

NTC Thermistors, MegaSurge™ Inrush Current Limiters



FEATURES

- Ability to withstand high steady-state currents to 2 A and up to 110 J of input energy
- Protect rectifiers and other downstream components from damage caused by sudden current spikes
- Increase safety by eliminating the fire hazard associated with failed relays
- Handle the same amount of energy as power resistors in a smaller package, saving valuable circuit board space
- Provide simple one-component alternatives to using power resistors with timers and relays, reducing costs and greatly simplifying designs
- UL-recognized MegaSurge™ devices are certified for single- and three-phase input voltages up to 480 V_{AC}

DESCRIPTION

These power thermistors are rugged and built to last even in the most demanding high power applications.

These inrush current limiters are also used to regulate the release of battery energy in electric vehicles and in pre-charge circuits for many different types of battery chargers.

APPLICATIONS

- Alternative energy
- Electric vehicles
- Inrush current protection of power supplies, motor controllers, audio amplifiers, battery chargers, frequency generators, plasma cutting tools, MRI machines, and toroidal transformers

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} (μ F)
MS1215102	150	± 20	2	110	-	6900
MS1515004	15	± 25	4.5	155	-	10 500
MS1515004A	15	± 25	4.5	155	-	10 500
MS1530004	30	± 25	4.2	135	-	9300
MS1540004	40	± 25	4.1	135	-	9300
MS1566003	66	± 25	3.5	125	-	8500
MS225R015	5	± 25	15	200	-	13 850
MS2210008	10	± 25	8	200	-	13 850
MS2210008B	10	± 25	8	200	-	13 850
MS2220005	20	± 25	5	180	-	12 000
MS2220005A324	20	± 25	5	180	-	12 000
MS2230005	30	± 20	5	150	-	10 300
MS2250004	50	± 25	4	240	-	16 400
MS2250004B	50	± 25	4	240	-	16 400
MS2275004	75	± 25	4	240	-	16 400
MS2212102	120	± 25	2	220	-	15 000
MS2212103	120	± 25	3	220	-	15 000
MS2212103B	120	± 25	3	220	-	15 000
MS2212104	120	± 25	4	220	-	15 220
MS2222103	220	± 25	3	75	-	5100

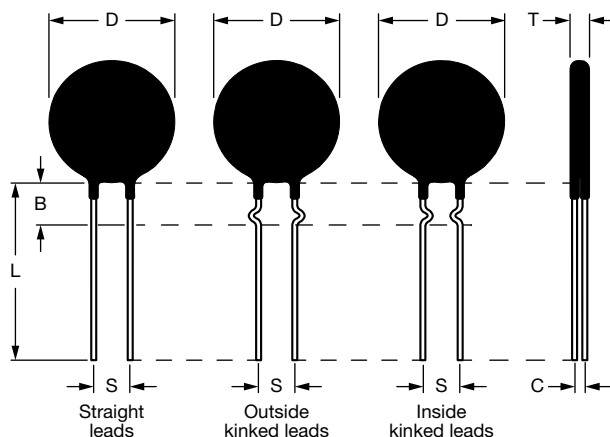


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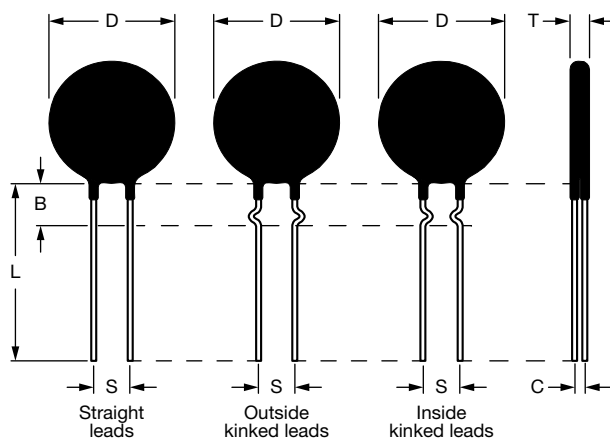
PART NUMBER	RESISTANCE AT 25 °C (R_{25}) (Ω)	TOLERANCE ON R_{25} VALUE (%)	MAX. STEADY-STATE CURRENT UP TO 65 °C (A)	MAX. RECOMMENDED ENERGY RATING (J)	MAX. VOLTAGE (V_{AC})	MAX. CAPACITANCE AT 120 V_{AC} (μF)
MS320R536	0.5	± 25	36	250	-	16 000
MS320R540	0.5	± 25	40	250	-	13 500
MS321R030	1	± 25	30	250	-	13 500
MS321R036	1	± 25	36	300	-	20 700
MS322R025	2	± 25	25	300	-	20 700
MS325R020	5	± 20	20	300	-	20 700
MS325R020B	5	± 20	20	300	-	20 700
MS327R015	7	± 20	15	250	-	17 000
MS3210015	10	± 25	15	250	-	19 250
MS3210015B	10	± 25	15	250	-	19 250
MS3215012	15	± 25	12	250	-	17 300
MS3220008	20	± 25	8	250	-	17 300
MS3220010	20	± 25	10	250	-	17 000
MS3220010B	20	± 25	10	250	-	17 000
MS3250006	50	± 25	6	250	-	17 000
MS3250006L	50	± 25	6	250	-	19 250
MS350R550	0.5	± 25	50	500	-	62 000
MS351R040	1	± 25	40	800	-	55 000
MS352R035	2	± 25	35	750	-	51 900
MS353R030	3	± 25	30	750	-	51 600
MS353R725	3.7	± 25	25	800	-	41 250
MS355R025	5	± 25	25	600	-	41 250
MS3510018	10	± 25	18	500	-	34 000
MS3520010	20	± 25	10	500	-	34 000

**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 ($^{\circ}\text{C}$)	DISSIPATION FACTOR ($\text{mW}/^{\circ}\text{C}$)	THERMAL TIME CONSTANT (s)	MATERIAL TYPE (FOR BETA AND CURVE)
MS1215102	-	1.34	3.5	162	12.7	47	I
MS1515004	310	0.2	0.85	144	49.4	114	G
MS1515004A	310	0.2	0.85	144	49.4	114	G
MS1530004	270	0.23	0.87	150	49.4	114	H
MS1540004	270	0.28	0.95	154	49.4	114	I
MS1566003	250	0.4	1.75	134	49.4	114	M
MS225R015	-	0	0.13	194	45.4	112	C
MS2210008	-	0	0.18	194	55	112	G
MS2210008B	-	0	0.18	194	55	112	G
MS2220005	360	0.19	0.48	170	42.5	114	H
MS2220005A324	360	0.19	0.485	170	42.5	114	H
MS2230005	285	0.23	0.65	174	45.4	112	H
MS2250004	-	0	0.79	159	47.8	119	H
MS2250004B	-	0	0.79	159	47.8	119	H
MS2275004	430	0	0.9	169	51.8	122	M
MS2212102	450	1.78	3.65	155	75.4	124	M
MS2212103	450	1.28	2.65	165	75.4	124	M
MS2212103B	450	1.28	2.65	165	75.4	124	M
MS2212104	450	0.75	1.98	175	75.4	124	M
MS2222103	175	1	2.75	144	45.4	114	L
MS320R536	400	0.01	0.02	214	45.4	194	A
MS320R540	400	0.01	0.01	224	79.8	194	A
MS321R030	525	0.01	0.04	190	45.4	194	B
MS321R036	540	0.01	0.02	255	72	285	B
MS322R025	548	0.02	0.06	236	65.4	208	C
MS325R020	670	0	0.1	204	55.4	194	G
MS325R020B	670	0	0.1	204	55.4	194	G
MS327R015	500	0	0.16	214	63.7	194	G
MS3210015	500	0	0.22	224	63.7	194	H
MS3210015B	500	0	0.22	224	63.7	194	H
MS3215012	250	0.07	0.31	229	75.4	199	I
MS3220008	500	0.22	0.89	204	45.5	194	I
MS3220010	500	0	0.64	224	45.4	194	I
MS3220010B	500	0	0.64	224	45.4	194	I
MS3250006	500	0.33	0.7	177	75.4	294	I
MS3250006L	500	0	0.7	177	75.4	294	I
MS350R550	1800	0.01	0.02	215	78.0	240	B
MS351R040	1400	0.01	0.03	215	78	240	B
MS352R035	1250	0	0.04	235	96	65	C
MS353R030	1250	0.03	0.07	215	78	240	C
MS353R725	1200	0.037	0.09	215	102.5	134	H
MS355R025	1200	0.03	0.08	212	102.5	134	H
MS3510018	1000	0.05	0.15	215	78	240	I
MS3520010	1000	0.1	0.48	235	80	65	M

MECHANICAL SPECIFICATIONS in millimeters


PART NUMBER	B	C	D	L	S	T	LEAD DIAMETER	STRAIGHT LEADS	LEAD STYLE
MS1215102	6.35 ± 0.6	6.5 ± 0.5	12.0 ± 1.0	38.0 ± 9.0	7.8 ± 1.0	8.5 ± 1.0	1.0 ± 0.1	5.0 max.	Straight
MS1515004	6.3 ± 0.6	6.5 ± 0.5	15.0 ± 1.0	38.0 ± 9.0	7.8 ± 2.0	7.0 ± 0.7	1.0 ± 0.1	5.0 ± 1.0	Straight
MS1515004A	6.3 ± 0.6	6.5 ± 0.5	15.0 ± 1.0	38.0 ± 9.0	7.8 ± 2.0	7.0 ± 0.7	1.0 ± 0.1	5.0 ± 1.0	Inside kinked
MS1530004	4.0 nom.	6.0 nom.	17.0 max.	38.0 nom.	7.8 nom.	8.0 max.	1.0 nom.	4.0 max.	Straight
MS1540004	4.0 nom.	6.0 nom.	17.0 max.	38.0 nom.	7.8 nom.	8.0 max.	1.0 nom.	4.0 max.	Straight
MS1566003	6.3 ± 0.6	6.5 ± 0.5	15.0 ± 1.0	38.0 ± 9.0	7.8 ± 2.0	7.0 ± 0.7	1.0 ± 0.1	5.0 ± 1.0	Straight
MS225R015	7.5 ± 2.5	3.82 ± 1.0	20.0 ± 1.0	38.0 ± 9.0	7.8 ± 2.0	7.0 ± 0.7	1.0 ± 0.1	5.0 ± 0.1	Straight
MS2210008	9.22 nom.	3.82 nom.	23.0 max.	38.0 nom.	7.8 nom.	9.5 max.	1.0 nom.	5.0 max.	Straight
MS2210008B	9.22 nom.	3.82 nom.	23.0 max.	38.0 nom.	7.8 nom.	9.5 max.	1.0 nom.	5.0 max.	Outside kinked
MS2220005	9.2 nom.	6.35 nom.	23.0 max.	38.0 nom.	7.8 nom.	8.0 max.	1.0 nom.	4.0 max.	Straight
MS2220005A324	9.35 ± 0.85	3.82 ± 1.0	20.0 ± 1.0	38.0 ± 9.0	7.8 ± 2.0	5.0 ± 0.2	1.0 ± 0.1	5.0 ± 1.0	Straight
MS2230005	9.2 nom.	6.7 nom.	23.0 max.	38.0 nom.	7.8 nom.	9.0 max.	1.0 nom.	4.0 max.	Straight
MS2250004	9.2 nom.	6.7 nom.	23.0 max.	38.0 nom.	7.8 nom.	10.0 max.	1.0 nom.	4.0 max.	Straight
MS2250004B	9.2 nom.	6.7 nom.	23.0 max.	38.0 nom.	7.8 nom.	10.0 max.	1.0 nom.	4.0 max.	Outside kinked
MS2275004	9.2 nom.	6.9 nom.	23.0 max.	38.0 nom.	7.8 nom.	9.0 max.	1.0 nom.	4.0 max.	Straight
MS2212102	9.2 nom.	7.6 nom.	23.0 max.	38.0 nom.	7.8 nom.	10.0 max.	1.0 nom.	4.0 max.	Straight
MS2212103	9.2 nom.	7.6 nom.	23.0 max.	38.0 nom.	7.8 nom.	10.0 max.	1.0 nom.	4.0 max.	Straight
MS2212103B	9.2 nom.	7.6 nom.	23.0 max.	38.0 nom.	7.8 nom.	10.0 max.	1.0 nom.	4.0 max.	Outside kinked
MS2212104	9.2 nom.	7.6 nom.	23.0 max.	38.0 nom.	7.8 nom.	10.0 max.	1.0 nom.	4.0 max.	Straight
MS2222103	9.2 nom.	7.3 nom.	23.0 max.	38.0 nom.	7.8 nom.	10.0 max.	1.0 nom.	4.0 max.	Straight
MS320R536	7.8 nom.	4.5 nom.	31.0 max.	38.0 nom.	7.8 nom.	7.0 max.	1.0 nom.	4.0 max.	Straight
MS320R540	7.8 nom.	4.5 nom.	31.0 max.	38.0 nom.	7.8 nom.	7.0 max.	1.0 nom.	4.0 max.	Straight
MS321R030	11.5 nom.	3.82 nom.	30.0 max.	38.0 nom.	7.8 nom.	7.0 max.	1.0 nom.	5.0 max.	Straight
MS321R036	7.8 nom.	4.5 nom.	31.0 max.	38.0 nom.	7.8 nom.	7.0 max.	1.0 nom.	5.0 max.	Straight
MS322R025	7.8 nom.	6.7 nom.	31.0 max.	38.0 nom.	7.8 nom.	10.0 max.	1.0 nom.	4.0 max.	Straight
MS325R020	7.8 nom.	5.7 nom.	31.0 max.	38.0 nom.	7.8 nom.	8.0 max.	1.0 nom.	5.0 max.	Straight
MS325R020B	7.8 nom.	5.7 nom.	31.0 max.	38.0 nom.	7.8 nom.	8.0 max.	1.0 nom.	5.0 max.	Outside kinked
MS327R015	7.8 nom.	6.7 nom.	31.0 max.	38.0 nom.	7.8 nom.	10.0 max.	1.0 nom.	4.0 max.	Straight
MS3210015	7.8 nom.	6.75 nom.	31.0 max.	38.0 nom.	7.8 nom.	9.3 max.	1.0 nom.	6.0 max.	Straight
MS3210015B	7.8 nom.	6.75 nom.	31.0 max.	38.0 nom.	7.8 nom.	9.3 max.	1.0 nom.	6.0 max.	Outside kinked
MS3215012	7.8 nom.	6.7 nom.	31.0 max.	38.0 nom.	7.8 nom.	10.0 max.	1.0 nom.	4.0 max.	Straight
MS3220008	7.8 nom.	6.7 nom.	31.0 max.	38.0 nom.	7.8 nom.	10.0 max.	1.0 nom.	4.0 max.	Straight
MS3220010	7.8 nom.	6.7 nom.	31.0 max.	38.0 nom.	7.8 nom.	10.0 max.	1.0 nom.	4.0 max.	Straight
MS3220010B	7.8 nom.	6.7 nom.	31.0 max.	38.0 nom.	7.8 nom.	10.0 max.	1.0 nom.	4.0 max.	Outside kinked

MECHANICAL SPECIFICATIONS in millimeters


PART NUMBER	B	C	D	L	S	T	LEAD DIAMETER	STRAIGHT LEADS	LEAD STYLE
MS3250006	9.35 nom.	3.82 nom.	30.0 max.	38.0 nom.	7.8 nom.	10.0 max.	1.2 nom.	5.0 max.	Straight
MS3250006L	-	6.7 nom.	31.0 max.	38.0 nom.	7.8 nom.	8.3 max.	1.2 nom.	5.0 max.	Straight
MS350R550	-	5.2 nom.	37.0 max.	40.0 nom.	19.0 nom.	9.0 max.	2.7 ± 0.1	7.0 max.	Straight
MS351R040	-	7.5 nom.	37.0 max.	39.0 nom.	19.0 nom.	11.0 max.	2.5 nom.	7.0 max.	Straight
MS352R035	-	7.3 ± 0.5	35.0 ± 2.0	32.0 ± 5.0	19.0 ± 1.0	10.0 ± 1.0	2.5 nom.	9.0 max.	Straight
MS353R030	-	7.5 nom.	37.0 max.	39.0 nom.	19.0 nom.	10.0 max.	2.5 nom.	7.0 max.	Straight
MS353R725	-	14.0 ± 2.0	37.0 max.	38.0 nom.	19.1 ± 2.0	15.0 ± 2.0	2.5 ± 0.2	-	Straight
MS355R025	-	7.5 nom.	38.0 max.	40.0 nom.	19.0 nom.	10.0 max.	2.5 nom.	7.0 max.	Straight
MS3510018	-	7.5 nom.	37.0 max.	40.0 nom.	19.0 nom.	11.0 max.	2.5 nom.	7.0 max.	Straight
MS3520010	-	7.5 nom.	37.0 max.	40.0 nom.	19.0 nom.	11.0 max.	2.5 nom.	7.0 max.	Straight



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