



Data Sheet

MegaMod & MegaMod Jr. Family



25 to 600 Watts DC-DC Converters

Single, Dual, Triple Output Chassis Mount



Features

- RoHS compliant (VE versions)
- Inputs: 10 to 400 Vdc
- Any output, 1 to 95 Vdc
- cULus, cTUVus, CE Marked
- 80 – 90% Efficiency (Typical)
- Up to 27 W/In³
- 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)
- Low noise ZCS power architecture
- Booster versions available for expanded output power – full size only

Product Highlights

Vicor's MegaMod and MegaMod 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, MegaMod and MegaMod Jr.'s can be ordered with single, dual or triple outputs, having a combined output power of up to 600 W. Totally isolated outputs eliminate efficiency penalties and output interaction problems.

Configuration Chart

Substitute VE– for VI– for RoHS compliant versions					
Full-Size Modules – MegaMod			Junior-Size Modules – MegaMod Jr		
Configuration	Output Power	# of Modules	Configuration	Output Power	# of Modules
Single Output			Single Output		
VI-L -	50 – 200 W	1	VI-LJ -	25 – 100 W	1
VI-M -	100 – 400 W	2			
VI-N -	300 – 600 W	3			
Dual Output			Dual Output		
VI-P -	100 – 400 W	2	VI-PJ -	50 – 200 W	2
VI-Q -	150 – 600 W	3			
Triple Output			Triple Output		
VI-R -	150 – 600 W	3	VI-RJ -	75 – 300 W	3

Input Voltage

		Maximum Power (see chart below)		Low Line Transient ^[a]	
Nominal	Input Range Full Power	MegaMod	MegaMod Jr.	75% Max Power	
0 = 12 V ^[b]	10 – 20 V	(4)	(1)	n/a	22
V = 18 V	10 – 36 V	(2)	n/a	n/a	n/a
1 = 24 V ^[b]	21 – 32 V	(8)	(5)	18 V	36
W = 24 V ^[b]	18 – 36 V	(8)	(5)	n/a	n/a
2 = 36 V	21 – 56 V	(6)	(1)	18 V	60
3 = 48 V	42 – 60 V	(10)	(5)	36 V	72
N = 48 V	36 – 76 V	(10)	(5)	n/a	n/a
4 = 72 V	55 – 100 V	(9)	(4)	45 V	110
T = 110 V	66 – 160 V	(8)	(5)	n/a	n/a
5 = 150 V	100 – 200 V	(9)	(5)	85 V	215
6 = 300 V	200 – 400 V	(10)	(6)	170 V	425
7 = 150/300 V	100 – 375 V	(5)	(1)	90 V	n/a
Max. Output Per Module	5 – 7.5 V Outputs	>7.5 V Outputs		<5 V Outputs	
(1)	50 W	75 W		10 A	
(2)	50 W ^[c]	75 W		15 A	
(4)	75 W	75 W		15 A	
(5)	75 W	100 W		20 A	
(6)	100 W	100 W		20 A	
(7)	100 W	150 W		30 A	
(8)	150 W	150 W		30 A	
(9)	150 W	200 W		40 A	
(10)	200 W	200 W		40 A	

[a] Transient voltage for 1 second.

[b] Total MegaMod output power for 225 W, 12 V input models and 450 W, 24 V input models are limited to 55°C ambient, and are available by special order.

[c] 7.5 V output is 75 W

Output Voltage

Z = 2 V
Y = 3.3 V
O = 5 V
X = 5.2 V
W = 5.5 V
V = 5.8 V
T = 6.5 V
R = 7.5 V
M = 10 V
1 = 12 V
P = 13.8 V
2 = 15 V
N = 18.5 V
3 = 24 V
L = 28 V
J = 36 V
K = 40 V
4 = 48 V
H = 52 V
F = 72 V
D = 85 V
B = 95 V

Product Grade Temperature (°C)

MegaMod	MegaMod Jr.
E = –10 to +85	–10 to +100
C = –25 to +85	–25 to +100
I = –40 to +85	–40 to +100
M = –55 to +85	–55 to +100
Refers to Baseplate Temperature	

Output Power/Current

Vout ≥ 5 V	Vout < 5 V
W = 100 W	W = 20 A
V = 150 W	V = 30 A
U = 200 W	U = 40 A
S = 300 W	S = 60 A
Q = 400 W	Q = 80 A

Output Power/Current

MegaMod		MegaMod Jr.	
Vout ≥ 5 V	Vout < 5 V	Vout ≥ 5 V	Vout < 5 V
Y = 50 W	Y = 10 A	Z = 25 W	Z = 5 A
X = 75 W	X = 15 A	Y = 50 W	Y = 10 A
W = 100 W	W = 20 A	X = 75 W	X = 15 A
V = 150 W	V = 30 A	W = 100 W	W = 20 A
U = 200 W	U = 40 A		

Output Power/Current

Vout ≥ 5 V	Vout < 5 V
S = 300 W	S = 60 A
P = 450 W	P = 90 A
M = 600 W	M = 120 A

MEGAMOD SPECIFICATIONS

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

■ INPUT SPECIFICATIONS

Parameter	MegaMod (E-Grade)			MegaMod (C-, I-, M-Grade)			Unit	Test Conditions
	Min	Typ	Max	Min	Typ	Max		
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 $\left(\frac{V_{in}}{V_{out}}\right)$			30+20Log $\left(\frac{V_{in}}{V_{out}}\right)$		dB	120 Hz, nom. line
					20+20Log $\left(\frac{V_{in}}{V_{out}}\right)$		dB	2400 Hz, nom. line
No load power dissipation		1.35	2		1.35	2	Watts	Per module

■ OUTPUT SPECIFICATIONS

Parameter	MegaMod (E-Grade)			MegaMod (C-, I-, M-Grade)			Units	Test Conditions
	Min	Typ	Max	Min	Typ	Max		
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
			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								
2 V, 3.3 V			150		60	100	mV	20 MHz bandwidth
5 V			5%		2%	3%	V _{NOM}	20 MHz bandwidth
10 – 95 V			3%		0.75%	1.5%	V _{NOM}	20 MHz bandwidth
Output voltage trimming ^[a]	50%		110%	50%		110%	V _{NOM}	
Total remote sense compensation	0.5			0.5			Volts	0.25 V max. neg. leg
OVP setpoint ^[b]		125%		115%	125%	135%	V _{NOM}	Recycle power
Current limit	105%		135%	105%		125%	I _{NOM}	Automatic restart
Short circuit current ^[c]	20%		140%	20%		130%	I _{NOM}	

^[a] 10 V, 12 V and 15 V outputs, standard trim range $\pm 10\%$. Consult factory for wider trim range. 95 V_{out} cannot be trimmed up.

^[b] 131% typical for booster modules.

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

■ CONTROL PIN SPECIFICATIONS

Parameter	MegaMod (E-Grade)			MegaMod (C-, I-, M-Grade)			Units	Test Conditions
	Min	Typ	Max	Min	Typ	Max		
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	0.95		1.05	0.95		1.05		

MEGAMOD SPECIFICATIONS (cont.)

■ DIELECTRIC WITHSTAND CHARACTERISTICS

Parameter	MegaMod (E-Grade)			MegaMod (C-, I-, M-Grade)			Unit	Test Conditions
	Min	Typ	Max	Min	Typ	Max		
Input to output	3,000			3,000			VRMS	Baseplate earthed
Output to baseplate	500			500			VRMS	
Input to baseplate	1,500			1,500			VRMS	

■ THERMAL CHARACTERISTICS

Parameter	MegaMod (E-Grade)			MegaMod (C-, I-, M-Grade)			Units	Test Conditions
	Min	Typ	Max	Min	Typ	Max		
Efficiency		78-88%			80 – 90%			
Baseplate to chassis		0.1			0.1		°C/Watt	
Thermal Shutdown (drivers only)	90	95	105	90	95	105	°C	Baseplate (Cool and recycle power to restart)

■ MECHANICAL SPECIFICATIONS

Parameter	MegaMod (E-Grade)			MegaMod (C-, I-, M-Grade)			Units	Test Conditions
	Min	Typ	Max	Min	Typ	Max		
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)	

MEGAMOD JR. SPECIFICATIONS

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

■ INPUT SPECIFICATIONS

Parameter	MegaMod Jr. (E-Grade)			MegaMod Jr. (C-, I-, M-Grade)			Unit	Test Conditions
	Min	Typ	Max	Min	Typ	Max		
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%		IIN	Nom. line, full load
Input ripple rejection		$25 + 20 \log \left(\frac{V_{in}}{V_{out}} \right)$			$30 + 20 \log \left(\frac{V_{in}}{V_{out}} \right)$		dB	120 Hz, nom. line
					$20 + 20 \log \left(\frac{V_{in}}{V_{out}} \right)$		dB	2400 Hz, nom. line
No load power dissipation		1.35	2		1.35	2	Watts	Per module

■ OUTPUT SPECIFICATIONS

Parameter	MegaMod Jr. (E-Grade)			MegaMod Jr. (C-, I-, M-Grade)			Units	Test Conditions
	Min	Typ	Max	Min	Typ	Max		
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
			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		%/1K hours	
Output ripple, pp								
2 V, 3.3 V		200			100	150	mV	20 MHz bandwidth
5 V		5%			2%	3%	V _{NOM}	20 MHz bandwidth
10 V – 95 V		3%			0.75%	1.5%	V _{NOM}	20 MHz bandwidth
Output voltage trimming ^[a]	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}	

^[a] 10 V, 12 V and 15 V outputs, standard trim range $\pm 10\%$. Consult factory for wider trim range. 95 V_{out} cannot be trimmed up.

■ CONTROL PIN SPECIFICATIONS

Parameter	MegaMod Jr. (E-Grade)			MegaMod Jr. (C-, I-, M-Grade)			Units	Test Conditions
	Min	Typ	Max	Min	Typ	Max		
Gate out impedance		50			50		Ohms	
Gate in impedance		1,000			1,000		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	

MEGAMOD JR. SPECIFICATIONS (cont.)

■ DIELECTRIC WITHSTAND CHARACTERISTICS

Parameter	MegaMod Jr. (E-Grade)			MegaMod Jr. (C-, I-, M-Grade)			Unit	Test Conditions
	Min	Typ	Max	Min	Typ	Max		
Input to output	3,000			3,000			VRMS	Baseplate earthed
Output to baseplate	500			500			VRMS	
Input to baseplate	1,500			1,500			VRMS	

■ THERMAL CHARACTERISTICS

Parameter	MegaMod Jr. (E-Grade)			MegaMod Jr. (C-, I-, M-Grade)			Units	Test Conditions
	Min	Typ	Max	Min	Typ	Max		
Efficiency		78 – 88%			80 – 90%			
Baseplate to chassis		0.2			0.2		°C/Watt	

■ MECHANICAL SPECIFICATIONS

Parameter	MegaMod Jr. (E-Grade)			MegaMod Jr. (C-, I-, M-Grade)			Units	Test Conditions
	Min	Typ	Max	Min	Typ	Max		
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)	

MEGAMOD 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

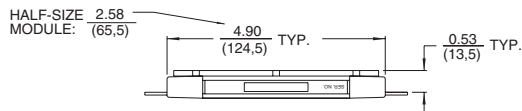
Output #1	Output #2	Output #3
A -Output	F -Output	L -Output
B -Sense*	G -Sense	M -Sense
C Trim*	H Trim	N Trim
D +Sense*	J +Sense	P +Sense
E +Output	K +Output	Q +Output

*For Units with BatMod

B-IMON
C-ITRIM
D-VTRIM

Inputs

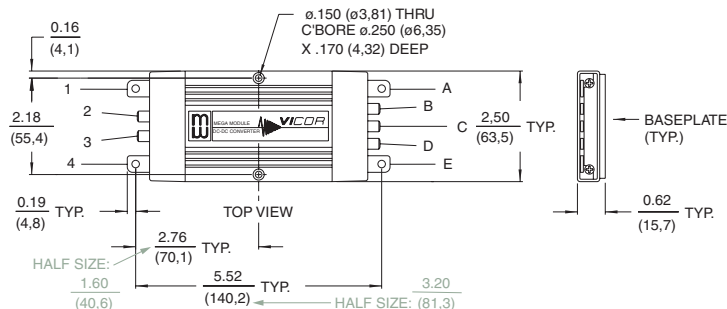
Outputs



Side view (all models)

L- and LJ-Series

L- and LJ-Series

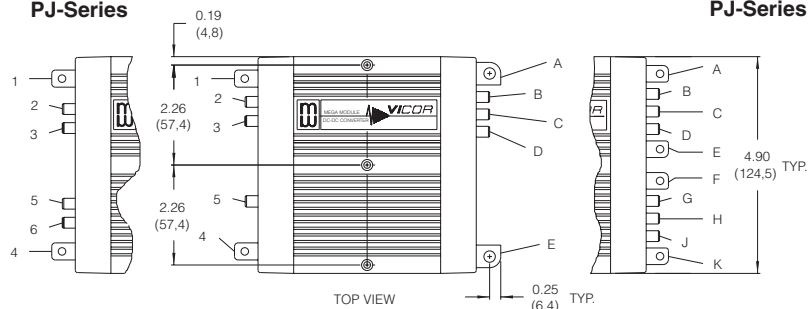


P- and PJ-Series

M-Series

M-Series

P- and PJ-Series



Mounting Information

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

R- and RJ-Series

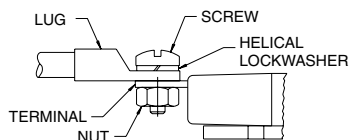
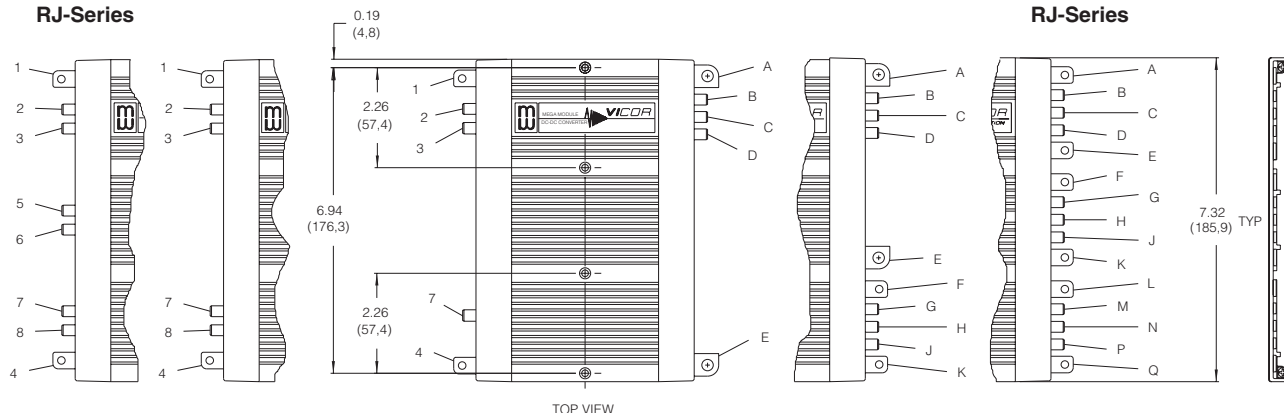
Q-Series

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	PCB	8-32 UNC	10 in-lb (1.1 N-m)
M- & N-Series	Metal	1/4-20 UNC	65 in-lb (7.2 N-m)
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)

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

Warranty

Vicor products are guaranteed for two years from date of shipment against defects in material or workmanship when in normal use and service. This warranty does not extend to products subjected to misuse, accident, or improper application or maintenance. Vicor shall not be liable for collateral or consequential damage. This warranty is extended to the original purchaser only.

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Vicor's comprehensive line of power solutions includes high density AC-DC and DC-DC modules and accessory components, fully configurable AC-DC and DC-DC power supplies, and complete custom power systems.

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