

## FM12 High-Reliability Solid Body Fuses

AEM, Inc. is the sole U.S. manufacturer of solid body current limiting fuses produced utilizing thick film technology with subsequent screening and qualification for spacecraft/satellite applications. AEM, Inc.'s FM12 Series Fuses have been selected by most major space programs and have been in orbit for the past 38 years with *zero failures*.

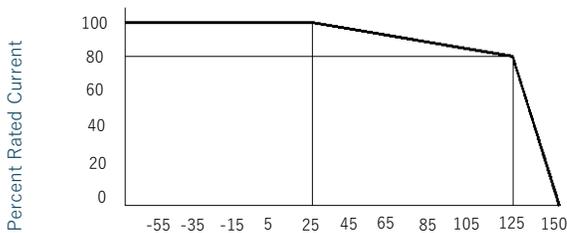
### Features

- Consistent clearing times achieved at overload currents regardless of vacuum conditions.
- Solid body construction without outgassing and not subjected to the de-rating factors of MIL-STD-975.
- Solid body construction capable of withstanding greater vibration and shock exposure without damage.
- Positive temperature coefficient of fuse element causing resistance to increase (prior to opening) thereby preventing absolute short to the power source.
- Internal construction ensuring that arc, plasma, and vapor are contained within the fuse package during overload current conditions.
- High-reliability fuse series with over 38 million hours of life testing without a failure.
- Groups A/B data supplied with each shipment and Group C inspection is optional.

### Applications

- Satellite/Spacecraft
- Aerospace
- Avionics
- Military

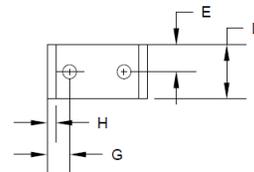
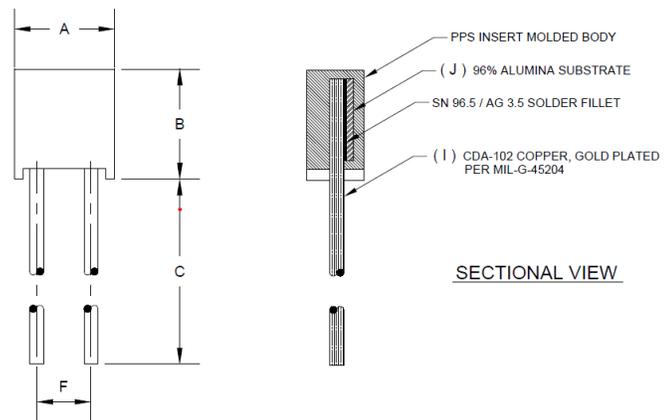
### Derating Curve



Case Temperature (DEGREES °C)

### Product Dimensions (Inches)

Dimension	Figure 1*	Figure 2*	Figure 3*	Figure 4*
A	.280 max.	.380 max.	.380 max.	.625 max.
B	.270 max.	.410 max.	.410 max.	.440 max.
C	1.50 min.	2.00 min.	2.00 min.	2.00 min
D	.145 max.	.210 max.	.210 max.	.325 max
E	.070 typ.	.100 typ.	.100 typ.	.152 typ.
F	.160 ± .010	.200 ± .010	.200 ± .010	.350 ± .010
G	.050 typ.	.083 typ.	.085 typ.	.125 typ.
H	.025 typ.	.032 typ.	.032 typ.	.032 typ.
I	.026 ± .002 Dia.	.051 ± .002 Dia.	.064 ± .002 Dia.	.051 ± .002 Dia.
J	.020 typ.	.025 typ.	.025 typ.	.040 typ.



\* See table on Page 2

# FM12 High-Reliability Solid Body Fuses

## Electrical Characteristics

PIN Designation / Ratings				DC Resistance (Ohms) / 1 / 2		Figure	Overload Interrupt Time (Seconds) / 3			Maximum I <sup>2</sup> T (Ampere <sup>2</sup> Seconds)/4		
Style	Characteristic	Max Voltage (V dc)	Current Rating (A)	Minimum	Maximum		Nominal Rating			Nominal Rating		
							250%	400%	600%	250%	400%	600%
FM12	A	72V	1/8A	6.375	10.625	1	0-30.0	0-0.015	0-0.003	2.930	0.004	0.002
FM12	A	72V	1/4A	1.875	3.125	1	0-30.0	0-0.015	0-0.003	11.719	0.015	0.007
FM12	A	72V	3/8A	1.125	1.875	1	.01-300	.001-0.015	.00015-0.003	0.264	0.034	0.015
FM12	A	72V	1/2A	0.675	1.125	1	.01-300	.001-0.015	.00015-0.003	0.469	0.060	0.027
FM12	A	72V	3/4A	0.225	0.375	1	.01-300	.001-0.015	.00015-0.003	1.055	0.135	0.061
FM12	A	72V	1A	0.135	0.225	1	.01-300	.001-0.015	.00015-0.003	1.875	0.240	0.108
FM12	A	72V	1.5A	0.097	0.163	1	.01-300	.001-0.015	.00015-0.003	4.219	0.540	0.243
FM12	A	72V	2.0A	0.045	0.075	1	.01-300	.001-0.015	.00015-0.003	7.500	0.960	0.432
FM12	A	72V	3.0A	0.0262	0.0438	1	.01-300	.001-0.015	.00015-0.003	16.875	2.160	0.972
FM12	A	72V	4.0A	0.0195	0.0325	1	.01-300	.001-0.015	.00015-0.003	30.000	3.840	1.728
FM12	A	72V	5.0A	0.0135	0.0225	1	.01-300	.001-0.015	.00015-0.003	46.875	6.000	2.700
FM12	A	72V	6.0A	0.0112	0.0188	1	.01-300	.001-0.015	.00015-0.003	67.500	8.640	3.888
FM12	A	72V	7.5A	0.0082	0.0138	1	.01-300	.001-0.015	.00015-0.003	105.469	13.500	6.075
FM12	A	72V	10A	0.0063	0.0107	2	.01-300	.001-0.015	.00015-0.003	187.500	24.000	10.800
FM12	A	72V	15A	0.0038	0.0070	2	.01-300	.001-0.015	.00015-0.003	421.875	54.000	24.300
FM12	A	125V/135V	1/8A	6.375	10.625	1	0-30.0	0-0.015	0-0.003	2.930	0.004	0.002
FM12	A	125V/135V	1/4A	1.875	3.125	1	0-30.0	0-0.015	0-0.003	11.719	0.015	0.007
FM12	A	125V/135V	3/8A	1.125	1.875	1	.01-300	.0005-0.015	.00005-0.003	0.264	0.034	0.015
FM12	A	125V/135V	1/2A	0.675	1.125	2	.01-300	.0005-0.015	.00005-0.003	0.469	0.060	0.027
FM12	A	125V/135V	3/4A	0.225	0.375	2	.01-300	.0005-0.015	.00005-0.003	1.055	0.135	0.061
FM12	A	125V/135V	1A	0.090	0.270	2	.01-300	.0005-0.015	.00005-0.003	1.875	0.240	0.108
FM12	A	125V/135V	1.5A	0.0850	0.2250	2	.01-300	.0005-0.015	.00005-0.003	4.219	0.540	0.243
FM12	A	125V/135V	2.0A	0.0450	0.1350	2	.01-300	.0005-0.015	.00005-0.003	7.500	0.960	0.432
FM12	A	125V/135V	3.0A	0.0350	0.1050	2	.01-300	.0005-0.015	.00005-0.003	16.875	2.160	0.972
FM12	A	125V/135V	4.0A	0.0300	0.0900	2	.01-300	.0005-0.015	.00005-0.003	30.000	3.840	1.728
FM12	A	125V/135V	5.0A	0.0220	0.0680	2	.01-300	.0005-0.015	.00005-0.003	46.875	6.000	2.700
FM12	A	125V/135V	7.5A	0.0165	0.0275	4	0.100-4.00	0.008-0.048	0.0008-0.008	1406.3	43.2	16.2
FM12	A	125V/135V	10A	0.0120	0.0200	4	0.100-4.00	0.008-0.048	0.0008-0.008	2500.0	76.8	28.8
FM12	A	125V/135V	15A	0.0090	0.0130	4	0.100-5.00	0.010-0.060	0.001-0.010	7031.3	216.0	81.0
FM12	A	50V	20A	0.0025	0.0050	3	.01-300	.001-0.015	.00015-0.003	750.000	96.000	43.200

**Notes:**

- 1/ Add "T" suffix to PIN designation if optional solder coated leads are required. Solder coating shall extend up the leads to a point between the fuse stand-off and the lead egress point. Add "F" suffix to PIN designation if optional formed leads are required (see explanation, below). Formed lead "F" suffix fuses are only supplied with solder coated leads, therefore "T" suffix should never be used with this "F" suffix.
- 2/ DC resistance is measured with a test current of 0.1 to 10 milliamperes.
- 3/ Overloads interrupt times at -55 °C and 250 percent overload current shall be as follows:
  - a. Fuses with ratings less than 3/8A shall open in 60 seconds maximum
  - b. Fuses with ratings greater than 1.0A shall open in 5 seconds maximum
  - c. Other fuses shall open in 10 seconds maximum.
- 4/ Maximum current clearing I<sup>2</sup>T at -55 °C and 250 percent overload currents may be greater than indicated. To calculate maximum I<sup>2</sup>T at case temperature of -55 °C and 250 percent overload currents, multiply the I<sup>2</sup> product by the maximum blow times indicated in note 3/ above.

AEM, Inc's FM12 series is also offered with a modified lead configuration, providing the design engineer additional flexibility of surface mounting.



For more details, see Figure 4 in the MIL-PRF-23419/12 specification sheet.



Certified to AS9100D ISO 9001:2015

