

Maxi, Mini, Micro Family

MILITARY

DC-DC CONVERTER MODULES

FEATURES

- 24 & 300 Vdc compliant to MIL-STD-704E/F
- Single outputs: 2 – 48 Vdc
- MIL-STD-810 environments
- Operating temperatures from –55°C to 100°C
- ZVS/ZCS power architecture
- Environmental stress screening
- Programmable output: 10 to 110% of Vnom
- OVP and thermal shut down
- Power density: Up to 100 W/in³
- Input undervoltage lockout
- Parallelable for increased power

PRODUCT INFORMATION

Vicor's **Maxi, Mini, Micro Family** DC-DC converter modules use advanced power processing, control and packaging technologies to provide the performance, flexibility, reliability and cost effectiveness of a mature power component. High frequency ZCS/ZVS switching provides high power density with low noise and high efficiency.

Fully encapsulated, Vicor Maxi, Mini, Micro modules utilize a proprietary spin fill process that assures complete, void free encapsulation making them suitable for the most harsh environments. Two grades (H & M) are available with temperatures to –55°C operating and –65°C storage. H & M-Grade modules have been subjected to the environmental testing requirements of MIL-STD-810, MIL-S-901, MIL-STD-202 and undergo 100% environmental stress screening.

GENERAL SPECIFICATIONS

(See vicorpower.com for model specific data sheets)

PARAMETER INPUT	MIN	TYP	MAX	UNIT	NOTE
Undervoltage turn-on	24 V	17.5	17.9	Vdc	
	28 V	8.7	8.9	Vdc	
	48 V	34.9	35.7	Vdc	
	300 V	174.6	178.2	Vdc	
	375 V	242.5	247.5	Vdc	
Undervoltage turn-off	24	14.8	15.3	Vdc	
	28 V	7.4	7.6	Vdc	
	48 V	29.4	30.5	Vdc	
	300 V	147.4	152.8	Vdc	
	375 V	204.7	212.2	Vdc	
Overvoltage turn-off / on	24 V	36.3	37.8	39.6	Vdc
	28 V	36.3	37.8	39.6	Vdc
	48 V	75.7	78.8	82.5	Vdc
	300 V		Not Included		Vdc
	375 V	429.2	446.3	467.5	Vdc



PARAMETER OUTPUT	MIN	TYPE	MAX	UNIT	NOTE
Line regulation		±0.02	±0.20	%	Low line to high line; full load
Temperature regulation		±0.002	±0.005	%/°C	Over operating temp. range
Power sharing accuracy		±2	±5	%	10 to 100% of full load
Programming range	10		110	% Vnom	For trimming below 90% of nominal, a minimum load may be required
Current limit			115	% Iout	Output voltage 95% of nominal
Short circuit current			115	% Iout	Output voltage <250 mV
ISOLATION					
Isolation voltage (in to out)			3,000	Vrms	Complies with reinforced insulation requirements
Isolation voltage (in to base)	1,550			Vrms	Complies with basic insulation requirements
Isolation voltage (out to base)	500			Vrms	Complies with operational insulation requirements
Isolation resistance (in to out)			10	MΩ	
THERMAL					
Operating temperature (H-grade)			–40 to +100	°C	Baseplate
Storage temperature (H-grade)			–55 to +125	°C	
Operating temperature (M-grade)			–55 to +100	°C	Baseplate
Storage temperature (M-grade)			–65 to +125	°C	
Temperature limiting (typical)			+115	°C	
ENVIRONMENTAL STRESS SCREENING					
Refer to end of section.					

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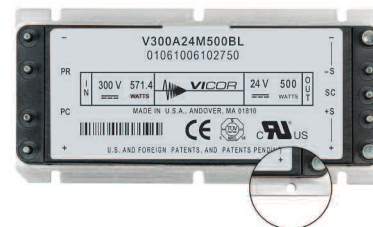
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PART NUMBERING

V	300	A	24	M	500	B	L	V
Input Voltage		Package	Output Voltage	Product Grade	Output Power		Pin Style	Baseplate
		A = Maxi B = Mini C = Micro		H = -40°C to +100°C M = -55°C to +100°C			Blank = Short Solder L = Long Solder S = Short ModuMate ^[a] N = Long ModuMate ^[a]	Blank = Slotted 2 = Threaded 3 = Through Hole

^[a] Compatible with InMate and SurfMate socketing systems



Slotted, threaded and through hole baseplate options.

EXAMPLES

Maxi Converter
V300A24M500BL
300 Vin, Maxi, 24 Vout @ 500 W,
long pins, slotted baseplate

Mini Converter
V300B15M250BL2
300 Vin, Mini, 15 Vout @ 250 W,
long pins, threaded baseplate

Micro Converter
V300C24M150B3
300 Vin, Micro, 24 Vout @ 150 W,
short pins, through hole baseplate

TYPICAL INPUT VOLTAGES

Nominal	Range	Transient	MIL Compliance
24 V	16 – 36 V ^[b]	50 V, 12.5 ms 100 V, 50 ms	MIL-STD-704E/F for 28 Vin ^[c] MIL-STD-1275A/B/D ^[d]
28 V	9 – 36 V ^[e]	50 V, 12.5 ms 100 V, 50 ms	MIL-STD-704E/F for 28 Vin ^[c] MIL-STD-1275A/B/D ^[d]
48 V	36 – 75 V	100 V, 100 ms	
300 V	180 – 375 V	400 V, 100 ms	MIL-STD-704E/F
375 V	250 – 425 V	500 V, 100 ms	

^[b] The following models will operate down to 16 V at 75% rated power after start up at >17.9 V

Maxi — selected models
Mini — all models
Micro — all models

^[c] With M-FIAMS5B input filter

^[d] With M-FIAMS9 input filter

^[e] 10 – 36 Vdc input range for selected Maxi modules. All others derate power 75% for 9 – 10 Vin.

CONFIGURATION CHART

Lower power options available, visit vicorpower.com.

Input Voltages	Maximum Power available for Maxi (Full Brick)								
	Output Voltages								
	3.3 V	5 V	8 V	12 V	15 V	24 V	28 V	36 V	48 V
24 (18 – 36)	264 W	400 W	300 W	400 W	400 W	400 W	400 W	400 W	400 W
28 (9 – 36)	150 W	175 W	200 W	200 W	200 W	200 W	200 W	200 W	200 W
48 (36 – 75)	264 W	400 W	--	500 W	500 W	500 W	500 W	500 W	500 W
72 (43 – 110)	264 W	300 W	--	400 W	400 W	400 W	400 W	400 W	400 W
110 (66 – 154)	200 W	300 W	--	400 W	400 W	400 W	400 W	400 W	400 W
150 (100 – 200)	264 W	400 W	400 W	500 W	500 W	500 W	500 W	500 W	500 W
300 (180 – 375)	264 W	400 W	400 W	500 W	500 W	500 W	500 W	500 W	500 W
375 (250 – 425)	264 W	400 W	400 W	600 W	600 W	600 W	600 W	600 W	600 W
Input Voltages	Maximum Power available for Mini (Half Brick)								
	Output Voltages								
	3.3 V	5 V	8 V	12 V	15 V	24 V	28 V	36 V	48 V
24 (18 – 36)	150 W	200 W	200 W	200 W	200 W	200 W	200 W	200 W	200 W
28 (9 – 36)	75 W	75 W	--	125 W	150 W	150 W	150 W	150 W	150 W
48 (36 – 75)	150 W	200 W	--	250 W	250 W	250 W	250 W	250 W	250 W
72 (43 – 110)	100 W	150 W	--	250 W	250 W	250 W	250 W	250 W	250 W
110 (66 – 154)	100 W	150 W	--	200 W	200 W	200 W	200 W	200 W	200 W
150 (100 – 200)	150 W	200 W	200 W	250 W	250 W	250 W	250 W	250 W	250 W
300 (180 – 375)	150 W	200 W	200 W	250 W	250 W	250 W	250 W	250 W	250 W
375 (250 – 425)	150 W	200 W	200 W	300 W	300 W	300 W	300 W	300 W	300 W
Input Voltages	Maximum Power available for Micro (Quarter Brick)								
	Output Voltages								
	3.3 V	5 V	8 V	12 V	15 V	24 V	28 V	36 V	48 V
24 (18 – 36)	75 W	100 W	100 W	100 W	100 W	100 W	100 W	100 W	100 W
28 (9 – 36)	50 W	50 W	--	100 W	100 W	100 W	100 W	100 W	100 W
48 (36 – 75)	75 W	100 W	--	150 W	150 W	150 W	150 W	150 W	150 W
72 (43 – 110)	75 W	100 W	--	150 W	150 W	150 W	150 W	150 W	150 W
110 (66 – 154)	50 W	75 W	--	100 W	100 W	100 W	100 W	100 W	100 W
150 (100 – 200)	75 W	100 W	100 W	150 W	150 W	150 W	150 W	150 W	150 W
300 (180 – 375)	75 W	100 W	100 W	150 W	150 W	150 W	150 W	150 W	150 W
375 (250 – 425)	75 W	100 W	100 W	150 W	150 W	150 W	150 W	150 W	150 W

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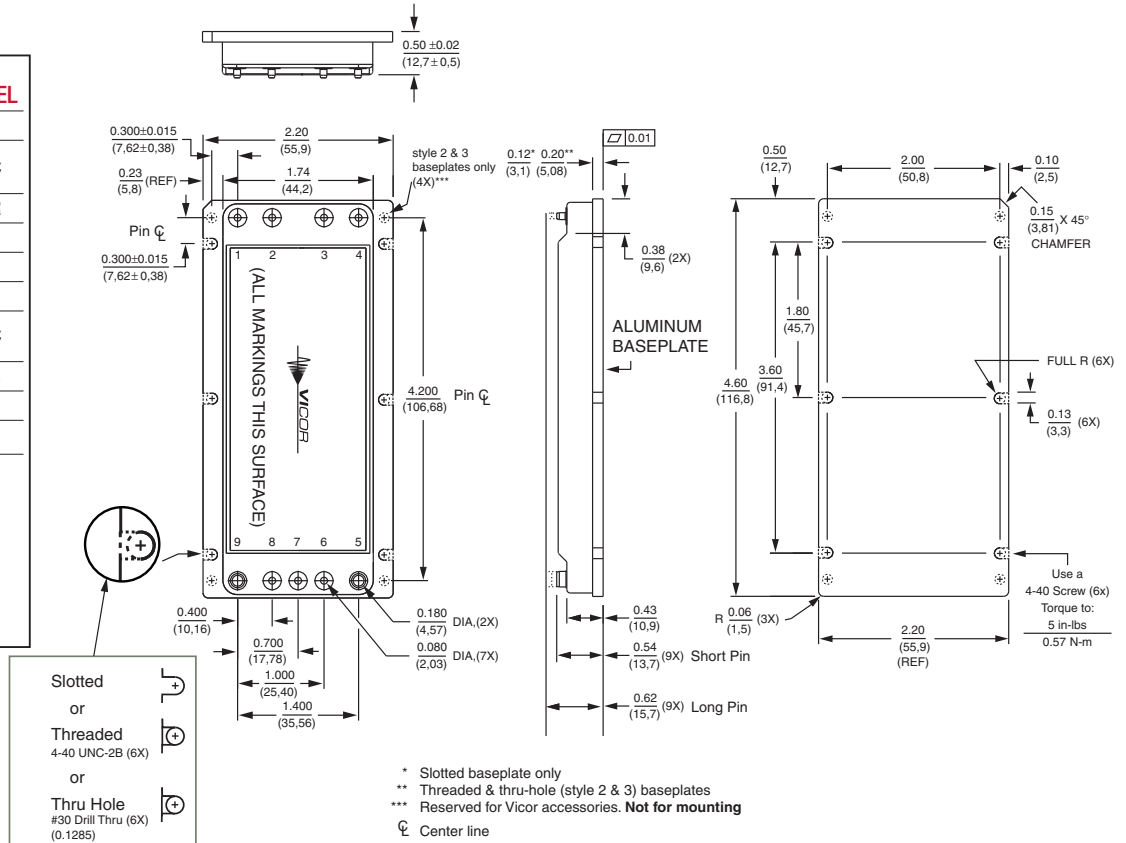
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MECHANICAL DRAWINGS $\frac{in}{(mm)}$

MAXI

CONVERTER PINS		
NO.	FUNCTION	LABEL
1	+In	+
2	Primary Control	PC
3	Parallel	PR
4	-In	-
5	-Out	-
6	-Sense	-S
7	Secondary Control	SC
8	+Sense	+S
9	+Out	+

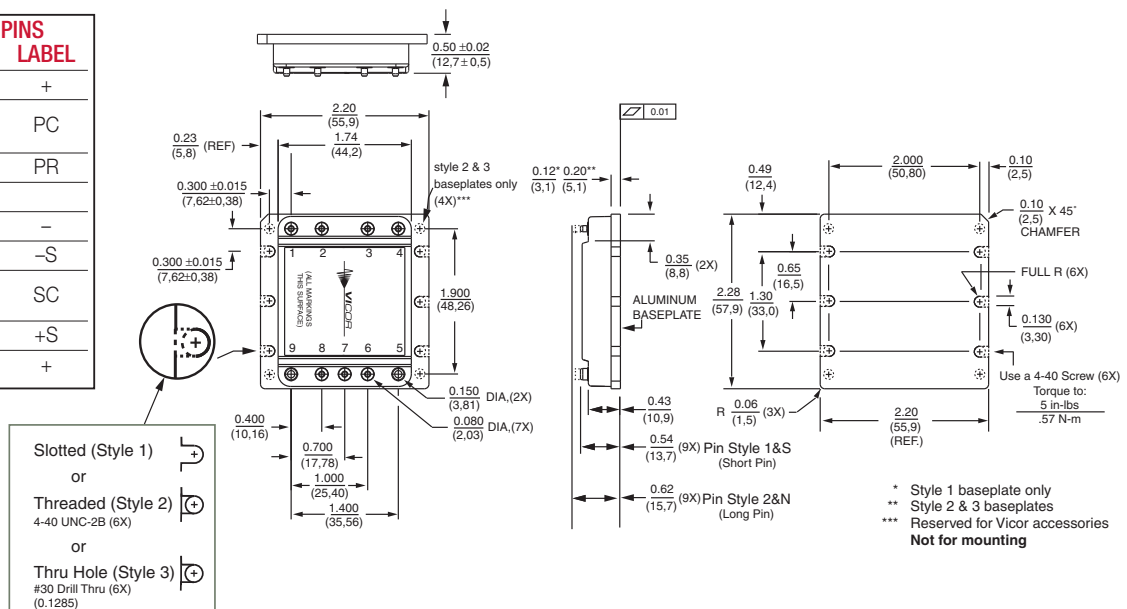
PIN STYLES	
Tin / Lead	
Hot Solder Dip	(Pin Style 1 & 2)
Gold Plated Copper	(Pin Style S & N)
Same on Mini & Micro	



MINI

CONVERTER PINS		
NO.	FUNCTION	LABEL
1	+In	+
2	Primary Control	PC
3	Parallel	PR
4	-In-	-
5	-Out	-
6	-Sense	-S
7	Secondary Control	SC
8	+Sense	+S
9	+Out	+

PIN STYLES	
Slotted (Style 1)	
or	
Threaded (Style 2)	
4-40 UNC-2B (6X)	
or	
Thru Hole (Style 3)	
#30 Drill Thru (6X)	
(0.1285)	



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MICRO

CONVERTER PINS	NO.	FUNCTION	LABEL
1	+In	+	
2	Primary Control	PC	
3	Parallel	PR	
4	-In	-	
5	-Out	-	
6	Secondary Control	SC	
7	+Out	+	

