ARTESYN SMT15E SERIES

Non-Isolated DC-DC Converter



Advanced Energy's Artesyn SMT15E series of non-isolated DC-DC converters comprises two fixed output models offering voltages of 2.5 V or 3.3 V, and one wide output trim model that can adjusted over the range 0.8 to 3.63 Vdc. All three models can deliver up to 15 amps output current. The 3.3 V fixed output model accepts a 4.5 to 5.5 Vdc input, while the other two models accept a 3 to 5.5 Vdc input.

DATA SHEET

Total Power:

41.25 Watts

Input Voltage:

3.0 - 5.5 Vdc

# of Outputs:

Single

RoHS 6/6 COMPLIANT

SPECIAL FEATURES

- 15 A current rating
- Input voltage range: 3.0 - 5.5 Vdc
- Output voltage range: 0.8 - 3.63 V
- Ultra high efficiency: 96% @ 5 Vin and 3.3 Vout
- Extremely low internal power dissipation
- Minimal thermal design concerns
- Designed-in reliability: MTBF of 7 million hours per Telcordia SR-332
- Ideal solution where board space is at a premium or tighter card pitch is required
- Industry standard surface-mount footprint
- Available RoHS compliant
- Two year warranty

SAFETY

- UL, cUL CAN/CSA 22.2 No. E174104
- UL 60690 File No. E174104
- TÜV Product Service (EN60950:2000)
- Certificate No. B 03 10 38572
- CB report and certificate to DE3-51686M1

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ELECTRICAL SPECIFICATIONS

Input		
Input voltage range		3.0 - 5.5 Vdc
Input current	No load	70 mA typical
Input current (max.)		11.8 A max. @ Io max. and Vout = 3.63 V
Input reflected ripple		110 mA rms
Remote ON/OFF		See Note 2
Start-up time		<20 ms
Output		
Voltage adjustability (See Note 1)	Fixed output versions Wide trim version	±10% 0.8 - 3.63 Vdc
Setpoint accuracy		±0.4%
Line regulation		±0.2%
Load regulation		±0.5%
Minimum load		0 A
Overshoot/Undershoot		None
Ripple and noise	0 - 20 MHz BW	60 mV pk-pk 25 mV rms max.
Temperature coefficient		±0.01% / °C
Transient response		60 mV max. deviation 150 µs recovery to within ±1.0%
Remote sense		10% Vo compensation

All specifications are typical at nominal input, full load at 25°C unless otherwise stated.

GENERAL SPECIFICATIONS

Efficiency		See Table below
Insulation voltage		Non-isolated
Switching frequency	Fixed	300 kHz
Approvals and standards		EN60950 UL/cUL60950
Material flammability		UL94V-0
Dimensions	L x W x H	33.02 x 13.46 x 8.21 mm 1.3 x 0.53 x 0.323 inches
Weight		6.3 g (0.22 oz)
Coplanarity		100 µm
MTBF	Telcordia SR-332 MIL-HDBK-217F	7,042,000 hours 680,000 hours

ENVIRONMENTAL SPECIFICATIONS

Thermal performance	Operating ambient temperature	-0 °C to +100 °C
(See Note 3)	Non-operating temperature	-40 °C to +125 °C
Protection		
Short-circuit	Continuous	
Thermal	Automatic recovery	

ENVIRONMENTAL SPECIFICATIONS

Electrostatic discharge	EN61000-4-2, IEC801-2
Conducted immunity	EN61000-4-6
Radiated immunity	EN61000-4-3

ORDERING INFORMATION

Model Number [5]	Output Power (Max.)	Input Voltage	Output Voltage	Output Current (Min.)	Output Current (Max.)	Efficiency (Typical)	Regulation	
							Line	Load
SMT15E-05W3V3J	54.45 W	3.0 - 5.5 Vdc	0.8 - 3.63 V	0 A	15 A	95% [4]	±0.2%	±1.0%

PART NUMBER SYSTEM WITH OPTIONS

Product Family	Rated Output Current	Performance		Input Voltage	Type of Output		Output Voltage	Packaging Options [5]
SMT	15	E	-	05	W	-	V	J
SMT = Surface Mount	15 - 15 A	E = Enhanced performance		05 = 3.0 - 5.5 Vdc	W = Wide		0.8 - 3.63 Vdc	No "-T' sufffix = Pb-free (RoHS 6/6 compliant) in trays

OUTPUT VOLTAGE ADJUSTMENT

The ultra-wide output voltage trim range offers major advantages to users who select the SMT15E-05W3V3J. It is no longer necessary to purchase a variety of modules in order to cover different output voltages. The output voltage can be trimmed in a range of 0.8 Vdc to 3.63 Vdc. When the SMT15E-05W3V3J converter leaves the factory the output has been adjusted to the default voltage of 3.3 V.

- When Vin ≥ 4.5 V, then Vout can be adjusted from 0.8 Vdc to 3.6 Vdc
- When Vin < 4.5 V, then Vout can be adjusted from 0.8 Vdc to 2.75 Vdc

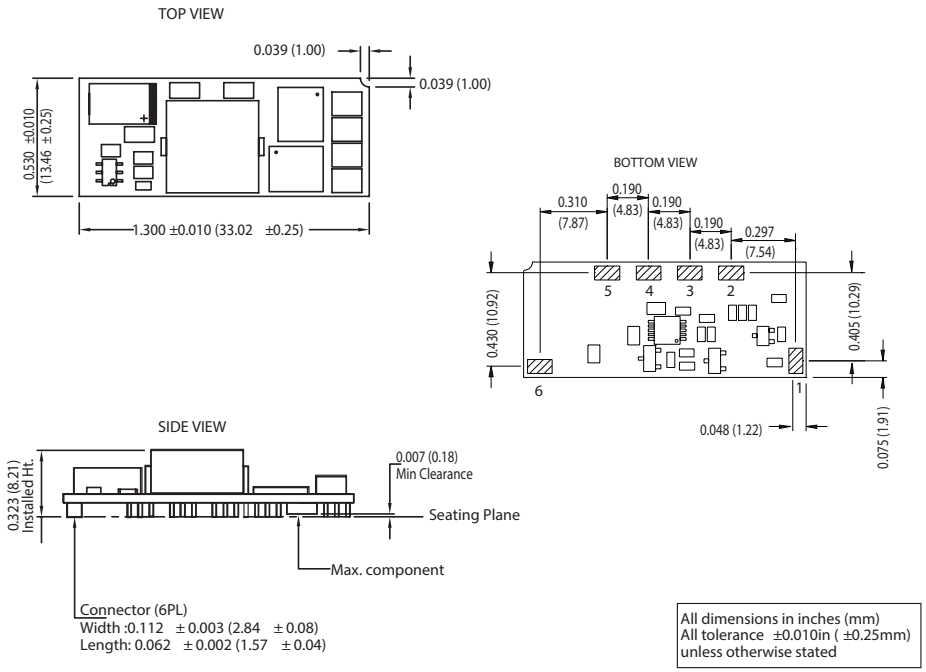
Notes:

1. When Vin ≥ 4.5 V, then Vout can be adjusted from 0.8 Vdc to 3.63 Vdc.
   When Vin < 4.5 V, then Vout can be adjusted from 0.8 Vdc to 2.75 Vdc.
2. The SMT15E features a 'Negative Logic' Remote ON/OFF operation. If not using the Remote ON/OFF pin, leave the pin open (the converter will be on). The Remote ON/OFF pin is referenced to ground. The following conditions apply for the SMT15E:

Configuration	Converter Operation
Remote pin open circuit	Unit is ON
Remote pin pulled low	Unit is ON
Remote pin pulled high [Von/off >1.2 V]	Unit is OFF

3. Full derating curves available in both the Longform Datasheet and Application Note 136.
4. When the unit is trimmed down to 0.8 V, the efficiency is 82.5%.
5. NOTICE: Some models do not support all options. Please contact your local Artesyn representative or use the on-line model number search tool at http://www.artesyn.com to find a suitable alternative.

MECHANICAL DRAWINGS



Pin Assignments	
Pin	Function
1	Remote ON/OFF
2	Remote Sense +
3	Trim
4	+Vout
5	Ground
6	+Vin

ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than three decades to perfecting power for its global customers. AE designs and manufactures highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

Our products enable customer innovation in complex applications for a wide range of industries including semiconductor equipment, industrial, manufacturing, telecommunications, data center computing, and medical. With deep applications know-how and responsive service and support across the globe, we build collaborative partnerships to meet rapid technological developments, propel growth for our customers, and innovate the future of power.

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