SEMICONDUCTOR CIRCUITS, INC. T-57-11

SUBSIDIARY OF ASTEC AMERICA, INC.

N SERIES

15 TO 40 WATT DC/DC POWER CONVERTER

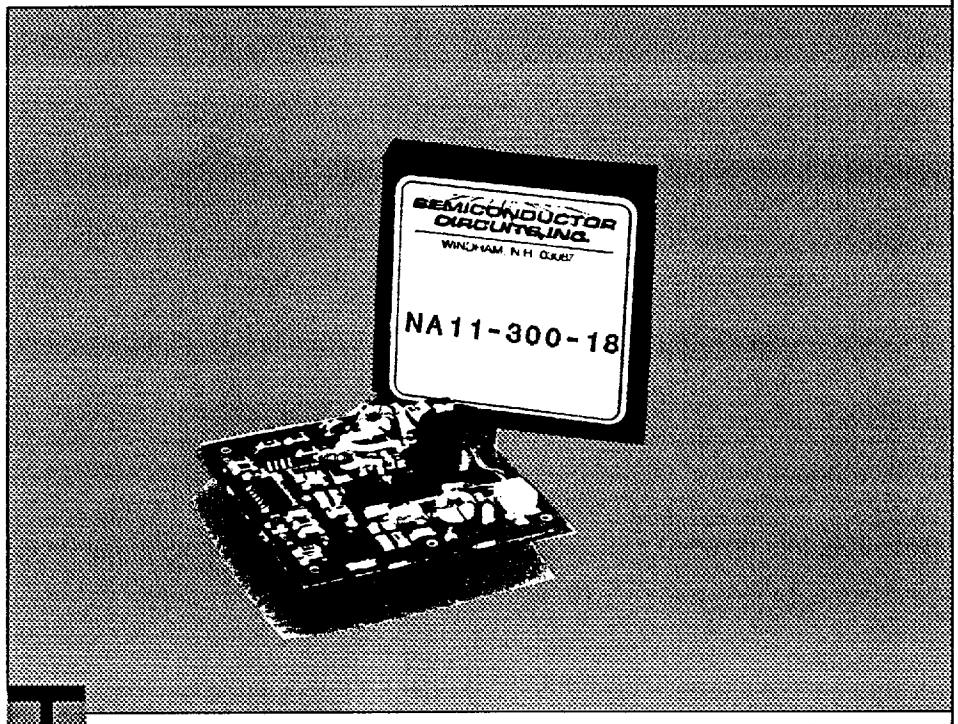
SINGLE OUTPUT

FEATURES

- *Ultrawide input range*
- *Efficiency to 85%*
- *Six-sided continuous shielding*
- *Regulated outputs*
- *Overvoltage protection*
- *Surface mount technology*

APPLICATIONS

The N Series is ideally suited for portable battery, automotive, and other applications demanding small size, high efficiency, where input-output isolation is not required.



THE N SERIES is a high quality, wide-input, efficient 15 to 40 watt DC/DC converter. Features include Pi input filtering to reduce input reflected ripple, efficiencies to 85%, well-regulated outputs, and up to 40 watts of output power. Other key features include: overvoltage protection, output trim adjustability, continuous short circuit protection, and a continuous six-sided shielded case.

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ELECTRICAL CHARACTERISTICS

Parameter	Conditions	Limits
Input Voltage		7–40 Vdc (Optional X) 9–36 Vdc
Input Filter		Pi Filter
Reflected Ripple Current		<20 mA P–P
Input Current	15 Watts Nominal Line — Full Load — 25% Load 40 Watts Nominal Line — Full Load — 25% Load	1100 mA Maximum 260 mA Maximum 2800 mA Maximum 700 mA Maximum
Setting Accuracy	Single Outputs	± 1% Maximum
Trim Adjustability		± 10% Typical
Line Regulation	Low Line to High Line, Full Load	± 0.5%
Load Regulation	Full Load to 25% Load	± 0.5%
Efficiency		To 85%
Temperature Coefficient		± 0.02%/°C Maximum
Voltage Stability	24 Hours	± 0.05% Maximum
Transient Response	10% To Full Load	250 mV Peak Transient settling within 1% within 1 ms
Output PARD		50 mV P-P Max (See Note)
Overshoot/Undershoot	Turn-on	None
Overvoltage Protection Threshold	5 Vdc Output 12 Vdc Output 15 Vdc Output	6.2 Vdc ± 5% 15 Vdc ± 5% 18 Vdc ± 5%
Short Circuit Protection	Auto Recovery-Indefinite Duration	Power Foldback
Total Output Power	71° C Ambient Temperature	15-40 Watts Maximum
Isolation		Not Galvanically Isolated
Switching Frequency		100 KHz ± 5%
Temperature	Operating (Standard Model) Case Temperature Non-Operating	- 25°C to +71°C +105°C Maximum - 40°C to +105°C
Cooling		Free Air Convection
Relative Humidity	Non-Condensing	5% to 95%
Vibration	Three Orthogonal Axes, Random Vibration 10 Minute Test for Each Axis	2.4 G RMS (approximately) 5 Hz to 500 Hz
MTBF	Per MIL-217-E	453,000 Hours Minimum
Size	Case 1&2 Case 3&4	2.0" x 2.0" x 0.4" ±0.03% 2.5" x 3.5" x 0.83" ±0.03%
Weight	Case 1&2 Case 3&4	2.0 oz. 11.2 oz.
Case Material	Case Ground to Input Pin #2	Six-Sided Shielded, Black Anodized Aluminum with Non-Conductive Base
Flammability Rating		Meets UL 94V-0

NOTE: Measured with 3.3 MF 25V tantalum capacitor across each output.

(See Operating Limits on Next Page)

Output Data/Ordering Information

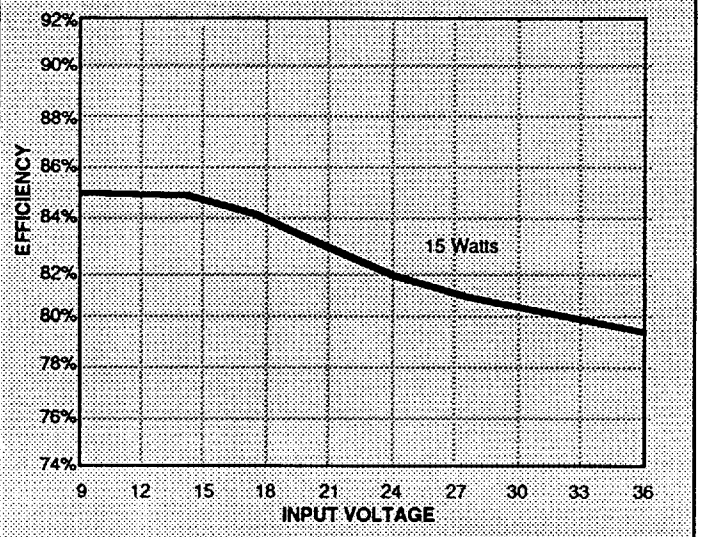
Model Number	Case Number	Input Voltage Range	Output Voltage	Output Current	Power Out
NA11-300-18	Case 1	9-36 Vdc	5 Vdc	3000 mA	15 Watts
NA11-300-18x	Case 1	7-40 Vdc	5 Vdc	3000 mA	15 Watts
NA12-125-18	Case 1	15-36 Vdc	12 Vdc	1250 mA	15 Watts
NA13-100-18	Case 1	18-36 Vdc	15 Vdc	1000 mA	15 Watts
NP11-300-18	Case 2	9-36 Vdc	5 Vdc	3000 mA	15 Watts
NP12-125-18	Case 2	14-36 Vdc	12 Vdc	1250 mA	15 Watts
NP13-100-18	Case 2	18-36 Vdc	15 Vdc	1000 mA	15 Watts
NC11-800-18	Case 3	9-36 Vdc	5 Vdc	8000 mA	40 Watts
NC12-330-18	Case 3	14-36 Vdc	12 Vdc	3300 mA	40 Watts
NC13-266-18	Case 3	18-36 Vdc	15 Vdc	2660 mA	40 Watts
NW11-800-18	Case 4	9-36 Vdc	5 Vdc	8000 mA	40 Watts
NW12-330-18	Case 4	14-36 Vdc	12 Vdc	3300 mA	40 Watts
NW13-266-18	Case 4	18-36 Vdc	15 Vdc	2660 mA	40 Watts

Efficiency vs Output Load

—Nominal Input—

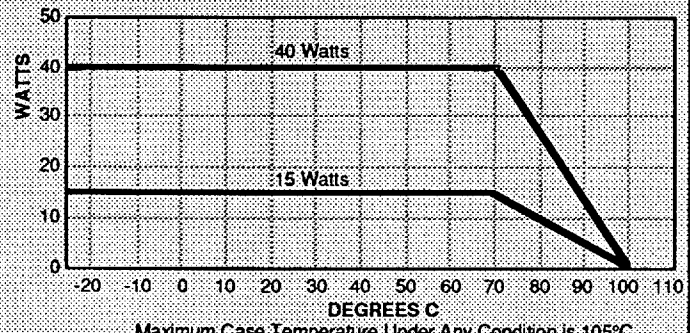
Efficiency vs Input Voltage

—Full Output Load—



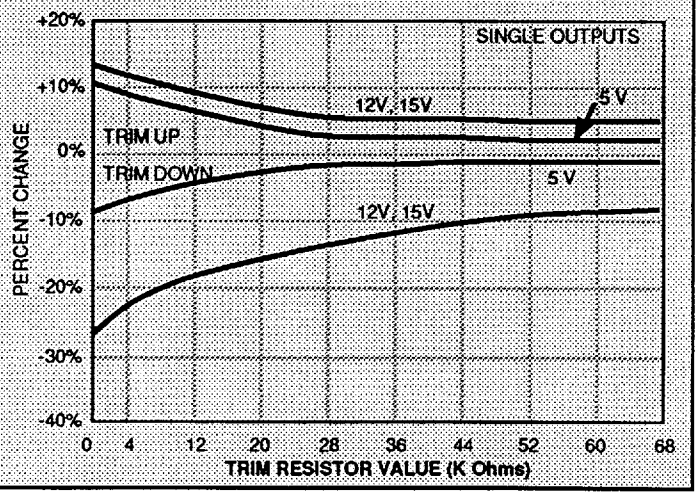
Operating Limits and Output Power Range

—Natural Convection Cooling—



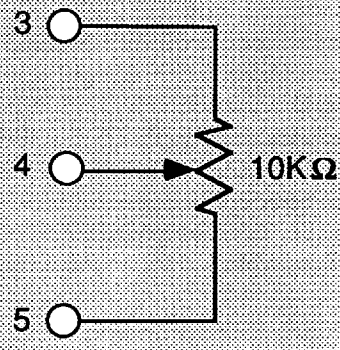
Maximum Case Temperature Under Any Condition is 105°C

Output Voltage Trim Limits



OUTPUT VOLTAGE TRIM PROCEDURE

External Output Trimming: Output may be externally trimmed (± 10%) with a trimpot as shown.

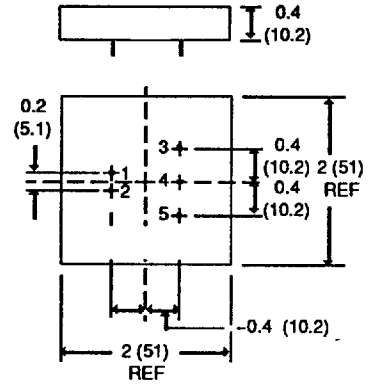


Output Voltage Trim Procedure: The output voltage(s) can be trimmed up or down using either a fixed value resistor or a potentiometer. The trim up resistor should be connected between Pin 5 and Pin 4. The trim down resistor should be connected between Pin 3 and Pin 4. Alternatively, the output voltage(s) can be made continuously variable by connecting a 10K or larger pot between Pin 3 and Pin 5 with the wiper connected to Pin 4.

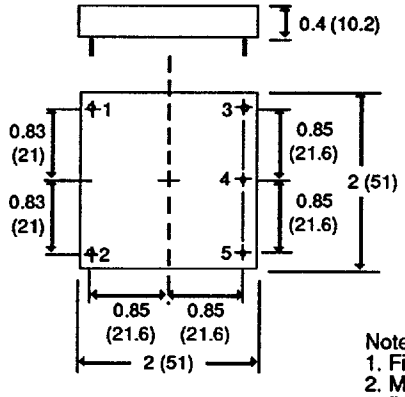
All specifications are typical at nominal line and full load at +25°C unless otherwise noted.
All specifications subject to change without notice.

CASE DIMENSIONS

CASE 1



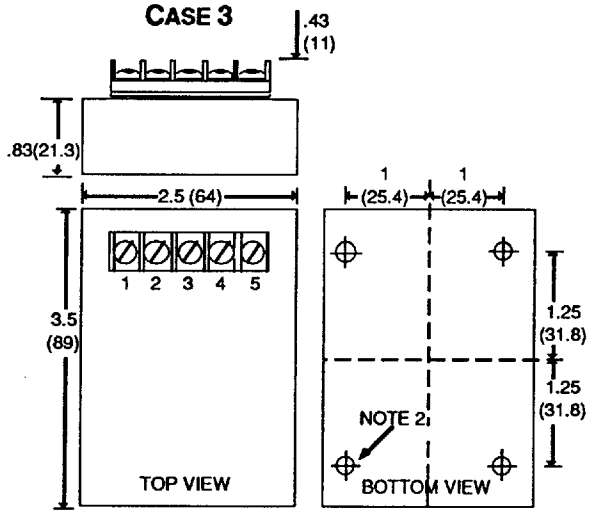
CASE 2



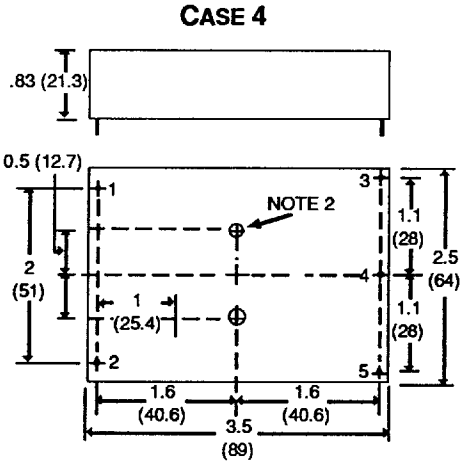
PIN CONNECTIONS
Single Output
PIN 1. + Vdc In
2. - Vdc In
3. + Vdc Out
4. Output Trim
5. - Vdc Out

Notes:
1. Five Pins, 0.040 (1) Dia. x 0.20 (5.1) Long Min.
2. Mounting inserts 4-40 x 0.1 (2.5) Deep Min.
3. Dimensions are given in both inches and (mm)

CASE 3



CASE 4



SEMICONDUCTOR CIRCUITS, INC.
SUBSIDIARY OF ASTEC AMERICA, INC.
49 Range Road Windham, NH 03087
TEL: (603) 893-2330
FAX: (603) 893-6280
ASTEC