FM13 High-Reliability Solid Body Fuses

AEM, Inc. is the sole U.S. manufacturer of solid body current limiting fuses produced utilizing hermetically sealed gold fusing elements with subsequent screening and qualification for spacecraft/ satellite applications. AEM, Inc.'s FM13/P700L Series Fuses have been used by most major space programs for over 30 years with ***zero*** failures.

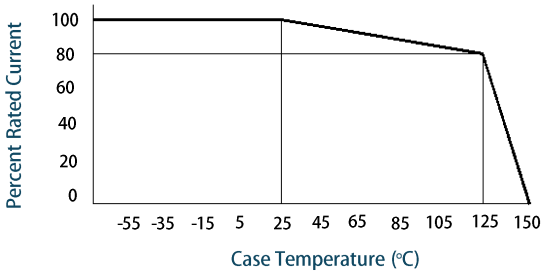
Features

- 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 29 million hours of life testing without a failure

Applications

- Satellite / Spacecraft
- Aerospace
- Avionics
- Military

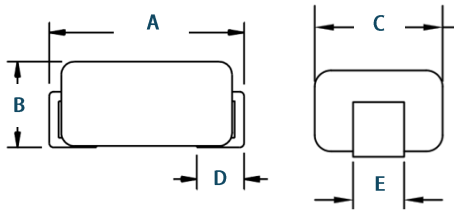
Derating Curve



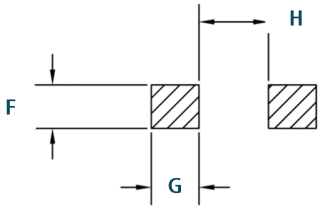
Product Dimensions

(Inches)

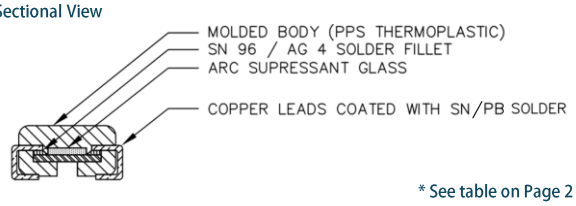
Dimension	Figure 1*	Figure 2*	Figure 3*
A	.330±.010	.475±.025	.720±.025
B	.160 max.	.250 max.	.350 typ.
C	.235±.010	.430±.020	.405 max.
D	.075±.010	.145±.010	.200 typ.
E	.094±.004	.203±.004	.200 typ.
F	.100 ±.010	.210 ±.010	.210 ±.010
G	.110 ±.010	.180 ±.010	.235 ±.010
H	.160 ±.010	.180 ±.010	.205 ±.010



Suggested Land Pattern



Sectional View



* See table on Page 2

AEM, INC.'s FM13 High-Reliability Solid Body Fuses

Electrical Characteristics

Fuse Part Number / Ratings				DC Resistance (Ohms) / 1		Fig.	Overload Interrupt Time (Seconds) /2			Maximum I^2t (A^2 Sec) /3		
Style	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	72	1/8	6.375	10.625	1	.005-30.0	.0005-.015	.000075-.003	2.93	0.00375	0.00169
FM13	A	72	1/4	1.875	3.125	1	.005-30.0	.0005-.015	.000075-.003	11.7	0.0150	0.00675
FM13	A	72	3/8	1.125	1.875	1	.005-.5	.0005-.015	.000075-.003	0.439	0.0338	0.0152
FM13	A	72	1/2	0.675	1.125	1	.005-.5	.0005-.015	.000075-.003	0.781	0.0600	0.0270
FM13	A	72	3/4	0.225	0.375	1	.005-.5	.0005-.015	.000075-.003	1.76	0.135	0.0608
FM13	A	72	1.0	0.135	0.225	1	.005-.5	.0005-.015	.000075-.003	3.13	0.240	0.108
FM13	A	72	1.5	0.097	0.163	1	.005-.5	.0005-.015	.000075-.003	7.03	0.540	0.243
FM13	A	72	2.0	0.045	0.0750	1	.005-.5	.0005-.015	.000075-.003	12.5	0.960	0.432
FM13	A	72	3.0	0.0262	0.0438	1	.005-.5	.0005-.015	.000075-.003	28.1	2.16	0.972
FM13	A	72	4.0	0.0195	0.0325	1	.005-.5	.0005-.015	.000075-.003	50.0	3.84	1.73
FM13	A	72	5.0	0.0135	0.0225	1	.005-.5	.0005-.015	.000075-.003	78.1	6.00	2.70
FM13	A	72	6.0	0.0100	0.0180	1	.005-.5	.0005-.015	.000075-.003	113	8.64	3.88
FM13	A	72	7.5	0.0070	0.0110	1	.005-.5	.0005-.015	.000075-.003	176	13.5	6.07
FM13	A	72	10.0	0.0046	0.0079	1	.005-.5	.0005-.015	.000075-.003	313	24.0	10.8
FM13	A	72	15.0	0.0040	0.0075	2	.005-.5	.0005-.015	.000075-.003	703	54.0	24.3
FM13	A	50	20.0	0.0020	0.0056	2	.005-.5	.0005-.015	.000075-.003	1250	96.0	43.2
FM13	A	125/135	1/8	6.375	10.625	1	.005-30.0	.0005-.015	.000075-.003	2.93	0.00375	0.00169
FM13	A	125/135	1/4	1.875	3.125	1	.005-30.0	.0005-.015	.000075-.003	11.7	0.0150	0.00675
FM13	A	125/135	3/8	1.125	1.875	1	.005-.5	.0005-.015	.000075-.003	0.439	0.0338	0.0152
FM13	A	125/135	1/2	0.675	1.125	2	.005-.5	.0005-.015	.000075-.003	0.781	0.0600	0.0270
FM13	A	125/135	3/4	0.225	0.375	2	.005-.5	.0005-.015	.000075-.003	1.76	0.135	0.0608
FM13	A	125/135	1.0	0.090	0.270	2	.005-.5	.0005-.015	.000075-.003	3.13	0.240	0.108
FM13	A	125/135	1.5	0.0850	0.2250	2	.005-.5	.0005-.015	.000075-.003	7.03	0.540	0.243
FM13	A	125/135	2.0	0.0450	0.1350	2	.005-.5	.0005-.015	.000075-.003	12.5	0.960	0.432
FM13	A	125/135	3.0	0.0350	0.1050	2	.005-.5	.0005-.015	.000075-.003	28.1	2.16	0.972
FM13	A	125/135	4.0	0.0300	0.0900	2	.005-.5	.0005-.015	.000075-.003	50.0	3.84	1.73
FM13	A	125/135	5.0	0.0220	0.0680	2	.005-.5	.0005-.015	.000075-.003	78.1	6.00	2.70
FM13	A	125/135	7.5	0.0165	0.0275	3	.100-4.00	.008-.048	.0008-.008	1410	43.2	16.2
FM13	A	125/135	10.0	0.0120	0.0200	3	.100-4.00	.008-.048	.0008-.008	2500	76.8	28.8
FM13	A	125/135	15.0	0.0090	0.0130	3	.100-5.00	.010-.060	.001-.010	7030	216	81.0

Notes:

1/ DC Resistance is measured at from 0.1 to 10 milliamperes of current or calculated from the measured Voltage Drop at a current not exceeding 10% of the rated current of the fuse

2/ Overload interrupt times at -55 ℃ and 250% overload current shall be as follows:

a) Fuses with ratings less then 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^2t at -55 ℃ and 250% overload current may be greater than indicated. To calculate maximum I^2t at a case temperature of -55 ℃ and 250% overload current, multiply the I^2 product by the maximum blow times indicated in Note 2 above.

4/ FM13 125VDC options are also available as 135 VDC fuses

TÜV AS9100 MIL-STD-790