VRK81B080CS

Programmable, 80A Single Output DC/DC Converter

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
- SMBus temperature monitor

DESCRIPTION

VRK81B080CS 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. High efficiency of 85% at full load for reduced power dissipation to simplify system thermal management. Packaged in a compact design, VRK81B080CU is ideal for use in a wide variety of server applications.

RoHS COMPLIANT 2002/95/EC

SELECTION GUIDE

Order Code	Input Voltage	Output Voltage	Output Current	Efficiency
	V (NOM.)	V	A	% (TYP.)
VRK81B080CS	12	0.8-1.55	80	85

INPUT CHARACTERISTICS

Parameter	Conditions[1]	MIN.	TYP.	MAX.	Units
Input voltage operating range		10.2	12.0	13.2	V
Under voltage lockout	Turn-on threshold	6.5	6.9	7.3	V
	Turn-off threshold	5.4	6.0	6.6	V
	Hysteresis voltage	0.7	0.9	1.1	V
Maximum input current	Typical: 80A, 1.4VID, V_{IN} = 12V		11		A
	Max: 80A, 1.55VID, V_{IN} = 12V			13	A
No-load input current	Enable state, no load	100	200	400	mA
Disabled input current	Disabled state	10	20	50	mA
Enable - positive logic	On state range	0.8		5	V
	Off state range	-0.3		0.4	V

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	5.0	mV
Load regulation			0.6		mΩ
Voltage total regulation DC		VID-50mV		VID+50mV	V
Ripple & noise[2]	20MHz bandwidth, using recommended output capacitors		8.4		mVp-p
Current operating range		0		80	A
Efficiency	I_O = 80A, VID = 1.325V	83	85		%
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 150ºC			115	ºC
Material flammability	UL 94V-0				ºC
MTBF	Calculated (RAC PRISM)		1.303		x10^6 Hrs
Switching frequency	Per phase		300		KHz

TEMPERATURE CHARACTERISTICS

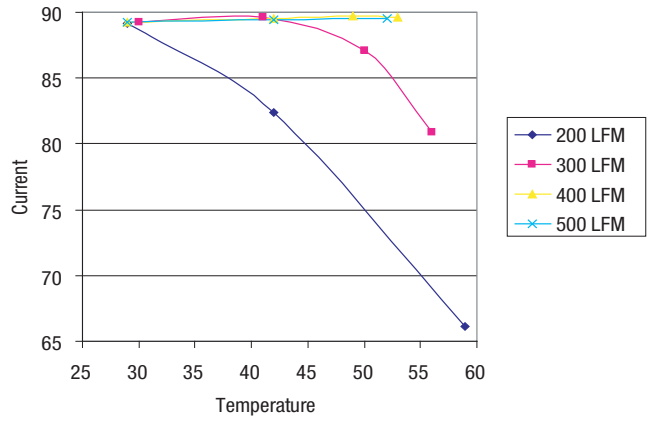
Parameter	Conditions[1]	MIN.	TYP.	MAX.	Units
Storage temperature range	Non-condensing	-40		70	ºC
Operating temperature range	See derating graph	0		60	ºC

PROTECTION CHARACTERISTICS

Parameter	Conditions[1]	MIN.	TYP.	MAX.	Units
Output overcurrent shutdown	Latching	85		120	A
Overvoltage Indication, CBOUT	V_{OUT}		2.1		V

1. V_{IN} = 12VDC, T_A = 25ºC, Airflow = 400LFM unless otherwise noted.
2. Output ripple voltage is specified when measured with recommended capacitance at the output of the converter.

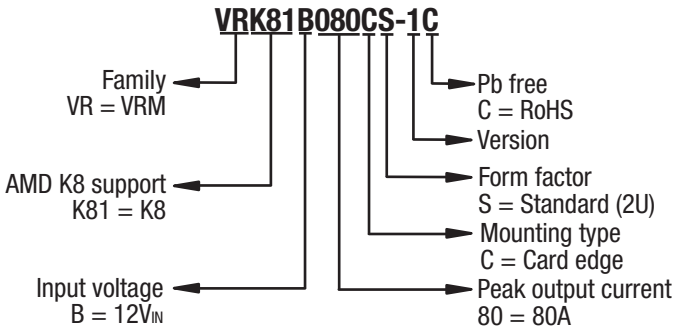
THERMAL DERATING GRAPH



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

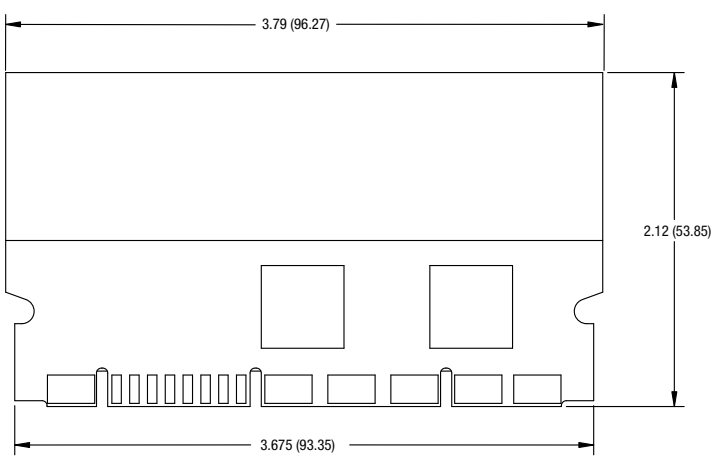
PIN ASSIGNMENT

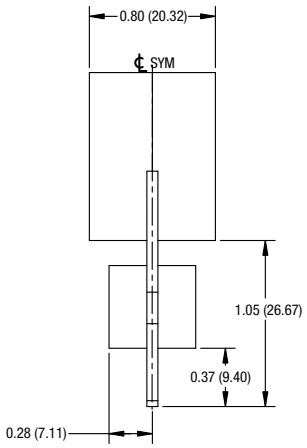
Pin	Signal	Pin	Signal
1	GND	54	+12VIN
2	GND	53	+12VIN
3	GND	52	+12VIN
4	VID4	51	VID3
5	VID2	50	VID1
6	VID0	49	NC
7	COREFB_H	48	CORERB_L
8	PWRGD	47	CBOUT
9	ENABLE	46[1]	ADD 0
10[1]	SmDA	45[1]	ADD 1
11[1]	SMCL	44	VRMPRES_L
12	SGND	43	+5V ALWAYS
13	VDD CORE+	42	VDD CORE+
14	VDD CORE+	41	VDD CORE+
15	VDD CORE+	40	VDD CORE+
16	GND	39	GND
17	GND	38	GND
18	GND	37	GND
19	VDD CORE+	36	VDD CORE+
20	VDD CORE+	35	VDD CORE+
21	VDD CORE+	34	VDD CORE+
22	VDD CORE+	33	VDD CORE+
23	VDD CORE+	32	VDD CORE+
24	VDD CORE+	31	VDD CORE+
25	GND	30	GND
26	GND	29	GND
27	GND	28	GND

1. Optional features. Substitute “NC” if option is not ordered.

PACKAGE SPECIFICATIONS (continued)

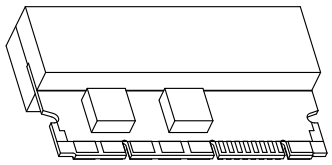
MECHANICAL DIMENSIONS





Recommended Interface Connector Options

Typco/Elcon	283-0172-01303 (Solder Tail, Long)
	283-0172-02303 (Solder Tail, Short)
	284-0202-03003 (Surface Mount)



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

Weight: 2.08oz (59g)

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