

Surface Mount Fuses

For NANO²⁰ Surface Mount Fuses

RoHS SMF OMNI-BLOK[®] Fuse Block Molded Base Type 154 Series



The **RoHS Compliant** SMF Omni-Blok[®] Fuseholder permits quick and easy replacement of Nano²⁰ SMF surface mount fuses. The fuse block and pre-installed fuse combination can be placed on the PC board in one efficient manufacturing operation. Fuse replacement is accomplished without exposing the PC board to the detrimental effects of solder heat. Refer to notes 1 and 2, below, for fuse/fuseholder combinations available.

AGENCY APPROVALS: Recognized under the Components Program of Underwriters Laboratories and Certified by CSA. Approved by METI from 1 through 5 amperes.

SPECIFICATIONS:

Electrical: 8 Amperes, 125 Volts.

Molded Parts: Thermoplastic (94V0).

Terminals: Tin Plated Copper.

Ambient Temperature: -55°C to +125°C.

Shock: MIL-STD-202, Method 213, Test Condition I (100 G's peak for 6 milliseconds).

Vibration: MIL-STD-202, Method 201 (10–55 Hz).

Thermal Shock: MIL-STD-202, Method 107, Condition A (200 cycles: 30 minutes at -55°C, 30 minutes at 125°C).

Soldering Parameters (Fuse Installed):

Reflow — 154 000: 446°F (230°C), 30 sec.; 154 000T: 446°F (230°C), 30 sec.

Solderability: MIL-STD-202, Method 208.

For iron soldering, Solder Iron Temp: 350° C – 360° C, heating time 3 – 5 sec. Heating should be done on the pad adjacent to the fuse terminal, not on the top of the fuse terminal.

Packaging: 16mm Tape and Reel for use with automatic pick and place equipment per EIA Standard 481; 1,500 per reel, add suffix DR.

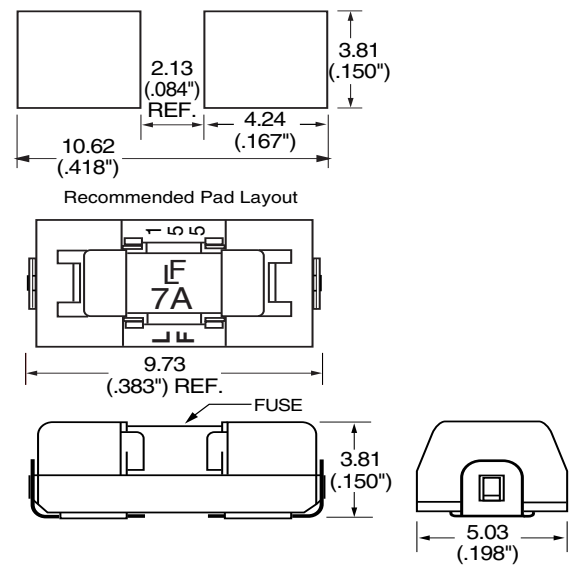
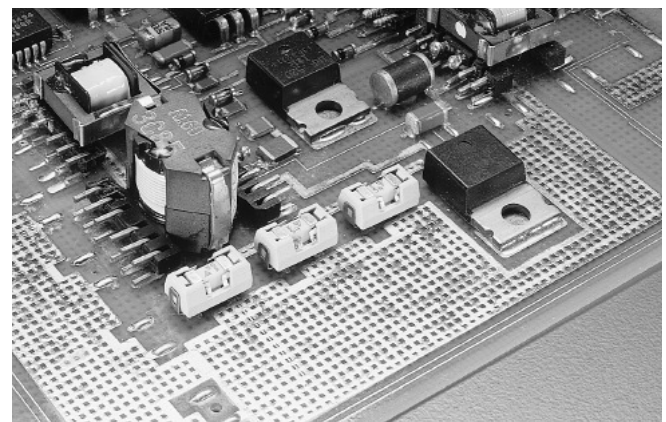
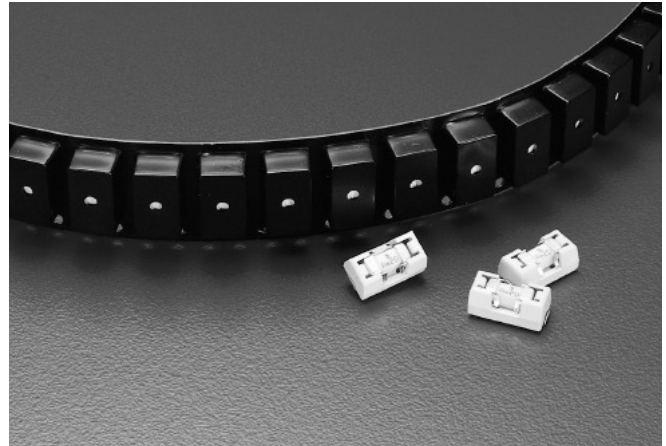
PATENTED ORDERING INFORMATION:

With Very Fast-Acting Fuse Installed

Catalog Number	Ampere Rating	Fuse Furnished ¹
154.062	1/16	0451.062
154.125	1/8	0451.125
154.250	1/4	0453.250
154.375	3/8	0453.375
154.500	1/2	0453.500
154.750	3/4	0453.750
154 001	1	0453 001.
154 01.5	1.5	0453 01.5
154 002	2	0453 002.
154 02.5	2.5	0453 02.5
154 003	3	0453 003.
154 03.5	3.5	0453 03.5
154 004	4	0453 004.
154 005	5	0453 005.
154 06.3	6.3	0453 06.
154 007	7	0453 007.
154 008	8	0453 008.
154 010	10	0453 010.

With Slo-Blo[®] Fuse Installed

Catalog Number	Ampere Rating	Fuse Furnished ²
154.375T	3/8	0454.375
154.500T	1/2	0454.500
154.750T	3/4	0454.750
154 001T	1	0454 001.
154 01.5T	1 1/2	0454 01.5
154 002T	2	0454 002.
154 02.5T	2 1/2	0454 02.5
154 003T	3	0454 003.
154 03.5T	3 1/2	0454 03.5
154 004T	4	0454 004.
154 005T	5	0454 005.



¹ 453 Series Fuse has silver plated end caps, installed to accommodate solder reflow process. Use either 451 or 453 Series for replacement purposes, page 371.

² 454 Series Fuse has silver plated end caps, installed to accommodate solder reflow process. Use either 452 or 454 Series for replacement purposes, page 372.

Surface Mount Fuses

Subminiature Surface Mount

RoHS NANO²® FUSE Very Fast-Acting 451/453 Series



The Nano² SMF Fuse is a very small, square surface mount fuse that is also available in a surface mount holder.

- 451 Series **RoHS Compliant** version now available, use ordering suffix 'L' (see example on data sheet).

ELECTRICAL CHARACTERISTICS:

% of Ampere Rating	Ampere Rating	Opening Time
100%	1/16–15	4 hours, Minimum
200%	1/16–10	5 seconds, Maximum
	12–15	20 seconds, Maximum

AGENCY APPROVALS: Recognized under the Components Program of Underwriters Laboratories and Certified by CSA. Approved by METI from 1 through 5 amperes. UL Listed 0.062 - 5A.

AGENCY FILE NUMBERS: UL E10480, CSA LR 29862.

INTERRUPTING RATINGS:

- 1/16 – 8A 50 amperes at 125 VAC/VDC
300 amperes at 32 VDC
- 10A 35 amperes at 125 VAC/50 amperes at 125 VDC
300 amperes at 32 VDC
- 12A – 15A 50 amperes at 65 VAC/VDC
300 amperes at 24 VDC

ENVIRONMENTAL SPECIFICATIONS:

Operating Temperature: –55°C to 125°C.

Shock: MIL-STD-202, Method 213, Test Condition I (100 G's peak for 6 milliseconds).

Vibration: MIL-STD-202, Method 201 (10–55 Hz).

Salt Spray: MIL-STD-202, Method 101, Test Condition B.

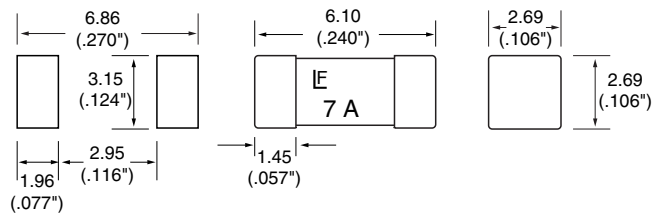
Insulation Resistance (After Opening): MIL-STD-202, Method 302, Test Condition A, (10,000 ohms minimum).

Resistance to Soldering Heat: MIL-STD-202, Method 210, Test Condition B (10 sec. at 260°C).

Thermal Shock: MIL-STD-202, Method 107, Test Condition B (–65 to 125°C).

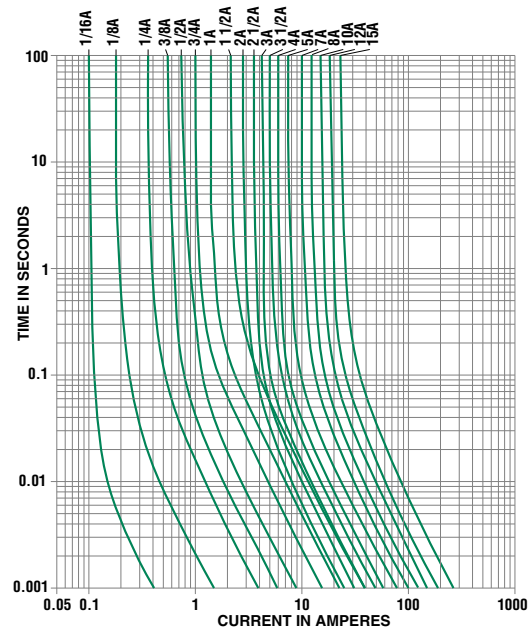
Moisture Resistance: MIL-STD-202, Method 106, High Humidity (90-98 RH), Heat (65°C).

Tin-Lead Plated Catalog #	Silver Plated Catalog #	Ampere Rating	Voltage Rating	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec.
–	0451.062	0.062	125	5.50	0.00019
–	0451.080	0.080	125	4.05	0.00033
–	0451.100	0.100	125	3.10	0.00138
–	0451.125	0.125	125	1.70	0.00286
0451.160	0453.160	0.160	125	1.80	0.00306
0451.200	0453.200	0.200	125	1.40	0.00652
0451.250	0453.250	0.250	125	1.05	0.01126
0451.315	0453.315	0.315	125	0.78	0.0231
0451.375	0453.375	0.375	125	0.610	0.0425
0451.400	0453.400	0.400	125	0.560	0.0484
0451.500	0453.500	0.500	125	0.420	0.0795
0451.630	0453.630	0.630	125	0.305	0.143
0451.750	0453.750	0.750	125	0.245	0.185
0451.800	0453.800	0.800	125	0.212	0.271
0451.001.	0453.001.	1.0	125	0.153	0.459
0451.1.25	0453.1.25	1.25	125	0.0780	0.664
0451.01.5	0453.01.5	1.5	125	0.0630	0.853
0451.01.6	0453.01.6	1.6	125	0.0580	1.060
0451.002.	0453.002.	2.0	125	0.0367	0.530
0451.02.5	0453.02.5	2.5	125	0.0286	1.029
0451.003.	0453.003.	3.0	125	0.0227	1.650
0451.3.15	0453.3.15	3.15	125	0.0215	1.920
0451.03.5	0453.03.5	3.5	125	0.0200	2.469
0451.004.	0453.004.	4	125	0.0160	3.152
0451.005.	0453.005.	5	125	0.0125	5.566
0451.06.3	0453.06.3	6.3	125	0.0096	9.17
0451.007.	0453.007.	7	125	0.0090	10.32
0451.008.	0453.008.	8	125	0.0077	20.23
0451.010.	0453.010.	10	125	0.0056	26.46
0451.012.	0453.012.	12	65	0.0049	47.97
0451.015.	0453.015.	15	65	0.0037	97.82



Recommended pad layout

Average Time Current Curves



PHYSICAL SPECIFICATIONS:

- Materials:** Body: Ceramic
Terminations: Tin-Lead Alloy
RoHS Compliant Terminations: Gold over Nickel Plated Caps(451)
Silver Plated Caps(453)

Soldering Parameters(see page 3 for typical soldering profile):

- Wave Solder — 260°C, 10 seconds maximum
- Reflow Solder — 260°C, 30 seconds maximum

Solderability: MIL-STD-202, Method 208.

PACKAGING SPECIFICATIONS: 12mm Tape and Reel per EIA-RS481-1 (IEC 286, part3); 1,000 pieces per reel, add packaging suffix, MR; 5,000 per reel, add packaging suffix NR.

Options: For RoHS Compliant 451 series add the letter 'L' to end of packaging suffix. Example: 0451001.MRL (RoHS Compliant 1A, 1,000 per reel).

PATENTED

Refer to pg. 374 for SMF Omni-Blok[®] Holder, Series 154 000.

Surface Mount Fuses

Subminiature Surface Mount

RoHS NANO² Slo-Blo[®] Fuse 452/454 Series



The NANO² Slo-Blo fuse has enhanced inrush withstand characteristics over the NANO² Fast-Acting fuse. The unique time delay feature of this fuse design helps solve the problem of nuisance “opening” by accommodating inrush currents that normally cause a fast-acting fuse to open.

- 452 Series **RoHS Compliant** version now available, use ordering suffix ‘L’ (see example on data sheet).

ELECTRICAL CHARACTERISTICS:

% of Ampere Rating	Opening Time
100%	4 hours, Minimum
200%	1 second, Min. ; 60 seconds, Max.
300%	0.2 seconds, Min. ; 3 seconds, Max.
800%	0.02 seconds, Min. ; 0.1 seconds, Max.

AGENCY APPROVALS: Recognized under the Components Program of Underwriters Laboratories and Certified by CSA. Approved by METI from 1 through 5 amperes.

AGENCY FILE NUMBERS: UL E10480, CSA LR 29862.

INTERRUPTING RATINGS:

50 amperes at 125 VAC/VDC; 300 amperes at 32 VDC

ENVIRONMENTAL SPECIFICATIONS:

Operating Temperature: -55°C to 125°C.

Shock: MIL-STD-202, Method 213, Test Condition I (100 G’s peak for 6 milliseconds).

Vibration: MIL-STD-202, Method 201 (10–55 Hz, .06 in. total excursion).

Salt Spray: MIL-STD-202, Method 101, Test Condition B (48 hrs.).

Insulation Resistance (After Opening): MIL-STD-202,

Method 302, Test Condition A, (10,000 ohms minimum).

Resistance to Soldering Heat: MIL-STD-202, Method 210, (3 sec. at 260°C).

Thermal Shock: MIL-STD-202, Method 107, Test Condition B (-65 to 125°C).

Moisture Resistance: MIL-STD-202, Method 106,

High Humidity (90-98 RH), Heat (65°C).

PHYSICAL SPECIFICATIONS:

Materials: Body: Ceramic

Terminations: Tin-Lead Alloy

RoHS Compliant Terminations: Gold over Nickel Plated Caps(452)
Silver Plated Caps(454)

Soldering Parameters:

Wave Solder — 260°C, 3 seconds maximum

Reflow Solder — 260°C, 30 seconds maximum

Solderability: MIL-STD-202, Method 208.

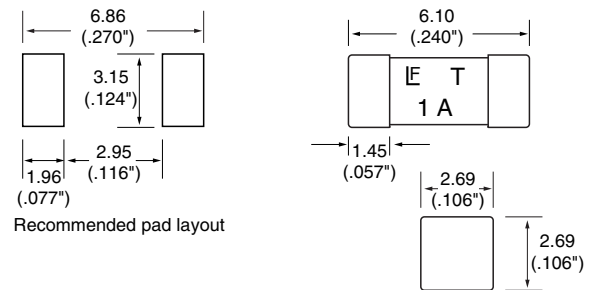
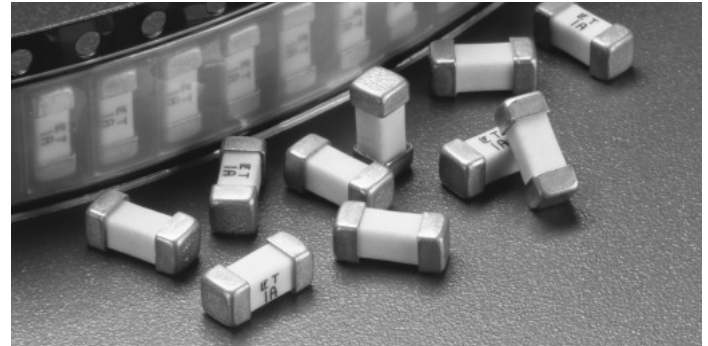
PACKAGING SPECIFICATIONS: 12mm Tape and Reel per EIA-RS481-1 (IEC 286, part3); 1,000 pieces per reel, add packaging suffix, MR; 5,000 per reel, add packaging suffix NR.

Options: For RoHS Compliant 452 series add the letter ‘L’ to end of packaging suffix. Example: 0452001.MRL (RoHS Compliant 1A, 1,000 per reel).

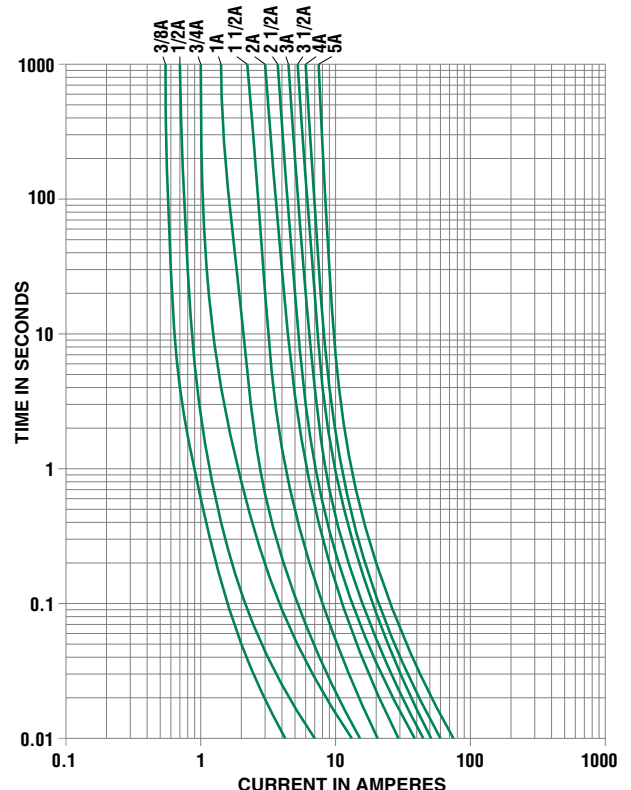
PATENTED

ORDERING INFORMATION:

Tin-Lead Plated Catalog #	Silver Plated Catalog #	Ampere Rating	Voltage Rating	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec.
0452.375	0454.375	3/8	125	1.20	0.101
0452.500	0454.500	1/2	125	0.700	0.240
0452.750	0454.750	3/4	125	0.360	0.904
0452 001.	0454 001.	1	125	0.225	1.98
0452 01.5	0454 01.5	1 1/2	125	0.0930	3.65
0452 002.	0454 002.	2	125	0.0625	8.20
0452 02.5	0454 02.5	2 1/2	125	0.0450	15.0
0452 003.	0454 003.	3	125	0.0340	20.16
0452 03.5	0454 03.5	3 1/2	125	0.0224	26.53
0452 004.	0454 004.	4	125	0.0186	34.40
0452 005.	0454 005.	5	125	0.0136	53.72



Average Time Current Curves



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SURFACE MOUNT FUSES

Refer to pg. 271 for SMF Omni-Blok[®] Holder, Series 154 000T.