

Typical Features

- ◆ Wide input voltage range, non-isolated & regulated output
- ◆ Efficiency up to 95% (Typ.)
- ◆ Low standby power consumption
- ◆ Mini SIP package
- ◆ Short circuit protection
- ◆ Operating temperature from -40°C to +85°C
- ◆ Plastic Case, flame class UL94-V0



Test Condition: Unless otherwise specified, all parameter values had been tested at nominal input voltage, pure resistive rated load, and at room temperature 25°C.

Application Field

This series of products can be widely used in the fields of instrument, communication, pure digital circuit, general low frequency analog circuit, relay drive circuit, data exchange circuit, etc.

Typical Product List

Certificate	Part No.	Input Voltage Range (VDC)		Output Voltage/ Current (Vo/Io)		Max Capacitive Load	Ripple & Noise (20MHz) Max/Typ.	Efficiency (%) @full load (Typ.)	
		Nom.	Range	Vo (VDC)	Io (mA)	uF	mVp-p	Vin (Min)	Vin (Max)
-	K783V3-500R3G	24	4.75-34	3.3	500	680	75/40	86	80
-	K7805-500R3G	24	6.5-34	5	500	680	75/40	90	84
		12	7-31	-5	-300	330	75/40	80	81
-	K7806-500R3G	24	9-36	6.5	500	680	75/40	90	84
-	K7809-500R3G	24	12-36	9	500	680	75/40	93	90
-	K7812-500R3G	24	15-36	12	500	680	75/40	94	91
		12	8-24	-12	-150	330	75/40	84	85
-	K7815-500R3G	24	19-36	15	500	680	75/40	95	93
		12	8-21	-15	-150	330	75/40	85	87

Note 1: It is recommended to connect an electrolytic capacitor (22uF/50V) to the input to protect the unit against the peak voltage when the input voltage is more than 30VDC.

Note 2: The Ripple & Noise is tested by the twisted pair method.

Input Specifications

Item	Operation Conditions	Min.	Typ.	Max.	Unit
No-load Input Current	--	--	0.2	1.5	mA
Input Reversed	Not allowed				
Input Filter	Capacitor filter				
Hot Plug	Unavailable				

Output Specifications

Item	Operation Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Full input voltage range, full load	Output 3.3V	--	±2	±4	%
		Others	--	±2	±3	
Load Regulation	10% ~ 100% load	V+ output	--	±0.4	±0.6	%
		V- output	--	±0.4	±0.8	
Line Regulation	Full input voltage range, full load		--	±0.2	±0.4	
Temp. Drift Coefficient	100% Load		--	--	±0.03	%/°C
Transient Response Deviation	Nominal input voltage, 25%-50%-25% & 50%-75%-50% load step change		--	50	300	mV
Transient Recovery Time			--	0.1	1	mS
Short Circuit Protection			Continuous, Self-recovery			

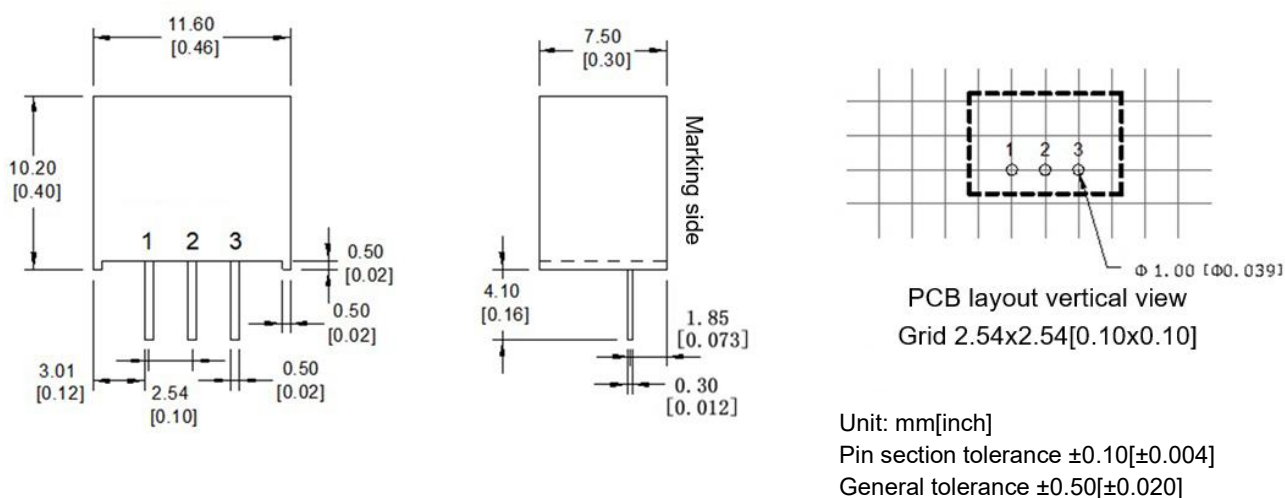
General Specifications

Item	Operation Conditions		Min.	Typ.	Max.	Unit
Switching Frequency	Nominal input voltage, full load	Output 3.3V & 5V	--	520	--	KHz
		Others	--	800	--	
Operating Temperature	Refer to the Temperature Derating Graph		-40	--	+85	°C
Storage Temperature			-55	--	+125	
Case temperature rise	Operating at Ta =25°C		--	30°	--	
Pin Soldering Temperature	1.5mm from the case, 10S		--	--	300	
Relative humidity	No condensation		5	--	95	%RH
Vibration			10-150Hz, 5G, 30 Min. along X, Y and Z			
MTBF	MIL-HDBK-217F@25°C		2000	--	--	K hours
Case Material	Plastic in Black, flame class UL94-V0					
Unit Weight	1.4g (Typ.)					
Cooling Method	Natural air					
Packing	Tube size (526x9.5x17mm)		43PCS/Tube			
	Carton size (542x110x155mm)		3440PCS/Carton (total 80 tubes)			
Unit Dimensions	L x W x H		11.60× 7.50 × 10.20 mm		0.457 × 0.295 × 0.402 inch	

EMC Performances

EMI	CE	CISPR32/EN55032, CLASS B (with the Recommended EMC Circuit)
	RE	CISPR32/EN55032, CLASS B (with the Recommended EMC Circuit)
EMS	ESD	IEC/EN61000-4-2, Contact $\pm 4\text{kV}$ perf.Criteria B
	RS	IEC/EN61000-4-3, 10V/m perf. Criteria A
	EFT	IEC/EN61000-4-4, $\pm 1\text{kV}$ perf. Criteria B (with the Recommended EMC Circuit)
	Surge	IEC/EN61000-4-5, Line to line $\pm 1\text{kV}$ perf. Criteria B (with the Recommended EMC Circuit)
	CS	IEC/EN61000-4-6, 3Vr.m.s perf. Criteria A (with the Recommended EMC Circuit)

Mechanical Dimensions



Pin-out Function Description

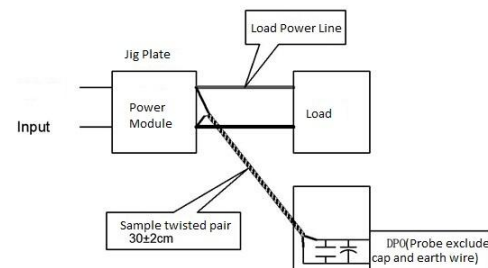
Pin No.	1	2	3
Positive output	+Vin	GND(Common)	+Vo
Negative output	+Vin	-Vo	GND(Common)

Note: Please take the pin definition on the product marking as the right one if there is any difference than the description on the data sheet.

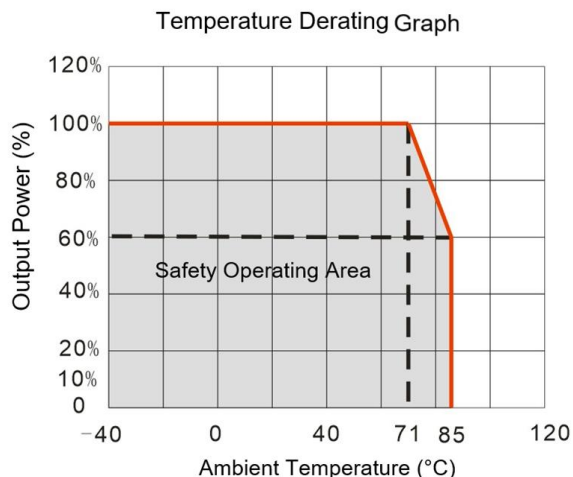
Ripple & Noise Test Instruction (Twisted Pair Method, 20MHz bandwidth)

1) The Ripple & noise test needs 12# twisted pair cables, an oscilloscope which bandwidth should be set to 20MHz, 0.1uF polypropylene capacitor and 10uF high-frequency low-resistance electrolytic capacitor are connected in parallel with the probes (100M bandwidth). The oscilloscope should be set at the Sample Mode.

2) The test diagram is shown on the right. The converter output connects to the electronic load by the jig with cables which size should be defined according to the output current value. The twisted pair (length $30\text{cm} \pm 2\text{cm}$) should be connected in parallel with the load, the location is as close as possible to the output pins or terminals. The test can be start after input power on.



Product Characteristics Graph



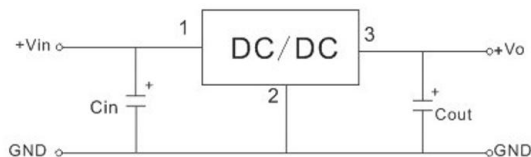
Recommended Circuits for Application

1. Requirements for output load

- To ensure the converter operating efficiently and reliably, its minimum load should not be less than 10% of the rated load. It is recommended to connect a resistor in parallel to the output when the real load is less than 10% (the sum of the power consumed should be bigger than or equal to 10% of the rated power).
- The maximum capacitive load is tested at nominal input voltage and full load. The converter may not start or be damaged at the capacitive over-load.

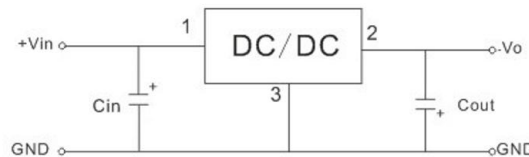
2. Typical application circuits

To effectively decrease the input and output ripple and noise, a capacitor filter can be connected to the input and output as below circuit diagrams (Figure 1 for the Positive output application, Figure 2 for the Negative output application and Figure 3 for Positive & Negative outputs connected in parallel application, 10uH is recommended for LDM). The suitable filtering capacitors should be chosen as the recommended capacitive load values in Table 1. The converter could not start if the capacitance is too big.



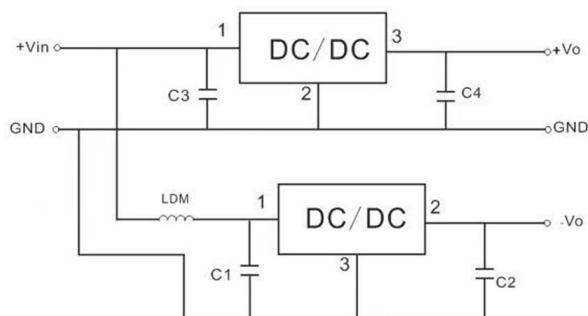
Positive output circuit diagram

Figure 1



Negative output circuit diagram

Figure 2



Positive & Negative outputs connected in parallel application circuit diagram

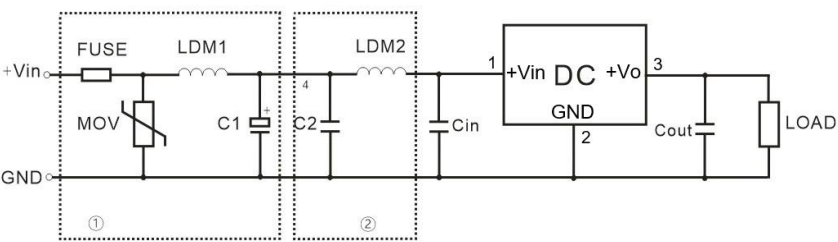
Figure 3

Recommended Capacitive Load Values (Table 1)

Part No.	C1/C3 (Ceramic capacitor)	C2/C4 (Ceramic capacitor)
K783V3-500R3G	10 μ F/50V	22 μ F/10V
K7805-500R3G		22 μ F/10V
K7806-500R3G		22 μ F/16V
K7809-500R3G		22 μ F/16V
K7812-500R3G		22 μ F/25V
K7815-500R3G		22 μ F/25V

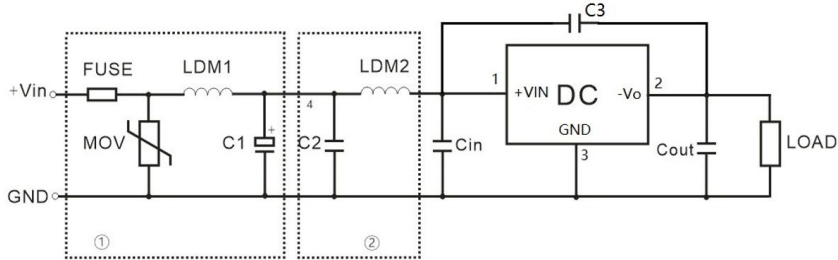
3. Recommended EMC circuit diagrams

Positive output



FUSE	TBD by input current
MOV	20D470K
C1	680 μF / 50V
C2	4. 7 μF / 50V
Cin/Cout	Refer to table 1
LDM1	82 μH
LDM2	12 μH

Negative output



FUSE	TBD by input current
MOV	20D470K
C1	680 μF / 50V
C2/C3	4. 7 μF / 50V
Cin/Cout	Refer to table 1
LDM1	82 μH
LDM2	12 μH

Note: Part ① circuit is for EMS test, part ② for EMI filtering, both can be adjusted according to the actual situation.

Application Notice

- 1.The product performance in this manual cannot be guaranteed if it works at a lower load than the minimum load condition.
- 2. All values or indicators in this manual have been tested based on Aipupower test specifications.

Guangzhou Aipu Electron Technology Co., Ltd
Address: Building 4, HEDY Park, No.63, Punan Road, Huangpu Dist, Guangzhou, China.
Tel: 86-20-84206763 Fax: 86-20-84206762 HOTLINE: 400-889-8821
E-mail: sales@aipu-elec.com Website: <https://www.aipupower.com>