NB100S & NB100D

100 Watts Output Power

Single and Dual outputs

How to Order:

NB 100 D I / 5 / 15 - A - D

- Series
- Total Output Power
- Single (S), Dual (D) Output
- Industrial (I) or Military (M)

Output Voltages: One number is for single out or two numbers for dual output. Maximum current as stated in selection chart.

Options:
A- pins out side of unit
B- pins out bottom of unit
C- pins out top of unit
D- through hole inserts (STD threaded)
I - M2.5 inserts

Model Numbering Example:
To order a 100 watt, 15 V out (single output), industrial grade power supply with pins out the side, the model number would be: NB100SI/15-A. Military grade would be NB100SM/15-A. To order a 100 watt, dual output, 15 V and 15 V, industrial grade power supply with pins out the top, the model number would be NB100DI/15/15-C. Dual output, 12 V and 15 V, military grade, would be NB100DM/12/15-C. When ordering a dual output unit, the first output voltage in the model number is located on channel 1, and the second output voltage in the model number is located on channel 2 (see case drawing for details).

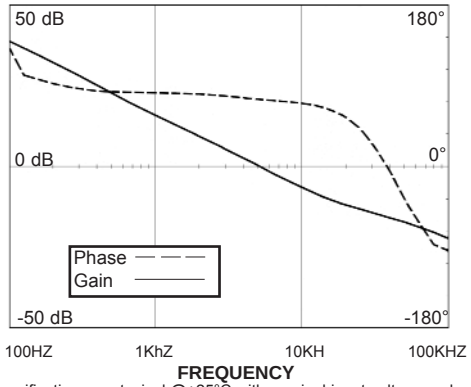
INPUT CHARACTERISTICS

	Per Channel			
	Min.	Typ.	Max.	Units
Input Voltage	14	28	40	Vdc
Brown Out (75% of Full Load) [fig. I]*		12		Vdc
No Load Power Dissipation		2	4	Watt
Inrush Charge [fig. VII]*			2	mc
Reflective Ripple Current [fig. VIII]*		15		%
Logic Disable Current (Sink)		100	150	µA
Logic Disable Power In		1.2	2.5	W
Input Ripple Rejection (120 Hz)		55		dB
Input Ripple Rejection (800 Hz)		45		dB
Efficiency up to		83		%
See Page 21 [fig. II, III]*				

EMI: Units conform to MIL-STD-461D (on the input leads) with companion filter

Input Transient: Units conform to MIL-STD-704D for transients up to 50V for 0.1 second

STABILITY



FEATURES

- .38 Inch Profile
- Synchronization
- Remote Turn On (TTL)
- Output Voltage Trim Pin
- Over Temperature Protection
- Output Overvoltage/Overcurrent Protection
- Built-In Test (Output Power Good; Main Output)
- 100% Environmental Screening (Military Version)
- Outputs Isolated Allowing Any Combination of Output Voltages

SELECTION CHART

Output Voltage and Output Current

Nominal Output Voltage	Single Output Current (Amps)	Dual Per Channel Current (Amps)
2	20	10
3.3	20	10
5	20	10
5.2	19.2	9.6
12	8.3	4.2
15	6.7	3.3
24	4.2	2.1
28	3.6	1.8

OUTPUT CHARACTERISTICS

	Per Channel			
	Min.	Typ.	Max.	Units
Set Point Accuracy			1 †	% V_{out}
Load Regulation		5	0.2%[1]	mV
Line Regulation		5	0.2%[1]	mV
Ripple P-P (10 MHz) (2V-24) [fig. IV]*		45	150	mV
Ripple P-P (10 MHz) (28V)[fig. IV]*		.2%	1%	% V_{out}
Trim Range	100		110	% V_{out}
Remote Sense Compensation			0.5	Vdc
Overvoltage Protection (2V, 3.3V)		140		% V_{out}
Overvoltage Protection (5V-28)		125		% V_{out}
Current Sharing		±10		% I_{out}
Transient Response (Vout 1%) Time/Overshoot [fig. V & VI]*				
20-80% Load		350/300		µS/mV
Low Line - High Line		300/350		µS/mV
50-100% Load		250/300		µS/mV
Temperature Drift		0.01	0.05	%/°C
Long Term Drift		0.01	0.02	%/1KHrs
Current Limit	105	125	150	% I_{out}
Short Circuit Current	25		75	% I_{out}
Turn On Time [fig. XI]*		1.5		mS
Logic Turn On Time [fig. IX]*		1.5		mS

† 1% or 50mV, whichever is greater
* figures on page 21 represents per channel
[1] .2% or 25mv whichever is greater

All specifications are typical @+25°C with nominal input voltage under full output load conditions, unless otherwise noted. Specifications subject to change without notice.

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HIGH DENSITY
DC TO DC CONVERTERS

Industrial & Military Grades

TEMPERATURE CHARACTERISTICS

	Min.	Typ.	Max.	Units
Operating	-55		+100	°C
Storage (Ambient)	-55		+125	°C
Over Temperature Shutdown		+105		°C
Thermal Resistance Case - Ambient		12		°C/W

ENVIRONMENTAL SCREENING - M MODEL

Stabilization Bake:	+125°C for 24 hours similar to Mil-Std-883, M1008.2, Condition B
Temperature Cycling:	10 cycles at -55°C to +125°C (transition period 36 minutes) similar to Mil-Std-883, M1010, Condition B
Burn-in:	160 hours at +85°C min.
Final Testing	

ENVIRONMENTAL SCREENING - I MODEL

Burn-in:	16 hours at +85°C min.
Final Testing	

See "Guide to Operation" for full details.

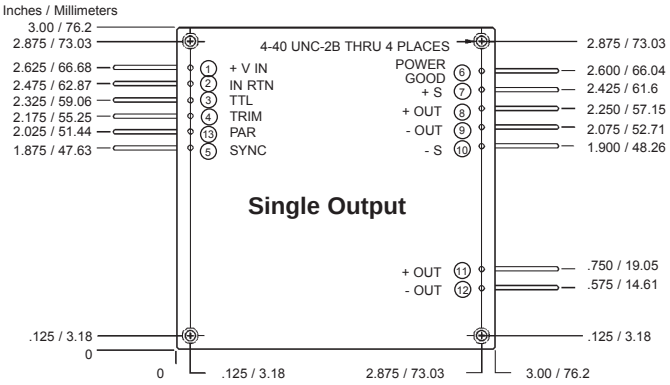
ISOLATION CHARACTERISTICS

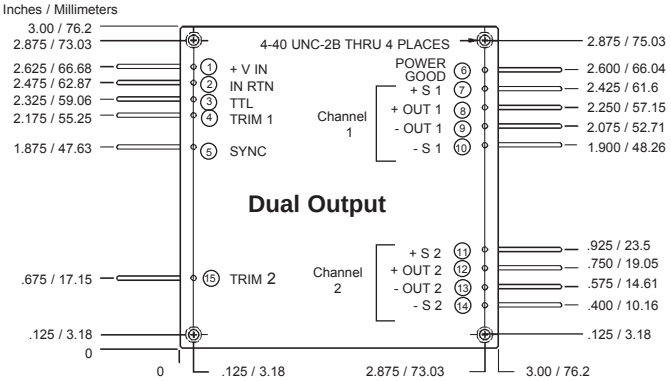
	Min.	Typ.	Units
Isolation:			
Input to Output	500		Vdc
Output to Base	250		Vdc
Input to Base	250		Vdc
Input to Output Capacitance		0.044	µf
Insulation Resistance (@50 Vdc)	50		MOhm

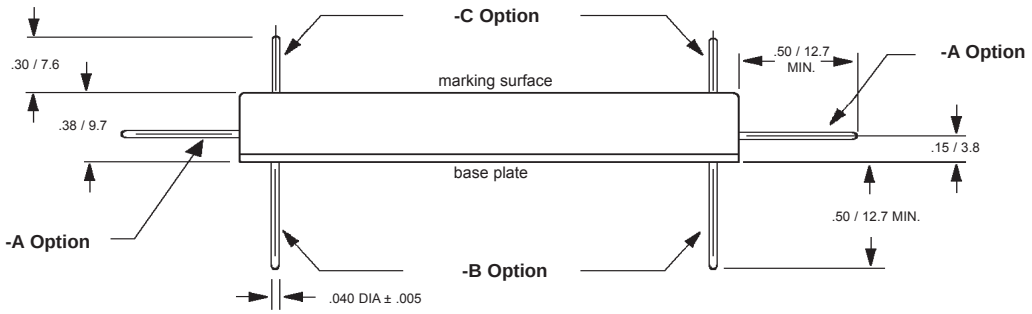
MECHANICAL CHARACTERISTICS

Weight	6.4	oz.
	180	grams
Size	3.0 x 3.0 x 0.38	inch
	76.2 x 76.2 x 9.7	mm
Volume	3.42	$inch^3$
	56.0	cm^3
Material	Pin	Brass (Solder Plating)
	Baseplate	Aluminum 5052-H32
	Case	28 Gauge Steel (cold rolled)
Finish		Nickel Plating
Mounting	Standard	4-40 inserts provided in baseplate
	I Option	M2.5 metric inserts (4 places)
	D Option	0.115 DIA thru holes (4 places)

CASE DRAWINGS







Tolerances: inches - x.xx = ±0.03 mm - x.x = ±0.8
x.xxx = ±0.015 x.xx = ±0.40

All specifications are typical @+25°C with nominal input voltage under full output load conditions, unless otherwise noted. Specifications subject to change without notice.

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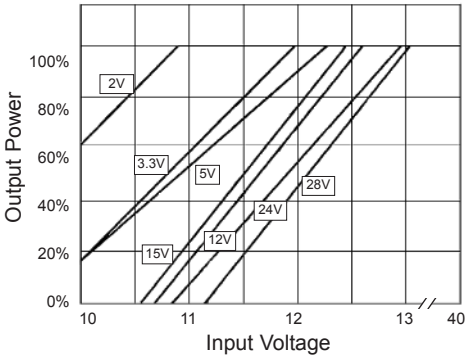
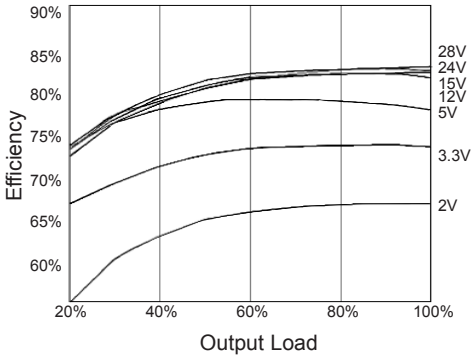
NB50S NB100 NB150

Performance Characteristics

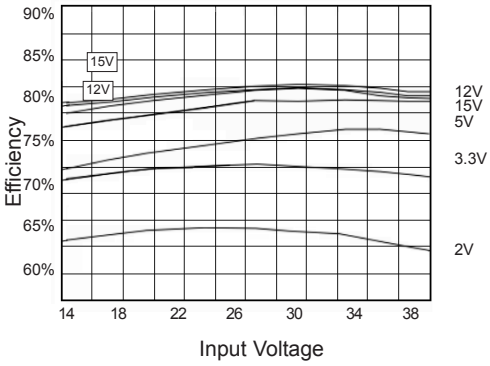
I. Input Voltage vs. Output Power



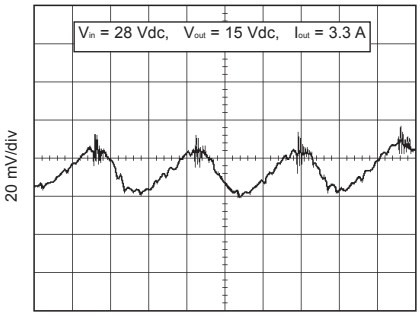
II. Efficiency vs. Output Power



III. Efficiency vs. Input Voltage

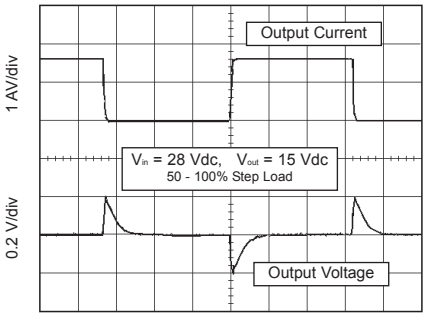


IV. Output Voltage Ripple



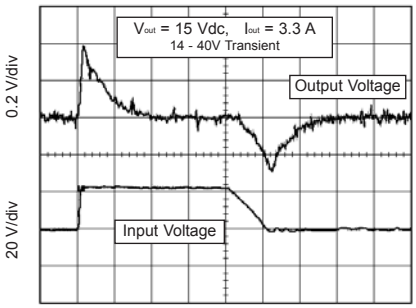
Time: 2 µS/div

V. Load Transient Response



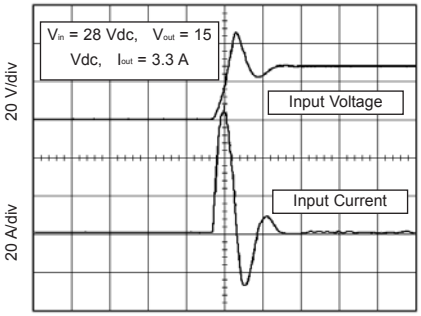
Time: 0.5 mS/div

VI. Input Transient Response



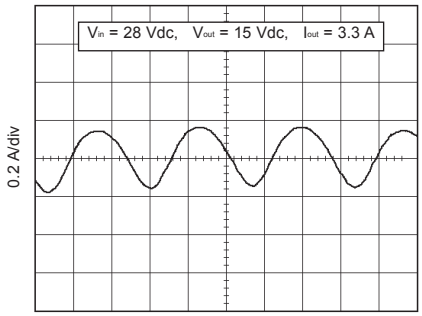
Time: 0.2 mS/div

VII. Input Inrush Current



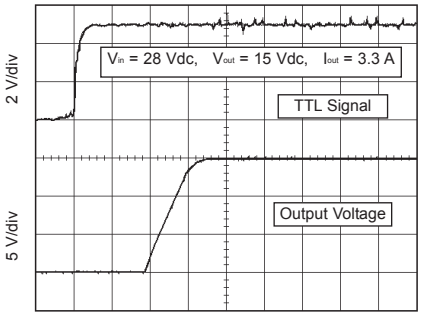
Time: 50 µS/div

VIII. Input Current Ripple



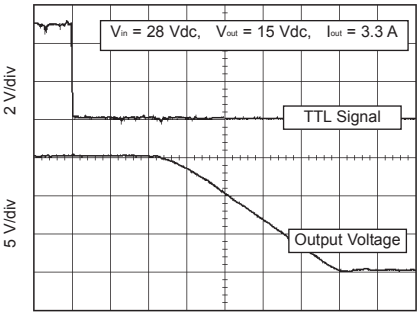
Time: 2 µS/div

IX. TTL Turn On



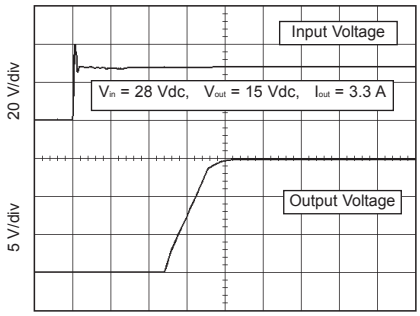
Time: 0.5 mS/div

X. TTL Turn-off



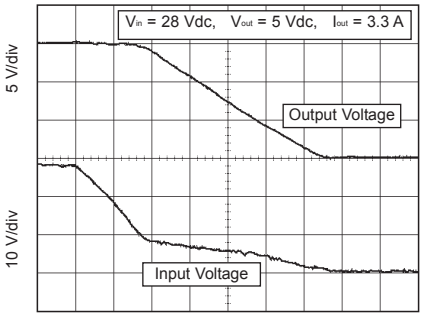
Time: 100 µS/div

XI. Turn-on



Time: 0.5 mS/div

XII. Turn-off / Hold-up Time



Time: 100 µS/div

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NBF150

EMI Filter

FEATURES

- **MIL-STD-461D Compliance CE101 and CE102**
- **Does Not Require External Components**
- **Meets Environmental Requirements of MIL-STD-810E and MIL-S-901**
- **For Use With NB80, NB100, NB150 Series DC/DC Converters**

How to Order:

NBF 150 - A - D

Series

Total Output Power

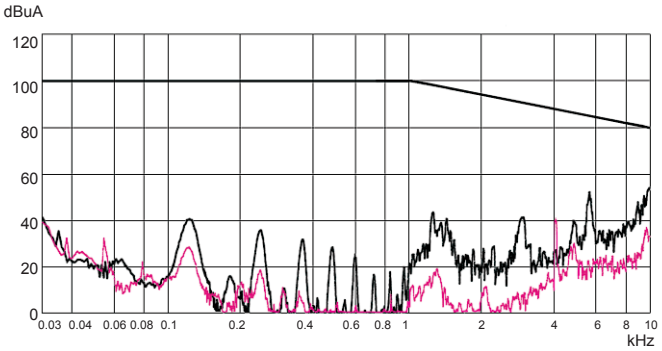
Options:
A- pins out side of unit
B- pins out bottom of unit
C- pins out top of unit
D- through hole inserts (STD threaded)
I - M2.5 inserts

SPECIFICATIONS

Input Voltage (maximum)		50	Vdc
Rated Output Current		15	A
Isolation (Input/Output to Case)		500	Vdc
Operating Temperature		-55 to +100	ºC
Storage Temperature		-55 to +125	ºC
Insulation Resistance (measured at 50Vdc)		50	M Ohm
Weight		4.2	oz.
		120	grams
Size		3.0 x 2.0 x 0.38	inch
		76.2 x 50.8 x 9.7	mm
Volume		2.28	$inch^3$
		37.5	cm^3
Material	Pin	Brass (Solder Plating)	
	Baseplate	Aluminum 5052-H32	
	Case	28 Gauge Steel (cold rolled)	
Finish		Nickel Plating	
Mounting	Standard	4-40 inserts provided in baseplate	
	I Option	M2.5 metric inserts (4 places)	
	D Option	0.115 DIA thru holes (4 places)	

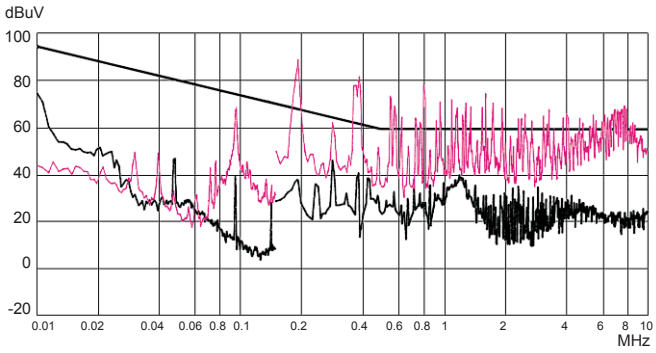
EMI COMPARISON GRAPHS

28Vin - 150 watts
MIL-STD-461D, CE101-4

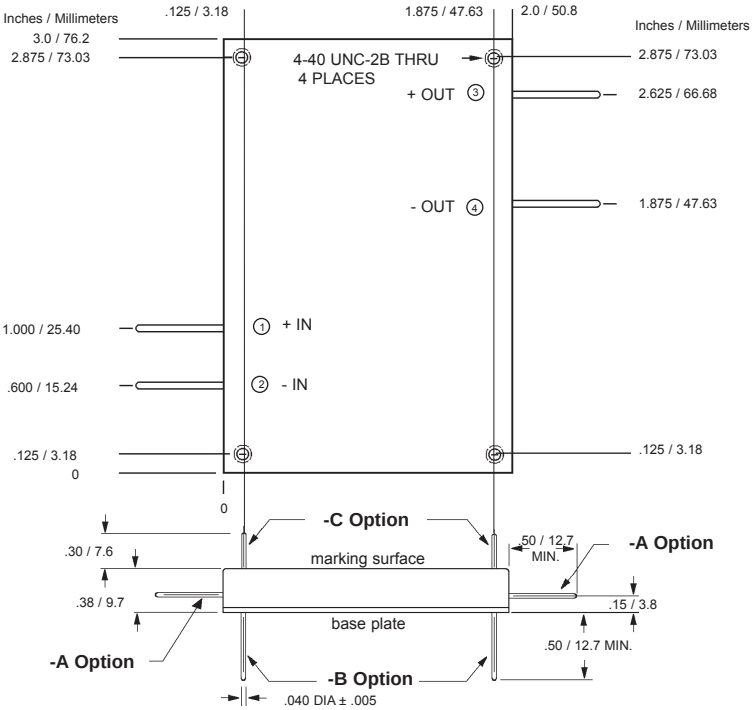


28Vin - 150 watts
MIL-STD-461D, CE102

With NBF50
Without NBF50



CASE DRAWINGS



Tolerances:

inches	-	x.xx	= ±0.03
		x.xxx	= ±0.015
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		x.xx	= ±0.40

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