ARTESYN SMT05E SERIES

12 V Non-Isolated DC-DC Converters



Advanced Energy's Artesyn SMT05E_12V series non-isolated DC-DC converter accepts a 10 to 14 Vdc input and produces an output that can be trimmed over a very wide 0.8 to 3.63 Vdc range to satisfy a broad diversity of semiconductor power needs. Rated at 16.5 watts, the converter has a typical efficiency of 91% and can deliver up to 5 amps. Standard features include remote On/Off and comprehensive protection against short-circuit and overtemperature conditions. Packaged as a low profile surface-mount module, it has a footprint of 0.45 x 0.8 inch (11.4 x 20.3 mm) and an installed height of only 0.23 inch (5.9 mm).

DATA SHEET

Total Power:

16.5 W

Input Voltage:

10 - 14 Vdc

# of Outputs:

Single

SPECIAL FEATURES

- 5 A current rating
- Input voltage range: 10 - 14 Vdc
- Output voltage range: 0.8 - 3.63 V
- Ultra-high efficiency: 91% @ 12 Vin and 3.3 Vout
- Extremely low internal power dissipation
- Minimal thermal design concerns
- Designed in reliability: MTBF of 6,920,000 hours per Telcordia SR-322
- Ideal solution where board space is at a premium or tighter card pitch is required
- Industry standard surface-mount footprint
- Available RoHS compliant
- Two years warranty

SAFETY

- UL, cUL CAN/CSA 22.2 No. E174104 UL60950 File No. E174104
- TÜV Product Service (EN60950) Certificate No. B 03 10 38572
- CB report and certificate to DE3-51686M1

RoHS 6/6 COMPLIANT

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ELECTRICAL SPECIFICATIONS

Input		
Input voltage range		10 - 14 Vdc
Input current	No load (max.)	100 mA
Input current (max.)		1.85 A max. @ Io max. and Vout = 3.3 V
Input reflected ripple		30 mA rms
Remote ON/OFF		See Note 1
Start-up time		20 ms
Output		
Voltage adjustability		0.8 - 3.63 Vdc
Setpoint accuracy		±0.4%.
Line regulation		±0.2%
Load regulation		±1.0%
Minimum load		0 A
Overshoot/undershoot		None
Ripple and noise 5 Hz to 20 MHz		60 mV pk=pk 25 mV rms
Temperature co-efficient		±0.01%/ °C
Transient response		50 mV max. deviation 50 µs recovery within ±1%

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

GENERAL SPECIFICATIONS

Efficiency		91%
Insulation voltage		Non-isolated
Switching frequency	Fixed	330 kHz typical
Approvals and standards		EN60950 UL/cUL60950
Material flammability		UL94V-0
Dimensions	L x W x H	20.32 x 11.43 x 5.97 mm 0.800 x 0.450 x 0.235 inches
Weight		3g (0.11 oz.)
Coplanarity		100 µm
MTBF	Telcordia SR-332	6,920,000 hours

ENVIRONMENTAL SPECIFICATIONS

Thermal performance	Operating ambient temperature	-40 °C to +100 °C
See Note 2	Non-operating temperature	-40 °C to +125 °C
Protection		
Short-circuit	Continuous	
Thermal	Automatic recovery	

EMC CHARACTERISTICS

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

ORDERING INFORMATION

Model Number [3, 4]	Output Power (Max.)	Input Voltage	Output Voltage	Output Current (Min.)	Output Current (Max.)	Efficiency (Typical)	Regulation	
							Line	Load
SMT05E-12W3V3J	16.5 W	10 - 14 Vdc	0.8 - 3.63 Vdc	0 A	5 A	91%	±0.2%	±1.0%

PART NUMBER SYSTEM WITH OPTIONS

Product Family	Rated Output Current	Performance		Input Voltage	Type of Output		Mounting Option	Packaging Options
SMT	05	E	-	12	W	-	3V3	TJ
SMT = Surface Mount	05 = 5 Amp	E = Enhanced Performance		12 = 10 - 14 VDC	S = Single W = Wide		0.8 - 3.63 Vdc	No '-T' suffix = Pb-free RoHS 6/6 compliant (Trays) -TJ suffix = Pb-free RoHS 6/6 compliant (Tape and Reel)

OUTPUT VOLTAGE ADJUSTMENT

The ultra-wide output voltage trim range offers major advantages to users who select the SMT05E-12W3V3J. 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 to 3.63 Vdc.
When the SMT05E-12W3V3J converter leaves the factory, the output has been adjusted to the default voltage of 0.8 V.

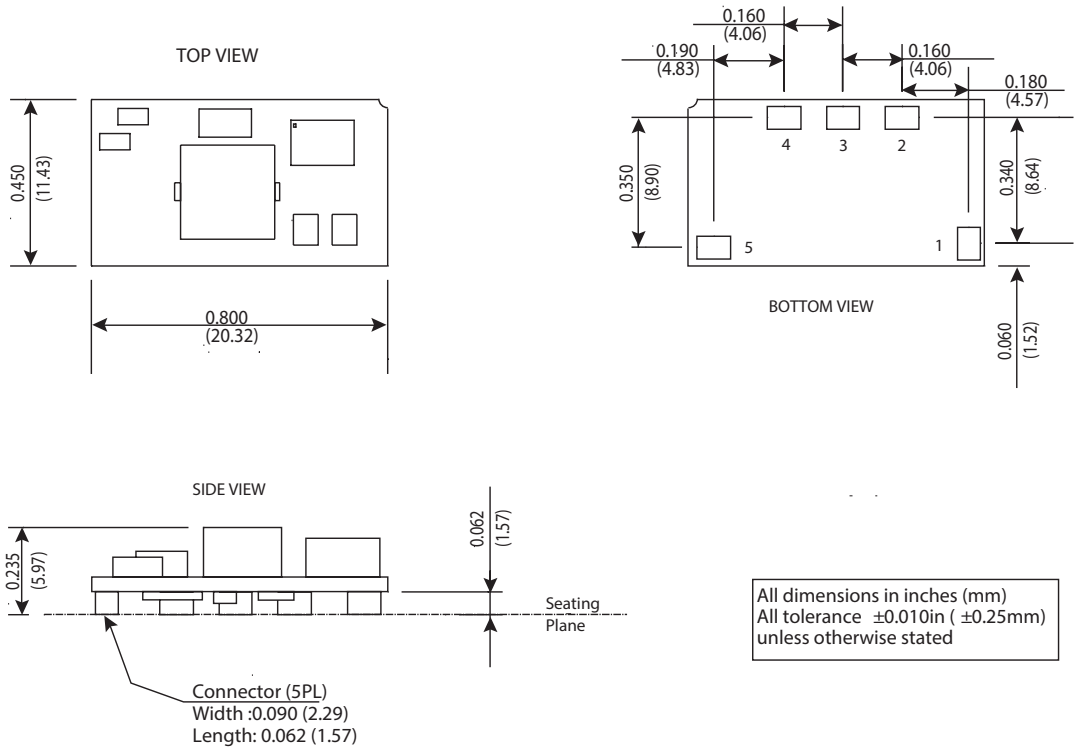
Notes:

1. The SMT05E 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 SMT05E:

Configuration	Converter Operation
Remote pin open circuit	Unit is ON
Remot pin pulled low [Von/off 0.8 V]	Unit is OFF
Remote pinpulled high [Von/off > 1.6 V]	Unit is ON

   A 'Negative Logic' Remote ON/OFF version is also possible with this converter. To order please use part number SMT05E-12W3V3-RJ.
2. Full derating curves available in both the Longform (Technical Reference) and Application Note.
3. NOTICE: Some models do not support all options. Please contact your local Artesyn Embedded Power representative or use the on-line model number search tool at http://www.artesyn.com to find a suitable alternative.

MECHANICAL DRAWINGS



All dimensions in inches (mm)
All tolerance ±0.010in (±0.25mm)
unless otherwise stated

Pin Assignments	
Pin	Function
1	Remote ON/OFF
2	Vout
3	Trim
4	Ground
5	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.

PRECISION | POWER | PERFORMANCE

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