MORNSUN®

RoHS

K78XX-500 Series

WIDE INPUT NON-ISOLATED & REGULATED SINGLE OUTPUT

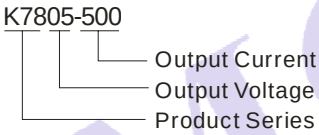
FEATURES

- Efficiency up to 96%
- Temperature range: -40°C ~ +85°C
- No heat sink required
- Pin-out compatible with LM78XX linears
- Short circuit protection, Thermal shutdown
- Low ripple and noise
- SIP package
- Industry standard pinout
- MTBF>2,000,000 hours

APPLICATIONS

The K78xx-500 series high efficiency switching regulators are ideally suited to replace 78xx linear regulators and are pin compatible.

MODEL SELECTION



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PRODUCT PROGRAM

Part Number	Input Voltage(VDC)		Output		Efficiency (%)(Typ)	
	Nominal	Range	Voltage (VDC)	Current (mA)	Vin (Min)	Vin (Max)
K7801-500	12	4.75-26	1.5	500	76	66
K78X2-500	12	4.75-28	1.8	500	79	67
K7802-500	12	4.75-28	2.5	500	85	73
K7803-500	24	4.75-28	3.3	500	90	80
K7805-500	24	6.5-32	5.0	500	93	84
K78X6-500	24	8-32	6.5	500	94	87
K7809-500	24	11-32	9.0	500	95	91
K7812-500	24	15-32	12	500	95	92
K7815-500	24	18-32	15	500	96	93

OUTPUT SPECIFICATIONS

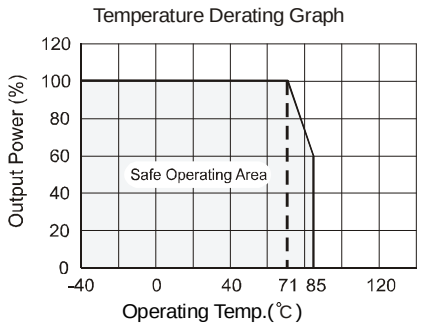
Item	Test Conditions		Min.	Typ.	Max.	Units
Output voltage accuracy	100% full load			±2	±3	%
Line regulation	Vin= min. to max. (at full load)	Vout:1.5V~2.5V		±0.5	±1.0	
		Vout:3.3V~15V		±0.2	±0.4	
Load regulation	10% to 100% load	Vout:1.5V~2.5V		±0.4	±0.75	
		Vout:3.3V~15V		±0.4	±0.6	
Ripple & Noise*	20MHz Bandwidth(refer to figure 3)			25	35	mVp-p
Short circuit input power				0.5	1.8	W
Short circuit protection			Continuous, automatic recovery			
Switching frequency	At full load, input voltage range		280	330	450	kHz
Output current limit	Vin= min. to max. (at full load)	Vout:1.5V~3.3V			3000	mA
		Vout: 5V~15V			2000	
Quiescent current				5	8	mA
Thermal shutdown	Internal IC junction			150		°C
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
Storage humidity range				95	%
Operating temp. range	Power derating (above 71°C)	-40		85	°C
Storage temp. range		-55		125	
Operating case temp.				100	
Lead temperature	1.5mm from case for 10 seconds			300	
Cooling		Free air convection			
Case material		Plastic (UL94-V0)			
MTBF	25℃（MIL-HDBK-217F）	2000			k hours
Weight			2.0		g

TYPICAL CHARACTERISTICS

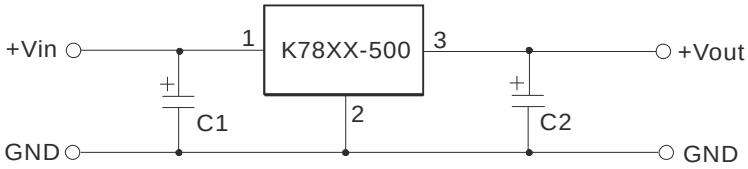


(figure1)

EXTERNAL CAPACITOR TABLE

Part Number	C1 (Ceramic Capacitor)	C2 (Ceramic Capacitor)
K7801-500	10μF/50V	22μF/6.3V
K78X2-500	10μF/50V	22μF/6.3V
K7802-500	10μF/50V	22μF/6.3V
K7803-500	10μF/50V	22μF/6.3V
K7805-500	10μF/50V	22μF/10V
K78X6-500	10μF/50V	10μF/10V
K7809-500	10μF/50V	10μF/16V
K7812-500	10μF/50V	10μF/25V
K7815-500	10μF/50V	10μF/25V

STANDARD APPLICATION CIRCUIT

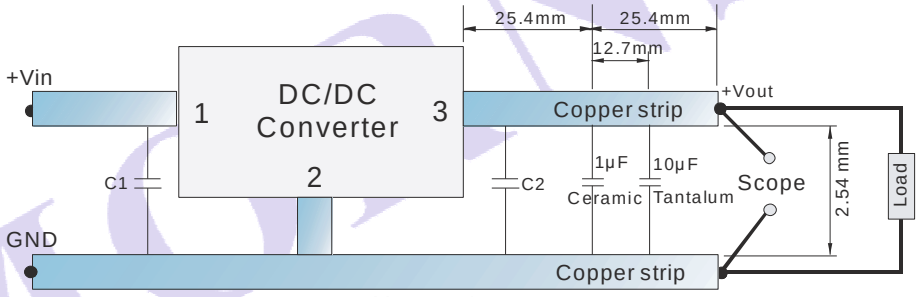


(figure 2)

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

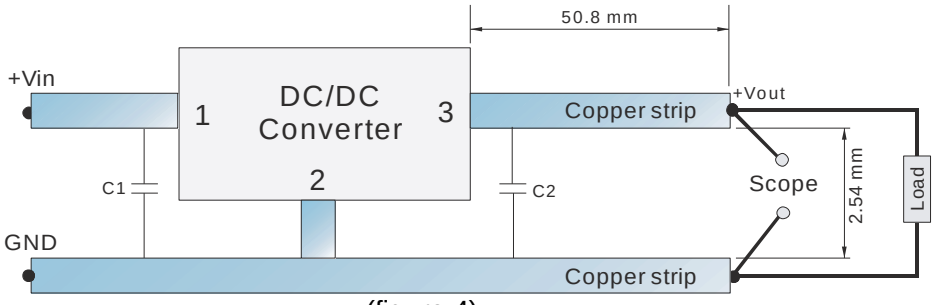
TEST CONFIGURATIONS (TA=25°C)

1 Efficiency and Output Voltage Ripple Test



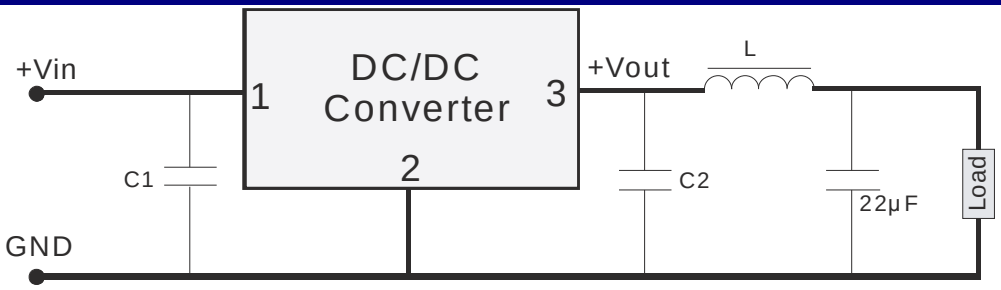
(figure 3)

2 Start-up and Load Transient Response Test



(figure 4)

OUTPUT RIPPLE REDUCTION



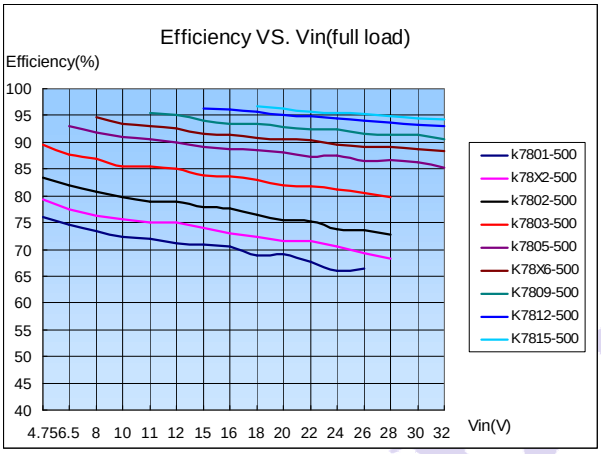
To reduce output ripple, it is recommended to add a LC filter in output port.

L: Recommended parameter 10μH ~ 47μH.

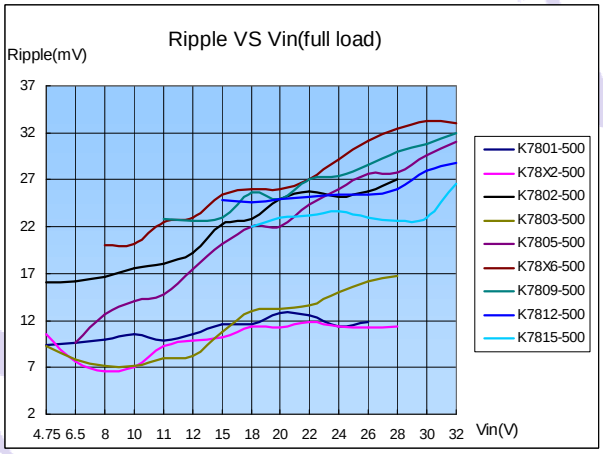
(figure 5)

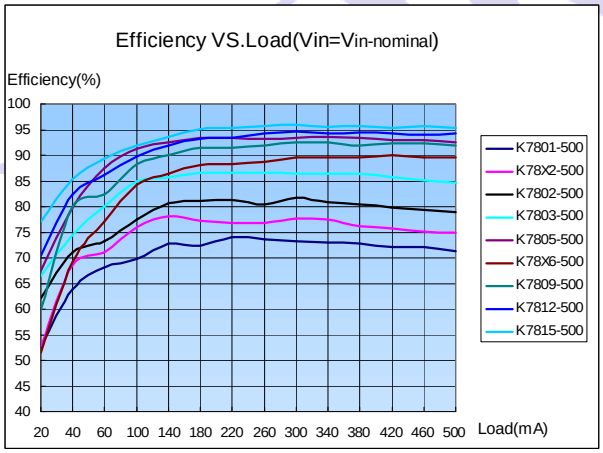
CHARACTERISTICS

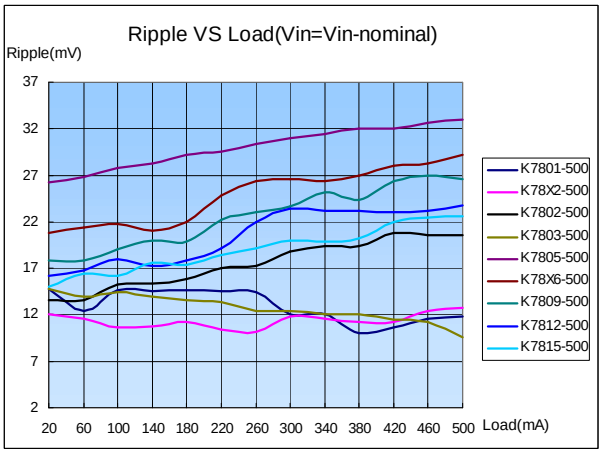
Efficiency



Ripple

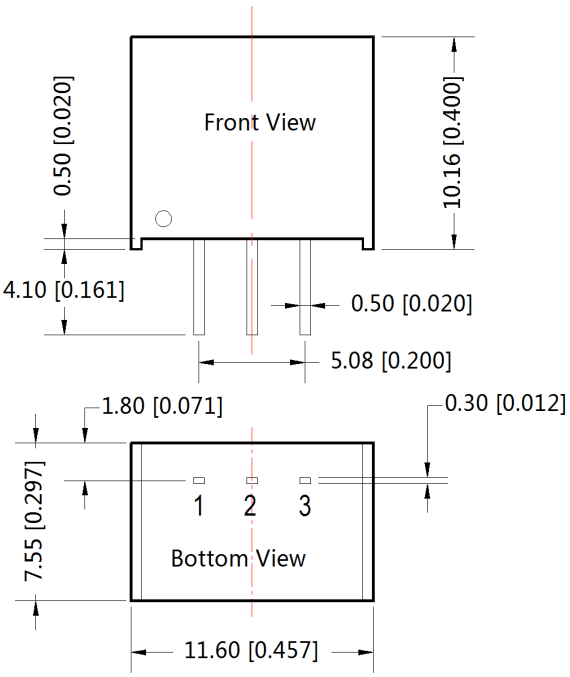


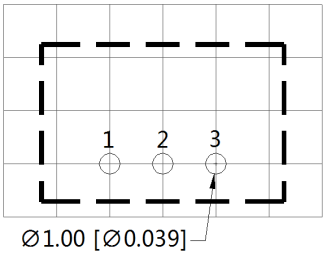




OUTLINE DIMENSION & FOOTPRINT DETAILS

THIRD ANGLE PROJECTION





Note : Grid 2.54*2.54mm

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

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

Note:

1. All specifications measured at TA=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
2. Only typical models listed. If you need other model, please confirm the power, input voltage and output voltage, and then phone us.
3. In this datasheet, all the test methods of indications are based on corporate standards.