



## Specifications

(Typical at  $T_{BP} = 25^{\circ}\text{C}$ , nominal line and 75% load, unless otherwise specified)

### INPUT SPECIFICATIONS

Parameter	Min	Typ	Max	Unit	Notes
Input voltage	10	28	36	$V_{DC}$	Continuous
Inrush limiting			0.007	A/ $\mu\text{F}$	Intended for use in Military Ground Vehicles where the power available is per MIL-STD-1275D. Internal capacitance is ~50 $\mu\text{F}$ , which precedes the inrush limit circuit. External precautions should be taken if the source cannot tolerate the capacitive charge current associated with this internal capacitance.
Transient immunity			100	$V_{DC}$	50ms per MIL-STD-1275A/B/D, continuous operation
			250	$V_{DC}$	70 $\mu\text{s}$ per MIL-STD-1275A/B/D, continuous operation
			70	$V_{DC}$	20ms per MIL-STD-704A, continuous operation
			50	$V_{DC}$	12.5ms per MIL-STD-704E/F, continuous operation

### OUTPUT SPECIFICATIONS

Parameter	Min	Typ	Max	Unit	Notes
Output power			500	W	See Figures 5 & 6
Output current			18	A	
Efficiency	96	97		%	
Internal voltage drop		0.85	1.5	V	500W, 25 $^{\circ}\text{C}$ baseplate
External capacitance	330		1000	$\mu\text{F}$	See Figure 7 on page 5 50V

### CONTROL PIN SPECIFICATIONS

Parameter	Min	Typ	Max	Unit	Notes
ON/OFF control					
Enable (ON)	0.0		1.0	$V_{DC}$	Referenced to $-V_{OUT}$
Disable (OFF)	3.5		5.0	$V_{DC}$	100k $\Omega$ internal pull up resistor

### SAFETY SPECIFICATIONS

Parameter	Min	Typ	Max	Unit	Notes
Dielectric withstand	1,500			$V_{RMS}$	Input/Output to Base
	2,121			$V_{DC}$	Input/Output to Base

### EMI

Standard	Test Procedure	Notes
MIL-STD-461E		
Conducted emissions:	CE101, CE102	When using with V28 series converters a 27 $\mu\text{H}$ inductor is needed between the filter and converter for compliance below 30% of rated power.
Conducted susceptibility:	CS101, CS114, CS115, CS116	

EMI performance is subject to a wide variety of external influences such as PCB construction, circuit layout etc. As such, external components in addition to those listed herein may be required in specific instances to gain full compliance to the standards specified.

## Specifications (Cont.)

## GENERAL SPECIFICATIONS

Parameter	Min	Typ	Max	Unit	Notes
Weight			3.3 (94)	Ounces (grams)	
Warranty			2	Years	

## ENVIRONMENTAL QUALIFICATION

**Altitude**

MIL-STD-810F, Method 500.4, Procedure I & II, 40,000ft. and 70,000ft. Operational.

**Explosive Atmosphere**

MIL-STD-810F, Method 511.4, Procedure I, Operational.

**Vibration**

MIL-STD-810F, Method 514.5, Procedure I, Category 14, Sine and Random vibration per Table 514.5C for Helicopter AH-6J Main Rotor with overall level of 5.6Grms for 4 hours per axis. MIL-STD-810F, Method 514.5C, General Minimum Integrity Curve per Figure 514.5C-17 with overall level of 7.7Grms for 1 hour per axis.

**Shock**

MIL-STD-810F, Method 516.5, Procedure I, Functional Shock, 40g. MIL-S-901D, Lightweight Hammer Shock, 3 impacts / axis, 1,3,5 ft. MIL-STD-202F, Method 213B, 60g, 9ms half sine. MIL-STD-202F, Method 213B, 75g, 11ms Saw Tooth Shock.

**Acceleration**

MIL-STD-810F, Method 513.5, Procedure II, table 513.5-II, Operational, 2-7g, 6 directions.

**Humidity**

MIL-STD-810F, Method 507.4.

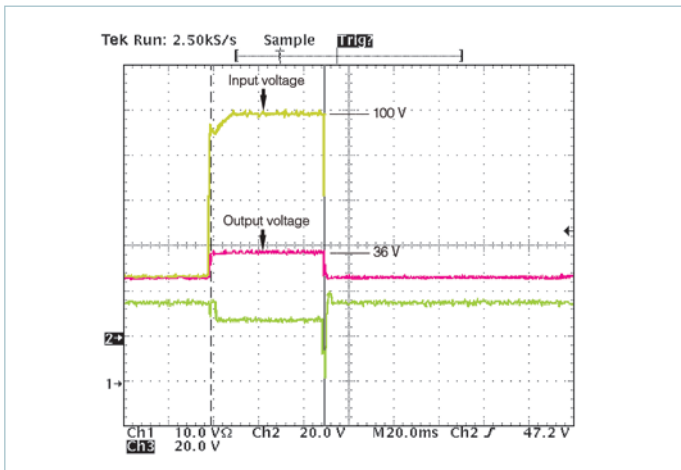
**Solder Test**

MIL-STD-202G, Method 208H, 8 hour aging.

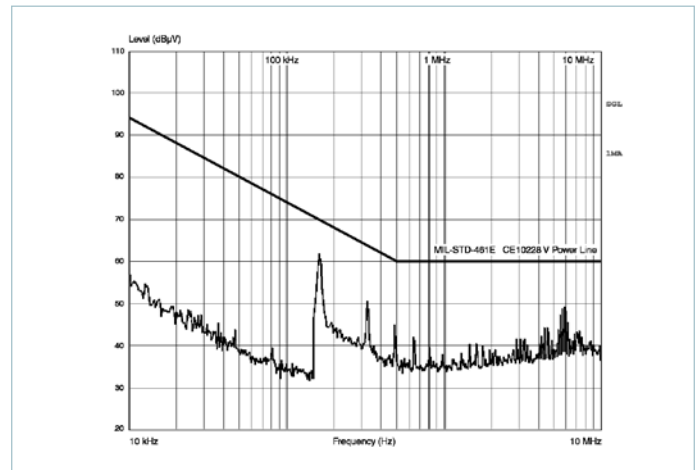
## ENVIRONMENTAL STRESS SCREENING

Parameter	H-Grade	M-Grade
Operating temperature	-40°C to +100°C	-55°C to +100°C
Storage temperature	-55°C to +125°C	-65°C to +125°C
Temperature cycling*	12 cycles -65°C to +100°C	12 cycles -65°C to +100°C
Ambient test @ 25°C	Yes	Yes
Power cycling burn-in	12 hours, 29 cycles	24 hours, 58 cycles
Functional and parametric ATE tests	-40°C and +100°C	-55°C and +100°C
Hi-Pot test	Yes	Yes
Visual inspection	Yes	Yes
Test data	<a href="http://vicorpower.com">vicorpower.com</a>	<a href="http://vicorpower.com">vicorpower.com</a>

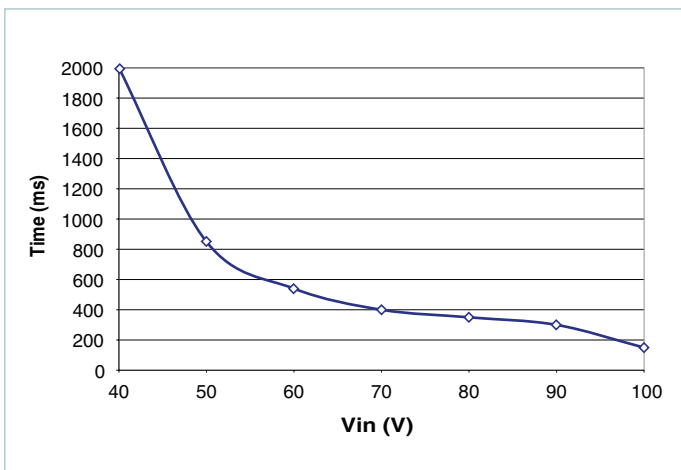
\*Temperature cycled with power off, 17°C per minute rate of change.



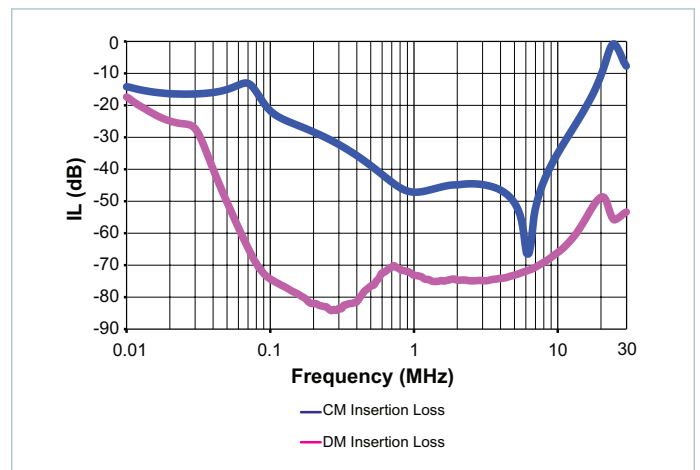
**Figure 1** — Transient Immunity: M-FIAM9 output response to an input transient



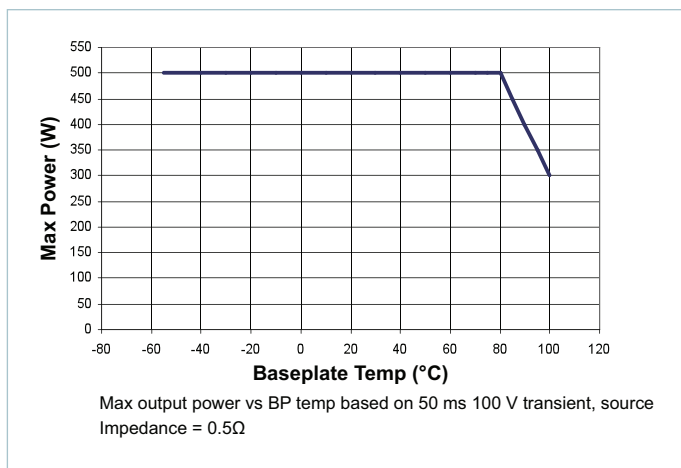
**Figure 2** — Conducted Noise; M-FIAM9 and model V28A12M200B DC-DC converter operating at 28V<sub>DC</sub>, 200W



**Figure 3** — Shut down time of M-FIAM9 vs. overvoltage



**Figure 4** — M-FIAM9 insertion loss



**Figure 5** — Temperature de-rating

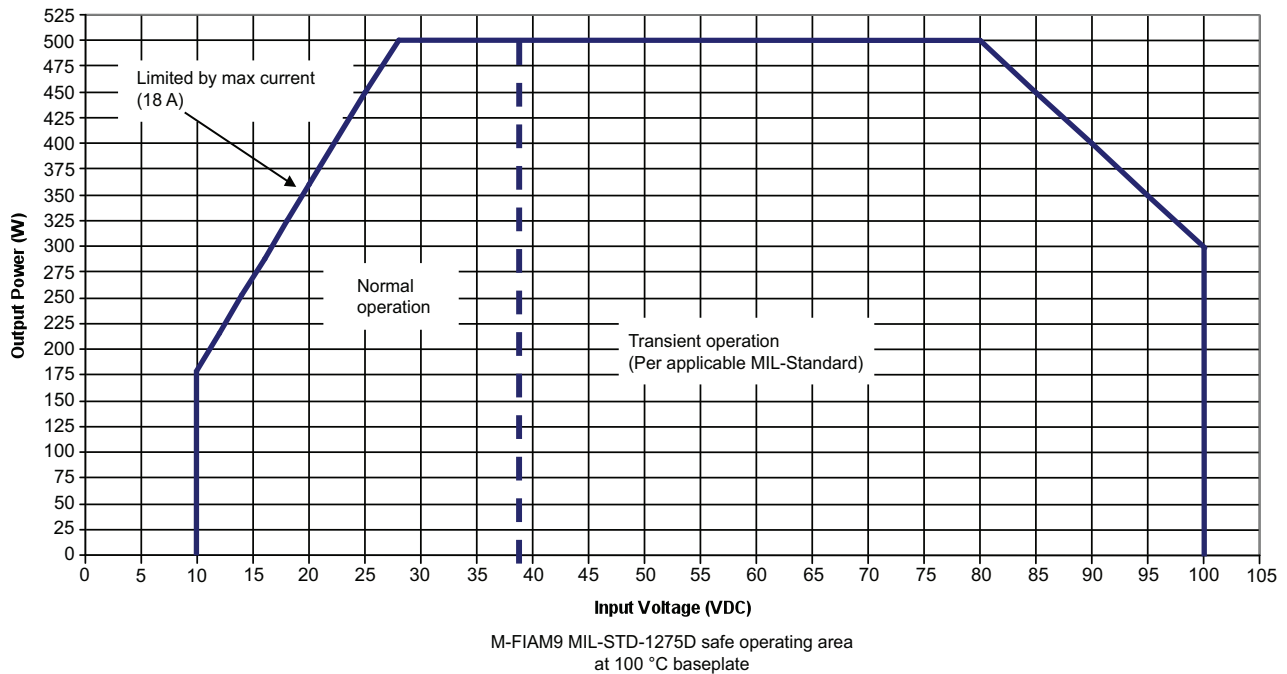


Figure 6 — M-FIAM 9 transient safe operating area at 100°C baseplate

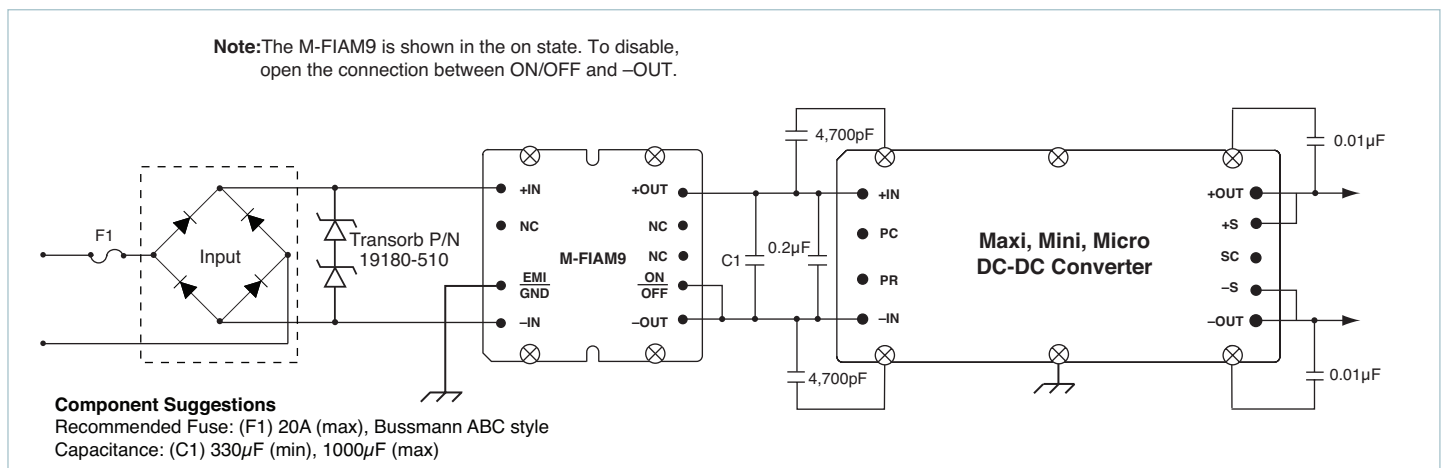
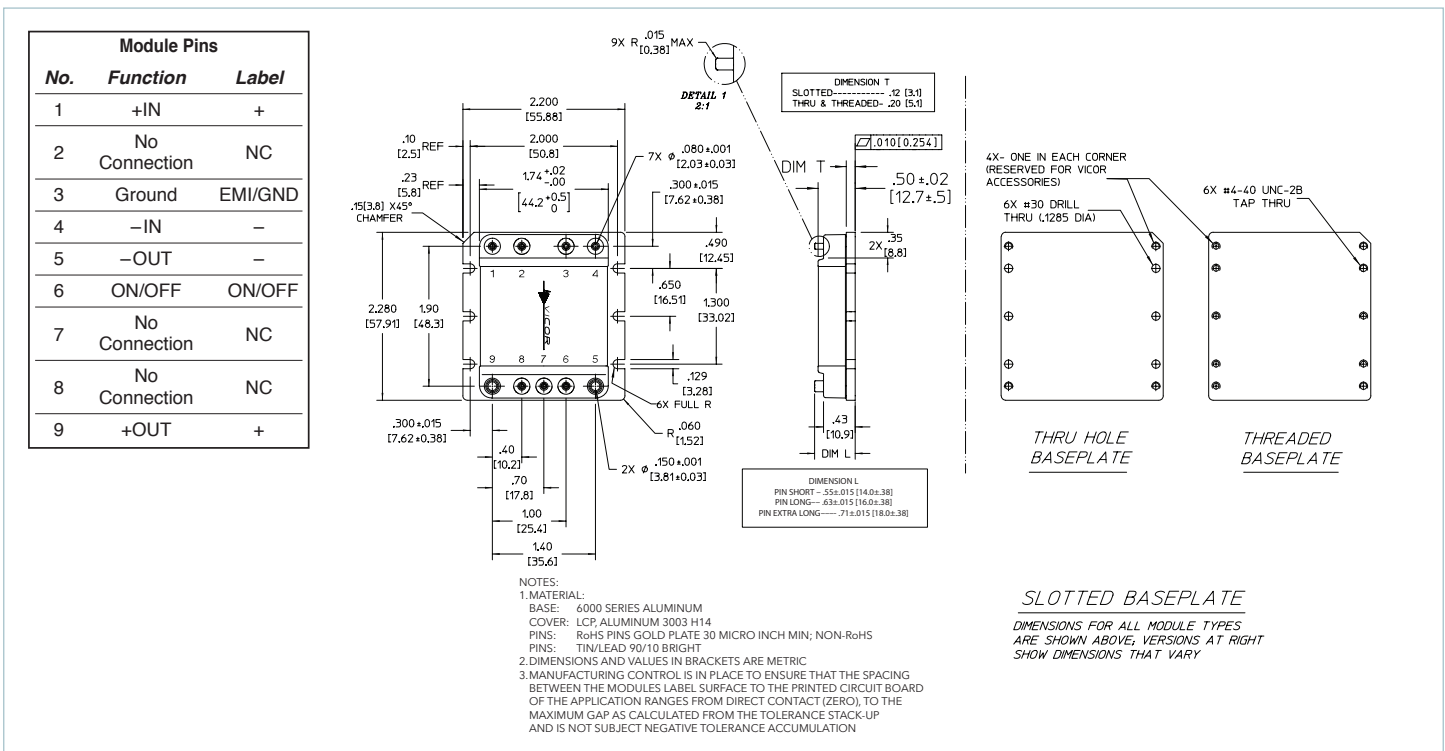
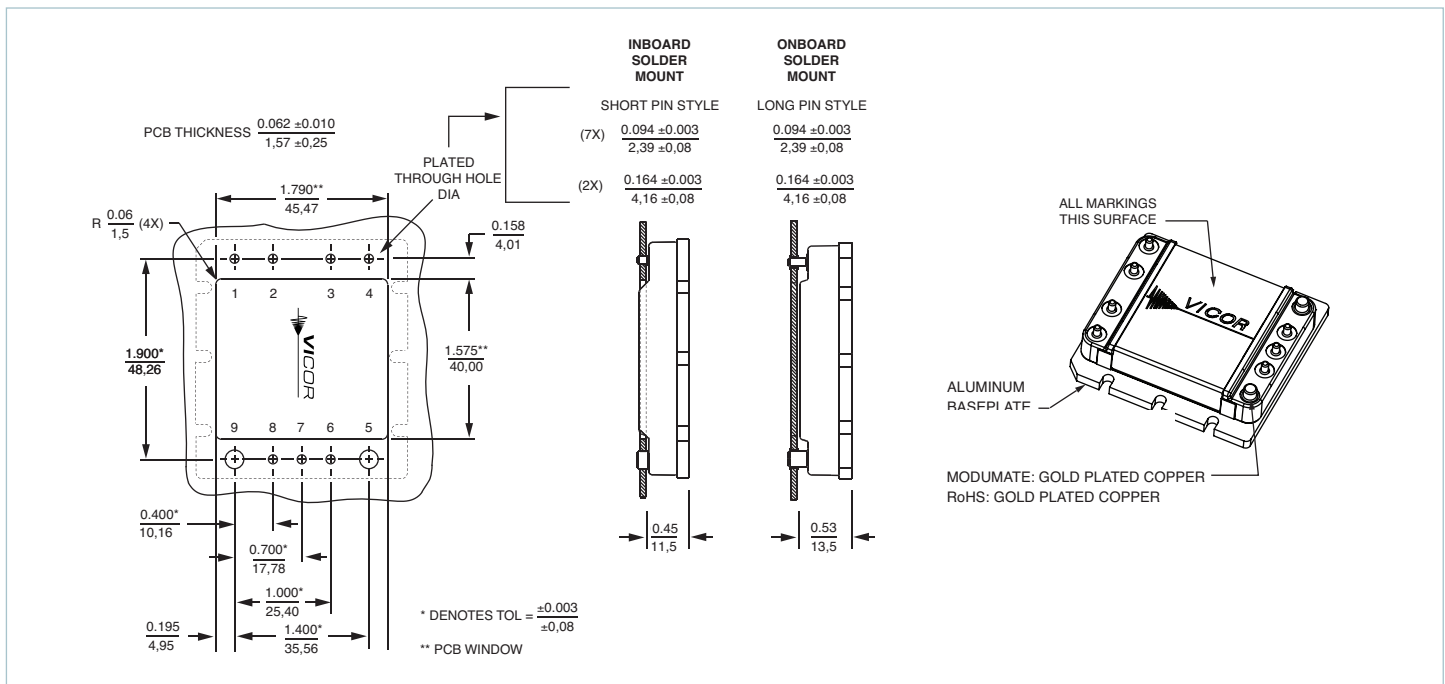


Figure 7 — Transient, surge protection and recommended reverse polarity protection

## Mechanical Drawings



**Figure 8 — Mechanical diagram**



**Figure 9 — PCB mounting specifications**

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