

0,5AMP, Wide Input Non Isolated Switching Regulator Series DV78-05-OFV3



Features

- Wide Input Range
- Single Positive/Negative Output, Regulated
- High Efficiency up to 95%
- SIP3 open frame
- Operating Temperature Range -40°C to +85°C
- Compatible with LM78 Linears
- meet UL60950
- Output short circuit protection
- No need for Heatsink

MODEL NUMBER	INPUT VOLTAGE NOMINAL [VDC]	INPUT VOLTAGE [VDC]	OUTPUT VOLTAGE [VDC]	OUTPUT CURRENT MAX. [mA]	EFFICIENCY [%]		CAPACITIVE LOAD MAX. [μ F]	OPEN FRAME
					MIN. Vin	MAX. Vin		
DV7803-05-OFV3	24	4,75 – 36	3,3	500	86	80	680	SIP3
DV7805-05-OFV3	24	6,5 – 36	5,0	500	90	84	680	
	12	7 – 31	-5,0	-300	80	81	330	
DV7812-05-OFV3	24	15 – 36	12	500	94	92	680	
	12	8 – 24	-12	-150	84	85	330	
DV7815-05-OFV3	24	19 – 36	15	500	95	93	680	
	12	8 – 21	-15	-150	85	87	330	

Note: For input voltage higher than 30 VDC, a 22 μ F/50V input capacitor is required.

INPUT SPECIFICATIONS:

Input Voltage Range.....	See Table
No-Load Input Current.....	1,5mA max.
Input Filter.....	Capacitive Filter

OUTPUT SPECIFICATION:

Output Voltage Accuracy	full load, other Outputs	±3 % max.
	3,3 Vout.....	±4 % max.
Line Regulation (Input Voltage Range)	full load.....	±0,4 % max.
Load Regulation (Nominal Input)	10% - 100% load.....	±0,6 % max.
Ripple & Noise, 20MHz BW (Note 2)		75 mVp-p max.
Short Circuit Protection.....		Continuous, automatic recovery
Switching Frequency		550 KHz min. / 850 KHz max.
Temperature Drift	-40°C to +85°C.....	0,03 %/°C max.

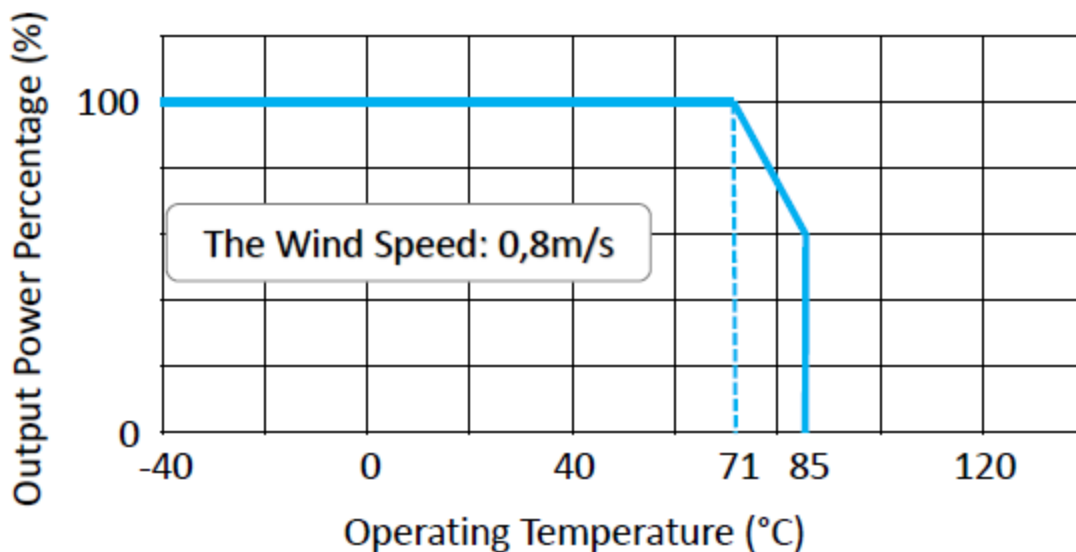
GENERAL SPECIFICATIONS:

Operating Temperature Range.....	-40°C to +85°C	
Derating, above	71°C (see derating curve)	
Efficiency.....	See Table	
Storage Temperature Range	-55°C to +125°C	
Cooling.....	Free Air Convection	
Pin Welding Resistance Temperature.....	(Welding time: 10s max.).....	260°C (max)
Storage Humidity Range		≤ 95 %
Isolation Voltage I/O		Non-Isolation
MTBF (+25°C).....		2.000.000 hours min.
Dimensions		10,00x7,20x11,00 (mm)
Case Material		Plastic (UL94-V0)
Package Weight		1.0g

Note:

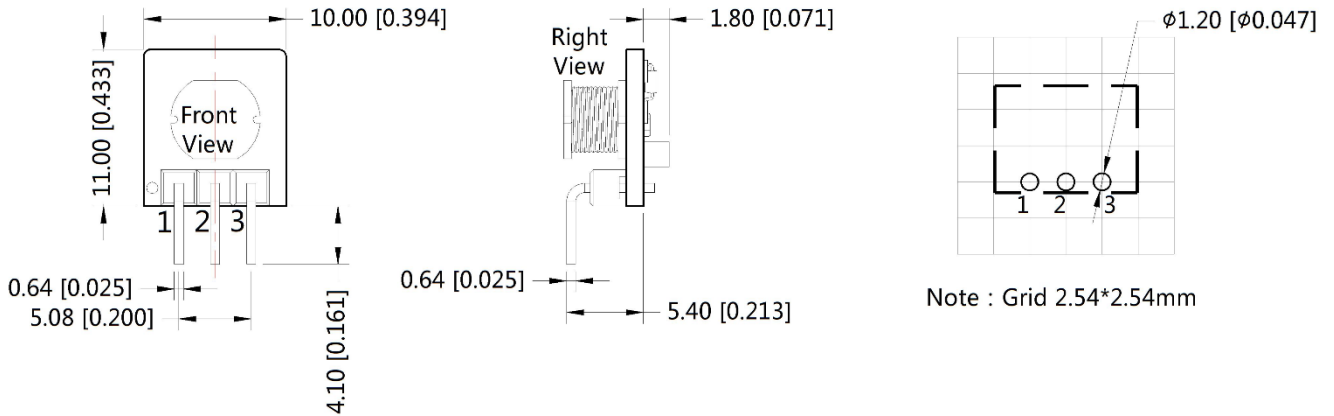
1. Ripple and noise tested with "parallel cable" method, please refer to DC-DC Converter Application Notes for specific operation methods;
2. With the load lower than 10%, the maximum ripple and noise of 3.3V/5V output products will be 150mVp-p, 12V/15V output products will be 2%Vo.
3. The max. capacitive load should be tested within the input voltage range and under full load conditions.
4. Without any special statement, all indexes are only specific to positive output application;
5. Unless otherwise specified, data in this datasheet should be tested under the conditions of Ta=25°C, humidity when inputting nominal voltage and outputting rated load;

Derating Curve



Note:

Unit:mm (inch); Pin tolerances: $\pm 0.10\text{mm}(\pm 0.004\text{inch})$; General tolerances: $\pm 0.25\text{mm}(\pm 0.010\text{inch})$



Pin	Function Series DV78-05-OFV3	
	Positive	Negative
1	+Vin	Vin
2	GND	-Vout
3	+Vout	GND

Typical Application Circuit

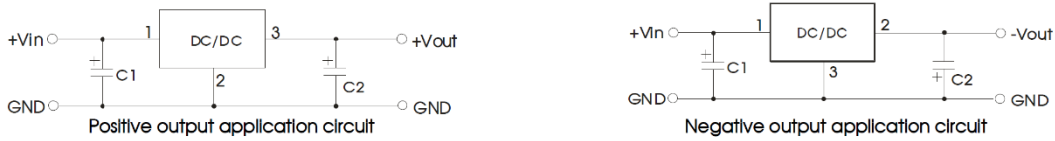
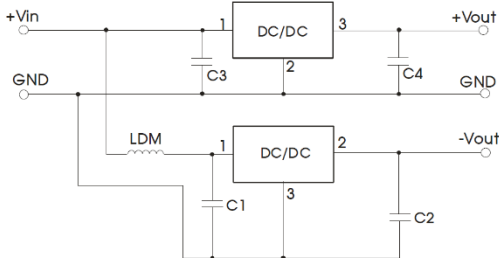


Fig. 2 Typical application circuit



Sheet 1

Part No.	C1/C3 (ceramic capacitor)	C2/C4 (ceramic capacitor)
DV7803-05-OF	10 μ F/50V	22 μ F/10V
DV7805-05-OF		22 μ F/10V
DV7812-05-OF		22 μ F/25V
DV7815-05-OF		22 μ F/25V

Note:

1. C1 and C2(C3 and C4) are required and should be connected close to the pin terminal of the module.
2. The capacitance of C1 and C2(C3 and C4) refer to Sheet 1, it can be increased properly if required, and tantalum or low ESR electrolytic capacitors may also suffice.
3. When the products used as the circuit like figure 3, an inductor named as LDM up to 10 μ H is recommended in the circuit to reduce the mutual interference.
4. Cannot be used in parallel for output and hot swap.

To reduce the output ripple furtherly, it is suggested to connect a "LC" filter at the output terminal, and recommended value of L is 10 μ H-47 μ H.

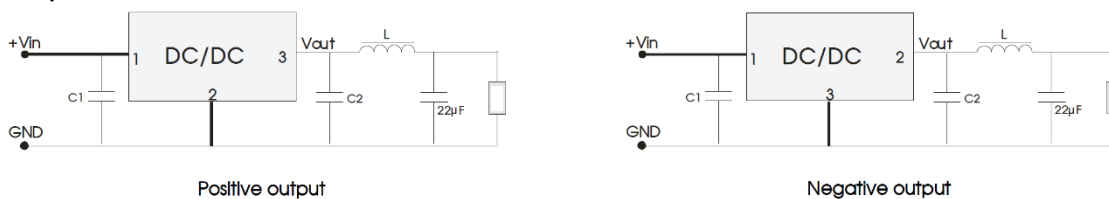


Fig. 4 "LC" filter application circuit

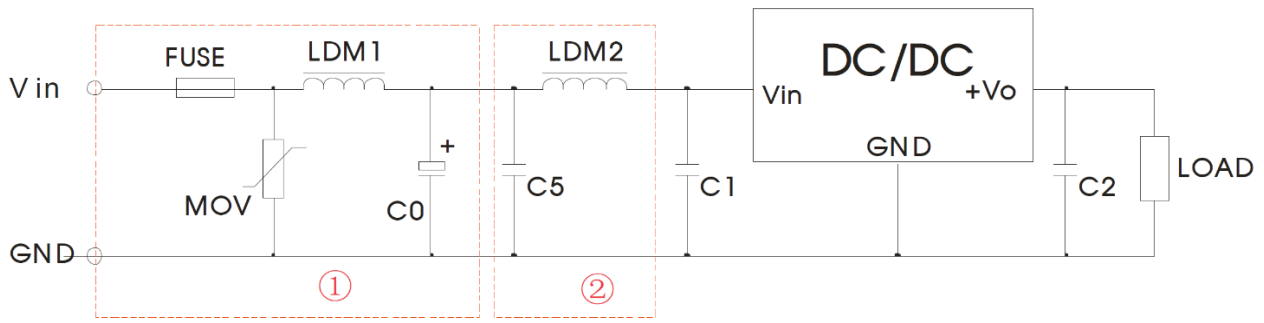


Figure 5

FUSE	MOV	LDM1	C0	C1/C2	C5	LDM2
Selected based on the actual input current from the customer	S20K30	82 μ H	680 μ F /50V	Refer to Sheet 1	4.7 μ F /50V	12 μ H

Note: Part ① in the Fig. 5 is for EMS test, part ② is for EMI filtering; parts ① and ② can be added based on actual requirement.

EMI

Conducted Disturbance CISPR22/EN55022 CLASS B (see Fig. 5-② for recommended circuit)

Radiated Emission CISPR22/EN55022 CLASS B (see Fig. 5-② for recommended circuit)

EMS

Electrostatic Discharge IEC/EN 61000-4-2 Contact \pm 4KV perf. Criteria B

Radiation Immunity IEC/EN 61000-4-3 10V/m perf. Criteria A

EFT IEC/EN 61000-4-4 \pm 1KV (see Fig. 5-① for recommended circuit) perf. Criteria B

Conducted Disturbance Immunity IEC/EN 61000-4-6 3Vr.m.s perf. Criteria A