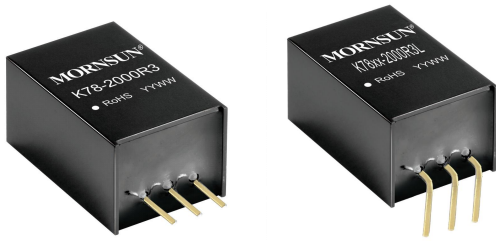


Wide input voltage, non-isolated and regulated single output

## FEATURES

- High efficiency up to 96%
- No-load input current as low as 0.1mA
- Operating ambient temperature range: -40℃ ~ +85℃
- Output short-circuit protection
- Pin compatible with LM78XX series linear regulators
- EN62368 approved



CE Patent Protection RoHS



K78xx-2000R3 series are high efficiency switching regulators and ideal substitutes of LM78xx series three-terminal linear regulators. The converters feature high efficiency, low loss, and there is no need for a heat sink. These products are widely used in applications such as industrial control, instrumentation and electric power.

## Selection Guide

Certification	Part Number	Input Voltage (VDC)	Output		Full Load Efficiency(%) typ. Vin Min. / Vin Max.	Capacitive Load(μF) Max.
		Nominal (Range)	Voltage (VDC)	Current (mA) Max.		
CE	K7802-2000R3	24 (4.5-36)	2.5	2000	89/83	2000
	K7803-2000R3(L)	24 (6-36)	3.3	2000	89/85	1800
	K7805-2000R3(L)	24 (8-36)	5	2000	92/89	1000
	K7809-2000R3	24 (13-36)	9	2000	95/92	680
	K7812-2000R3(L)	24 (16-36)	12	2000	96/94	470
	K7815-2000R3	24 (18-36)	15	2000	96/94	470

Note: For input voltage exceeding 30 VDC, an input electrolytic capacitor of 22μF/50V is required to prevent the module from being damaged by voltage spikes.

## Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
No-load Input Current(Positive output )	Nominal input voltage, 2.5V output	--	0.2	0.5	mA
	Others	--	0.1	1	
Reverse Polarity at Input		Avoid / Not protected			
Input Filter		Capacitance filter			

## Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Voltage Accuracy	Full load, input voltage range	2.5V, 3.3V output	--	±2	±4	%
		Others	--	±2	±3	
Linear Regulation	Full load, input voltage range		--	±0.4	±0.8	%
Load Regulation	10% -100% load step; nominal input voltage		--	±0.5	±1.5	
Ripple & Noise*	20MHz bandwidth, nominal input voltage, 100% load		--	30	75	mVp-p
Temperature Coefficient	Operating temperature -40℃ ~ +85℃		--	--	±0.03	%/℃

Transient Response Deviation	Nominal input, 25% load step (25%-50%-25%, 50%-75%-50% step)	2.5V output	--	±80	±150	mV
		Others	--	±50	±150	
Transient Recovery Time			--	0.2	1	ms
Short-circuit Protection	Nominal input	Continuous, self-recovery				

Notes: \*1.The "parallel cable" method is used for ripple and noise test, please refer to Non-isolated DC-DC Converter Application Notes for specific information;  
\*2.Input voltage range, 20%-100% load ripple & noise is less than 100mVp-p, 0%-20% load ripple & noise is less than 180mVp-p.

## General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Operating Temperature	See Fig. 1	-40	--	85	°C
Storage Temperature		-55	--	125	
Pin Soldering Resistance Temperature	Soldering time: 10s (Max.)	--	--	260	
Storage Humidity	Non-condensing	5	--	95	%RH
Switching Frequency	Full load, nominal input	--	400	--	KHz
MTBF	MIL-HDBK-217F@25°C	2000	--	--	K hours

## Mechanical Specifications

Case Material	Black plastic; flame-retardant and heat-resistant (UL94-V0)
Dimensions	11.50 x 9.00 x 17.50 mm
Weight	3.8g (Typ.)
Cooling Method	Free air convection

## Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032	CLASS B (see Fig. 3-② for recommended circuit)
	RE	CISPR32/EN55032	CLASS B (see Fig. 3-② for recommended circuit)
Immunity	ESD	IEC/EN 61000-4-2	Contact ±6KV perf. Criteria B
	RS	IEC/EN 61000-4-3	10V/m perf. Criteria A
	EFT	IEC/EN 61000-4-4	±1KV (see Fig. 3-① for recommended circuit) perf. Criteria B
	Surge	IEC/EN 61000-4-5	line to line ±1KV(see Fig. 3-① for recommended circuit) perf. Criteria B
	CS	IEC/EN 61000-4-6	3Vr.m.s perf. Criteria A

## Typical Characteristic Curves

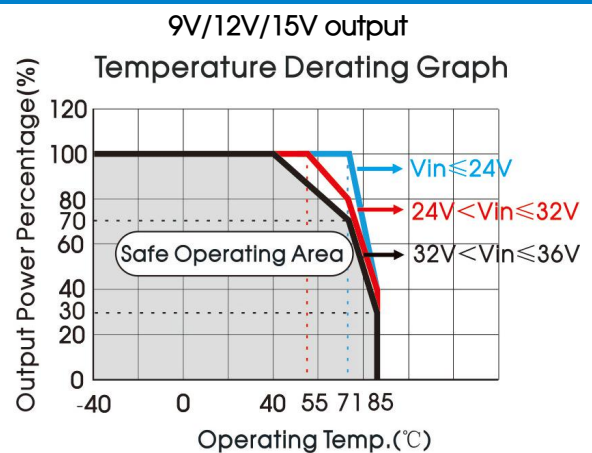
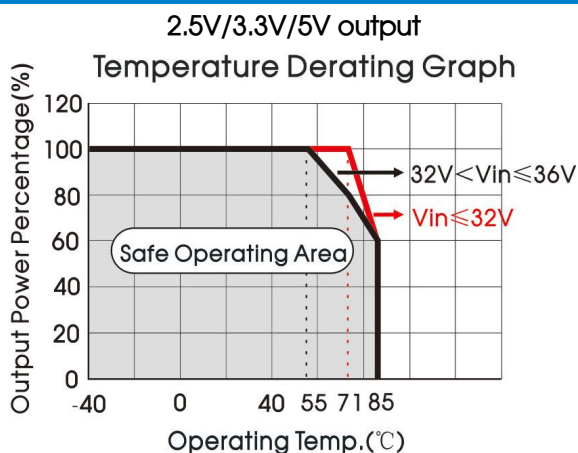
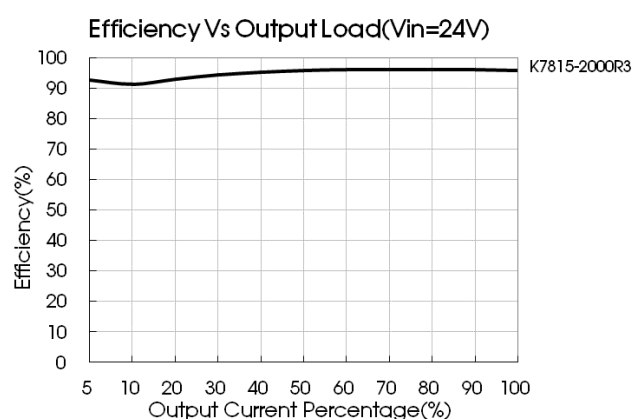
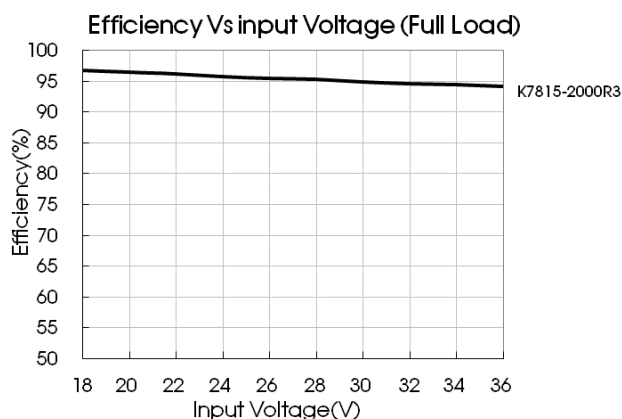
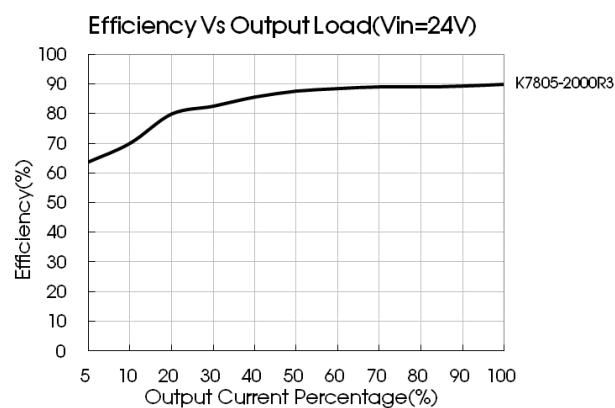
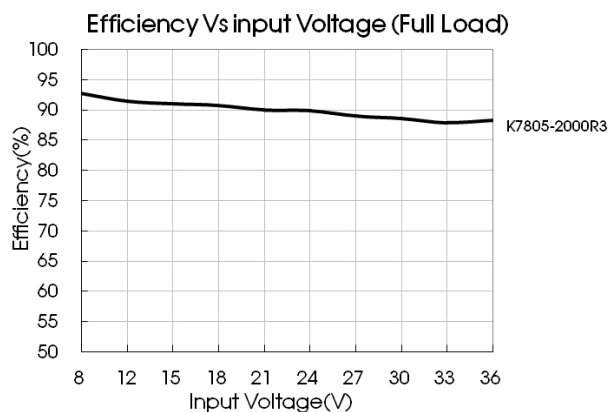


Fig. 1



## Design Reference

### 1. Typical application

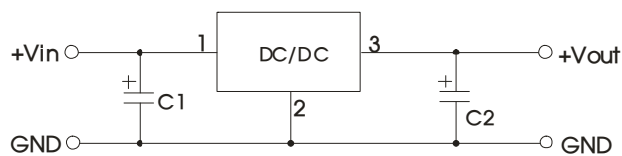


Fig. 2 Typical application

Sheet 1

Part No.	C1 (ceramic capacitor)	C2 (ceramic capacitor)
K7802-2000R3	22μF/50V	22μF/10V
K7803-2000R3(L)		22μF/10V
K7805-2000R3(L)		22μF/10V
K7809-2000R3		22μF/16V
K7812-2000R3(L)		22μF/25V
K7815-2000R3		22μF/25V

Note:

- 1.The required C1 and C2 capacitors must be connected as close as possible to the terminals of the module;
- 2.Refer to Table 1 for C1 and C2 capacitor values;
- 3.For certain applications, increased values of C2 and/or tantalum or low ESR electrolytic capacitors may also be used instead;
- 4.Converter cannot be used for hot swap and with output in parallel.

### 2. EMC compliance circuit

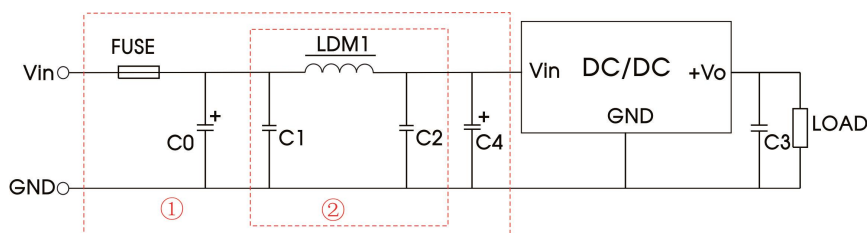


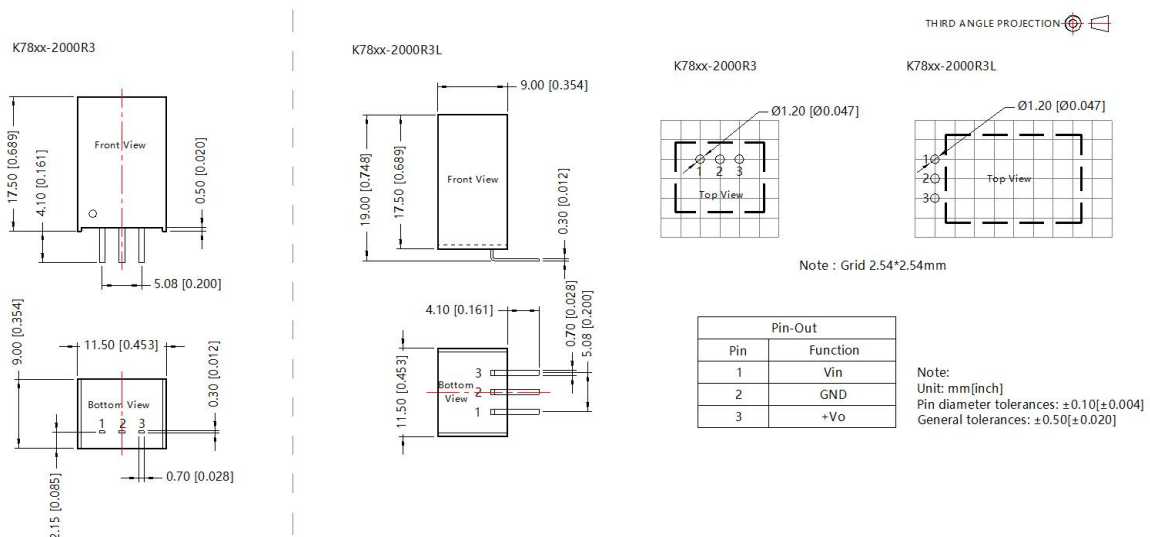
Fig. 3 EMC recommended circuit

FUSE	C0	LDM1	C4	C1/C2	C3
Selected based on the actual input current in application	100μF /100V	22μH	680μF /50V	10μF /50V	22μF /25V

Note: For EMC tests we use Part ① in Fig. 3 for immunity and part ② for emissions test. Selecting based on needs.

3. For additional information please refer to DC-DC converter application notes on [www.mornsun-power.com](http://www.mornsun-power.com)

## Dimensions and Recommended Layout



### Notes:

- For additional information on Product Packaging please refer to [www.mornsun-power.com](http://www.mornsun-power.com). Packaging bag number: 58210021(Straight Legs Series), 58210027(Bend Legs Series);
- The maximum capacitive load offered were tested at input voltage range and full load;
- Unless otherwise specified, parameters in this datasheet were measured under the conditions of T<sub>a</sub>=25°C, humidity<75%RH with nominal input voltage and rated output load;
- All index testing methods in this datasheet are based on our company corporate standards;
- We can provide product customization service, please contact our technicians directly for specific information;
- Products are related to laws and regulations: see "Features" and "EMC";
- Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

## MORNSUN Guangzhou Science & Technology Co., Ltd.

Address: No. 5, Kehui St. 1, Kehui Development Center, Science Ave., Guangzhou Science City, Huangpu District, Guangzhou, P. R. China

Tel: 86-20-38601850

Fax: 86-20-38601272

E-mail: info@mornsun.cn

[www.mornsun-power.com](http://www.mornsun-power.com)