

**Features**

- Meets VRM 10.1 and 10.2 Requirements
- DAC Programmable Output Voltage
- Power Good Output
- Differential Remote Sense
- Remote Enable
- Supervisory Functions
  - Output Overcurrent
  - Short Circuit Protection
  - Overtemperature Indicator
  - Output Current Level Signal
- Tri-state Output when Disabled
- Dynamic VID Capability
- 1U Form Factor (1.250" total mating height)
- LL0 / LL1 Function



**Table 1:**

Input Characteristics	Notes and Conditions (1)	Min	Typ	Max	Units
Input Voltage Operating Range		11.04	12.0	12.60	Vdc
Input Undervoltage Lockout	Turn-on Threshold	6.5	6.9	7.3	Vdc
	Turn-off Threshold	5.4	6.0	6.6	Vdc
	Hysteresis Voltage	0.7	0.9	1.1	Vdc
Maximum Input Current VRM 10.1 Levels	Typical: 105A 1.325VID Max: 120A 1.6VID		13	18	A
Maximum Input Current VRM 10.2 Levels	Typical: 130A 1.325VID Max: 150A 1.6VID		15.3	21	A
No-Load Input Current	Enable state, no Load	200	320	400	mA
Disabled Input Current	Disabled State	20	30	50	mA
Enable - Positive Logic Version	On State Range	0.8		Vin	Vdc
	Off State Range	-0.3		0.4	Vdc
LL0 and LL1	High State Range	0.8		3.5	Vdc
	Low State Range	-0.3		0.4	Vdc

**Table 2:**

Output Characteristics	Notes and Conditions (1)	Min	Typ	Max	Units
Output Voltage Set Point	6-Bit DAC Controlled	0.8375		1.600	Vdc
Output Line Regulation		-5	0	5	mV
Output Load Regulation	Adjustable	0.91		1.25	mΩ
Output Voltage Total Regulation				VID-40	mV
Output Ripple Voltage & Noise (2)	20 MHz Bandwidth		6.4		mVp-p
Output Current Operating Range		0		150	A
Efficiency for 10.1 TDP	Io = 105 Amps VID = 1.325	86	87		%
Efficiency for 10.2 TDP	Io = 130 Amps VID = 1.325	84	85.5		%

**Table 2:**

Output Characteristics	Notes and Conditions (1)	Min	Typ	Max	Units
Turn-on Time	Vin present: Enable to 90% Vout			50	mS
Transient Response (3)	100A step, 100A/μS, ΔVo, Adjustable	81		135	mV
Remote Sense Compensation Range (4)				300	mV
Recommended Bulk Output Capacitance for 10.1 Applications	UCC 4PS560MH11 or equivalent		14		EA
Recommended Bulk Output Capacitance for 10.2 Applications	UCC 4PS560MH11 or equivalent		16		EA

**Table 3:**

Protection Characteristics	Notes and Conditions (1)	Min	Typ	Max	Units
Output Overcurrent Shutdown	Latching	155		210	A
Overvoltage Shutdown	Latching, Above VID	90		200	mV
Overtemperature Indicator	Non-Latching, at hot spots Worst case junction temperature		125		°C
Load Indicator	VID = 1.325, 0 A Load, LL1 = 1 VID = 1.325, 100 A Load, LL1 = 1 VID = 1.325, 0A Load, LL1 = 0 VID = 1.325, 100A Load, LL1 = 0		1 3 1 3.75		V

**Table 4:**

General Characteristics	Notes and Conditions (1)	Min	Typ	Max	Units
Storage Temperature Range	Non-condensing	-40		70	°C
Operating Temperature Range		0		60	°C
Semiconductor Junction Temperature	Package rated to 150°C			115	°C
Material Flammability	UL 94V-0				
MTBF	Calculated (RAC PRISM) 45°C		0.93		x10 <sup>6</sup> Hrs
	Demonstrated				x10 <sup>6</sup> Hrs
Switching Frequency	Per phase		300		KHz
Dimensions	3.8"L x 1.18"H x 1.0"W				
Weight			59		g

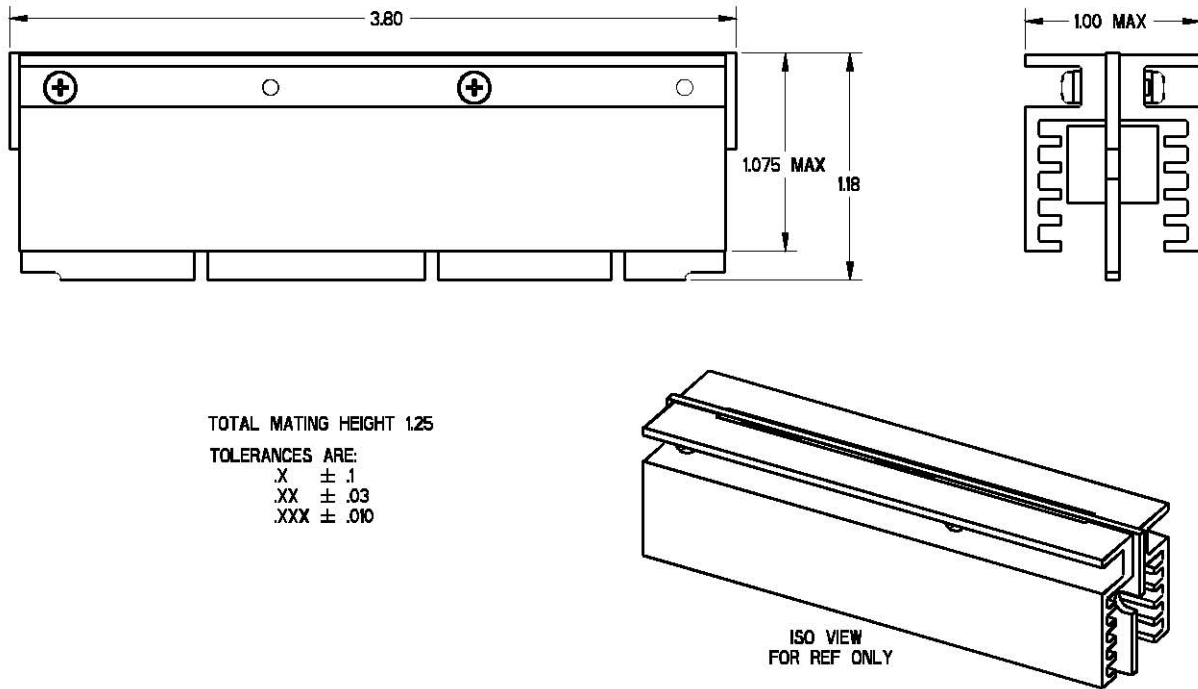
**Table 5:**

Adaptive Voltage Positioning	Notes and Conditions (1)	Min	Typ	Max	Units
Voltage Droop for 100A Load (linear)	LL0 = X, LL1 = 0 LL0 = X, LL1 = 1		125 91		mV

**Notes:**

1. Vin = 12Vdc, Ta = 25°C, Airflow = 400LFM unless otherwise noted.
2. Output Ripple Voltage is specified when measured with Intel specified capacitance at the output of the converter.
3. Transient response is specified with Intel specified capacitors at the output of the converter.
4. If remote sense is not required or used, the Sense(+) and Sense(-) pins must be connected to Vo(+) and Vo(-) respectively.
5. User will select the appropriate Load Line through the LL0 and LL1 signals. LL0 and LL1 signals are TTL compatible. The default state is a 1.25mOhm Load Line.
6. VRM\_PRES and VRM\_ID are connected to Vss on the VRM.

**Mechanical Information**

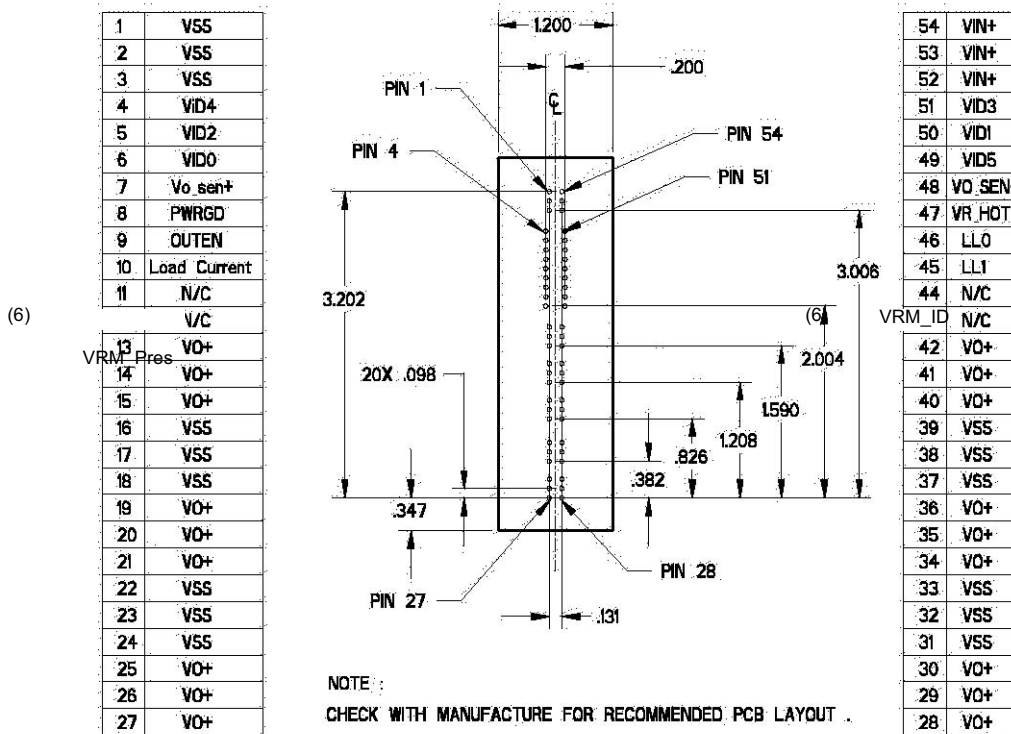


**Figure 1**

**Recommended Interface Connector Options**

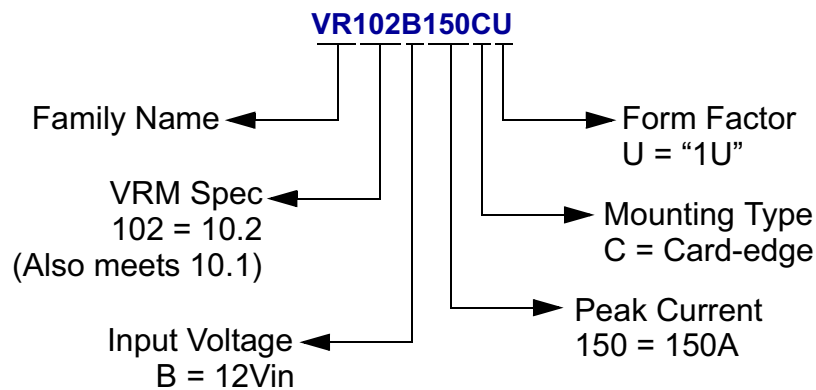
- |            |                                     |
|------------|-------------------------------------|
| Tyco/Elcon | 283-0172-01303 (Solder Tail, Long)  |
|            | 283-0172-02303 (Solder Tail, Short) |
|            | 284-0202-03003 (Surface Mount)      |

**Pin Assignment**



**Figure 2**

**Ordering Information**



Model# VR10150CU is backwards compatible to Model# VR101B120CU (no longer available).

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