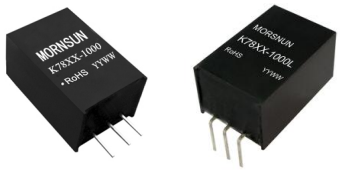
MORNSUN®



RoHS

K78XX-1000(L) Series

WIDE INPUT NON-ISOLATED & REGULATED SINGLE OUTPUT

FEATURES

- Efficiency up to 97%
- Operating temperature: -40°C ~ +85°C
- Pin-out compatible with LM78XX Linear
- Short circuit protection, thermal shutdown
- Low ripple and noise
- Micro miniature SIP package
- No heatsink required
- Industry standard pinout
- MTBF>2,000,000 hours

APPLICATIONS

The K78xx-1000(L) series high efficiency switching regulators are ideally suited to replace 78xx linear regulators and are pin compatible. The efficiency of up to 97% means that very little energy is wasted as heat so there is no need for any heatsinks with their additional space and mounting costs.

MODEL SELECTION

K7805-1000

- Output Current
- Output Voltage
- Product Series

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Product Program

Part Number	Input Voltage(VDC)		Output		Efficiency (%)(Typ)	
	Nominal	Range	Voltage (VDC)	Current (mA)	Vin (min.)	Vin (max.)
K7801-1000(L)	12	4.75-26	1.5	1000	80	71
K78X2-1000(L)	12	4.75-26	1.8	1000	83	74
K7802-1000(L)	12	4.75-28	2.5	1000	88	80
K7803-1000(L)	24	4.75~28	3.3	1000	90	83
K7805-1000(L)	24	6.5~32	5.0	1000	93	88
K78X6-1000(L)	24	9.0~32	6.5	1000	94	90
K7809-1000(L)	24	12~32	9.0	1000	95	92
K7812-1000(L)	24	16~32	12	1000	96	94
K7815-1000(L)	24	20~32	15	1000	97	94
Add suffix “L” for 90° bend pins, for example: K7805-1000L.						

Output Specifications

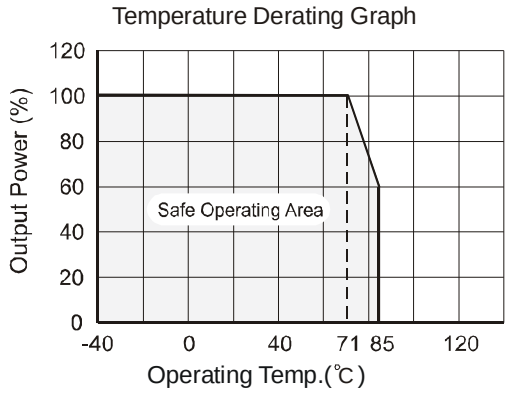
Item	Test conditions		Min.	Typ.	Max.	Units
Output voltage accuracy	100% full load			±2	±3	%
Line regulation	Vin=min. to max. at full load			±0.2	±0.4	
Load regulation*	10% to 100% load			±0.4	±0.6	
Ripple & Noise	20MHz bandwidth (refer to figure 3)			25	35	mVp-p
Short circuit input power**				0.5	1.8	W
Short circuit protection			Continuous, automatic recovery			
Thermal shutdown	Internal IC junction			150		°C
Switching frequency	100% full load		280	330	450	KHz
Output current limit	Vin= min. to max. (at full load)	Vout:1.5V~3.3V			3000	mA
		Vout:5V~15V			2000	
Quiescent current				5	8	mA
Temperature coefficient	-40°C ~ +85°C ambient				±0.02	%/°C
Max capacitance load					1000	μF

* K78X2-1000 is ±0.75%(Max), ** K7801-1000 is 4W(Max).

COMMON SPECIFICATIONS

Item	Test conditions	Min.	Typ.	Max.	Units
Storage humidity				95	%
Operating temperature	Power derating (above 71°C)	-40		85	°C
Operating case temp.				100	
Storage temperature		-55		125	
Lead temperature	1.5mm from case for 10 seconds			300	
Cooling		Free air convection			
Case material		Plastic (UL94-V0)			
MTBF	25℃（MIL-HDBK-217F）	2000			k hours
Weight			3.7		g

TYPICAL CHARECTERISTICS

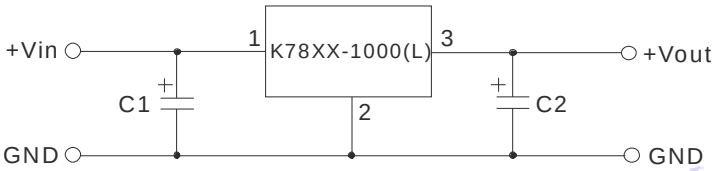


(figure1)

EXTERNAL CAPACITOR TABLE

Part Number	C1 (Ceramic capacitor)	C2 (Ceramic capacitor)
K7801-1000(L)	10μF/50V	22μF/6.3V
K78X2-1000(L)	10μF/50V	22μF/6.3V
K7802-1000(L)	10μF/50V	22μF/6.3V
K7803-1000(L)	10μF/50V	22μF/6.3V
K7805-1000(L)	10μF/50V	22μF/16V
K78X6-1000(L)	10μF/50V	10μF/16V
K7809-1000(L)	10μF/50V	10μF/16V
K7812-1000(L)	10μF/50V	10μF/25V
K7815-1000(L)	10μF/50V	10μF/25V

TYPICAL APPLICATION CIRCUIT

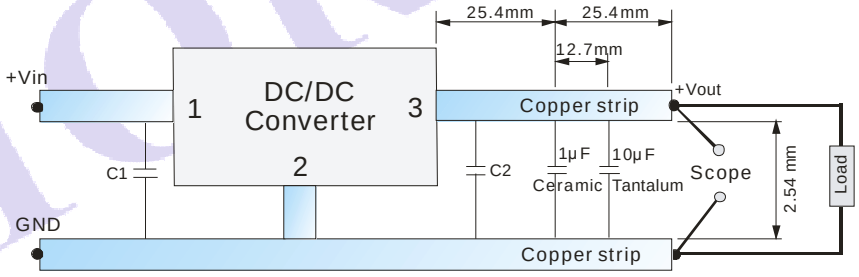


(figure 2)

1. C1 and C2 are required and should be fitted close to the converter pins.
2. The capacitance of C1, 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.

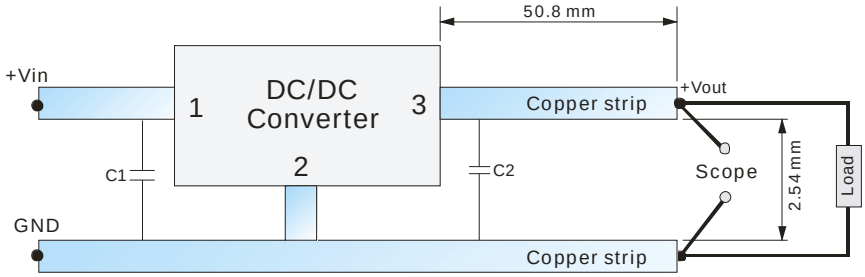
TEST CONFIGURATIONS (TA=25°C)

1 Efficiency and Output Voltage Ripple Test



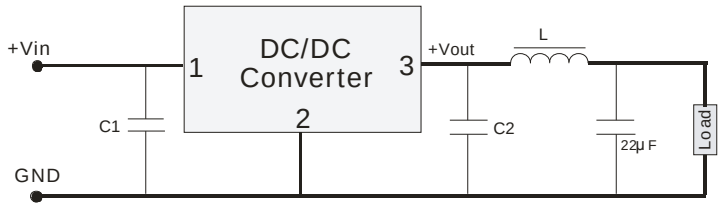
(figure 3)

2 Start-up and Load Transient Response Test



(figure 4)

OUTPUT RIPPLE REDUCTION



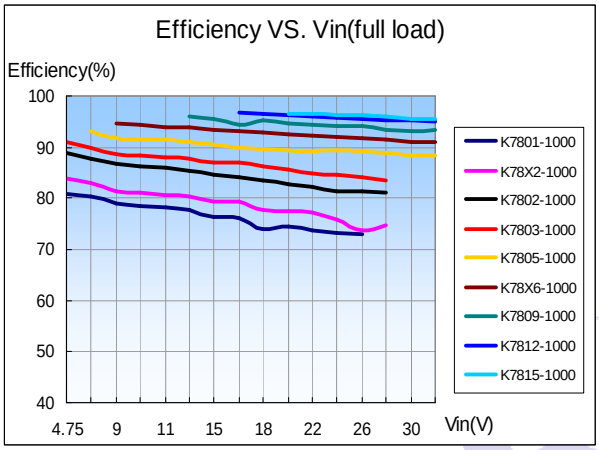
To reduce output ripple, it is recommended to add a LC filter in output port.

L: Recommended parameter 10μH ~ 47μH.

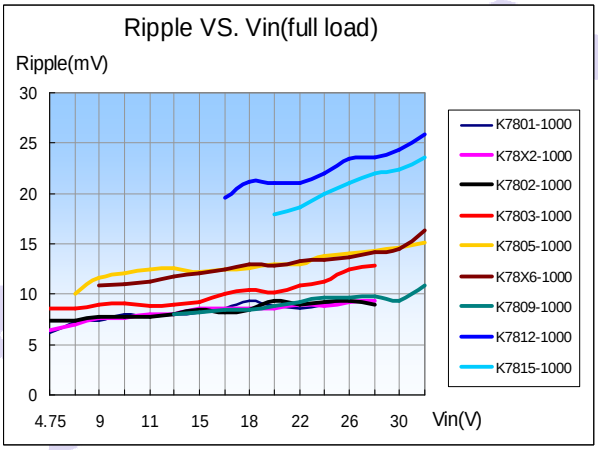
(figure 5)

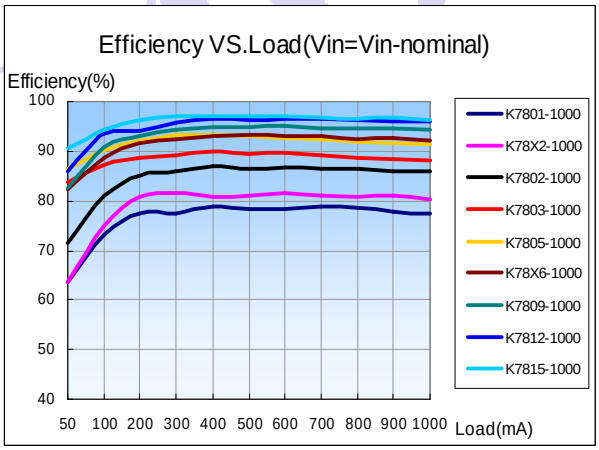
CHARACTERISTICS CURVE

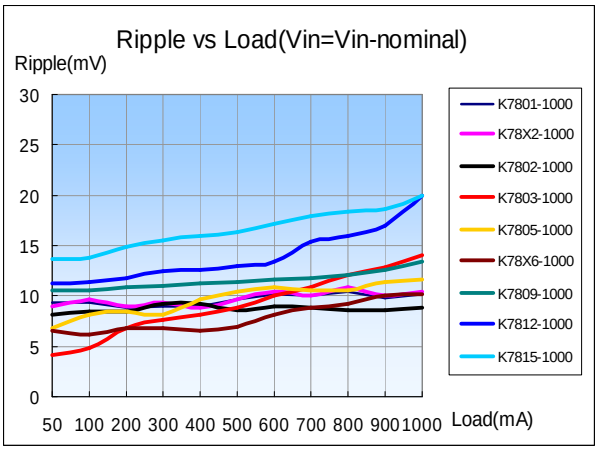
Efficiency



Ripple



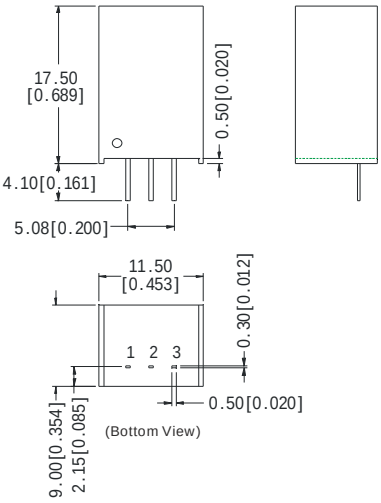




OUTLINE DIMENSIONS & FOOTPRINT DETAILS

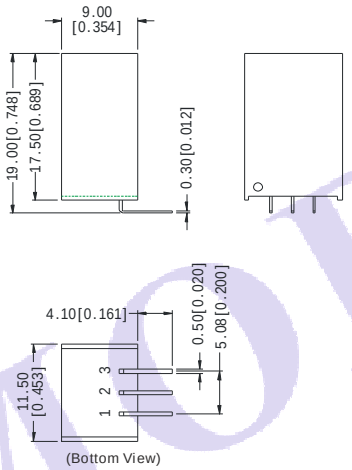
MECHANICAL DIMENSIONS

K78XX-1000



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

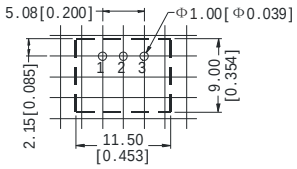
K78XX-1000L



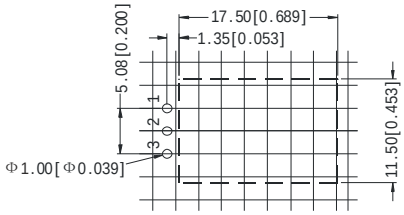
Note:
Unit:mm[inch]
Pin section tolerances:± 0.10mm[± 0.004inch]
General tolerances:± 0.25mm[± 0.010inch]

RECOMMENDED FOOTPRINT

K78XX-1000



K78XX-1000L

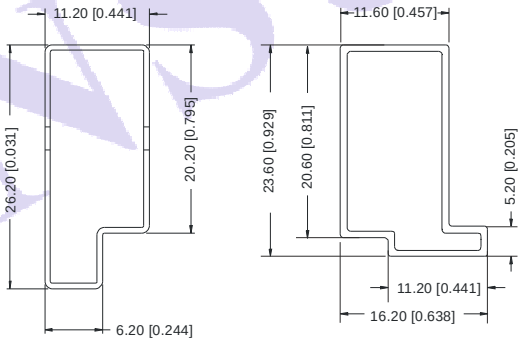


Note:
grid:2.54*2.54mm.

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

TUBE OUTLINE DIMENSIONS

K78XX-1000 **K78XX-1000L**



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. In this datasheet, all the test methods of indications are based on corporate standards.