

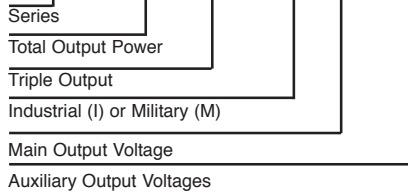
# NB50T triple-output DC/DC converters

## 14 – 40Vin, 5 – 15Vout, 50 watts



### How to Order:

**NB 50 T M / 5 / 15 - A - D**



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

### FEATURES

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

### SELECTION CHART

Main Output		Auxiliary Output		Model Number
Voltage	Current	Voltage	Current	
5	5.0A	±12	1.04A	NB50TI/5/12-A
5	5.0A	±15	0.83A	NB50TI/5/15-A

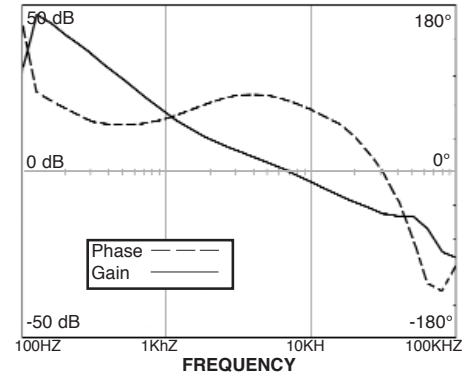
The above model number is for the Industrial grade power supply. For the Military grade power supply replace the 'I' with 'M'.

### INPUT CHARACTERISTICS

	Min.	Typ.	Max.	Units
Input Voltage	14	28	40	Vdc
Brown Out (75% of Full Load) [fig. I]*		12		Vdc
No Load Power Dissipation		3	5	Watt
Inrush Charge [fig. VII]*			2	mc
Reflective Ripple Current [fig. VIII]*		10		%
Logic Disable Current (Sink)		150	250	µA
Logic Disable Power In		1.2	2.5	W
Input Ripple Rejection (120 Hz)		50		dB
Input Ripple Rejection (800 Hz)		40		dB
Efficiency (FL) [fig. II & III]*	64	68		%

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

### STABILITY



### OUTPUT CHARACTERISTICS

	+5V Output			Auxiliary Outputs			Units
	Min.	Typ.	Max.	Min.	Typ.	Max.	
Set Point Accuracy		1 †	2			1	% V <sub>out</sub>
Load Regulation		0.1	0.5	0.3		1	% V <sub>out</sub>
Line Regulation		0.1	0.5	0.2		1	% V <sub>out</sub>
Ripple P-P (10 MHz) [fig. IV]*		50	125	50		150	mV
Trim Range	100		110				% V <sub>out</sub>
Remote Sense Compensation			0.5				Vdc
Overvoltage Protection		125					% V <sub>out</sub>
Transient Response (Vout 1%) Time/Overshoot [fig. V & VI]*							
20-80% Load		350/200		200/30			µS/mV
Low Line - High Line		500/350		500/50			µS/mV
50-100% Load		300/150		200/30			µS/mV
Temperature Drift		0.01	0.05	0.02		0.05	%/°C
Long Term Drift		0.01	0.02	0.01		0.02	%/1KHrs
Current Limit	105	125	150	105	125	150	% I <sub>out</sub>
Short Circuit Current	25		75	25		75	% I <sub>out</sub>
Turn On Time [fig. X, XI, XII]*		1.0		1.0			mS
Logic Turn On Time [fig. IX]*		1.0		1.0			mS

† 1% or 50mV, whichever is greater  
 \* figures on page 22

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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# Industrial & military grade high density DC to DC converters

## TEMPERATURE CHARACTERISTICS

	Min.	Typ.	Max.	Units
Operating	-55		+100	°C
Storage (Ambient)	-55		+125	°C
Over Temperature Shutdown		+105		°C
Thermal Resistance Case - Ambient		11		°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.

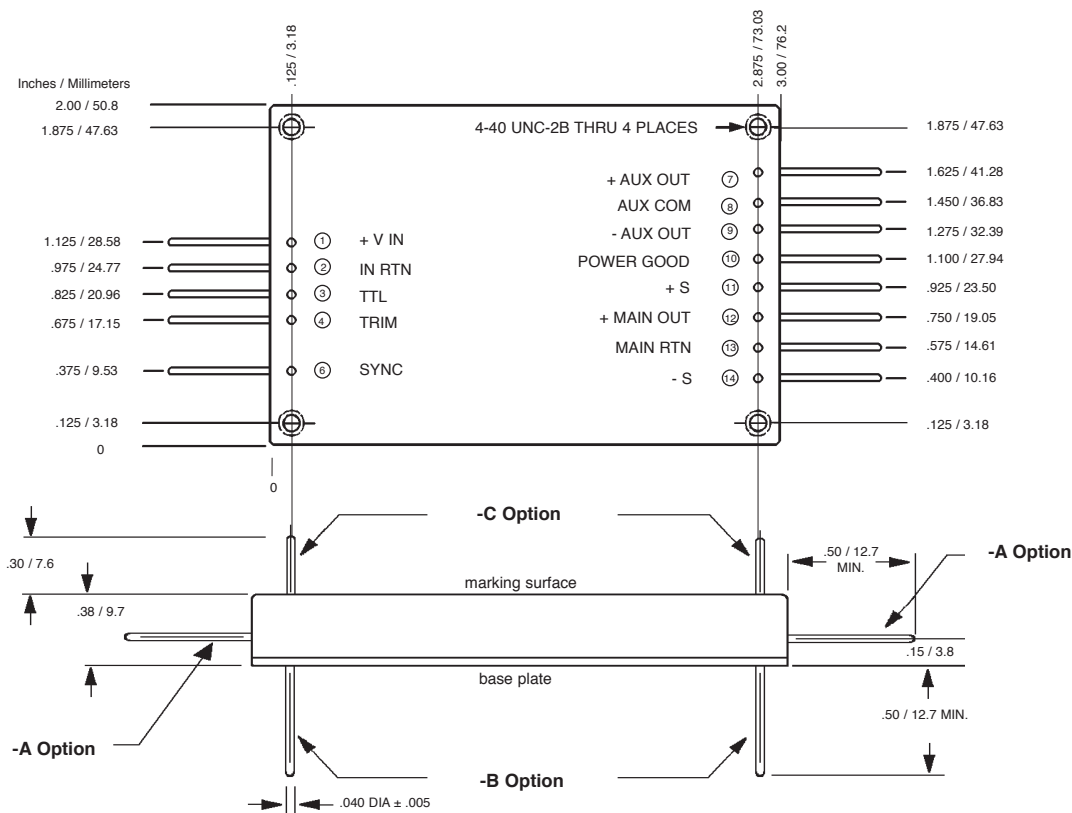
## ISOLATION CHARACTERISTICS

	Min.	Typ.	Units
Isolation:			
Input to Output	500		Vdc
Output to Base	250		Vdc
Input to Base	250		Vdc
Input to Output Capacitance		0.022	µf
Insulation Resistance (@50 Vdc)	50		MOhm

## MECHANICAL CHARACTERISTICS

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 <sup>3</sup>
	37.5	cm <sup>3</sup>
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

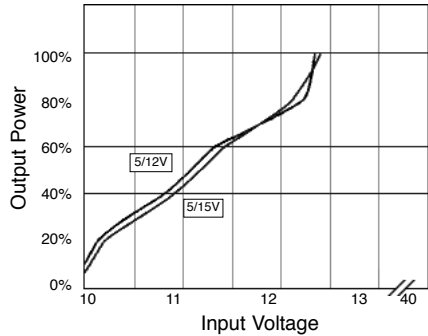


**Tolerances:** inches - x.xx = ±0.03 mm - x.x = ±0.8  
 inches - x.xxx = ±0.015 mm - x.xx = ±0.40

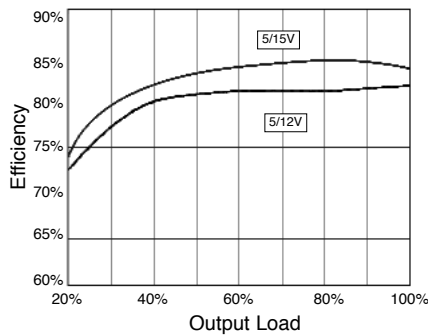
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# Performance characteristics

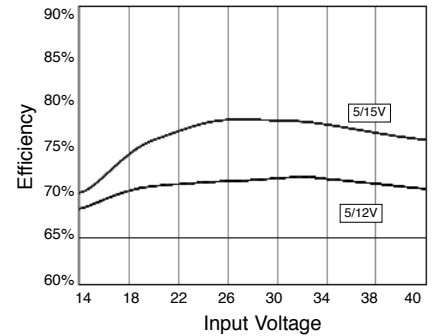
I. Input Voltage vs. Output Power



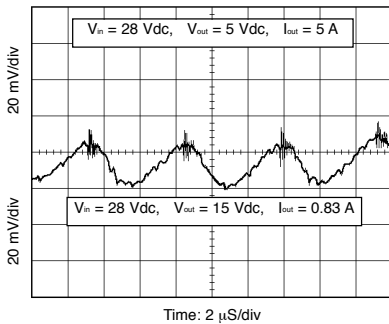
II. Efficiency vs. Output Power



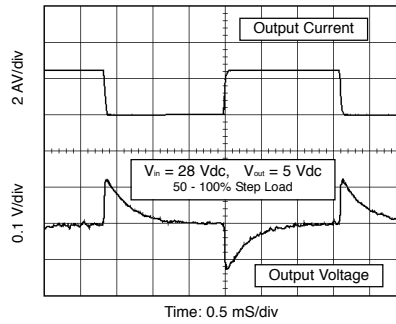
III. Efficiency vs. Input Voltage



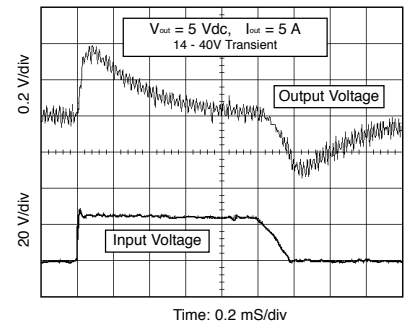
IV. Output Voltage Ripple



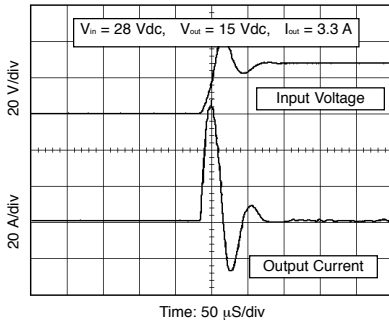
V. Load Transient Response



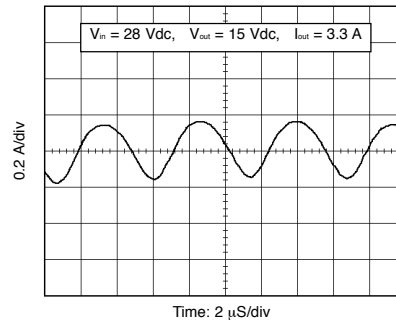
VI. Input Transient Response



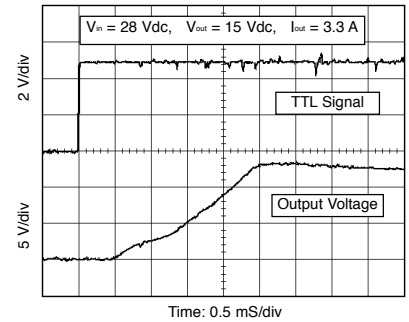
VII. Input Inrush Current



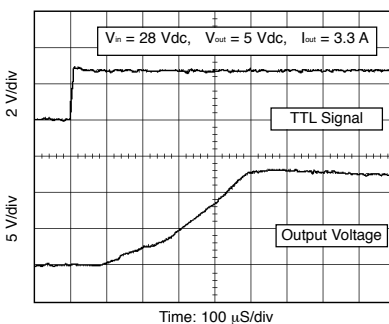
VIII. Input Current Ripple



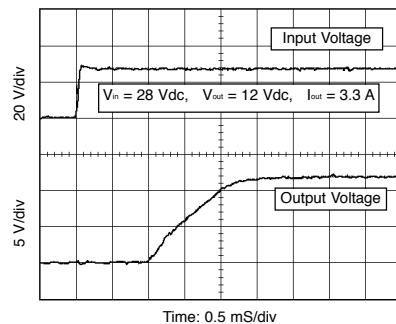
IX. TTL Turn On



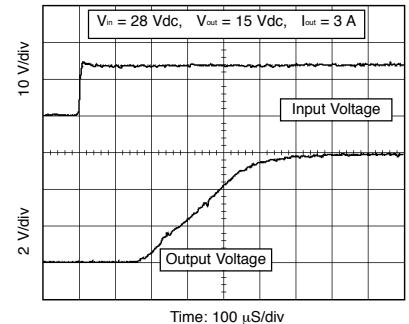
X. Turn On



XI. Turn On



XII. Turn On



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