

FEATURES

- Meets AMD K8 requirements
- DAC Programmable output voltage
- Power good output
- Differential remote sense
- Remote enable
- Supervisory functions
 - Latch off overcurrent
 - Short circuit protection
- Tri-state output when disabled
- Dynamic VID capability

DESCRIPTION

VRK81B100TH is designed to meet the fast load transients required by AMD 64-bit processors and is fully compliant with the latest AMD64™ processor power specifications. In a horizontal-mount orientation with a max height of 0.415", VRK81B100TH's unique design and thermal packaging delivers 100A of power with efficiencies exceeding 86%. With its ultra low profile and high current rating, VRK81B100TH is an ideal fit for a wide variety of applications including 1U high, or under, rack-mounting equipment and blade servers.



SELECTION GUIDE				
Order Code	Input Voltage	Output Voltage	Output Current	Efficiency
	V (NOM.)	V	A	% (TYP.)
VRK81B100TH	12	0.8-1.55	100	86

INPUT CHARACTERISTICS					
Parameter	Conditions ¹	MIN.	TYP.	MAX.	Units
Input voltage operating range		11.04	12.0	12.6	V
Under voltage lockout	Turn-on threshold	6.7	7.1	7.5	
	Turn-off threshold	5.6	6.2	6.8	
	Hysteresis voltage	0.7	0.9	1.1	
Maximum input current	Typical: 100A, 1.4VID, V _{IN} = 12V		14		A
No-load input current	Enable state, no load	100	200	400	mA
Disabled input current	Disabled state	10	20	50	
Enable - positive logic	On state range	0.8		5	V
	Off state range	-0.3		0.4	
Powergood signal	Active high, pullup required			5.5	

OUTPUT CHARACTERISTICS					
Parameter	Conditions ¹	MIN.	TYP.	MAX.	Units
Voltage set point	5-Bit DAC controlled	0.800		1.55	V
Line regulation		-5	0	5	mV
Load regulation			0.5		mΩ
Voltage total regulation DC		VID-50mV		VID+50mV	V
Voltage total regulation AC		VID-100mV		VID+100mV	V
Ripple & noise ²	20MHz bandwidth, using recommended output capacitors		8.4		mVp-p
Current operating range	Based on air flow of 500LFM at 45°C	0		100	A
Efficiency	I _o = 100 Amps VID = 1.550V	83	86		%
Turn-on time	V _{IN} present: enable to 90% V _{OUT}			50	mS
Recommended bulk output capacitance	560μF, 4V alum poly		8		EA
	10μF, 1206 X7R ceramic		25		EA

GENERAL CHARACTERISTICS					
Parameter	Conditions ¹	MIN.	TYP.	MAX.	Units
Semiconductor junction temperature	Package rated to 150°C			115	°C
Material flammability	UL 94V-0				
MTBF	Calculated (RAC PRISM)		1.09		x10 ⁶ Hrs
Switching frequency	Per phase		300		KHz

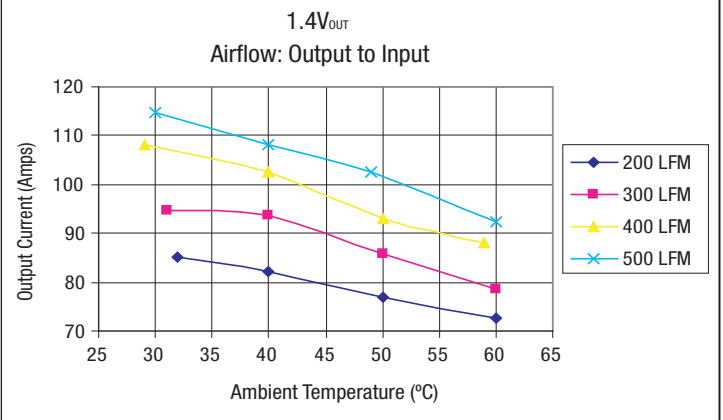
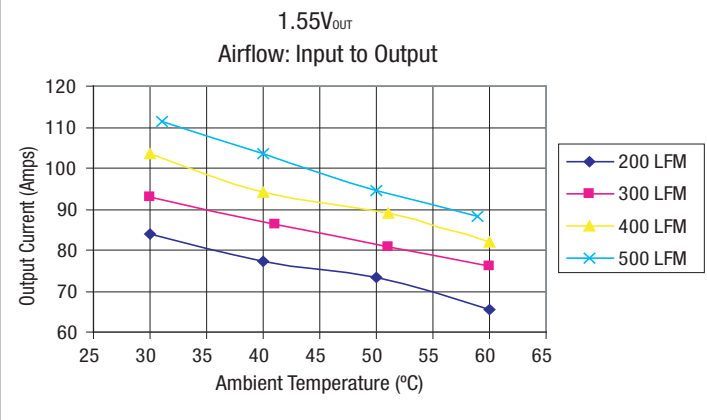
TEMPERATURE CHARACTERISTICS					
Parameter	Conditions ¹	MIN.	TYP.	MAX.	Units
Storage temperature range	Non-condensing	-40		70	°C
Operating temperature range	See thermal derating graph	0		60	

PROTECTION CHARACTERISTICS					
Parameter	Conditions ¹	MIN.	TYP.	MAX.	Units
Output overcurrent shutdown	Latching	105		150	A
Overvoltage shutdown	V _{OUT}		2.2		V

1. V_{IN} = 12VDC, T_A = 25°C, Airflow = 400LFM unless otherwise noted.

2. Output ripple voltage is specified when measured with recommended capacitance at the output of the converter.

THERMAL DERATING GRAPHS



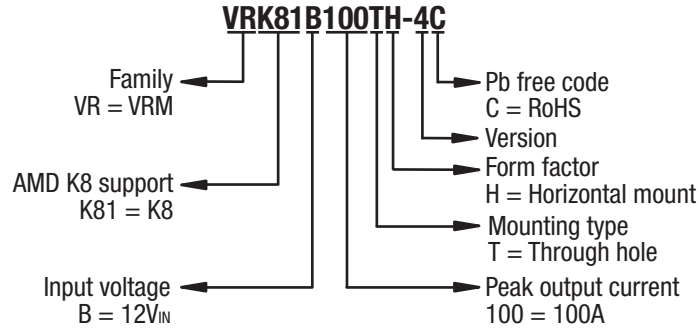
RECOMMENDED INTERCONNECT

The module should be soldered in place. The power interconnect is made by 10 pins that are .060 inches in diameter. The signal interconnect is made by 12 pins that are .020 inch square on a 2mm grid. See the recommended footprint or dimensions.

VID CODES

VID4	VID3	VID2	VID1	VID0	V _{OUT}
0	0	0	0	0	1.550
0	0	0	0	1	1.525
0	0	0	1	0	1.500
0	0	0	1	1	1.475
0	0	1	0	0	1.450
0	0	1	0	1	1.425
0	0	1	1	0	1.400
0	0	1	1	1	1.375
0	1	0	0	0	1.350
0	1	0	0	1	1.325
0	1	0	1	0	1.300
0	1	0	1	1	1.275
0	1	1	0	0	1.250
0	1	1	0	1	1.225
0	1	1	1	0	1.200
0	1	1	1	1	1.175
1	0	0	0	0	1.150
1	0	0	0	1	1.125
1	0	0	1	0	1.100
1	0	0	1	1	1.075
1	0	1	0	0	1.050
1	0	1	0	1	1.025
1	0	1	1	0	1.000
1	0	1	1	1	0.975
1	1	0	0	0	0.950
1	1	0	0	1	0.925
1	1	0	1	0	0.900
1	1	0	1	1	0.875
1	1	1	0	0	0.850
1	1	1	0	1	0.825
1	1	1	1	0	0.800
1	1	1	1	1	Shutdown

PART NUMBER CODING



PACKAGE SPECIFICATIONS

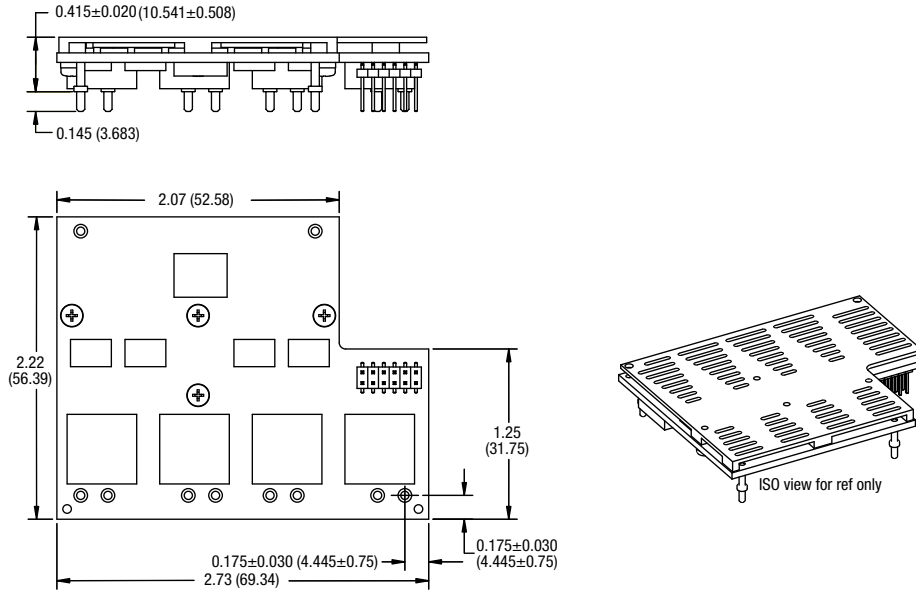
PIN ASSIGNMENT

Pin	Signal	Pin	Signal
P1	+12V _{IN}	J1	NC
P2	+12V _{IN}	J2	VID0
P3	GND	J3	VID1
P4	V _{DD}	J4	VID2
P5	V _{DD}	J5	VID3
P6	GND	J6	VID4
P7	GND	J7	COREFB_L/REMOTE SENSE-
P8	V _{DD}	J8	COREFB_H/REMOTE SENSE+
P9	V _{DD}	J9	Enable
P10	GND	J10	PWRGD
		J11	-VRMPRES
		J12	NC

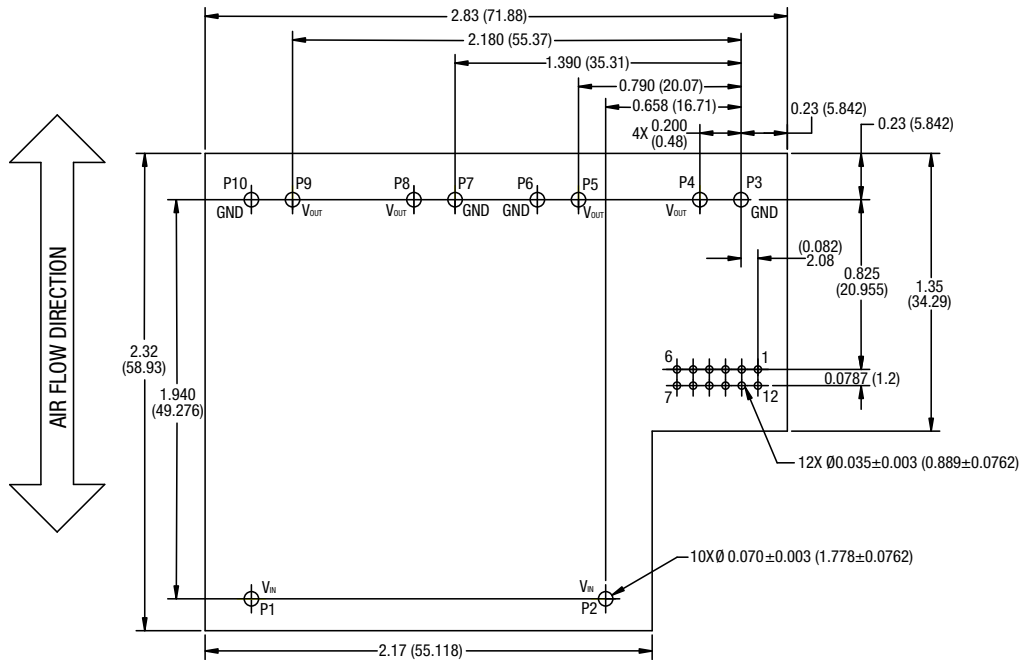
PACKAGE SPECIFICATIONS (continued)

MECHANICAL DIMENSIONS

Overall VRM Dimensions



VRM Footprint



All dimensions in inches ±0.03 (mm ±0.25mm).

Weight: 1.9oz (53.865g)