Murata Power Solutions

DC/DC Converter

Programmable, Single Output, 0.8375V - 1.600Vout @ 80A

VR100B080CU-2C

NOT RECOMMENDED FOR NEW DESIGNS

Features

- Vout Range = 0.8375 to 1.6V per VRM10 VID Range
- 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
- 90% Efficiency at Full Load



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
Recommended Input Capacitance	Sanyo 16SP270M		2		each
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		80	A
Efficiency	Io = 70 Amps VID = 1.325	87	90		%
Turn-on Time	Vin present: Enable to 90% Vout			50	mS
Transient Response (3) Overshoot Recovery within 25µSec	46A step, 500A/µS			50	mV

Table 2:

Output Characteristics	Notes and Conditions (1)	Min	Typ	Max	Units
Remote Sense Compensation Range (4)				300	mV
Recommended Bulk Output Capacitance	UCC 4PS560MH11 or Panasonic EEFSDOD471R		10		EA

Table 3:

Protection Characteristics	Notes and Conditions (1)	Min	Typ	Max	Units
Output Overcurrent Shutdown	Latching	83		120	A
Overvoltage Shutdown	Above VID	90		200	mV
Overtemperature Indicator	Non-Latching, at hot spots Worst case junction temperature		125		°C
Load Indicator	VID = 1.325, 0A Load, LL1 = 1 VID = 1.325, 100A Load, LL1 = 1		1 3		V V
	VID = 1.325, 0A Load, LL1 = 0 VID = 1.325, 100A Load, LL1 = 0		1 3.75		V V

Table 4:

General Characteristics	Notes and Conditions (1)	Min	Typ	Max	Units
Storage Temperature Range	Non-condensing	-40		70	°C
Operating Ambient Temperature Range (7)		0		65	°C
Semiconductor Junction Temperature	Package rated to 150°C			110	°C
Material Flammability	UL 94V-0				
MTBF	Calculated (RAC PRISM) @ 45°C		0.93		$x10^6$ Hrs
Switching Frequency	Per phase		300		KHz
Dimensions	3.8”L x 1.18”H x 0.475”W				
Weight			30		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.
7. During operation within Thermal Derating Curve boundaries.

Mechanical Information

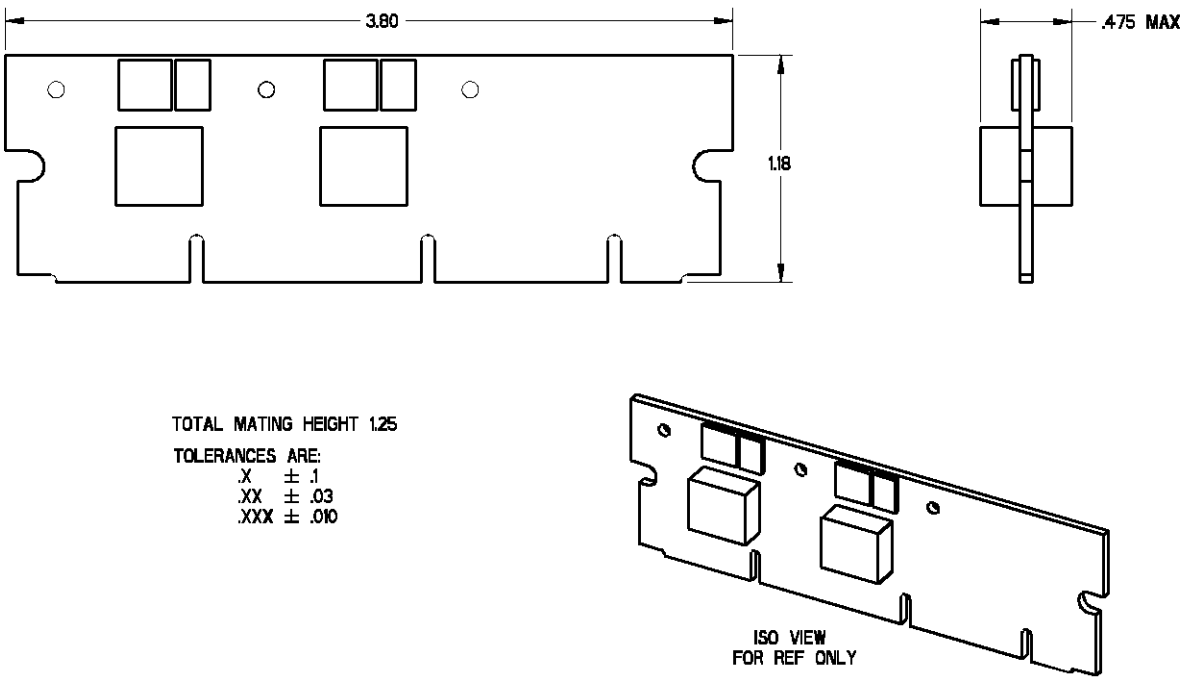


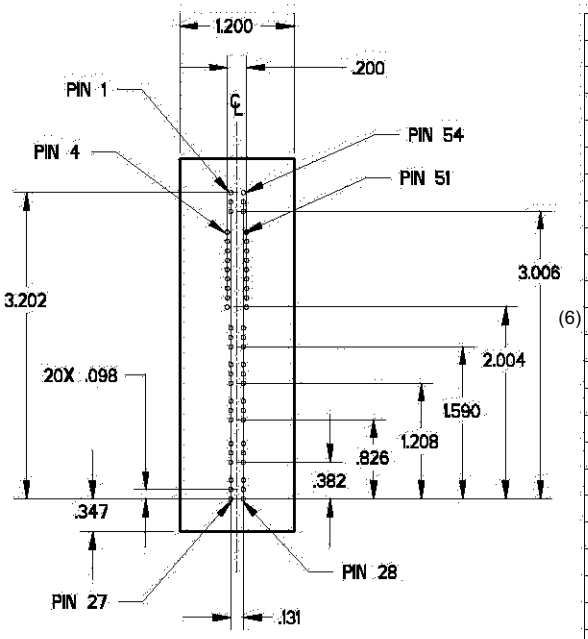
Figure 1

Recommended Interface Connector Options

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

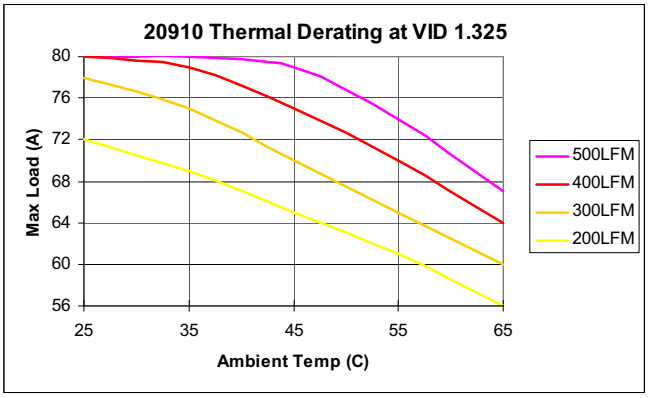
Pin Assignment

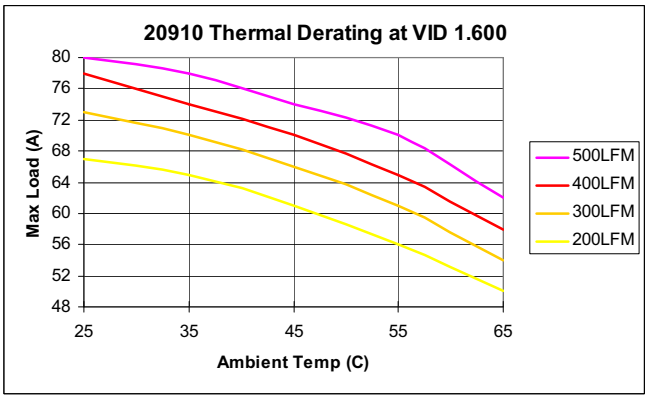
	1	VSS
	2	VSS
	3	VSS
	4	VID4
	5	VID2
	6	VID0
	7	Vo_sen+
	8	PWRGD
	9	OUTEN
	10	Load_Current
	11	N/C
(6)	12	VRM_Pres
	13	VO+
	14	VO+
	15	VO+
	16	VSS
	17	VSS
	18	VSS
	19	VO+
	20	VO+
	21	VO+
	22	VSS
	23	VSS
	24	VSS
	25	VO+
	26	VO+
	27	VO+



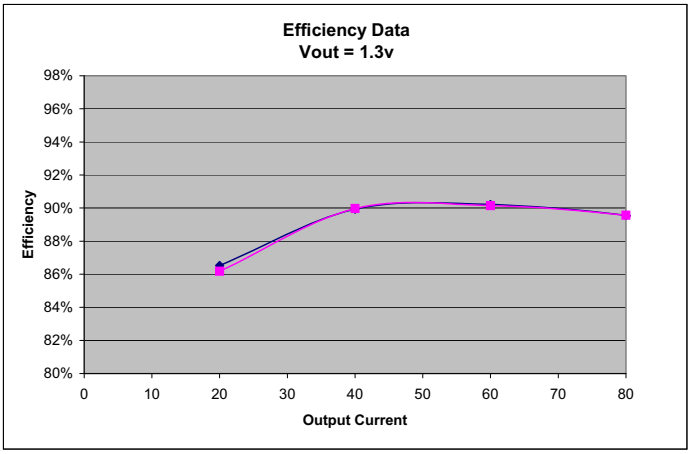
	54	VIN+
	53	VIN+
	52	VIN+
	51	VID3
	50	VID1
	49	VID5
	48	VO_SEN-
	47	VR_HOT
	46	LL0
	45	LL1
	44	N/C
(6)	43	N/C
	42	VO+
	41	VO+
	40	VO+
	39	VSS
	38	VSS
	37	VSS
	36	VO+
	35	VO+
	34	VO+
	33	VSS
	32	VSS
	31	VSS
	30	VO+
	29	VO+
	28	VO+

Thermal Derating Curves

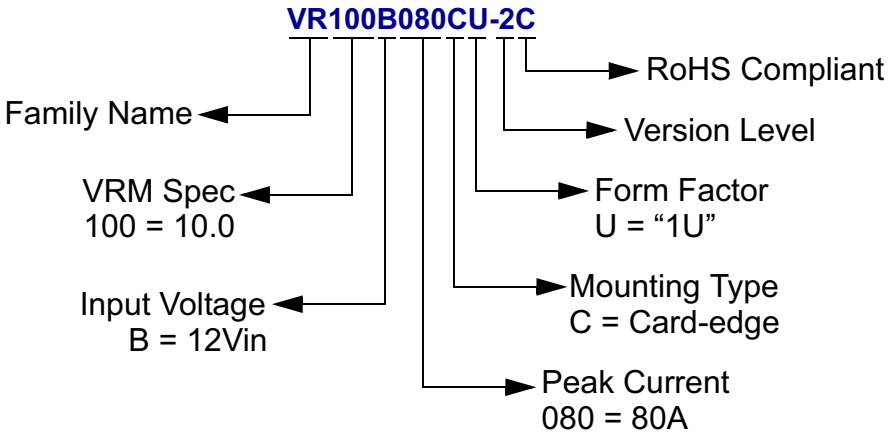




Efficiency Curve



Ordering Information



RoHS Compliancy

The VR100B080CU-2C is in compliance with the European Union Directive 2002/95/EC (RoHS) with respect to the following substances: lead (Pb), cadmium (Cd), mercury (Hg), hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE).

Process Note

This product is not intended to go through a reflow solder process. See recommended interface connector options.

Murata Power Solutions

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01/19/09

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