



SELECTION GUIDE

OBSOLETE PRODUCT

Contact Factory for Replacement Model

| Order Code | Input Voltage (V _{IN}) | Output Voltage (V _{OUT}) | Output Current (A) | Efficiency (%) |
|-------------|----------------------------------|------------------------------------|--------------------|----------------|
| VRK81B080CU | 12 | 0.800-1.55 | 80 | 85 |

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
- 1U Form factor (1.200" total mating height)
- SMBus temperature monitor

DESCRIPTION

VRK81B080CU 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. Packaged in a compact design, VRK81B080CU has a height only 1.16" (1.2" total mating height), and is ideal for 1U server applications. High efficiency of 85% at full load for reduced power dissipation to simplify system thermal management.



| 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, V _{IN} = 12V Max: 80A, 1.55VID, V _{IN} = 12V | | 11 | 13 | 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 | |

INPUT CHARACTERISTICS

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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 = 1.4V | 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 150°C | | | 115 | °C |
| Material flammability | UL 94V-0 | | | | |
| MTBF | Calculated (RAC PRISM) | | 1.303 | | x10 ⁶ Hrs |
| Switching frequency | Per phase | | 300 | | KHz |

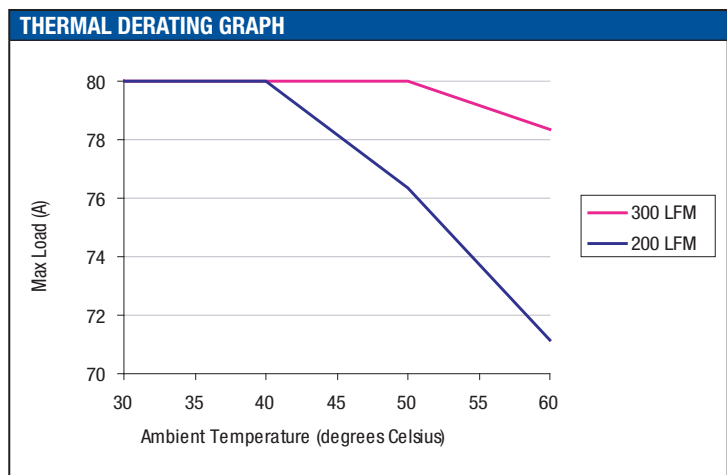
TEMPERATURE CHARACTERISTICS

| 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

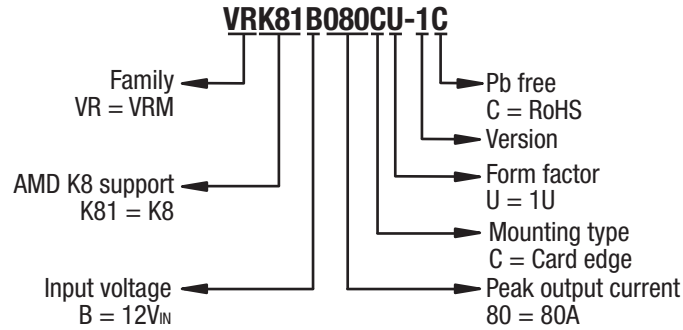
| Parameter | Conditions ¹ | MIN. | TYP. | MAX. | Units |
|-------------------------------|-------------------------|------|------|------|-------|
| Output overcurrent shutdown | Latching | 85 | | 120 | A |
| Overvoltage Indication, CBOUT | V _{OUT} | | 2.1 | | V |

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.



| 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



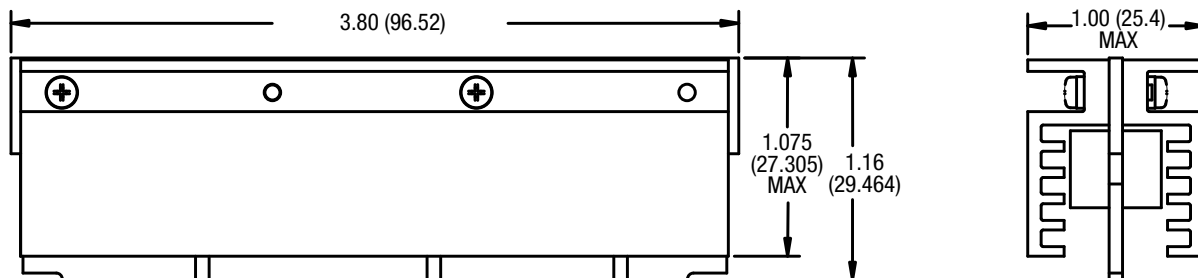
PACKAGE SPECIFICATIONS

| 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 | CBOOT | |
| 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 | V _{DD} | 42 | V _{DD} | |
| 14 | V _{DD} | 41 | V _{DD} | |
| 15 | V _{DD} | 40 | V _{DD} | |
| 16 | GND | 39 | GND | |
| 17 | GND | 38 | GND | |
| 18 | GND | 37 | GND | |
| 19 | V _{DD} | 36 | V _{DD} | |
| 20 | V _{DD} | 35 | V _{DD} | |
| 21 | V _{DD} | 34 | V _{DD} | |
| 22 | V _{DD} | 33 | V _{DD} | |
| 23 | V _{DD} | 32 | V _{DD} | |
| 24 | V _{DD} | 31 | V _{DD} | |
| 25 | GND | 30 | GND | |
| 26 | GND | 29 | GND | |
| 27 | GND | 28 | GND | |

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

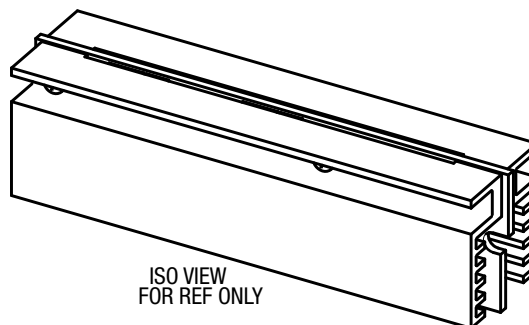
PACKAGE SPECIFICATIONS (continued)

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)