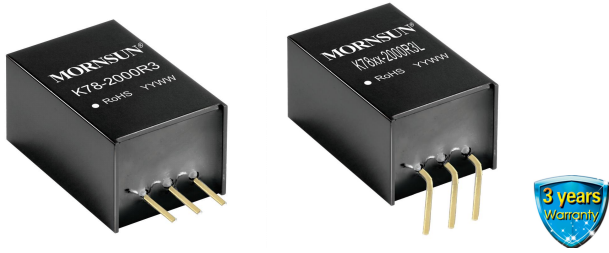


Wide input voltage, non-isolated and regulated single output

FEATURES



CE Patent Protection RoHS

- High efficiency up to 95%
- No-load input current as low as 0.1mA
- Operating ambient temperature range: -40°C ~ +85°C
- Output short circuit protection
- Pin compatible with LM78XX series linear regulators
- EN62368 approved

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.	Max. Capacitive Load(μF)
		Nominal (Range)	Voltage (VDC)	Max. Output Current (mA)		
CE	K7803-2000R3	24 (6-36)	3.3	2000	87/83	1800
	K7805-2000R3(L)	24 (8-36)	5	2000	90/87	1000
	K7809-2000R3	24 (13-36)	9	2000	93/90	680
	K7812-2000R3	24 (16-36)	12	2000	94/92	470
	K7815-2000R3	24 (18-36)	15	2000	95/93	470

Note: When the input voltage exceeds 30VDC, the input needs to be connected with an electrolytic capacitor of 22μF/50V 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	--	0.1	1	mA
Reverse Polarity at Input		Avoid / Not protected			
Input Filter		Capacitor filter			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit	
Voltage Accuracy	Full load, input voltage range	K7803-2000R3	--	±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, 100% load	--	30	75	mVp-p	
Temperature Coefficient	Operating temperature -40°C ~ +85°C	--	--	±0.03	%/°C	
Transient Response Deviation	Nominal input, 25% load step (25%-50%-25%, 50%-75%-50% step)	--	50	150	mV	
Transient Recovery Time		--	0.2	1	ms	

Short-circuit Protection	Nominal input	Continuous, self-recovery
Note: *1.The "parallel cable" method is used for ripple and noise test, please refer to <i>Non-isolated DC-DC Converter Application Notes</i> 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

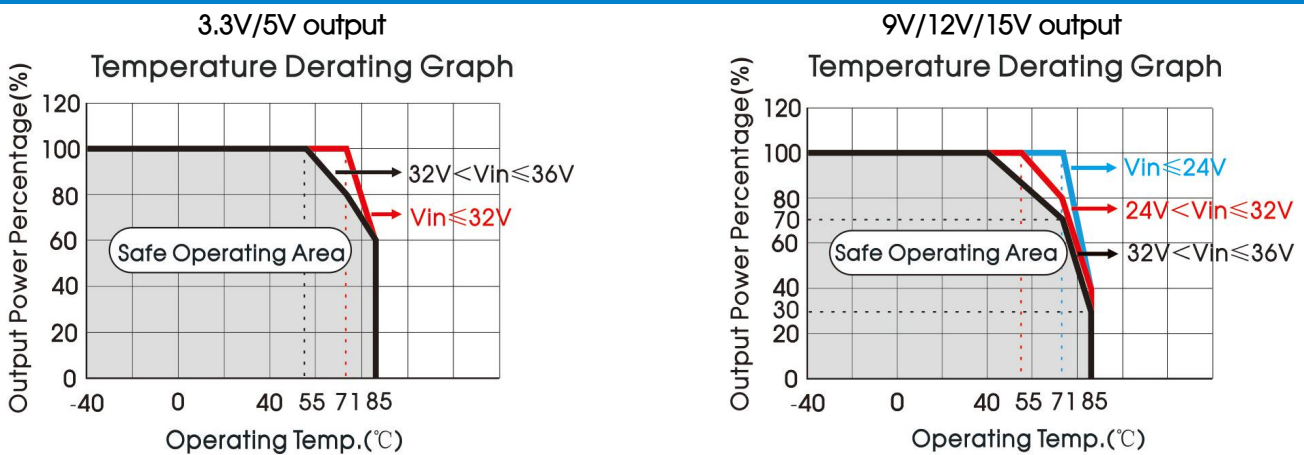
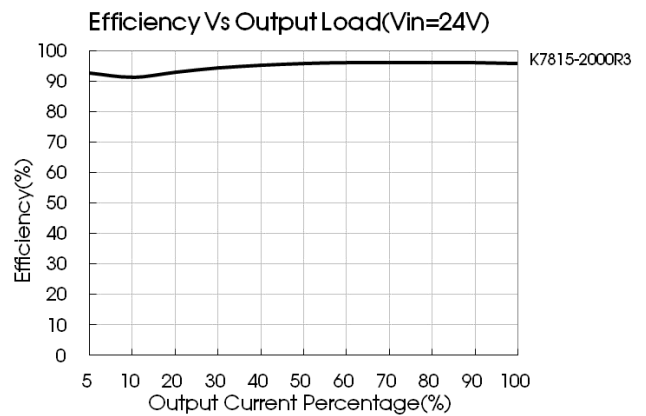
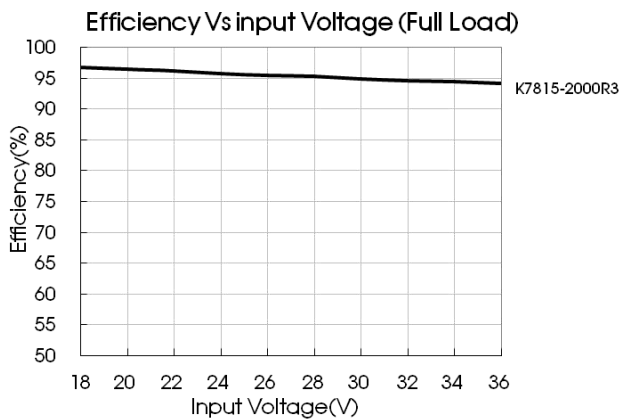
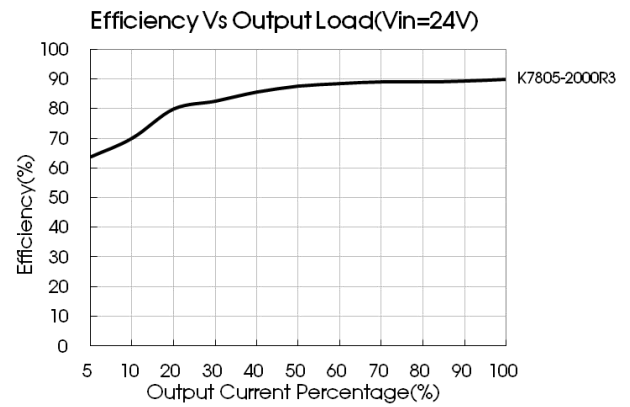
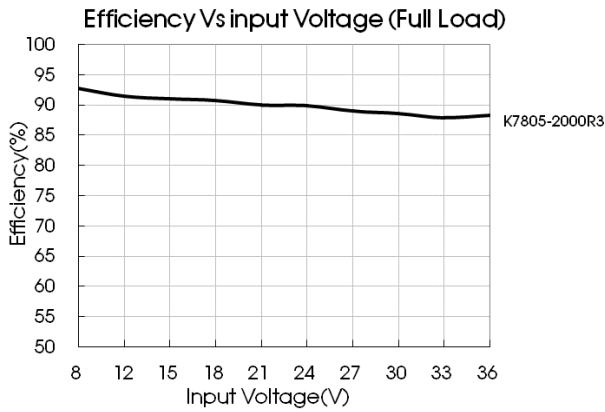
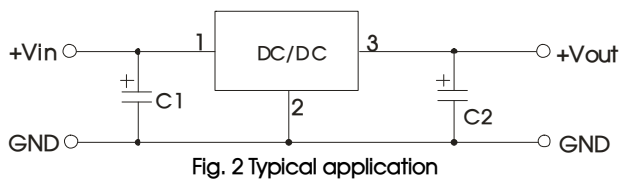


Fig. 1



Design Reference

1. Typical application



Sheet 1

Part No.	C1 (ceramic capacitor)	C2 (ceramic capacitor)
K7803-2000R3	22 μ F/50V	22 μ F/10V
K7805-2000R3		22 μ F/10V
K7809-2000R3		22 μ F/16V
K7812-2000R3		22 μ F/25V
K7815-2000R3		22 μ F/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.The products do not support parallel connection of their output and hot plug.

2. EMC compliance circuit

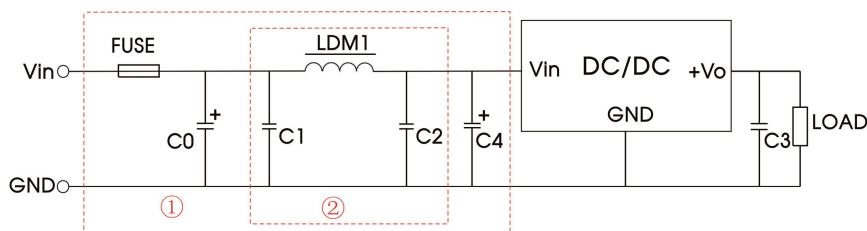


Fig. 3 EMC recommended circuit

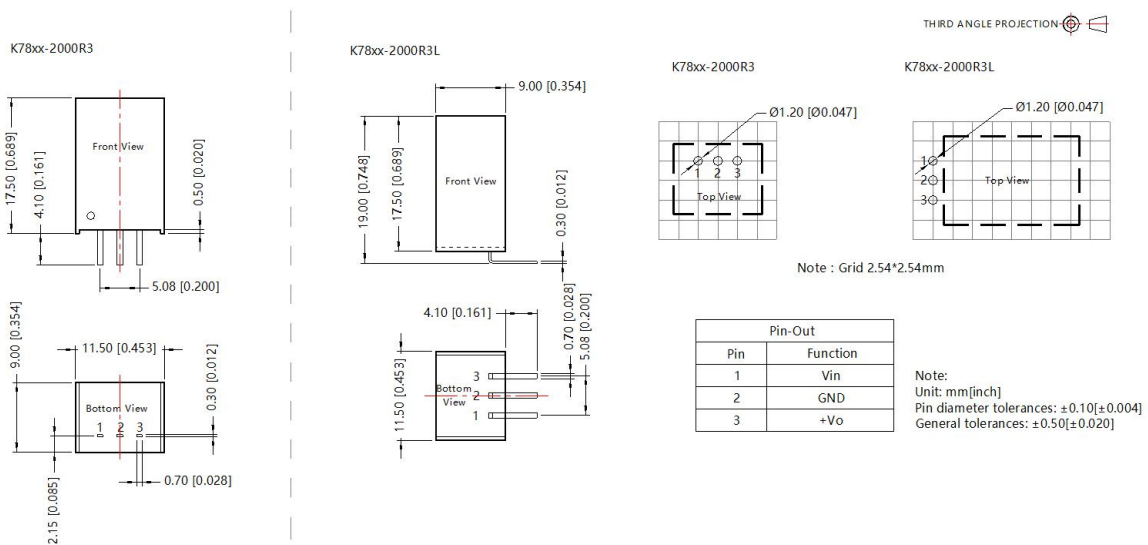
FUSE	C0	LDM1	C4	C1/C2	C3
Selected based on the actual input current from the customer	100μF /100V	22μH	680μF /50V	10μF /50V	22μF /25V

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

3. For additional information please refer to DC-DC converter application notes on

www.mornsun-power.com

Dimensions and Recommended Layout



Notes:

- For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number 58210021(Straight Foot Series), 58210027(Bend Foot Series);
- The specified maximum capacitive load is tested under full load condition and over the input voltage range;
- Unless otherwise specified, parameters in this datasheet were measured under the conditions of $T_a=25^{\circ}\text{C}$, 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.

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