



RoHS

## K78XXM-1000 Series

**WIDE INPUT NON-ISOLATED & REGULATED  
SINGLE OUTPUT**

### FEATURES

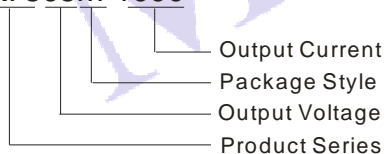
- Efficiency up to 93%
- Operating tem. range : -40°C ~ +85°C
- Pin-out compatible with LM78XX Linear
- Short circuit protection, thermal shutdown
- Low ripple and noise
- Micro miniature SIP package, meet UL94-V0 requirement
- No heatsink required
- Industry standard pinout
- MTBE>2000KHours

### APPLICATIONS

The K78xxM-1000 series high efficiency switching regulators are ideally suited to replace 78xx linear regulators and are pin compatible. The efficiency of up to 93% 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

**K7805M-1000**



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### PRODUCT PROGRAM

Part Number	Input Voltage(VDC)		Output		Efficiency (%) (Typ.)	
	Nominal	Range	Voltage (VDC)	Current (mA)	Vin (min.)	Vin (max.)
K7801M-1000	12	4.75-18	1.5	1000	78	72
K78X2M-1000	12	4.75-18	1.8	1000	82	76
K7802M-1000	12	4.75-18	2.5	1000	87	82
K7803M-1000	12	4.75-20	3.3	1000	90	83
K7805M-1000	12	6.5-20	5.0	1000	93	85

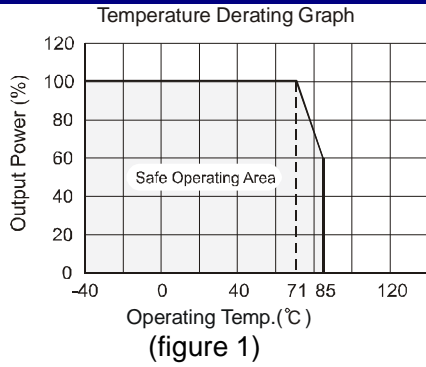
### OUTPUT SPECIFICATIONS

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 3)		25	45	mVp-p
Short circuit protection		Continuous, auto-recovery			
Thermal shutdown	Internal IC junction		150		°C
Output current limit			3000		mA
Switching frequency	Full load, input voltage range	335	385	435	KHz
Dynamic load stability				±100	mV
Quiescent current	Vin from min to max and at 0% load		7	10	mA
Temperature coefficient	-40°C ~ +85°C ambient			±0.02	%/°C
Max capacitance load				1000	µF
*K7803M-1000 is ±3.5%(MAX)					

### COMMON SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Units
Storage humidity range				95	%
Operating temp. range	Power derating (above 71°C)	-40		85	°C
Storage temp. range		-55		125	
Operating case temp.				100	
Lead temperature	1.5mm from case for 10 seconds			300	
Cooling		Free air convection			
Case material		Plastic (UL94-V0)			
MTBF	(25°C, MIL-HDBK-217F)	2000			k hours
Weight			2.0		g

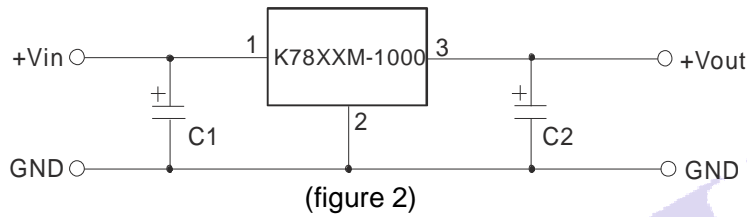
## TYPICAL CHARECTERISTICS



## EXTERNAL CAPACITOR TABLE

Part Number	C1 (Ceramic capacitor)	C2 (Ceramic capacitor)
K7801M-1000	10 $\mu$ F/25V	22 $\mu$ F/6.3V
K78X2M-1000	10 $\mu$ F/25V	22 $\mu$ F/6.3V
K7802M-1000	10 $\mu$ F/25V	22 $\mu$ F/10V
K7803M-1000	10 $\mu$ F/25V	22 $\mu$ F/16V
K7805M-1000	10 $\mu$ F/25V	22 $\mu$ F/16V

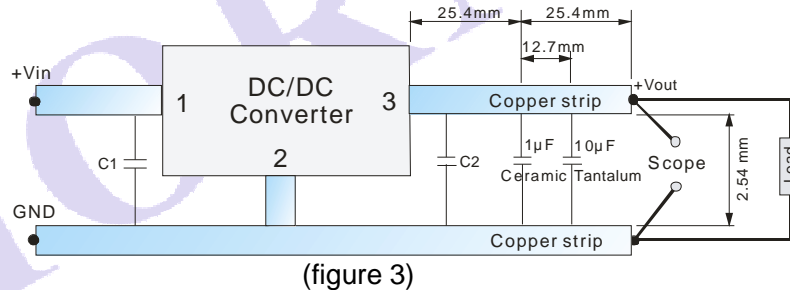
## TYPICAL APPLICATION CIRCUIT



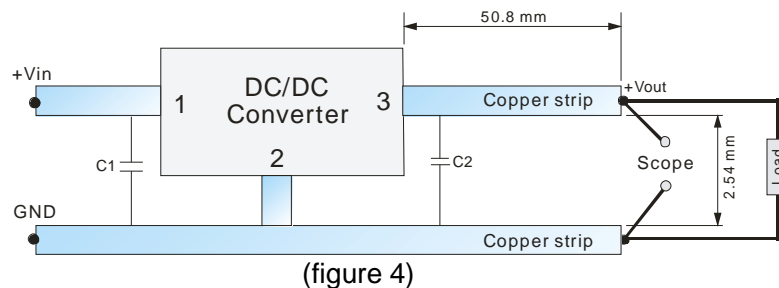
- Note:
1. C1 and C2 are required and should be fitted close to the converter pins.
  2. The capacitance of C1,C2 sees external capacitor table, it can be increased properly if required, and tantalum or low ESR electrolytic capacitors may also suffice.
  3. No parallel connection or plug and play.

## TEST CONFIGURATIONS (TA=25°C)

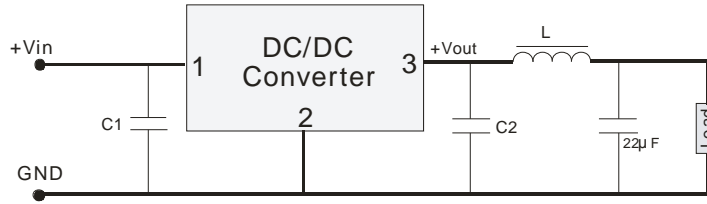
### 1 Efficiency and Output Voltage Ripple Test



### 2 Start-up and Load Transient Response Test



## OUTPUT RIPPLE REDUCTION



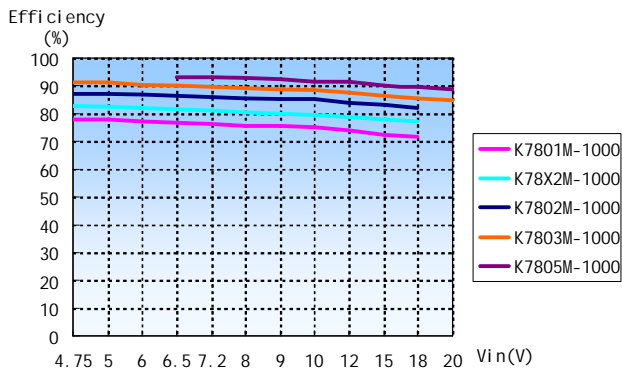
To reduce output ripple, it is recommended to add a LC filter in output port.

L: Recommended parameter  $10\mu\text{H} \sim 47\mu\text{H}$ .

(figure 5)

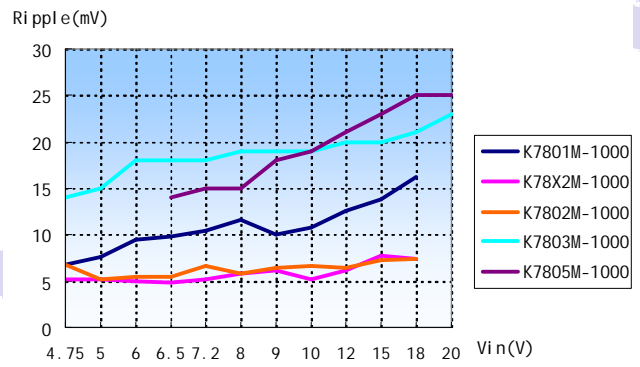
## CHARACTERISTICS

### Efficiency

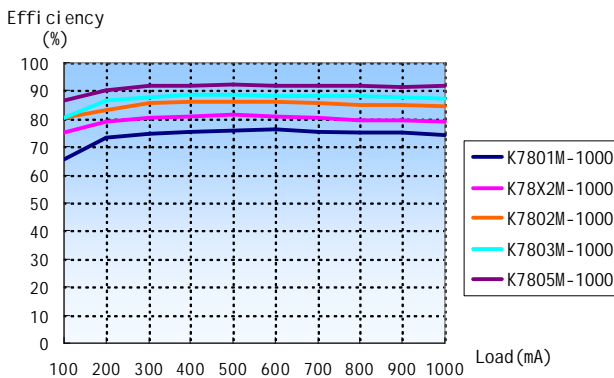


Efficiency VS Vin (Full Load)

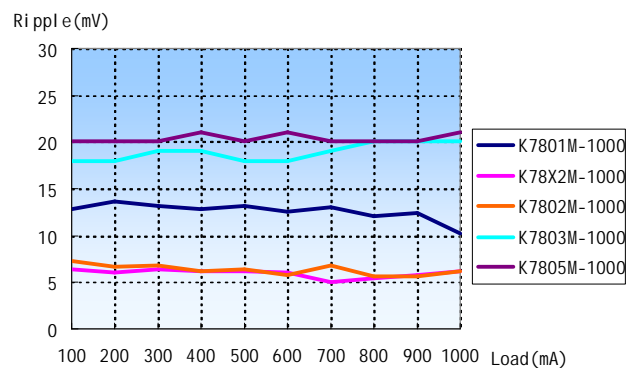
### Ripple



Ripple VS Vin (Full Load)



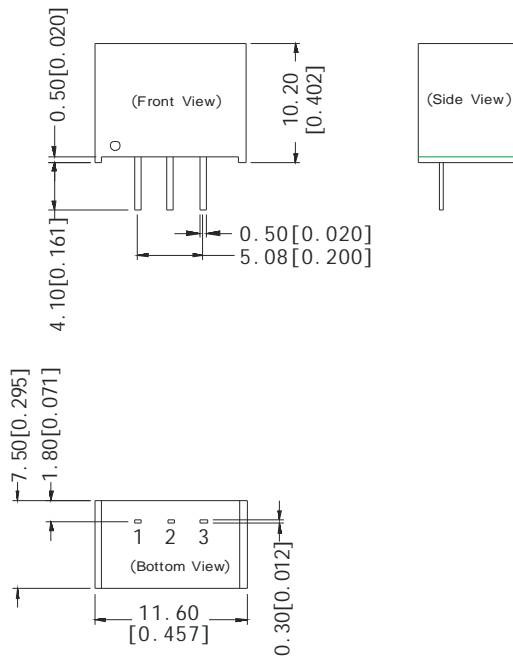
Efficiency VS Load (Vin = Vin-nominal)



Ripple VS Load (Vin = Vin-nominal)

# OUTLINE DIMENSIONS & FOOTPRINT DETAILS

## MECHANICAL DIMENSIONS

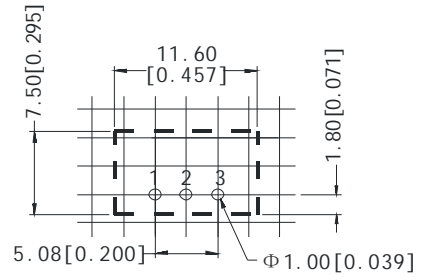


Note:  
 Unit: mm[inch]  
 Pin section tolerances  $\pm 0.10$  mm [ $\pm 0.004$  inch]  
 General tolerances:  $\pm 0.25$  mm [ $\pm 0.010$  inch]

### FOOTPRINT DETAILS

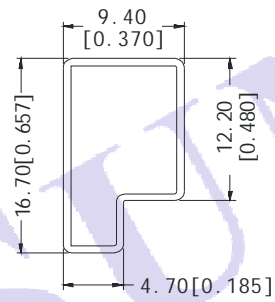
Pin	Function
1	+Vin
2	GND
3	+Vout

## RECOMMENDED FOOTPRINT



Note:  
 grid: 2.54 \* 2.54 mm

## TUBE OUTLINE DIMENSIONS



Note:  
 Unit: mm[inch]  
 General tolerance:  $\pm 0.50$  mm [ $\pm 0.020$  inch]  
 L=530mm[20.866 inch] Packaging quantity: 43pcs  
 L=220mm[8.661 inch] Packaging 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  $T_a=25^\circ\text{C}$ , 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.