

Wide input voltage , non-isolated & regulated single output





ROHS

FEATURES

- High efficiency up to 95%
- No-load input current as low as 0.1mA
- Operating temperature range: -40℃ to +85℃
- Output short circuit protection
- Pin-out compatible with LM78XX linear regulators
- Meets EN62368 standards (Pending)

K78xx-2000R3 series are high efficiency switching regulators and ideal substitutes of LM78xx series three-terminal linear regulators. The product is featured with high efficiency, low loss and no heat sink requirement. They are widely used in industrial control, instrumentation, and electric power applications.

Certification	Part Number	Input Voltage (VDC)	Voltage (VDC) Output		Efficiency (%/Typ.)	Max.
		Nominal (Range)	Output Voltage (VDC)	Max. Output Current (mA)	(Min. Vin)/ (Max. Vin) @Full Load	Capacitive Load(µF)
	K7803-2000R3	24 (6-36)	3.3	2000	87/83	1800
	K7805-2000R3	24 (8-36)	5	2000	90/87	1000
CE (Pending)	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: For input voltage higher than 30 VDC, a $22\mu\text{F}/50\text{V}$ input capacitor is required.

Input Specifications					
Item	Operating Conditions	Min.	Тур.	Max.	Unit
No-load Input Current	Positive output		0.1	1	mA
Reverse Polarity Input			Forbi	dden	
Input Filter			Capac	itor filter	

Output Specifications						
Item	Operating Conditions		Min.	Тур.	Max.	Unit
0.1.11/.11	Full load, input voltage range	K7803-2000R3		±2	±4	
Output Voltage Accuracy		Others		±2	±3	
Line Regulation	Full load, input voltage range	Full load, input voltage range		±0.4	±0.8	%
Load Regulation	Nominal input voltage,10% -100% load		-	±0.5	±1.5	
Ripple & Noise*	20MHz bandwidth, Nominal input voltage, 100% load			30	75	mVp-p
Temperature Drift Coefficient	Operating temperature -40°C to +85°C				±0.03	%/℃
Transient response deviation	Nominal input voltage,		-	50	150	mV
Transient recovery time	25%-50%-25%, 50%-75%-50% load step change			0.2	1	ms
Output short circuit protection	Nominal input voltage			Continuous	, self-recovery	<i>.</i> /
Note: *1.Ripple and noise tested with "	parallel cable" method, please refer to <i>L</i>	DC-DC Converter Applic	cation Notes for	r specific oper	ation methods	

*2.Input voltage range, 20%-100% load ripple&Noise is no more than 100mVp-p, 0%-20% load ripple&Noise is no more than 180mVp-p.

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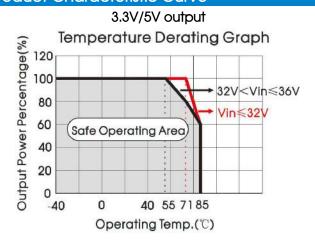
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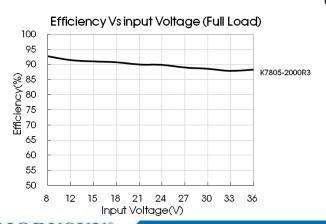
General Specifications					
Item	Operating Conditions	Min.	Тур.	Max.	Unit
Operating Temperature	see Fig. 1	-40		85	
Storage Temperature		-55		125	°C
Pin Welding Resistance Temperature	Welding time: 10s (Max.)			260	
Storage Humidity	Non-condensing	5		95	%RH
Switching Frequency	Full load, nominal input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

Physical Specifications				
Casing Material	Black flame-retardant and heat-resistant plastic (UL94 V-0)			
Package Dimensions	11.50*9.00*17.50 mm			
Weight	3.8g (Typ.)			
Cooling Method	Free air convection			

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

Product Characteristic Curve





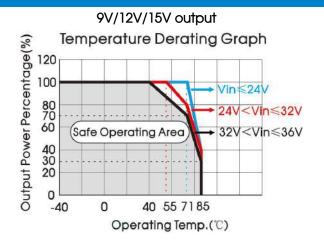
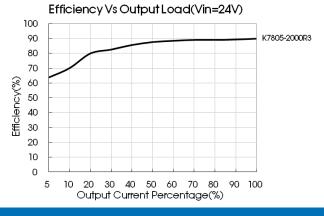
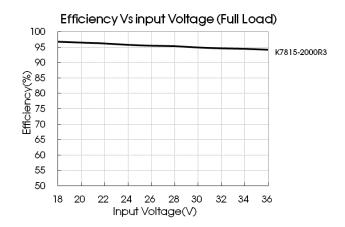


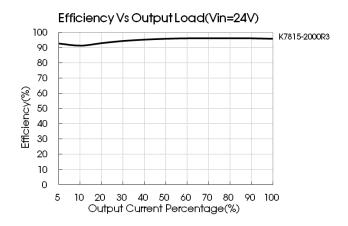
Fig. 1



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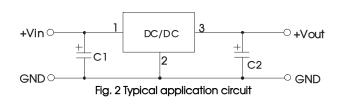
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Design Reference

1. Typical application circuit



Sheet 1					
Part No.	C1 (ceramic capacitor)	C2 (ceramic capacitor)			
K7803-2000R3		22µF/10V			
K7805-2000R3		22µF/10V			
K7809-2000R3	22μF/50V	22µF/16V			
K7812-2000R3		22µF/25V			
K7815-2000R3		22µF/25V			

Note:

- 1. C1 and C2 are required and should be connected close to the pin terminal of the module.
- 2. The capacitance of C1 and C2 refer to Sheet 1.
- 3. To reduce the output ripple furtherly, C2 can be increased properly if required, tantalum capacitor and aluminum electrolytic capacitor of low ESR may also suffice.
- 4. Cannot be used in parallel to enlarge the power for output and hot swap.

2. EMC solution-recommended circuit

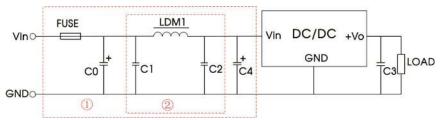


Fig. 4 EMC recommended circuit

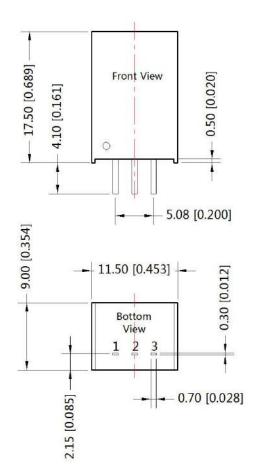
FUSE	C0	LDM1	C4	C1/C2	СЗ
Selected based on the actual input current from the customer	100µF /100V	22µH	680µF /50V	10µF /50V	22µF /25V

Note: Part 1 in the Fig. 4 is for EMS test, part 2 is for EMI filtering; parts 1 and 2 can be added based on actual requirement.

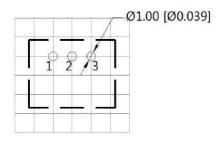
3. For more information please find the application notes on www.mornsun-power.com



Dimensions and Recommended Layout







Note: Grid 2.54*2.54mm

	Pin-Out
Pin	Positive Output
1	Vin
2	GND
3	+Vo

Note:

Unit:mm[inch]

Pin diameter tolerances :±0.10[±0.004] General tolerances:±0.25[±0.010]

Notes:

- Packing information please refer to Product Packing Information which can be downloaded from <u>www.mornsun-power.com</u>. Packing bag number: 58210021;
- 2. 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 Ta=25 ℃, humidity<75% with nominal input voltage and rated output load;
- 4. All index testing methods in this datasheet are based on our Company's corporate standards;
- 5. 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";
- 7. 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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