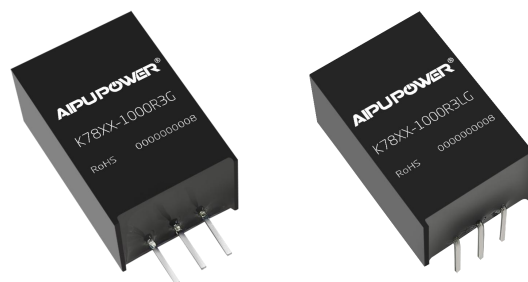


Typical Features

- ◆ Wide input voltage range, non-isolated & regulated output
- ◆ Efficiency up to 95%
- ◆ Low standby power consumption
- ◆ Mini size SIP package
- ◆ Short circuit protection, available for negative output
- ◆ Operating temperature from -40℃ to +85℃
- ◆ Plastic case, flame class UL94-V0



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		Output Voltage/Current (Vo/Io)		Max Capacitive Load (uF)	Efficiency (%) @full load/nominal volt.	
		Nominal (VDC)	Range (VDC)	Vo (VDC)	Io (mA)		Vin (Min)	Vin (Typ.)
-	K783V3-1000R3(L)G	24	6-34	3.3	1000	680	90	81
-	K7805-1000R3(L)G	24	8-34	5	1000	680	92	86
		12	8-27	-5	-500	330	85	81
-	K7806-1000R3(L)G	24	10-34	6.5	1000	680	92	86
-	K7809-1000R3(L)G	24	13-34	9	1000	680	93	90
-	K7812-1000R3(L)G	24	15-34	12	1000	680	95	91
		12	8-20	-12	-300	330	88	87
-	K7815-1000R3(L)G	24	20-34	15	1000	680	95	91
		12	8-18	-15	-300	330	87	88

Note 1: It is recommended to use an electrolytic capacitor (22uF/50V) at 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.

Note 3: The part number letter L indicates the parts with the Pins 90° bent.

Input Specifications

Item	Test Condition	Min.	Typ.	Max.	Unit
No load input current	Positive input	--	0.2	1.5	mA
	Negative input	--	1	4	
Input reversed	Not allowed				
Input filter	Capacitor Filter				
Hot plug	Unavailable				

Output Specifications

Item	Test Condition		Min.	Typ.	Max.	Unit
Output voltage accuracy	Full input voltage range, 0%-100% load	3.3V output	--	±2	±4	%
		Others	--	±2	±3	
Line voltage regulation	100% load		--	±0.2	±0.4	%
Load regulation	10% - 100% load	Positive output	--	±0.4	±0.6	%
		Negative output	--	±0.4	±0.8	
Transient response deviation	25% load step change, nominal input voltage		--	50	300	mV
Transient recovery time			--	0.1	1	mS
Temperature drift coefficient			--	--	±0.03	%/°C
Ripple & Noise	0%-100% load, 20MHz bandwidth		--	40	75	mVp-p
Over current protection	Full input voltage range		--	--	300	%Io
Short circuit protection	Continuous, self-recovery					

Note: The Ripple & Noise is tested by the Twisted Pair Method, please refer to the following test instruction.

General Specifications

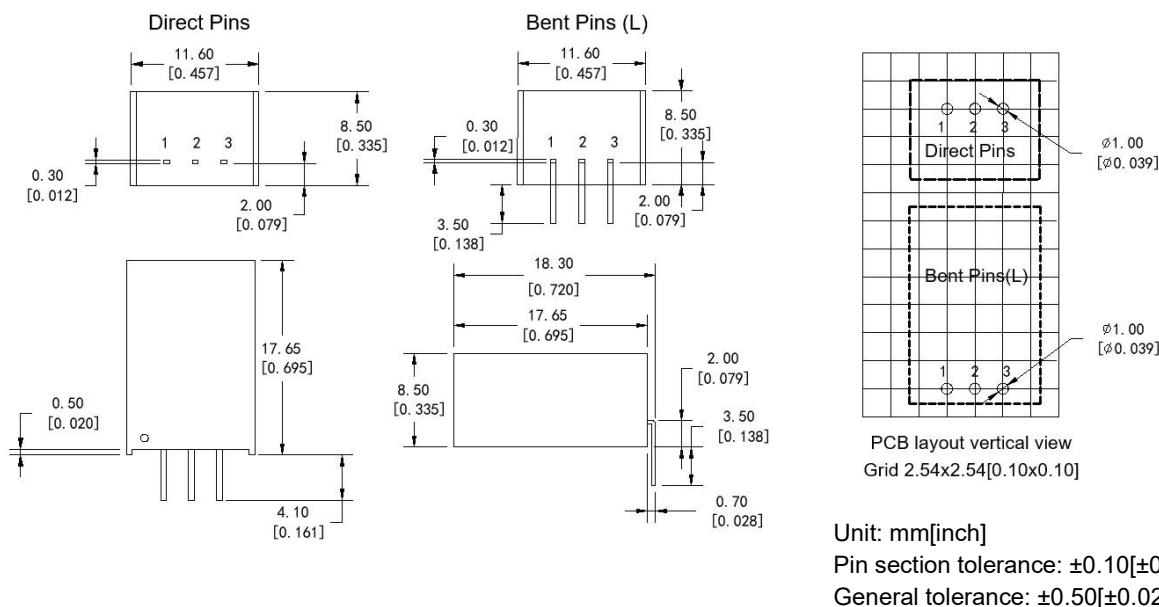
Item	Test Condition		Min.	Typ.	Max.	Unit
Switching frequency	Nominal input voltage, full load	3.3 & 5V output	--	520	--	KHz
		Others	--	800	--	
Operating temperature	Refer to the Temperature Derating Graph		-40	--	+85	°C
Storage temperature			-55	--	+125	°C
Case temperature rise	Within the operating derating range		--	30°	--	°C
Pin soldering temperature	1.5mm from the case, soldering time 10S		--	--	300	°C
Relative humidity	No condensing		5	--	95	%RH
MTBF	MIL-HDBK-217F@25°C		3500	--	--	K hours
Vibration	10-150Hz, 5G, 30 Min. along X, Y and Z					
Case material	Plastic in Black, flame class UL94-V0					
Unit weight	3.8g (Typ.)					
Cooling method	Natural air					
Packing (Direct pins)	Tube size (220x12.5x26.5mm)		17PCS/Tube			
	Carton size (542x110x155mm)		1904PCS/Carton (Total 112 Tubes)			
Packing (Bent pins)	Tube size (220x14.4x20mm)		17PCS/Tube			
	Carton size (542x110x155mm)		1666PCS/Carton (Total 98 Tubes)			
Unit dimensions	L x W x H	11.60 × 8.50 × 17.65 mm		0.457 × 0.335 × 0.695 inch		

EMC Performance

Item		Test Standards	Performance/Class
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 ±4kV perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m perf. Criteria A
	EFT	IEC/EN61000-4-4	±1kV perf. Criteria B
	Surge	IEC/EN61000-4-5	±2kV line to line ±1kV perf. Criteria B
	CS	IEC/EN61000-4-6	3 Vr.m.s perf. Criteria A

Mechanical Dimensions

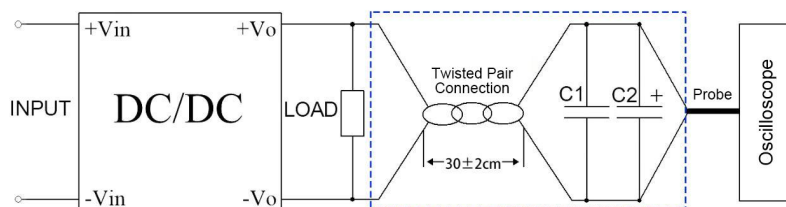


Pin-out Function Description

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

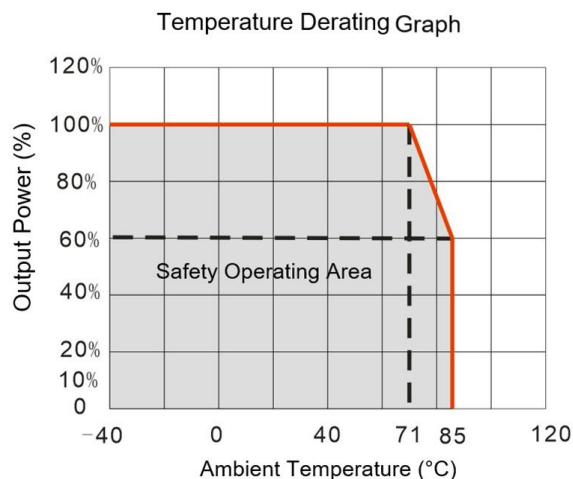
Note: Please take the pin definition on the product label as the right one if it is different than the data sheet description.

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



1. The Ripple & noise test needs 12# twisted pair cables, an oscilloscope which should be set at the Sample Mode, bandwidth 20MHz. 100M bandwidth probe with cap and ground removed. C1(0.1uF) polypropylene capacitor and C2(10uF) high-frequency low-resistance electrolytic capacitor are connected in parallel with the probes and one side of the twisted pair.
2. Refer to the test diagram, 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 other side of the twisted pair (length 30cm±2 cm) should be connected in parallel with the load. The test can start after the input power on.
3. It is recommended to use a ≥10% load or a high-frequency low resistance electrolytic capacitor (≥100uF) load at the output to avoid the output ripple increasing.

Product Characteristics Graph



Recommended Circuits for Application

1. Requirement for the output load

- a. 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).
- b. The maximum capacitive load is tested at the 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.

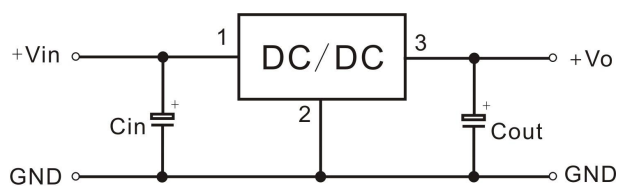


Figure 1 (Positive output circuit diagram)

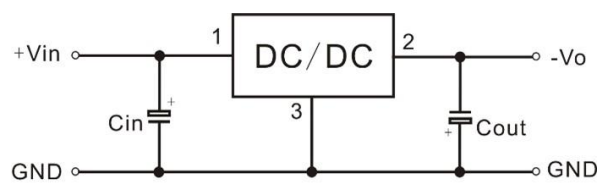


Figure 2 (Negative output circuit diagram)

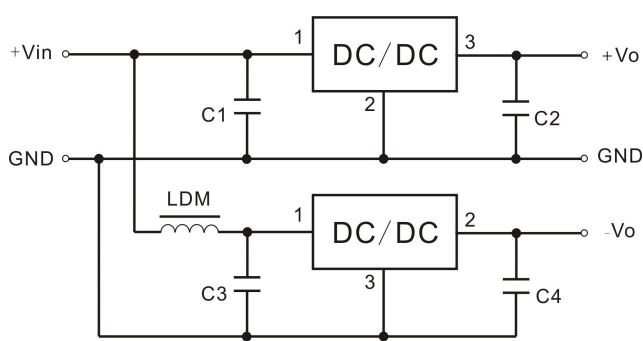


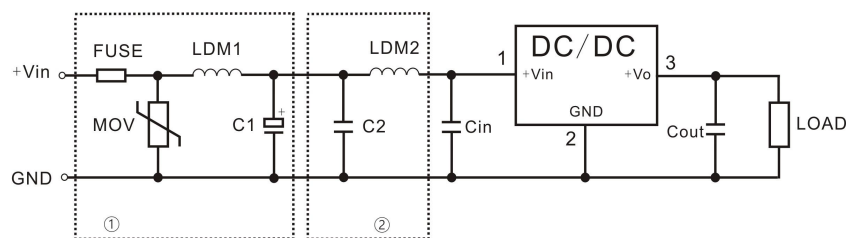
Figure 3 (Positive & negative outputs connected in parallel application circuit diagram)

Recommended Capacitive Load Values (Table 1)

Part No.	C1/C3 (SMD capacitor)	C2/C4 (SMD capacitor)
K783V3-1000R3(L)G	10uF/50V	22uF/10V
K7805-1000R3(L)G		22uF/10V
K7806-1000R3(L)G		22uF/16V
K7809-1000R3(L)G		22uF/16V
K7812-1000R3(L)G		22uF/25V
K7815-1000R3(L)G		22uF/25V

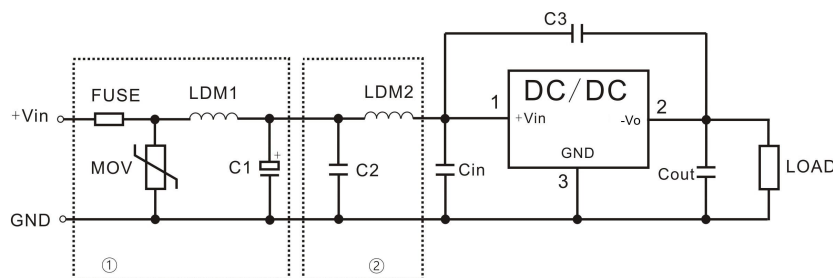
3. Recommended EMC circuit diagrams

Positive output circuit diagram



FUSE	TBD by the input current
MOV	20D470K
C1	680uF/50V
C2	4.7uF/50V
Cin/Cout	Refer to Table 1
LDM1	82uH
LDM2	12uH

Negative output circuit diagram



FUSE	TBD by the input current
MOV	20D470K
C1	680uF/50V
C2/C3	4.7uF/50V
Cin/Cout	Refer to Table 1
LDM1	82uH
LDM2	12uH

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 should be used according to the specifications, otherwise it could be permanently damaged.
2. The product performance cannot be guaranteed if it works at a lower load than the minimum load defined.
3. The product performance cannot be guaranteed if it works under the over-load condition.
4. Unless otherwise specified, all values or indicators on this datasheet are tested at $T_a=25^{\circ}\text{C}$, humidity<75%RH, nominal input voltage and rated load (pure resistance load).
5. All values or indicators on this datasheet have been tested based on Aipupower test specifications.
6. The specifications are specially for the parts listed on this datasheet, any other non-standard model performances could be out of the specifications. Please contact our technician for specific requirements.
7. Aipupower can provide customization service.

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