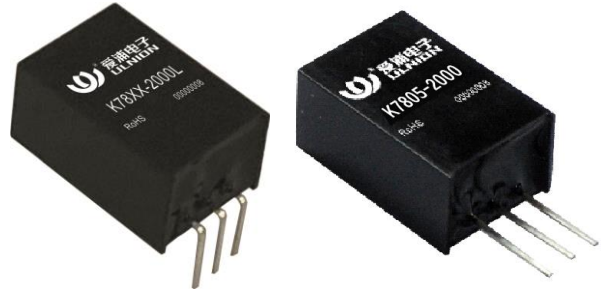


Typical Features

- ◆ Wide input voltage range, non-Isolated & regulated output
- ◆ High transfer efficiency up to 95%
- ◆ Operating Temperature: -40°C ~ +85°C
- ◆ Pin compatible with LM78XX Series
- ◆ Over-heat Protection
- ◆ Low ripple & Noise
- ◆ Small compact SIP packing, meet UL94 V-0 standard
- ◆ 3 years warranty



Test Condition: Unless otherwise specified, data in the datasheet should be tested under the conditions of inputting nominal voltage, pure resistance rated load and Ta=25°C

Application Field

K78XX is a new type of high-efficiency three-terminal voltage regulator, which is an upgraded product of the 78 series linear regulator. The efficiency of the product is as high as 95%, which means that the product has very low power consumption, low heat generation, and can be used simply without a heat sink. Products are widely used in industrial control, electric power, instrumentation and other industries.

Typical Product List

Part No	Input Voltage Range (VDC)		Output Voltage/Current (Vo/Io)		Max Capacitive Load	Ripple & Noise		Efficiency (%)@output full load, nominal input voltage	
	Nominal	Range	Voltage (VDC)	Current (mA)		uF	mVp-p		Min.
					Typ.		Max.		
K7801-2000(L)	12	4.75-18	1.5	2000	1000	25	45	78	83
K78X2-2000(L)	12	4.75-18	1.8	2000	1000	25	45	81	85
K7802-2000(L)	12	4.75-18	2.5	2000	1000	25	45	85	88
K7803-2000(L)	12	4.75-18	3.3	2000	1000	25	45	88	91
K7805-2000(L)	12	6.5-18	5	2000	1000	25	45	91	93
K78X6-2000(L)	12	8-18	6.5	2000	1000	25	45	93	95
K7812-2000(L)	15	13.5-18	12	2000	1000	25	45	92	95

Note 1: Max capacitive load is the max capacitance of output capacitor that is allowed to be connected when module is fully load. If exceed it, the module may not be able to start.

Note 2: Suffix L means 90 degree bend of pin.

Input Specifications

Stand-by Consumption	0.09 W(TYP.)	0.18W(Max)
Input Filter	Capacitor filter	

Output Specifications

Output Voltage Accuracy	Full voltage full load	Vo	±2.0%(TYP)	±3.0%(max)
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Line Regulation	Nominal load, full voltage	Vo	±0.5%(TYP)	±0.75%(max)
Load Regulation	10% ~ 100% nominal load	Vo	±0.5%(TYP)	±1.0%(max)
Ripple & Noise	Twisted Pair method	25mvp-p(TYP)		45mvp-p(max)
Dynamic Response	25% nominal load, step change	$\Delta Vo/\Delta t$	≤250mV	300μ s
Temperature Drift Coefficient	40°C~+85°C		±0.03%/°C	
Over Heat Protection	IC inside	150°C(TYP)		
Thermal Impedance	60°C/W			

General Specifications

Item	Conditions	Min	TYP	Max	Unit
Operating Temperature	Temperature >71°C, refer to temperature derating curve	-40	-	85	°C
Storage Temperature		-55		125	°C
Pin Withstand Soldering Temp	Distance to case 1.5mm, 10S	-	-	300	°C
Relative Humidity	No condensing			95	%RH
Switching Frequency	100% load, input voltage range	300	340	380-	KHZ
MTBF	MIL-HDBK-217F@25°C	2000	-		Khours

Note: If K7803-2000(L) works at -40°C, input voltage of product need ≥5V.

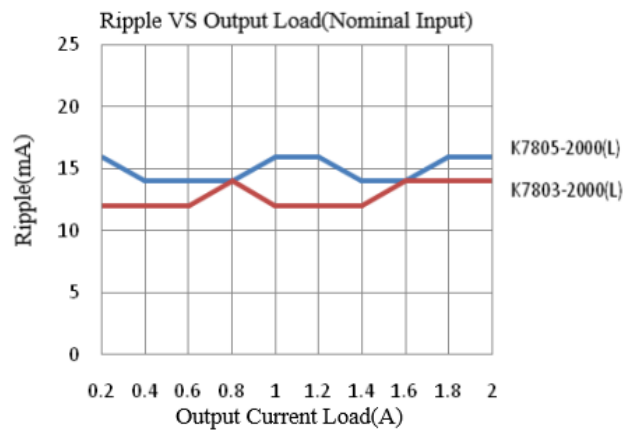
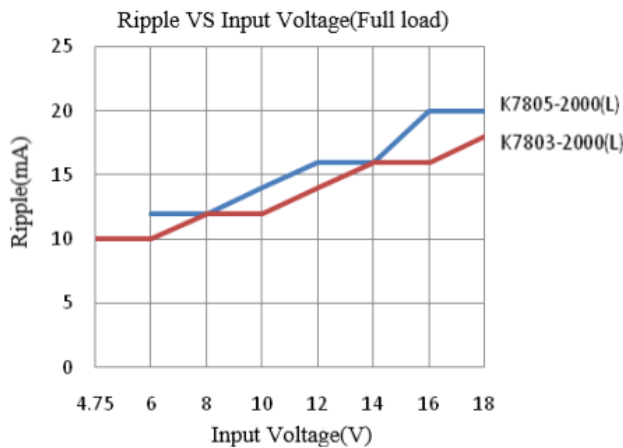
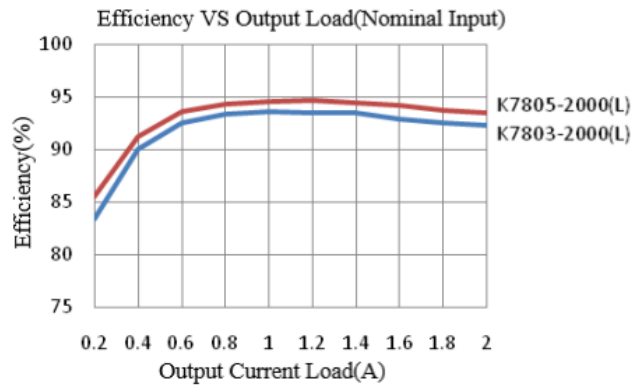
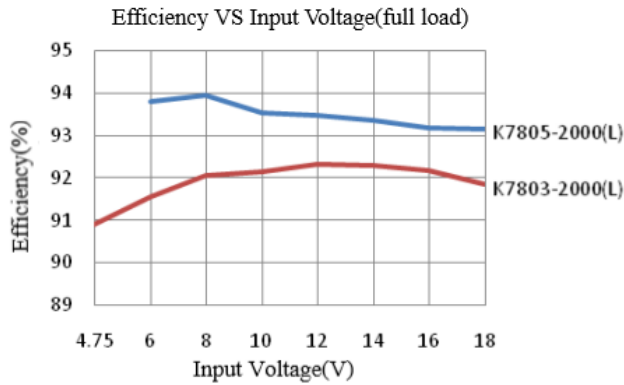
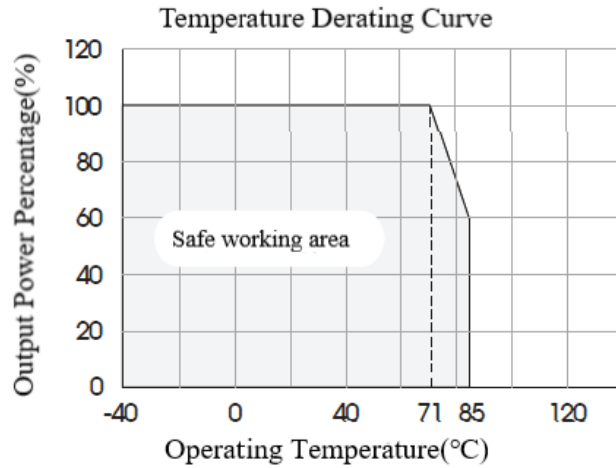
Physical Specifications

Class of Case Materials		Black flame-retardant heat-resistant Plastic (UL94 V-0)
Dimensions	K78XX-2000	11.50X9.00X17.50mm
	K78XX-2000L	
Weight		3.70g(Typ.)
Cooling Method		Free air convection

EMC Characteristics

Total	Sub-total	Standard	Class
EMC	EMI	CE	CISPR22/EN55032 CLASS B (Application circuit Photo ②)
		RE	CISPR22/EN55032 CLASS B (Application circuit Photo ②)
	EMS	RS	IEC/EN61000-4-3 10V/m Perf.Criteria B (Application circuit Photo 2)
		CS	IEC/EN61000-4-6 3Vr.m.s Perf.Criteria B (Application circuit Photo 2)
		ESD	IEC/EN61000-4-2 Contact ±4KV Perf.Criteria B
		Surge	IEC/EN61000-4-5 ±1KV Perf.Criteria B (Application circuit Photo 1)
		EFT	IEC/EN61000-4-4 ±1KV Perf.Criteria B (Application circuit Photo 1)
		Voltage dips and interruptions	IEC/EN61000-4-11 0%~70% Perf.Criteria B

Product Characteristic Curve



Design Application Reference

1. Typical Application Circuit

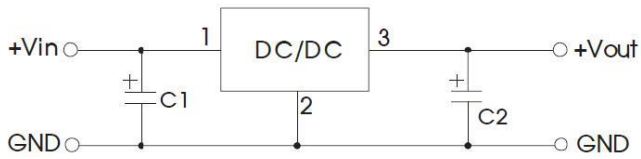


Photo 2 Typical Application Circuit

Item	C1 (Ceramic capacitor)	C2 (Ceramic capacitors)
K7801-2000(L)	10 μ F/50V	22 μ F/6.3V
K78X2-2000(L)	10 μ F/50V	22 μ F/6.3V
K7802-2000(L)	10 μ F/50V	22 μ F/6.3V
K7803-2000(L)	10 μ F/50V	22 μ F/6.3V
K7805-2000(L)	10 μ F/50V	10 μ F/16V
K78X6-2000(L)	10 μ F/50V	10 μ F/16V

Note:

- ① In general, the external capacitors C1 and C2 can be added depending on the environment of the product, and the capacitor should be located close to the pin end of the converter.
- ② The capacitance values of C1 and C2 refer to the external capacitor table, which can be increased appropriately as needed, or low ESR tantalum capacitors and electrolytic capacitors can be used.
- ③ The output terminals of this product cannot be used in parallel, and the input does not support hot plug. To further reduce the output ripple, it is recommended to connect a "LC" filter network to the output end, the recommended value of L is 10 μ H~47 μ H.

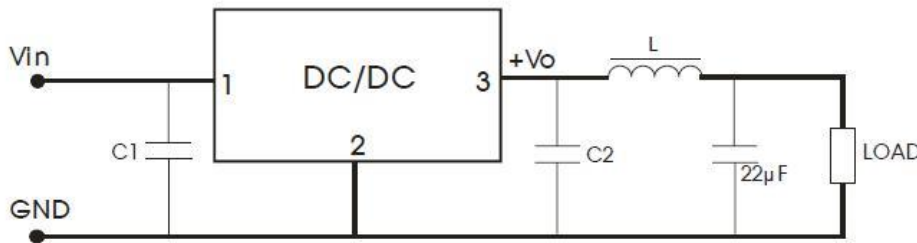


Photo 3

2. EMC Recommended Circuit

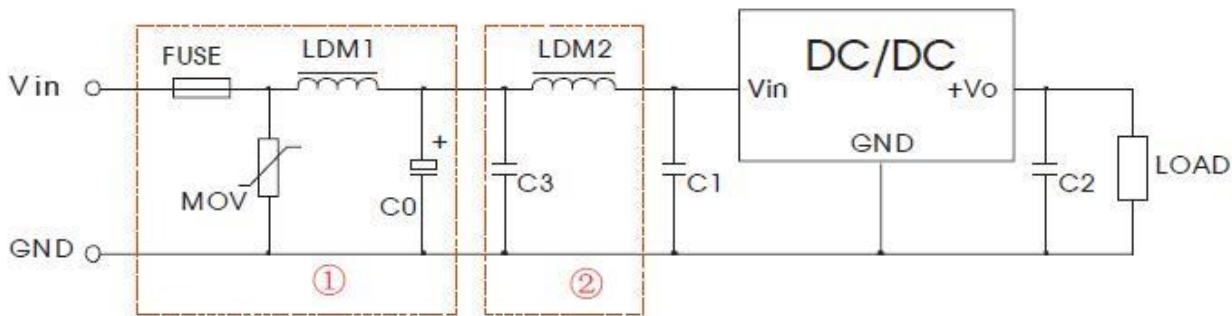
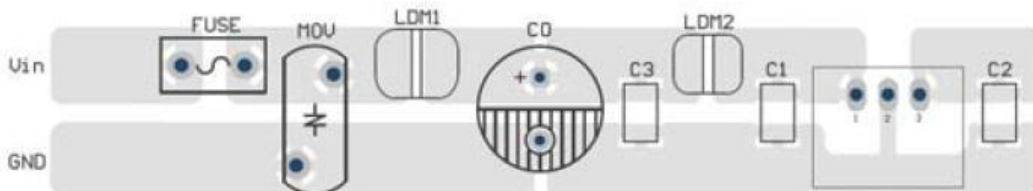


Photo 4 EMC Recommended Circuit



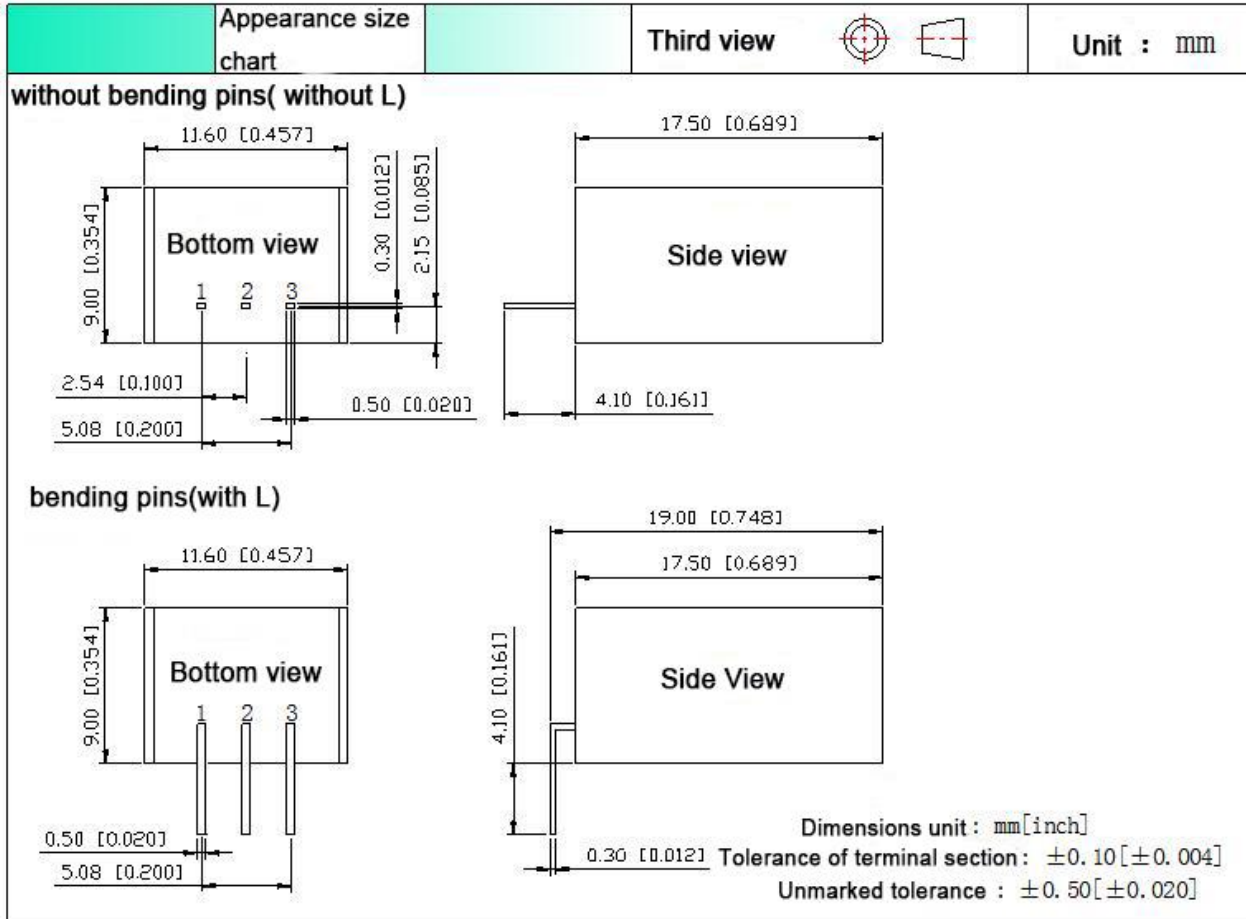
FUSE	MOV	LDM1	C0	C3	C1/C2	LDM2
According to the customer's actual input current selection	14D560K	82 μ H	680 μ F /50V	4.7 μ F /50V	Refer to Figure 2 Parameters	12 μ H

Photo 5 EMC recommended circuit----PCB Layout

Note: Part ① in Figure 1 is used for EMS testing.

Part ② is used for EMI filtering, which can be selected according to requirements

Dimensions



Pin	Single (S)	1	2	3
		+Vin	GND	+Vout

Note:

1. The maximum capacitive load is tested under the input voltage range and full load condition;
2. Unless otherwise specified, the data in this article are measured at Ta=25°C, humidity <75%, input nominal voltage and output rated load;
3. All index test methods in this article are based on the company's corporate standards;
4. The above are the performance indicators of the product models listed in this manual. Some indicators of non-standard products will exceed the above requirements. For details, please contact our technical staff directly;
5. Our company can provide product customization;
6. Product specifications are subject to change without notice.