



## FM13 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 FM13 Series Fuses have been selected by most major space programs and have been in orbit for the past 38 years with *zero failures*.

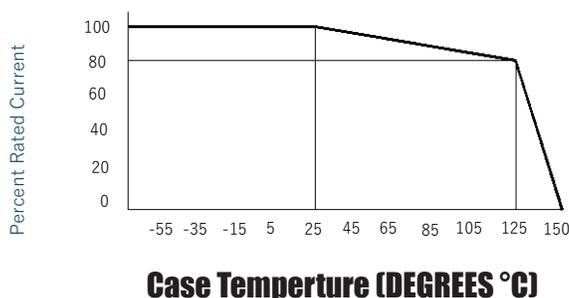
### Features

- Solid body construction with hermetically sealed gold fusing elements.
- 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.
- Groups A/B data supplied with each shipment and Group C inspection optional.
- High-reliability fuse series with over 39 million hours of life testing without a failure.

### Applications

- Satellite/Spacecraft
- Aerospace
- Avionics
- Military

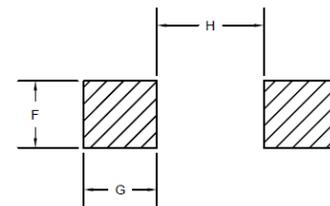
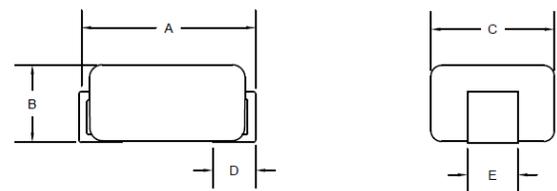
### Derating Curve



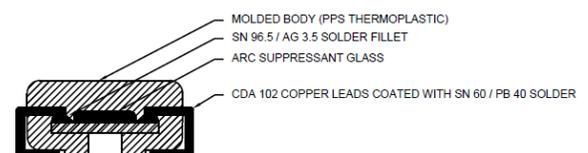
### Product Dimensions

(Inches)

Dimension	Figure 1*	Figure 2*	Figure 3*
A	.330 ± .010	.475 ± .025	0.720 ± .025
B	.160 max.	.250 max.	.350 max.
C	.235 ± .010	.430 ± .020	.405 max.
D	.075 ± .010	.145 ± .010	.200 typ.
E	.094 ± .004	.203 ± .004	.200 typ.
F	.100 ± .010	.210 ± .010	.210 ± .010
G	.110 ± .010	.180 ± .010	.235 ± .010
H	.160 ± .010	.180 ± .010	.205 ± .010



SUGGESTED LAND PATTERN



SECTIONAL VIEW

\* See table on Page 2



# FM13 High-Reliability Solid Body Fuses

## Electrical Characteristics

Fuse Part Numbers / Ratings				DC Resistance (Ohms) / 1		Figure	Overload Interrupt Time (Seconds) / 2			Maximum I <sup>2</sup> T (Ampere <sup>2</sup> Sec) / 3		
Part Number	Characteristic	Maximum Voltage (VDC)	Current Rating (Amps)	Minimum	Maximum		250% Nominal Rating	400% Nominal Rating	600% Nominal Rating	250% Nominal Rating	400% Nominal Rating	600% Nominal Rating
FM13	A	72V	1/8A	6.375	10.625	1	.005-30.0	.0005-.015	.000075-.003	2.930	0.004	0.002
FM13	A	72V	1/4A	1.875	3.125	1	.005-30.0	.0005-.015	.000075-.003	11.719	0.015	0.007
FM13	A	72V	3/8A	1.125	1.875	1	.005-5	.0005-.015	.000075-.003	0.439	0.034	0.015
FM13	A	72V	1/2A	0.675	1.125	1	.005-5	.0005-.015	.000075-.003	0.781	0.060	0.027
FM13	A	72V	3/4A	0.225	0.375	1	.005-5	.0005-.015	.000075-.003	1.758	0.135	0.061
FM13	A	72V	1A	0.135	0.225	1	.005-5	.0005-.015	.000075-.003	3.125	0.240	0.108
FM13	A	72V	1.5A	0.097	0.163	1	.005-5	.0005-.015	.000075-.003	7.031	0.540	0.243
FM13	A	72V	2.0A	0.045	0.075	1	.005-5	.0005-.015	.000075-.003	12.500	0.960	0.432
FM13	A	72V	3.0A	0.0262	0.0438	1	.005-5	.0005-.015	.000075-.003	28.125	2.160	0.972
FM13	A	72V	4.0A	0.0195	0.0325	1	.005-5	.0005-.015	.000075-.003	50.000	3.840	1.728
FM13	A	72V	5.0A	0.0135	0.0225	1	.005-5	.0005-.015	.000075-.003	78.125	6.000	2.700
FM13	A	72V	6.0A	0.0100	0.0180	1	.005-5	.0005-.015	.000075-.003	112.500	8.640	3.888
FM13	A	72V	7.5A	0.0070	0.0110	1	.005-5	.0005-.015	.000075-.003	175.781	13.500	6.075
FM13	A	72V	10A	0.0046	0.0079	1	.005-5	.0005-.015	.000075-.003	312.500	24.000	10.800
FM13	A	72V	15A	0.0040	0.0075	2	.005-5	.0005-.015	.000075-.003	703.125	54.000	24.300
FM13	A	125/135V	1/8A	6.375	10.625	1	.005-30.0	.0005-.015	.000075-.003	2.930	0.004	0.002
FM13	A	125/135V	1/4A	1.875	3.125	1	.005-30.0	.0005-.015	.000075-.003	11.719	0.015	0.007
FM13	A	125/135V	3/8A	1.125	1.875	1	.005-5	.0005-.015	.000075-.003	0.439	0.034	0.015
FM13	A	125/135V	1/2A	0.675	1.125	2	.005-5	.0005-.015	.000075-.003	0.781	0.060	0.027
FM13	A	125/135V	3/4A	0.225	0.375	2	.005-5	.0005-.015	.000075-.003	1.758	0.135	0.061
FM13	A	125/135V	1A	0.090	0.270	2	.005-5	.0005-.015	.000075-.003	3.125	0.240	0.108
FM13	A	125/135V	1.5A	0.0850	0.2250	2	.005-5	.0005-.015	.000075-.003	7.031	0.540	0.243
FM13	A	125/135V	2.0A	0.0450	0.1350	2	.005-5	.0005-.015	.000075-.003	12.500	0.960	0.432
FM13	A	125/135V	3.0A	0.0350	0.1050	2	.005-5	.0005-.015	.000075-.003	28.125	2.160	0.972
FM13	A	125/135V	4.0A	0.0300	0.0900	2	.005-5	.0005-.015	.000075-.003	50.000	3.840	1.728
FM13	A	125/135V	5.0A	0.0220	0.0680	2	.005-5	.0005-.015	.000075-.003	78.125	6.000	2.700
FM13	A	125/135V	7.5A	0.0165	0.0275	3	0.100-4.00	0.008-0.048	0.0008-0.008	1406.300	43.200	16.200
FM13	A	125/135V	10A	0.0120	0.0200	3	0.100-4.00	0.008-0.048	0.0008-0.008	2500.000	76.800	28.800
FM13	A	125/135V	15A	0.0090	0.0130	3	0.100-5.00	0.010-0.060	0.001-0.010	7031.300	216.000	81.000
FM13	A	50V	20A	0.0020	0.0056	2	.005-5	.0005-.015	.000075-.003	1250.000	96.000	43.200

- Notes:
- 1/ DC Resistance is measured at current levels less than or equal to 10% of rated current.
  - 2/ Overload interrupt times at -55 °C and 250% overload current shall be as follows:
    - a) Fuses with ratings less than 3/8 amperes shall open in 60 seconds maximum
    - b) Fuses with ratings from 3/8 to 1.0 ampere shall open in 10 seconds maximum
    - c) Fuses with ratings greater than 1.0 ampere shall open in 5 seconds maximum.
  - 3/ Maximum I<sup>2</sup>T at -55 °C and 250% overload current may be greater than indicated. To calculate maximum I<sup>2</sup>T at a case temperature of -55 °C and 250% overload current, multiply the I<sup>2</sup> product by the maximum blow times indicated in Note 2 above.
  - 4/ Standard FM13 part type is manufactured with an internal solder of type Sn96/Ag4.  
 Non-standard FM13 part type (High Temperature) is manufactured with an internal solder of type Sn10/Pb88/Ag2.
  - 5/FM13-125 options are also available as 135 VDC fuses.

