V_D-40W Series

Features

- Operating temperature: -40 to +85℃
- 9-18/18-36/36-75Vdc wide input
- 5/9/12/15/24/±5/±9/±12/±15Vdc output
- Efficiency up to 90%
- Ultra low noise & ripple
- EMC meet EN55022 Class B
- Remote voltage compensation design
- Six-sided continuous shield
- Over-heat protection, output short circuit protection, over-voltage protection, over-current protection
- RoHS/CE/ISO multiple compliance
- With 3 years warranty

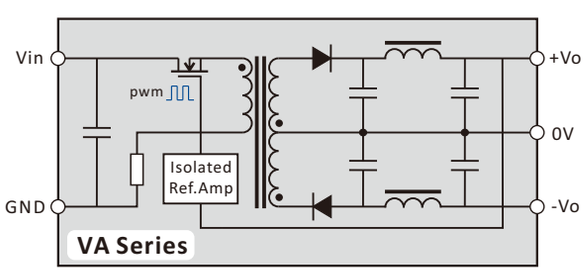
General Description

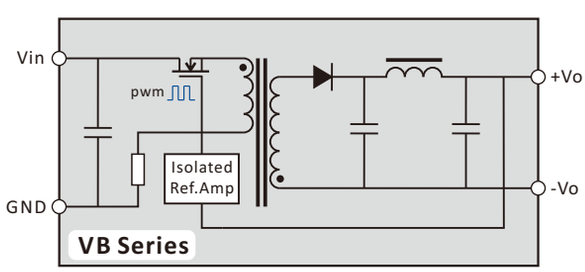
V_D-40W series has advantages of wide input voltage range, small start current, good load characteristic, and low ripple. Ceramic chip capacitors and SMT used in the series. The product has characteristics of long lifetime, good performance and high reliability. The series product makes an ideal solution in industrial control system, data transmission device, communication device, battery driver, industrial robots, remote control system, Analog / digital hybrid system, etc.

RoHS

EMI | 1500 Vdc | High Power Density | SCP OCP OVP | 4:1 2:1

Functional Diagram





EMC Solution-Recommended Circuit

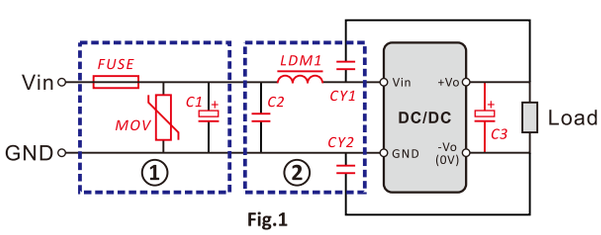


Fig.1

Notes:
Part ① in the Fig.1 is used for EMS test and part ② for EMI filtering; selected based on needs.

Parameter Description			
Model	Vin:12V	Vin:24V	Vin:48V
FUSE	Choose according to actual input current		
MOV	S14K17	S14K35	S14K60
C1	680uF/25V	470uF/50V	330uF/100V
C2	1uF/25V	1uF/50V	1uF/100V
LDM1	4.7uH		
CY1/CY2	1nF/2kV or 4.5kV		
C3	Refer to the Cout in Fig.3		

・All specifications are subject to change without notice

V_D-40W Series

40w, wide input, isolated & regulated dual & single output dc-dc converter

Input Specifications

Item		Min	Typ	Max	Units
Input Impulse Voltage (1 sec max)	12V input models	-0.7		20	Vdc
	24V input models	-0.7		40	
	48V input models	-0.7		80	
Startup Voltage	12V input models			9	
	24V input models			18	
	48V input models			36	
REM Pin	module switch ON	3.5～12Vdc or Open			
	module switch OFF	0～1.2Vdc or Gnd			
	input current @ off			1	mA
Startup Current @ 100% load, nominal input		<1.6 lin-max.			
Input Filter		"LC" filter			
Input Polarity Protection		Unavailable			

Output Specifications

Item		Test Conditions	Min	Typ	Max	Units
Output Power		Operating temp curve range	4		40	W
Line Regulation		100% load, input low to high		±0.1	±0.3	%
Load Regulation		10-100% load, nominal input		±0.1	±0.3	
Output Voltage Accuracy	Master	100% load, nominal input		±1	±3	
	Slave			±3	±5	
Balance of Vout		Dual output, balance load		±0.8	±2	
Transient Recovery Time		25% load step change		200	500	uS
Overshoot Rate				±3	±5	%
Ripple & Noise		DC-20MHz bandwidth		150	300	mVp-p
Temperature Drift		100% load, nominal input		±0.02		%/℃
Output Adjustment Range		input low to high	-10%Vo		+10%Vo	Vdc
Over-current Protection			120-190%Po			
Over-voltage Protection			110-160%Vo			
Short Circuit Protection			Continuous, Self-Recovery			
Output Filter			"∏" filter			

Common Specification

Item	Test Conditions	Min	Typ	Max	Units
Switching Frequency			330		kHz
Operating Temperature	More see on derating cruve	-45		+85	℃
Case Temperature	100% load, nominal input			+105	
Lead Temperature	1.5mm from case for 10 seconds			+300	
Overheat Protection			150		
Storage Temperature		-50		+125	
Storage Humidity				95	%
MTBF	Using MIL-HDBK 217 @ 25℃	1000			k hours
Hot Plug		Unavailable			
Case Material		Aluminium Alloy			

Isolation Specifications

Item	Test Conditions	Min	Typ	Max	Units
Isolation Voltage	Tested for 60S and 1mA max	1500			Vdc
Insulation Resistance	Test at 500Vdc	1000			MΩ
Isolation Capacitance	IN-OUT, 100kHz @ 0.1Vdc		1000		pF

Application Note

1. Application for TRIM

The output voltage can be adjusted by TRIM pin worked as following Fig.2. There is internal structure of the product in the red block. The external resistor RT connected to 0V or +Vo terminal can achieve higher or lower output voltage. The maximum amplitude of adjustment is ±10%Vo.

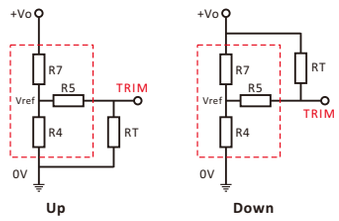
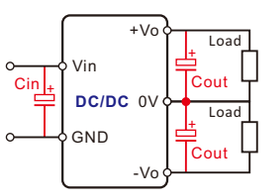


Fig.2

2. Typical Application Circuit

This series of products has tested according to Fig.3 before delivery (but no external Cin and Cout capacitors).



Vin	Cin
12V	220uF
24V	100uF
48V	10-47uF
Cout=10uF	

Fig.3

In general, the module satisfies performance requirement in this datasheet without the Cout.

Increased Cin and Cout appropriately or used lower ESR capacitor, if you want to further reduce the input and output ripple.

Note: The Cout can not be exceed the maximum capacitive load on Model List to prevent startup failed.

3. EMC solution

The series products have a very good ripple and noise performance so that bare module meet the EN55022 Class A. Used the EMC solution shown in Fig.1 can meet the EN55022 Class B (see Fig.1).

4. On derating

When the environmental temperature exceeds a certain value, the module should be derating used according to the Fig.4

Temperature Derating Curve

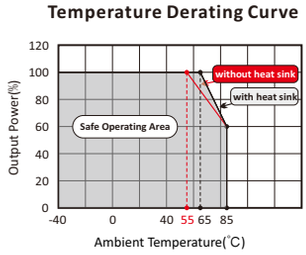


Fig.4

5. The series product cannot be used in parallel.

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VA_D-40W & VB_D-40W Series

40w, wide input, isolated & regulated dual & single output dc-dc converter

Product Program

Certificate	Model	Eff (%)	Input		Output				Drawing	Order Station
			Voltage(Vdc)		Voltage(Vdc)	Current(mA)		Max Capacitive Load (uF)		
			Nominal	Range	Nominal	Max	Min			
RoHS	**VA1205D-40W**	84	12	9-18	±5	±4000	±400	2200	Fig.5	ok
	VA1209D-40W	85			±9	±2222	±222	1500		ok
	VA1212D-40W	86			±12	±1667	±166	1000		ok
	VA1215D-40W	86			±15	±1333	±133	1000		ok
RoHS	**PVA2405D-40W**	85	24	18-36 (9-36)	±5	±4000	±400	2200	Fig.5	ok
	PVA2409D-40W	86			±9	±2222	±222	1500		ok
	PVA2412D-40W	87			±12	±1667	±166	1000		ok
	PVA2415D-40W	88			±15	±1333	±133	1000		ok
RoHS	**PVA4805D-40W**	85	48	36-75 (18-75)	±5	±4000	±400	2200	Fig.5	ok
	PVA4809D-40W	86			±9	±2222	±222	1500		ok
	PVA4812D-40W	89			±12	±1667	±166	1000		ok
	PVA4815D-40W	89			±15	±1333	±133	1000		ok
RoHS	**VB1205D-40W**	85	12	9-18	5	8000	800	4700	Fig.5	ok
	VB1209D-40W	86			9	4444	444	3300		ok
	VB1212D-40W	86			12	3333	333	2200		ok
	VB1215D-40W	88			15	2667	266	1500		ok
	VB1224D-40W	86			24	1667	166	470		ok
RoHS	**PVB2405D-40W**	86	24	18-36 (9-36)	5	8000	800	4700	Fig.5	ok
	PVB2409D-40W	86			9	4444	444	3300		ok
	PVB2412D-40W	90			12	3333	333	2200		ok
	PVB2415D-40W	90			15	2667	266	1500		ok
	PVB2424D-40W	88			24	1667	166	470		ok
RoHS	**PVB4805D-40W**	88	48	36-75 (18-75)	5	8000	800	4700	Fig.5	ok
	PVB4809D-40W	89			9	4444	444	3300		ok
	PVB4812D-40W	89			12	3333	333	2200		ok
	PVB4815D-40W	89			15	2667	266	1500		ok
	PVB4824D-40W	88			24	1667	166	470		ok

Note: The prefix "P" for 4:1 input range

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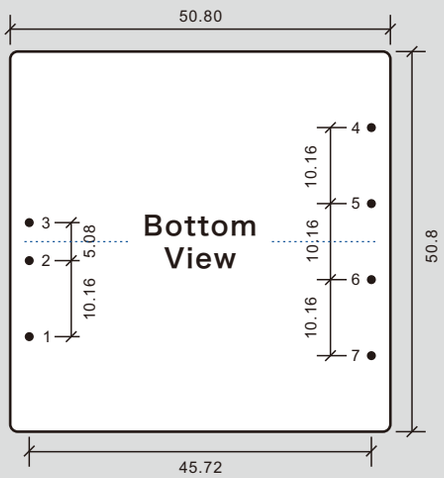
Dimensions

First Angle Proj



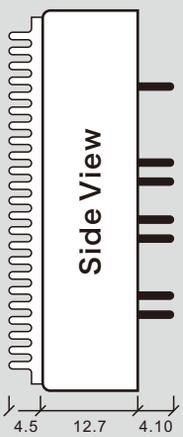


Fig.5

Pin	Single	Dual
1	**REM**	**REM**
2	**GND**	**GND**
3	**Vin**	**Vin**
4	**no Pin**	**+Vo**
5	**+Vo**	**0V**
6	**0V**	**-Vo**
7	**TRIM**	**TRIM**

Note:
All size units **mm**,
Diameter of all terminal 1.0mm;
Isolation: 1500Vdc
Weight: 60g/85g (with heat sink)
The heat sink is optional

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File Release Notes

DBN-409 Technical Data Sheet Version

No.	Version	Data	Description
1	V0	2011/11/01	First release
2	A/0	2016/07/01	Fixed some wrong, and change datasheet document version
3			
4			
5			

1. All data in addition to particular things, are Ta = 25℃, humidity<75%, nominal input voltage and output measured at rated load;
2. Non-standard models with some of the following indicators may be different from the specific circumstances of the Secretary to direct contact with me;
3. In the use of this manual, if some of them do not quite understand terms please refer to our <<DC/DC Converter Application Guide>>;
4. The Company focused on technological improvements, product specifications and parameter updates without notice, to pay attention to the latest information on website.

All Delus Corporation's products are manufactured, assembled and tested utilizing ISO9001 quality systems.
For information regarding Delus Corporation and its products please see website: www.delus-power.com

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