MORNSUN

K78XX-1000 Series

WIDE INPUT NON-ISOLATED & REGULATED SINGLE POSITIVE /NEGATIVE OUTPUT

RoHS

FEATURES

- Efficiency up to 97%
- Operating temperature: -40°C to +85°C
- Pin-out compatible with LM78XX Linear
- Short circuit protection, thermal shutdown
- Low ripple and noise
- Micro miniature SIP package
- No heat sink required
- Industry standard pinout
- MTBF>2,000,000 hours
- Can be used to convert a positive voltage into a negative voltage
- Only two extra capacitors are required
- Input voltage range can be lower than the output voltage for higher output voltages in negative application

APPLICATIONS

The K78xx-1000 Series high efficiency switching regulators are ideally suited to replace 78xx linear regulators and are pin compatible. The efficiency of up to 97% 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.

MODEL SELECTION

K78XX-1000

- Output Current
- Output Voltage
- Product Series

PRODUCT PROGRAM

Part Number	Input	Output		Efficiency (%)	
	Voltage Range (VDC)	Voltage (VDC)	Current (mA)	Vin (min.)	Vin(max.)
K7803-1000	4.75-28	3.3	1000	90	83
	4.75-25	-3.3	-600	80	82
K7805-1000	6.5-32	5.0	1000	93	88
	7.0-27	-5.0	-600	85	87
K78X6-1000	9.0-32	6.5	1000	94	90
	7.0-25	-6.5	-400	88	90
K7809-1000	12-32	9.0	1000	95	92
	7.0-23	-9.0	-400	89	91
K7812-1000	16-32	12	1000	96	94
	7.0-20	-12	-300	89	91
K7815-1000	20-32	15	1000	97	94
	7-17	-15	-300	87	92

OUTPUT SPECIFICATIONS

Item	Test conditions	Min.	Typ.	Max.	Units
Output voltage accuracy	100% full load		±2	±3	%
Line regulation	Vin=min. to max. at full load		±0.2	±0.4	
Load regulation	10% to 100% load		±0.4	±0.6	
Ripple+Noise*	20MHZ bandwidth		25	35	mVp-p
Short circuit input power			0.5	1.8	W
Short circuit protection		Continuous, automatic recovery			
Thermal shutdown	Internal IC junction		150		°C
Switching frequency	100% full load	280	330	450	KHz
Output current limit				2000	mA
Quiescent current	Positive Output		5	8	mA
	Negative Output		7	13	
Temperature coefficient	-40°C to +85 °C ambient			0.02	%/°C
Max capacitance load				1000	μF

*Test ripple and noise by "parallel cable" method.

COMMON SPECIFICATIONS

Item	Test conditions	Min.	Typ.	Max.	Units
Operating temperature		-40		85	°C
Operating case temp.				100	
Storage temperature		-55		125	
Lead temperature	1.5mm from case for 10 seconds			300	
Cooling		Free Air Convection			
Case material		Plastic (UL94-V0)			
Storage humidity				95	%
MTBF		2000			K hours
Package weight			3.7		g

Note:
1. All specifications measured at T_A=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
2. In this datasheet, all the test methods of indications are based on corporate standards.

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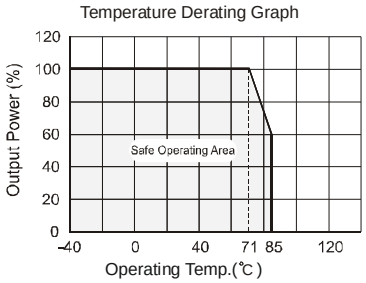
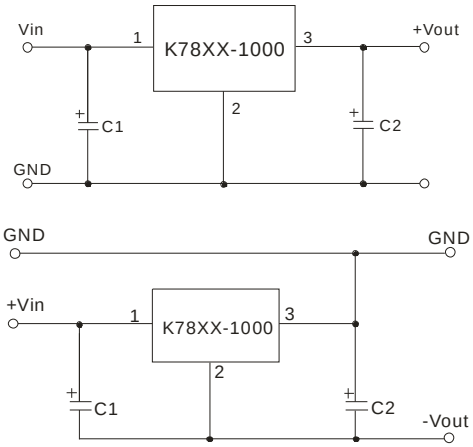
TYPICAL CHARECTERISTICS



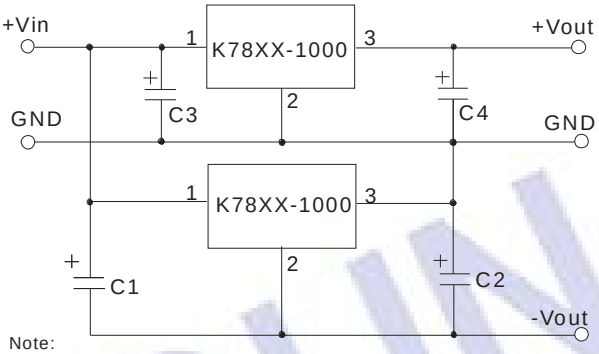
EXTERNAL CAPACITOR TABLE

Part Number	C1,C3 (ceramic capacitor)	C2,C4 (ceramic capacitor)
K7803-1000	10uF/50V	22uF/6.3V
K7805-1000	10uF/50V	22uF/10V
K78X6-1000	10uF/50V	10uF/10V
K7809-1000	10uF/50V	10uF/16V
K7812-1000	10uF/50V	10uF/25V
K7815-1000	10uF/50V	10uF/25V

TYPICAL APPLICATION CIRCUIT



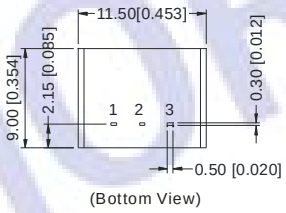
APPLICATION EXAMPLE

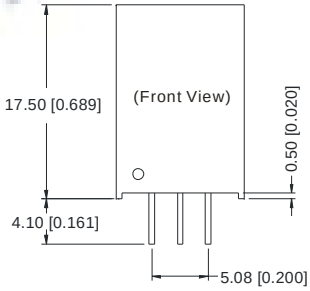


Note:
1.C1 and C2 are required and should be fitted close to the converter pins.
2.The capacitance of C1 ,C2,C3 and C4 sees external capacitor table, it can be increased properly if required, andtantalum or low ESR electrolytic capacitors may also suffice
3.No parallel connection or plug and play.

STANDARD APPLICATION CIRCUIT

MECHANICAL DIMENSIONS

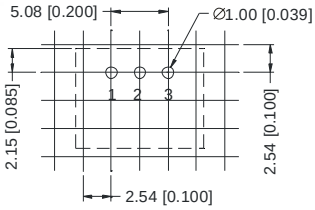




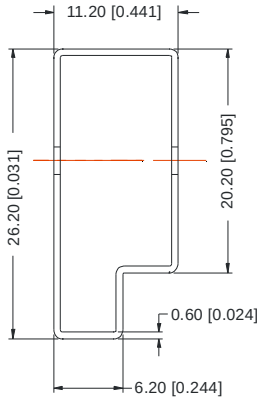
Note:
Unit:mm[inch]
Pin section tolerances±0.10mm [±0.004inch]
General tolerances±0.25mm [±0.010inch]

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

RECOMMENDED FOOTPRINT



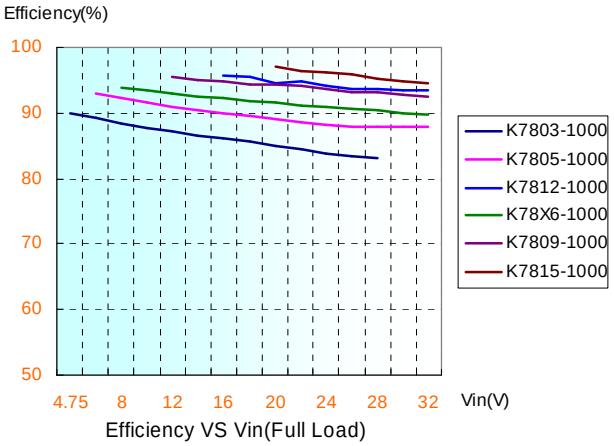
TUBE OUTLINE DIMENSIONS



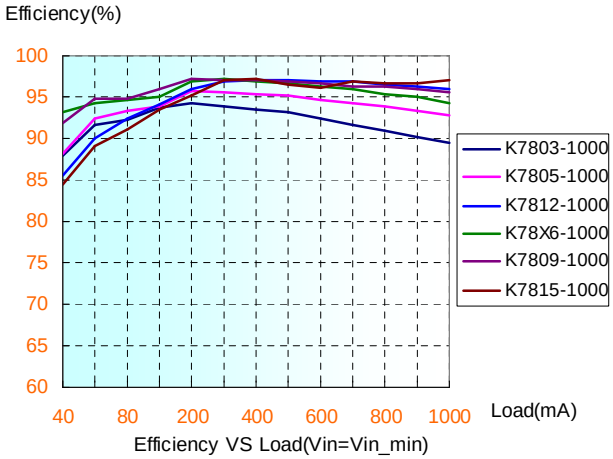
Note:
Unit :mm[inch]
General tolerances:±0.50mm [±0.020inch]
L=530mm[20.866inch] Tube Quantity: 44pcs
L=220mm[8.661inch] Tube Quantity: 17pcs

CHARACTERISTICS (POSITIVE VOLTAGE OUTPUT)

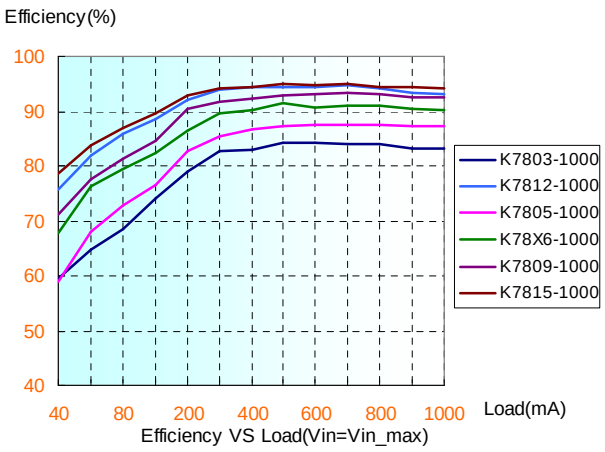
Efficiency



Efficiency VS Vin(Full Load)

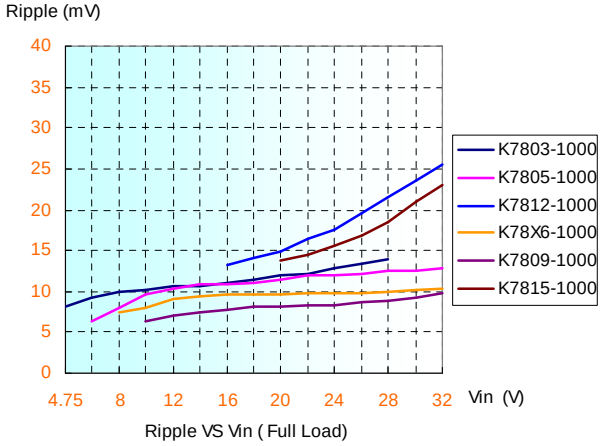


Efficiency VS Load(Vin=Vin_min)

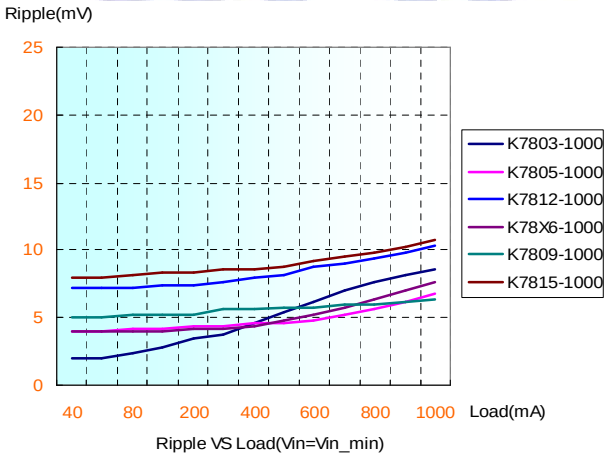


Efficiency VS Load(Vin=Vin_max)

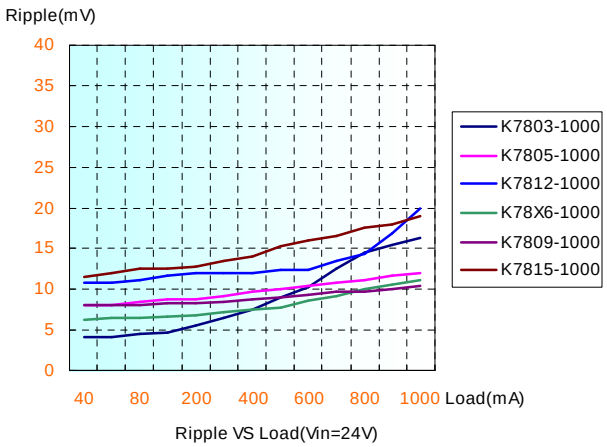
Ripple



Ripple VS Vin (Full Load)



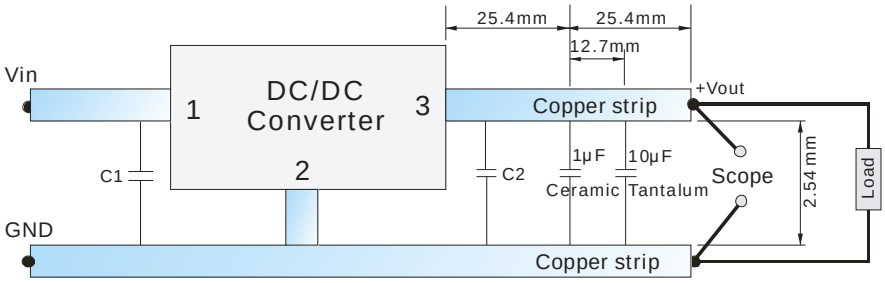
Ripple VS Load(Vin=Vin_min)



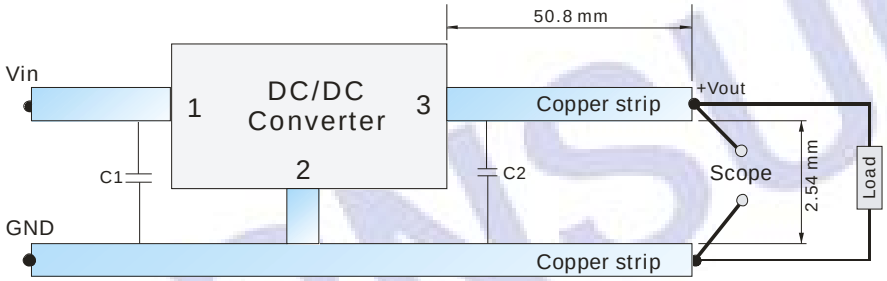
Ripple VS Load(Vin=24V)

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 10μH ~ 47μH.