



FEATURES

- ◆ Efficiency up to 93%
- ◆ Operating tem.range: -40°C ~ 85°C
- ◆ Pin-out compatible with WRN78XX linear
- ◆ Short circuit protection, Thermal Shutdown
- ◆ Low ripple and noise
- ◆ Micro miniature SIP3 package, meet UL94-Vo requirement
- ◆ No heatsink required
- ◆ Industry standard pinout
- ◆ MTBE>2000KHours

MODEL SELECTION

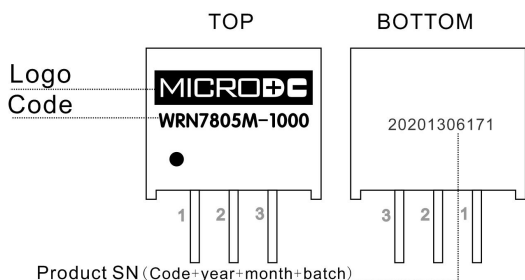
WRN78^①05^②M^③-1000^④

- ① Product Series ② Output Voltage
③ Miniature SIP3 Package ④ Output Current

DESCRIPTION

The WRN78xxM-1000 Series high efficiency switching regulators are ideally suited to replace 78xx linear regulators and are pin compatible. The efficiency of up to 93% 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.

PRODUCT ID DESCRIPTION



SELECTION GUIDE

Part Number	Input	Output		Efficiency(% Typ)	
	Voltage Range (VDC)	Voltage (VDC)	Current (mA)	Vin(min)	Vin(max)
WRN781.5M-1000	4.75-30	1.5	1000	78	72
WRN782.5M-1000	4.75-30	2.5	1000	87	82
WRN7803M-1000	4.75-36	3.3	1000	90	83
WRN7805M-1000	6.5-36	5.0	1000	93	85
WRN7809M-1000	9-36	9.0	1000	95	90
WRN7812M-1000	12-36	12	1000	95	92
WRN7815M-1000	15-36	15	1000	95	93

OUTPUT SPECIFICATIONS

Item	Test conditions	Min.	Typ.	Max.	Units
Output Voltage accuracy	100% full load, input voltage range		±2	±3	%
Line regulation	Vin= min. to max. at full load		±0.5	±0.75	%
Load regulation	10% to 100% load		±0.5	±1.0	%
Ripple & Noise*	20MHZ Bandwidth (refer to figure 3)		25	45	mVp-p
Short Circuit protection		Continuous, automatic recovery			
Thermal Shutdown	Internal IC junction		150		°C
Output current limit			3000		mA
Switching frequency	Full load, input voltage range	335	385	435	KHZ
Dynamic load stability				±100	mV
Quiescent current	Vin from min to max and at 0% load		7	10	mA
Temperature coefficient	-40 °C ~ +85 °C ambient			±0.02	%/°C
Max capacitance load				1000	µF

*WRN7803M-1000 is ±3.5%(MAX)

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°C MIL-HDBK-217F)	2000			K hours
Weight			2.0		g

Note:

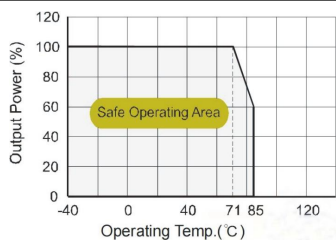
- All specifications measured at TA=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
- Only typical models listed. If you need other model, please confirm the power, input voltage and output voltage, then phone us.



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TYPICAL CHARACTERISTICS

Temperature Derating Graph

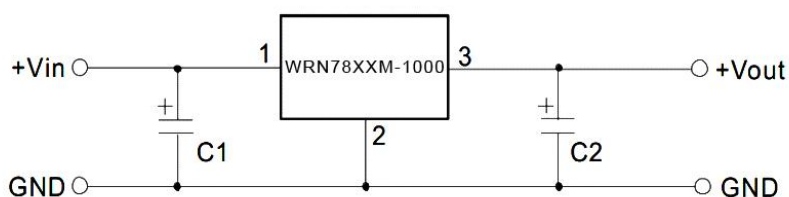


(figure 1)

EXTERNAL CAPACITOR TABLE

Part Number	C1,C3 (ceramic capacitor)	C2,C4 (ceramic capacitor)
WRN781.5M-1000	10uF/25V	22uF/6.3V
WRN781.8M-1000	10uF/25V	22uF/6.3V
WRN782.5M-1000	10uF/25V	22uF/10V
WRN7803M-1000	10uF/25V	22uF/16V
WRN7805M-1000	10uF/25V	22uF/16V

TYPICAL APPLICATION CIRCUIT



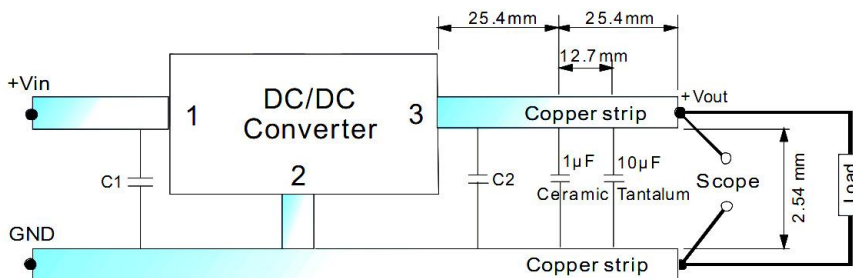
(figure 2)

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.

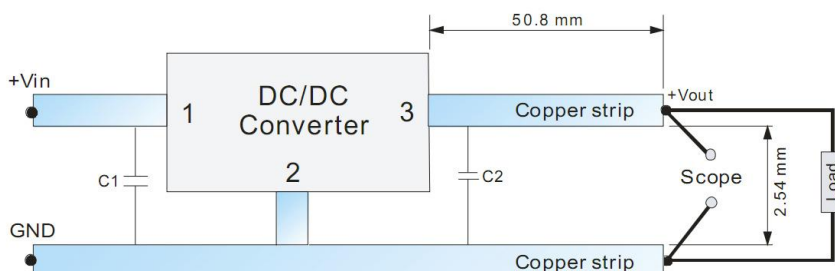
TEST CONFIGURATIONS (TA=25°C)

1 Efficiency and Output Voltage Ripple Test



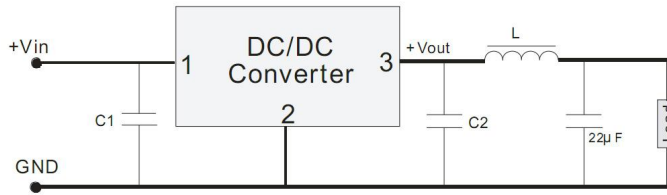
(figure 3)

2 Start-up and Load Transient Response Test



(figure 4)

OUTPUT RIPPLE REDUCTION

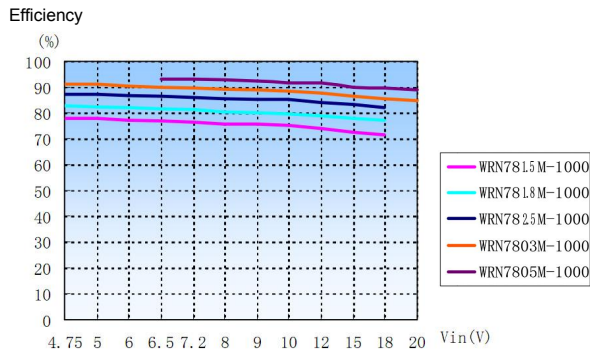


To reduce output ripple, it is recommended to add a LC filter in output port
L: Recommended parameter 10µH-47µH.

(figure 5)

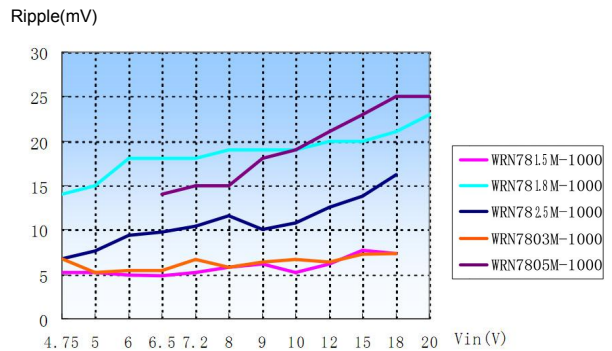
CHARACTERISTICS

Efficiency

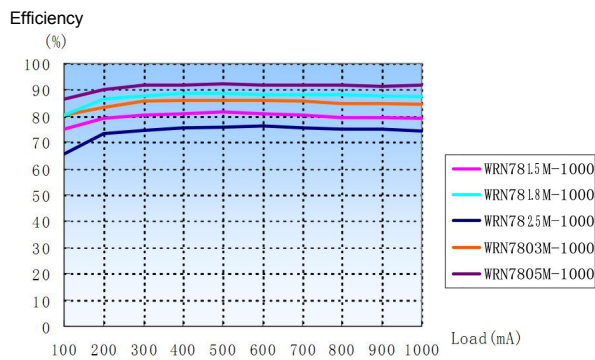


Efficiency VS Vin(Full Load)

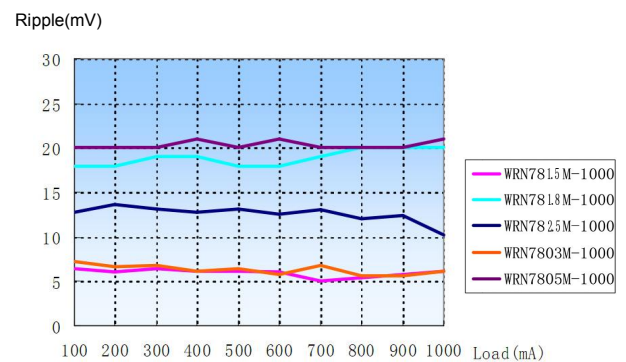
Ripple



Ripple VS Vin(Full Load)



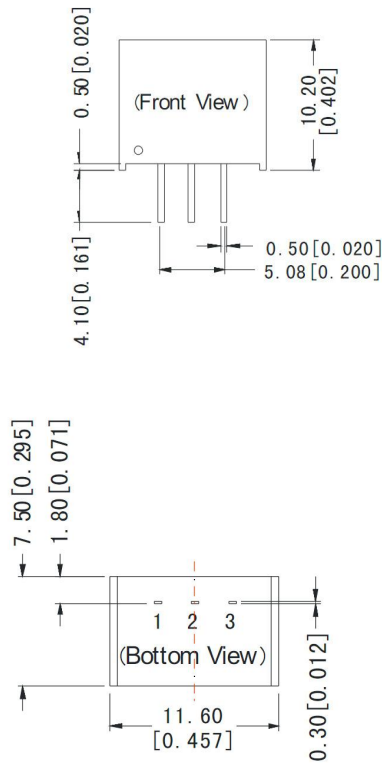
Efficiency VS Load(Vin=Vin-nominal)



Ripple VS Load(Vin=Vin-nominal)

OUTLINE DIMENSIONS & FOOTPRINT DETAILS

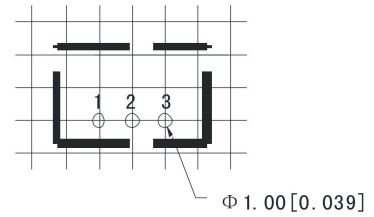
Mechanical Dimensions



FOOTPRINT DETAILS	
Pin	Function
1	+Vin
2	GND
3	+Vout

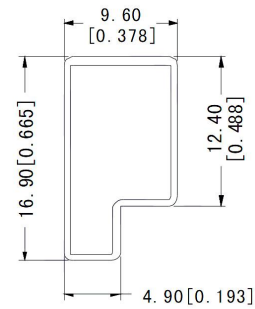
Note:
Unit:mm[inch]
Pin section tolerances:±0.10mm[±0.004inch]
General tolerances:±0.25mm[±0.010inch]

Recommended Footprint



Note:grid 2.54*mm

Tube Outline Dimensions



Note:
Unit:mm[inch]
General tolerances:±0.50mm:[0.020inch]
L=530mm[20.866inch] Packaging quantity:43 pcs
L=220mm[8.661inch] Packaging quantity:17 pcs
Short tube inner packaging dimensions:L*W*H=255*170*80mm
Short tube outer packaging dimensions(with six inner packaging boxes):
L*W*H=375*280*270mm;
Long tube inner packaging dimensions:L*W*H=580*200*100mm;
Long tube outer packaging dimensions(with two inner packaging boxes):
L*W*H=600*215*220mm;
Short tube outer packaging dimensions(with three inner packaging boxes):
L*W*H=600*215*325mm;

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,other models may be different,please contact our technical person for more details.