

500 Watt, High Efficiency, AC/DC Power Module

SMV-28-500



- Miniature 4.59" x 2.4" x 0.5." Size
- High Power Density up to 90.78W/ Inch ³
- High Typical Efficiency of 88.5% at 230VAC
- Low Output Noise
- Metal Baseplate
- Thermal Protection
- Over Voltage Protection
- Current Limit/Short Circuit Protection
- Adjustable Output Voltage 60-120% of Vo, Set
- Remote Sense
- Power On Signal (ENA) Open Collector (10mA sink current). Low (ON) when output is present

DESCRIPTION:

The SMV-28-500 is a high power density and high efficiency AC/DC converter module which utilizes a metal baseplate, planar transformers and surface mount construction to produce up to 500W of output power and is therefore well suited for the most rigorous requirements of COTS and thermally challenging industrial applications.

Model Number	Output Voltage	Output Amps	Input Range	Max. Iin FL	Efficiency (Tb=25°C)	O/P Set Point
SMV-28-500	28 VDC	18	85-265 VAC	6.2A	88.5%	27.44-28.56VDC

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

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ABSOLUTE MAXIMUM RATINGS (MIN TO MAX.)

Input Voltage (AC(L) to AC(N))	300 VAC with No Damage
Power Factor Correction	0.95 min HL-LL and Full Load
Storage Temperature	-55 to +125°C
Storage Humidity	10 to 95%
Operating Temperature (Note 5)	-40 to 100°C
Operating Humidity	20 to 95%
Output Power	500 Watts

INPUT SPECIFICATIONS

Input Operation Voltage:	85-265 VAC
Input Frequency	47-63 Hz
Input Current FL @ 100 Vin, FL	6.2A
Inrush Current (Note 3)	40A @ 265VAC

OUTPUT SPECIFICATIONS

Output Voltage & Current	See Model Selection Chart PG. 1
Output Set Point	See Model Selection Chart PG. 1
Output Voltage Adjustment Range	16.8-33.6VDC @ FL
Load Regulation	56mV typ. NL-FL
Line Regulation	56mV typ. HL-LL
Ripple/Noise p-p max. (Note 1)	280mV
Dynamic Response (Note 6)	25% - 50% - 75% Load
Peak Deviation:	3% Vo, set
Settling Time	300uS
Current Limit (Note 2)	105-140% of Rated Load
Over Voltage Protection	125-145% Vo, set, Io=0.5A, clamp
Over Temperature Protection	
Shutdown:	110°C typ.
Auto Recovery:	90°C min.
Efficiency (Tb=°C)	86.5% @ 110 Vin, FL
	88.5% @ 230Vin, FL
	See Fig. 4 EFFICIENCY CURVE

STRUCTURAL DYNAMICS

Vibration	(Note 4)
Shock	196.1mS ²

ISOLATION SPECIFICATIONS

Input-Output	3000VAC, 60S
Input-Case	2500VAC, 60S
Output-Case	1500VDC, 60S
Input-Output Capacitance	2000pF
Isolation Resistance	100MΩ @ Tb=25°C & 70%RH
	Output to Baseplate-500VDC

GENERAL SPECIFICATIONS

MTBF (Tb=40°C, 80%L, 230Vin)	1.47 Mhrs
Weight	7.05 oz (200g)
Dimensions	4.59" x 0.5" x 2.4" (116.8 x 12.7 x 61mm)

CONTROL SPECIFICATIONS

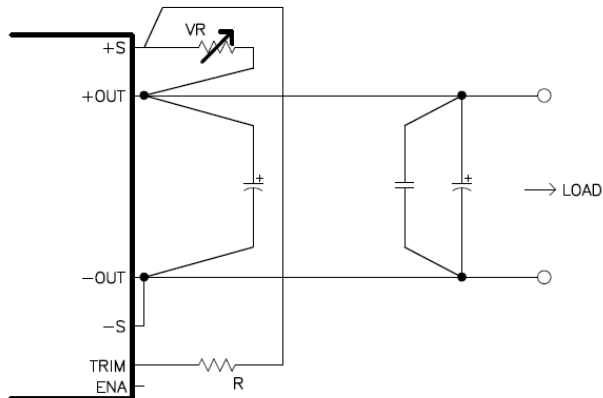
Turn-on Time	3S max., 90% Vo, set, FL
Trim Adjustment Range	60-120% with Cap. 940uF/35V, Tb=25°C See Fig. 1 TRIM CIRCUIT

NOTES

1. Bandwidth 5Hz to 20MHz and with filter 4.7nF MLCC series 50Ω min. Output Capacitor: 470uF*2, TC≥ -20°C, 470uF*4, TC≤ -20°C.
2. Current Limit inception point Vo=90% of Vo, set @ Tb=25°C; Auto recovery.
3. Turn on @ 265Vin, External Components are needed for operation Refer to Fig. 3 for application circuit.
4. Sine Wave, 10-55Hz (Sweep for 1 min.), Amplitude 0.825mm Constant (Max. 0.5g) X, Y, Z 1 Hour each, at No Operation
5. Temperature measurement shall be taken from the baseplate (Tb). See Fig. 2 for location definition .
6. 0.1A/uS; with cap 940uF/35V, Tb=25°C, Vin=200VAC

TRIM CIRCUIT:

Output Voltage Adjusted by using external resistor and/or variable resistor:



For 28Vout, R=35.7Kohm
$$VR = 2.709 \left(\frac{V_{o_{trim}}}{2.469} - 1 \right) - 15.692 \text{ (UNIT: K}\Omega\text{)}$$

BASEPLATE MEASURE POINT:

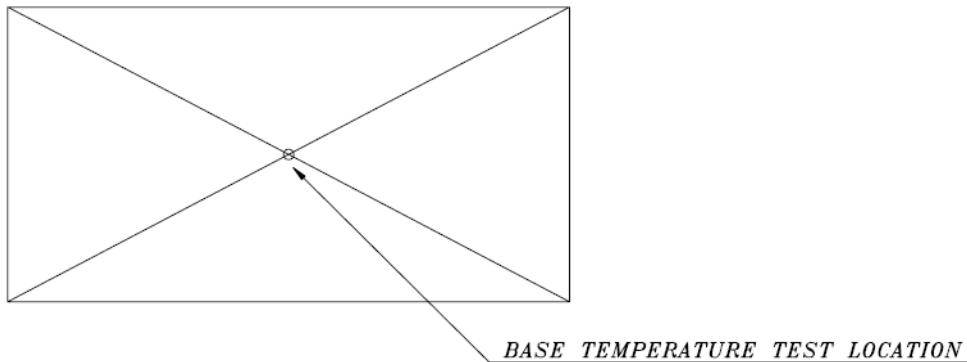


Fig2 Baseplate Temperature Measure Point.

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APPLICATION CIRCUIT:

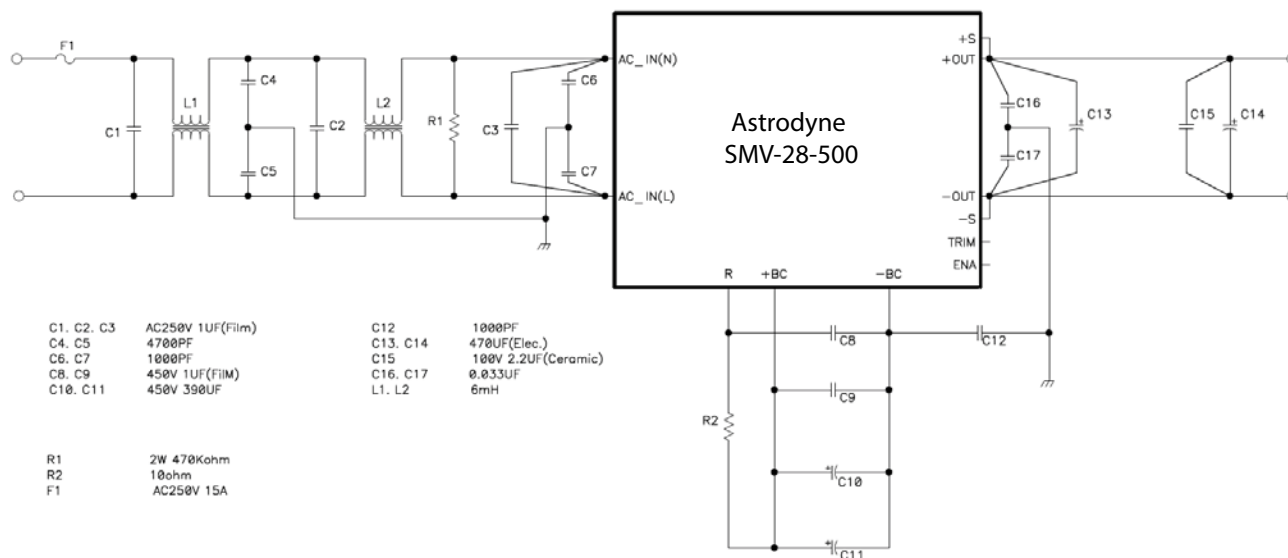
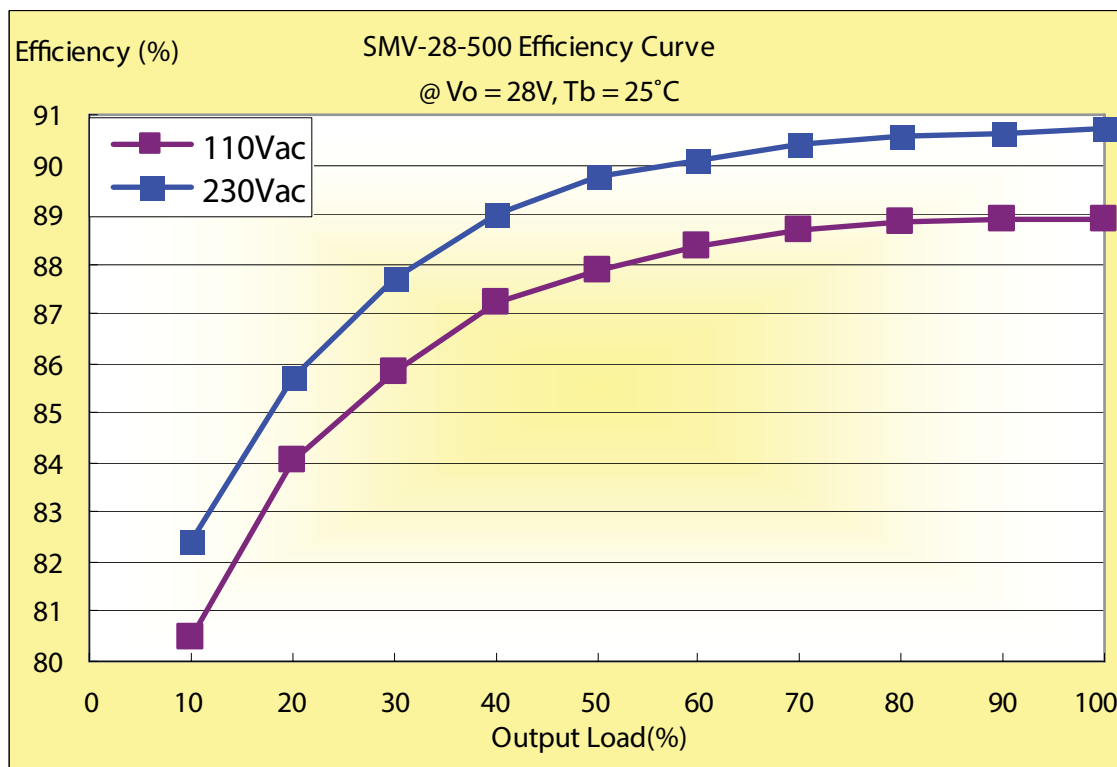


Fig. 3 Application Circuit.



OUTLINE DRAWING:

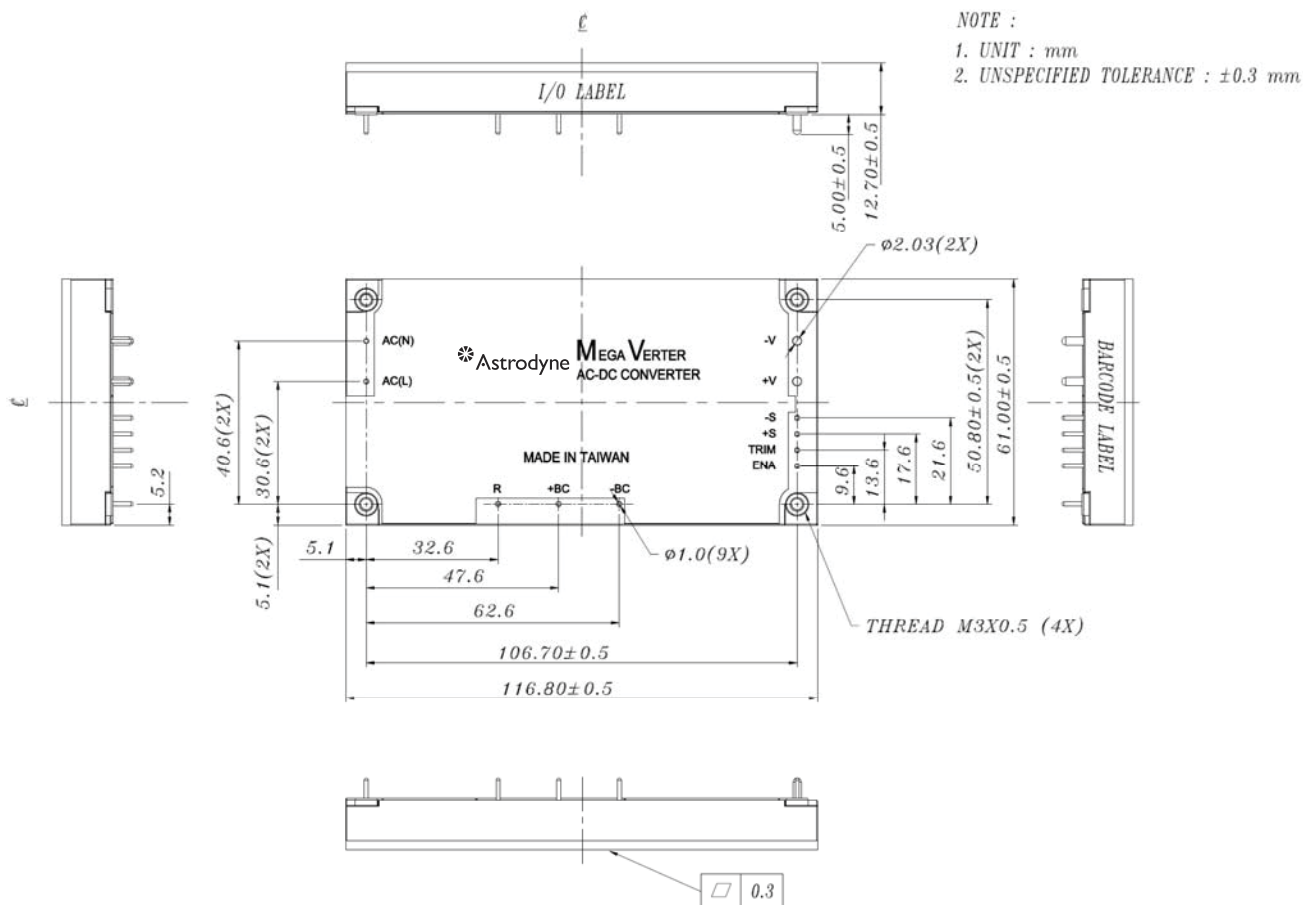


Fig. 5 Outline drawing.