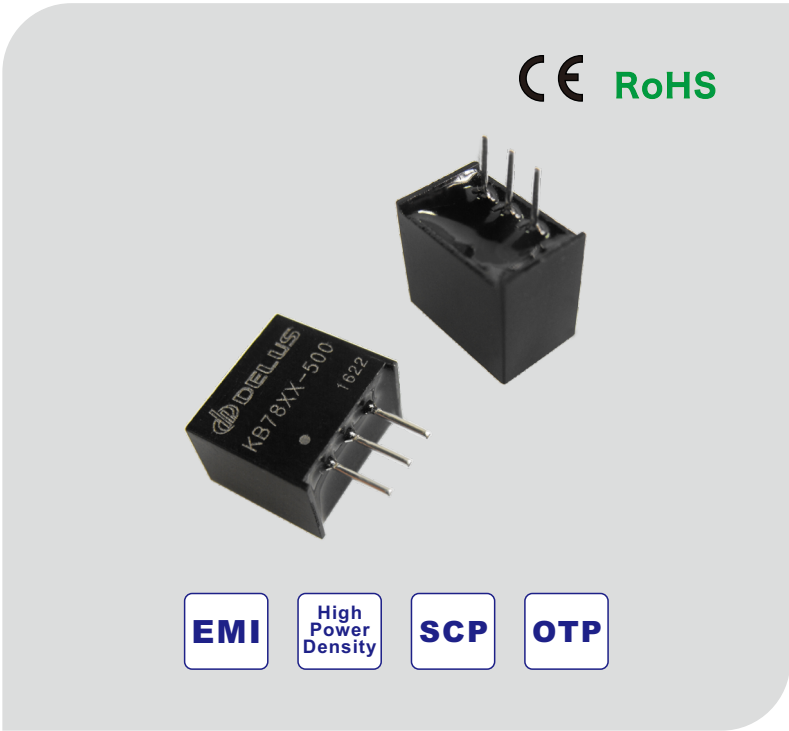


## Features

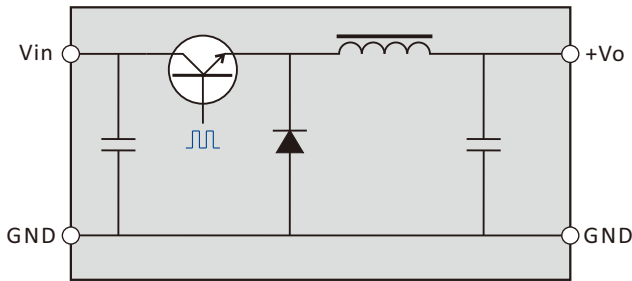
- ◆ Operating temperature: -40 to +85°C
- ◆ 4.75-32Vdc ultra wide input voltage range
- ◆ 3.3/5/9/12/15Vdc multiple output
- ◆ Output current up to 500mA
- ◆ Efficiency up to 96%
- ◆ Support negative voltage output
- ◆ Pin-compatible LM78xx three-terminal linear regulators
- ◆ Ultra-low noise & ripple
- ◆ Bare module meet CISPR22/EN55022 Class B
- ◆ 100% burn-In
- ◆ No external heat sink
- ◆ Continuous short circuit protection
- ◆ RoHS/CE multiple compliance
- ◆ With 3 years warranty

## General Description

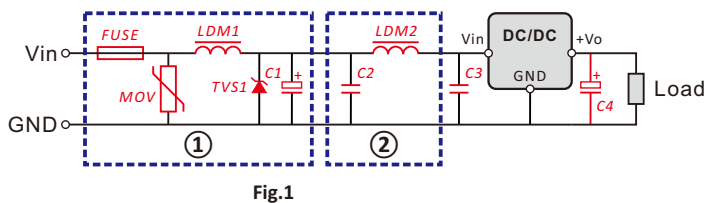
KB78xx-500 series is a new generation of high efficiency switching regulator, which is a ideal substitute for the traditional LM78xx series linear three terminal voltage regulator. The efficiency is up to 96%, it means that very little energy is wasted and the heat is low, so there is no need for any heat sinks with their additional space and costs. The series support negative output. They are widely used in industrial control, instrumentation, and electric power applications.



## Functional Diagram



## EMC Solution-Recommended Circuit



### Notes:

Part ① in the Fig.1 is used for EMS test and part ② for EMI filtering; selected based on needs.

Parameter Description	
Component	Specification
FUSE	according to actual current
MOV	10D560
LDM1	82uH
TVS1	SMCJ36A
C1	120uF/50V
C2	4.7uF/50V
LDM2	33uH

# KB78xx-500 Series

500mA, wide input, non-isolated & regulated single output dc-dc converter



## Parameter Specification

Item	Test Conditions	Min	Typ	Max	Units
Output Current	Operating temp curve range			500	mA
Load Regulation	10-100% load, nominal input			±0.4	%
Line Regulation	100% load, input low to high		±1	±3	
Output Voltage Accuracy					
Switching Frequency	DC-20MHz bandwidth	280	330	450	KHz
Ripple & Noise	100% load, nominal input			0.03	mVp-p
Temperature Drift					%/°C
Short Circuit Protection	Continuous, Self-Recovery				
Overheat Protection	IC built-in		150		°C
Quiescent Current	no load			3	mA
MTBF	MIL-HDBK 217 @ 25°C	1000			k hours
Hot Plug	Unavailable				

## Common Specification

Item	Test Conditions	Min	Typ	Max	Units
Operating Temperature	More see on derating cruve	-40		+85	°C
Lead Temperature	1.5mm from case for 10 seconds			+260	
Storage Temperature		-50		+130	
Storage Humidity				95	%
Weight			2.0		g
Case Material	Black Plastic (UL94V-0)				

## Product Program

Certificate	Model	Input		Output		Eff [%]		Max Capacitive Load [uF]
		Voltage [Vdc]		Voltage [Vdc]	Current [mA]	Vin (min)	Vin (max)	
		Nominal	Range					
CE/RoHS	KB7803-500	24	4.75~28	3.3	500	90	80	680
		12	4.75~25	-3.3	-400	74	78	470
	KB7805-500	24	6.5~32	5	500	93	84	680
		12	6.5~27	-5	-400	78	83	470
	KB7809-500	24	11~32	9	500	95	91	680
		12	7~23	-9	-200	85	86	470
	KB7812-500	24	15~32	12	500	95	92	680
		12	7~20	-12	-200	83	87	330
	KB7815-500	24	18~32	15	500	96	93	470
		12	7~17	-15	-200	81	87	330

## Dimensions

First Angle Proj

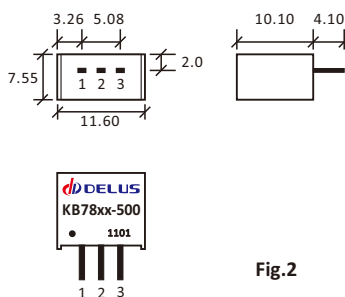


Fig.2

Pin	Positive	Negative
1	Vin	Vin
2	GND	-Vo
3	+Vo	GND

**Note:**  
All size units mm,  
Diameter of all terminal 0.5mm;  
Distance between all adjacent  
terminal 2.54mm

## Application Note

### 1. Typical Application Circuit

All products of this series have tested according to Fig.3(A) before delivery (but no external Cin and Cout capacitors ). In general applications, KB78xx-500 series products can operate steadily and reliably without any external filter. Under condition of full load, full range of products, the maximum input ripple does not exceed 300mVp-p, and the maximum output ripple is not more than 50mVp-p (typical values 10mVp-p). There is no need for external filter capacitors in normal usage. If you want to further reduce the ripple, please connect a external filter circuit at the inputs and outputs(as the figure below). Recommended values of external capacitors please see the following table.

If the input voltage exceeds 30V, external capacitors must be connect to inputs to protect the module from voltage spike.

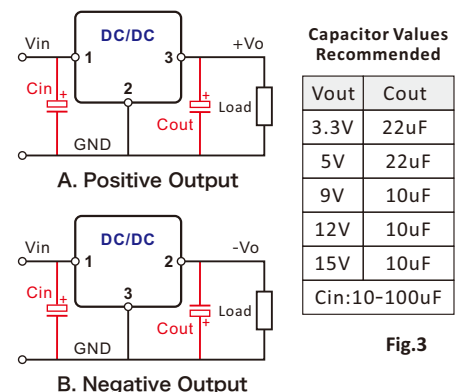


Fig.3

### 2. Input polarity protection

The series product has no positive & negative reverse polarity protection, and the solution is that a diode connects to input in series.

### 3. On derating

When the environmental temperature exceeds 70°C, the module should be derating used according to the following figure.

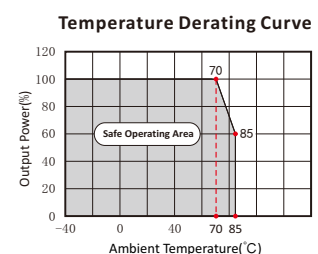


Fig.4

**4. The series product cannot be used in parallel and hot-swappable.**

# File Release Notes

DBN-301 Technical Data Sheet Version



No.	Version	Date	Description
1	V0	2011/11/01	First release
2	A/0	2016/07/01	Fixed bug and change document version definition
3			
4			
5			

1. All data in addition to particular things, are  $T_a = 25^{\circ}\text{C}$ , humidity<75%, nominal input voltage and output measured at rated load;
2. Non-standard models with some of the following indicators may be different from the specific circumstances of the Secretary to direct contact with me;
3. In the use of this manual, if some of them do not quite understand terms please refer to our <<DC/DC Converter Application Guide>>;
4. The Company focused on technological improvements, product specifications and parameter updates without notice, to pay attention to the latest information on website.

All Delus Corporation's products are manufactured, assembled and tested utilizing ISO9001 quality systems.  
For information regarding Delus Corporation and its products please see website: [www.delus-power.com](http://www.delus-power.com)

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