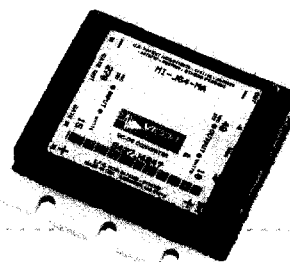


MI-J00™

Military DC-DC Converters 10 to 50W



Product Highlights

The MI-J00 Family of miniaturized DC-DC converters is designed for Military applications utilizing distributed power architectures. Based on Vicor's second generation family of "zero-current-switching," component-level, DC-DC converters, the MI-J00 Family offers state-of-the-art performance in terms of power density, efficiency, noise, ease of use, and reliability.

The MI-J00 Family is designed to exceed all steady-state, transient and under/over voltage requirements of MIL-STD-704D for both 28Vdc input (MI-J20) and 270Vdc input (MI-J60), and the worst case envelope of DOD-STD-1399A for 155Vdc input.

The output voltage can be externally trimmed or programmed from 50% to 110% of nominal output. Current limiting, remote sense, and an inhibit pin all combine to offer a high degree of protection, versatility and reliability for Military Power Systems.

All units are manufactured under a quality system approved to MIL-I-45208 and in ISO 9001-registered facilities. Full epoxy encapsulation in Vicor's industry standard package enables the MI-J00 Family units to meet MIL-STD-810 environmental testing requirements for humidity, fungus, salt fog, explosive atmosphere, acceleration, vibration and shock. (See page 21.)

Features:

- 28Vdc and 270Vdc Inputs per MIL-STD-704D/E
- 155Vdc Inputs per DOD-STD-1399A
- Up to 23W/in³
- 10, 25 and 50W Standard Outputs

- Environments to MIL-STD-810
- 80-90% Efficiency
- Size: 2.28"L x 2.4"W x 0.5"H (59,7 x 61,0 x 12,7mm)
- Remote Sense and Current Limit

Converter Specifications

(Typical at T_{BP} = 25°C, nominal line and 75% load, unless otherwise specified)

PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Voltage Range	See Input Voltage Chart				
No Load Power Dissipation		1.35	2	Watts	
Set Point Accuracy		0.5%	1%	V _{NOM}	
Load/Line Regulation		0.05%	0.2%	V _{NOM}	LL to HL, 10% to FL
		0.2%	0.5%	V _{NOM}	LL to HL, NL to 10%
Output Temperature Drift		0.01	0.02	%/°C	
Output Noise - pp		1.0%	1.5%	V _{NOM}	} Whichever is greater 20MHz BW
		100	150	mV	
Output Voltage Trimming ¹	50%		110%	V _{NOM}	
Remote Sense Compensation	0.5			Volts	
Current Limit	105%		125%	I _{NOM}	Auto Restart
Short Circuit Current	105%		130%	I _{NOM}	Auto Restart
Gate In High Threshold			6	Volts	
Gate In Low Threshold	0.65			Volts	
Gate In Low Current			6	mA	
Isolation (Input to Output)	3,000			V _{RMS}	
Isolation (Output to Baseplate)	500			V _{RMS}	
Isolation (Input to Baseplate)	1,500			V _{RMS}	
Input/Output Capacitance		50	75	pF	
Altitude - Method 500.2	70,000			feet	Procedure II
Humidity - Method 507.2	86,240			%, hours	Procedure 1, Cycle 1
Acceleration - Method 513.3	9			g's	Procedure 2
Vibration - Method 514.3	20			g's	Procedure 1, Category 6
Shock - Method 516.3	40			g's	Procedure 1
25°C Ground Benign: G.B		969,000		hours	
50°C Naval Sheltered: N.S.		125,000		hours	
65°C Airborne Inhabited Cargo: A.I.C.		90,000		hours	
Efficiency		77-90		%	
Baseplate to Sink		0.4		°C/Watt	With Thermal Pad
Baseplate Operating Temperature			+100	°C	See Product Grade
Storage Temperature			+125	°C	See Product Grade
Weight		3.0 (85)		Ounces (Grams)	

¹12V and 15V outputs, standard trim range ± 10%. Consult factory for wider trim range.

Converter Selection Chart

MI-J

- (1) 16V operation at 70% load.
- (2) 5V, 50W unit rated at 38W from 125-150 V_{in}.
- 28Vdc input per MIL-STD 704D/E
- 155Vdc input per DOD-STD-1399A
- 270Vdc input per MIL-STD-704D/E

Input Voltage		
Model	Range	Max Input
Z	28V - 50V (1)	60V
Y	100 - 210V	230V
0	125 - 400V (2)	475V
1	100 - 310V	

Output Voltage	
Z	2V
Y	3.3V
0	5V
1	12V
2	15V
3	24V
L	28V
4	48V

Output Power	
A	10W
Z	25W
Y	50W

Output Power		
	>5V	<5V
A	10W	—
Z	25W	5A
Y	50W	10A

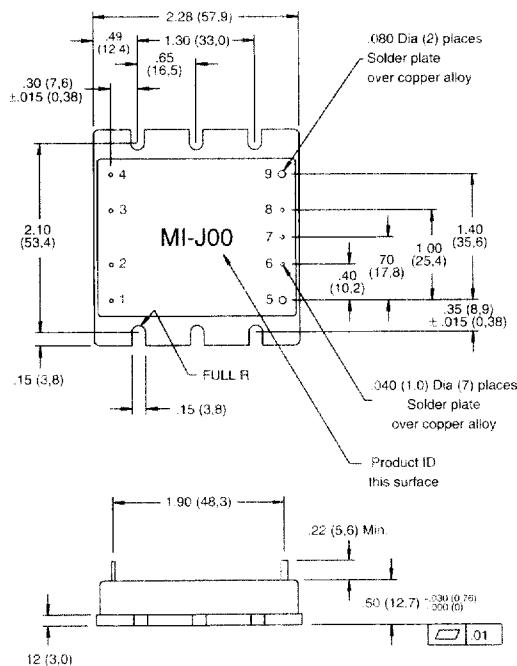
Product Grade Specifications

Parameter	Product 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 hours, 25 cycles	96 hours, 200 cycles
Temperature Cycled with Power Off	48 hours, 12-16 cycles	48 hours, 12-16 cycles
	-55°C to +100°C	-65°C to +100°C
Test Data Supplied at These Temperatures	-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

Mechanical Drawing

Alternative Mechanical Packaging Available.

See Package Options page 23



Pin #	Function
1	+In
2	Gate In
3	Gate Out
4	-In
5	+Out
6	+Sense
7	Trim
8	-Sense
9	-Out

