NTC Thermistors, bigAMP Inrush Current Limiters



RoHS COMPLIANT

FEATURES

- Rugged and reliable
- UL recognition for specified components
- Can withstand up to 20 A of continuous current and 160 J of input energy
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

APPLICATIONS

- Switching power supplies
- AC motors
- Uninterruptible power supplies
- Variable frequency drive
- Other equipment that can be improved with inrush current protection

DESCRIPTION

The bigAMP inrush current limiter absorbs high amounts of inrush current when electrical equipment is turned on by offering a high resistance to current and quickly decreasing in resistance once steady-state current begins to flow through the thermistor.

In a switching power supply, the instantaneous surge energy is caused by the large input filter capacitors and AC input voltage.

During the absorption of energy, the initial high resistance of the thermistor drops within milliseconds to a negligible resistance in preparation of allowing high levels steady state current to flow with a minimal loss of power through the circuit.

QUICK REFERENCE DATA

PART NUMBER	RESISTANCE AT 25 °C (R_{25}) (Ω)	TOLERANCE ON R_{25} VALUE (%)	MAX. STEADY-STATE CURRENT UP TO 65 °C (A)	MAX. RECOMMENDED ENERGY RATING (J)	MAX. VOLTAGE (V_{AC})	MAX. CAPACITANCE AT 120 V_{AC} (µF)	UL RECOGNITION FILE NUMBER
SL220R516	0.5	± 25	16	160	265	10 000	E209153
SL220R516A	0.5	± 25	16	160	265	10 000	E209153
SL220R712	0.7	± 25	12	120	265	8335	E209153
SL220R712B	0.7	± 25	12	120	265	8335	E209153
SL221R020	1	± 20	20	65	265	4400	E209153
SL222R018	2	± 20	18	90	265	6000	E209153
SL222R018A	2	± 20	18	90	265	6000	E209153
SL222R018B	2	± 20	18	90	265	6000	E209153
SL222R508	2.5	± 20	8	90	265	6251	-
SL222R510	2.5	± 20	10	90	265	6000	E209153
SL222R510B	2.5	± 20	10	90	265	6000	E209153
SL222R515	2.5	± 20	15	90	265	6000	E209153
SL222R515A	2.5	± 20	15	90	265	6000	E209153
SL222R515B	2.5	± 20	15	90	265	6000	E209153
SL224R014	4	± 20	14	100	265	6400	E209153
SL224R014A	4	± 20	14	100	265	6400	E209153
SL224R014B	4	± 20	14	100	265	6400	E209153
SL225R006	5	± 20	6	50	265	3473	-

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QUICK REFERENCE DATA

PART NUMBER	RESISTANCE AT 25 °C (R_{25}) (Ω)	TOLERANCE ON R_{25} VALUE (%)	MAX. STEADY-STATE CURRENT UP TO 65 °C (A)	MAX. RECOMMENDED ENERGY RATING (J)	MAX. VOLTAGE (V_{AC})	MAX. CAPACITANCE AT 120 V_{AC} (µF)	UL RECOGNITION FILE NUMBER
SL225R012	5	± 20	12	100	265	6400	E209153
SL225R012B	5	± 20	12	100	265	6400	E209153
SL227R010	7	± 20	10	100	265	6400	E209153
SL227R010B	7	± 20	10	100	265	6400	E209153
SL2210005	10	± 20	5	90	265	6251	-
SL2210007	10	± 20	7	90	265	6251	E209153
SL2210008	10	± 20	8	90	265	6000	E209153
SL2210008B	10	± 20	8	90	265	6000	E209153
SL2210009	10	± 20	9	100	265	6946	-
SL2214005	14	± 25	5	75	265	5209	-
SL2214007	14	± 25	7	75	265	4800	E209153
SL2216004	16	± 20	4	100	265	6500	E209153
SL2216004A	16	± 20	4	100	265	6500	E209153
SL2216005	16	± 20	5	100	265	6500	E209153
SL2220005	20	± 20	5	125	265	7600	E209153
SL2220005B	20	± 20	5	125	265	7600	E209153
SL2220007	20	± 25	7	125	265	8693	E209153
SL2220007B	20	± 25	7	125	265	8693	E209153
SL222000617	20	± 25	6	125	265	8683	-
SL222000717	20	± 25	7	125	265	8683	-
SL2225004	25	± 20	4	150	265	10 419	-
SL2225005	25	± 20	5	63	265	4376	-
SL2230004	30	± 20	4	80	265	5557	-
SL2230005	30	± 20	5	80	265	5200	E209153
SL2230005B	30	± 20	5	80	265	5200	E209153
SL2240005	40	± 20	5	63	265	4376	-
SL2247003	47	± 25	3	90	265	6251	-
SL2247003A	47	± 25	3	90	265	6251	-
SL2250004	50	± 20	4	80	265	5200	E209153
SL2250004A	50	± 20	4	80	265	5200	E209153
SL2250004B	50	± 20	4	80	265	5200	E209153
SL2260003	60	± 25	3	72	265	4800	E209153
SL2212102	120	± 25	2	80	265	5557	-
SL2212103	120	± 25	3	80	265	5200	E209153
SL2212103A	120	± 25	3	80	265	5200	E209153
SL2212103B	120	± 25	3	80	265	5200	E209153

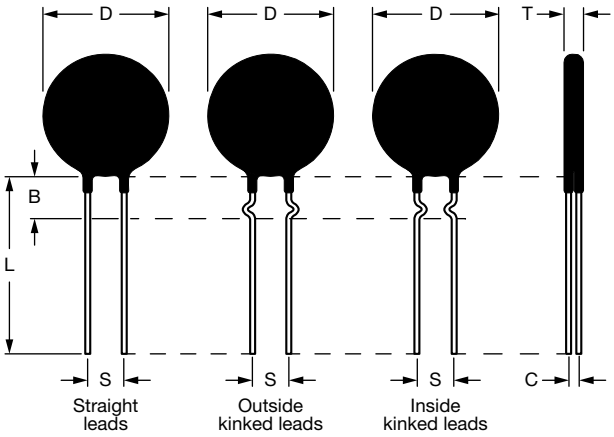
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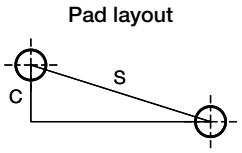
ELECTRICAL SPECIFICATIONS

PART NUMBER	ACTUAL FAILURE INSTANTANEOUS ENERGY (J)	RESISTANCE AT 100 % MAX. CURRENT (Ω)	RESISTANCE AT 50 % MAX. CURRENT (Ω)	BODY TEMP. AT 100 % MAX. CURRENT (°C)	DISSIPATION FACTOR (mW/°C)	THERMAL TIME CONSTANT (s)	MATERIAL TYPE (FOR BETA AND CURVE)
SL220R516	320	0.02	0.04	184	32.4	94	A
SL220R516A	320	0.02	0.04	184	32.4	94	A
SL220R712	250	0.03	0.06	165	32.4	94	A
SL220R712B	250	0.03	0.06	165	32.4	94	A
SL221R020	130	0.018	0.03	187	32.4	40	B
SL222R018	200	0.04	0.09	214	32.4	94	B
SL222R018A	200	0.04	0.09	214	32.4	94	B
SL222R018B	200	0.04	0.09	214	32.4	94	B
SL222R508	200	0.06	0.14	162	32.4	94	B
SL222R510	200	0.04	0.10	192	32.4	94	B
SL222R510B	200	0.04	0.10	200	32.4	94	B
SL222R515	200	0.03	0.07	172	32.4	94	B
SL222R515A	200	0.03	0.07	172	32.4	94	B
SL222R515B	200	0.03	0.07	172	32.4	94	B
SL224R014	200	0.05	0.14	214	32.4	94	C
SL224R014A	200	0.05	0.14	214	32.4	94	C
SL224R014B	200	0.05	0.14	214	32.4	94	C
SL225R006	200	0.10	0.22	165	32.4	94	G
SL225R012	210	0.05	0.12	214	32.4	94	G
SL225R012B	210	0.05	0.12	214	32.4	94	G
SL227R010	220	0.08	0.18	212	32.4	94	G
SL227R010B	220	0.08	0.18	212	32.4	94	G
SL2210005	200	0.18	0.44	152	32.4	94	H
SL2210007	200	0.12	0.24	172	32.4	122	H
SL2210008	180	0.10	0.19	182	32.4	122	H
SL2210008B	180	0.10	0.19	182	32.4	122	H
SL2210009	220	0.10	0.22	192	45.5	94	H
SL2214005	200	0.12	0.29	177	32.4	94	H
SL2214007	190	0.12	0.29	197	48.4	144	H
SL2216004	250	0.25	0.64	157	38.0	94	I
SL2216004A	250	0.25	0.64	157	38.0	94	I
SL2216005	250	0.25	0.65	157	38.0	94	I
SL2220005	295	0.40	0.82	178	32.4	104	H
SL2220005B	295	0.40	0.82	178	32.4	104	H
SL2220007	250	0.17	0.35	187	45.4	134	H
SL2220007B	250	0.17	0.35	187	45.4	134	H
SL222000617	250	0.28	0.42	169	45.4	104	H
SL222000717	250	0.28	0.42	169	45.4	134	H
SL2225004	275	0.41	0.85	168	45.4	104	H
SL2225005	275	0.40	0.82	178	45.4	104	H
SL2230004	175	0.49	0.85	162	45.4	94	H
SL2230005	175	0.39	0.75	172	32.4	94	H
SL2230005B	175	0.39	0.75	172	32.4	94	H
SL2240005	175	0.34	0.72	162	32.4	94	M
SL2247003	150	0.49	1.14	165	32.4	94	M
SL2247003A	150	0.49	1.14	165	32.4	94	M
SL2250004	175	0.44	0.90	162	32.4	94	M
SL2250004A	175	0.44	0.90	162	32.4	94	M
SL2250004B	175	0.44	0.90	162	32.4	94	M
SL2260003	150	0.41	1.28	166	32.4	112	I
SL2212102	170	1.54	3.70	139	32.7	94	L
SL2212103	170	0.90	2.25	150	32.4	94	L
SL2212103A	170	0.90	2.25	150	32.4	94	L
SL2212103B	170	0.90	2.25	150	32.4	94	L

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MECHANICAL SPECIFICATIONS in millimeters





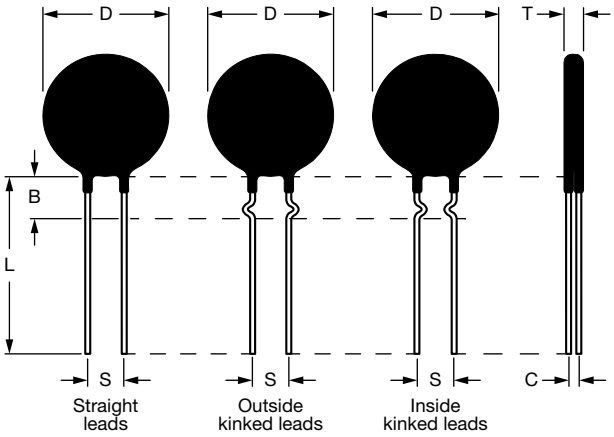
PART NUMBER	B	C	D	L	S	T	LEAD DIAMETER	LEAD STYLE
SL220R516	9.0 nom.	3.0 nom.	22.0 max.	38.0 nom.	7.8 nom.	6.0 max.	1.0 ± 0.1	Straight
SL220R516A	9.0 nom.	3.0 nom.	22.0 max.	38.0 nom.	7.8 nom.	6.0 max.	1.0 ± 0.1	Inside kinked
SL220R712	9.22 nom.	3.0 nom.	22.0 max.	38.0 nom.	7.8 nom.	6.0 max.	1.0 nom.	Straight
SL220R712B	9.5 ± 1.0	3.0 nom.	22.0 max.	38.0 nom.	9.5 ± 1.0	6.0 max.	1.0 nom.	Outside kinked
SL221R020	9.2 ± 1.0	2.74 ± 0.5	20.0 ± 2.0	38.0 ± 5.0	7.8 ± 1.0	4.5 ± 1.0	1.0 ± 0.1	Straight
SL222R018	9.35 nom.	3.1 nom.	22.0 max.	38.0 nom.	7.8 nom.	6.0 max.	1.0 nom.	Straight
SL222R018A	9.35 nom.	3.1 nom.	22.0 max.	38.0 nom.	7.8 nom.	6.0 max.	1.0 nom.	Inside kinked
SL222R018B	9.5 ± 1.0	3.1 nom.	22.0 max.	38.0 nom.	9.5 ± 1.0	6.0 max.	1.0 nom.	Outside kinked
SL222R508	9.22 nom.	3.65 nom.	22.0 max.	38.0 nom.	7.8 nom.	5.0 max.	1.0 nom.	Straight
SL222R510	11.5 nom.	3.65 nom.	22.0 max.	38.0 nom.	7.8 nom.	6.0 max.	1.0 nom.	Straight
SL222R510B	9.5 ± 1.0	3.65 nom.	22.0 max.	38.0 nom.	9.5 ± 1.0	6.0 max.	1.0 nom.	Outside kinked
SL222R515	11.5 nom.	3.65 nom.	22.0 max.	38.0 nom.	7.8 nom.	6.0 max.	1.0 nom.	Straight
SL222R515A	11.5 nom.	3.65 nom.	22.0 max.	38.0 nom.	7.8 nom.	6.0 max.	1.0 nom.	Inside kinked
SL222R515B	9.5 ± 1.0	3.65 nom.	22.0 max.	38.0 nom.	9.5 ± 1.0	6.0 max.	1.0 nom.	Outside kinked
SL224R014	9.22 nom.	3.92 nom.	22.0 max.	38.0 nom.	7.8 nom.	6.0 max.	1.0 nom.	Straight
SL224R014A	9.22 nom.	3.92 nom.	22.0 max.	38.0 nom.	7.8 nom.	6.0 max.	1.0 nom.	Inside kinked
SL224R014B	9.5 ± 1.0	3.92 nom.	22.0 max.	38.0 nom.	9.5 ± 1.0	6.0 max.	1.0 nom.	Outside kinked
SL225R006	9.35 nom.	3.92 nom.	22.0 max.	38.0 nom.	7.8 nom.	5.5 ± 0.5	1.0 nom.	Straight
SL225R012	9.22 nom.	3.92 nom.	22.0 max.	38.0 nom.	7.8 nom.	6.0 max.	1.0 nom.	Straight
SL225R012B	9.5 ± 1.0	3.92 nom.	22.0 max.	38.0 nom.	9.5 ± 1.0	6.0 max.	1.0 nom.	Outside kinked
SL227R010	9.36 nom.	3.92 nom.	22.0 max.	38.0 nom.	7.8 nom.	6.0 max.	1.0 nom.	Straight
SL227R010B	9.5 ± 1.0	3.92 nom.	22.0 max.	38.0 nom.	9.5 ± 1.0	6.0 max.	1.0 nom.	Outside kinked
SL2210005	9.36 nom.	3.77 nom.	22.0 max.	38.0 nom.	7.8 nom.	5.0 max.	1.0 nom.	Straight
SL2210007	9.35 nom.	3.77 nom.	22.0 max.	38.0 nom.	7.8 nom.	5.0 max.	1.0 nom.	Straight
SL2210008	9.35 ± 0.6	3.5 ± 0.5	20.0 ± 1.0	38.0 ± 9.0	7.8 ± 2.0	5.0 ± 1.0	1.0 ± 0.1	Straight
SL2210008B	9.5 ± 1.0	3.5 ± 0.5	20.0 ± 1.0	38.0 ± 9.0	9.5 ± 1.0	5.0 ± 1.0	1.0 ± 0.1	Outside kinked
SL2210009	9.5 ± 1.0	3.96 nom.	22.0 max.	38.0 nom.	7.8 nom.	5.0 max.	1.2 nom.	Straight
SL2214005	9.2 nom.	3.65 nom.	22.0 max.	38.0 nom.	7.8 nom.	5.0 max.	1.0 nom.	Straight
SL2214007	9.22 nom.	3.65 nom.	22.0 max.	38.0 nom.	7.8 nom.	6.0 max.	1.0 nom.	Straight
SL2216004	9.0 nom.	3.1 nom.	22.0 max.	38.0 nom.	7.8 nom.	7.0 max.	1.0 nom.	Straight
SL2216004A	9.0 nom.	3.1 nom.	22.0 max.	38.0 nom.	7.8 nom.	7.0 max.	1.0 nom.	Inside kinked
SL2216005	9.0 nom.	3.1 nom.	22.0 max.	38.0 nom.	7.8 nom.	7.0 max.	1.0 nom.	Straight
SL2220005	9.35 nom.	3.82 nom.	22.0 max.	38.0 nom.	7.8 nom.	7.0 max.	1.0 nom.	Straight
SL2220005B	9.5 ± 1.0	3.82 nom.	22.0 max.	38.0 nom.	9.5 ± 1.0	7.0 max.	1.0 nom.	Outside kinked
SL2220007	9.35 nom.	3.82 nom.	22.0 max.	38.0 nom.	7.8 nom.	5.0 max.	1.0 nom.	Straight
SL2220007B	9.5 ± 1.0	3.82 nom.	22.0 max.	38.0 nom.	9.5 ± 1.0	5.0 max.	1.0 nom.	Outside kinked
SL222000617	9.35 nom.	3.95 nom.	22.0 max.	38.0 nom.	7.8 nom.	5.0 max.	1.2 nom.	Straight

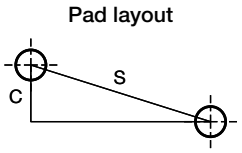
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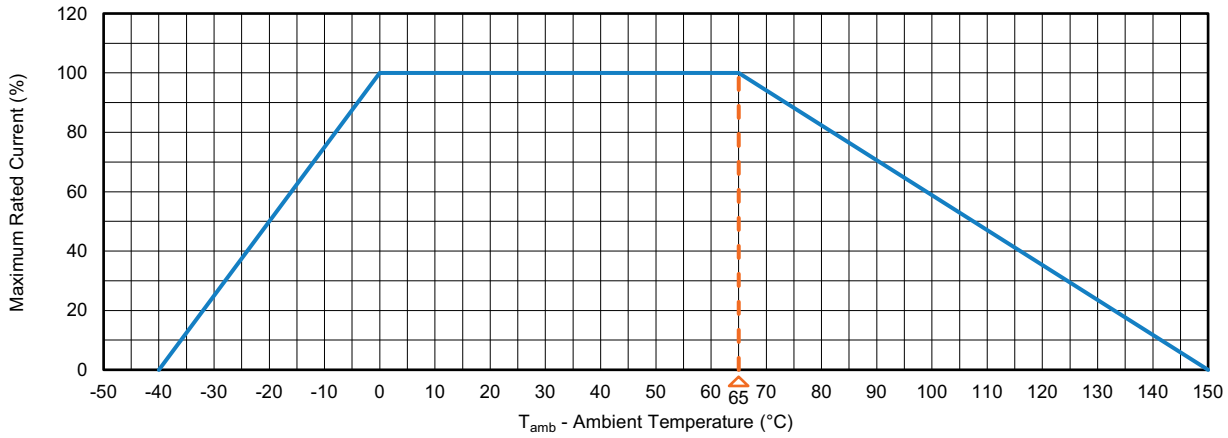
MECHANICAL SPECIFICATIONS in millimeters





PART NUMBER	B	C	D	L	S	T	LEAD DIAMETER	LEAD STYLE
SL222000717	9.35 nom.	3.95 nom.	22.0 max.	38.0 nom.	7.8 nom.	6.0 ± 0.5	1.3 nom.	Straight
SL2225004	9.35 nom.	3.88 nom.	22.0 max.	38.0 nom.	7.8 nom.	6.0 max.	1.0 nom.	Straight
SL2225005	9.35 nom.	3.88 nom.	22.0 max.	38.0 nom.	7.8 nom.	6.8 max.	1.0 nom.	Straight
SL2230004	11.5 nom.	3.95 nom.	22.0 max.	38.0 nom.	7.8 nom.	5.0 max.	1.0 nom.	Straight
SL2230005	11.5 nom.	3.95 nom.	22.0 max.	38.0 nom.	7.8 nom.	6.0 max.	1.0 nom.	Straight
SL2230005B	9.5 ± 1.0	3.95 nom.	22.0 max.	38.0 nom.	9.5 ± 1.0	6.0 max.	1.0 nom.	Outside kinked
SL2240005	11.5 nom.	3.88 nom.	22.0 max.	38.0 nom.	7.8 nom.	5.0 max.	1.0 nom.	Straight
SL2247003	11.5 nom.	4.33 nom.	22.0 max.	38.0 nom.	7.8 nom.	5.0 max.	1.0 nom.	Straight
SL2247003A	11.5 nom.	4.33 nom.	22.0 max.	38.0 nom.	7.8 nom.	5.0 max.	1.0 nom.	Inside kinked
SL2250004	9.22 nom.	3.92 nom.	22.0 max.	38.0 nom.	7.8 nom.	6.0 max.	1.0 nom.	Straight
SL2250004A	9.22 nom.	3.92 nom.	22.0 max.	38.0 nom.	7.8 nom.	6.0 max.	1.0 nom.	Inside kinked
SL2250004B	9.5 ± 1.0	3.92 nom.	22.0 max.	38.0 nom.	9.5 ± 1.0	6.0 max.	1.0 nom.	Outside kinked
SL2260003	9.35 nom.	4.33 nom.	22.0 max.	38.0 nom.	7.8 nom.	7.0 max.	1.0 nom.	Straight
SL2212102	11.5 nom.	4.33 nom.	22.0 max.	38.0 nom.	7.8 nom.	5.0 max.	1.0 nom.	Straight
SL2212103	11.5 nom.	3.88 nom.	22.0 max.	38.0 nom.	7.8 nom.	6.0 max.	1.0 nom.	Straight
SL2212103A	11.5 nom.	3.88 nom.	22.0 max.	38.0 nom.	7.8 nom.	6.0 max.	1.0 nom.	Inside kinked
SL2212103B	9.5 ± 1.0	3.88 nom.	22.0 max.	38.0 nom.	9.5 ± 1.0	6.0 max.	1.0 nom.	Outside kinked

DERATING CURVE



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