

Voltage Regulator Module

VRMP-91-12-40

Key Features

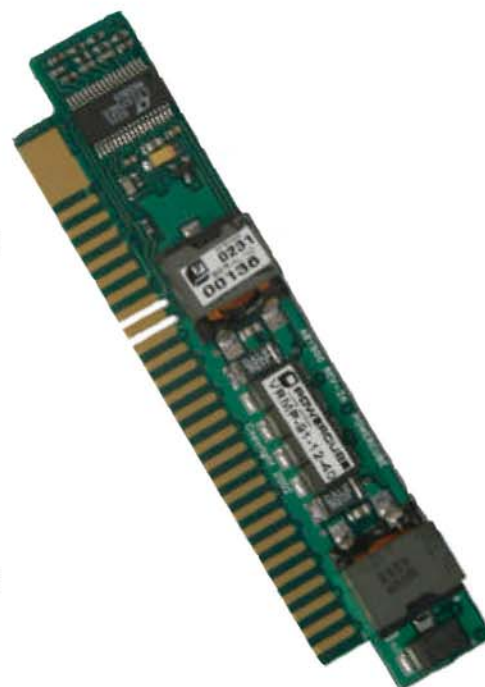
- Mobile VRM
- Low Profile 1U Form Factor, 0.865" Height
- 40A (Max) Output Current

KEY FEATURES IN COMPLIANCE WITH INTEL® 9.1 SPECIFICATION

- 12 V Input
- Parallelable / Current Sharing Capability
- Overcurrent and Short Circuit Protection
- Power Good Output Signal (Open Drain)
- Remote ON/OFF
- Dual Key Location (Compatible with VRM 9.1 or VRM 9.0 connector)

KEY FEATURES IN COMPLIANCE WITH INTEL® MOBILE VOLTAGE POSITIONING (IMVP)-III SPECIFICATION

- 5 Bit Mobile VID Programmable Output
- IMVP-III Loadline for VID = 1.3V (Performance Mode) and 1.2V (Battery Optimized Mode)
- Mating Connectors are Tyco 1264-1, 1489-1 or Equivalent



DESCRIPTION

The VRMP-91-12-40 is a DC/DC converter Voltage Regulator Module (VRM) specifically designed to meet the Intel® Mobile Voltage Positioning (IMVP) III loadline specification. This VRM converts a +12V supply voltage to a well regulated voltage required by the CPU.

Applications include Intel® Pentium 4 Processors and Intel® 845E chipset platforms.

SUMMARY TYPICAL CHARACTERISTICS

Input	11—12.60 VDC
Output	0.600—1.750 VDC
Efficiency	80%
Output Ripple	20 mV
Board Temperature	90° C (Max)
Switching Frequency	300 KHz
Output Overcurrent Protection	58A
Turn On Response Time	15 ms (Max)

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Specification		
Input	11-12.6 VDC	
Input di/dt	1 A/uS	Maximum
Idle Current	0.1 A	Maximum
Turn on time	15 mS	Maximum
Efficiency	80%	Minimum
Output	Table 1	
No Load (NL)	0 A	
Min Load (ML)	0.7 A	
Full Load (FL)	(VID=1.30V)	40 A
	(VID=1.20V)	25 A
Setpoint Accuracy	(VID=1.30V)	1.300 ±25 mV
	(VID=1.20V)	1.176 ±25 mV
Loadline Regulation	(VID=1.30V)	1.195V - 1.325V
	(VID=1.20V)	1.101V - 1.201V
Combined Regulation	(VID=1.30V)	1.175V - 1.345V
+ Transient Response	(VID=1.20V)	1.081V - 1.221V
(ML - FL)		
Turn On Overshoot	2%	Maximum
Size	3.80" x .865" x 0.40"	
Additional Features		
Output Overcurrent Protection	58 A	Maximum
Output Overvoltage Protection	VID+.25 V	Maximum
Remote Sense	0.055 V	
Powergood Signal	O.C. High = Ok	
Output Enable Signal	O.C. High = On	
Input Overcurrent Protection	10A Fuse	
Pin Out	Table 2	
Enviromental Requirements		
Operating Temperature:	0° - 50°C	
(400LFM Air@Connector Axis)		
Shock:	Non-Operational, 50g 11 mS Half Sine Wave	
Board Temperature:	Less than 90°C	
UL Recognized To Standard UL1950		

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TABLE 1. VOLTAGE IDENTIFICATION CODES

Processor Pins (0 = low, 1 = high)					V _{CC} (V)
VID4	VID3	VID2	VID1	VID0	
1	1	1	1	1	0.600
1	1	1	1	0	0.625
1	1	1	0	1	0.650
1	1	1	0	0	0.675
1	1	0	1	1	0.700
1	1	0	1	0	0.725
1	1	0	0	1	0.750
1	1	0	0	0	0.775
1	0	1	1	1	0.800
1	0	1	1	0	0.825
1	0	1	0	1	0.850
1	0	1	0	0	0.875
1	0	0	1	1	0.900
1	0	0	1	0	0.925
1	0	0	0	1	0.950
1	0	0	0	0	0.975
0	1	1	1	1	1.000
0	1	1	1	0	1.050
0	1	1	0	1	1.100
0	1	1	0	0	1.150
0	1	0	1	1	1.200
0	1	0	1	0	1.250
0	1	0	0	1	1.300
0	1	0	0	0	1.350
0	0	1	1	1	1.400
0	0	1	1	0	1.450
0	0	1	0	1	1.500
0	0	1	0	0	1.550
0	0	0	1	1	1.600
0	0	0	1	0	1.650
0	0	0	0	1	1.700
0	0	0	0	0	1.750

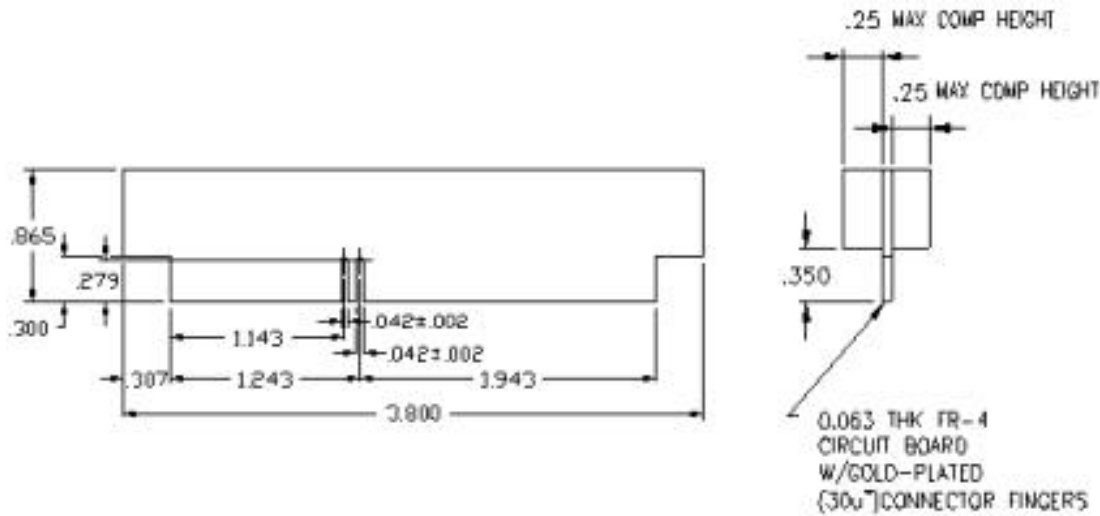
TABLE 2. PIN CONNECTIONS

PIN NO.	FUNCTION	PIN NO.	FUNCTION
1	VIN+	62	VIN-
2	VIN+	61	VIN-
3	VIN+	60	VIN-
4	VIN+	59	VIN-
5	Reserved	58	VRM-pres
6	Key	57	VID4
7	VID3	56	VID2
8	VID1	55	VID0
9	Reserved	54	Reserved
10	PWRGD	53	OUTEN
11	VO-sen-	52	VO-sen+
12	Reserved	51	Reserved
13	VO-	50	VO+
14	VO+	49	VO+
15	VO-	48	VO-
16	VO+	47	VO+
17	VO-	46	VO-
18	VO+	45	VO+
19	VO-	44	VO-
20	VO+	43	VO+
21	VO-	42	VO-
22	VO+	41	VO+
23	VO-	40	VO-
24	VO+	39	VO+
25	VO-	38	VO-
26	VO+	37	VO+
27	VO-	36	VO-
28	VO+	35	VO+
29	VO-	34	VO-
30	VO+	33	VO+
31	VO-	32	VO-

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MECHANICAL OUTLINE



OTHER POWERCUBE PRODUCTS

DC-DC Converters

"Half—Brick" Size (2.28"L x 2.4"W x .05"H)

- 25, 50, 75 100 and 150 Watts DC-to-DC Converters as direct replacement for the industry's most popular devices (**LPD150 Series**)
- 30 Amp (Max) High Efficiency (90%) DC/DC Converter with Standard Inputs of 48 and 24 volts and Standard Outputs from 1.5V to 28V. (**QED Series**)
- 25, 50, 75 , 100 and 150 Watts DC-to-DC Converters with four threaded holes for additional heatsinks, as well as versatile mounting (**TD Series**)

"Full-Brick Size (4.6"L x 2.4"W x 0.5"H)

- 300 Watts output, high density, DC-to-DC Converters (**PD301 Series**).

- 50 to 200 Watts (**LPD301**) employing an innovative topology and special integrated magnetics to reduce component count.
- 300 Watts DC-to-DC Converters with four threaded holes for additional heatsink, as well as versatile mounting (**TD300 Series**).

AC-DC Converters

- **Autoranging Universal Front-end Module (UFM500/UFM1K) 500/750 Watts & 1000/1500 Watts in a very small size (1.45" x 2.28" x 0.5").**



Specifications subject to change without notice
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