Input Ranges :
9-75 VDC

Output Output:
Single Output
5.0V - 24V
Bipolar Output
±5.0V, ±12V, ±15V
Triple Output
+5.0V / ±12V,
+5.0V / ±15V
Quad Output
±5.0V / ±12V,
±5.0V / ±15V

Output Power:
25 - 30 W

The **N** series DC-DC converters feature high power density, high efficiency and excellent line & load regulation. Using innovative design technique, state-of-the art Current Mode PWM control, and Surface Mount packaging & manufacturing technology, the N series provides up to 30 watts of well regulated power in a encapsulated 2.56" x 3.0" x 0.83" metal case with six-sided EMI/RFI shielding. Automatic feed forward compensation, pulse-by-pulse current limiting, and output short circuit protection are standard for all models.

These converters are designed for wide input range telecommunications, industrial and instrument applications. The wide input range (2:1 & 4:1) is ideal for battery or unregulated input applications.

No external components are needed for normal operation. Low ESR capacitors are used to minimize the conductive noise. This package is ideal for all I/O board system and distributed DC power configurations.

FEATURES

General:

- Small footprint : 2.56" x 3.0"
- Current-Mode Control
- Input/Output Isolation
- Input Voltage from 9 to 75Vdc
- 2:1 & 4:1 Input Voltage Range
- High conversion efficiency to 84%
- Line & load regulation to ±1.0%
- Fixed operating frequency
- Six-Sided Shielding

Isolation:

- Isolation Voltage >500V

APPLICATIONS

- Distributed Power Systems
- Workstations
- Computer Equipment
- Communications Equipment

TABLE OF CONTANTS :

General Specifications 2
Single Output 4
Bipolar Output 5
Triple Output 6
Quad Output 7

1. Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause performance degradation, adversely effect longterm reliability, and cause permanent damage to the device.

Parameter	Conditions / Description	Min	Max	Units
Input Voltage				
Continuous	12	-0.3	20	Vdc
	24	-0.3	38	Vdc
	48	-0.3	78	Vdc
	W24	-0.3	38	Vdc
	W48	-0.3	78	Vdc
Transient (100mSec.)	12	-0.3	22	Vdc
	24	-0.3	40	Vdc
	48	-0.3	80	Vdc
	W-24	-0.3	40	Vdc
	W-48	-0.3	80	Vdc
Operating Temperature	All models, base plate temperature	-40	+95	°C
Storage Temperature	**Ambient**	-55	+105	°C
Isolation Voltage	Input to Output		+700	Vdc

2. Input Specifications

Parameter	Conditions / Description	Min	Nom	Max	Units
Input Voltage					
Voltage Range (Continuous)	12	9	12	18	Vdc
	24	18	24	36	Vdc
	48	36	48	75	Vdc
	W-24	10	24	36	Vdc
	W-48	20	48	75	Vdc

3. Enable (On-Off Control)

Parameter	Conditions / Description	Min	Nom	Max	Units
Enable Pin					
Open Circuit Voltage			5		Vdc
Source Current				1	mA
Positive Logic	**Standard**				
On-Control	Logic High or Floating	5.0		3.5	Vdc
Off-Control		-0.5		1.8	Vdc
Negative Logic	**Not Available**				

* Enable pin can be left floating if not used.

4. Output Specifications

Parameter	Conditions / Description	Min	Nom	Max	Units
Voltage Accuracy	Please see table				%
Output Current	Please see table				Adc
Output Trim		±10			%Vout
Over Voltage Protection	Not available				Vdc
Line Regulation				±0.2	%Vout
Load Regulation				±1.0	%Vout
Transient Respoonse	50% ± 25% step load change		400		µSec.
Ripple & Noise	Please see table				mVp-p
Switching Frequency			100		KHz

5. Output Trim

Parameter	Conditions / Description	Min	Nom	Max	Units
Negative Trim	Standard				
Trim Up	Trim Pin to (-)Vout			10	%Vdc
Trim Down	Trim Pin to (+)Vout	10			%Vdc
Positive Trim	Not Available				

*** Trim pin can be left floating if not used**

6. Environmental and Mechanical Specifications

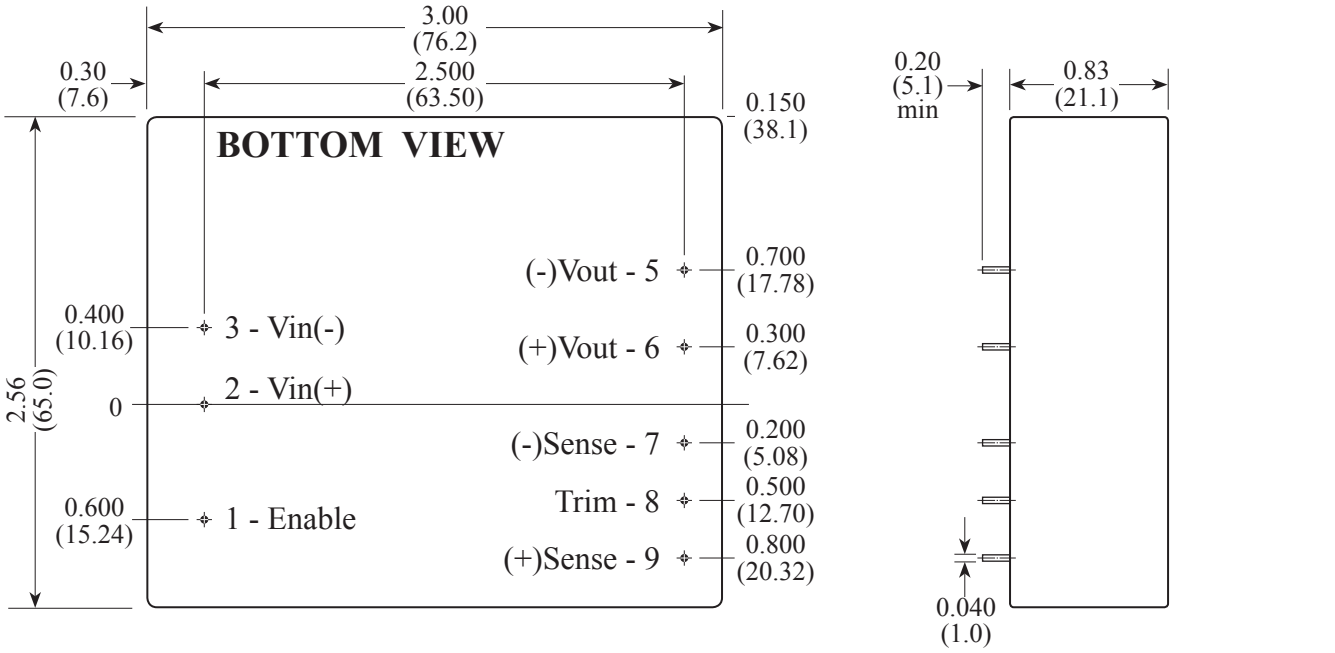
Parameter	Conditions / Description	Min	Nom	Max	Units
Operating Temperature	Case Temperature	-40		+95	°C
Storage Temperature		-40		+105	°C
Temperature Coefficient				±0.02	%/°C
Shock	Halfsine wave, 3 axes	50			g
Sinusoidal Vibration	GR-63-CORE, Section 5.4.2	1			g
Humidity	Relative Humidity, Non-Condensing			95	%R.H.
Weight			6.7 (190)		Oz (g)
MTBF (calculated)	Bellcore TR-NWT-000332 method 1 - parts count	0.5			MHrs

7. Isolation Specifications

Parameter	Conditions / Description	Min	Nom	Max	Units
Isolation Voltage					
Input to Output		500			Vdc
I/O to Case		500			Vdc
Isolation Resistance	Input to Output	10			MΩ
Isolation Capacitance	Input to Output		3		nF

INPUT	OUTPUT										
Nominal (Range)	Max. Output Power	Voltage (V)			Current (A)		Ripple & Noise		Over Load Protection	EFF. (typ.)	MODEL NO.
		Set Point	Min.*	Max.*	Min.	Max.	Peak-Peak	R.M.S.			
12 (9-18)	25W	5.00	4.90	5.10	0.5	5.0	75mV	15mV	Pulse by Pulse Current Limiting	80%	N25S1205
	30W	12.0	11.88	12.12	0.25	2.5	100mV	25mV		82%	N30S1212
	30W	15.0	14.85	15.15	0.2	2.0	120mV	30mV		82%	N30S1215
	30W	24.0	23.76	24.24	0.12	1.25	200mV	40mV		82%	N30S1224
24 (18-36)	25W	5.00	4.90	5.10	0.5	5.0	75mV	15mV		82%	N25S2405
	30W	12.0	11.88	12.12	0.25	2.5	100mV	25mV		84%	N30S2412
	30W	15.0	14.85	15.15	0.2	2.0	120mV	30mV		84%	N30S2415
	30W	24.0	23.76	24.24	0.12	1.25	200mV	40mV		84%	N30S2424
48 (36-75)	25W	5.00	4.90	5.10	0.5	5.0	75mV	15mV		82%	N25S4805
	30W	12.0	11.88	12.12	0.25	2.5	100mV	25mV		84%	N30S4812
	30W	15.0	14.85	15.15	0.2	2.0	120mV	30mV		84%	N30S4815
	30W	24.0	23.76	24.24	0.12	1.25	200mV	40mV		84%	N30S4824
W24 (10-36)	25W	5.00	4.90	5.10	0.5	5.0	75mV	15mV		78%	NW25S2405
	30W	12.0	11.88	12.12	0.25	2.5	100mV	25mV		80%	NW30S2412
	30W	15.0	14.85	15.15	0.2	2.0	120mV	30mV		80%	NW30S2415
	30W	24.0	23.76	24.24	0.12	1.25	200mV	40mV		80%	NW30S2424
W48 (20-75)	25W	5.00	4.90	5.10	0.5	5.0	75mV	15mV		80%	NW25S4805
	30W	12.0	11.88	12.12	0.25	2.5	100mV	25mV		82%	NW30S4812
	30W	15.0	14.85	15.15	0.2	2.0	120mV	30mV		82%	NW30S4815
	30W	24.0	23.76	24.24	0.12	1.25	200mV	40mV		82%	NW30S4824

* Combined Line & Load Regulation.



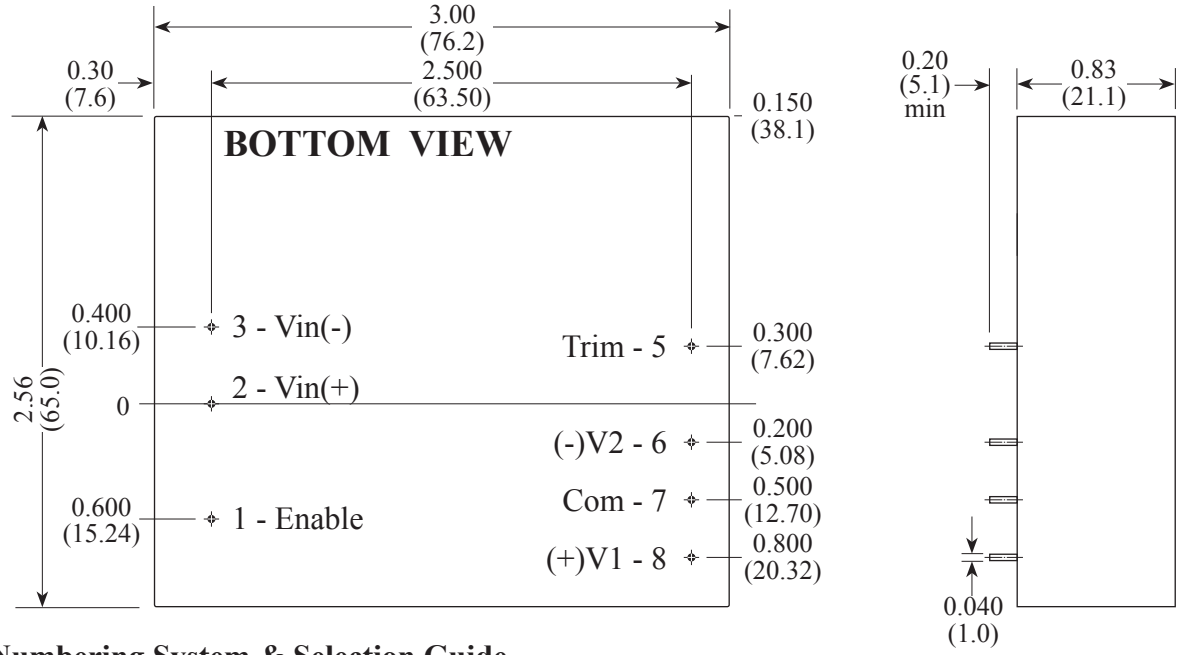
Product Numbering System & Selection Guide

N	25	S	24	05

Series No.	Output Power		No Output		Input Voltage		Output Voltage	
N	25 :	25W	S :	Single	12 :	9-18V	05 :	5.0V
	30 :	30W			24 :	18-36V	12 :	12V
					48 :	36-75V	15 :	15V
NW					24 :	10-36V	24 :	24V
NW					48 :	20-75V		

INPUT	OUTPUT													
Nominal (Range)	Max Power (Watt)	Voltage (V) #		Set Point	Min.*	Max.*	Current (A) #	Min.	Max.	Ripple & Noise Peak-Peak	R.M.S.	Short Circuit Protection	Over Temp. Protect	EFF. (typ.)	MODEL NO.
12 (9-18)	30	±5.0V	+V1	+5.00	+4.90	+5.10	+I1	+0.3	+3.0	75mV	15mV	Pulse by Pulse Current Limiting	Not Available	82%	N30D1205
			-V2	-5.00	-4.80	+5.20	-I2	-0.3	-3.0	75mV	15mV				
	30	±12V	+V1	+12.00	+11.90	+12.10	+I1	+0.13	+1.25	100mV	20mV			84%	N30D1212
			-V2	-12.00	-11.80	+12.20	-I2	-0.13	-1.25	100mV	20mV				
	30	±15V	+V1	+15.00	+14.85	+15.15	+I1	+0.1	+1.0	120mV	25mV			84%	N30D1215
			-V2	-15.00	-14.70	-15.30	-I2	-0.1	-1.0	120mV	25mV				
24 (18-36)	30	±5.0V	+V1	+5.00	+4.90	+5.10	+I1	+0.3	+3.0	75mV	15mV			84%	N30D2405
			-V2	-5.00	-4.80	+5.20	-I2	-0.3	-3.0	75mV	15mV				
	30	±12V	+V1	+12.00	+11.90	+12.10	+I1	+0.13	+1.25	100mV	20mV			86%	N30D2412
			-V2	-12.00	-11.80	+12.20	-I2	-0.13	-1.25	100mV	20mV				
	30	±15V	+V1	+15.00	+14.85	+15.15	+I1	+0.1	+1.0	120mV	25mV			86%	N30D2415
			-V2	-15.00	-14.70	-15.30	-I2	-0.1	-1.0	120mV	25mV				
48 (36 - 75)	30	±5.0V	+V1	+5.00	+4.90	+5.10	+I1	+0.3	+3.0	75mV	15mV			84%	N30D4805
			-V2	-5.00	-4.80	+5.20	-I2	-0.3	-3.0	75mV	15mV				
	30	±12V	+V1	+12.00	+11.90	+12.10	+I1	+0.13	+1.25	100mV	20mV			86%	N30D4812
			-V2	-12.00	-11.80	+12.20	-I2	-0.13	-1.25	100mV	20mV				
	30	±15V	+V1	+15.00	+14.85	+15.15	+I1	+0.1	+1.0	120mV	25mV			86%	N30D4815
			-V2	-15.00	-14.70	-15.30	-I2	-0.1	-1.0	120mV	25mV				
24W (10-36)	30	±5.0V	+V1	+5.00	+4.90	+5.10	+I1	+0.3	+3.0	75mV	15mV			82%	NW30D2405
			-V2	-5.00	-4.80	+5.20	-I2	-0.3	-3.0	75mV	15mV				
	30	±12V	+V1	+12.00	+11.90	+12.10	+I1	+0.13	+1.25	100mV	20mV			84%	NW30D2412
			-V2	-12.00	-11.80	+12.20	-I2	-0.13	-1.25	100mV	20mV				
	30	±15V	+V1	+15.00	+14.85	+15.15	+I1	+0.1	+1.0	120mV	25mV			84%	NW30D2415
			-V2	-15.00	-14.70	-15.30	-I2	-0.1	-1.0	120mV	25mV				
48W (20-75)	30	±5.0V	+V1	+5.00	+4.90	+5.10	+I1	+0.3	+3.0	75mV	15mV			82%	NW30D4805
			-V2	-5.00	-4.80	+5.20	-I2	-0.3	-3.0	75mV	15mV				
	30	±12V	+V1	+12.00	+11.90	+12.10	+I1	+0.13	+1.25	100mV	20mV			84%	NW30D4812
			-V2	-12.00	-11.80	+12.20	-I2	-0.13	-1.25	100mV	20mV				
	30	±15V	+V1	+15.00	+14.85	+15.15	+I1	+0.1	+1.0	120mV	25mV			84%	NW30D4815
			-V2	-15.00	-14.70	-15.30	-I2	-0.1	-1.0	120mV	25mV				

* Combined Line & Load (Low Line to High Line, Min. Load to Full Load)

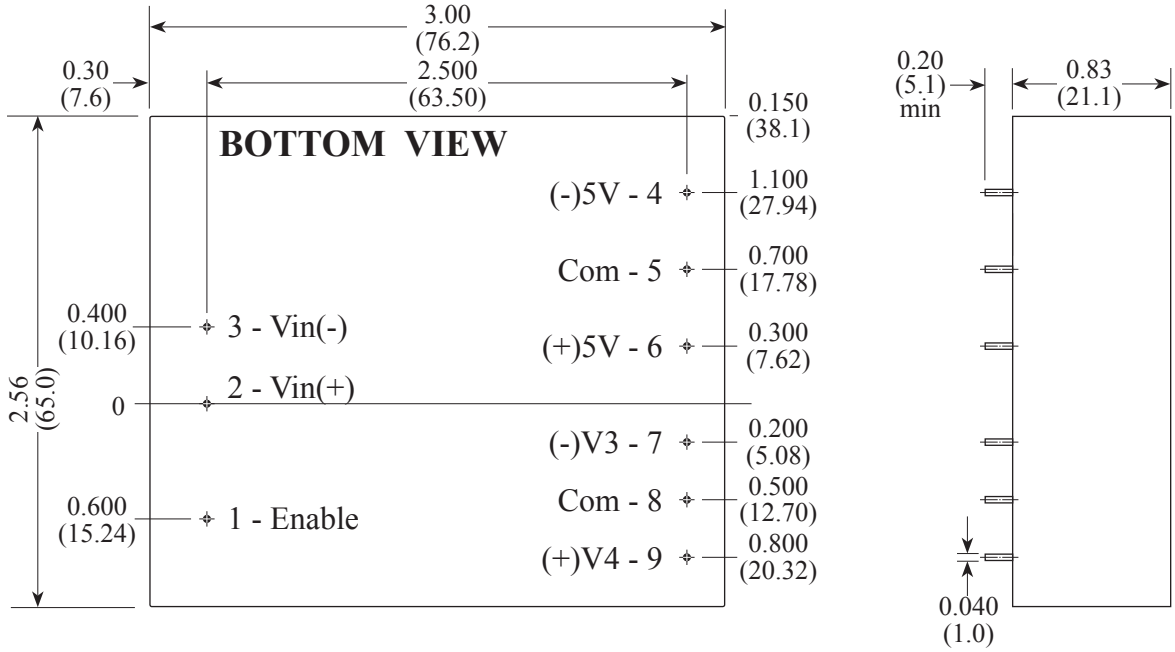


Product Numbering System & Selection Guide

N	25	D	24	05
Series No.	Output Power	No Output	Input Voltage	Output Voltage
N	**25** : 25W	**D** : Dual	**12** : 9-18V	**05** : ±5V
	30 : 30W		**24** : 18-36V	**12** : ±12V
			48 : 36-75V	**15** : ±15V
NW			**24** : 10-36V	
NW			**48** : 18-75V	

INPUT	OUTPUT													
Nominal (Range)	Max. Output Power	Voltage (V) #		Set Point	Min.*	Max.*	Current (A) #	Min.	Max.	Ripple & Noise Peak-Peak	R.M.S.	Short Circuit Protection	Over Temp. Protect	EFF. (typ.)	MODEL NO.
12 (9 - 36)	25W	±5.0V ±12V	-V1	-5.00	-4.90	-5.10	-I1	-0.0	-0.5	15mV	5mV	Pulse by Pulse Current Limiting	Not Available	80%	N25Q1205-12
			+V2	+5.00	+4.90	+5.10	+I2	+0.3	+3.0	75mV	15mV				
			-V3	-12.00	-11.50	-12.50	-I3	-0.05	-0.50	100mV	20mV				
			+V4	+12.00	+11.50	+12.50	+I4	+0.05	+0.50	100mV	20mV				
	25W	±5.0V ±15V	-V1	-5.00	-4.90	-5.10	-I1	-0.0	-0.5	15mV	5mV			80%	N25Q1205-15
			+V2	+5.00	+4.90	+5.10	+I2	+0.3	+3.0	75mV	15mV				
			-V3	-15.00	-14.40	-15.60	-I3	-0.05	-0.50	120mV	25mV				
			+V4	+15.00	+14.40	+15.60	+I4	+0.05	+0.50	120mV	25mV				
24 (18 - 36)	25W	±5.0V ±12V	+V2	-5.00	-4.90	-5.10	-I1	-0.0	-0.5	15mV	5mV			82%	N25Q2405-12
			-V1	+5.00	+4.90	+5.10	+I2	+0.3	+3.0	75mV	15mV				
			+V4	-12.00	-11.50	-12.50	-I3	-0.05	-0.50	100mV	20mV				
			-V3	+12.00	+11.50	+12.50	+I4	+0.05	+0.50	100mV	20mV				
	25W	±5.0V ±15V	+V2	-5.00	-4.90	-5.10	-I1	-0.0	-0.5	15mV	5mV			82%	N25Q2405-15
			-V1	+5.00	+4.90	+5.10	+I2	+0.3	+3.0	75mV	15mV				
			+V4	-15.00	-14.40	-15.60	-I3	-0.05	-0.50	120mV	25mV				
			-V3	+15.00	+14.40	+15.60	+I4	+0.05	+0.50	120mV	25mV				
48 (36 - 75)	25W	±5.0V ±12V	+V2	-5.00	-4.90	-5.10	-I1	-0.0	-0.5	15mV	5mV			82%	N25Q4805-12
			-V1	+5.00	+4.90	+5.10	+I2	+0.3	+3.0	75mV	15mV				
			+V4	-12.00	-11.50	-12.50	-I3	-0.05	-0.50	100mV	20mV				
			-V3	+12.00	+11.50	+12.50	+I4	+0.05	+0.50	100mV	20mV				
	25W	±5.0V ±15V	+V2	-5.00	-4.90	-5.10	-I1	-0.0	-0.5	15mV	5mV			82%	N25Q4805-15
			-V1	+5.00	+4.90	+5.10	+I2	+0.3	+3.0	75mV	15mV				
			+V4	-15.00	-14.40	-15.60	-I3	-0.05	-0.50	120mV	25mV				
			-V3	+15.00	+14.40	+15.60	+I4	+0.05	+0.50	120mV	25mV				

*Measured from 10% to max. load.



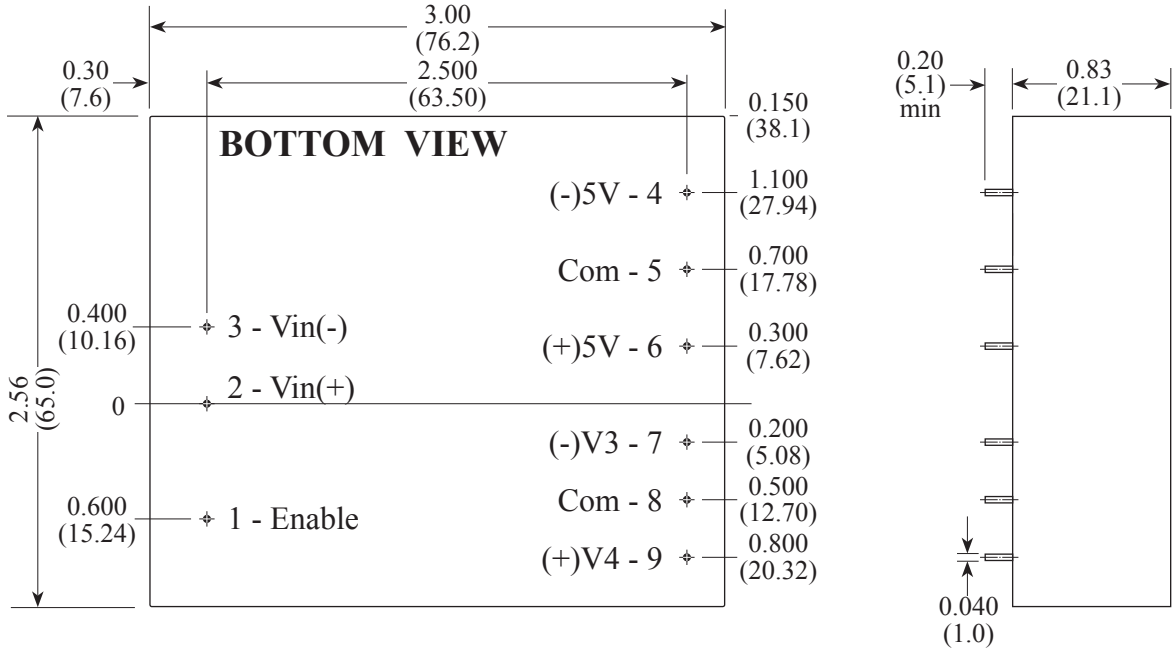
Product Numbering System

N	25	T	24	05	-	12

Series No.	Output Power		No Output		Input Voltage		-V1/+V2 Output		-V3/+V4 Outputs	
N	**25** :	25W	**Q** :	Quad	**12** :	9-18V	**05** :	±5.0V	**12** :	±12V
					24 :	18-36V			**15** :	±15V
					48 :	36-75V				

INPUT	OUTPUT													
Nominal (Range)	Max. Output Power	Voltage (V) #		Set Point	Min.*	Max.*	Current (A) #	Min.	Max.	Ripple & Noise Peak-Peak	R.M.S.	Short Circuit Protection	Over Temp. Protect	EFF. (typ.)	MODEL NO.
12 (9 - 36)	25W	±5.0V ±12V	-V1	-5.00	-4.90	-5.10	-I1	-0.0	-0.5	15mV	5mV	Pulse by Pulse Current Limiting	Not Available	80%	N25Q1205-12
			+V2	+5.00	+4.90	+5.10	+I2	+0.3	+3.0	75mV	15mV				
			-V3	-12.00	-11.50	-12.50	-I3	-0.05	-0.50	100mV	20mV				
			+V4	+12.00	+11.50	+12.50	+I4	+0.05	+0.50	100mV	20mV				
	25W	±5.0V ±15V	-V1	-5.00	-4.90	-5.10	-I1	-0.0	-0.5	15mV	5mV			80%	N25Q1205-15
			+V2	+5.00	+4.90	+5.10	+I2	+0.3	+3.0	75mV	15mV				
			-V3	-15.00	-14.40	-15.60	-I3	-0.05	-0.50	120mV	25mV				
			+V4	+15.00	+14.40	+15.60	+I4	+0.05	+0.50	120mV	25mV				
24 (18 - 36)	25W	±5.0V ±12V	+V2	-5.00	-4.90	-5.10	-I1	-0.0	-0.5	15mV	5mV			82%	N25Q2405-12
			-V1	+5.00	+4.90	+5.10	+I2	+0.3	+3.0	75mV	15mV				
			+V4	-12.00	-11.50	-12.50	-I3	-0.05	-0.50	100mV	20mV				
			-V3	+12.00	+11.50	+12.50	+I4	+0.05	+0.50	100mV	20mV				
	25W	±5.0V ±15V	+V2	-5.00	-4.90	-5.10	-I1	-0.0	-0.5	15mV	5mV			82%	N25Q2405-15
			-V1	+5.00	+4.90	+5.10	+I2	+0.3	+3.0	75mV	15mV				
			+V4	-15.00	-14.40	-15.60	-I3	-0.05	-0.50	120mV	25mV				
			-V3	+15.00	+14.40	+15.60	+I4	+0.05	+0.50	120mV	25mV				
48 (36 - 75)	25W	±5.0V ±12V	+V2	-5.00	-4.90	-5.10	-I1	-0.0	-0.5	15mV	5mV			82%	N25Q4805-12
			-V1	+5.00	+4.90	+5.10	+I2	+0.3	+3.0	75mV	15mV				
			+V4	-12.00	-11.50	-12.50	-I3	-0.05	-0.50	100mV	20mV				
			-V3	+12.00	+11.50	+12.50	+I4	+0.05	+0.50	100mV	20mV				
	25W	±5.0V ±15V	+V2	-5.00	-4.90	-5.10	-I1	-0.0	-0.5	15mV	5mV			82%	N25Q4805-15
			-V1	+5.00	+4.90	+5.10	+I2	+0.3	+3.0	75mV	15mV				
			+V4	-15.00	-14.40	-15.60	-I3	-0.05	-0.50	120mV	25mV				
			-V3	+15.00	+14.40	+15.60	+I4	+0.05	+0.50	120mV	25mV				

*Measured from 10% to max. load.



Product Numbering System

N	25	T	24	05	-	12

Series No.	Output Power		No Output		Input Voltage		-V1/+V2 Output		-V3/+V4 Outputs	
N	**25** :	25W	**Q** :	Quad	**12** :	9-18V	**05** :	±5.0V	**12** :	±12V
					24 :	18-36V			**15** :	±15V
					48 :	36-75V				