

MI-200

MILITARY

50-100W DC-DC CONVERTER - BOOSTER MODULE

FEATURES

- Inputs:
 - 28 Vdc per MIL-STD-704D/E/F
 - 155 Vdc per MIL-STD-1399A
 - 270 Vdc per MIL-STD-704D/E/F
- Single output: 2 – 48 Vdc
- Up to 23 W/in³
- MIL-STD-810 environments
- Efficiency: Up to 90%
- Remote sense
- Current limit
- OVP and thermal shut down
- Power boosters for higher power outputs
- ZCS power architecture
- Low noise FM control
- Size: 4.6" x 2.4" x 0.5" (116,8 x 61,0 x 12,7 mm)



PRODUCT INFORMATION

The MI-Family is designed for applications utilizing distributed power architecture and is based on Vicor's VI-200 / VI-J00 family of zero-current switching, component level DC-DC converters. Operating at frequencies up to 1 MHz, the MI-Family offers exceptional performance in terms of power density, efficiency, noise, ease of use, and reliability.

Fully encapsulated in Vicor's industry standard package, the MI-Family meets MIL-STD-810 environmental requirements for humidity, fungus, salt-fog, explosive atmosphere, acceleration, vibration, and shock.

Standard features such as wide output trimming / programming, current limiting, remote sense, output inhibit, and latching OVP and OTP combine to offer the highest degree of protection, versatility, and reliability for power systems..

GENERAL SPECIFICATIONS

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

PARAMETER	MIN	TYP	MAX	UNIT	NOTE
INPUT					
Input voltage range	See input voltage chart				
No load power dissipation		1.35	2.0	Watts	
OUTPUT					
Set point accuracy		0.5	1.0	% Vnom	
Load / line regulation		0.05	0.2	% Vnom	LL to HL, 10% to FL
		0.2	0.5	% Vnom	LL to HL, NL to 10%

[a] 10 V, 12 V, and 15 V outputs, standard trim range ±10%. Consult Powerbox sales for wider trim range

[b] Output voltages of 5 V or less incorporate foldback current limiting; outputs of 10 V and above provide constant current limiting

[c] No over temperature protection in booster modules

PARAMETER	MIN	TYPE	MAX	UNIT	NOTE
Output temperature drift		0.01	0.02	%/°C	
Output noise - pp		1.0	1.5	% Vnom	Whichever is greater
		100	150	mV	20 MHz BW
Output voltage trimming ^[a]	50		110	% Vnom	
Remote sense compensation	0.5			Vdc	
OVP set point	115	125	135	% Vnom	Latching
Current limit	105		125	% Inom	Auto restart
Short circuit current ^[b]	20		130	% Inom	

CONTROL PIN

Gate in high threshold		6.0		Vdc	
Gate in low threshold	0.65			Vdc	
Gate in low current			6.0	mA	
Power sharing accuracy	0.95		1.05		

ISOLATION

Isolation (input to output)	3,000			Vrms	
Isolation (output to baseplate)	500			Vrms	
Isolation (input to baseplate)	1,500			Vrms	
Input / output capacitance		50	75	pF	

ENVIRONMENTAL - MIL-STD-810

Altitude - Method 500.2	70,000			feet	Procedure II
Humidity - Method 507.2	88 / 240			% / hrs	Procedure I, cycle 1
Acceleration - Method 513.3	9.0			g	Procedure II
Vibration - Method 514.3	20			g	Procedure I, category 6
Shock - Method 516.3	40			g	Procedure I

RELIABILITY

- MIL-HDBK-217F (MI-22L-MW)

25°C Ground Benign: G.B.		3,552		1,000 hrs	
50°C Naval Sheltered: N.S.		639		1,000 hrs	
65°C Airborne Inhabited Cargo: A.I.C.		501		1,000 hrs	

THERMAL

Efficiency		80 - 90		%	
Baseplate to sink		0.07		°C/W	With thermal pads
Thermal shut down ^[c]	+90	+95	+105	°C	Latching
Baseplate operating temperature			+85	°C	See product grade
Storage temperature			+100	°C	See product grade

MECHANICAL SPECIFICATIONS

Weight		7.3 (208)		ounces (grams)	
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CONFIGURATION CHART

MI - 2 ■ ■ - ■ ■

Semi-custom driver and booster modules available: Consult factory.

[d] 16 V operation at 75% load.

[e] These units rated at 75% load from 125 – 150 Vin:
MI-26Z-xV • MI-26Y-xV • MI-260-xW

[f] 75 W max power for 28 V input

28 Vdc input per MIL-STD 704D/E/F
155 Vdc input per MIL-STD-1399A
270 Vdc input per MIL-STD-704D/E/F

Input Voltage		
NOMINAL	RANGE	TRANSIENT
2 = 28 V	18 – 50 V ^[d]	60 V
5 = 155 V	100 – 210 V	230 V
6 = 270 V	125 – 400 V ^[e]	475 V
7 = 165 V	100 – 310 V	

Output Voltage		
Z = 2 V	T = 6.5 V ^[f]	N = 18.5 V
Y = 3.3 V	R = 7.5 V ^[f]	3 = 24 V
0 = 5 V	M = 10 V	L = 28 V
X = 5.2 V	1 = 12 V	J = 36 V
W = 5.5 V	P = 13.8 V	K = 40 V
V = 5.8 V	2 = 15 V	4 = 48 V

Product Grade Operating Temp.	
I =	-40°C to +85°C
M =	-55°C to +85°C

Output Power / Current		
	5 V	<5 V
Y =	50 W	10 A
X =	75 W	15 A
W =	100 W	20 A
V =	—	30 A

For additional power, 100 W and 75 W booster modules are available. Change MI-2xx-xx to MI-Bxx-xx.

PRODUCT GRADE SPECIFICATIONS

PARAMETER	PRODUCT GRADE	
	I-GRADE	M-GRADE
Storage temperature	-55°C to +100°C	-65°C to +100°C
Operating temperature (baseplate)	-40°C to +85°C	-55°C to +85°C
Power cycling burn-in	12 hrs, 29 cycles	96 hrs, 213 cycles
Temperature cycled with power off	12 cycles	12 cycles
17°C per minute rate of change	-65°C to +100°C	-65°C to +100°C
Test data supplied at these temperatures ^[g]	-40°C, +80°C	-55°C, +80°C
Warranty	2 years	2 years
Environmental compliance	MIL-STD-810	MIL-STD-810
Derating	NAVMAT P-4855-1A	NAVMAT P-4855-1A

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

MECHANICAL DRAWING $\frac{in}{(mm)}$

