



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 25 years with *zero failures*.

### Applications

Used in military and commercial satellites and spacecraft including manned space vehicles

- Protection of power supplies, batteries and solar arrays
- Isolation of redundant and branch circuits
- Short circuit protection from fired squib and jettison circuitry

### 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 29 million hours of life testing *without a failure*
- Groups A/B data supplied with each shipment and Group C inspection optional

### Model FM12 Current Limiting Fuses

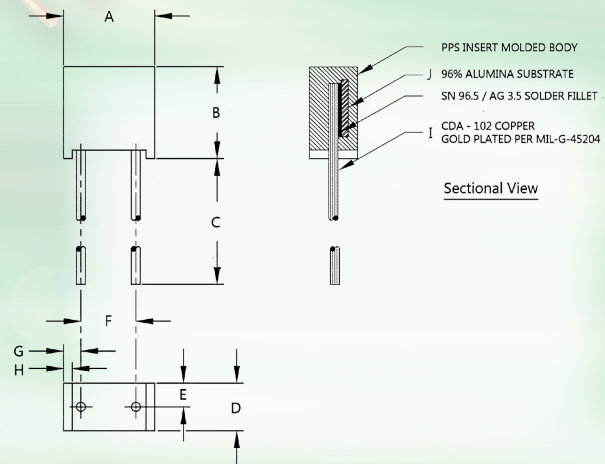


	Figure 1* (inches)	Figure 2* (inches)	Figure 3* (inches)
A	.280 max.	.380 max.	.380 max.
B	.270 max.	.410 max.	.410 max.
C	1.50 min.	2.00 min.	2.00 min.
D	.145 max.	.210 max.	.210 max.
E	.070 typ.	.100 typ.	.100 typ.
F	.160 ± .010	.200 ± .010	.200 ± .010
G	.050 typ.	.083 typ.	.085 typ.
H	.025 typ.	.032 typ.	.032 typ.
I	.026 ± .002 Dia.	.051 ± .002 Dia.	.064 ± .002 Dia.
J	.020 typ.	.025 typ.	.025 typ.

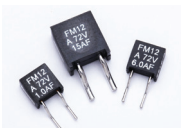
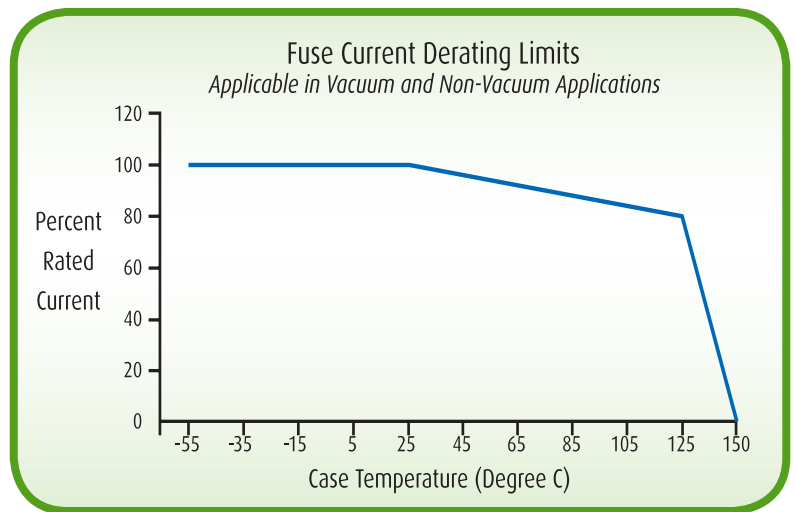
\* see table on page 2

# AEM, Inc.'s High Reliability Solid Body Fuses

## ELECTRICAL CHARACTERISTICS

PIN Designation/Rating Note 1		DC Resistance (Ohms) Note 2		Overload Interrupt Time (Seconds) Nominal Rating - Note 3			Maximum I <sup>2</sup> T (Ampere <sup>2</sup> seconds)					
							Nominal Rating - Note 4					
Style	Charac- teristic	Maximum Voltage (VDC)	Current Rating (AMP)	Min.	Max.	Figure (1,2 or 3)	250% Nominal Rating	400% Nominal Rating	600% Nominal Rating	250% Nominal Rating	400% Nominal Rating	600% Nominal Rating
FM12	A	72V	1/8A	6.375	10.625	1	0-30.0	0-.015	0-.003	2.930	0.004	0.002
FM12	A	72V	1/4A	1.875	3.125	1	0-30.0	0-.015	0-.003	11.719	0.015	0.007
FM12	A	72V	3/8A	1.125	1.875	1	.01-.300	.001-.015	.00015-.003	0.264	0.034	0.015
FM12	A	72V	1/2A	0.675	1.125	1	.01-.300	.001-.015	.00015-.003	0.469	0.060	0.027
FM12	A	72V	3/4A	0.225	0.375	1	.01-.300	.001-.015	.00015-.003	1.055	0.135	0.061
FM12	A	72V	1A	0.135	0.225	1	.01-.300	.001-.015	.00015-.003	1.875	0.240	0.108
FM12	A	72V	1.5A	0.097	0.163	1	.01-.300	.001-.015	.00015-.003	4.219	0.540	0.243
FM12	A	72V	2.0A	0.045	0.075	1	.01-.300	.001-.015	.00015-.003	7.500	0.960	0.432
FM12	A	72V	3.0A	0.0262	0.0438	1	.01-.300	.001-.015	.00015-.003	16.875	2.160	0.972
FM12	A	72V	4.0A	0.0195	0.0325	1	.01-.300	.001-.015	.00015-.003	30.000	3.840	1.728
FM12	A	72V	5.0A	0.0135	0.0225	1	.01-.300	.001-.015	.00015-.003	46.875	6.000	2.700
FM12	A	72V	6.0A	0.0112	0.0188	1	.01-.300	.001-.015	.00015-.003	67.500	8.640	3.888
FM12	A	72V	7.5A	0.0082	0.0138	1	.01-.300	.001-.015	.00015-.003	105.469	13.500	6.075
FM12	A	72V	10A	0.0063	0.0107	2	.01-.300	.001-.015	.00015-.003	187.500	24.000	10.800
FM12	A	72V	15A	0.0038	0.0070	2	.01-.300	.001-.015	.00015-.003	421.875	54.000	24.300
FM12	A	125V	1/8A	6.375	10.625	1	0-30.0	0-.015	0-.003	2.930	0.004	0.002
FM12	A	125V	1/4 A	1.875	3.125	1	0-30.0	0-.015	0-.003	11.719	0.015	0.007
FM12	A	125V	3/8A	1.125	1.875	1	.01-.300	.0005-.015	.00005-.003	0.264	0.034	0.015
FM12	A	125V	1/2A	0.675	1.125	2	.01-.300	.0005-.015	.00005-.003	0.469	0.060	0.027
FM12	A	125V	3/4A	0.225	0.375	2	.01-.300	.0005-.015	.00005-.003	1.055	0.135	0.061
FM12	A	125V	1A	0.090	0.270	2	.01-.300	.0005-.015	.00005-.003	1.875	0.240	0.108
FM12	A	125V	1.5A	0.0850	0.2250	2	.01-.300	.0005-.015	.00005-.003	4.219	0.540	0.243
FM12	A	125V	2.0A	0.0450	0.1350	2	.01-.300	.0005-.015	.00005-.003	7.500	0.960	0.432
FM12	A	125V	3.0A	0.0350	0.1050	2	.01-.300	.0005-.015	.00005-.003	16.875	2.160	0.972
FM12	A	125V	4.0A	0.0300	0.0900	2	.01-.300	.0005-.015	.00005-.003	30.000	3.840	1.728
FM12	A	125V	5.0A	0.0220	0.0680	2	.01-.300	.0005-.015	.00005-.003	46.875	6.000	2.700
FM12	A	50V	20A	0.0025	0.0050	3	.01-.300	.001-.015	.00015-.003	750.000	96.000	43.200

- 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.



The AEM, Inc. 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.



AS9100



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