

VSX75MD35

75 Watt Dual Output Quarter Brick DC/DC Converter



- 3.3V & 5.0V Dual Output
- 2.3" x 1.5" x 0.5"
- 90% Efficiency
- Low Output Noise
- Input Filtering
- Remote On/Off, Input Side
- Output Voltage Trim, +/-10%
- Fixed Frequency Operation
- -40°C to +100°C Baseplate Temp.
- Output Current Limit, Self-Start
- 1,500 Vdc Isolation, Input to Output
- UL/CUL 1950, EN60 950
- 36-75 Vdc Input Models
- Continuous Short Circuit Protection
- Non-latching Protection:
 - Input Undervoltage
 - Input Overvoltage
 - Output Overvoltage
 - Overtemperature
- Output Voltage Tracking at Turn-on and Turn-off
- No Minimum Load Current

APPLICATIONS

- Distributed Power Architectures
- Workstations
- EDP Equipment
- Telecommunications

OPTIONS

- Choice of Remote On/Off Logic Configuration
- Heatsink Available for Extended Operation

ADDITIONAL INFORMATION

- See Application Note DCAN-40 at www.cdpowerelectronics.com

The VSX75 Series are 75 Watt, compact, high-efficiency, high-density dual output converters with a 36-75V input and with 3.3Vdc and 5.0Vdc outputs. The industry quarter-pack size of 2.3" x 1.5" x 0.5" coupled with 90% efficiency is an industry high-density breakthrough.

These converters utilize V Series high density technology. This technology has been featured in our highly efficient VKP and VKA Series now successfully in use worldwide. The very high 90%

efficiency minimizes the requirement for heat-sinking and the low output ripple minimizes the need for additional filtering. For maximum flexibility, power can be traded between outputs as required. The VSX75 Series feature virtually all of the options required by design engineers but not at the competition's typical additional price for each option. This multitude of features are standard on the VSX75 Series.

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MIN	MAX	UNIT
Input Voltage: VSX75MD35	V_i		100	Vdc
I/O Isolation Voltage			1500	Vdc
I/P to case			1500	Vdc
O/P to case			200	Vdc
Operating Case Temperature	T	-40	100	°C

SPECIFICATIONS, ALL MODELS

Specifications are at $T_{CASE} = +40^{\circ}C$ nominal input voltage unless otherwise specified.

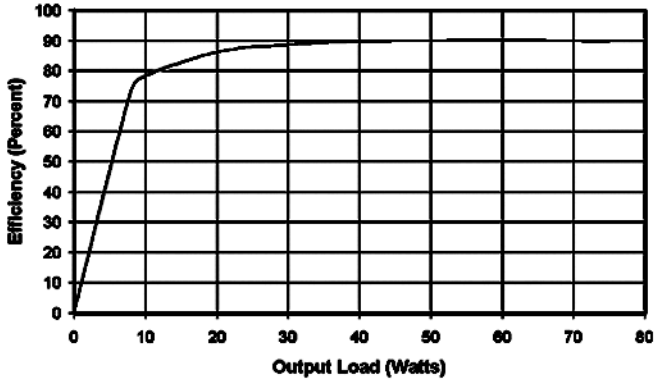
INPUT	PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	
	INPUT						
	Voltage Range		36	48	75	VDC	
	Input Reflected Ripple Current	Peak - Peak			500	mA	
	Maximum Input Current	$V_{in} = 30V, P_{out} 75W$			3	A	
	No Load Input Current				60	mA	
	On/Off Activated Input Current				25	mA	
	Input Undervoltage Lockout						
	Turn On		30	33	36	VDC	
	Turn Off		27	30	33	VDC	
Input Overvoltage Lockout							
Turn Off		76	80	84	VDC		
Turn On		74.5	78.5	82.5	VDC		

OUTPUT Under any conditions, the voltage of V1 will always be greater or equal to that of V2.	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
	Output Power				75	Watts
	Output Efficiency	$I_{o1}=11.5A, I_{o2}=7.5A$	89			%
	Set Point Voltage					
	V1 (3.3V)	$I_{o1}=11.5A$	3.26	3.30	3.34	VDC
	V2 (5.0V)	$I_{o2}=7.5A$	4.96	5.02	5.08	VDC
	Output Current	Total Module Output Power Should Not Exceed 75 Watts				
	V1 (3.3V)		0		23	A
	V2 (5.0V)		0		15	A
	Output Ripple And Noise Voltage	100 MHz BW				
	V1 (3.3V)				60	mV _{P-P}
	V2 (5.30V)				80	mV _{P-P}
	Output Adjust Range	Both Outputs Will Adjust at the Same Time and by the Same %	-8		+10	%
	Output Temperature Drift		.	0.02	0.05	% / $^{\circ}C$
	Line Regulation	$V_{IN} = 36$ to 75 $I_1=11.5A, I_2=7.5A$		0.10	0.20	%
	Load Regulation					
	V1 (3.3V)	$I_1 = 0$ to $23A, I_2=0A$			3.0	% of Nom
	V2 (5.0V)	$I_1=0A, I_2=0$ to $15A$			2.5	% of Nom
	Load Cross Regulation					
	V1 (3.3V)	$I_1 = 0A, I_2=0$ to $15A$			1.0	% of Nom
	V2 (5.0V)	$I_1=0$ to $23A, I_2=0A$			5.0	% of Nom
	Output Current Limit Inception					
	V1 (3.3V)		24	27	30	A
	V2 (5.0V)		16	18	20	A
	Short Circuit Current					
	V1 (3.0V)		22	25	30	A
	V2 (5.0V)		15	18	20	A
	Output Overvoltage Set Point (Non-latching independent control loop)					
	V1 (3.3V)		3.8	4.0	4.3	VDC
	V2 (5.0V)		5.85	6.1	6.35	VDC
Transient Response						
Settling Time	$(\Delta I_o/\Delta t=0.2A/\mu sec$ either output) Load change of 40% of I_o max at any operating load up to I_o max and P_o max			100	μsec	
Peak Deviation				4	%	
Switching Frequency			330		KHz	

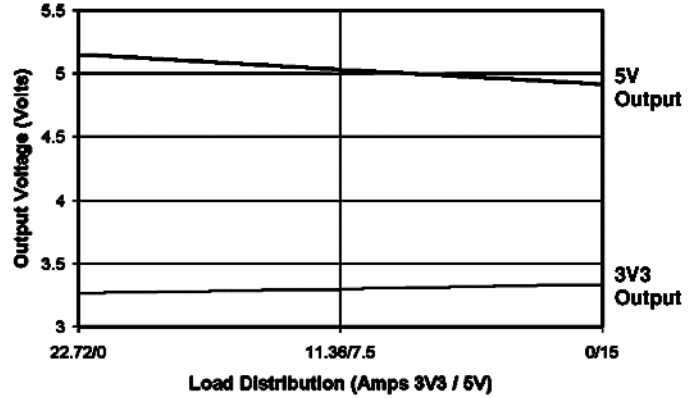
	PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	
GENERAL	ISOLATION SPECIFICATIONS						
	Input to Output		1500			V _{DC}	
	Input to Case		1500			V _{DC}	
	Output to Case		200			V _{DC}	
	Resistance Input to Output		10			MΩ	
	Capacitance Input to Output			1000		pF	
	Leakage Current	V _{ISO} = 240V _{AC} , 60Hz			90		μA, rms
	FEATURE SPECIFICATIONS						
	Remote On/Off (open collector equivalent, signal referenced to -V _{IN} terminal)						
	VSX75MD35 Preferred Logic (negative) Logic Low – Module On Logic High – Module Off						
	VSX75MD35-1 Optional Logic (Positive) Logic Low – Module Off Logic High – Module On						
		Von/off Low	0			0.4	V _{DC}
		Von/off High	2			Open Collector	V _{DC}
		Ion/off				200	μA
	Turn On Time						
	From Application of V _{IN}	(V _O within 1% of			7	10	mSecs
	From Remote On/Off Activation	steady state)			3	4	mSecs
	Weight						
	VSX75MD35, VSX75MD35-1				67		Grams
	VSX75MD35-U, VSX75MD35-1U				44		Grams
	TEMPERATURE						
	Operation /Specification	Case	-40			+100	°C
	Storage	Case	-55			+125	°C
Shutdown	Case	+105		+115	+125	°C	
Shutdown (Hysteresis)				10		°C	
Thermal Impedance (Case to Ambient)	Free Air			12.2		°C/Watt	

GRAPHS

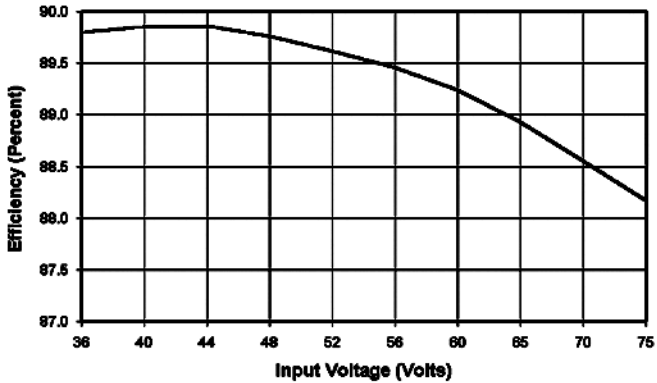
EFFICIENCY VS. OUTPUT LOAD



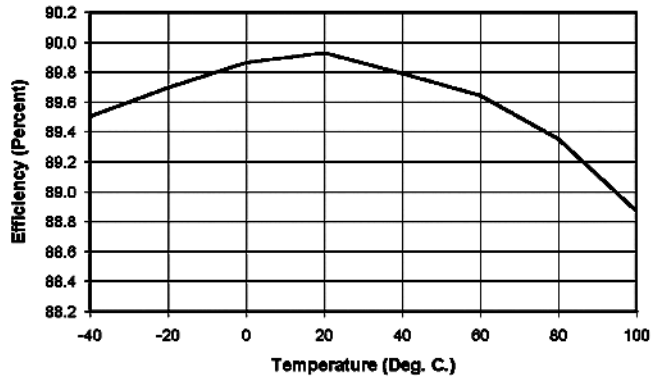
LOAD REGULATION VS. LOAD DISTRIBUTION



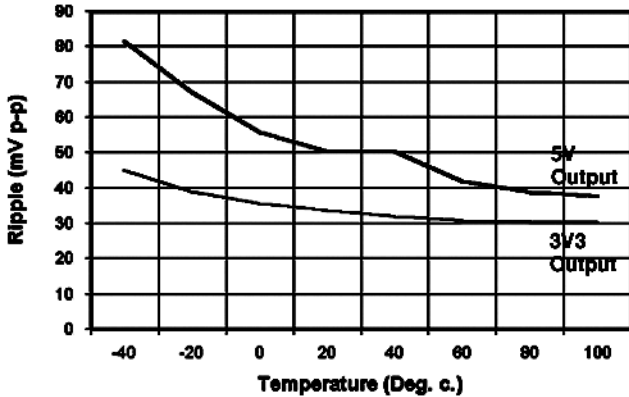
EFFICIENCY VS. INPUT VOLTAGE



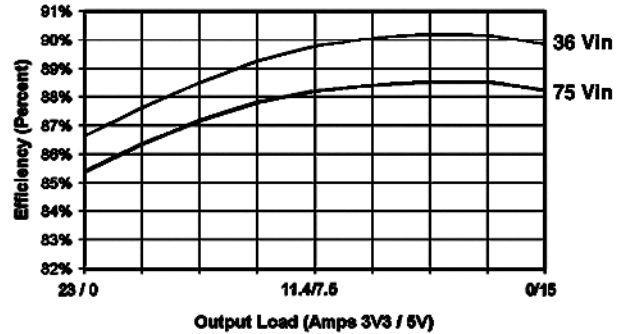
EFFICIENCY VS. BASEPLATE TEMPERATURE



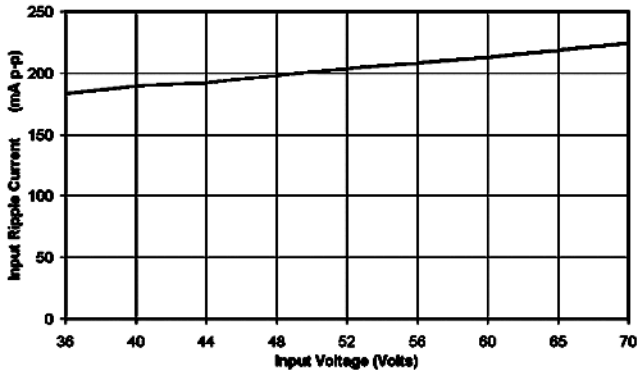
OUTPUT VOLTAGE RIPPLE VS. TEMPERATURE AT FULL LOAD



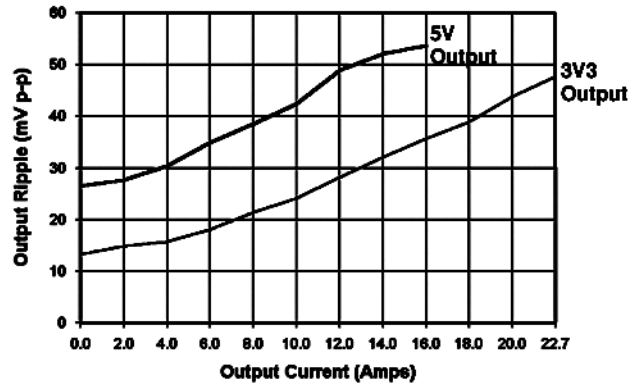
FULL LOAD EFFICIENCY VS. LOAD DISTRIBUTION



REFLECTED RIPPLE VS. INPUT VOLTAGE



OUTPUT RIPPLE VS. LOAD

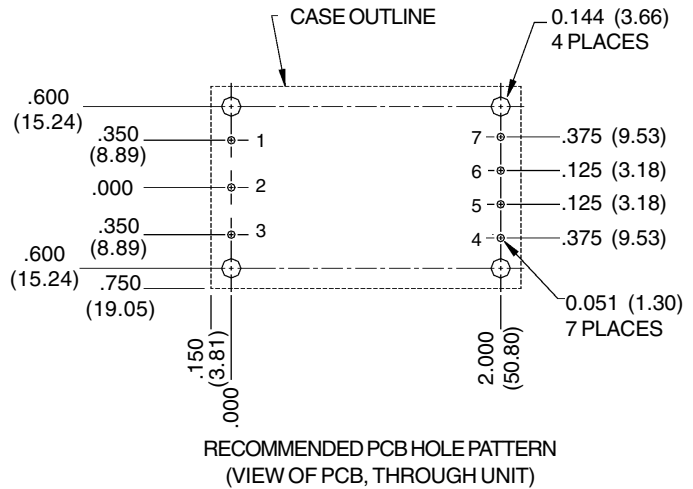
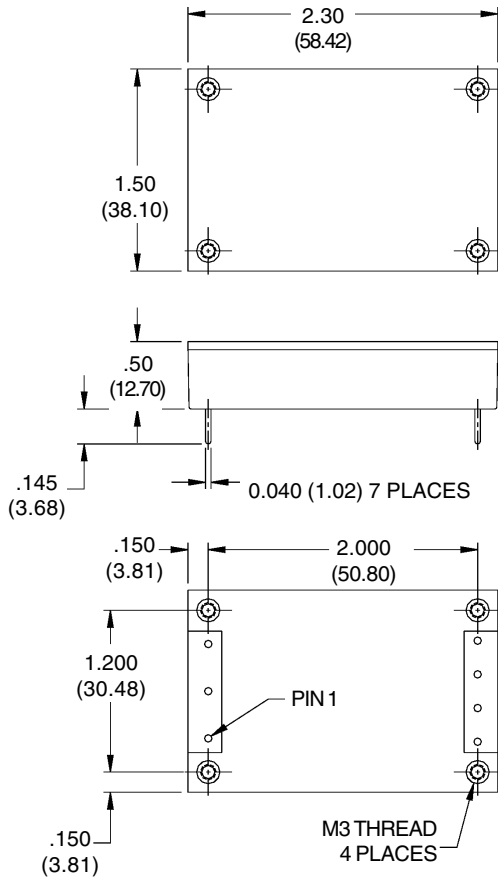


MECHANICAL

Dimensions are in inches (millimeters).

Tolerances: x.xx in. \pm 0.02 in.

x.xxx in. \pm 0.01 in.



Pinout Key	
1	+Vin
2	On/Off
3	-Vin
4	+3.3 Vout
5	O/P RTN
6	Trim
7	+5.0 Vout

NOTES:

1. Marked with: specific model ordered, date code, job code.
2. MATERIAL: Units are encapsulated in a low thermal resistance molding compound which has excellent chemical resistance and electrical properties in high humidity environments and over a wide operating temperature range. The encapsulant and outer shell of the unit have UL94V-0 ratings. Lead material is solder plated to allow ease of solderability.
3. IMPORTANT: When utilizing the PEM nuts for board mounting, it is required to follow guidelines in application note DCAN-40 available on the web at www.cdpowerelectronics.com.

ORDERING INFORMATION

To Find Model Number

Device Family _____ VSX75MD35 - 1 U

VSX75MD35 (Quarter Brick, 75 Watt DC/DC)

Logic: No Number = Preferred Logic (Negative); _____

1 = Optional Logic (Positive)

Package _____

No Letter = Encapsulated; U = Unencapsulated

Model Numbers

VSX75MD35
VSX75MD35-U
VSX75MD35-1
VSX75MD35-1U

Power Electronics Division, United States
3400 E Britannia Drive, Tucson, Arizona 85706
Tel: 800.547.2537 Fax: 520.295.4160

C&D Technologies, (NCL)
Milton Keynes MK14 5BU UK
Tel: +44 (0)1908 615232 Fax: +44 (0)1908 617545

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