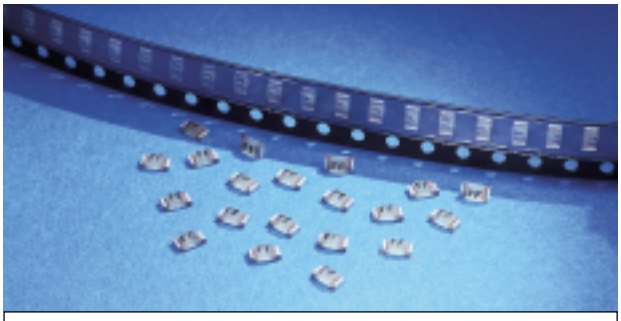
SURFACE MOUNT FUSES

THIN-FILM SURFACE MOUNT

1206 SMF Very Fast-Acting Thin-Film Type 429 Series

- The 1206 SMF is an extremely small, low profile design (1206 chip size) utilizing thin-film technology to achieve precise control of electrical characteristics.
- New one-piece element/termination design assures extra reliability by eliminating the need for soldering, welding or other joining operations in the manufacture of the fuse.
- Semi-rigid substrate eliminates the potential for thermal shock fractures and decreases the risk of mechanical damage during pick and place operations.



ELECTRICAL CHARACTERISTICS:

% of Ampere Rating	Opening Time at 25°C
100%	4 hours, **Min**imum
200%	5 seconds, **Max**imum
300%	0.2 seconds, **Max**imum

AGENCY APPROVALS: Recognized under the Components Program of Underwriters Laboratories and Certified by CSA.

AGENCY FILE NUMBERS: UL E10480, CSA LR 29862.

INTERRUPTING RATINGS:
0.125 – 3A 50 amperes at rated voltage, VAC/VDC
4 – 7A 35 amperes at rated voltage, VAC/VDC

ENVIRONMENTAL SPECIFICATIONS:
Operating Temperature: –55°C to 125°C.
Vibration: Withstands 10–55 Hz per MIL-STD-202F, Method 201A and 10-2000 Hz at 20 G's per MIL-STD-202F, Method 204D, Condition D.
Insulation Resistance (After Opening): Greater than 10 KOhm.
Resistance to Soldering Heat: Withstands 60 seconds above 200°C up to 260°C, maximum.
Thermal Shock: Withstands 5 cycles of –55° to 125°C.

PHYSICAL SPECIFICATIONS:
Materials: Body: Epoxy Substrate
Terminations: Copper/Nickel/Tin-Lead (95/5)
Cover Coat: Conformal Coating
Soldering Parameters:
Wave Solder — 260°C, 10 seconds maximum
Reflow Solder — 260°C, 30 seconds maximum

PACKAGING SPECIFICATIONS: 8mm Tape and Reel per EIA-RS481-2 (IEC 286, part 3); 3,000 per reel, add packaging suffix, WR.

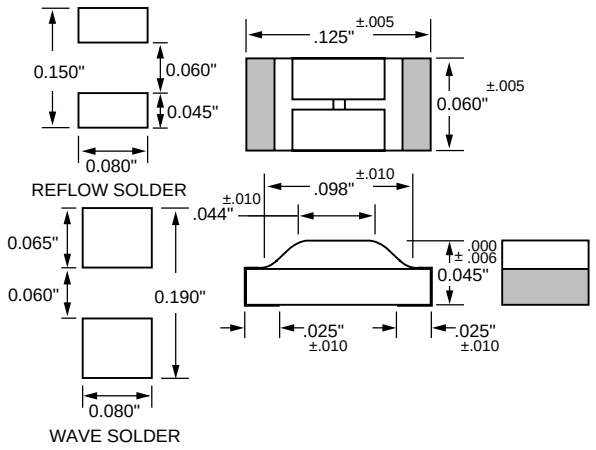
PATENTED

ORDERING INFORMATION:

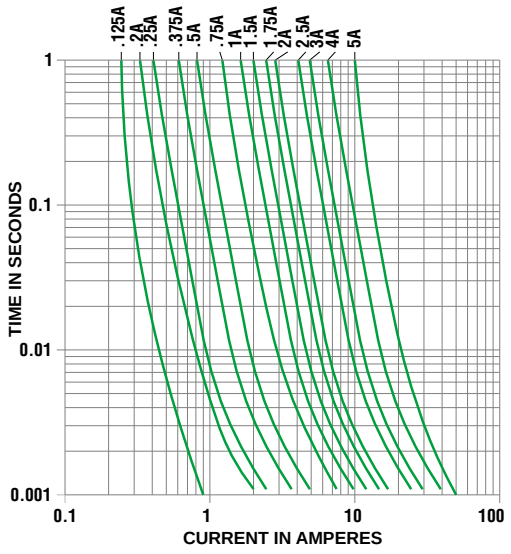
Catalog Number	Ampere Rating	Marking Code	Nominal Voltage Rating	Nominal Resistance Cold Ohms[1]	Nominal Voltage Drop (V)[2]	Melting I^2t (A^2 Sec.)[3]
429.125	1/8	FB	125	2.30000	0.200	0.00020
429.200	2/10	FC	125	0.93800	0.175	0.00055
429.250	1/4	FD	125	0.62500	0.160	0.00100
429.375	3/8	FE	125	0.37500	0.138	0.00280
429.500	1/2	FF	63	0.24050	0.130	0.0060
429.750	3/4	FG	63	0.13700	0.120	0.0170
429 001	1	FH	63	0.09950	0.115	0.035
429 1.25	1¼	FJ	63	0.07475	0.108	0.065
429 01.5	1½	FK	63	0.06250	0.101	0.125
429 1.75	1¾	FL	63	0.05000	0.096	0.150
429 002	2	FN	63	0.03975	0.093	0.230
429 02.5	2½	FO	32	0.03065	0.087	0.50
429 003	3	FP	32	0.02625	0.080	0.70
429 004	4	FS	24	0.01926	0.070	1.5
429 005	5	FT	24	0.01375	0.065	2.7
429 007	7	FU	24	0.00925	0.060	3.6

[1] Measured at 10% of rated current, 25°C. [2] Measured at 100% of rated current, 25°C.
[3] Measured at rated voltage.

RECOMMENDED PAD LAYOUTS



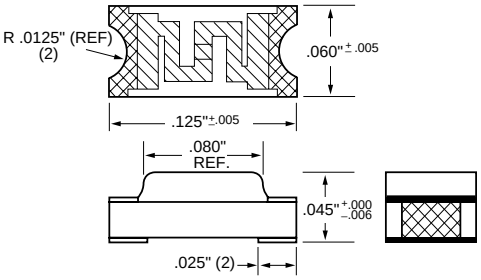
Average Time Current Curves



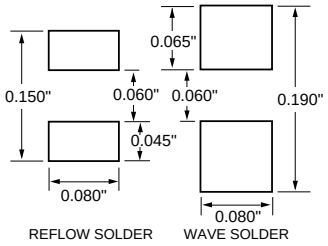
THIN-FILM SURFACE MOUNT

1206 SMF Slo-Blo® Thin-Film Fuse 430 Series

- Time delay feature withstands high in-rush currents and prevents nuisance openings.
- Package is visually distinct from fast-acting version for easy identification.
- Top side marking allows visual verification of amperage rating.



RECOMMENDED MOUNTING PAD DIMENSIONS - INCHES:



ELECTRICAL CHARACTERISTICS:

% of Ampere Rating	Opening Time @ 25°C
100%	4 hours, **Min**imum
200%	1 sec., **Min.;** 120 sec., **Max.**
300%	0.1 sec., **Min.;** 3 sec., **Max.**
800%	0.002 sec., **Min.;** .05 sec., **Max.**

AGENCY APPROVALS: Recognized under the Components Program of Underwriters Laboratories and Certified by CSA.

AGENCY FILE NUMBERS: UL E10480, CSA LR 29862.

INTERRUPTING RATINGS:

0.5A - 1.5A	50 amperes at 63 VAC/VDC
2A	35 amperes at 63 VAC/VDC
3A	50 amperes at 32 VAC/VDC

ENVIRONMENTAL SPECIFICATIONS:
Operating Temperature Range:
-55°C to +125°C
Vibration:
Withstands 10-55 Hz per MIL-STD-202F, Method 201A and 10-2000 Hz at 20 G's per MIL-STD-202F, Method 204D, Condition D.
Insulation Resistance (after opening):
Greater than 10kΩ.
Resistance to Soldering Heat:
Withstands 60 seconds above 200°C up to 260°C, maximum.
Thermal Shock:
Withstands 5 cycles of -50°C to +125°C.

PHYSICAL SPECIFICATIONS:
Materials: Body: Epoxy Substrate
Terminations: Copper/Nickel/Tin-Lead (95/5)
Cover Coat: Conformal Coating
Soldering Parameters:
Wave Solder: 260°C, 10 seconds maximum
Reflow Solder: 260°C, 30 seconds maximum

PACKAGING SPECIFICATIONS: 8mm Tape and Reel per EIA-RS481-2 (IEC 286, part 3); 3,000 per reel, add packaging suffix, WR.

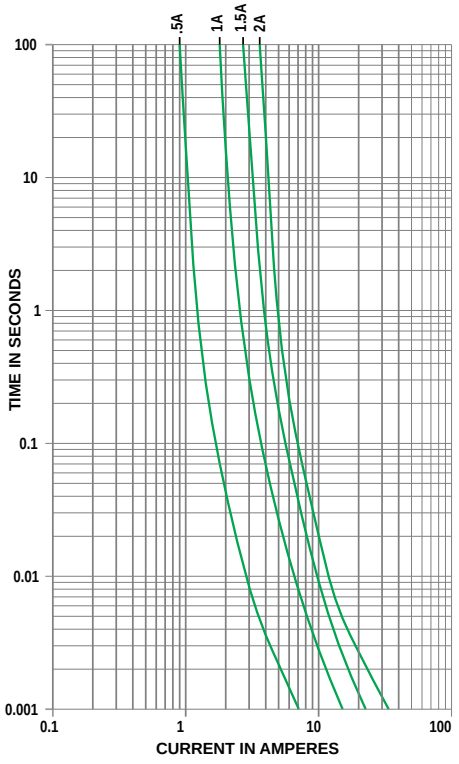
PATENTED

ORDERING INFORMATION:

Catalog Number	Amperage Rating (A)	Marking Code	Voltage Rating (V)	Nom. Cold Resistance (Ω)[1]	Nominal Voltage Drop (V)[2]	Nominal Melting I²t (A²sec)
0430.500	0.5	TF	63	.250	.126	0.045
0430 001.	1.0	TH	63	.097	.094	0.239
0430 01.5	1.5	TK	63	.056	.085	0.607
0430 002.	2.0	TN	63	.039	.078	1.025
0430 003.	3.0	TP	32	.020	.073	1.65

[1] Measured at 10% of rated current, 25°C.
[2] Measured at 100% of rated current, 25°C.

Average Time Current Curves



SURFACE MOUNT

0603 Very Fast-Acting Thin-Film Type 431 Series

Super-small size saves valuable board space while providing high power density. Ideal for circuit protection of disk drives, PCMCIA cards and cellular phones.

ELECTRICAL CHARACTERISTICS:

% of Ampere Rating	Opening Time at 25°C
100%	4 hours, **Min**imum
200%	5 seconds, **Max**imum
300%	0.2 seconds, **Max**imum

AGENCY APPROVALS: Recognized under the Components Program of Underwriters Laboratories and Certified by CSA.

AGENCY FILE NUMBERS: UL E10480, CSA LR 29862.

INTERRUPTING RATINGS:

.25–1A 50 amperes at 32 VAC/VDC
1–5A 35 amperes at 32 VAC/VDC

ENVIRONMENTAL SPECIFICATIONS:

Operating Temperature: –55°C to 125°C.
Vibration: Withstands 10-55 HZ per MIL-STD-202F, Method 201A and 10-2000 HZ at 20 G's per MIL-STD-202F, Method 204D, Condition D.
Insulation Resistance (After Opening): Greater than 500,000 ohms.
Resistance To Soldering Heat: Withstands 60 seconds above 200°C up to 260°C, maximum.
Thermal Shock: Withstands 5 cycles of –50°C to 125°C.

PHYSICAL SPECIFICATIONS:

Materials: Body: Epoxy Substrate
Terminations: Copper/Nickel/Tin-Lead (95/5)
Cover Coat: Conformal Coating

Soldering Parameters:

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

PACKAGING SPECIFICATIONS: 8mm Tape and Reel per EIA-RS481 (IEC 286, part 3); 5,000 per reel, add packaging suffix, NR.

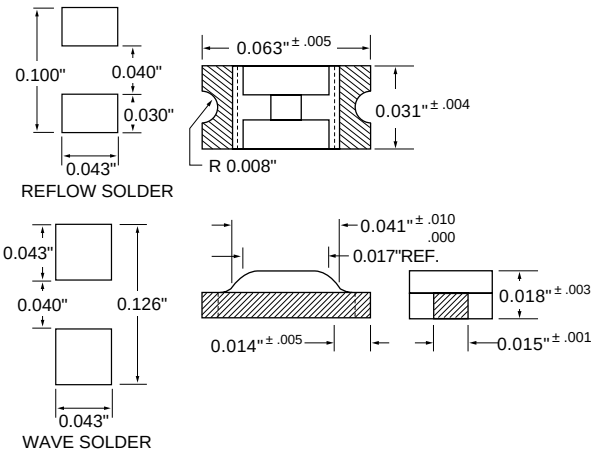
PATENTED

ORDERING INFORMATION:

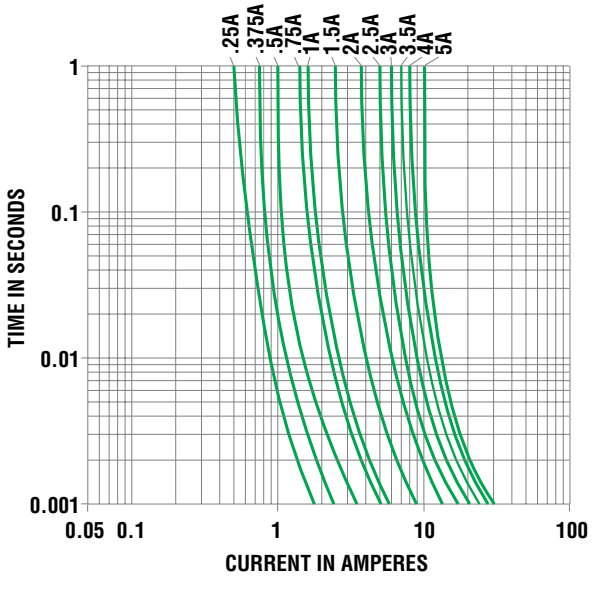
Catalog Number	Ampere Rating	Voltage Rating	Nominal Resistance Cold Ohm[1]	Nominal Voltage Drop (V)[2]	Melting I²t (A² Sec.)
431.250	1/4	32	0.375	0.130	0.0030
431.375	3/8	32	0.265	0.084	0.0053
431.500	1/2	32	0.193	0.120	0.0087
431.750	3/4	32	0.114	0.110	0.0171
431 001	1	32	0.072	0.100	0.0210
431 01.5	1½	32	0.048	0.082	0.0696
431 002	2	32	0.036	0.077	0.104
431 02.5	2½	32	0.028	0.089	0.175
431 003	3	32	0.023	0.080	0.198
431 03.5	3½	32	0.019	0.090	0.265
431 004	4	32	0.017	0.100	0.420
431 005	5	32	0.013	0.107	0.600

[1]Measured at 10% of rated current, 25°C.
[2]Measured at 100% of rated current, 25°C.

Reference Dimensions:



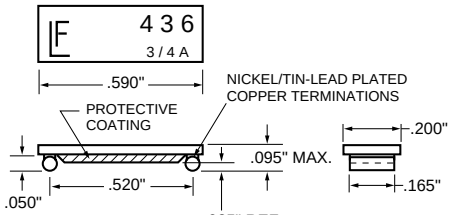
Average Time Current Curves



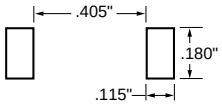
*SMT*elecom® Fuse 436 Series

- Surface mount overcurrent protection from lightning and power cross.
- Meets UL 1459/1950 power cross requirements stand alone.
- Ideal for use in telecommunication equipment including modems, fax machines, desk top phones, answering machines and line cards.
- UL recognized, with a 250 V operating voltage.
- Top side marking allows visual verification of ampere rating.
- Complies with Bellcore GR-1089-CORE and FCC 47 part 68 Surge Specifications.

Reference Dimensions



Recommended Pad Layout:



ELECTRICAL CHARACTERISTICS:

% of Ampere Rating	Opening Time
100%	4 Hours, **Min**imum
200%	5 Seconds, **Min.;** 30 Seconds, **Max.**

Short Circuit Capabilities:
UL 1459 / UL 1950 3rd. Edt.
40 Amperes @ 600 VAC
7 amperes @ 600 VAC
2.2 amperes @ 600 VAC

AGENCY APPROVALS: Recognized under the Components Program of Underwriters Laboratories and Certified by CSA .

AGENCY FILE NUMBERS: UL E10480, CSA LR 29862.

INTERRUPTING RATINGS:
10,000 amperes @ 125V
100 amperes @ 250V

ENVIRONMENTAL SPECIFICATIONS:
Operating Temperature Range: –55°C to +125°C

PHYSICAL SPECIFICATIONS:
Materials: Body: Melamine Substrate
Terminations: Copper/Nickel/Tin-Lead (95/5)
Soldering Parameters:
Reflow Solder — 250°C, 10 sec. maximum.
Wave Solder — Not recommended.

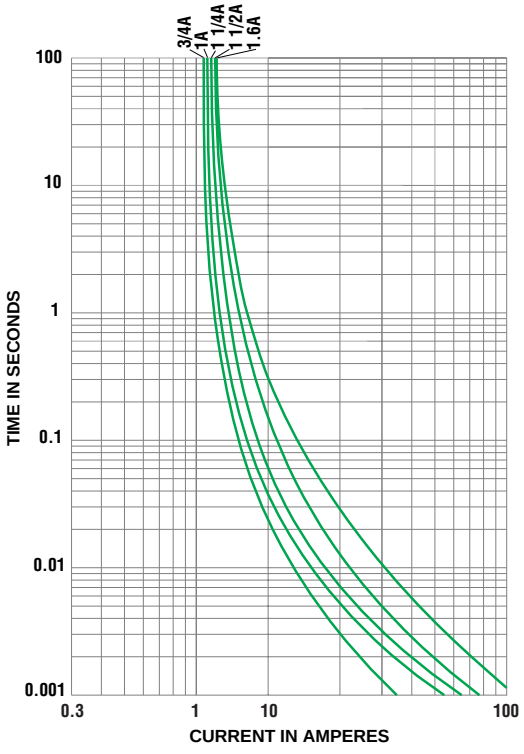
PACKAGING SPECIFICATIONS: 24mm Tape and Reel per EIA-RS481-2 (IEC 286, part 3); 2,000 per reel, add packaging suffix, PR.

PATENTED

ORDERING INFORMATION:

Catalog Number	Ampere Rating (A)	Voltage Rating (V)	Nominal Cold Resistance (Ω)	Nominal Melting I^2t (A^2 sec.)
0436.750	3/4	250	0.850	1.143
0436001.	1	250	0.475	2.606
04361.25	1 1/4	250	0.305	3.658
043601.5	1 1/2	250	0.210	5.921
043601.6	1 6/10	250	0.165	13.500

Average Time Current Curves



PERFORMANCE CHARACTERISTICS:

Catalog Number	FCC 47 Part 68				Bellcore GR-1089-CORE First Level Lightning	
	Longitudinal Surge 10x160µSec. (1500 V)		Metallic Surge 10x560µSec. (800 V)		10x1000µSec. (1000 V)	2x10µSec. (2500 V)
Repetitions	50	2	50	2	50	20
0436.750	82 A	88 A	29 A	32 A	22 A	225A
0436001.	102 A	117 A	44 A	48 A	37 A	350A
04361.25	120 A	135 A	87 A	95 A	56 A	425A
043601.5	175 A	200 A	100 A	115 A	80 A	500A
043601.6	200 A	200 A	134 A	156 A	100 A	500A

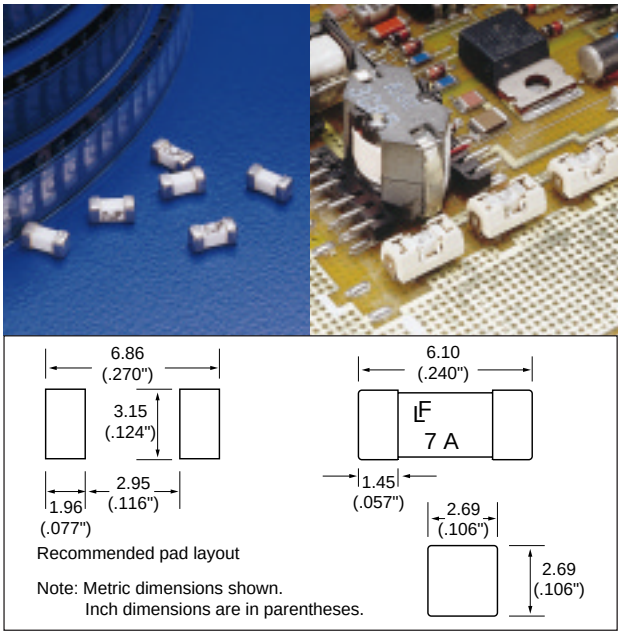
NANO²® SMF Very Fast-Acting Type Fuse

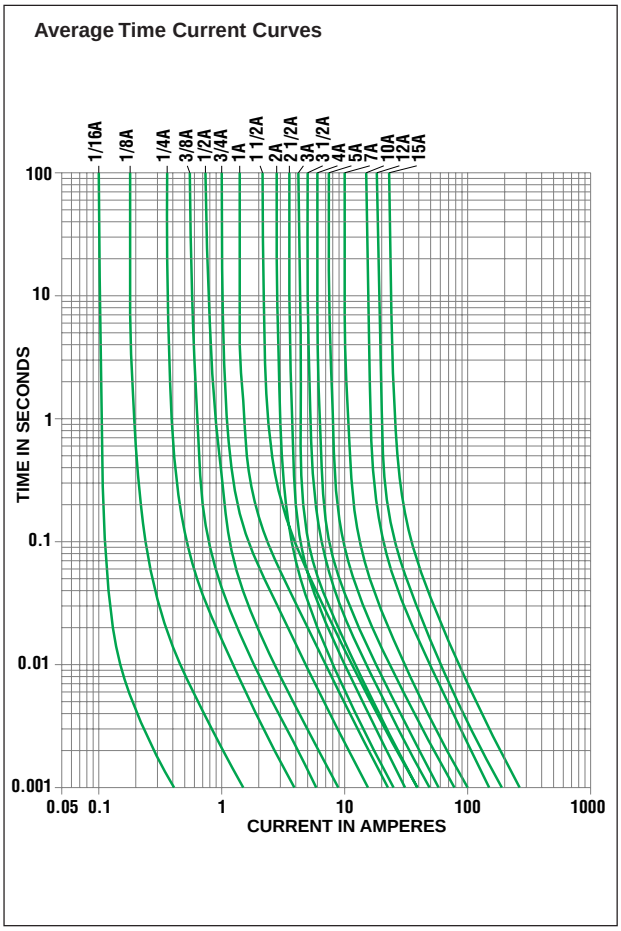
The Nano² SMF Fuse is a very small, square surface mount fuse that is also available in a surface mount holder.

ELECTRICAL CHARACTERISTICS:

% of Ampere Rating	Ampere Rating	Opening Time
100%	1/16–15	4 hours, **Min**imum
200%	1/16–10	5 seconds, **Max**imum
	12–15	20 seconds, **Max**imum

AGENCY APPROVALS: Recognized under the Components Program of Underwriters Laboratories and Certified by CSA. Approved by MITI from 1 through 5 amperes.
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 F (20 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 or Silver Plated Brass Caps.
Soldering Parameters:
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 (IEC 286, part 3); 1,000 per reel, add packaging suffix, MR.
PATENTED
ORDERING INFORMATION:





Tin-Lead Plated Catalog #	Silver Plated Catalog #	Ampere Rating	Voltage Rating	Nominal Resistance Cold Ohms	Nominal Melting I²t A² Sec.
–	**R451**.062	1/16	125	5.50	0.00019
–	**R451**.125	1/8	125	1.70	0.00286
R451.250	**0453**.250	1/4	125	1.05	0.01126
R451.375	**0453**.375	3/8	125	0.610	0.0425
R451.500	**0453**.500	1/2	125	0.420	0.0795
R451.750	**0453**.750	3/4	125	0.245	0.185
R451 001.	**0453** 001.	1	125	0.153	0.459
R451 01.5	**0453** 01.5	1½	125	0.0630	0.853
R451 002.	**0453** 002.	2	125	0.0367	0.53
R451 02.5	**0453** 02.5	2½	125	0.0286	1.029
R451 003.	**0453** 003.	3	125	0.0227	1.65
R451 03.5	**0453** 03.5	3½	125	0.0200	2.469
R451 004.	**0453** 004.	4	125	0.0160	3.152
R451 005.	**0453** 005.	5	125	0.0125	5.566
R451 007.	**0453** 007.	7	125	0.0090	10.32
R451 010.	**0453** 010.	10	125	0.0056	26.46
R451 012.	**0453** 012.	12	65	0.0049	47.97
R451 015.	**0453** 015.	15	65	0.0037	97.82

Refer to pg. 102 for SMF Omni-Blok® Holder, Series **154** 000.

SUBMINIATURE SURFACE MOUNT

NANO²® SMF Slo-Blo® Type Fuse

The very small NANO² Fuse with time delay performance characteristics. 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.

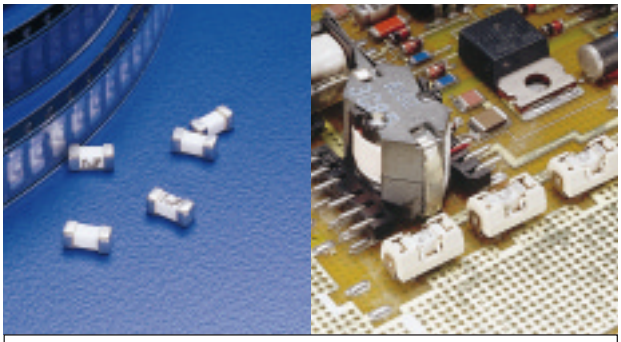
ELECTRICAL CHARACTERISTICS:

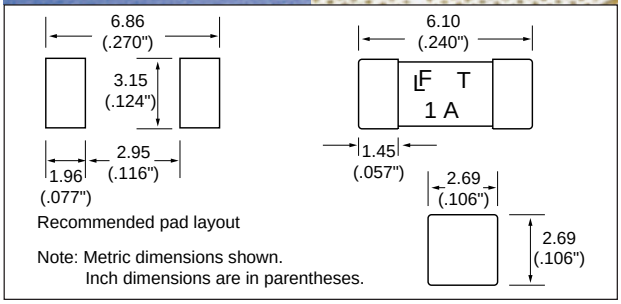
% of Ampere Rating	Opening Time
100%	4 hours, **Min**imum
200%	1 second, **Min.;** 60 seconds, **Max.**
300%	0.2 seconds, **Min.;** 3 seconds, **Max.**
800%	0.02 seconds, **Min.;** 0.1 seconds, **Max**.

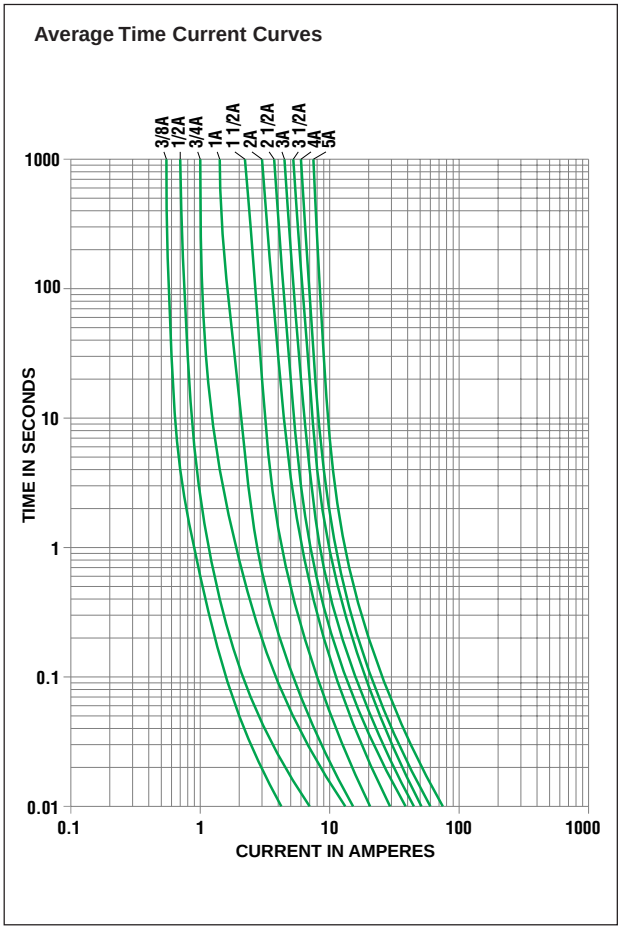
AGENCY APPROVALS: Recognized under the Components Program of Underwriters Laboratories and Certified by CSA.
AGENCY FILE NUMBERS: UL E10480, CSA LR 29862.
INTERRUPTING RATINGS:
50 amperes at 125 VAC
50 amperes at 125 VDC
300 amperes at 32 VDC
ENVIRONMENTAL SPECIFICATIONS:
Operating Temperature: –55°C 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 or Silver Plated Brass Caps.
Soldering Parameters:
Wave Solder — 260°C, 3 seconds maximum
Reflow Solder — 230°C, 30 seconds maximum
Solderability: MIL-STD-202, Method 208.
PACKAGING SPECIFICATIONS: 12mm Tape and Reel per EIA-RS481 (IEC 286, part 3); 1,000 per reel.
Marking: The **452/454** series Slo-Blo fuse marking includes the letter "T" to designate time delay characteristics.
PATENTED

ORDERING INFORMATION:

Tin-Lead Plated Catalog #	Silver Plated Catalog #	Ampere Rating	Voltage Rating	Nominal Resistance Cold Ohms	Nominal Melting I²t A² Sec.
R452.375	**0454**.375	3/8	125	1.60	0.101
R452.500	**0454**.500	1/2	125	0.940	0.240
R452.750	**0454**.750	3/4	125	0.460	0.904
R452 001.	**0454** 001.	1	125	0.270	1.98
R452 01.5	**0454** 01.5	1½	125	0.116	3.65
R452 002.	**0454** 002.	2	125	0.0760	8.20
R452 02.5	**0454** 02.5	2½	125	0.0540	15.0
R452 003.	**0454** 003.	3	125	0.0414	20.16
R452 03.5	**0454** 03.5	3½	125	0.0224	26.53
R452 004.	**0454** 004.	4	125	0.0186	34.40
R452 005.	**0454** 005.	5	125	0.0136	53.72







Refer to pg. 102 for SMF Omni-Blok® Holder, Series **154** 000T.

SUBMINIATURE SURFACE MOUNT

PICO® SMF Very Fast-Acting Type Fuse 459 Series

The PICO® SMF Very Fast-Acting Fuse provides high performance in a rectangular package suitable for reflow and wave soldering methods.

ELECTRICAL CHARACTERISTICS:

% of Ampere Rating	Opening Time
100%	4 hours, **Min**imum
200%	1 second, **Max**imum
300%	0.1 second, **Max**imum

AGENCY APPROVALS: Recognized under the Components Program of Underwriters Laboratories and Certified by CSA.

AGENCY FILE NUMBERS: UL E10480, CSA LR 29862.

INTERRUPTING RATINGS:
50 amperes at 125 VAC.
300 amperes at 125 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, (10,000 ohms minimum at 100 volts).
Resistance to Soldering Heat: MIL-STD-202, Method 210, Test Condition F (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°).

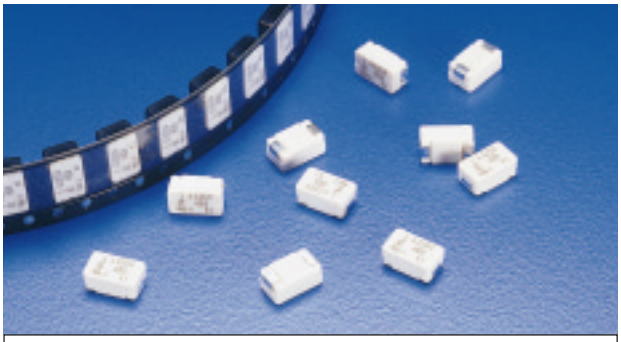
PHYSICAL SPECIFICATIONS:
Materials: Body: Molded Thermoplastic
Terminations: Tin-Lead Plated Copper
Soldering Parameters:
Wave Solder — 260°C, 10 seconds maximum
Reflow Solder — 260°C, 30 seconds maximum
Solderability: MIL-STD-202, Method 208.

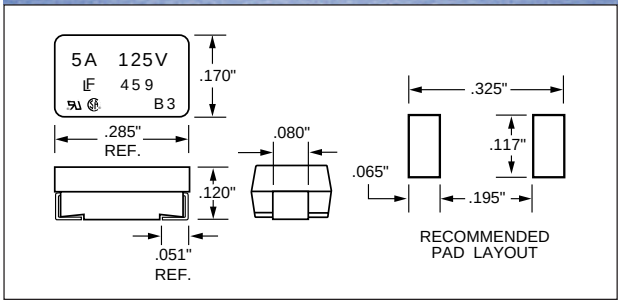
PACKAGING SPECIFICATIONS: 12mm Tape and Reel per EIA-RS481 (IEC 286, part 3); 500 per reel, add packaging suffix, UR.

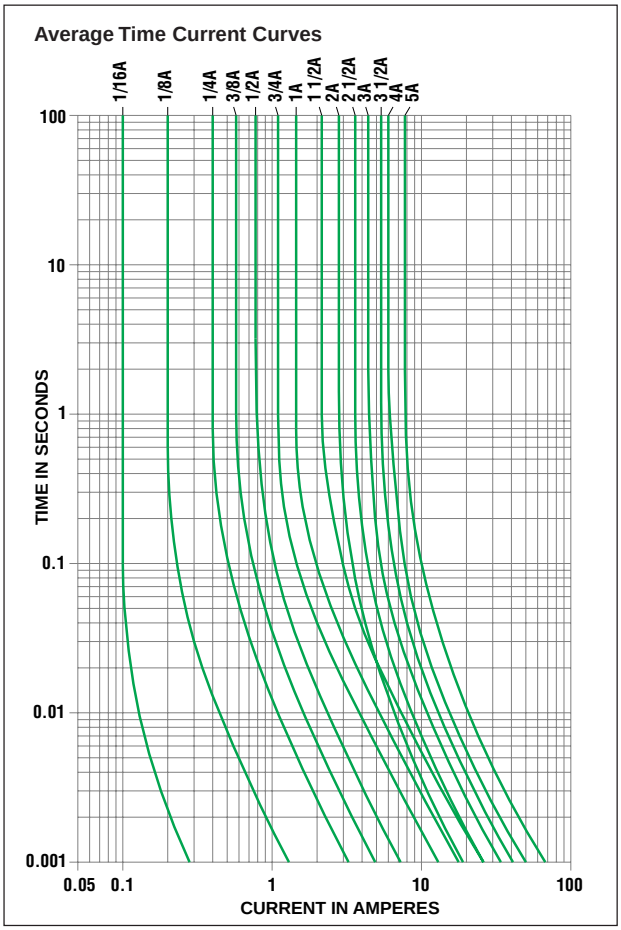
PATENTED

ORDERING INFORMATION:

Catalog Number	Ampere Rating	Voltage Rating	Nominal Resistance Cold Ohms	Nominal Melting I^2t A^2 Sec.
R459.062	1/16	125	7.0	0.000075
R459.125	1/8	125	1.70	0.00163
R459.250	1/4	125	0.665	0.0106
R459.375	3/8	125	0.395	0.0254
R459.500	1/2	125	0.280	0.0546
R459.750	3/4	125	0.175	0.155
R459 001	1	125	0.125	0.281
R459 01.5	1½	125	0.0800	0.650
R459 002	2	125	0.0468	0.421
R459 02.5	2½	125	0.0350	0.721
R459 003	3	125	0.0290	1.23
R459 03.5	3½	125	0.0240	1.65
R459 004	4	125	0.0200	2.35
R459 005	5	125	0.0155	3.90



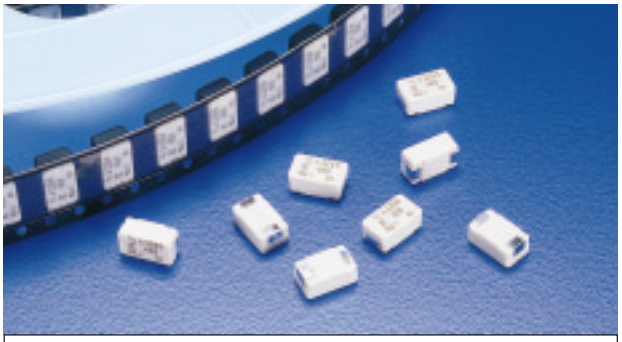


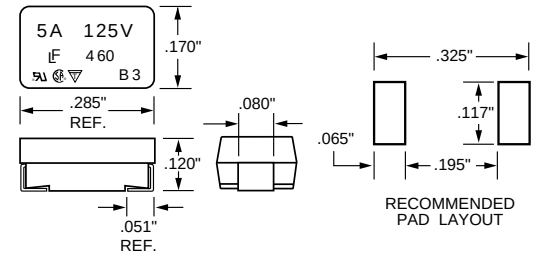


SUBMINIATURE SURFACE MOUNT

PICO® SMF Slo-Blo® Type Fuse 460 Series

The PICO® SMF Slo-Blo® Fuse product provides Pico® fuse reliability and performance in a standard rectangular surface mount package.





ELECTRICAL CHARACTERISTICS:

% of Ampere Rating	Opening Time
100%	4 hours, **Min**imum
200%	1 second, **Min.;** 120 seconds, **Max.**
300%	0.2 second, **Min.;** 3 seconds, **Max.**
800%	0.02 second, **Min.;** 0.1 second, **Max**.

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

AGENCY FILE NUMBERS: UL E10480, CSA LR 29862.

INTERRUPTING RATINGS:
50 amperes at 125 VAC.
50 amperes at 125 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). MIL-STD-202, Method 204, Test Condition C (55–2000 Hz, 10 G's peak).
Salt Spray: MIL-STD-202, Method 101, Test Condition B.
Insulation Resistance (After Opening): MIL-STD-202, Method 302, (10,000 ohms minimum at 100 volts).
Resistance to Soldering Heat: MIL-STD-202, Method 210, (3 sec. at 260°C).
Thermal Shock: MIL-STD-202, Method 107, (–65 to 125°C).
Moisture Resistance: MIL-STD-202, Method 106, High Humidity (90-98 RH), Heat (65°C).

PHYSICAL SPECIFICATIONS:
Materials: Body: Molded Thermoplastic
Terminations: Tin-Lead Plated Copper
Soldering Parameters:
Wave Solder — 260°C, 3 seconds maximum
Reflow Solder — 230°C, 30 seconds maximum
Solderability: MIL-STD-202, Method 208.

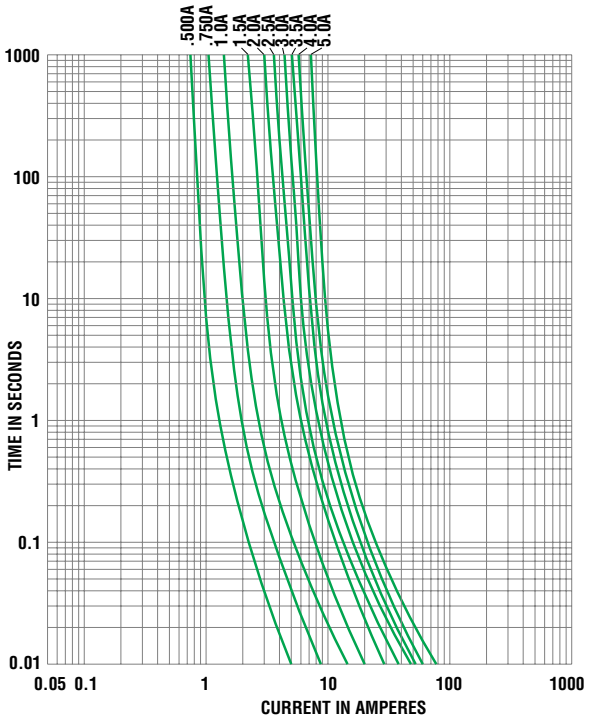
PACKAGING SPECIFICATIONS: 12mm Tape and Reel per EIA-RS481 (IEC 286, part 3); 500 per reel, add packaging suffix, UR.

PATENTED

ORDERING INFORMATION:

Catalog Number	Ampere Rating	Voltage Rating	Nominal Resistance Cold Ohms	Nominal Melting I^2t A^2 Sec.
R460.500	1/2	125	1.19	0.210
R460.750	3/4	125	0.497	0.760
R460 001	1	125	0.280	2.01
R460 01.5	1½	125	0.116	3.94
R460 002	2	125	0.071	7.60
R460 02.5	2½	125	0.052	13.0
R460 003	3	125	0.038	21.0
R460 03.5	3½	125	0.024	26.8
R460 004	4	125	0.0194	35.0
R460 005	5	125	0.0133	54.8

Average Time Current Curves



SUBMINIATURE SURFACE MOUNT & DIP TYPES

FLAT-PAK® Fast Acting Fuse

Fast-Acting and Slo-Blo® Fuse versions of the Flat-Pak® Fuse designs are available. Both designs are available in either a gull-wing surface mount package or a DIP configuration for through-hole mounting. These fuse designs feature a 250 VAC rating in a low profile, rectangular package.

ELECTRICAL CHARACTERISTICS:

% of Ampere Rating	Opening Time
100%	4 hours, **Min**imum
200%	2 seconds, **Max**imum

AGENCY APPROVALS: Recognized under the Components Program of Underwriters Laboratories and Certified by CSA.

AGENCY FILE NUMBERS: UL E10480, CSA LR 29862.

INTERRUPTING RATING:
50 amperes at 250 VAC.

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

PHYSICAL SPECIFICATIONS:
Materials: Body: Thermoplastic
Terminations: Tin/Lead Plated Copper
Soldering Parameters:
Wave Solder — 260°C, 3 seconds maximum.
Reflow Solder — 215°C, 30 seconds maximum.
Solderability: MIL-STD-202, Method 208.
Cleaning: Board washable in most common solvents.

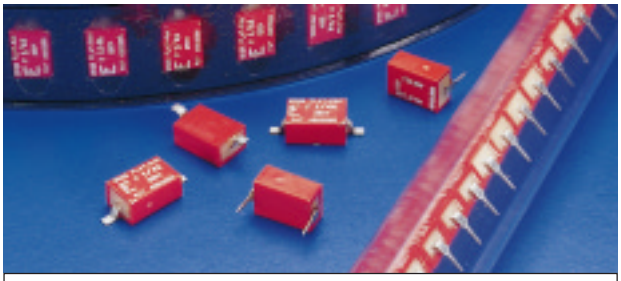
PACKAGING SPECIFICATIONS:
SMF Fuses — 24mm Tape and Reel per EIA-RS481 (IEC 286, part 3); 500 per reel.
DIP Fuses — Antistatic magazine, 100 per magazine.

PATENTED

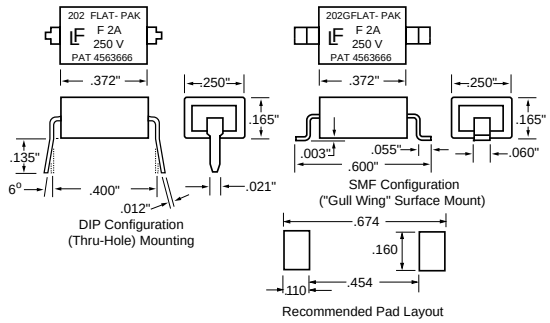
ORDERING INFORMATION

Catalog Number	Catalog[1] Number	Ampere Rating	Voltage Rating	Nominal Resistance Cold Ohms	Nominal Melting I^2t A^2 Sec.
202.062	**202**.062G	1/16	250	7.90	0.000220
202.125	**202**.125G	1/8	250	2.45	0.00180
202.250	**202**.250G	1/4	250	0.880	0.0147
202.500	**202**.500G	1/2	250	0.298	0.0363
202.750	**202**.750G	3/4	250	0.166	0.0980
202 001	**202** 001G	1	250	0.119	0.192
202 01.5	**202** 01.5G	1½	250	0.0701	0.540
202 002	**202** 002G	2	250	0.0469	1.07
202 02.5	**202** 02.5G	2½	250	0.0455	1.76
202 003	**202** 003G	3	250	0.0327	1.71
202 004	**202** 004G	4	250	0.0244	3.00
202 005	**202** 005G	5	250	0.0174	4.68

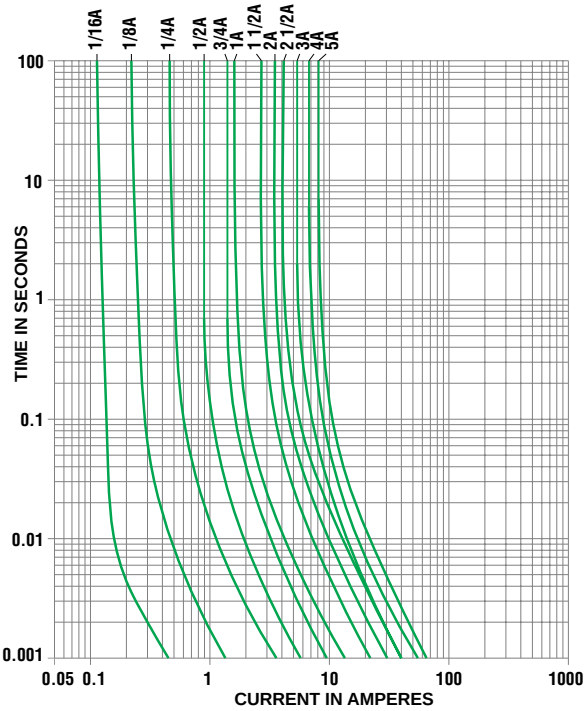
[1]SMF fuse marking includes the letter "G" next to the series number indicating "Gull-Wing".



Reference Dimensions:



Average Time Current Curves



FLAT-PAK® Slo-Blo® Fuse

Fast-Acting and Slo-Blo® Fuse versions of the Flat-Pak Fuse designs are available. Both designs are available in either a gull-wing surface mount package or a DIP configuration for through-hole mounting. These fuse designs feature a 250 VAC rating in a low profile, rectangular package.

ELECTRICAL CHARACTERISTICS:

% of Ampere Rating	Opening Time
100%	4 hours, **Min**imum
200%	1 second, **Min**imum
	30 seconds, **Max**imum

AGENCY APPROVALS: Recognized under the Components Program of Underwriters Laboratories and Certified by CSA.

AGENCY FILE NUMBERS: UL E10480, CSA LR 29862.

INTERRUPTING RATING:
50 amperes at 250 VAC.

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

PHYSICAL SPECIFICATIONS:
Materials: Body: Thermoplastic
Terminations: Tin/Lead Plated Copper
Soldering Parameters:
Wave Solder — 260°C, 3 seconds maximum.
Reflow Solder — 215°C, 30 seconds maximum.
Solderability: MIL-STD-202, Method 208.
Cleaning: Board washable in most common solvents.

PACKAGING SPECIFICATIONS:
SMF Fuses — 24mm Tape and Reel per EIA-RS481 (IEC 286, part 3); 500 per reel.
DIP Fuses — Antistatic magazine, 100 per magazine.

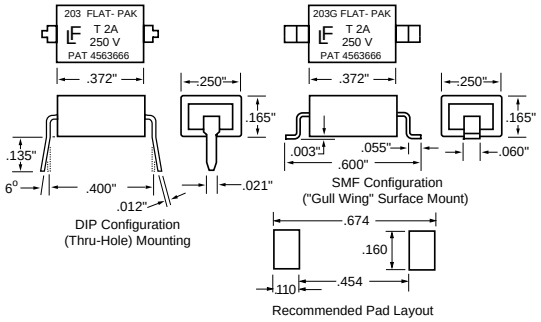
PATENTED

ORDERING INFORMATION

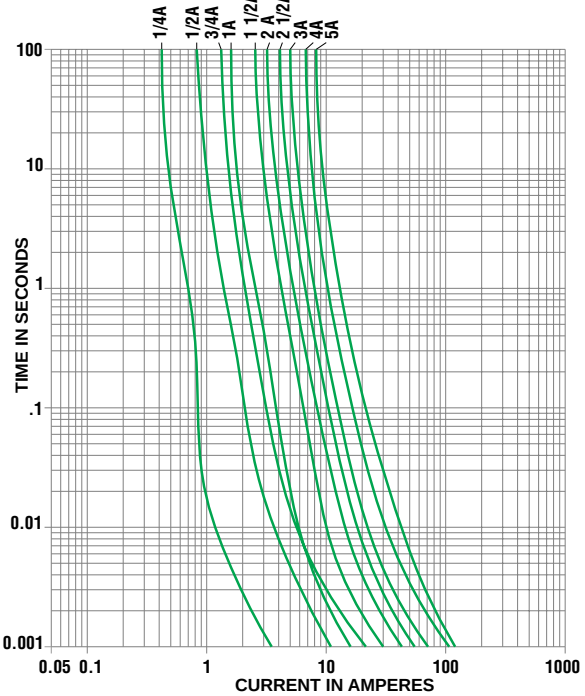
Catalog Number	Catalog[1] Number	Ampere Rating	Voltage Rating	Nominal Resistance Cold Ohms	Nominal Melting I²t A² Sec.
203.250	**203**.250G	1/4	250	1.36	0.0126
203.500	**203**.500G	1/2	250	0.433	0.112
203.750	**203**.750G	3/4	250	0.158	0.327
203 001	**203** 001G	1	250	0.0755	0.328
203 01.5	**203** 01.5G	1½	250	0.0390	0.850
203 002	**203** 002G	2	250	0.0345	1.70
203 02.5	**203** 02.5G	2½	250	0.0237	2.87
203 003	**203** 003G	3	250	0.0197	4.40
203 004	**203** 004G	4	250	0.0148	8.75
203 005	**203** 005G	5	250	0.0124	14.7

[1]SMF fuse marking includes the letter "G" next to the series number indicating "Gull-Wing".

Reference Dimensions:



Average Time Current Curves

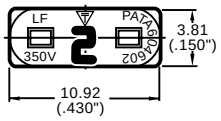


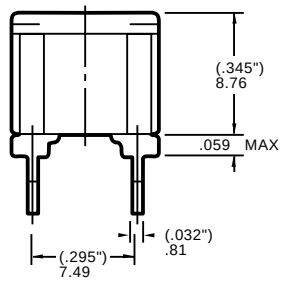
350 VOLT SURFACE MOUNT FUSE

EBF Fuse Fast-Acting Type 446 Series

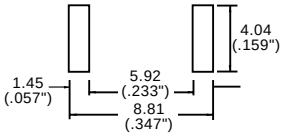
- Ideal for use in electronic lighting ballast, power supply and power inverter applications.
- Rated for use in 125, 250, 277 and 350 VAC circuits.
- Based on the proven reliability of the automotive MINI® Fuse; available from 2 through 10 amperes.

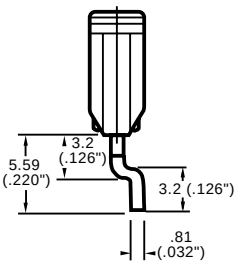
Reference Dimensions (Inches):





Recommended Pad Layout:





ELECTRICAL CHARACTERISTICS:

% of Ampere Rating	Opening Time
100%	4 hours, **Min**imum
200%	0.15 sec. Min., 5 Sec. Max

AGENCY APPROVALS: Recognized under the Components Program of Underwriters Laboratories and CSA Certified. Approved by MITI to 5 amperes.

AGENCY FILE NUMBERS: UL: E71611, CSA LR 29862.

INTERRUPTING RATINGS:
100 amperes at 350 VAC.

ENVIRONMENTAL SPECIFICATIONS:
Operating Temperature: –40°C to +125°C.

PHYSICAL SPECIFICATIONS:
Materials: Body: Plastic Body
Terminations: Silver Plated Zinc

Soldering Parameters:
Reflow Solder — 245°C, 5 seconds maximum.
Wave Solder — Not recommended.

PACKAGING SPECIFICATIONS:
24mm Tape and Reel per EIA-RS481 (Equivalent to IEC 286, part 3); 800 fuses per reel, add packaging suffix, ZR.

ORDERING INFORMATION:

Catalog Number	Ampere Rating (A)	Voltage Rating (VAC)	Body Color	Nominal Cold Resistance(Ω)	Nominal Melting I²t (A²sec)
0446002.	2	350	Natural	0.0560	2.8
0446003.	3	350	Violet	0.0340	9.4
0446004.	4	350	Pink	0.0240	17
0446005.	5	350	Tan	0.0180	25
044607.5	7.5	350	Brown	0.0110	68
0446010.	10	350	Red	0.0073	93

Average Time Current Curves