	56	10,0	110	1000	N/A	10,0	9000	15,5	4,5	17,5	7,5
S(NF)20K35		35	45	56	20,0	110	2000	N/A	33,0	20000	21,5	5,1	23,5	8,1
S(NF)05K40		40	56	68	1,0	135	100	N/A	1,3	1200	7,0	3,9	9,0	6,9
S(NF)07K40		40	56	68	2,5	135	250	N/A	3,0	1900	9,0	4,1	11,0	7,1
S(NF)10K40		40	56	68	5,0	135	500	N/A	6,4	3600	12,0	4,8	14,0	7,8
S(NF)14K40		40	56	68	10,0	135	1000	N/A	13,0	6000	15,5	4,9	17,5	7,9
S(NF)20K40		40	56	68	20,0	135	2000	N/A	37,0	10000	21,5	5,4	23,5	8,4
S(NF)05K50		50	65	82	5,0	135	400	N/A	1,8	900	7,0	3,3	9,0	6,3
S(NF)07K50		50	65	82	10,0	135	1200	N/A	4,2	1800	9,0	3,3	11,0	6,3
S(NF)10K50		50	65	82	25,0	135	2500	N/A	8,4	3400	12,0	3,9	14,0	6,9
*S(NF)14K50		50	65	82	50,0	135	4500	6.0kV/3.0kA	15,0	5400	15,5	3,9	17,5	6,9
*S(NF)20K50		50	65	82	100,0	135	6500	6.0kV/3.0kA	27,0	9000	21,5	4,3	23,5	7,3
S(NF)05K60		60	85	100	5,0	165	400	N/A	2,2	600	7,0	3,3	9,0	6,3
S(NF)07K60		60	85	100	10,0	165	1200	N/A	4,8	1000	9,0	3,3	11,0	6,3
S(NF)10K60		60	85	100	25,0	165	2500	N/A	10,0	2000	12,0	4,0	14,0	7,0
*S(NF)14K60		60	85	100	50,0	165	4500	6.0kV/3.0kA	17,0	3400	15,5	4,0	17,5	7,0
*S(NF)20K60		60	85	100	100,0	165	6500	6.0kV/3.0kA	33,0	6000	21,5	4,4	23,5	7,4

- (1) For explanation of style reference number, see clause 1.5.
(2) All types marked with "*" are covered by IEC 60950-1 Annex Q.

Table 1 (3 of 19)

Style (1)	Supply voltage (V)	Maximum continuous voltage		Voltage at 1 mA (V)	Voltage at class current (8/20 μ s)		Max. peak current (8/20 μ s, 1 time) (A)	Max. peak current (8/20 μ s, combination pulse, 10 times) (A)	Energy surge rating (2 ms, 1 time) (J)	Maximum capacitance (pF)	Dimensions for S*		Dimensions for SNF*	
		r.m.s. (V)	d.c. (V)		Class current(A)	Max. volt (V)					b _{max} (mm)	s _{max} (mm)	b _{max} (mm)	s _{max} (mm)
S(NF)05K75		75	100	120	5,0	200	400	N/A	2,5	420	7,0	3,4	9,0	6,4
S(NF)07K75		75	100	120	10,0	200	1200	N/A	5,9	790	9,0	3,6	11,0	6,6
S(NF)10K75		75	100	120	25,0	200	2500	N/A	12,0	1600	12,5	4,2	14,0	7,2
*S(NF)14K75		75	100	120	50,0	200	4500	6.0kV/3.0kA	20,0	3000	15,5	4,2	17,5	7,2
*S(NF)20K75		75	100	120	100,0	200	6500	6.0kV/3.0kA	40,0	5000	21,5	4,6	23,5	7,6
S(NF)05K95		95	125	150	5,0	250	400	N/A	3,4	350	7,0	3,4	9,0	6,4
S(NF)07K95		95	125	150	10,0	250	1200	N/A	7,6	700	9,0	3,4	11,0	6,4
S(NF)10K95		95	125	150	25,0	250	2500	N/A	15,0	1400	12,5	4,0	14,0	7,0
*S(NF)14K95		95	125	150	50,0	250	4500	6.0kV/3.0kA	25,0	2500	15,5	4,0	17,5	7,0
*S(NF)20K95		95	125	150	100,0	250	6500	6.0kV/3.0kA	50,0	4500	21,5	4,5	23,5	7,5
S(NF)05K115		115	150	180	5,0	300	400	N/A	3,6	300	7,0	3,6	9,0	6,6
S(NF)07K115		115	150	180	10,0	300	1200	N/A	8,4	640	9,0	3,6	11,0	6,6
S(NF)10K115		115	150	180	25,0	300	2500	N/A	18,0	1200	12,5	4,2	14,0	7,2
*S(NF)14K115		115	150	180	50,0	300	4500	6.0kV/3.0kA	30,0	2200	15,5	4,2	17,5	7,2
*S(NF)20K115		115	150	180	100,0	300	6500	6.0kV/3.0kA	60,0	4000	21,5	4,6	23,5	7,6
S(NF)05K130		130	170	205	5,0	340	400	N/A	4,2	240	7,0	3,6	9,0	6,6
S(NF)07K130		130	170	205	10,0	340	1200	N/A	9,5	580	9,0	3,6	11,0	6,6
S(NF)10K130	120	130	170	205	25,0	340	2500	N/A	19,0	1050	12,5	4,2	14,0	7,2
*S(NF)14K130		130	170	205	50,0	340	4500	6.0kV/3.0kA	34,0	1900	15,5	4,2	17,5	7,2
*S(NF)20K130		130	170	205	100,0	340	8000	6.0kV/3.0kA	74,0	3500	21,5	4,7	23,5	7,7
S(NF)05K140		140	180	220	5,0	360	400	N/A	4,5	220	7,0	3,7	9,0	6,7
S(NF)07K140		140	180	220	10,0	360	1200	N/A	10,0	550	9,0	3,7	11,0	6,7
S(NF)10K140		140	180	220	25,0	360	2500	N/A	22,0	980	12,5	4,3	14,0	7,3
*S(NF)14K140		140	180	220	50,0	360	4500	6.0kV/3.0kA	36,0	1750	15,5	4,3	17,5	7,3
*S(NF)20K140		140	180	220	100,0	360	8000	6.0kV/3.0kA	78,0	3250	21,5	4,8	23,5	7,8

(1) For explanation of style reference number, see clause 1.5.
(2) All types marked with "*" are covered by IEC 60950-1 Annex Q.

Table 1 (4 of 19)

Style (1)	Supply voltage (V)	Maximum continuous voltage		Voltage at 1 mA (V)	Voltage at class current (8/20µs)		Max. peak current (8/20µs, 1 time) (A)	Max. peak current (8/20µs, combination pulse, 10 times) (A)	Energy surge rating (2 ms, 1 time) (J)	Maximum capacitance (pF)	Dimensions for S*		Dimensions for SNF*	
		r.m.s. (V)	d.c. (V)		Class current(A)	Max. volt (V)					b _{max} (mm)	s _{max} (mm)	b _{max} (mm)	s _{max} (mm)
S(NF)05K150		150	200	240	5,0	395	400	N/A	4,9	200	7,0	3,8	9,0	6,8
S(NF)07K150		150	200	240	10,0	395	1200	N/A	11,0	520	9,0	3,8	11,0	6,8
S(NF)10K150		150	200	240	25,0	395	2500	N/A	24,0	900	12,0	4,4	14,0	7,4
*S(NF)14K150		150	200	240	50,0	395	4500	6.0kV/3.0kA	40,0	1600	15,5	4,4	17,5	7,4
*S(NF)20K150		150	200	240	100,0	395	8000	6.0kV/3.0kA	85,0	3000	21,5	4,9	23,5	7,9
S(NF)05K175		175	225	270	5,0	455	400	N/A	5,6	170	7,0	4,3	9,0	6,9
S(NF)07K175		175	225	270	10,0	455	1200	N/A	13,0	380	9,0	4,3	11,0	7,0
S(NF)10K175		175	225	270	25,0	455	2500	N/A	28,0	720	12,5	4,9	14,0	7,6
*S(NF)14K175		175	225	270	50,0	455	4500	6.0kV/3.0kA	46,0	1380	16,5	4,9	17,5	7,6
*S(NF)20K175		175	225	270	100,0	455	8000	6.0kV/3.0kA	98,0	2600	22,5	5,3	23,5	8,0
S(NF)05K210		210	270	330	5,0	550	400	N/A	7,0	155	7,0	4,2	9,0	7,0
S(NF)07K210		210	270	330	10,0	550	1200	N/A	15,0	340	9,0	4,2	11,0	7,0
S(NF)10K210		210	270	330	25,0	550	2500	N/A	34,0	635	12,0	5,0	14,0	7,7
*S(NF)14K210		210	270	330	50,0	550	4500	6.0kV/3.0kA	55,0	1250	15,5	5,0	17,5	7,7
*S(NF)20K210		210	270	330	100,0	550	8000	6.0kV/3.0kA	120,0	2300	21,5	5,4	23,5	8,1
S(NF)05K230		230	300	360	5,0	595	400	N/A	7,2	140	7,0	4,8	9,0	7,0
S(NF)07K230		230	300	360	10,0	595	1200	N/A	17,0	300	9,0	4,8	11,0	7,0
S(NF)10K230		230	300	360	25,0	595	2500	N/A	36,0	550	12,5	5,4	14,0	7,7
*S(NF)14K230		230	300	360	50,0	595	4500	6.0kV/3.0kA	60,0	1100	16,5	5,5	17,5	7,7
*S(NF)20K230		230	300	360	100,0	595	8000	6.0kV/3.0kA	130,0	2000	22,5	5,9	23,5	8,1

- (1) For explanation of style reference number, see clause 1.5.
(2) All types marked with "*" are covered by IEC 60950-1 Annex Q.

Table 1 (5 of 19)

Style (1)	Supply voltage (V)	Maximum continuous voltage		Voltage at 1 mA (V)	Voltage at class current (8/20µs)		Max. peak current (8/20µs, 1 time) (A)	Max. peak current (8/20µs, combination pulse, 10 times) (A)	Energy surge rating (2 ms, 1 time) (J)	Maximum capacitance (pF)	Dimensions for S*		Dimensions for SNF*	
		r.m.s. (V)	d.c. (V)		Class current(A)	Max. volt (V)					b _{max} (mm)	s _{max} (mm)	b _{max} (mm)	s _{max} (mm)
S(NF)05K250	220	250	320	390	5,0	650	400	N/A	8,2	120	7,0	4,2	9,0	7,2
S(NF)07K250	AND	250	320	390	10,0	650	1200	N/A	19,0	240	9,0	4,2	11,0	7,2
S(NF)10K250	230	250	320	390	25,0	650	2500	N/A	38,0	480	12,0	4,8	14,0	7,8
*S(NF)14K250		250	320	390	50,0	650	4500	6.0kV/3.0kA	65,0	940	15,5	4,8	17,5	7,8
*S(NF)20K250		250	320	390	100,0	650	8000	6.0kV/3.0kA	140,0	1800	21,5	5,3	23,5	8,3
S(NF)05K275		275	350	430	5,0	710	400	N/A	8,6	120	7,0	4,3	9,0	7,3
S(NF)07K275		275	350	430	10,0	710	1200	N/A	21,0	210	9,0	4,4	11,0	7,4
S(NF)10K275	240	275	350	430	25,0	710	2500	N/A	43,0	440	12,0	5,0	14,0	8,0
*S(NF)14K275		275	350	430	50,0	710	4500	6.0kV/3.0kA	71,0	900	15,5	5,0	17,5	8,0
*S(NF)20K275		275	350	430	100,0	710	8000	6.0kV/3.0kA	151,0	1800	21,5	5,4	23,5	8,4
S(NF)05K300		300	385	470	5,0	775	400	N/A	9,6	110	7,0	4,5	9,0	7,5
S(NF)07K300		300	385	470	10,0	775	1200	N/A	23,0	170	9,0	4,5	11,0	7,5
S(NF)10K300		300	385	470	25,0	775	2500	N/A	47,0	360	12,0	5,1	14,0	8,1
*S(NF)14K300		300	385	470	50,0	775	4500	6.0kV/3.0kA	76,0	780	15,5	5,2	17,5	8,2
*S(NF)20K300		300	385	470	100,0	775	8000	6.0kV/3.0kA	173,0	1500	21,5	5,6	23,5	8,6
S(NF)05K320		320	420	510	10,0	845	400	N/A	10,5	105	7,0	4,6	9,0	7,6
S(NF)07K320		320	420	510	25,0	845	1200	N/A	25,0	155	9,0	4,6	11,0	7,6
S(NF)10K320		320	420	510	25,0	845	2500	N/A	50,0	340	12,0	5,4	14,0	8,4
*S(NF)14K320		320	420	510	50,0	845	4500	6.0kV/3.0kA	84,0	680	15,5	5,4	17,5	8,4
*S(NF)20K320		320	420	510	100,0	845	8000	6.0kV/3.0kA	184,0	1300	21,5	5,8	23,5	8,8

- (1) For explanation of style reference number, see clause 1.5.
 (2) All types marked with "*" are covered by IEC 60950-1 Annex Q.

Table 1 (6 of 19)

Style (1)	Supply voltage (V)	Maximum continuous voltage		Voltage at 1 mA (V)	Voltage at class current (8/20µs)		Max. peak current (8/20µs, 1 time) (A)	Max. peak current (8/20µs, combination pulse, 10 times) (A)	Energy surge rating (2 ms, 1 time) (J)	Maximum capacitance (pF)	Dimensions for S*		Dimensions for SNF*	
		r.m.s. (V)	d.c. (V)		Class current(A)	Max. volt (V)					b _{max} (mm)	s _{max} (mm)	b _{max} (mm)	s _{max} (mm)
S(NF)05K350		350	460	560	5,0	910	400	N/A	12,0	50	7,0	6,0	9,0	8,0
S(NF)07K350		350	460	560	10,0	910	1200	N/A	24,0	75	9,0	6,0	11,0	8,0
S(NF)10K350		350	460	560	25,0	910	2500	N/A	45,0	160	12,5	6,6	14,0	8,5
*S(NF)14K350		350	460	560	50,0	910	4500	6.0kV/3.0kA	82,0	260	16,5	6,6	17,5	8,6
*S(NF)20K350		350	460	560	100,0	910	8000	6.0kV/3.0kA	145,0	650	22,5	7,2	23,5	9,2
S(NF)05K385		385	505	620	5,0	1025	400	N/A	13,0	100	7,0	5,1	9,0	8,1
S(NF)07K385		385	505	620	10,0	1025	1200	N/A	28,0	150	9,0	5,2	11,0	8,2
S(NF)10K385		385	505	620	25,0	1025	2500	N/A	40,0	320	12,5	5,8	14,0	8,8
*S(NF)14K385		385	505	620	50,0	1025	4500	6.0kV/3.0kA	80,0	670	15,5	5,9	17,5	8,9
*S(NF)20K385		385	505	620	100,0	1025	8000	6.0kV/3.0kA	150,0	1250	21,5	6,3	23,5	9,3
S(NF)05K420	380	420	560	680	5,0	1120	400	N/A	14,0	90	7,0	5,4	9,0	8,4
S(NF)07K420		420	560	680	10,0	1120	1200	N/A	32,0	140	9,0	5,4	11,0	8,4
S(NF)10K420		420	560	680	25,0	1120	2500	N/A	45,0	290	12,5	6,1	14,0	9,1
*S(NF)14K420		420	560	680	50,0	1120	4500	6.0kV/3.0kA	90,0	600	15,5	6,1	17,5	9,1
*S(NF)20K420		420	560	680	100,0	1120	8000	6.0kV/3.0kA	175,0	1100	21,5	6,5	23,5	9,5
S(NF)05K440	400	440	585	715	5,0	1180	400	N/A	16,0	75	7,0	5,5	9,0	8,5
S(NF)07K440		440	585	715	10,0	1180	1200	N/A	34,0	130	9,0	5,5	11,0	8,5
S(NF)10K440		440	585	715	25,0	1180	2500	N/A	47,0	280	12,5	6,2	14,0	9,2
*S(NF)14K440		440	585	715	50,0	1180	4500	6.0kV/3.0kA	95,0	540	15,5	6,3	17,5	9,3
*S(NF)20K440		440	585	715	100,0	1180	8000	6.0kV/3.0kA	185,0	1000	21,5	6,7	23,5	9,7

- (1) For explanation of style reference number, see clause 1.5.
(2) All types marked with "*" are covered by IEC 60950-1 Annex Q.

Table 1 (7 of 19)

Style (1)	Supply voltage (V)	Maximum continuous voltage		Voltage at 1 mA (V)	Voltage at class current (8/20µs)		Max. peak current (8/20µs, 1 time) (A)	Max. peak current (8/20µs, combination pulse, 10 times) (A)	Energy surge rating (2 ms, 1 time) (J)	Maximum capacitance (pF)	Dimensions for S*		Dimensions for SNF*	
		r.m.s. (V)	d.c. (V)		Class current(A)	Max. volt (V)					b _{max} (mm)	s _{max} (mm)	b _{max} (mm)	s _{max} (mm)
S(NF)05K460		460	615	750	5	1240	400	N/A	18	80	7,0	5,7	9,0	8,7
S(NF)07K460		460	615	750	10	1240	1200	N/A	36	120	9,0	5,7	11,0	8,7
S(NF)10K460	415	460	615	750	25	1240	2500	N/A	50	250	12,0	6,3	14,0	9,3
*S(NF)14K460		460	615	750	50	1240	4500	6.0kV/3.0kA	100	570	15,5	6,4	17,5	9,4
*S(NF)20K460		460	615	750	100	1240	8000	6.0kV/3.0kA	195	1100	21,5	6,8	23,5	9,8
S(NF)07K510		510	670	820	10	1355	1200	N/A	40	110	9	8,1	11,0	10,0
S(NF)10K510		510	670	820	25	1355	2500	N/A	55	220	12,0	6,7	14,0	9,7
*S(NF)14K510		510	670	820	50	1355	4500	6.0kV/3.0kA	110	460	15,5	6,8	17,5	9,8
*S(NF)20K510		510	670	820	100	1355	6500	6.0kV/3.0kA	190	900	21,5	7,1	23,5	10,1
S(NF)07K550		550	745	910	10	1500	1200	N/A	42	100	9	8	11,0	10,4
S(NF)10K550		550	745	910	25	1500	2500	N/A	60	200	12,0	7,1	14,0	10,1
*S(NF)14K550	500	550	745	910	50	1500	4500	6.0kV/3.0kA	120	350	15,5	7,2	17,5	10,2
*S(NF)20K550		550	745	910	100	1500	6500	6.0kV/3.0kA	210	700	21,5	7,5	23,5	10,5
S(NF)07K625		625	825	1000	10	1650	1200	N/A	44	90	9	7,5	11,0	10,5
S(NF)10K625		625	825	1000	25	1650	2500	N/A	68	180	12,0	7,5	14,0	10,5
*S(NF)14K625		625	825	1000	50	1650	4500	6.0kV/3.0kA	130	320	15,5	7,5	17,5	10,5
*S(NF)20K625		625	825	1000	100	1650	6500	6.0kV/3.0kA	230	650	21,5	7,5	23,5	10,9
S(NF)10K680		680	895	1100	25	1815	2500	N/A	72	150	12,0	7,9	14,0	10,9
*S(NF)14K680		680	895	1100	50	1815	4500	6.0kV/3.0kA	140	280	15,5	8,0	17,5	11,0
*S(NF)20K680		680	895	1100	100	1815	6500	6.0kV/3.0kA	250	600	21,5	8,4	23,5	11,4
*S(NF)14K1000		1100	1465	1800	50	2970	4500	6.0kV/3.0kA	230	200	15,5	11,0	17,5	14,0
*S(NF)20K1000		1100	1465	1800	100	2970	6500	6.0kV/3.0kA	410	400	21,5	11,4	23,5	14,4

- (1) For explanation of style reference number, see clause 1.5.
(2) All types marked with "*" are covered by IEC 60950-1 Annex Q.

Table 1 (8 of 19)

Style (1)	Supply voltage (V)	Maximum continuous voltage		Voltage at 1 mA (V)	Voltage at class current (8/20µs)		Max. peak current (8/20µs, 1 time) (A)	Max. peak current (8/20µs, combination pulse, 10 times) (A)	Energy surge rating (2 ms, 1 time) (J)	Maximum capacitance (pF)	Dimensions for S*		Dimensions for SNF*	
		r.m.s. (V)	d.c. (V)		Class current(A)	Max. volt (V)					b _{max} (mm)	s _{max} (mm)	b _{max} (mm)	s _{max} (mm)
S(NF)05K11E2		11	14	18	1,0	36	250	N/A	0,4	3000	7,0	3,5	9,0	6,5
S(NF)07K11E2		11	14	18	2,5	36	500	N/A	0,9	7000	9,0	3,5	11,0	6,5
S(NF)10K11E2		11	14	18	5,0	36	1000	N/A	2,2	15000	12,0	4,1	14,0	7,1
S(NF)14K11E2		11	14	18	10,0	36	2000	N/A	4,3	35000	15,5	4,1	17,5	7,1
S(NF)20K11E2		11	14	18	20,0	36	3000	N/A	12,0	70000	21,5	4,5	23,5	7,5
S(NF)05K14E2		14	18	22	1,0	43	250	N/A	0,5	2500	7,0	3,6	9,0	6,6
S(NF)07K14E2		14	18	22	2,5	43	500	N/A	1,1	5500	9,0	3,6	11,0	6,6
S(NF)10K14E2		14	18	22	5,0	43	1000	N/A	2,6	12000	12,0	4,2	14,0	7,2
S(NF)14K14E2		14	18	22	10,0	43	2000	N/A	5,3	30000	15,5	4,2	17,5	7,2
S(NF)20K14E2		14	18	22	20,0	43	3000	N/A	14,0	60000	21,5	4,6	23,5	7,6
S(NF)05K17E2		17	22	27	1,0	53	250	N/A	0,7	2000	7,0	3,7	9,0	6,7
S(NF)07K17E2		17	22	27	2,5	53	500	N/A	1,3	4000	9,0	3,7	11,0	6,7
S(NF)10K17E2		17	22	27	5,0	53	1000	N/A	3,2	8000	12,0	4,4	14,0	7,4
S(NF)14K17E2		17	22	27	10,0	53	2000	N/A	6,5	20000	15,5	4,4	17,5	7,4
S(NF)20K17E2		17	22	27	20,0	53	3000	N/A	17,0	45000	21,5	4,8	23,5	7,8
S(NF)05K20E2		20	26	33	1,0	65	250	N/A	0,8	1800	7,0	3,9	9,0	6,9
S(NF)07K20E2		20	26	33	2,5	65	500	N/A	1,6	3000	9,0	3,9	11,0	6,9
S(NF)10K20E2		20	26	33	5,0	65	1000	N/A	4,0	6000	12,0	4,5	14,0	7,5
S(NF)14K20E2		20	26	33	10,0	65	2000	N/A	7,9	15000	15,5	4,6	17,5	7,6
S(NF)20K20E2		20	26	33	20,0	65	3000	N/A	21,0	35000	21,5	5,1	23,5	8,1
S(NF)05K25E2		25	31	39	1,0	77	250	N/A	0,9	1000	7,0	3,6	9,0	6,6
S(NF)07K25E2		25	31	39	2,5	77	500	N/A	1,9	2500	9,0	3,7	11,0	6,7
S(NF)10K25E2		25	31	39	5,0	77	1000	N/A	4,7	5000	12,0	4,3	14,0	7,3
S(NF)14K25E2		25	31	39	10,0	77	2000	N/A	9,4	12000	15,5	4,4	17,5	7,4
S(NF)20K25E2		25	31	39	20,0	77	3000	N/A	25,0	30000	21,5	4,8	23,5	7,8

(1) For explanation of style reference number, see clause 1.5.

Table (9 of 19)

Style (1)	Supply voltage (V)	Maximum continuous voltage		Voltage at 1 mA (V)	Voltage at class current (8/20µs)		Max. peak current (8/20µs, 1 time) (A)	Max. peak current (8/20µs, combination pulse, 10 times) (A)	Energy surge rating (2 ms, 1 time) (J)	Maximum capacitance (pF)	Dimensions for S*		Dimensions for SNF*	
		r.m.s. (V)	d.c. (V)		Class current(A)	Max. volt (V)					b _{max} (mm)	s _{max} (mm)	b _{max} (mm)	s _{max} (mm)
S(NF)05K30E2		30	38	47	1,0	93	250	N/A	1,1	1500	7,0	3,8	9,0	6,8
S(NF)07K30E2		30	38	47	2,5	93	500	N/A	2,3	3000	9,0	3,8	11,0	6,8
S(NF)10K30E2		30	38	47	5,0	93	1000	N/A	5,6	6000	12,0	4,4	14,0	7,4
S(NF)14K30E2		30	38	47	10,0	93	2000	N/A	11,0	11000	15,5	4,5	17,5	7,5
S(NF)20K30E2		30	38	47	20,0	93	3000	N/A	30,0	25000	21,5	5,0	23,5	8,0
S(NF)05K35E2		35	45	56	1,0	110	250	N/A	1,3	1250	7,0	3,9	9,0	6,9
S(NF)07K35E2		35	45	56	2,5	110	500	N/A	2,7	2300	9,0	3,9	11,0	6,9
S(NF)10K35E2		35	45	56	5,0	110	1000	N/A	6,7	4500	12,0	4,5	14,0	7,5
S(NF)14K35E2		35	45	56	10,0	110	2000	N/A	13,0	9000	15,5	4,7	17,5	7,7
S(NF)20K35E2		35	45	56	20,0	110	3000	N/A	36,0	20000	21,5	5,2	23,5	8,2
S(NF)05K40E2		40	56	68	1,0	135	250	N/A	1,6	1200	7,0	4,1	9,0	7,1
S(NF)07K40E2		40	56	68	2,5	135	500	N/A	3,3	1900	9,0	4,1	11,0	7,1
S(NF)10K40E2		40	56	68	5,0	135	1000	N/A	8,2	3600	12,0	4,8	14,0	7,8
S(NF)14K40E2		40	56	68	10,0	135	2000	N/A	16,0	6000	15,5	4,9	17,5	7,9
S(NF)20K40E2		40	56	68	20,0	135	3000	N/A	44,0	10000	21,5	5,4	23,5	8,4
S(NF)05K50E2		50	65	82	5,0	135	800	N/A	2,5	900	7,0	3,5	9,0	6,5
S(NF)07K50E2		50	65	82	10,0	135	1750	N/A	5,0	1800	9,0	3,5	11,0	6,5
S(NF)10K50E2		50	65	82	25,0	135	3500	N/A	10,0	3400	12,0	4,1	14,0	7,1
*S(NF)14K50E2		50	65	82	50,0	135	6000	6.0kV/3.0kA	20,0	5400	15,5	4,1	17,5	7,1
*S(NF)20K50E2		50	65	82	100,0	135	10000	6.0kV/3.0kA	40,0	9000	21,5	4,5	23,5	7,5
S(NF)05K60E2		60	85	100	5,0	165	800	N/A	3,0	600	7,0	3,5	9,0	6,5
S(NF)07K60E2		60	85	100	10,0	165	1750	N/A	6,0	1000	9,0	3,5	11,0	6,5
S(NF)10K60E2		60	85	100	25,0	165	3500	N/A	12,0	2000	12,0	4,1	14,0	7,1
*S(NF)14K60E2		60	85	100	50,0	165	6000	6.0kV/3.0kA	25,0	3400	15,5	4,2	17,5	7,2
*S(NF)20K60E2		60	85	100	100,0	165	10000	6.0kV/3.0kA	50,0	6000	21,5	4,6	23,5	7,6

(1) For explanation of style reference number, see clause 1.5.
(2) All types marked with "*" are covered by IEC 60950-1 Annex Q.

Table 1 (10 of 19)

Style (1)	Supply voltage (V)	Maximum continuous voltage		Voltage at 1 mA (V)	Voltage at class current (8/20µs)		Max. peak current (8/20µs, 1 time) (A)	Max. peak current (8/20µs, combination pulse, 10 times) (A)	Energy surge rating (2 ms, 1 time) (J)	Maximum capacitance (pF)	Dimensions for S*		Dimensions for SNF*	
		r.m.s. (V)	d.c. (V)		Class current(A)	Max. volt (V)					b _{max} (mm)	s _{max} (mm)	b _{max} (mm)	s _{max} (mm)
S(NF)05K75E2		75	100	120	5,0	200	800	N/A	3,5	420	7,0	3,6	9,0	6,6
S(NF)07K75E2		75	100	120	10,0	200	1750	N/A	7,0	790	9,0	3,6	11,0	6,6
S(NF)10K75E2		75	100	120	25,0	200	3500	N/A	14,5	1600	12,0	4,2	14,0	7,2
*S(NF)14K75E2		75	100	120	50,0	200	6000	6.0kV/3.0kA	30,0	3000	15,5	4,2	17,5	7,2
*S(NF)20K75E2		75	100	120	100,0	200	10000	6.0kV/3.0kA	60,0	5000	21,5	4,6	23,5	7,6
S(NF)05K95E2		95	125	150	5,0	250	800	N/A	4,5	350	7,0	3,6	9,0	6,6
S(NF)07K95E2		95	125	150	10,0	250	1750	N/A	9,0	700	9,0	3,6	11,0	6,6
S(NF)10K95E2		95	125	150	25,0	250	3500	N/A	18,0	1400	12,0	4,2	14,0	7,2
*S(NF)14K95E2		95	125	150	50,0	250	6000	6.0kV/3.0kA	37,5	2500	15,5	4,2	17,5	7,2
*S(NF)20K95E2		95	125	150	100,0	250	10000	6.0kV/3.0kA	75,0	4500	21,5	4,6	23,5	7,6
S(NF)05K115E2		115	150	180	5,0	300	800	N/A	4,5	300	7,0	3,6	9,0	6,6
S(NF)07K115E2		115	150	180	10,0	300	1750	N/A	9,0	640	9,0	3,6	11,0	6,6
S(NF)10K115E2		115	150	180	25,0	300	3500	N/A	18,5	1200	12,5	4,2	14,0	7,2
*S(NF)14K115E2		115	150	180	50,0	300	6000	6.0kV/3.0kA	35,0	2200	15,5	4,2	17,5	7,2
*S(NF)20K115E2		115	150	180	100,0	300	10000	6.0kV/3.0kA	75,0	4000	21,5	4,6	23,5	7,6
S(NF)05K130E2		130	170	200	5,0	340	800	N/A	4,2	240	7,0	3,9	9,0	6,9
S(NF)07K130E2		130	170	200	10,0	340	1750	N/A	9,5	580	9,0	3,9	11,0	6,9
S(NF)10K130E2	120	130	170	200	25,0	340	3500	N/A	19,0	1050	12,0	4,5	14,0	7,5
*S(NF)14K130E2		130	170	200	50,0	340	6000	6.0kV/3.0kA	34,0	1900	15,5	4,6	17,5	7,6
*S(NF)20K130E2		130	170	200	100,0	340	10000	6.0kV/3.0kA	74,0	3500	21,5	5,0	23,5	8,0
S(NF)05K140E2		140	180	220	5,0	360	800	N/A	4,5	220	7,0	4,0	9,0	7,0
S(NF)07K140E2		140	180	220	10,0	360	1750	N/A	10,0	550	9,0	4,0	11,0	7,0
S(NF)10K140E2		140	180	220	25,0	360	3500	N/A	22,0	980	12,0	4,6	14,0	7,6
*S(NF)14K140E2		140	180	220	50,0	360	6000	6.0kV/3.0kA	36,0	1750	15,5	4,7	17,5	7,7
*S(NF)20K140E2		140	180	220	100,0	360	10000	6.0kV/3.0kA	78,0	3250	21,5	5,1	23,5	8,1

(1) For explanation of style reference number, see clause 1.5.
(2) All types marked with "*" are covered by IEC 60950-1 Annex Q.

Table 1 (11 of 19)

Style (1)	Supply voltage (V)	Maximum continuous voltage		Voltage at 1 mA (V)	Voltage at class current (8/20µs)		Max. peak current (8/20µs, 1 time) (A)	Max. peak current (8/20µs, combination pulse, 10 times) (A)	Energy surge rating (2 ms, 1 time) (J)	Maximum capacitance (pF)	Dimensions for S*		Dimensions for SNF*	
		r.m.s. (V)	d.c. (V)		Class current(A)	Max. volt (V)					b _{max} (mm)	s _{max} (mm)	b _{max} (mm)	s _{max} (mm)
S(NF)05K150E2		150	200	240	5,0	395	800	N/A	7,5	200	7,0	4,1	9,0	7,1
S(NF)07K150E2		150	200	240	10,0	395	1750	N/A	15,0	520	9,0	4,1	11,0	7,1
S(NF)10K150E2		150	200	240	25,0	395	3500	N/A	30,0	900	12,0	4,7	14,0	7,7
*S(NF)14K150E2		150	200	240	50,0	395	6000	6.0kV/3.0kA	60,0	1600	15,5	4,8	17,5	7,8
*S(NF)20K150E2		150	200	240	100,0	395	10000	6.0kV/3.0kA	120,0	3000	21,5	5,2	23,5	8,2
S(NF)05K175E2		175	225	270	5,0	455	800	N/A	8,0	170	7,0	4,3	9,0	7,3
S(NF)07K175E2		175	225	270	10,0	455	1750	N/A	17,0	380	9,0	4,3	11,0	7,3
S(NF)10K175E2		175	225	270	25,0	455	3500	N/A	35,0	720	12,0	4,9	14,0	7,9
*S(NF)14K175E2		175	225	270	50,0	455	6000	6.0kV/3.0kA	70,0	1380	15,5	4,9	17,5	7,9
*S(NF)20K175E2		175	225	270	100,0	455	10000	6.0kV/3.0kA	135,0	2600	21,5	5,3	23,5	8,3
S(NF)05K210E2		210	270	330	5,0	545	800	N/A	9,5	155	7,0	4,2	9,0	7,2
S(NF)07K210E2		210	270	330	10,0	545	1750	N/A	20,0	340	9,0	4,2	11,0	7,2
S(NF)10K210E2		210	270	330	25,0	545	3500	N/A	42,0	635	12,0	5,0	14,0	8,0
*S(NF)14K210E2		210	270	330	50,0	545	6000	6.0kV/3.0kA	80,0	1250	15,5	5,0	17,5	8,0
*S(NF)20K210E2		210	270	330	100,0	545	10000	6.0kV/3.0kA	160,0	2300	21,5	5,4	23,5	8,4
S(NF)05K230E2		230	300	360	5,0	595	800	N/A	11,0	140	7,0	4,4	9,0	7,4
S(NF)07K230E2		230	300	360	10,0	595	1750	N/A	23,0	300	9,0	4,4	11,0	7,4
S(NF)10K230E2		230	300	360	25,0	595	3500	N/A	45,0	550	12,0	5,0	14,0	8,0
*S(NF)14K230E2		230	300	360	50,0	595	6000	6.0kV/3.0kA	90,0	1100	15,5	5,1	17,5	8,1
*S(NF)20K230E2		230	300	360	100,0	595	10000	6.0kV/3.0kA	180,0	2000	21,5	5,5	23,5	8,5
S(NF)05K250E2	220	250	320	390	5,0	650	800	N/A	12,0	120	7,0	4,5	9,0	7,5
S(NF)07K250E2	AND	250	320	390	10,0	650	1750	N/A	25,0	240	9,0	4,5	11,0	7,5
S(NF)10K250E2	230	250	320	390	25,0	650	3500	N/A	50,0	480	12,0	5,2	14,0	8,2
*S(NF)14K250E2		250	320	390	50,0	650	6000	6.0kV/3.0kA	100,0	940	15,5	5,2	17,5	8,2
*S(NF)20K250E2		250	320	390	100,0	650	10000	6.0kV/3.0kA	195,0	1800	21,5	5,7	23,5	8,7

(1) For explanation of style reference number, see clause 1.5.
(2) All types marked with "*" are covered by IEC 60950-1 Annex Q.

Table 1 (12 of 19)

Style (1)	Supply voltage (V)	Maximum continuous voltage		Voltage at 1 mA (V)	Voltage at class current (8/20µs)		Max. peak current (8/20µs, 1 time) (A)	Max. peak current (8/20µs, combination pulse, 10 times) (A)	Energy surge rating (2 ms, 1 time) (J)	Maximum capacitance (pF)	Dimensions for S*		Dimensions for SNF*	
		r.m.s. (V)	d.c. (V)		Class current(A)	Max. volt (V)					b _{max} (mm)	s _{max} (mm)	b _{max} (mm)	s _{max} (mm)
S(NF)05K275E2		275	350	430	5,0	710	800	N/A	13,5	120	7,0	4,6	9,0	7,6
S(NF)07K275E2		275	350	430	10,0	710	1750	N/A	27,5	210	9,0	4,6	11,0	7,6
S(NF)10K275E2	240	275	350	430	25,0	710	3500	N/A	55,0	440	12,0	5,4	14,0	8,4
*S(NF)14K275E2		275	350	430	50,0	710	6000	6.0kV/3.0kA	110,0	900	15,5	5,4	17,5	8,4
*S(NF)20K275E2		275	350	430	100,0	710	10000	6.0kV/3.0kA	215,0	1800	21,5	5,8	23,5	8,8
S(NF)05K300E2		300	385	470	5,0	775	800	N/A	15,0	110	7,0	4,7	9,0	7,7
S(NF)07K300E2		300	385	470	10,0	775	1750	N/A	30,0	170	9,0	4,7	11,0	7,7
S(NF)10K300E2		300	385	470	25,0	775	3500	N/A	60,0	360	12,0	5,6	14,0	8,6
*S(NF)14K300E2		300	385	470	50,0	775	6000	6.0kV/3.0kA	125,0	780	15,5	5,6	17,5	8,6
*S(NF)20K300E2		300	385	470	100,0	775	10000	6.0kV/3.0kA	250,0	1500	21,5	6,1	23,5	9,1
S(NF)07K320E2		320	420	510	10,0	845	1750	N/A	32,0	155	9,0	4,6	11,0	7,6
S(NF)10K320E2		320	420	510	25,0	845	3500	N/A	67,0	340	12,0	5,8	14,0	8,8
*S(NF)14K320E2		320	420	510	50,0	845	6000	6.0kV/3.0kA	136,0	680	15,5	5,8	17,5	8,8
*S(NF)20K320E2		320	420	510	100,0	845	10000	6.0kV/3.0kA	273,0	1300	21,5	6,2	23,5	9,2
S(NF)07K350E2		350	455	560	10	930	1750	N/A	32	140	9	5,7	11,0	7,7
S(NF)10K350E2		350	455	560	25,0	930	3500	N/A	55,0	330	12,0	6,9	14,0	8,9
*S(NF)14K350E2		350	455	560	50,0	930	5000	6.0kV/3.0kA	110,0	675	15,5	6,9	17,5	8,9
*S(NF)20K350E2		350	455	560	100,0	930	10000	6.0kV/3.0kA	200,0	1270	21,5	7,4	23,5	9,4
S(NF)07K385E2		385	505	620	10	1025	1750	N/A	38	130	9	6,6	11,0	8,2
S(NF)10K385E2		385	505	620	25,0	1025	3500	N/A	67,0	320	12,0	7,1	14,0	10,1
*S(NF)14K385E2		385	505	620	50,0	1025	5000	6.0kV/3.0kA	136,0	670	15,5	7,1	17,5	10,1
*S(NF)20K385E2		385	505	620	100,0	1025	10000	6.0kV/3.0kA	273,0	1250	21,5	7,6	23,5	10,6
S(NF)07K420E2		420	560	680	10	1120	1750	N/A	57	120	9	7	11,0	8,6
S(NF)10K420E2		420	560	680	25,0	1120	3500	N/A	67,0	290	12,0	7,4	14,0	10,4
*S(NF)14K420E2		420	560	680	50,0	1120	5000	6.0kV/3.0kA	136,0	600	15,5	7,5	17,5	10,5
*S(NF)20K420E2		420	560	680	100,0	1120	10000	6.0kV/3.0kA	273,0	1100	21,5	7,9	23,5	10,9

(1) For explanation of style reference number, see clause 1.5. (2) All types marked with "*" are covered by IEC 60950-1 Annex Q.

Table 1 (13 of 19)

Style (1)	Supply voltage (V)	Maximum continuous voltage		Voltage at 1 mA (V)	Voltage at class current (8/20µs)		Max. peak current (8/20µs, 1 time) (A)	Max. peak current (8/20µs, combination pulse, 10 times) (A)	Energy surge rating (2 ms, 1 time) (J)	Maximum capacitance (pF)	Dimensions for S*		Dimensions for SNF*	
		r.m.s. (V)	d.c. (V)		Class current(A)	Max. volt (V)					b _{max} (mm)	s _{max} (mm)	b _{max} (mm)	s _{max} (mm)
S(NF)10K460E2	415	460	615	750	25,0	1240	3500	N/A	70,0	250	12,0	7,7	14,0	10,7
*S(NF)14K460E2		460	615	750	50,0	1240	5000	6.0kV/3.0kA	150,0	570	15,5	7,8	17,5	10,8
*S(NF)20K460E2		460	615	750	100,0	1240	10000	6.0kV/3.0kA	300,0	1100	21,5	8,2	23,5	11,2
S(NF)10K510E2		510	670	820	25,0	1355	3500	N/A	80,0	220	12,0	8,0	14,0	11,0
*S(NF)14K510E2		510	670	820	50,0	1355	5000	6.0kV/3.0kA	165,0	460	15,5	8,1	17,5	11,1
*S(NF)20K510E2		510	670	820	100,0	1355	10000	6.0kV/3.0kA	325,0	900	21,5	8,6	23,5	11,6
S(NF)10K550E2		550	745	910	25,0	1500	3500	N/A	90,0	200	12,0	8,4	14,0	11,4
*S(NF)14K550E2	500	550	745	910	50,0	1500	5000	6.0kV/3.0kA	180,0	350	15,5	8,5	17,5	11,5
*S(NF)20K550E2		550	745	910	100,0	1500	10000	6.0kV/3.0kA	360,0	700	21,5	9,0	23,5	12,0
S(NF)10K625E2		625	825	1000	25,0	1650	3500	N/A	100,0	180	12,0	8,8	14,0	11,8
*S(NF)14K625E2		625	825	1000	50,0	1650	5000	6.0kV/3.0kA	200,0	320	15,5	8,9	17,5	11,9
*S(NF)20K625E2		625	825	1000	100,0	1650	10000	6.0kV/3.0kA	400,0	650	21,5	9,4	23,5	12,4
S(NF)10K680E2		680	895	1100	25,0	1815	3500	N/A	110,0	150	12,0	9,3	14,0	12,2
*S(NF)14K680E2		680	895	1100	50,0	1815	5000	6.0kV/3.0kA	220,0	280	15,5	9,4	17,5	12,3
*S(NF)20K680E2		680	895	1100	100,0	1815	10000	6.0kV/3.0kA	440,0	600	21,5	9,9	23,5	12,8
*S(NF)14K1000E2		1100	1465	1800	50,0	2970	5000	6.0kV/3.0kA	360	200	15,5	12,8	17,5	15,3
*S(NF)20K1000E2		1100	1465	1800	100,0	2970	10000	6.0kV/3.0kA	720	400	21,5	13,4	23,5	15,7

- (1) For explanation of style reference number, see clause 1.5.
(2) All types marked with "*" are covered by IEC 60950-1 Annex Q.

Table 1 (14 of 19)

Style (1)	Supply voltage (V)	Maximum continuous voltage		Voltage at 1 mA (V)	Voltage at class current (8/20µs)		Max. peak current (8/20µs, 1 time) (A)	Max. peak current (8/20µs, combination pulse, 10 times) (A)	Energy surge rating (2 ms, 1 time) (J)	Maximum capacitance (pF)	Dimensions for S*		Dimensions for SNF*	
		r.m.s. (V)	d.c. (V)		Class current(A)	Max. volt (V)					b _{max} (mm)	s _{max} (mm)	b _{max} (mm)	s _{max} (mm)
*S(NF)20K115E3		115	150	180	100,0	300	12000	6.0kV/3.0kA	110	4000	22,5	4,8	24,5	7,8
*S(NF)20K130E3	120	130	170	205	100,0	340	12000	6.0kV/3.0kA	130	3500	22,5	5,0	24,5	8,0
*S(NF)20K140E3		140	180	220	100,0	360	12000	6.0kV/3.0kA	140	3250	22,5	5,1	24,5	8,1
*S(NF)20K150E3		150	200	240	100,0	395	12000	6.0kV/3.0kA	150	3000	22,5	5,2	24,5	8,2
*S(NF)20K175E3		175	225	270	100,0	455	12000	6.0kV/3.0kA	180	2600	22,5	5,3	24,5	8,3
*S(NF)20K210E3		210	270	330	100,0	550	12000	6.0kV/3.0kA	210	2300	22,5	5,4	24,5	8,4
*S(NF)20K230E3		230	300	360	100,0	595	12000	6.0kV/3.0kA	220	2000	22,5	5,9	24,5	8,9
*S(NF)20K250E3	220	250	320	390	100,0	650	12000	6.0kV/3.0kA	250	1800	22,5	6,1	24,5	9,1
	AND													
*S(NF)20K275E3	230	275	350	430	100,0	710	12000	6.0kV/3.0kA	260	1800	22,5	6,3	24,5	9,3
*S(NF)20K300E3		300	385	470	100,0	775	12000	6.0kV/3.0kA	290	1500	22,5	6,6	24,5	9,6
*S(NF)20K320E3		320	420	510	100,0	845	12000	6.0kV/3.0kA	320	1300	22,5	6,8	24,5	9,8
*S(NF)20K350E3		350	460	560	100	930	12000	6.0kV/3.0kA	320	1270	22,5	7,3	24,5	10,3
*S(NF)20K385E3		385	505	620	100	1025	12000	6.0kV/3.0kA	320	1200	22,5	8,3	24,5	11,3
*S(NF)20K420E3	380	420	560	680	100	1120	12000	6.0kV/3.0kA	320	1100	22,5	8,6	24,5	11,6
*S(NF)20K460E3	415	460	615	750	100	1240	12000	6.0kV/3.0kA	370	1100	22,5	8,9	24,5	11,9
*S(NF)20K510E3		510	670	820	100	1355	10000	6.0kV/3.0kA	410	900	23	9,3	25	12,3
*S(NF)20K550E3	500	550	745	910	100	1500	10000	6.0kV/3.0kA	450	700	23	9,8	25	12,8
*S(NF)20K625E3		625	825	1000	100	1650	10000	6.0kV/3.0kA	500	650	23	10,3	25	13,3
*S(NF)20K680E3		680	895	1100	100	1815	10000	6.0kV/3.0kA	540	600	23	10,9	25	13,9

- (1) For explanation of style reference number, see clause 1.5.
(2) All types marked with "*" are covered by IEC 60950-1 Annex Q.

Table 1 (15 of 19)

Style (1)	Supply voltage (V)	Maximum continuous voltage		Voltage at 1 mA (V)	Voltage at class current (8/20µs)		Max. peak current (8/20µs, 1 time) (A)	Max. peak current (8/20µs, combination pulse, 10 times) (A)	Energy surge rating (2 ms, 1 time) (J)	Maximum capacitance (pF)	Dimensions	
		r.m.s. (V)	d.c. (V)		Class current(A)	Max. volt (V)					bmax (mm)	smax (mm)
*S20KV181		115	150	180	100.0	300	6500	6.0kV/3.0kA	60	4000	21.5	4.6
*S20KV201	120	130	170	205	100.0	340	8000	6.0kV/3.0kA	74	3500	21.5	4.7
*S20KV221		140	180	220	100.0	360	8000	6.0kV/3.0kA	78	3250	21.5	4.8
*S20KV241		150	200	240	100.0	395	8000	6.0kV/3.0kA	85	3000	21.5	4.9
*S20KV271		175	225	270	100.0	455	8000	6.0kV/3.0kA	98	2600	22.5	5.3
*S20KV331		210	270	330	100.0	550	8000	6.0kV/3.0kA	120	2300	21.5	5.4
*S20KV361		230	300	360	100.0	595	8000	6.0kV/3.0kA	130	2000	22.5	5.9
*S20KV391	230	250	320	391	100.0	650	8000	6.0kV/3.0kA	140	1800	21.5	5.3
*S20KV431	240	275	350	430	100.0	710	8000	6.0kV/3.0kA	151	1800	21.5	5.4
*S20KV471		300	385	470	100.0	775	8000	6.0kV/3.0kA	173	1500	21.5	5.6
*S20KV511		320	420	510	100.0	845	8000	6.0kV/3.0kA	184	1300	21.5	5.8
*S20KV561		350	460	560	100.0	910	8000	6.0kV/3.0kA	145	650	21.5	7.2
*S20KV621		385	505	620	100.0	1025	8000	6.0kV/3.0kA	150	1250	21.5	6.3
*S20KV681		420	560	680	100.0	1120	8000	6.0kV/3.0kA	175	1100	21.5	6.5
*S20KV721		440	585	715	100.0	1180	8000	6.0kV/3.0kA	185	1000	21.5	6.7
*S20KV751	415	460	615	750	100.0	1240	8000	6.0kV/3.0kA	195	1100	21.5	6.8
*S20KV821		510	670	820	100.0	1355	6500	6.0kV/3.0kA	190	900	21.5	7.1
*S20KV911		550	745	910	100.0	1500	6500	6.0kV/3.0kA	210	700	21.5	7.5

(1) For explanation of style reference number, see clause 1.5.
(2) All types marked with "*" are covered by IEC 60950-1 Annex Q.

Table 1 (16 of 19)

Style (1)	Supply voltage (V)	Maximum continuous voltage		Voltage at 1 mA (V)	Voltage at class current (8/20µs)		Max. peak current (8/20µs, 1 time) (A)	Max. peak current (8/20µs, combination pulse, 10 times) (A)	Energy surge rating (2 ms, 1 time) (J)	Maximum capacitance (pF)	Dimensions for S*		Dimensions for SNF*	
		r.m.s. (V)	d.c. (V)		Class current(A)	Max. volt (V)					b _{max} (mm)	s _{max} (mm)	b _{max} (mm)	s _{max} (mm)
*S(NF)10K130E2K1	120	130	170	205	25	340	3500	6.0kV/3.0kA	30	1400	12.0	4.7	14.0	7.7
*S(NF)10K140E2K1		140	180	220	25	360	3500	6.0kV/3.0kA	32.5	1200	12.0	4.8	14.0	7.8
*S(NF)10K150E2K1		150	200	240	25	395	3500	6.0kV/3.0kA	35	1100	12.0	4.9	14.0	7.9
*S(NF)10K175E2K1		175	225	270	25	455	3500	6.0kV/3.0kA	40	900	12.0	5.1	14.0	8.1
*S(NF)10K210E2K1		210	270	330	25	545	3500	6.0kV/3.0kA	47	780	12.0	5.4	14.0	8.4
*S(NF)10K230E2K1		230	300	360	25	595	3500	6.0kV/3.0kA	50	660	12.0	5.6	14.0	8.6
*S(NF)10K250E2K1	230	250	320	390	25	650	3500	6.0kV/3.0kA	55	580	12.0	5.7	14.0	8.7
*S(NF)10K275E2K1	240	275	350	430	25	710	3500	6.0kV/3.0kA	60	520	12.0	5.9	14.0	8.9
*S(NF)10K300E2K1		300	385	470	25	775	3500	6.0kV/3.0kA	65	430	12.0	6.1	14.0	9.1
*S(NF)10K320E2K1		320	420	510	25	840	3500	6.0kV/3.0kA	72	400	12.0	6.3	14.0	9.3
*S(NF)10K350E2K1		350	460	560	25	910	3500	6.0kV/3.0kA	77	390	12.5	6.7	14.5	9.7
*S(NF)10K385E2K1		385	505	620	25	1025	3500	6.0kV/3.0kA	82	380	12.5	7.7	14.5	10.7
*S(NF)10K420E2K1		420	560	680	25	1120	3500	6.0kV/3.0kA	87	350	12.5	8.1	14.5	11.1
*S(NF)10K460E2K1		460	615	750	25	1240	3500	6.0kV/3.0kA	92	300	12.5	8.4	14.5	11.4
*S(NF)10K510E2K1		510	670	820	25	1355	3500	6.0kV/3.0kA	92	260	13.0	8.8	15.0	11.8
*S(NF)10K550E2K1		550	745	910	25	1500	3500	6.0kV/3.0kA	97	240	13.0	9.3	15.0	12.3
*S(NF)10K625E2K1		625	825	1000	25	1650	3500	6.0kV/3.0kA	105	210	13.0	9.8	15.0	12.8
*S(NF)10K680E2K1		680	895	1100	25	1815	3500	6.0kV/3.0kA	115	180	13.0	10.4	15.0	13.4

- (1) For explanation of style reference number, see clause 1.5.
(2) All types marked with "*" are covered by IEC 60950-1 Annex Q.

Table 1 (17 of 19)

Style (1)	Supply voltage (V)	Maximum continuous voltage		Voltage at 1 mA (V)	Voltage at class current (8/20µs)		Max. peak current (8/20µs, 1 time) (A)	Max. peak current (8/20µs, combination pulse, 10 times) (A)	Energy surge rating (2 ms, 1 time) (J)	Maximum capacitance (pF)	Dimensions	
		r.m.s. (V)	d.c. (V)		Class current(A)	Max. volt (V)					bmax (mm)	smax (mm)
*Q14K130	120	130	170	205	65	340	8000	6.0kV/3.0kA	75	2800	16,5	5,0
*Q14K140		140	180	220	65	360	8000	6.0kV/3.0kA	80	2570	16,5	5,1
*Q14K150		150	200	240	65	395	8000	6.0kV/3.0kA	85	2370	16,5	5,2
*Q14K175		175	225	270	65	455	8000	6.0kV/3.0kA	100	2140	16,5	5,3
*Q14K210		210	270	330	65	550	8000	6.0kV/3.0kA	115	1710	16,5	5,4
*Q14K230		230	300	360	65	595	8000	6.0kV/3.0kA	130	1570	16,5	5,5
*Q14K250	230	250	320	390	65	650	8000	6.0kV/3.0kA	140	1430	16,5	5,7
*Q14K275		275	350	430	65	710	8000	6.0kV/3.0kA	150	1340	16,5	5,8
*Q14K300		300	385	470	65	775	8000	6.0kV/3.0kA	175	1230	16,5	6,1
*Q14K320		320	420	510	65	840	8000	6.0kV/3.0kA	185	1110	16,5	6,3
*Q14K350		350	460	560	65	910	8000	6.0kV/3.0kA	200	1030	16,5	7,3
*Q14K385		385	505	620	65	1025	8000	6.0kV/3.0kA	225	930	16,5	7,6
*Q14K420	380	420	560	680	65	1120	8000	6.0kV/3.0kA	245	870	16,5	7,9
*Q14K440	400	440	585	715	65	1180	8000	6.0kV/3.0kA	260	830	16,5	8,1
*Q14K460	415	460	615	750	65	1240	8000	6.0kV/3.0kA	270	790	16,5	8,2
*Q14K510		510	670	820	65	1355	6000	6.0kV/3.0kA	240	710	16,5	8,6
*Q14K550	500	550	745	910	65	1500	6000	6.0kV/3.0kA	260	660	16,5	9,0
*Q14K625		625	825	1000	65	1650	6000	6.0kV/3.0kA	290	580	16,5	9,4
*Q14K680		680	895	1100	65	1815	6000	6.0kV/3.0kA	320	520	16,5	9,9

- (1) For explanation of style reference number, see clause 1.5.
(2) All types marked with "*" are covered by IEC 60950-1 Annex Q.

Table 1 (18 of 19)

Style (1)	Supply voltage (V)	Maximum continuous voltage		Voltage at 1 mA (V)	Voltage at class current (8/20µs)		Max. peak current (8/20µs, 1 time) (A)	Max. peak current (8/20µs, combination pulse, 10 times) (A)	Energy surge rating (2 ms, 1 time) (J)	Maximum capacitance (pF)	Dimensions	
		r.m.s. (V)	d.c. (V)		Class current(A)	Max. volt (V)					bmax (mm)	smax (mm)
*Q20K130	120	130	170	205	130	340	15000	6.0kV/3.0kA	100	5560	22,5	5,0
*Q20K140		140	180	220	130	360	15000	6.0kV/3.0kA	110	5130	22,5	5,1
*Q20K150		150	200	240	130	395	15000	6.0kV/3.0kA	120	4700	22,5	5,2
*Q20K175		175	225	270	130	455	15000	6.0kV/3.0kA	135	4280	22,5	5,3
*Q20K210		210	270	330	130	550	15000	6.0kV/3.0kA	165	3420	22,5	5,4
*Q20K230		230	300	360	130	595	15000	6.0kV/3.0kA	180	3140	22,5	5,5
*Q20K250	230	250	320	390	130	650	15000	6.0kV/3.0kA	195	2850	22,5	5,7
*Q20K275		275	350	430	130	710	15000	6.0kV/3.0kA	215	2650	22,5	5,8
*Q20K300		300	385	470	130	775	15000	6.0kV/3.0kA	235	2420	22,5	6,1
*Q20K320		320	420	510	130	840	15000	6.0kV/3.0kA	255	2220	22,5	6,3
*Q20K350		350	460	560	130	910	15000	6.0kV/3.0kA	280	1970	22,5	7,3
*Q20K385		385	505	620	130	1025	15000	6.0kV/3.0kA	315	1800	22,5	7,6
*Q20K420	380	420	560	680	130	1120	15000	6.0kV/3.0kA	340	1680	22,5	7,9
*Q20K440	400	440	585	715	130	1180	15000	6.0kV/3.0kA	365	1600	22,5	8,1
*Q20K460	415	460	615	750	130	1240	15000	6.0kV/3.0kA	380	1510	22,5	8,2
*Q20K510		510	670	820	130	1355	13000	6.0kV/3.0kA	360	1370	22,5	8,6
*Q20K550	500	550	745	910	130	1500	13000	6.0kV/3.0kA	390	1280	22,5	9,0
*Q20K625		625	825	1000	130	1650	13000	6.0kV/3.0kA	430	1110	22,5	9,4
*Q20K680		680	895	1100	130	1815	13000	6.0kV/3.0kA	470	1000	22,5	9,9

- (1) For explanation of style reference number, see clause 1.5.
(2) All types marked with "*" are covered by IEC 60950-1 Annex Q.

Table 1 (19 of 19)

Style (1)	Supply voltage (V)	Maximum continuous voltage		Voltage at 1 mA (V)	Voltage at class current (8/20µs)		Max. peak current (8/20µs, 1 time) (A)	Max. peak current (8/20µs, combination pulse, 10 times) (A)	Energy surge rating (2 ms, 1 time) (J)	Maximum capacitance (pF)	Dimensions	
		r.m.s. (V)	d.c. (V)		Class current(A)	Max. volt (V)					bmax (mm)	smax (mm)
*S25K115E4R12		115	150	180	150	300	20000	6.0kV/3.0kA	165	8000	27.5	5.0
*S25K130E4R12	120	130	170	205	150	340	20000	6.0kV/3.0kA	185	7000	27.5	5.1
*S25K140E4R12		140	180	220	150	360	20000	6.0kV/3.0kA	195	6500	27.5	5.2
*S25K150E4R12		150	200	240	150	395	20000	6.0kV/3.0kA	215	6000	27.5	5.3
*S25K175E4R12		175	225	270	150	455	20000	6.0kV/3.0kA	245	5200	27.5	5.4
*S25K210E4R12		210	270	330	150	545	20000	6.0kV/3.1kA	280	4600	27.5	5.5
*S25K230E4R12		230	300	360	150	595	20000	6.0kV/3.0kA	315	4000	27.5	6.0
*S25K250E4R12	230	250	320	390	150	650	20000	6.0kV/3.0kA	345	3600	27.5	6.2
*S25K275E4R12		275	350	430	150	710	20000	6.0kV/3.0kA	375	3600	27.5	6.4
*S25K300E4R12		300	385	470	150	775	20000	6.0kV/3.0kA	410	3000	27.5	6.7
*S25K320E4R12		320	420	510	150	840	20000	6.0kV/3.0kA	445	2600	27.5	6.9
*S25K350E4R12		350	460	560	150	910	20000	6.0kV/3.0kA	460	2540	27.5	8.3
*S25K385E4R12		385	505	620	150	1025	20000	6.0kV/3.0kA	600	2500	27.5	7.6
*S25K420E4R12	380	420	560	680	150	1120	20000	6.0kV/3.0kA	700	2200	27.5	7.9
*S25K440E4R12	400	440	585	715	150	1180	20000	6.0kV/3.0kA	710	2200	27.5	8.1
*S25K460E4R12	415	460	615	750	150	1240	20000	6.0kV/3.0kA	720	2200	27.5	8.3
*S25K510E4R12		510	670	820	150	1355	20000	6.0kV/3.0kA	750	1800	27.5	8.7
*S25K550E4R12	500	550	745	910	150	1500	20000	6.0kV/3.0kA	780	1092	27.5	9.2
*S25K580E4R12		580	780	940	150	1580	20000	6.0kV/3.1kA	800	1120	27.5	9.4
*S25K625E4R12		625	825	1000	150	1650	20000	6.0kV/3.0kA	855	1197	27.5	9.8
*S25K680E4R12		680	895	1100	150	1815	20000	6.0kV/3.0kA	940	1316	27.5	10.4
*S25K750E4R12		750	1060	1200	150	2000	20000	6.0kV/3.1kA	1025	1435	27.5	10.9

- (1) For explanation of style reference number, see clause 1.5.
(2) All types marked with "*" are covered by IEC 60950-1 Annex Q.

1.4 Marking

The varistors are marked with their:

- style reference (includes style – 05 and 07 without S, NF, tolerance, max. continuous r.m.s. voltage; alternatively style – 05 and 07 without S, NF, tolerance, varistor voltage at 1 mA)

They are distinguished as follows: no underline under the S..., SNF...(Standard); an additional underline under the S..., SNF...(for type series AdvanceD – E2) or a line above the S..., SNF...(for type series SuperioR – E3), or a line above and under the S...(for type series SuperioR – E4)

S20 K275	<u>S20</u> K275	<u>S20</u> K275	<u>S25</u> K275
StandarD	AdvanceD	SuperioR	SuperioR
SNF10 K300	<u>SNF10</u> K300	<u>SNF20</u> K300	
StandarD	AdvanceD	SuperioR	

- Manufacturer's code or trade mark
- Date of manufacture

1.5 Ordering information

Orders for varistors covered by this specification shall contain, in clear or in coded form, the following minimum information

Example S 05 K 275(V431) A(B,C) E2 G GX A S R H M P K K8 K9 T VB

<u>S</u>	Style - (S: round disc; Q: square disc; NF: Nonflammable disc;)
<u>05</u>	Disc size (S: diameter of ceramic disc; Q: length of each side)
<u>K</u>	Tolerance ± 10 % of voltage at 1 mA (J: ± 5 %; L: ± 15 %; M: ± 20 %; S: special tolerance)
<u>275</u>	Max. continuous r.m.s. voltage
<u>V431</u>	Alternative type designation with varistor voltage at 1 mA instead of max. cont. r.m.s voltage (code: 43×10^1)
<u>A(B,C)</u>	designation for special types
<u>E2 E3 E4</u>	High energy series
<u>G</u>	Taping according IEC 60286, part 2
<u>GX</u>	Customer defined taping not defined with other standard taping styles
<u>A</u>	Ammopack
<u>S</u>	Crimp-Type, is omitted when Crimp-Type Standard
<u>R</u>	Lead spacing (e): mm
<u>H</u>	Component height (h or h_1): mm
<u>M</u>	Cut lead length (l): mm
<u>P</u>	Test requirements additionally agreed to this detail specification
<u>K</u>	Customer specific properties not defined with other codes (K1 - K99 available except for the two reserved codes below)
<u>K8</u>	Special combination lead diameter - lead spacing
<u>K9</u>	Components have the same ratings but they are matched for the varistor voltage at 1 mA within one package
<u>T</u>	Resistance to temperature changes - denotes that the varistor exceeds the normally defined temperature range
(.)	additional numbers 00-99
SIOV	may be prefixed

Special varistor types with customer specific tolerances (tolerance designation S in combination with the letters A, B or C) and varistors with special geometrical specifications designated by R, H, M, or K8, are available on request.

1.6 Certified records or released lots

Not required.

1.7 Additional information (not for inspection purposes)

The voltage indicated on the component is the maximum allowable steady state sinusoidal voltage at 50 - 60 Hz. When use is made of a supply voltage, the maximum continuous a.c. r.m.s. voltage = 1.1 x supply voltage. Should the varistor be subjected to voltage above the indicated voltage, it may fail by package rupture or expulsion material, causing a major problem in the equipment.

1.8 Additional or increased severities or requirements to those specified in the generic and/or sectional specification

None.

SECTION TWO – INSPECTION REQUIREMENTS

2 Inspection requirements

2.1 Procedures

2.1.1 For Qualification Approval the procedure shall be in accordance with the Sectional Specification, IEC Publication 61051-2, Sub-clause 3.2.

2.1.2 For Quality Conformance Inspection the test schedule (Table II) includes sampling, periodicity, severities and requirements. The formation of inspection lots is covered by Sub-clause 3.3.1 of the Sectional Specification.

TABLE II

- Notes
1. - Sub-clause numbers of tests and performance requirements refer to the Generic Specification, IEC Publication 61051-1.
 2. - Inspection Levels and AQL's are selected from IEC Publication 60410: Sampling Plans and Procedures for Inspection by Attributes.
 3. - In this table:
 - p = periodicity (in months)
 - n = sample size
 - c = acceptance criterion (permitted number of defectives)
 - D = destructive
 - ND = non-destructive
 - IL = inspection level
 - AQL = acceptable quality level } IEC 60410
 4. - The bump test and shock test are considered to be alternative. The detail specification shall indicate which test is to be performed.
 5. - Where d.c. has been applied to the varistor, the reference voltage shall be measured in the same direction.
 7. - The manufacturer shall only be required to perform one of these tests.

Sub-clause number and Test (see Note 1)	D or ND	Conditions of test (see Note 1)	IL	AQL	Performance requirements (see Note 1)
			(see Note 2)		
<u>GROUP A INSPECTION</u> (lot-by-lot) <u>Sub-group A1</u> 4.4.1 Visual examination 4.4.2 Marking	ND		II	1,0%	As in 4.3.1 Legible marking and as specified in 1.4 of this specification
<u>Sub-group A2</u> 4.5 Voltage	ND	Voltage at specified current	II	0,65%	As specified in 1.2.2 of this specification
<u>Sub-group A3</u> 4.4.3 Dimensions (gauging)	ND	Not applicable	S-4	1,0%	As specified in 1.2.1 of this specification
<u>GROUP B INSPECTION</u> (lot-by-lot) <u>Sub-group B1</u> 4.11 Robustness of terminations 4.13 Solderability (if applicable) 4.22 Solvent resistance of the marking (if applicable)	D	IEC 60068-2-21, Test Ua1 F = 10 N (d ≤ 0.8 mm) F = 20 N (d = 1 mm) Visual examination Voltage at specified current IEC 60068-2-20, Test Ta, Method 1 T = 235±5°C, d = 2±0.5s IEC 60068-2-45, Test XA (3.1.1, Method 1): T = 23±5°C, t = 5±0,5 min Solvent mixture (70±5% Diethylenglycoldibutylether, 30±5% 2-propanol). Rubbing material: Cotton wool F = 5±0,5 N, 10 strokes. Visual examination	S-3	2,5%	No visible damage $\left \frac{\Delta U}{U} \right \leq 10\%$ The terminations shall be uniformly tinned Legible marking

Sub-clause number and Test (see Note 1)	D or ND	Conditions of test (see Note 1)	IL	AQL	Performance requirements (see Note 1)
			(see Note 2)		
<u>Sub-group B2</u>	D	At class current: See table 1.	S-2	1,0%	As specified in the detail specification
4.7 Voltage under pulse condition					
4.9 Voltage proof		Metal balls method (4.8.1.2) 2500 V, 60 s			As in 4.8

Sub-clause number and Test (see Note 1)	D or ND	Conditions of test (see Note 1)	Sample size & criterion of acceptability (see Note 3)			Performance requirements (see Note 1)
			p	n	c	
<u>GROUP C INSPECTION</u> (periodic)	D	<u>Pulse current</u> 10 pulses 8/20 μs at 2 per min in one direction (current according table 1 and 1.2.3) Visual examination Voltage at specified current <u>Combination pulse</u> 10 pulses (combination pulse), in one direction, 1 per min Visual examination Leakage current or voltage at specified current	6	13	1	No visible damage $\left \frac{\Delta U}{U} \right \leq 10\%$
<u>Sub-group C1</u>						
4.6 Pulse current (or combination pulse).						
<u>Sub-group C2</u>	D	10 pulses 2 ms square wave in one direction, 1 every 2 min, at the maximum peak current defined for 100 pulses (see derating curve) Visual examination Voltage at specified current	12	13	1	No visible damage $\left \frac{\Delta U}{U} \right \leq 10\%$
4.6 Pulse current						

Sub-clause number and Test (see Note 1)	D or ND	Conditions of test (see Note 1)	Sample size & criterion of acceptability (see Note 3)			Performance requirements (see Note 1)
			p	n	c	
<p><u>Sub-group C3B</u></p> <p>Other part of sample of Sub-group C3</p> <p>4.16 Shock (or bump, see Note 4)</p>		<p>IEC 60068-2-27, Test Ea</p> <p>Pulse shape: half-sine $a = 490 \text{ m/s}^2$, $d = 11 \text{ ms}$ $N = 6 \times 3$ shocks. (For mounting method see 2.3.3 of the sectional specification)</p> <p>Visual examination</p> <p>Voltage at specified current</p>	12	6		<p>No visible damage Legible marking</p> $\left \frac{\Delta U}{U} \right \leq 5\%$
<p>4.15 Bump (or shock, see Note 4)</p>		<p>IEC 60068-2-29, Test Eb</p> <p>Pulse shape: half sine. $a = 390 \text{ m/s}^2$, $d = 6 \text{ ms}$ $N = 6 \times 4000$ shocks. (For mounting method see 2.3.4 of the sectional specification)</p> <p>Visual examination</p> <p>Voltage at specified current</p>				<p>No visible damage Legible marking</p> $\left \frac{\Delta U}{U} \right \leq 5\%$
<p>4.17 Vibration</p>		<p>IEC 60068-2-6, Test Fc, Method B4</p> <p>Frequency range: 10 Hz to 55 Hz $a = 0,75 \text{ mm}$ or 98 m/s^2 (whichever is the less) $d = 3 \times 2 \text{ h}$ (For mounting method see 2.3.5 of the sectional specification)</p> <p>Visual examination</p> <p>Voltage at specified current</p>				<p>No visible damage Legible marking</p> $\left \frac{\Delta U}{U} \right \leq 5\%$

Sub-clause number and Test (see Note 1)	D or ND	Conditions of test (see Note 1)	Sample size & criterion of acceptability (see Note 3)			Performance requirements (see Note 1)
			p	n	c	
<u>Sub-group C3</u> Combined sample of specimens of Sub-groups C3A and C3B 4.18 Climatic sequence - Dry heat - Damp heat, cyclic, Test Db, first cycle - Cold - Damp heat, cyclic, Test Db, remaining cycles - Final measurement	D	(Low air pressure test not applicable) IEC 60068-2-2, Test Ba 16±2h, T = 85±2°C; IEC 60068-2-30, Test Db 24h, T = 55±2°C; IEC 60068-2-1, Test Aa 2h, T = -40±3°C; IEC 60068-2-30, Test Db 24h, T = 55±2°C; Visual examination Voltage at specified current Insulation resistance U = 500V (Insulated varistors only) Voltage proof (Insulated varistors only)	12	13	1	No visible damage Legible marking $\left \frac{\Delta U}{U} \right \leq 10\%$ ≥ 100 MΩ No breakdown or flashover
<u>Sub-group C4</u> 4.21 Endurance at upper category temperature	D	T = 85±2°C, Duration: 1000 h Voltage: max. a.c. voltage Examination at 48 h, 500 h and 1000 h: Visual examination Voltage at specified current Examination at 1000 h: Voltage at class current Insulation resistance U = 500V (Insulated varistors only)	12	13	1	No visible damage Legible marking $\left \frac{\Delta U}{U} \right \leq 10\%$ 1,1 x the initial limit ≥ 1 GΩ

Sub-clause number and Test (see Note 1)	D or ND	Conditions of test (see Note 1)	Sample size & criterion of acceptability (see Note 3)			Performance requirements (see Note 1)
			p	n	c	
<u>GROUP D INSPECTION</u> <u>Sub-group D1</u> 4.19 Damp heat, steady state	D	IEC 60068-2-78, Test Ca T = 40±2°C, RH = 93(+2/-3)%, 56d 4 specimens: No voltage applied Other 4 specimens: Applied voltage: 10% of the max. d.c. voltage Visual examination Voltage at specified current Insulation resistance U = 500V (Insulated varistors only)	24	8	1	No visible damage Legible marking $\left \frac{\Delta U}{U} \right \leq 10\%$ $\geq 100 \text{ M}\Omega$
<u>Sub-group D2</u> 4.4.4 Dimensions (detail) 4.5 Voltage (if applicable)	ND	At specified current At following temperatures: LCT = -40(+3/-0)°C and UCT = +85(+0/-3)°C	24	8	1	As specified in 1.2.1 of this specification As specified in 1.2.2 of this specification $\frac{U_{25^{\circ}\text{C}} - U_{-40^{\circ}\text{C}}}{\Delta T} \cdot \frac{100\%}{U_{25^{\circ}\text{C}}} \leq 0,09\% \text{ K}^{-1}$ $\frac{U_{25^{\circ}\text{C}} - U_{85^{\circ}\text{C}}}{\Delta T} \cdot \frac{100\%}{U_{25^{\circ}\text{C}}} \leq 0,09\% \text{ K}^{-1}$
<u>Sub-group D3</u> 4.20 Fire hazard (Needle flame test)	D	IEC 60695-11-5 Severity: Vertical 10 s	24	5	0	Duration of burning: 5 s max.