



## FEATURES

- ◆ RoHS compliant
- ◆ Efficiency up to 96%
- ◆ SIP Package
- ◆ Wide temperature range: -40°C to 85°C
- ◆ Short circuit protection, Thermal Shutdown
- ◆ No heatsink required
- ◆ Low ripple and noise
- ◆ Industry standard pinout
- ◆ MTBF > 2,000,000 hours
- ◆ Only two extra capacitors are required
- ◆ Input voltage range can be lower than the output voltage for higher output voltages
- ◆ The WRN78xx-500 Series converters can also be used to convert a positive voltage into a negative voltage

## MODEL SELECTION

### WRN78<sup>①</sup> 05<sup>②</sup> -500<sup>③</sup>

- ① Product Series      ② Output Voltage  
③ Output Current

## DESCRIPTION

The WRN78xx-500 Series high efficiency switching Regulators are ideally suited to replace 78xx linear regulators and are pin compatible.



# CE REACH

MICRODC reserves the copyright

## SELECTION GUIDE

order code	Input	Output		Efficiency(% Typ)	
	Voltage Range (VDC)	Voltage (VDC)	Current (MA)	Vin(min)	Vin(max)
WRN7803-500	4.75-28	3.3	500	90	80
	4.75-25	-3.3	-400	73	78
WRN7805-500	6.5-32	5.0	500	93	84
	6.0-27	-5.0	-400	78	83
WRN786.5-500	8-32	6.5	500	94	87
	6.0-25	-6.5	-300	83	85
WRN7809-500	11-32	9.0	500	95	91
	7.0-23	-9.0	-200	87	86
WRN7812-500	15-32	12	500	95	92
	7.0-20	-12	-200	85	87
WRN7815-500	18-32	15	500	96	93
	7.0-17	-15	-200	84	89

\* Input voltage can't exceed this value, or will cause the permanent damage.

## OUTPUT SPECIFICATIONS

Parameter	Test conditions	Min.	Typ.	Max.	Units
Output Voltage accuracy	100% full load		±2	±3	W
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		20	35	%
Short Circuit Input Power			0.5	1.8	%
Short circuit protection		Continuous, automatic recovery			
Switching frequency		280	330	450	Khz
Quiescent current	Positive Output		5	8	mA
Quiescent current	Negative Output		7	13	
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

Parameter	Test conditions	Min.	Typ.	Max.	Units
Operating Temp. Range		-40		85	°C
Operating Case Temp.				100	°C
Storage Temp. Range		-55		125	°C
Cooling		Free Air Convection			
Case Material		Plastic (UL94-V0)			
Lead Temperature	1.5mm from case for 10 seconds			300	°C
Storage Humidity Range				95	%
MTBF	+25°C MIL-HDBK-217F	2000			K hours
Package Weight			2.0		g

Note:

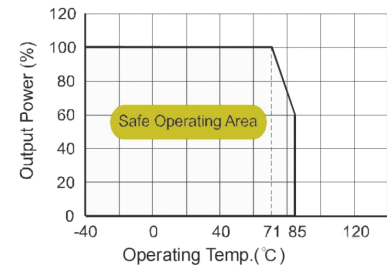
- All specifications measured at TA=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
- Only typical models listed. If you need other model, please confirm the power, input voltage and output voltage, then phone us.

### EXTERNAL CAPACITOR TABLE

Part Number	C1,C3 (ceramic capacitor)	C2,C4 (ceramic capacitor)
WRN7803-500	10uF/50V	22uF/6.3V
WRN7805-500	10uF/50V	22uF/10V
WRN786.5-500	10uF/50V	10uF/10V
WRN7809-500	10uF/50V	10uF/16V
WRN7812-500	10uF/50V	10uF/25V
WRN7815-500	10uF/50V	10uF/25V

### TYPICAL CHARACTERISTICS

Temperature Derating Graph

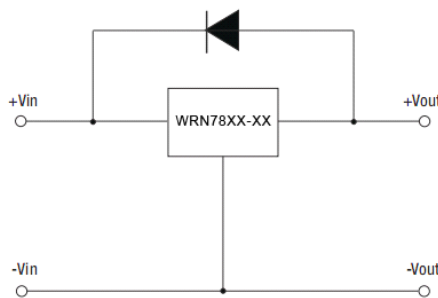


### OPTIONAL DIODE PROTECTION CIRCUIT

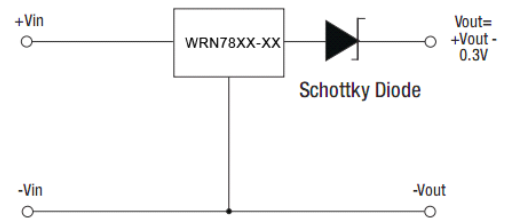
Add a blocking diode to Vout if current can flow backwards into the output, as this can damage the converter when it is powered down.

The diode can either be fitted across the device if the source is low impedance or fitted in series with the output (recommended).

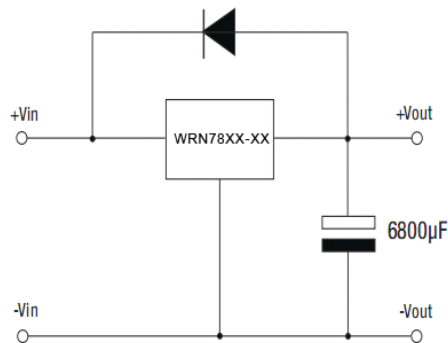
Optional Protection 1:



Optional Protection 2:

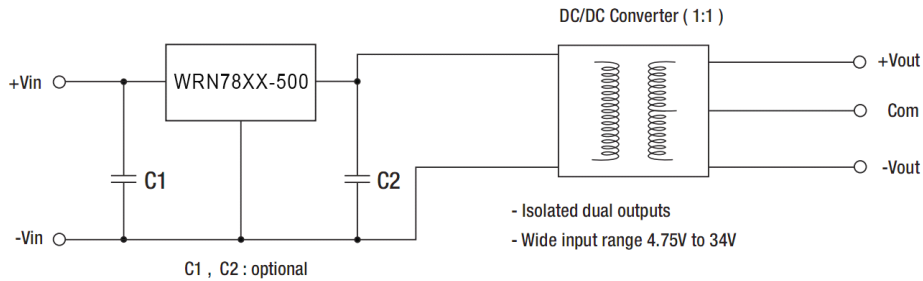


Application example:  
Driving a high capacitive load

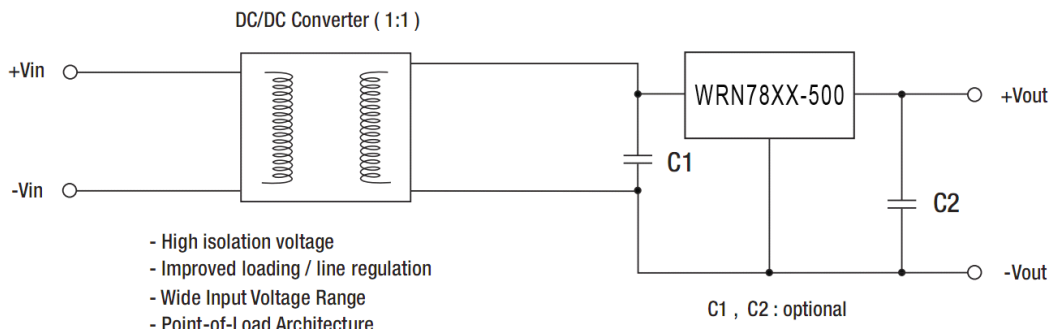


### APPLICATION EXAMPLE

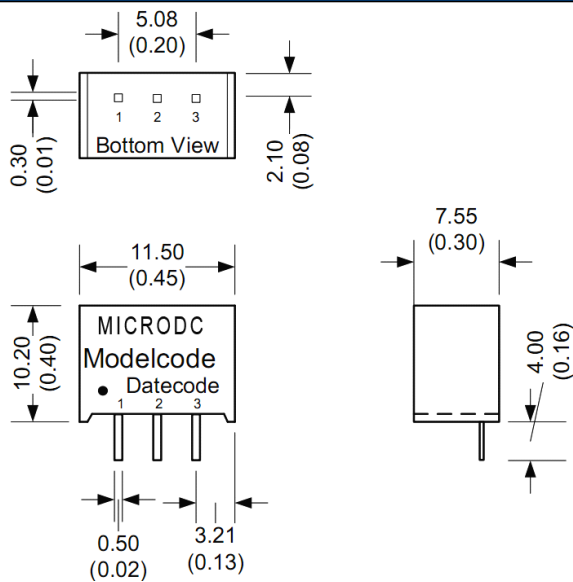
#### High efficiency, isolated, dual unregulated outputs



#### Isolated (up to 6KV), wide input range regulated output

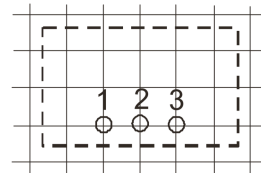


### MECHANICAL DIMENSIONS



Note:  
Unit:mm[inch]  
Pin section:0.50\*0.30mm(0.020\*0.012inch)  
Pin section tolerances:±0.10mm[±0.004inch]  
General tolerances:±0.25mm[±0.010inch]

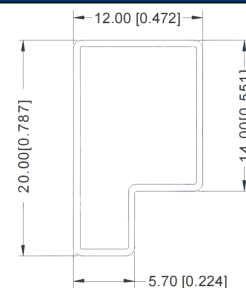
### RECOMMENDED FOOTPRINT



Pin #	Connection
1	+ V Input
2	GND
3	+ V Output

RECOMMENDED FOOTPRINT  
Top view,grid:2.54mm(0.1inch)  
diameter:1.00mm(0.039inch)

### TUBE OUTLINE DIMENSIONS



Note:  
Unit :mm[inch]  
General tolerances: ±0.50mm[±0.020inch]  
L=530mm[20.866inch] Tube Quantity: 22pcs  
L=220mm[8.661inch] Tube Quantity: 8pcs