

RoHS

K78XX-2000(L) Series

WIDE INPUT NON-ISOLATED & REGULATED SINGLE OUTPUT

FEATURES

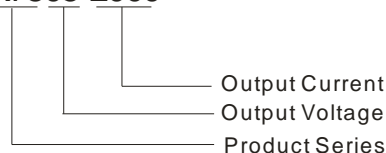
- Efficiency up to 92%, No heatsink required
- 2A large current output
- Operating temperature : -40°C ~ +85°C
- Short circuit protection, thermal shutdown
- Low ripple and noise
- Micro miniature SIP package, meet UL94-V0 requirement
- Ultra low power loss
- Negative output application
- Industry standard 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



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PRODUCT PROGRAM

| Part Number | Input | Output | | Efficiency (%) | |
|---------------|---------------------|---------------|--------------|----------------|------------|
| | Voltage Range (VDC) | Voltage (VDC) | Current (mA) | Vin (min.) | Vin (max.) |
| K7802-2000(L) | 4.75-18 | 2.5 | 2000 | 85 | 83 |
| | 6.5-15 | -2.5 | -1200 | 81 | 84 |
| K7803-2000(L) | 4.75-18 | 3.3 | 2000 | 87 | 86 |
| | 6.5-16 | -3.3 | -1200 | 82 | 86 |
| K7805-2000(L) | 7-18 | 5 | 2000 | 91 | 88 |
| | 7-13 | -5 | -1000 | 84 | 88 |
| K78X6-2000(L) | 8.5-18 | 6.5 | 2000 | 92 | 91 |
| | 7-13 | -6.5 | -800 | 87 | 90 |

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, typical application circuit | | 25 | 45 | mVp-p |
| Short circuit input power | | | 0.5 | 1.8 | W |
| Short circuit protection | | Continuous, auto-recovery | | | |
| Thermal shutdown | | | 150 | | °C |
| Output current limit | | | 5000 | | mA |
| Switching frequency | Full load, input voltage range | 300 | 340 | 380 | KHz |
| Quiescent current | Positive Output | | 5 | 10 | mA |
| | Negative Output | | 11 | 13 | |
| Temperature coefficient | -40°C ~ +85°C ambient | | | ±0.03 | %/°C |
| Max capacitance load | | | | 1000 | µF |

COMMON SPECIFICATIONS

| | | |
|---------------------------------------|---------------------|---------|
| Operating temp. range | -40~+85 °C | |
| Operating case temp. | +100 °C(max) | |
| Storage Temp. range | -55~+125 °C | |
| Cooling | Free air convection | |
| Lead temperature** | 300 °C(max) | |
| Storage humidity range | ≤ 95% | |
| Case material | Plastic(UL94-V0) | |
| MTBF | > 2000kHours | |
| Package Weight | 4.0g | |
| Conducted emissions(Refer to Figure6) | EN55022 | CLASS B |
| Radiated emissions | EN55022 | CLASS B |
| ESD | EN61000-4-2 | CLASS A |

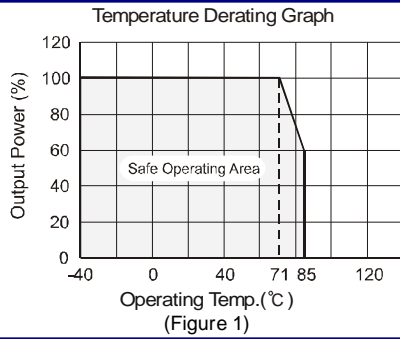
**1.5mm from case for 10 seconds

Note: 1. *The Ripple & Noise test circuit please refer to Figure 7

2. All specifications measured at Ta=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.

3. Only typical models listed, other models may be different, please contact our technical person for more details.

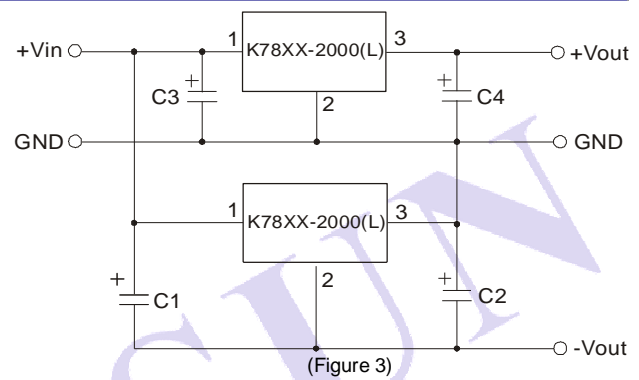
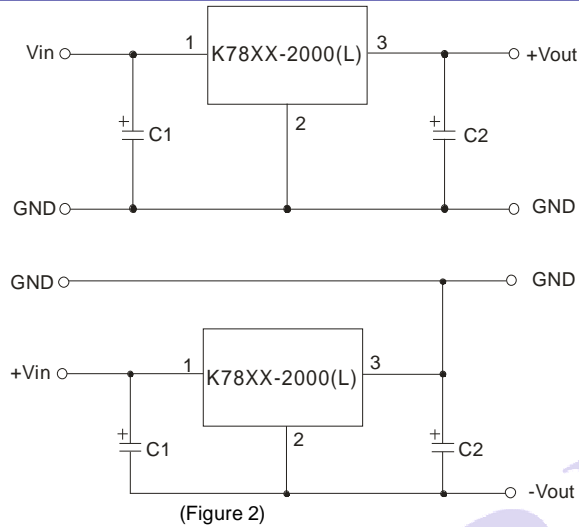
TYPICAL CHARACTERISTICS



EXTERNAL CAPACITOR TABLE

| Part Number | C1 (Ceramic capacitor) | C2 (Ceramic capacitor) |
|---------------|---------------------------|---------------------------|
| K7802-2000(L) | 10 μ F/25V | 22 μ F/6.3V |
| K7803-2000(L) | 10 μ F/25V | 22 μ F/6.3V |
| K7805-2000(L) | 10 μ F/25V | 22 μ F/16V |
| K78X6-2000(L) | 10 μ F/25V | 22 μ F/16V |

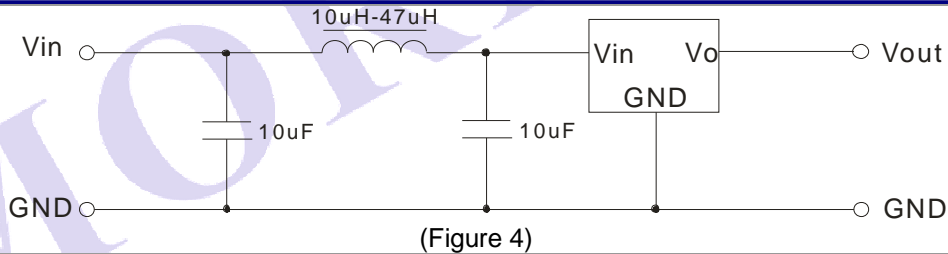
TYPICAL APPLICATION CIRCUIT



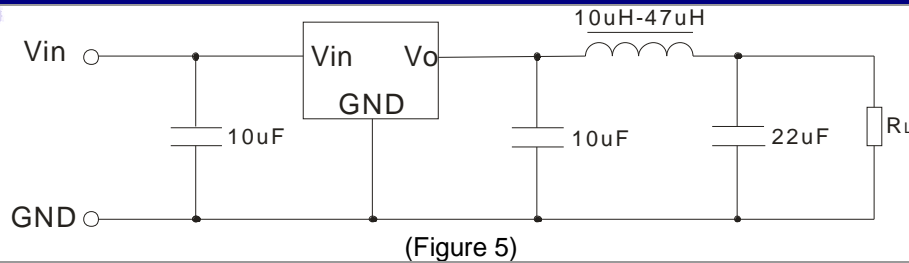
Note:

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

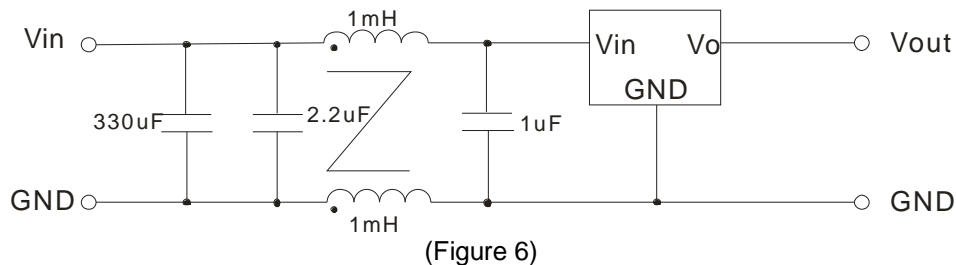
INPUT FILTER CIRCUIT CONNECT



OUTPUT FILTER CIRCUIT CONNECT

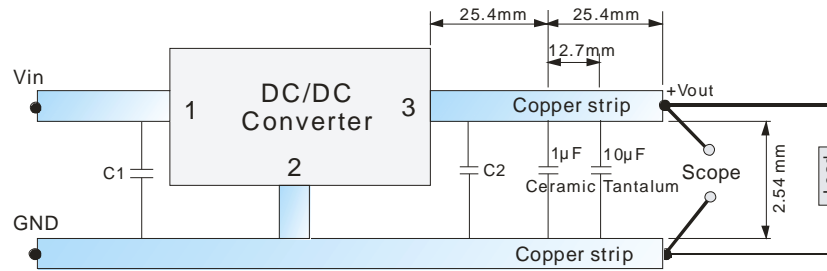


EMC RECOMMENDED CIRCUIT



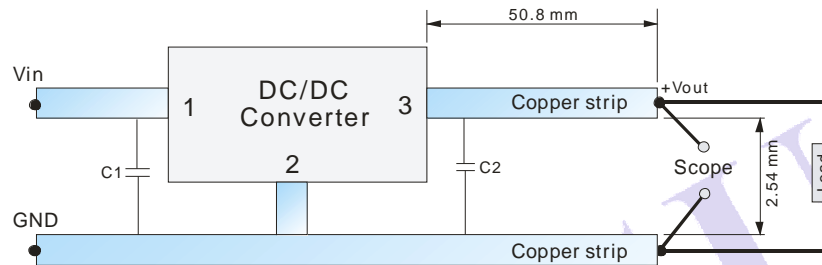
TEST CONFIGURATIONS (TA=25°C)

1 Efficiency and Output Voltage Ripple Test



(Figure 7)

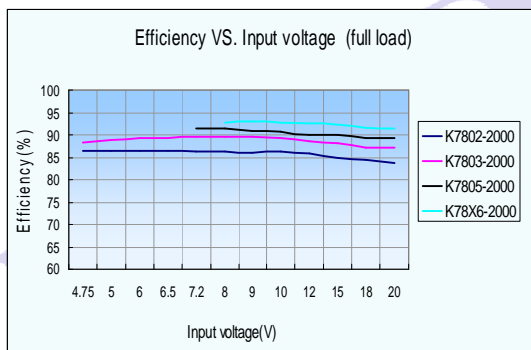
2 Start-up and Load Transient Response Test



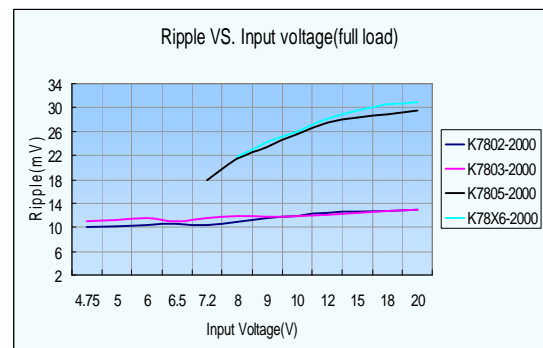
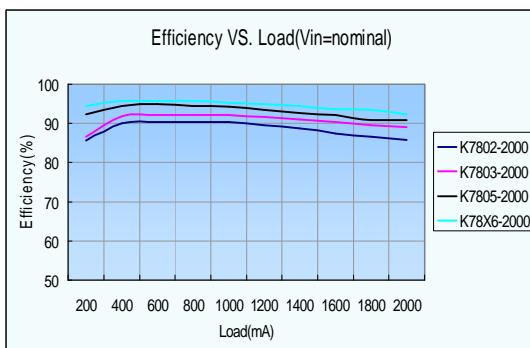
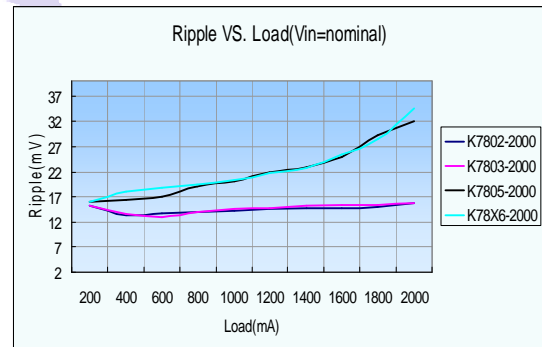
(Figure 8)

CHARACTERISTICS CURVE

Efficiency

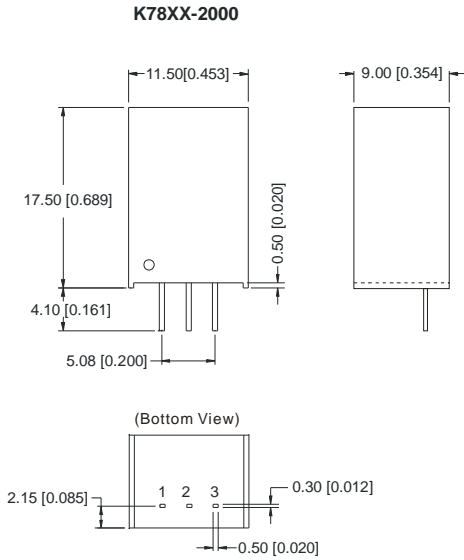


Ripple

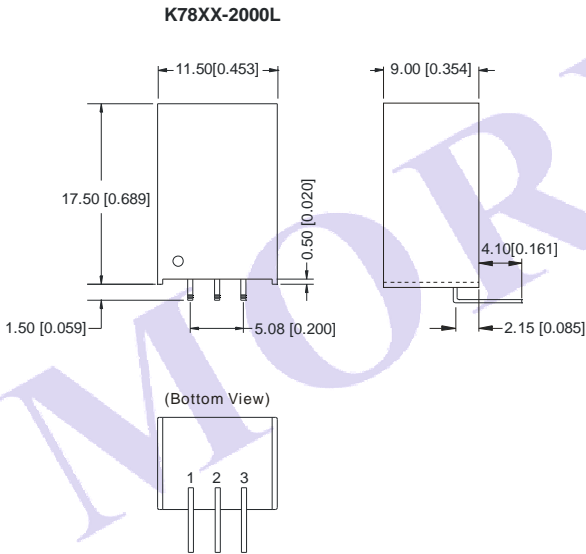


OUTLINE DIMENSIONS & FOOTPRINT DETAILS

MECHANICAL DIMENSIONS

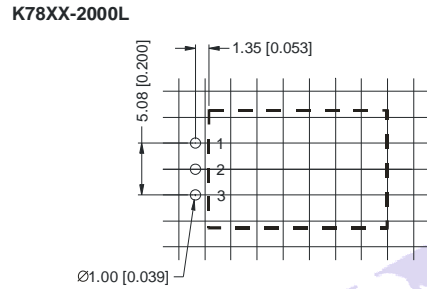
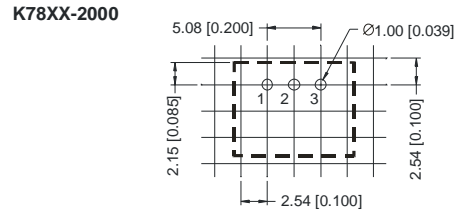


Note:
 Unit:mm[inch]
 Pin section tolerances: $\pm 0.10\text{mm}$ [$\pm 0.004\text{inch}$]
 General tolerances: $\pm 0.25\text{mm}$ [$\pm 0.010\text{inch}$]



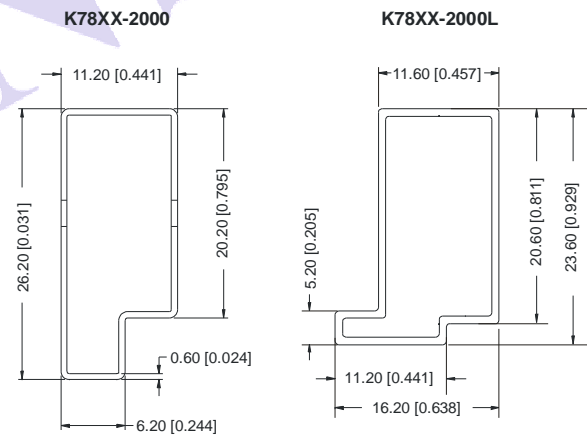
Note:
 Unit:mm[inch]
 Pin section tolerances: $\pm 0.10\text{mm}$ [$\pm 0.004\text{inch}$]
 General tolerances: $\pm 0.50\text{mm}$ [$\pm 0.020\text{inch}$]

RECOMMENDED FOOTPRINT



| FOOTPRINT DETAILS | | |
|-------------------|----------|----------|
| Pin | Positive | Negative |
| 1 | +Vin | +Vin |
| 2 | GND | -Vout |
| 3 | +Vout | GND |

TUBE OUTLINE DIMENSIONS



Note:
 Unit :mm[inch]
 General tolerances: $\pm 0.50\text{mm}$ [$\pm 0.020\text{inch}$]
 L=530mm[20.866inch] Devices per tube quantity: 44pcs
 L=220mm[8.661inch] Devices per tube quantity: 17pcs