

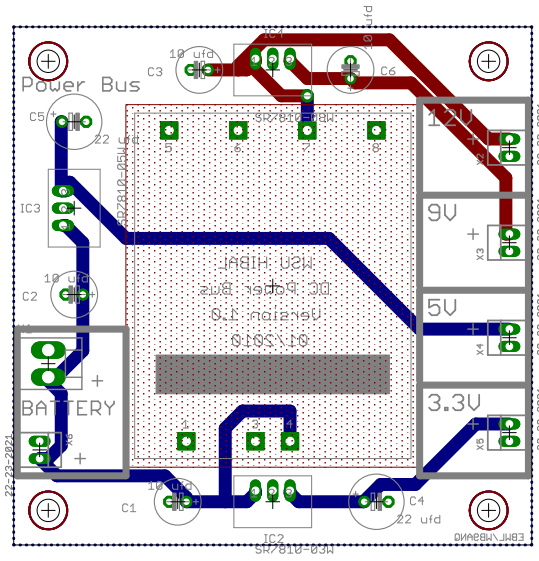
TITLE: WSU HIBAL Power Bus

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# SR7810 Series

## Low Cost, 1A Output Non-isolated POL Switching Regulators



### Key Features:

- Efficiency to 96%
- 1A Output Current
- Compact SIP Case
- LM78xx Replacement
- Wide Input Range
- Short Circuit Protected
- Thermal Shutdown
- Low Noise
- **Low Low Cost**

RoHS



### MicroPower Direct

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### Electrical Specifications

Specifications typical @ +25°C, nominal input voltage & rated output current, unless otherwise noted. Specifications subject to change without notice.

#### Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy			±2.0	±3.0	%
Line Regulation	V <sub>in</sub> = Min to Max		±0.2	±0.4	%
Load Regulation	I <sub>out</sub> = 10% to 100%		±0.4	±0.6	%
Ripple & Noise (20 MHz)			20	35	mV P - P
Dynamic Load Stability	See Note 1			±100	mV
Output Power Protection		120			%
Thermal Shutdown	See Note 2		150		°C
Quiescent Current, Note 3	Positive Output		5	8	mA
	Negative Output		7	13	
Temperature Coefficient				0.02	%/°C
Maximum Capacitive Load				1,000	µF
Output Current Limit				2,000	mA
Short Circuit Input Power			0.5	1.8	W
Output Short Circuit	Continuous (Autorecovery)				

#### General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage	Not Isolated				
Switching Frequency		280	330	450	kHz

#### Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-40	+25	+85	°C
Operating Temperature Range	Case			+100	°C
Storage Temperature Range		-55		+125	°C
Lead Temperature	1.5 mm From Case For 10 Sec			300	°C
Cooling	Free Air Convection				
Humidity	RH, Non-condensing			95	%

#### Physical

Case Size	0.45 x 0.35 x 0.69 Inches (11.5 x 9.0 x 17.50 mm)				
Case Material	Non-Conductive Black Plastic (UL-94V0)				
Weight	0.13 Oz (3.7g)				

#### Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	2.0			MHours

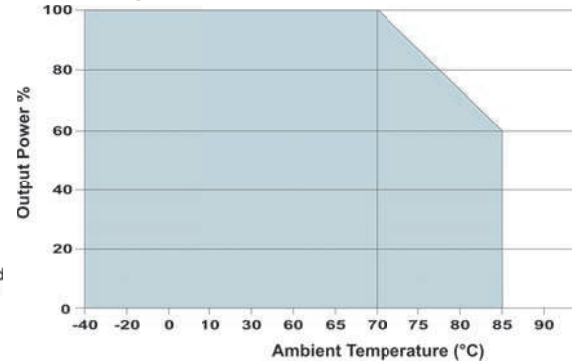
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Model Number	Input Voltage Range (VDC)	Output		Efficiency (% Typ)	
		Voltage (VDC)	Current (mA, Max)	Min Vin	Max Vin
SR7810-03W	4.75 - 28.0	3.3	1,000.0	90	83
	4.75 - 25.0	-3.3	-600.0	80	82
SR7810-05W	6.5 - 32.0	5.0	1,000.0	93	88
	7.0 - 27.0	-5.0	-600.0	85	87
SR7810-06W	9.0 - 32.0	6.5	1,000.0	94	90
	7.0 - 25.0	-6.5	-400.0	88	90
SR7810-09W	12.0 - 32.0	9.0	1,000.0	95	92
	7.0 - 23.0	-9.0	-400.0	89	91
SR7810-12W	16.0 - 32.0	12.0	1,000.0	96	94
	7.0 - 32.0	-12.0	-300.0	89	91

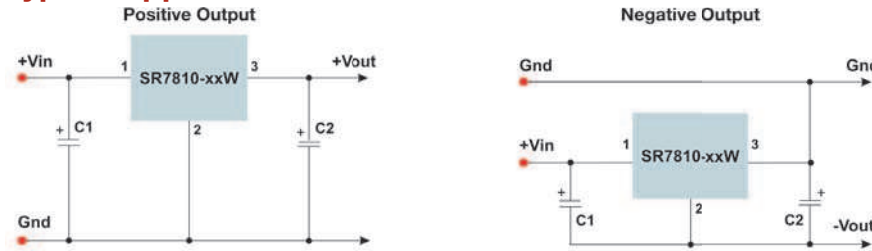
Notes:

1. Dynamic load stability is specified for output loads from 10% to 100%.
2. Measured at an internal IC junction.
3. Quiescent current is specified at 0% load for Vin = min to max.
4. This regulator is not designed to be used in parallel with another unit to increase output power.
5. The input should not exceed the range given in the model selection chart. Exceeding this limit could damage the unit.

Derating Curve

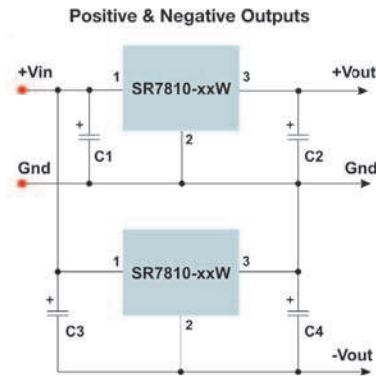


Typical Application Circuits



Pin Connection

Pin	1	2	3
Function	+Vin	Gnd	+Vout



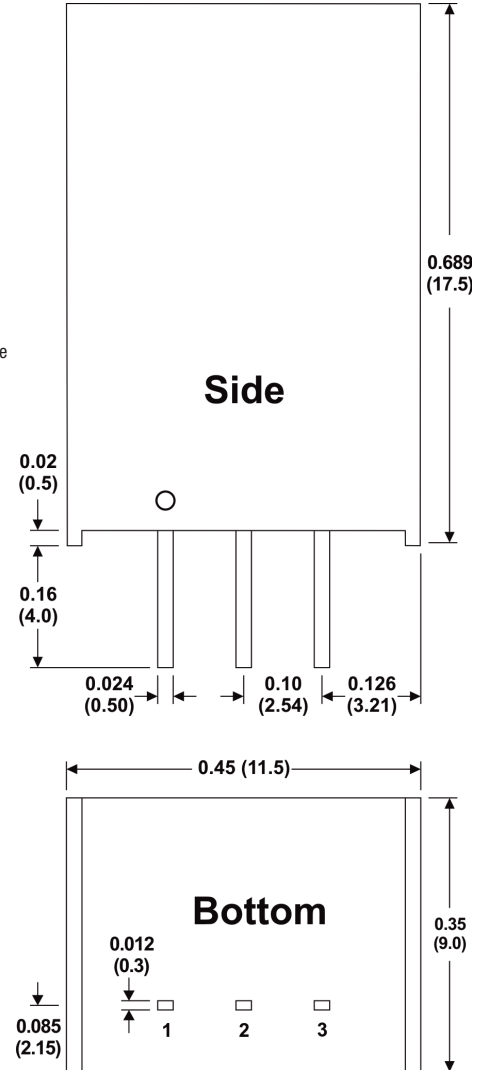
Component Values

Model Number	Ceramic Capacitors	
	C1, C3	C2, C4
SR7810-03W	10 $\mu$ F/50V	22 $\mu$ F/ 6.3V
SR7810-05W	10 $\mu$ F/50V	22 $\mu$ F/ 10V
SR7810-06W	10 $\mu$ F/50V	10 $\mu$ F/ 10V
SR7810-09W	10 $\mu$ F/50V	10 $\mu$ F/ 16V
SR7810-12W	10 $\mu$ F/50V	10 $\mu$ F/ 25V

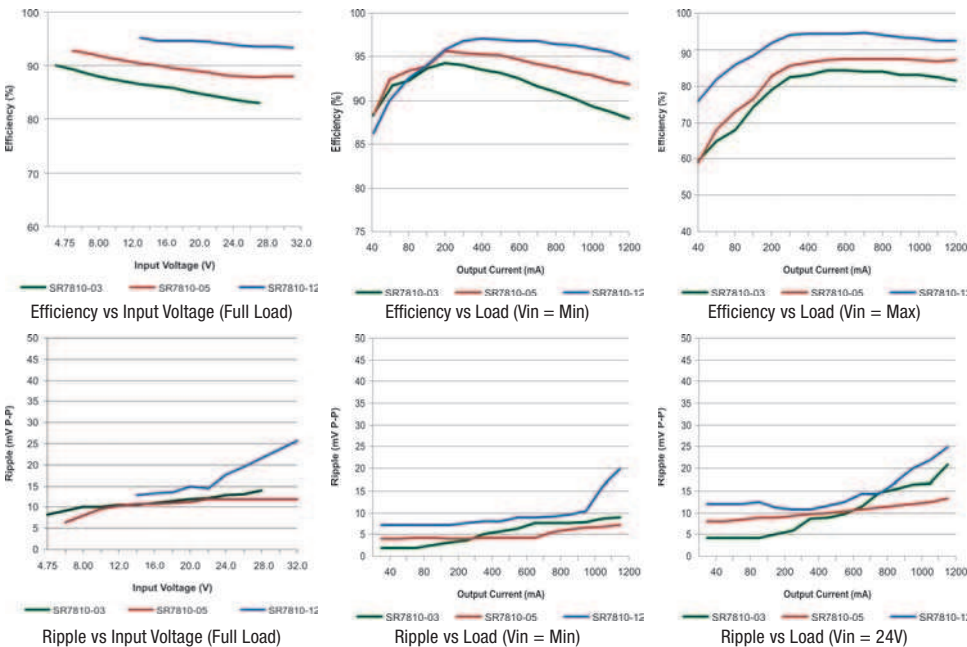
Notes:

1. C1 & C3 are low ESR ceramic capacitors used to minimize noise at the regulator. A tantalum or low ESR electrolytic capacitor may also be used.
2. C1 & C2 (and if used C3 & C4) are required and should be mounted as close to the regulator pins as possible.

Mechanical Dimensions



Characteristic Curves (Efficiency & Ripple)



Notes:

- All dimensions are typical in inches (mm)
- Tolerance x.xx =  $\pm 0.01$  ( $\pm 0.25$ )
- Pin 1 is marked by a "dot" or indentation on the side of the unit



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Unit measures 1.6"W x 2"L x 0.45"H

- Wide 4:1 Input Range
- 1500V Isolation
- Short Circuit Protection
- Remote On/Off Control
- High Efficiency
- Input PI Filter



Model Number	Output Voltage	Output Amps	Input Range	Efficiency
<b>SINGLE OUTPUT</b>				
ASD20-12S3	3.3 VDC	4	9-36 VDC	78%
ASD20-48S3		4	18-72 VDC	78%
ASD20-12S5	5 VDC	4	9-36 VDC	81%
ASD20-48S5		4	18-72 VDC	82%
ASD20-12S12	12 VDC	1.67	9-36 VDC	83%
ASD20-48S12		1.67	18-72 VDC	84%
ASD20-12S15	15 VDC	1.33	9-36 VDC	83%
ASD20-48S15		1.33	18-72 VDC	84%
<b>DUAL OUTPUT</b>				
ASD20-12D5	+/-5 VDC	+/-2.0	9-36 VDC	83%
ASD20-48D5		+/-2.0	18-72 VDC	84%
ASD20-12D12	+/-12 VDC	+/-833	9-36 VDC	83%
ASD20-48D12		+/-833	18-72 VDC	84%
ASD20-12D15	+/-15 VDC	+/-666	9-36 VDC	83%
ASD20-48D15		+/-666	18-72 VDC	84%



Isolated and Regulated 20 WATT Modular DC/DC Converter

**ASD20** series

**INPUT SPECIFICATIONS**

Input Voltage Ranges:	12 VDC Nominal	9-36 VDC
	24 VDC Nominal	18-72 VDC
Input Filter	PI Type	
Remote On/Off Control		
Logic Compatibility	CMOS or Open Collector TTL	
EC-On	>+5.5VDC or Open Circuit	
EC-Off	<1.8VDC	
Control Common	Ref. to - Input	

**OUTPUT SPECIFICATIONS**

Voltage and Current	See Selection Chart	
Load Regulation (25% to FL)	+/-0.5%	
Line Regulation	(HL-LL)	+/-0.5%
Temperature Coefficient	+/-0.02%/°C	
Ripple/Noise	RMS	20mV max.
	P-P	75mVp-p max.
Voltage Accuracy	Single O/P	+/-1%
	Dual +O/P	+/-1%
	Dual -O/P	+/-2%
Voltage Balance (Dual FL)	+/-1%	
Short Circuit Protection	Continuous	
Efficiency	See Selection Chart	
Transient Response		
Single 25% Load Change	<500uS	
Dual Full Load to 1/2 Load	<500uS	
Trim	+/-10%	

**GENERAL SPECIFICATIONS**

Input-Output Isolation	1500VDC
Isolation Resistance	10-8nth Ohm min.
Switching Frequency	300Khz
Safety	UL60950
RFI	Six Sided Shielding
MTBF	MIL-HDBK-217F
	Ground Benign, 25°C
	880,584 Hrs.

**ENVIRONMENTAL SPECIFICATIONS**

Oper. Temperature	-25 to +71°C w. Derate
Derate Above 60°C	Linearly to Zero Power +100°C
Case Temperature	100°C max.
Storage Temperature	-55 to +105°C *

**PHYSICAL SPECIFICATIONS**

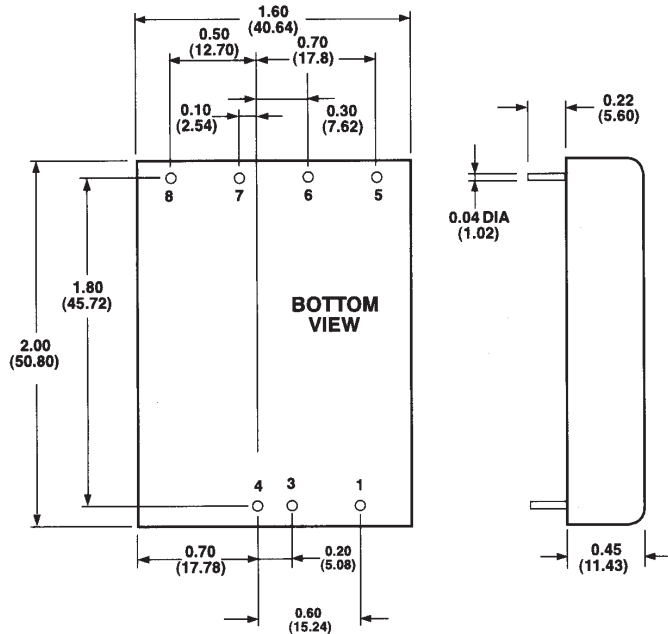
Case Material	Black coated Copper
	w. Non-conductive base
Construction	Fully Encapsulated
Weight	2 oz, (57g)
Dimensions	1.6" x 2" x 0.45"

All specifications are typical at nominal input, full load, and 25°C unless otherwise noted

\* These are stress ratings. Exposure of the devices to any of these conditions may adversely affect long term reliability. Proper operation under conditions other than the standard operating conditions is neither warranted nor implied.

**Astrodyne products are not authorized or warranted for use as critical components in life support systems, equipment used in hazardous environments, nuclear controls systems, or other mission-critical applications.**

### MECHANICAL DIMENSIONS



All Dimensions In Inches (mm)  
Tolerance .xx = +/-0.04, .xxx = +/- 0.010

Pin #	Single Outputs	Dual Outputs
1	On/Off Control	On/Off Control
3	- Input	- Input
4	+ Input	+ Input
5	Trim	Trim
6	- Vout	- Vout
7	+ Vout	Common
8	No Pin	+ Vout

Output may optionally be externally trimmed ( $\pm 10\%$ ) with a fixed resistor or an external trimpot as shown.

