

M-FIAM3 / M-FIAM5B / M-FIAM9

MILITARY

FILTER AND FRONT-END MODULES

FEATURES

- MIL-STD-461E EMI compliant
- MIL-STD-810, MIL-STD-202 environments
- MIL-STD-704 input transient protection
- MIL-STD-1275 input transient protection (M-FIAM9)
- Reverse polarity protection
- Environmental stress screening
- Low profile mounting options
- Inrush current limiting
- Size: 2.28" x 2.2" x 0.5" (57,9 x 55,9 x 12,7 mm)



PRODUCT INFORMATION

The **M-FIAM** is a family of DC front-end modules that provide EMI filtering and transient protection. The M-FIAM3 / 5B / 9 enable designers using Vicor Maxi, Mini, Micro Family 24, 28, and 300 V DC-DC converters to meet conducted emission / conducted susceptibility per MIL-STD-461E; and input transients per MIL-STD-704E/F and MIL-STD-1275A/B/D.

GENERAL SPECIFICATIONS

(At TBP = 25°C, nominal line and 75% load, unless otherwise specified)

PARAMETER	MIN	TYP	MAX	UNIT	NOTE	
28 Vdc modules (M-FIAM5B)	Steady state input	14	28	36	Vdc	Continuous
	Input transient			50	Vdc	12.5 ms, MIL-STD-704E/F, continuous operation
	Inrush limiting			0.007	A/μF	
28 Vdc modules M-FIAM9)	Steady state input	10	28	36	Vdc	Continuous input
	Input transient			100	Vdc	50 ms per MIL-STD-1275A/B/D
	Inrush limiting			0.007	A/μF	
270 Vdc modules (M-FIAM3)	Steady state input	180	270	375	Vdc	Continuous input
	Input transient			400	Vdc	100 ms, MIL-STD-704E/F
	Inrush limiting			0.018	A/μF	
EMI MIL-STD-461E						
Input power leads	Conducted emission	CE101, CE102				
	Conducted susceptibility	CS101, CS114, CS115, CS116				

PARAMETER	MIN	TYPE	MAX	UNIT	NOTE
28 Vdc input (M-FIAM5B)			20	Amps	
28 Vdc input (M-FIAM9)			18	Amps	
270 Vdc input (M-FIAM3)			3.0	Amps	
Internal voltage drop	28 Vdc input (M-FIAM5B)	0.5	1.0	Vdc	@ 20 A, 100°C baseplate
	28 Vdc input (M-FIAM9)	0.85	1.5	Vdc	@ 18 A, 25°C baseplate
	270 Vdc input	3.0	5.0	Vdc	@ 3 A, 100°C baseplate (M-FIAM3)

ISOLATION					
Dielectric withstand		1,500		Vrms	Input / output to baseplate
		2,121		Vdc	Input / output to baseplate

THERMAL					
Efficiency	96	98		%	
Baseplate to sink; flat, greased surface		0.16		°C/Watt	
	Baseplate to sink; thermal pad (P/N 20264)		0.1	°C/Watt	
Baseplate to ambient		7.9		°C/Watt	
Baseplate to sink; 1000 LFM		2.2		°C/Watt	

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FILTER AND FRONT-END MODULES

PART NUMBERING

M	FIAM	5B	M	2	1
Military Product	Filter Input Attenuator Module	Input Voltage 3 = 270 Vdc 5B = 28 Vdc 9 = 28 Vdc	Product Grade H = -40°C to +100°C M = -55°C to +100°C	Pin Style 1 = Short 2 = Long S = Short ModuMate ^[a] N = Long ModuMate ^[a]	Baseplate 1 = Slotted 2 = Threaded 3 = Through Hole

^[a] Compatible with SurfMate and InMate socketing systems

MODEL SELECTION CHART

MODEL NUMBER	NOMINAL INPUT VOLTAGE	INPUT RANGE	COMPATIBLE PRODUCTS
M-FIAM3xxx	270 Vdc	180 – 375 V	V300 Maxi, Mini, Micro Family
M-FIAM5Bxxx	28 Vdc	14 – 36 V	V24 Maxi, Mini, Micro Family
M-FIAM9xxx	28 Vdc	10 – 36 V	V24 and V28 Maxi, Mini, Micro Family

MTBF PER MIL-HDBK-217F

TEMP.	ENVIRONMENT	MTBF			UNIT
		M-FIAM3M21	M-FIAM5BM21	M-FIAM9M21	
25°C	Ground Benign: G.B.	3,646	2,943	3,587	1,000 hrs
50°C	Naval Sheltered: N.S.	656	456	1,108	1,000 hrs
65°C	Airborne Inhabited Cargo : A.I.C	514	375	868	1,000 hrs

PRODUCT GRADE SPECIFICATIONS

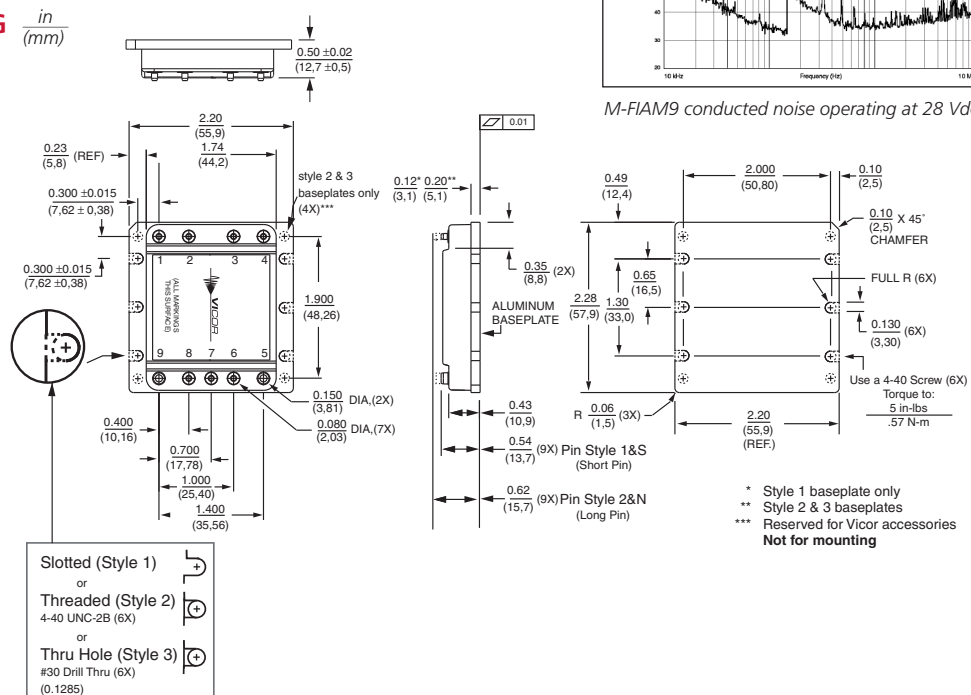
PARAMETER	PRODUCT GRADE	
	I-GRADE	M-GRADE
Storage temperature	-55°C to +125°C	-65°C to +125°C
Operating temperature (baseplate)	-40°C to +100°C	-55°C to +100°C
Power cycling burn-in	12 hrs, 29 cycles	24 hrs, 58 cycles
Temperature cycled with power off 17°C per minute rate of change	12 cycles -65°C to +100°C	12 cycles -65°C to +100°C
Test data supplied at these temperatures ^[b]	-40°C, +100°C	-55°C, +100°C
Warranty	2 years	2 years
Environmental compliance	MIL-STD-810	MIL-STD-810

^[b] Test data available for review or download from vicorpower.com

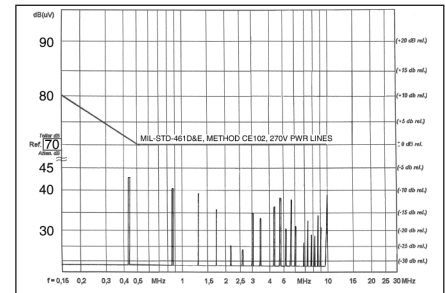
MECHANICAL DRAWING

CONVERTER PINS		
NO.	FUNCTION	LABEL
1	+In	+
2	No Connection	NC
3	Ground	EMI/GND
4	-In	-
5	-Out	-
6	ON/OFF	ON/OFF
7	No Connection	NC
8	No Connection	NC
9	+Out	+

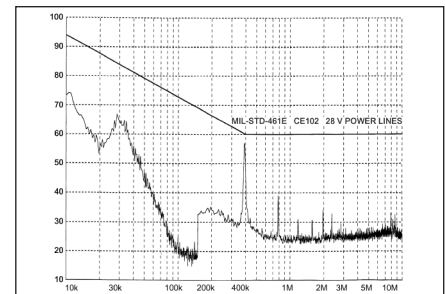
Pin Styles	
Tin / Lead	
Hot Solder Dip	(Pin Style 1 & 2)
Gold Plated Copper	(Pin Style S & N)



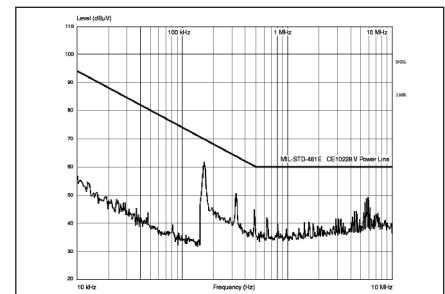
EMI COMPLIANCE



M-FIAM3 conducted noise operating at 180 Vdc, 130 W



M-FIAM5B conducted noise operating at 28 Vdc, 400 W



M-FIAM9 conducted noise operating at 28 Vdc, 200 W