



Mega Module & Mega Module Jr. Family

25 to 600 Watts
DC-DC Converters
Single, Dual,
Triple Output
Chassis Mount

Features

- Inputs: 10 to 400Vdc
- Any Output, 1 to 95Vdc
- UL, CSA, TÜV, VDE, BABT
- CE Marked
- 80-90% Efficiency (Typical)
- Up to 27W/Cubic Inch
- 1 Up
2.58" x 2.5" x 0.62" (Junior)
4.9" x 2.5" x 0.62" (Full Size)
- 2 Up
2.58" x 4.9" x 0.62" (Junior)
4.9" x 4.9" x 0.62" (Full Size)
- 3 Up
2.58" x 7.3" x 0.62" (Junior)
4.9" x 7.3" x 0.62" (Full Size)
- ZCS Power Architecture
- Low Noise FM Control
- Booster Versions Available for Expanded Output Power-Full size only

Product Highlights

Vicor's Mega Module and Mega Module Jr. Families of single, dual and triple output DC-DC converters provide power system designers with cost effective, high performance, off-the-shelf solutions to applications that might otherwise require a custom supply.

Incorporating standard VI-200 or VI-J00 Family converters in rugged, chassis mount packages, Mega Module and Mega Module Jr.'s can be ordered with single, dual or triple outputs, having a combined output power of up to 600W. Totally isolated outputs eliminate efficiency penalties and output interaction problems.

Configuration Chart

Full-Size Modules

Mega Modules:				# of Modules
Single Output	VI-L	50-200W	4.9" x 2.5" x 0.62"	1
	VI-M	100-400W	4.9" x 4.9" x 0.62"	2
	VI-N	300-600W	4.9" x 7.3" x 0.62"	3
Dual Output	VI-P	100-400W	4.9" x 4.9" x 0.62"	2
	VI-Q	150-600W	4.9" x 7.3" x 0.62"	3
Triple Output	VI-R	150-600W	4.9" x 7.3" x 0.62"	3

Junior-Size Modules

Mega Module Juniors:				
Single Output	VI-LJ	25-100W	2.58" x 2.5" x 0.62"	1
Dual Output	VI-PJ	50-200W	2.58" x 4.9" x 0.62"	2
Triple Output	VI-RJ	75-300W	2.58" x 7.3" x 0.62"	3

□ Input Voltage						
Nominal	Range	Brownout*	Transient**	Mega Module	Mega Module Jr.	
0 = 12V	10 - 20V	n/a	22	(4)	(1)	
1 = 24V	21 - 32V	18	36	(8)	(5)	
W = 24V	18 - 36V	n/a	n/a	(8)	(5)	
2 = 36V	21 - 56V	18	60	(6)	(1)	
3 = 48V	42 - 60V	36	72	(10)	(5)	
N = 48V	36 - 76V	n/a	n/a	(10)	(5)	
4 = 72V	55 - 100V	45	110	(9)	(4)	
T = 110V	66 - 160V	n/a	n/a	(8)	(5)	
5 = 150V	100 - 200V	85	215	(9)	(5)	
6 = 300V	200 - 400V	170	425	(10)	(6)	
7 = 150/300V	100 - 375V	90	n/a	(5)	(1)	

□ Output Voltage	
Z =	2V
Y =	3.3V
0 =	5V
M =	10V
1 =	12V
2 =	15V
3 =	24V
L =	28V
4 =	48V

(1 to 95V, consult factory)

□ Product Grade		
	Mega Module	Mega Module Jr.
E =	-10°C to +85°C	-10°C to +100°C
C =	-25°C to +85°C	-25°C to +100°C
I =	-40°C to +85°C	-40°C to +100°C
M =	-55°C to +85°C	-55°C to +100°C

Refers to Baseplate Temperature

□ Output Power/Current			
Mega Module		Mega Module Jr.	
V _{out} ≥ 5V	V _{out} < 5V	V _{out} ≥ 5V	V _{out} < 5V
Y = 50W	Y = 10A	Z = 25W	Z = 5A
X = 75W	X = 15A	Y = 50W	Y = 10A
W = 100W	W = 20A	X = 75W	X = 15A
V = 150W	V = 30A	W = 100W	W = 20A
U = 200W	U = 40A		

□ Output Power/Current	
V _{out} ≥ 5V	V _{out} < 5V
W = 100W	W = 20A
V = 150W	V = 30A
U = 200W	U = 40A
S = 300W	S = 60A
Q = 400W	Q = 80A

□ Output Power/Current	
V _{out} ≥ 5V	V _{out} < 5V
S = 300W	S = 60A
P = 450W	P = 90A
M = 600W	M = 120A

Max. Output Per Module	5V Outputs	>5V Outputs	<5V Outputs
(1)	50W	50W	10A
(4)	75W	75W	15A
(5)	75W	100W	20A
(6)	100W	100W	20A

Max. Output Per Module	5V Outputs	>5V Outputs	<5V Outputs
(7)	100W	150W	30A
(8)	150W	150W	30A
(9)	150W	200W	40A
(10)	200W	200W	40A

*Brownout 75% of rated load.
**Transient voltage for 1 second.
***Consult factory for availability of "T" input Mega Module Jrs.

Mega Module Specifications

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

PARAMETER	Mega Module (E-Grade)			Mega Module (C-, I-, M-Grade)			UNITS	TEST CONDITIONS
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		
■ Input Characteristics								
Inrush charge		120x10 ⁻⁶		120x10 ⁻⁶	200x10 ⁻⁶		Coulombs	Nom. line, per module
Input reflected ripple current – pp		10%		10%			I _{IN}	Nom. line, full load
Input ripple rejection		25+20Log($\frac{V_{in}}{V_{out}}$)		30+20Log($\frac{V_{in}}{V_{out}}$)			dB	120 Hz, nom. line
					20+20Log($\frac{V_{in}}{V_{out}}$)			
No load power dissipation		1.35	2	1.35	2		Watts	Per module
■ Output Characteristics								
Setpoint accuracy		1%	2%	0.5%	1%		V _{NOM}	
Load/line regulation			0.5%	0.05%	0.2%		V _{NOM}	LL to HL, 10% to FL
Load/line regulation			1%	0.2%	0.5%		V _{NOM}	LL to HL, NL to 10%
Output temperature drift		0.02		0.01	0.02		% / °C	Over rated temp.
Long term drift		0.02		0.02			%/1K hours	
Output ripple - pp:								
2V, 3.3V			150	60	100		mV	20 MHz bandwidth
5V			5%	2%	3%			20 MHz bandwidth
10-48V			3%	0.75%	1.5%			20 MHz bandwidth
High/low program ¹	50%		110%	50%	110%			
Total remote sense compensation	0.5			0.5			Volts	0.25V max. neg. leg
OVP setpoint ²		125%		115%	125%	135%	V _{NOM}	Recycle power
Current limit	105%		135%	105%		125%	I _{NOM}	Automatic restart
Short circuit current ³	20%		140%	20%		130%	I _{NOM}	
■ Control Pin Characteristics								
Gate out impedance		50		50			Ohms	
Gate in impedance		10 ³		10 ³			Ohms	
Gate in open circuit voltage		6		6			Volts	Use open collector
Gate in low threshold	0.65			0.65			Volts	
Gate in low current			6		6		mA	
Power sharing accuracy	.95		1.05	0.95		1.05		
■ Dielectric Withstand Characteristics								
Input to output	3,000			3,000			V _{RMS}	Baseplate earthed
Output to baseplate	500			500			V _{RMS}	
Input to baseplate	1,500			1,500			V _{RMS}	
■ Thermal Characteristics								
Efficiency		78-88%		80-90%				
Baseplate to chassis		0.1		0.1			°C/Watt	
Thermal Shutdown (Drivers only)Baseplate	90	95	105	90	95	105	°C	Cool and recycle power to restart
■ Mechanical Specifications								
Weight								
1 Up		9.0 (255)		9.0 (255)			Ounces (Grams)	
2 Up		1.2 (545)		1.2 (545)			Lbs. (Grams)	
3 Up		1.7 (772)		1.7 (772)			Lbs. (Grams)	

¹10V, 12V and 15V outputs, standard trim range ±10%. Consult factory for wider trim range.

²131% typical for booster modules.

³Output voltages of 5V or less incorporate foldback current limiting; outputs of 10V and above contain straight-line limiting.

Mega Module Jr. Specifications

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

PARAMETER	Mega Module Jr. (E-Grade)			Mega Module Jr. (C-, I-, M-Grade)			UNITS	TEST CONDITIONS
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		
■ Input Characteristics								
Inrush charge		60×10^{-6}	100×10^{-6}		60×10^{-6}	100×10^{-6}	Coulombs	Nom. line, per module
Input reflected ripple current — pp		10%			10%		I_{IN}	Nom. line, full load
Input ripple rejection		$25 + 20 \text{Log} \left(\frac{V_{in}}{V_{out}} \right)$			$30 + 20 \text{Log} \left(\frac{V_{in}}{V_{out}} \right)$		dB	120 Hz, nom. line
					$20 + 20 \text{Log} \left(\frac{V_{in}}{V_{out}} \right)$			2400 Hz, nom. line
No load power dissipation		1.35	2		1.35	2	Watts	Per module
■ Output Characteristics								
Setpoint accuracy		1.0%	2.0%		0.5%	1%	V_{NOM}	
Load/line regulation			0.5%		0.05%	0.2%	V_{NOM}	LL to HL, 10% to FL
Load/line regulation			1.0%		0.2%	0.5%	V_{NOM}	LL to HL, NL to 10%
Output temperature drift		0.02			0.01		$\%/^{\circ}\text{C}$	Over rated temp.
Long term drift		0.02			0.02		$\%/1\text{K hours}$	
Output ripple, pp:								
2V, 3.3V		200			100	150	mV	20 MHz bandwidth
5V		5%			2%	3%		20 MHz bandwidth
10V-48V		3%			0.75%	1.5%		20 MHz bandwidth
High/low program ¹	50%		110%	50%		110%	V_{NOM}	
Total remote sense compensation	0.5			0.5			Volts	0.25V max. neg. leg
OVP setpoint		N/A			N/A			
Current limit	105%		135%	105%		125%	I_{NOM}	Automatic restart
Short circuit current	105%		140%	105%		130%	I_{NOM}	
■ Control Pin Characteristics								
Gate out impedance		50			50		Ohms	
Gate in impedance		10^3			10^3		Ohms	
Gate in high threshold		6			6		Volts	Use open collector
Gate in low threshold	0.65			0.65			Volts	
Gate in low current			6			6	mA	
■ Dielectric Withstand Characteristics								
Input to output	3,000			3,000			V_{RMS}	Baseplate earthed
Output to baseplate	500			500			V_{RMS}	
Input to baseplate	1,500			1,500			V_{RMS}	
■ Thermal Characteristics								
Efficiency		78-88%			80-90%			
Baseplate to chassis		0.2			0.2		$^{\circ}\text{C/Watt}$	
■ Mechanical Specifications								
Weight								
1 Up		4.5 (127)			4.5 (127)		Ounces (Grams)	
2 Up		8.8 (250)			8.8 (250)		Ounces (Grams)	
3 Up		13.3 (377)			13.3 (377)		Ounces (Grams)	

¹10V, 12V and 15V outputs, standard trim range $\pm 10\%$. Consult factory for wider trim range.

Mega Module Mechanical Specifications

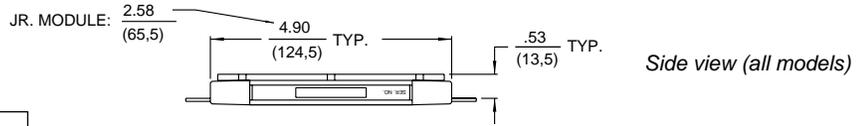
Inputs	
1 -Input	5 Gate Out #2
2 Gate Out #1	6 Gate In #2
3 Gate In #1	7 Gate Out #3
4 +Input	8 Gate In #3

Outputs		
Output #1	Output #2	Output #3
A -Output	F -Output	L -Output
B -Sense*	G -Sense	M -Sense
C Trim*	H Trim	N Trim
D +Sense*	J +Sense	P +Sense
E +Output	K +Output	Q +Output

*For Units with BatMod
 B-IMON
 C-ITRIM
 D-VTRIM

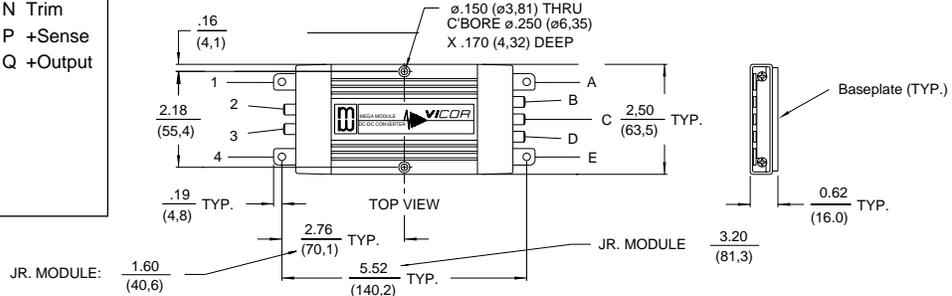
Inputs

Outputs



L- and LJ-Series

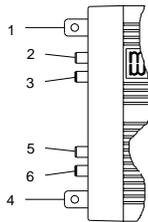
L- and LJ-Series



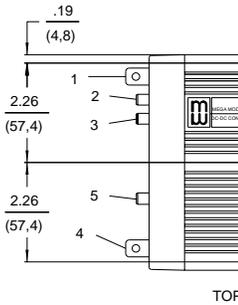
Mounting Information

Use #6 machine hardware torqued to 5-7 in-lbs.

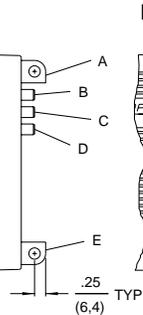
P- and PJ-Series



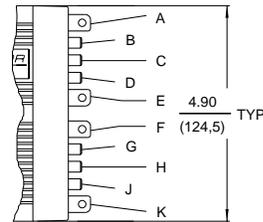
M-Series



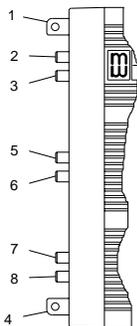
M-Series



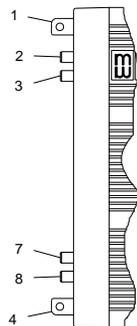
P- and PJ-Series



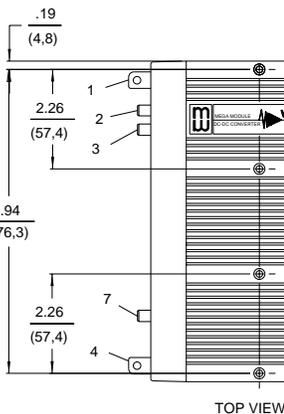
R- and RJ-Series



Q-Series



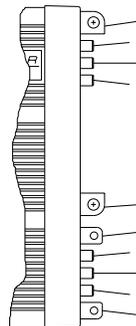
N-Series



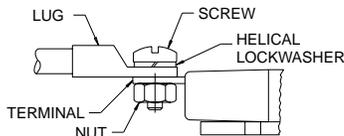
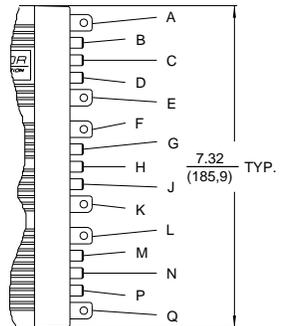
N-Series



Q-Series



R- and RJ-Series



Terminal and Product Model	Terminal Style	Screw Size	Recommended Torque
-Input, +Input All models	PCB	8-32 UNC	10 in-lb (1.1 N-m)
-Output, +Output L-, P-, R-, LJ-, PJ- & RJ-Series M- & N-Series Q-Series	PCB	8-32 UNC	10 in-lb (1.1 N-m)
Supervisory All models	Metal	1/4-20 UNC	65 in-lb (7.2 N-m)
	PCB	8-32 UNC	10 in-lb (1.1 N-m)
	Metal	1/4-20 UNC	65 in-lb (7.2 N-m)

Sized to accept AMP Faston® insulated receptacle #2-520184-2