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MegaMod™ & MegaMod Jr.™ Family

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

Features & Benefits

- RoHS compliant (VE versions)
- Inputs: 10 to 400V_{DC}
- Any output, 1 to 95V_{DC}
- cULus, cTÜVus, CE Marked
- 80 – 90% Efficiency (Typical)
- Up to 27 W/In^3
- 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 (add B to part number Example: VI-LBxx-xx)

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 600W. Totally isolated outputs eliminate efficiency penalties and output interaction problems.

For on-line product configuration visit:

MegaMod / MI-MegaMod DC-DC Converters Configurator

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 – 200W	1	VI-LJ ▫ ▫ - ▫ ▫	25 – 100W	1
VI-M ▫ ▫ - ▫ ▫	100 – 400W	2			
VI-N ▫ ▫ - ▫ ▫	300 – 600W	3			
Dual Output			**Dual Output**		
VI-P ▫ ▫ ▫ - ▫ ▫ ▫	100 – 400W	2	VI-PJ ▫ ▫ ▫ - ▫ ▫ ▫	50 – 200W	2
VI-Q ▫ ▫ ▫ - ▫ ▫ ▫	150 – 600W	3			
Triple Output			**Triple Output**		
VI-R ▫ ▫ ▫ ▫ - ▫ ▫ ▫ ▫	150 – 600W	3	VI-RJ ▫ ▫ ▫ ▫ - ▫ ▫ ▫ ▫	75 – 300W	3

▪ Input Voltage

Nominal	Input Range Full Power	Maximum Power (see chart below) MegaMod	MegaMod Jr.	Low Line 75% Max Power	Transient[a]
0 = 12V[b][c]	10 – 20V	(4)	(1)	n/a	22
V = 24V[b][c]	10 – 36V	(2)	(11)	n/a	n/a
1 = 24V[d]	21 – 32V	(8)	(6)	18V	36
W = 24V[d]	18 – 36V	(8)	(6)	n/a	n/a
2 = 36V	21 – 56V	(6)	(1)	18V	60
3 = 48V	42 – 60V	(10)	(6)	36V	72
N = 48V	36 – 76V	(10)	(5)	n/a	n/a
4 = 72V	55 – 100V	(9)	(6)	45V	110
T = 110V	66 – 160V	(8)	(5)	n/a	n/a
5 = 150V	100 – 200V	(9)	(6)	85V	215
6 = 300V	200 – 400V	(10)	(6)	170V	425
7 = 150/300V	100 – 375V	(5)	(1)	90V	n/a

Max. Output Per Module	5 – 7.5V Outputs	>7.5V Outputs	<5V Outputs
(1)	50W	75W	10A
(2)	50W[e]	75W	15A
(4)	75W	75W	15A
(5)	75W	100W	20A
(6)	100W[f]	100W	20A
(7)	100W	150W	30A
(8)	150W	150W	30A
(9)	150W	200W	40A
(10)	200W	200W	40A
(11)	50W	50W	10A

▪ Output Voltage

Z =	2V
Y =	3.3V
0 =	5V
X =	5.2V
W =	5.5V
V =	5.8V
T =	6.5V
R =	7.5V
M =	10V
1 =	12V
P =	13.8V
2 =	15V
N =	18.5V
3 =	24V
L =	28V
J =	36V
K =	40V
4 =	48V
H =	52V
F =	72V
D =	85V
B =	95V

[a] Transient voltage for 1 second.
[b] Single output configurations of 225W are limited to +55°C ambient and are available by special order.
[c] Dual and triple output configurations totaling 225W are limited to +55°C ambient.
[d] Single, dual, and triple output configurations totaling 450W are limited to +55°C.
[e] 7.5V output is 75W
[f] 6.5V and 7.5V output is 75W

▪ 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

$V_{OUT} \geq 5V$	$V_{OUT} < 5V$
W = 100W	W = 20A
V = 150W	V = 30A
U = 200W	U = 40A
S = 300W	S = 60A
Q = 400W	Q = 80A

▪ Output Power/Current

MegaMod		MegaMod Jr.	
$V_{OUT} \geq 5V$	$V_{OUT} < 5V$	$V_{OUT} \geq 5V$	$V_{OUT} < 5V$
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

$V_{OUT} \geq 5V$	$V_{OUT} < 5V$
S = 300W	S = 60A
P = 450W	P = 90A
M = 600W	M = 120A

MegaMod Specifications

(typical at T_{BP} = 25ºC, nominal line, 75% load, unless otherwise specified)

INPUT SPECIFICATIONS

	MegaMod (E-Grade)			MegaMod (C-, I-, M-Grade)				
Parameter	**Min**	**Typ**	**Max**	**Min**	**Typ**	**Max**	**Unit**	**Test Conditions**
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		$25+20\text{Log}\left(\frac{V_{IN}}{V_{OUT}}\right)$			$30+20\text{Log}\left(\frac{V_{IN}}{V_{OUT}}\right)$		dB	120Hz, nom. line
					$20+20\text{Log}\left(\frac{V_{IN}}{V_{OUT}}\right)$		dB	2400Hz, nom. line
No load power dissipation		1.35	2		1.35	2	Watts	Per module

OUTPUT SPECIFICATIONS

	MegaMod (E-Grade)			MegaMod (C-, I-, M-Grade)				
Parameter	**Min**	**Typ**	**Max**	**Min**	**Typ**	**Max**	**Units**	**Test Conditions**
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								
2V, 3.3V			150		60	100	mV	20MHz bandwidth
5V			5%		2%	3%	V_{NOM}	20MHz bandwidth
10 – 95V			3%		0.75%	1.5%	V_{NOM}	20MHz 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[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] 10V to 15V outputs, or "V" input range have standard trim range ±10%. Consult factory for wider trim range. 95V output -50 + 0% trim range.
[b] 131% typical for booster modules.
[c] Output voltages of 5V or less incorporate foldback current limiting; outputs of 10V and above contain straight-line limiting.

CONTROL PIN SPECIFICATIONS

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

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

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

	MegaMod (E-Grade)			MegaMod (C-, I-, M-Grade)				
Parameter	**Min**	**Typ**	**Max**	**Min**	**Typ**	**Max**	**Units**	**Test Conditions**
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°C, nominal line, 75% load, unless otherwise specified)

INPUT SPECIFICATIONS

	MegaMod Jr. (E-Grade)			MegaMod Jr. (C-, I-, M-Grade)				
Parameter	**Min**	**Typ**	**Max**	**Min**	**Typ**	**Max**	**Unit**	**Test Conditions**
Inrush charge		$60x10^{-6}$	$100x10^{-6}$		$60x10^{-6}$	$100x10^{-6}$	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	120Hz, nom. line
					$20+20\text{Log}\left(\frac{V_{IN}}{V_{OUT}}\right)$		dB	2400Hz, nom. line
No load power dissipation		1.35	2		1.35	2	Watts	Per module

OUTPUT SPECIFICATIONS

	MegaMod Jr. (E-Grade)			MegaMod Jr. (C-, I-, M-Grade)				
Parameter	**Min**	**Typ**	**Max**	**Min**	**Typ**	**Max**	**Units**	**Test Conditions**
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		%/°C	Over rated temp.
Long term drift		0.02			0.02		%/1K hours	
Output ripple, pp								
2V, 3.3V		200			100	150	mV	20MHz bandwidth
5V		5%			2%	3%	V_{NOM}	20MHz bandwidth
10V – 95V		3%			0.75%	1.5%	V_{NOM}	20MHz 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] 10V to 15V outputs, standard trim range ±10%. Consult factory for wider trim range. 95 Vout cannot be trimmed up.

CONTROL PIN SPECIFICATIONS

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

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

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

MECHANICAL SPECIFICATIONS

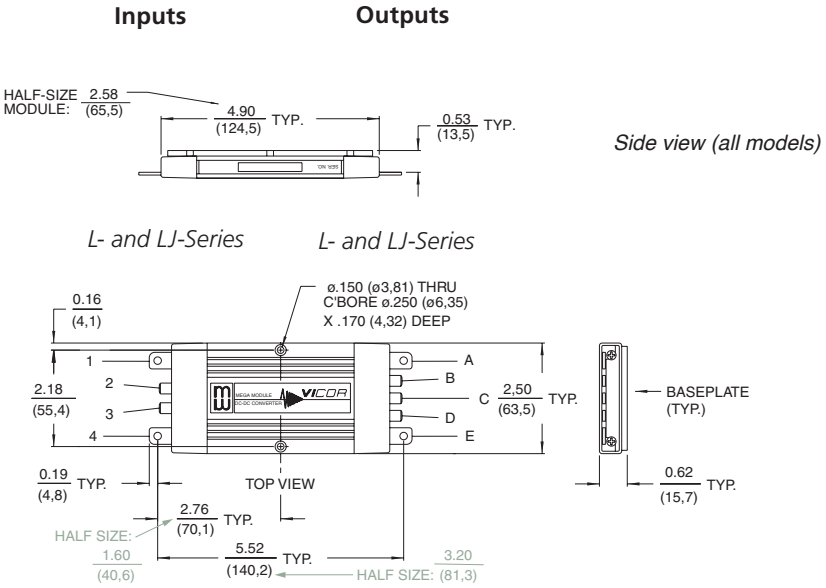
	MegaMod Jr. (E-Grade)			MegaMod Jr. (C-, I-, M-Grade)				
Parameter	**Min**	**Typ**	**Max**	**Min**	**Typ**	**Max**	**Units**	**Test Conditions**
Weight								
1 Up		4.5 (127)			4.5 (127)		Ounces (Grams)	
2 Up		8.8 (250)			8.8 (250)		Ounces (Grams)	
3 Up		13.3 (377)			13.3 (377)		Ounces (Grams)	

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

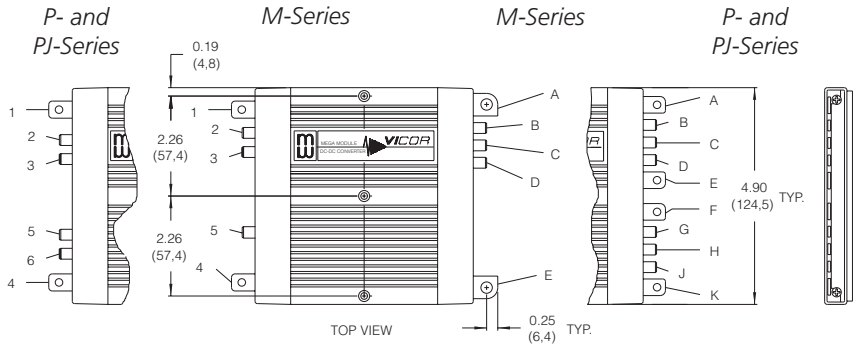
Outputs		
Output #1	Output #2	Output #3
A –Output	F –Output	L –Output
B –Sense*	G –Sense	M –Sense
C Trim*	H Trim	N Trim
D +Sense*	J +Sense	P +Sense
E +Output	K +Output	Q +Output

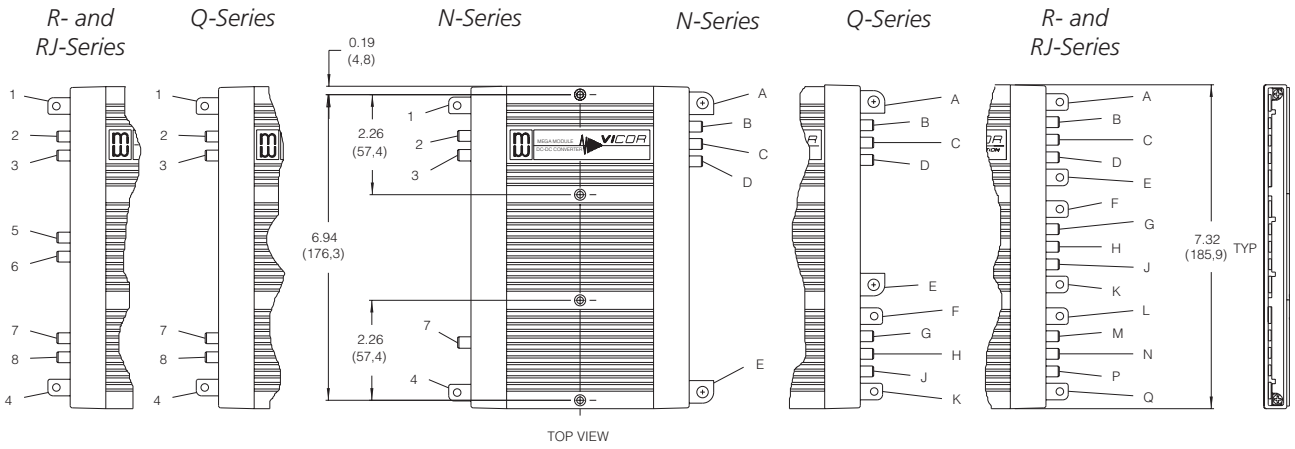
*For Units with BatMod
B-I_{MON}
C-I_{TRIM}
D-V_{TRIM}

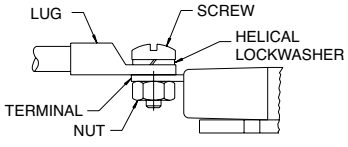


Mounting Information

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







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)
	Metal	1/4-20 UNC	65 in-lb (7.2 N-m)
Supervisory All models	Sized to accept AMP Faston® insulated receptacle #2-520184-2		

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