

POLYRESET

Polymer PTC Resettable Fuse SMD Type

MS (4532 size) series

(1) Features

1. Overcurrent and overtemperature protection device has a low resistance and high hold current.
2. 4.5mm×3.2mm size SMD.
3. Fast tripping resettable circuit protection.
4. Surface mount packaging for automated assembly.
5. Reduced component size and resistance.

(2) Applications

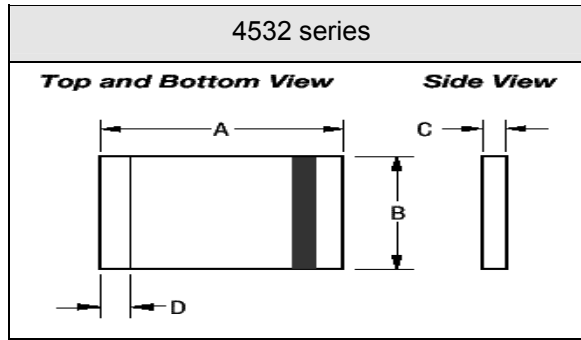
1. High density circuit board.
2. Hard disk drives.
3. PC motherboards.
4. PC peripherals.
5. Point-of-sale (POS) equipment.
6. PCMCIA cards.

(3) Ordering Information

PR - MS - 010 - B
(1) (2) (3) (4)

- (1) Polyreset Product Designator
- (2) Product series
ex) MS series/ US series
- (3) Hold current (×0.01 Amp)
- (4) Packaging
T : Tape and Reel
B : Bulk

(4) Shape and Dimension



Unit : millimeters(inches)

Part number	A(max.)	B(max.)	C(max.)	D(min.)	Fig
PR-MS-010-□	4.73 (0.186)	3.41 (0.134)	0.81 (0.032)	0.30 (0.012)	1
PR-MS-014-□	4.73 (0.186)	3.41 (0.134)	0.81 (0.032)	0.30 (0.012)	1
PR-MS-020-□	4.73 (0.186)	3.41 (0.134)	0.81 (0.032)	0.30 (0.012)	1
PR-MS-050-□	4.73 (0.186)	3.41 (0.134)	0.62 (0.024)	0.30 (0.012)	1
PR-MS-075-□	4.73 (0.186)	3.41 (0.134)	0.62 (0.024)	0.30 (0.012)	1
PR-MS-110-□	4.73 (0.186)	3.41 (0.134)	0.62 (0.024)	0.30 (0.012)	1
PR-MS-125-□	4.73 (0.186)	3.41 (0.134)	0.48 (0.019)	0.25 (0.010)	1
PR-MS-150-□	4.73 (0.186)	3.41 (0.134)	0.48 (0.019)	0.25 (0.010)	1
PR-MS-160-□	4.73 (0.186)	3.41 (0.134)	0.62 (0.024)	0.30 (0.012)	1
PR-MS-200-□	4.75 (0.187)	3.60 (0.142)	2.00 (0.079)	1.40 (0.055)	1
PR-MS-260-□	4.75 (0.187)	3.60 (0.142)	2.00 (0.079)	1.40 (0.055)	1

(5) Specifications

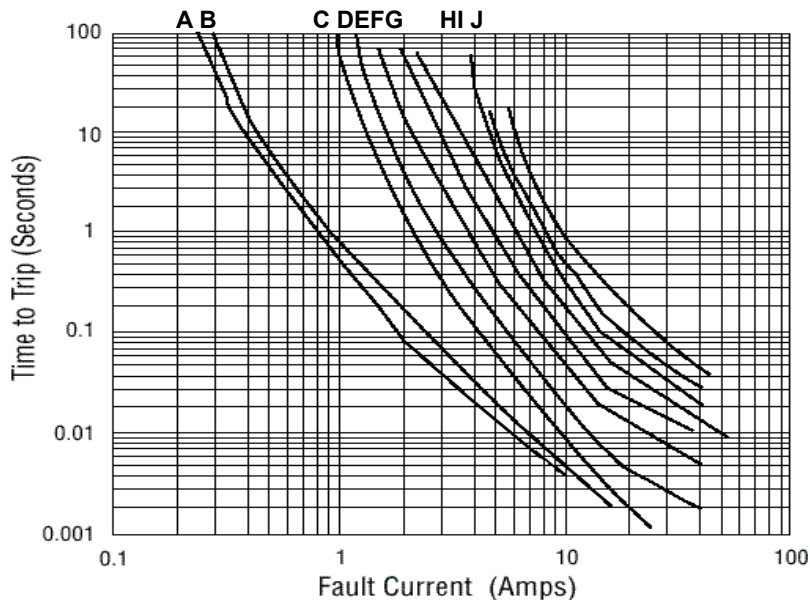
◆ Electrical Characteristics

Part number	V _{max} (V)	I _{max} (A)	I _H (A)	I _T (A)	Max.time to trip		P _d (W)	R _{min} (Ω)	R ₁ max (Ω)
					(A)	(s)			
PR-MS-010-□	30.0	10	0.10	0.20	0.5	1.50	0.8	0.70	15.00
PR-MS-014-□	60.0	10	0.14	0.34	1.5	0.15	0.8	0.70	6.00
PR-MS-020-□	30.0	10	0.20	0.40	6.0	0.06	0.8	0.40	5.00
PR-MS-050-□	15.0	40	0.50	1.00	8.0	0.15	0.8	0.15	1.00
PR-MS-075-□	13.2	40	0.75	1.50	8.0	0.20	0.8	0.11	0.45
PR-MS-110-□	6.0	40	1.10	2.20	8.0	0.30	0.8	0.04	0.21
PR-MS-125-□	6.0	40	1.25	2.50	8.0	0.40	0.8	0.035	0.14
PR-MS-150-□	6.0	40	1.50	3.00	8.0	0.50	0.8	0.03	0.110
PR-MS-160-□	8.0	40	1.60	2.80	8.0	2.00	0.5	0.066	0.099
PR-MS-200-□	6.0	40	2.00	4.00	8.0	3.00	1.5	0.022	0.060
PR-MS-260-□	6.0	40	2.60	5.20	8.0	10.0	1.5	0.015	0.043

◆ Hold current vs. Temperature

Part number	Maximum ambient operating temperature (°C)								
	-40	-20	0	20	40	50	60	70	85
PR-MS-010-□	0.16	0.14	0.12	0.11	0.08	0.07	0.06	0.05	0.03
PR-MS-014-□	0.23	0.19	0.17	0.14	0.12	0.10	0.09	0.08	0.06
PR-MS-020-□	0.29	0.26	0.23	0.20	0.17	0.15	0.14	0.12	0.10
PR-MS-050-□	0.77	0.68	0.59	0.50	0.44	0.40	0.37	0.33	0.29
PR-MS-075-□	1.15	1.01	0.88	0.75	0.65	0.60	0.55	0.49	0.43
PR-MS-110-□	1.59	1.43	1.26	1.10	0.95	0.87	0.80	0.71	0.60
PR-MS-125-□	1.80	1.63	1.43	1.25	1.08	0.99	0.91	0.81	0.68
PR-MS-150-□	2.17	1.95	1.72	1.50	1.30	1.18	1.09	0.97	0.82
PR-MS-160-□	2.30	2.20	1.90	1.60	1.45	1.30	1.15	1.03	0.91
PR-MS-200-□	3.08	2.71	2.35	2.00	1.80	1.60	1.50	1.07	0.80
PR-MS-260-□	4.00	3.52	3.06	2.60	2.34	2.08	1.95	1.39	1.04

◆ Typical time to trip at 20 °C (4532 series)



- A : PR-MS-014
- B : PR-MS-020
- C : PR-MS-050
- D : PR-MS-075
- E : PR-MS-110
- F : PR-MS-125
- G : PR-MS-150
- H : PR-MS-160
- I : PR-MS-200
- J : PR-MS-260

(6) Environmental Characteristics

ITEM	REQUIREMENT	TEST CONDITION
Operating/Storage Temperature		-40°C to +85°C
Maximum Device Surface Temperature in Tripped state		125°C
Passive Aging	±5% typical resistance change	+85°C, 1000 hours
Humidity Aging	±10% typical resistance change	+85°C, 85% R.H. 7days
Thermal Shock	±10% typical resistance change	+85°C to -40°C, 20 times
Solvent Resistance	No change	MIL-STD-202, Method 215
Vibration	No change	MIL-STD-883C, Condition A
Stocking Recommendations	6 months with prepackaged desiccant	

(7) Test Procedures And Requirement

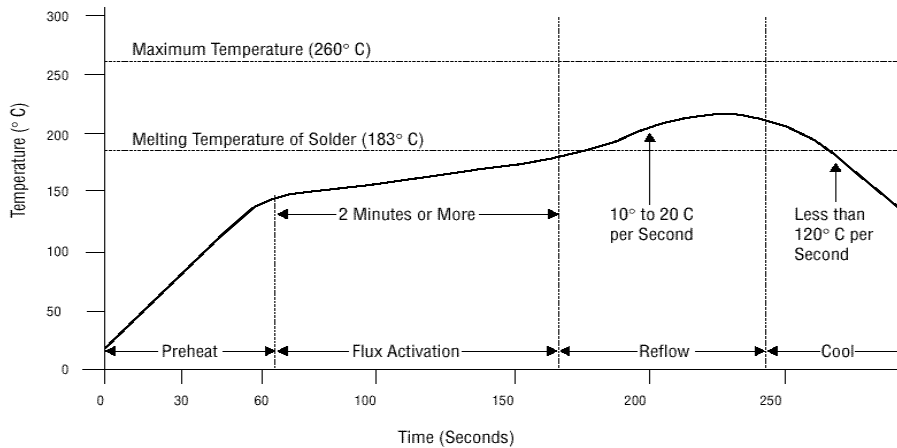
ITEM	REQUIREMENT	TEST CONDITION
Visual/Mech.	Per physical description	Verify dimensions and materials
Resistance	$R_{min} \leq R \leq R_{max}$	In still air @23°C
Time to Trip	$T \leq \text{max. time to trip(seconds)}$	At specified current, V_{max} , 23°C
Hold Current	No Trip	30min. at I_{hold}
Trip Cycle Test	No arching or burning	V_{max} , I_{max} , 100 cycles
Trip Endurance	No arching or burning	V_{max} , 48hours

(8) Physical Characteristics

Termination materials	solder-plated copper
Termination pad solderability	Meets EIA specification RS-186-9E, ANSI/J-STD-002 category 3.

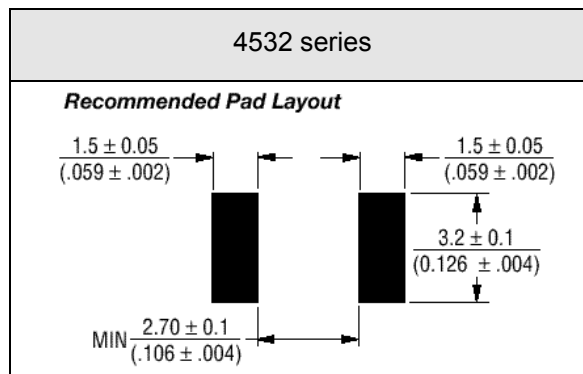
(9) Soldering Profile

Reflow Soldering Profile



(10) Land Pattern Design

unit : mm



(11) Terms and Description

1. **Hold current (I_H)** : maximum current at which the device will not trip at 20°C
2. **Trip current (I_T)** : minimum current at which the device will always trip at 20°C ($2 \times I_H$)
3. **Typical power dissipation (P_d)** : typical amount of power dissipation by the device when in tripped state in 20°C still air environment
4. **R_{min}** : Minimum device resistance at 20°C prior to tripping
5. **R_{max}** : Maximum device resistance at 20°C prior to tripping
6. **R_{1max}** : Maximum device resistance at 20°C measured 1 hour post trip

(12) Packaging Information

- (1) Bulk
10000 pcs. per a bag.
- (2) Tape and Reel
4532 series : 1500 per reel
3225 series : 3000 per reel

(13)Tape and Reel Specification

unit : mm (inch)

Tape Dimension Identifiers	4532 Series per EIA-481-1	3225 Series per EIA 481-1
W	$\frac{12 \pm 0.3}{(.472 \pm .012)}$	$\frac{8 \pm 0.3}{(.040 \pm .012)}$
P ₀	$\frac{4.0 \pm 0.10}{(.157 \pm .004)}$	$\frac{4.0 \pm 0.10}{(.157 \pm .004)}$
P ₁	$\frac{8.0 \pm 0.10}{(.315 \pm .004)}$	$\frac{4.0 \pm 0.10}{(.157 \pm .004)}$
P ₂	$\frac{2.0 \pm 0.05}{(.079 \pm .039)}$	$\frac{2.0 \pm 0.05}{(.079 \pm .039)}$
A ₀	$\frac{3.5 \pm 0.23}{(.134 \pm .009)}$	$\frac{2.8 \pm 0.1}{(.110 \pm .004)}$
B ₀	$\frac{5.1 \pm 0.15}{(.201 \pm .006)}$	$\frac{3.5 \pm 0.1}{(.138 \pm .004)}$
B ₁ max.	$\frac{5.9}{(.232)}$	$\frac{4.35}{(.171)}$
D ₀	$\frac{1.5 + 0.1/-0}{(.059 + .004/-0)}$	$\frac{1.5 + 0.1/-0}{(.059 + .004/-0)}$
F	$\frac{5.5 \pm 0.05}{(.2165 \pm .002)}$	$\frac{3.5 \pm 0.05}{(.138 \pm .002)}$
E ₁	$\frac{1.75 \pm 0.10}{(.069 \pm .004)}$	$\frac{1.75 \pm 0.10}{(.069 \pm .004)}$
E ₂ min.	$\frac{10.25}{(.404)}$	$\frac{6.25}{(.246)}$
T max.	$\frac{0.6}{(.024)}$	$\frac{0.6}{(.024)}$
T ₁ max.	$\frac{0.1}{(.004)}$	$\frac{0.1}{(.004)}$
K ₀	$\frac{0.9 \pm 0.15}{(.035 \pm .006)}$	$\frac{1.1 \pm 0.05}{(.043 \pm .002)}$
Leader min.	$\frac{390}{(15.35)}$	$\frac{390}{(15.35)}$
Trailer min.	$\frac{160}{(6.30)}$	$\frac{160}{(6.30)}$
Reel Dimension Identifiers		
A max.	$\frac{185}{(7.283)}$	$\frac{185}{(7.283)}$
N min.	$\frac{50}{(1.97)}$	$\frac{50}{(1.97)}$
W ₁	$\frac{12.4 + 2.0/-0}{(.488 + .075/-0)}$	$\frac{8.4 + 1.5/-0}{(.331 + .059/-0)}$
W ₂ max.	$\frac{18.4}{(.724)}$	$\frac{14.4}{(.567)}$

