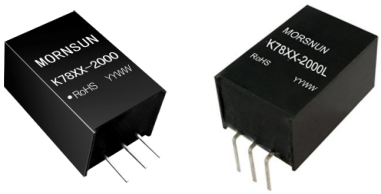
MORNSUN®



RoHS

K78XX-2000(L) Series

WIDE INPUT NON-ISOLATED & REGULATED SINGLE OUTPUT

FEATURES

- Efficiency up to 92%,No heatsink required
- 2A large current output
- Operating temperature : -40°C ~ +85°C
- Short circuit protection, thermal shutdown
- Low ripple and noise
- Micro miniature SIP package, meet UL94-V0 requirement
- Ultra low power loss
- Industry standard pinout
- Pin-out compatible with LM78XX Linear
- MTBE>2000,000Hours

APPLICATIONS

Upgraded K78xx-2000(L) series switching regulators are ideal replacement for K78xx linear regulators and LDOs. The efficiency of up to 92% means that very little energy is wasted as heat so there is no need for any heat sinks with their additional space and mounting costs. They are widely used in industrial control, instrumentation, and electric power applications.

MODEL SELECTION

K7805-2000

- Output Current
- Output Voltage
- Product Series

PRODUCT PROGRAM

Part Number	Input Voltage(VDC)		Output		Efficiency (%)(Typ.)	
	Nominal	Range	Voltage (VDC)	Current (mA)	Vin (min.)	Vin (max.)
K7801-2000(L)	12	4.75-18	1.5	2000	79	76
K78X2-2000(L)	12	4.75-18	1.8	2000	81	79
K7802-2000(L)	12	4.75-18	2.5	2000	85	83
K7803-2000(L)	12	4.75-18	3.3	2000	87	86
K7805-2000(L)	12	7-18	5	2000	91	88
K78X6-2000(L)	12	8.5-18	6.5	2000	92	91

Add suffix “L” for 90° bend pins, for example: K7805-2000L.

OUTPUT SPECIFICATIONS

Item	Test conditions	Min.	Typ.	Max.	Units
Output voltage accuracy	100% full load, input voltage range		±2	±3	%
Line regulation	Vin=min. to max, at full load		±0.5	±0.75	
Load regulation	10% to 100% load		±0.5	±1.0	
Ripple & Noise*	20MHz bandwidth (refer to figure 6)		25	45	mVp-p
Short circuit input power			0.5	1.8	W
Short circuit protection		Continuous, auto-recovery			
Thermal shutdown	Internal IC junction		150		°C
Output current limit			5000		mA
Switching frequency	Full load, input voltage range	300	340	380	KHz
Quiescent current			5	10	mA
Temperature coefficient	-40°C ~ +85°C ambient			±0.03	%/°C
Max capacitance load				1000	μF

*Test ripple and noise by “parallel cable” method.

COMMON SPECIFICATIONS

Operating temp. range	-40~+85 ℃(above 71°C power derating)
Operating case temp.	+100 ℃(max)
Storage temp. range	-55~+125 ℃
Cooling	Free air convection
Lead temperature**	300 ℃(max)
Storage humidity range	≤ 95%
Case material	Plastic(UL94-V0)
MTBF	> 2000k hours (25℃,MIL-HDBK-217F)
Weight	4.0g
Conducted emissions (Refer to Figure 5)	EN55022 CLASS B
Radiated emissions	EN55022 CLASS B
ESD	EN61000-4-2 Level 3 6kV/8kV perf. Criteria B

**1.5mm from case for 10 seconds

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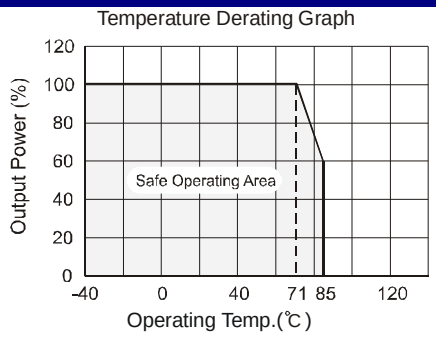
TYPICAL CHARECTERISTICS

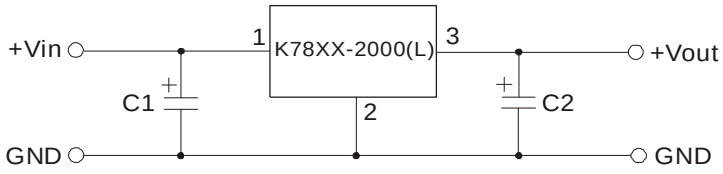


(figure 1)

EXTERNAL CAPACITOR TABLE

Part Number	C1 (Ceramic capacitor)	C2 (Ceramic capacitor)
K7801-2000(L)	10μF/25V	22μF/6.3V
K78X2-2000(L)	10μF/25V	22μF/6.3V
K7802-2000(L)	10μF/25V	22μF/6.3V
K7803-2000(L)	10μF/25V	22μF/6.3V
K7805-2000(L)	10μF/25V	22μF/16V
K78X6-2000(L)	10μF/25V	22μF/16V

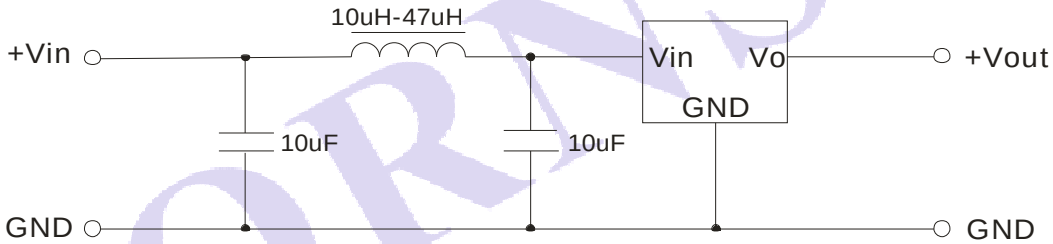
TYPICAL APPLICATION CIRCUIT



(figure 2)

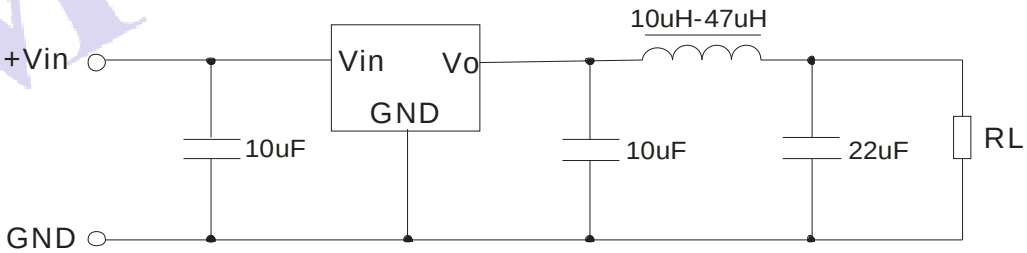
Note:
1. C1 and C2 are required and should be fitted close to the converter pins.
2. The capacitance of C1and C2 sees external capacitor table, it can be increased properly if required, and tantalum or low ESR electrolytic capacitors may also suffice.
3. No parallel connection or plug and play.

INPUT FILTER CIRCUIT CONNECT



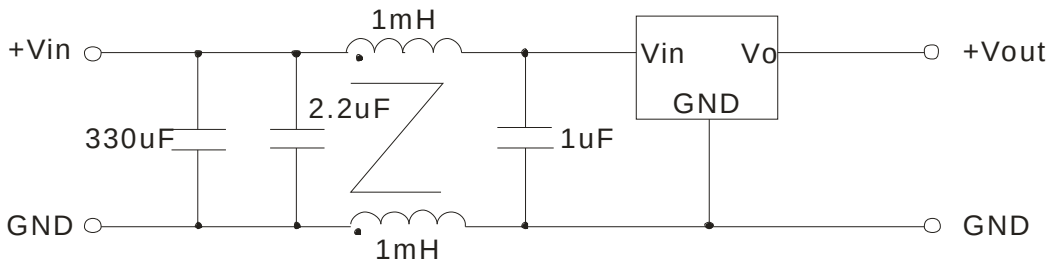
(figure 3)

OUTPUT FILTER CIRCUIT CONNECT



(figure 4)

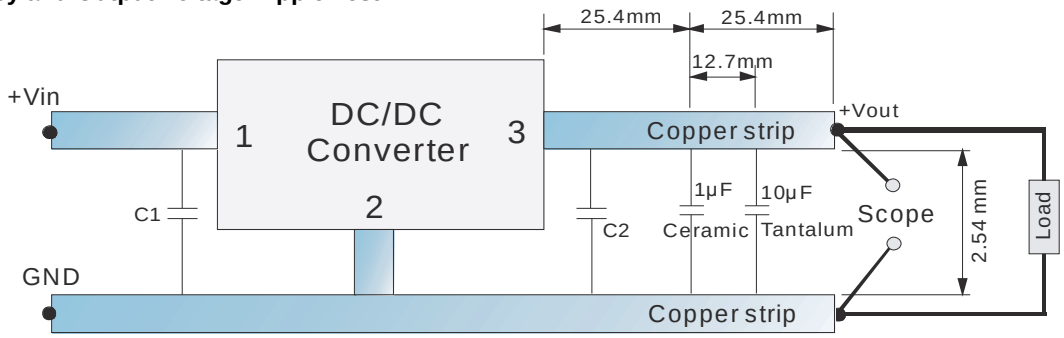
EMC RECOMMENDED CIRCUIT



(figure 5)

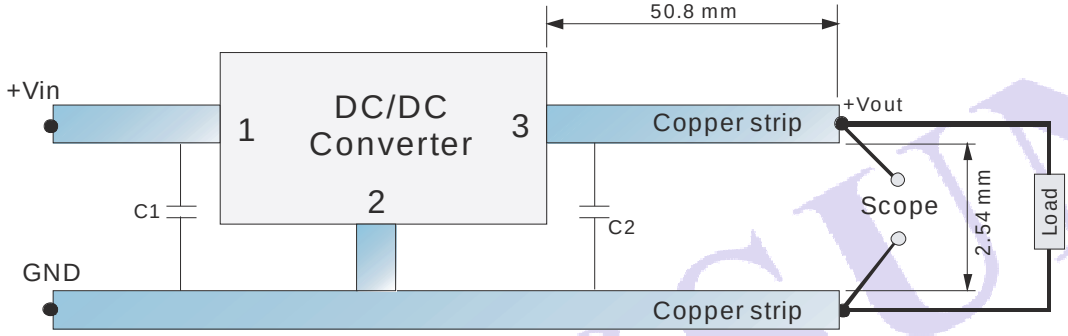
TEST CONFIGURATIONS (TA=25°C)

1 Efficiency and Output Voltage Ripple Test



(figure 6)

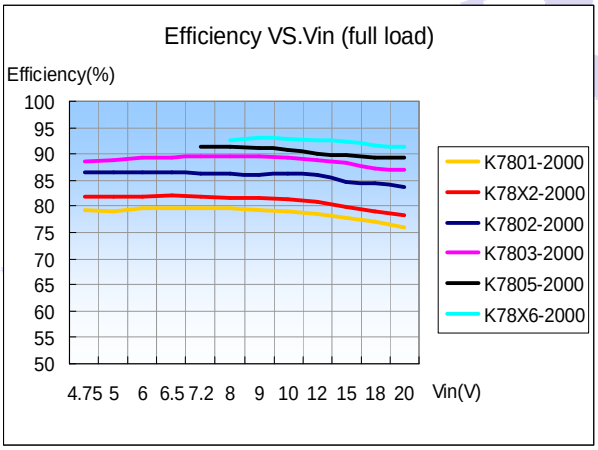
2 Start-up and Load Transient Response Test



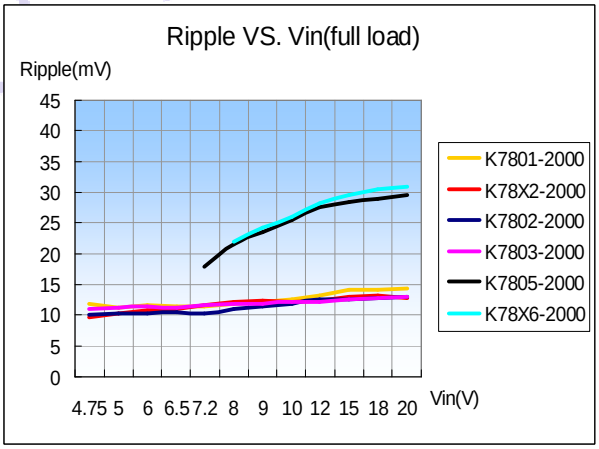
(figure 7)

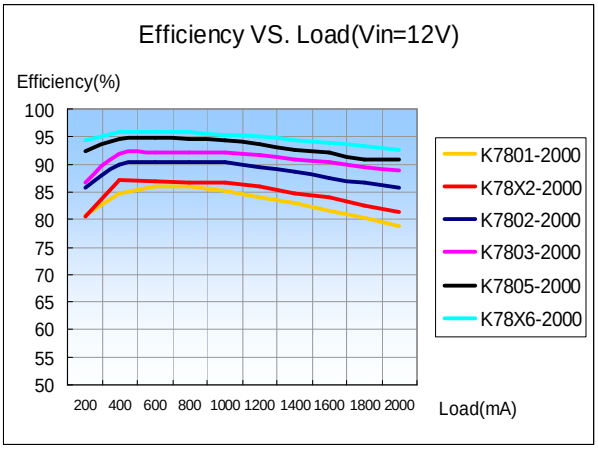
CHARACTERISTICS CURVE

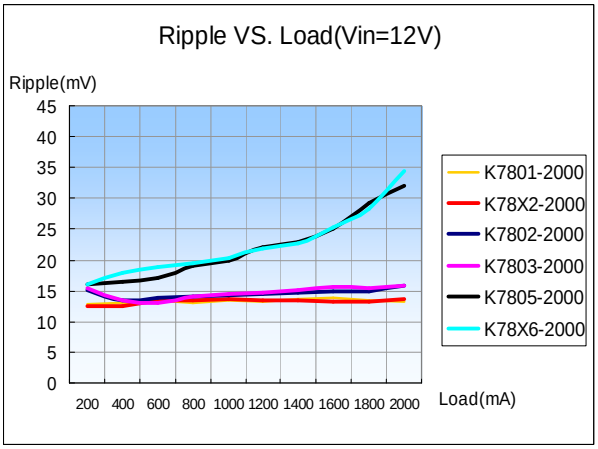
Efficiency



Ripple



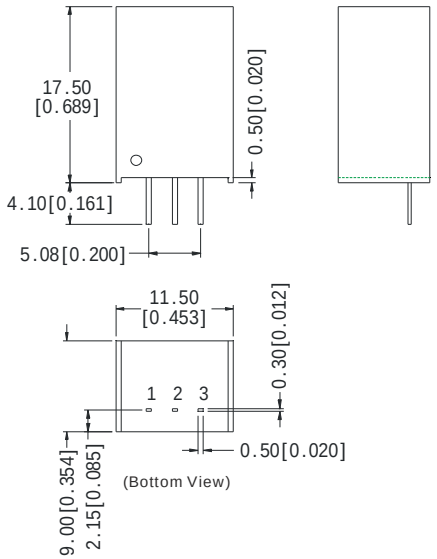




OUTLINE DIMENSIONS & FOOTPRINT DETAILS

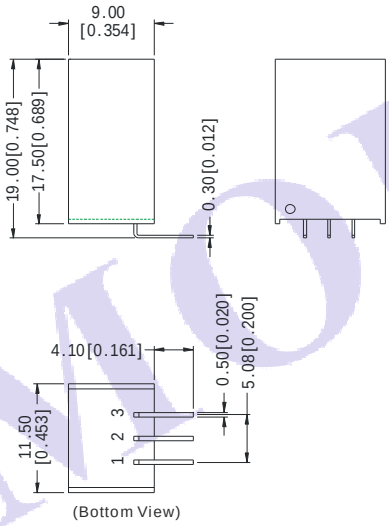
MECHANICAL DIMENSIONS

K78XX-2000



Note:
Unit:mm[inch]
Pin section tolerances:±0.10mm[±0.004inch]
General tolerances:±0.25mm[±0.010inch]

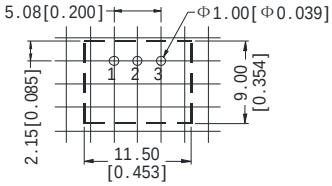
K78XX-2000L



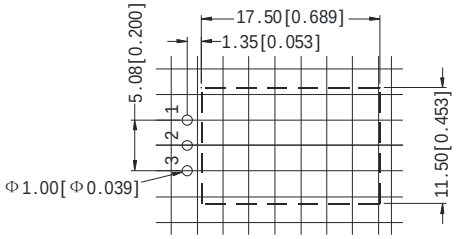
Note:
Unit:mm[inch]
Pin section tolerances:±0.10mm[±0.004inch]
General tolerances:±0.25mm[±0.010inch]

RECOMMENDED FOOTPRINT

K78XX-2000



K78XX-2000L

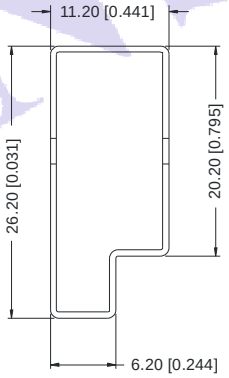


Note:
grid:2.54*2.54mm.

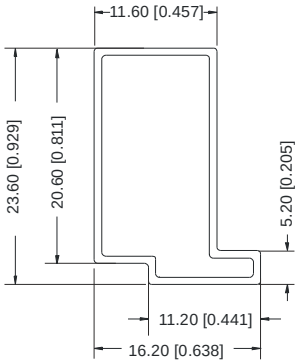
FOOTPRINT DETAILS	
Pin	Function
1	+Vin
2	GND
3	+Vout

TUBE OUTLINE DIMENSIONS

K78XX-2000



K78XX-2000L



Note:
Unit :mm[inch]
General tolerances: ±0.50mm[±0.020inch]
L=530mm[20.866inch] Devices per tube quantity: 44pcs
L=220mm[8.661inch] Devices per tube quantity: 17pcs
Short tube inner packaging dimensions: L*W*H=255*170*80mm
Short tube outer packaging dimensions(with six inner packaging boxes):
L*W*H=375*280*270mm
Long tube inner packaging dimensions: L*W*H=580*200*100mm
Long tube outer packaging dimensions(with two inner packaging boxes):
L*W*H=600*215*220mm
Long tube outer packaging dimensions(with three inner packaging boxes):
L*W*H=600*215*325mm

Note:
1. All specifications measured at Ta=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
2. Only typical models listed, other models may be different, please contact our technical person for more details.
3. In this datasheet, all the test methods of indications are based on corporate standards.