



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

VRK81B100CS 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, VRK81B100CS is ideal for use in a wide variety of server applications.

This product is a direct replacement for VRK81B080CS.

SELECTION GUIDE

Order Code	Input Voltage	Output Voltage	Output Current	Efficiency
	V (NOM.)	V	A	% (Typ.)
VRK81B100CS-1C	12	0.8-1.55	100	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	
	Turn-off threshold	5.4	6.0	6.6	
	Hysteresis voltage	0.7	0.9	1.1	
Maximum input current	Typical: 80A, 1.4VID, VIN = 12V		11		A
	Max: 80A, 1.55VID, VIN = 12V			13	
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	

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		100	A
Efficiency	IO = 100A, VID = 1.325V	82	84		%
	IO = 80A, VID = 1.325V	83	85		
Turn-on time	VIN present: enable to 90% VOUT			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)		1.303		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	°C
Operating temperature range	See derating graph	0		60	

PROTECTION CHARACTERISTICS

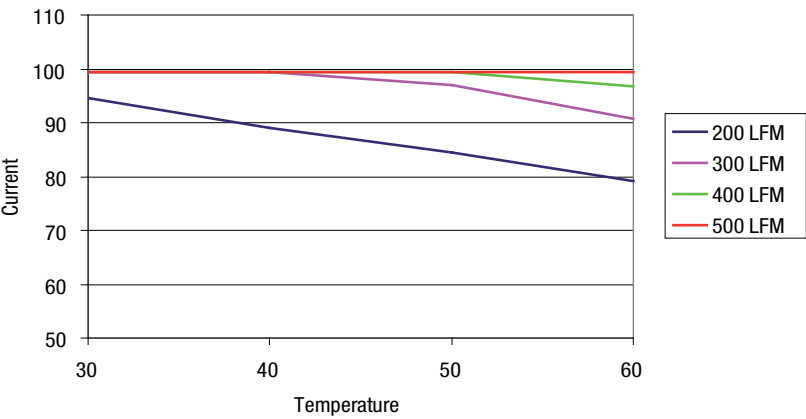
Parameter	Conditions ¹	Min.	Typ.	Max.	Units
Output overcurrent shutdown	Latching	115		120	A
Overvoltage Indication, CBOUT	VOUT		2.1		V

1. VIN = 12VDC, TA = 25°C, Airflow = 400LFM unless otherwise noted.

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



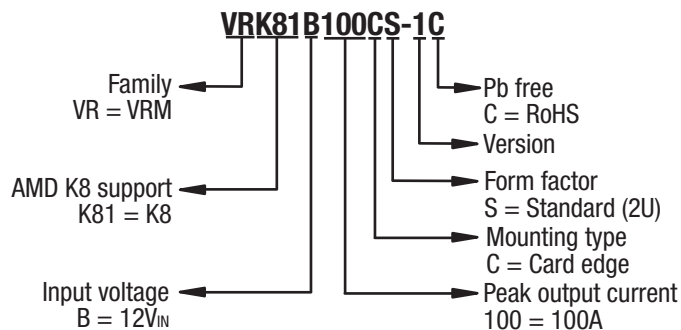
THERMAL DERATING GRAPH



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



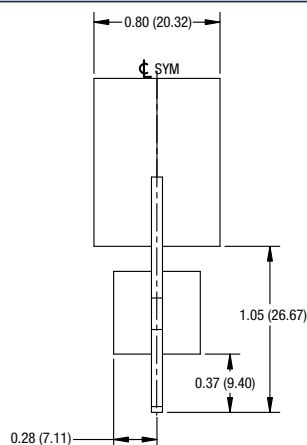
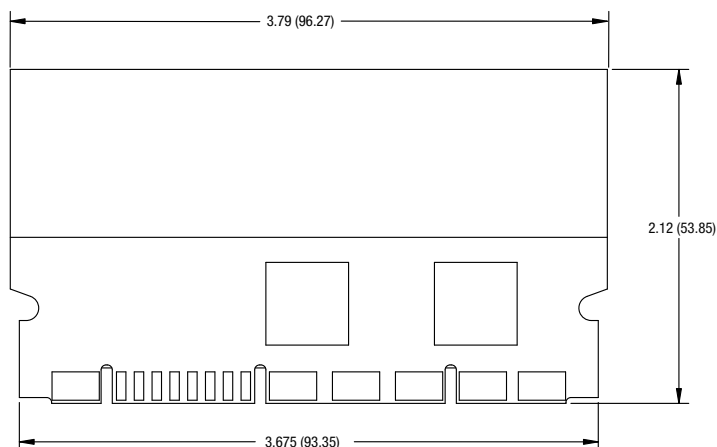
PACKAGE SPECIFICATIONS

PIN ASSIGNMENT			
Pin	Signal	Pin	Signal
1	GND	54	+12V _{IN}
2	GND	53	+12V _{IN}
3	GND	52	+12V _{IN}
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	SMC _L	44	VRMPRES_L
12	SGND	43	+5V ALWAYS
13	V _{DD} CORE+	42	V _{DD} CORE+
14	V _{DD} CORE+	41	V _{DD} CORE+
15	V _{DD} CORE+	40	V _{DD} CORE+
16	GND	39	GND
17	GND	38	GND
18	GND	37	GND
19	V _{DD} CORE+	36	V _{DD} CORE+
20	V _{DD} CORE+	35	V _{DD} CORE+
21	V _{DD} CORE+	34	V _{DD} CORE+
22	V _{DD} CORE+	33	V _{DD} CORE+
23	V _{DD} CORE+	32	V _{DD} CORE+
24	V _{DD} CORE+	31	V _{DD} CORE+
25	GND	30	GND
26	GND	29	GND
27	GND	28	GND

1. Optional features. Substitute "NC" if option is not ordered.

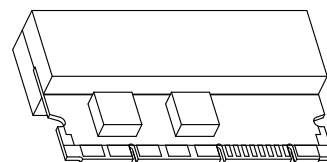
PACKAGE SPECIFICATIONS (continued)

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 ± 0.25 mm).

Weight: 2.08oz (59g)