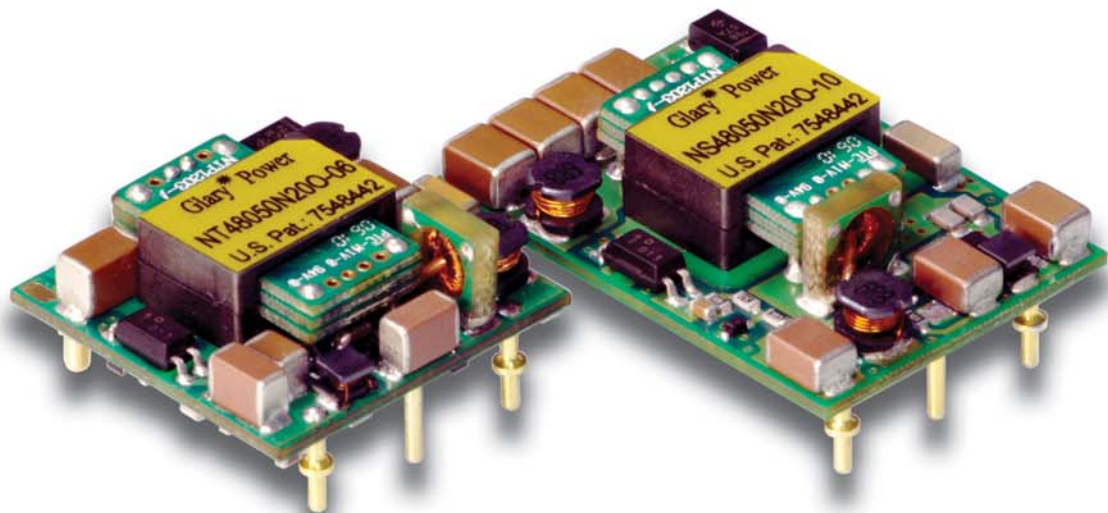
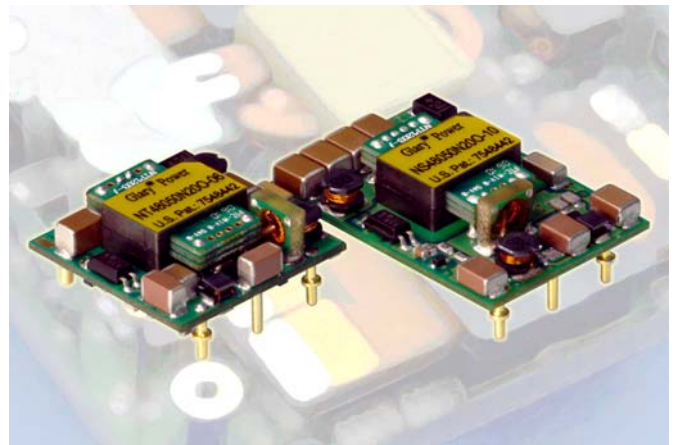




*The Rise of Technology Convergence*





The high efficiency *Neat* Converter family provides up to 50W/12A output with 1/32 and 1/16 brick packages, which is designed with the efficiently patented "Coupled-Inductor SR" topology. The low profile module design with open frame package reduces the shadow effect and provides the improved thermal performance to simplify the system power design.

Part Number *	Maximum Input	Maximum Output	Efficiency
NT48120abcd-ef	36V~75V 33W	12.0V/2.5A 30W	92%
NT48050abcd-ef	36V~75V 34W	5.0V/6A 30W	90%
NT48033abcd-ef	36V~75V 29W	3.3V/8A 26W	90%
NT48025abcd-ef	36V~75V 23W	2.5V/8A 20W	88%

Part Number *	Maximum Input	Maximum Output	Efficiency
NS48120abcd-ef	36V~75V 55W	12.0V/4.2A 50W	91%
NS48050abcd-ef	36V~75V 56W	5.0V/10A 50W	90%
NS48033abcd-ef	36V~75V 45W	3.3V/12A 40W	89%
NS48025abcd-ef	36V~75V 35W	2.5V/12A 30W	87%

\* Options for **NT** and **NS** modules are listed as follows (referring to mechanical drawings in page 3/3):

- a** (Enable Logic): **P**: Positive **N**: Negative  
**b** (Pin Dimension): **0**: 0.12" **1**: 0.16" **2**: 0.20" **3**: 0.24"  
**c** (Standoff Height): **0**: 0.02" **1**: 0.08" **2**: 0.16"  
**d** (Packaging/Module Thickness): **O**: Open frame standard type/0.32"  
**D**: Customized
- ef** (Output): output current rating: **00** to **12** for output voltage below 12V  
**00** to **42** for 12V model only



### Preliminary Datasheet

**Example:** **NT48050P100-06** is a *Neat* Converter in 1/32 brick offering 48V input to 5.0V/6A output with positive control logic, 0.12" pin length, 0.02" of standoff height in a standard open frame package.

ABSOLUTE MAXIMUM RATINGS		
Temperature	Operation	-40°C to +110°C
	Storage	-55°C to +125°C
Input Voltage Range	Operation:	
	48V Models Transient (100mS):	-0.5V to +80Vdc
Isolation Voltage	Input to Output	100V Maximum 2.0KV Minimum
	Remote Control Voltage	-0.5V to +12Vdc

INPUT SPECIFICATIONS		
Operation Voltage Range	48V Models	+36V to +75Vdc
Reflected Ripple Current	L <sub>EXT</sub> = 10uH	20mA Max
Power ON Voltage Ranges	48V Models	+34.5V to +35.8Vdc
Power OFF Voltage Ranges	48V Models	+33.5V to +34.8Vdc
Off State Input Current	V <sub>NOM</sub>	3mA Max
Latch-State Input Current	V <sub>NOM</sub>	8mA Max
Input Capacitance	48V Models	2.2uF Max

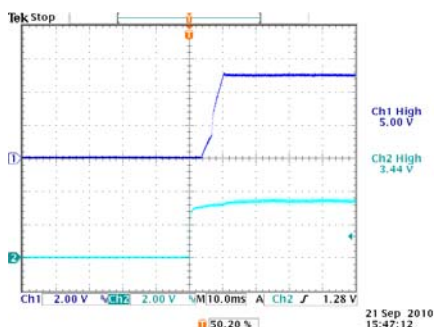
GENERAL SPECIFICATION		
Conversion Efficiency	Typical	See table
Switching Frequency	Typical	400KHz
MTBF	Bellcore	7.6×10 <sup>6</sup> hrs @GB/25°C.
	TR-332 issue 6	(NT48050P100-06)
OTP	Internal	115°C (Tc)
Weight		8g (1/32 Brick) 10g (1/16 Brick)

OUTPUT SPECIFICATIONS		
Voltage Accuracy	Typical	±1%
Line Regulation	Full Input Range	±0.2%
Load Regulation	10%~100%	±0.2%
Temperature Drift	-40°C ~100°C	±0.03%/°C
Output Tolerance Band	All Conditions	±4%
Ripple & Noise (20MHz)	Peak-Peak (RMS)	3% (1%) V <sub>o</sub>
Over Voltage Protection	V <sub>NOM</sub> , 10% Load	115~130 %V <sub>o</sub>
Output Current Limits	V <sub>NOM</sub>	105%~125%
Voltage Trim	V <sub>NOM</sub> , 10% Load	±10%
Input Ripple Rejection (<1KHz)	V <sub>NOM</sub> , Full Load	-50dB
Step Load (2.5A/uS)	75%~100% Load	300mV/500uS
Start-Up Delay Time	V <sub>NOM</sub> , Full Load	20mS/250mS

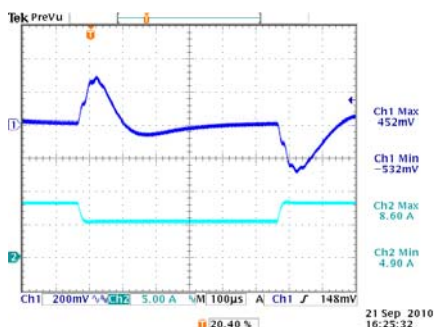
CONTROL FUNCTIONS		
Remote Control	Logic High	+3.0V to +6.5V
	Logic Low	0V to +1.0V
Input Current of Remote Control Pin		-0.5mA ~ +1.5mA

Important Note: General specifications and the performances referring to standard series only, no special customer specification display here except requested items.

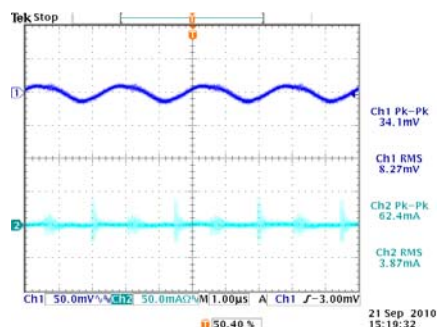
# Neat Converter Family



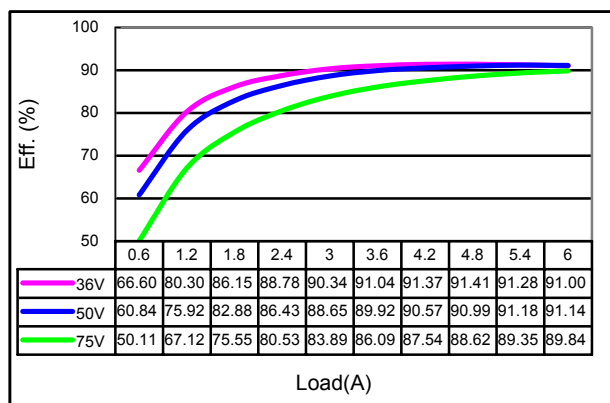
Start-Up Waveform  
( $V_{IN}$ : 50V, Load: 8A)



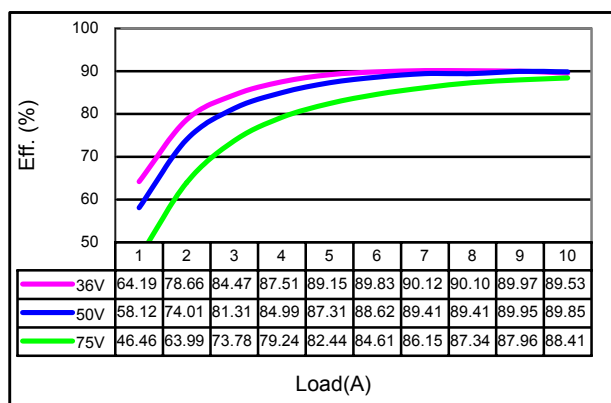
Transient Response  
( $V_{IN}$ : 50V, Load: 8A/6A@2.5A/ $\mu$ S)



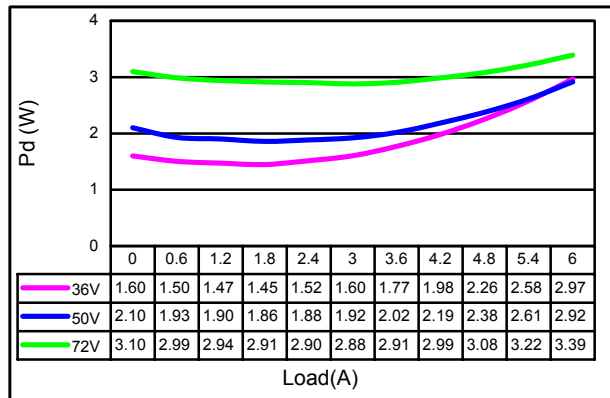
Output Ripple/Noise and Input Ripple Current  
( $V_{IN}$ : 50V, Load: 8A,  $L_{IN}$ =10uH)



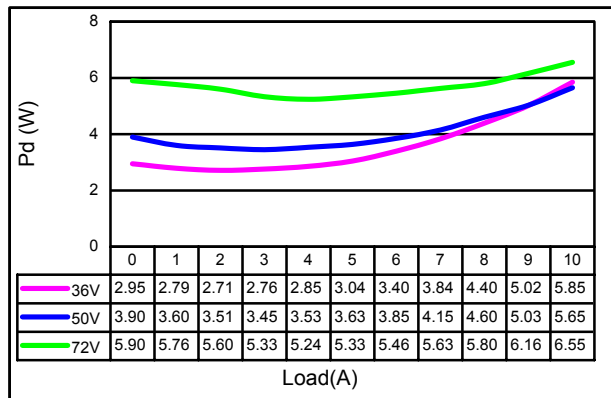
Efficiency Plot of NT48050N200-06



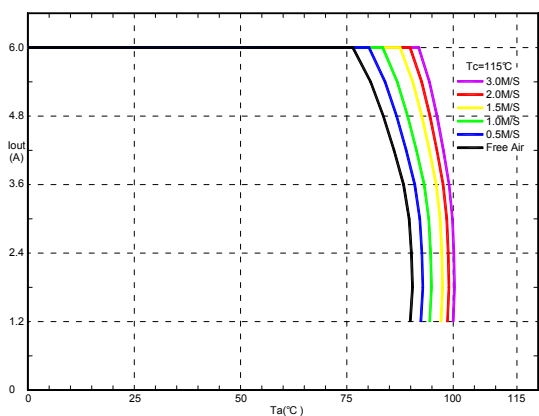
Efficiency Plot of NS48050N200-10



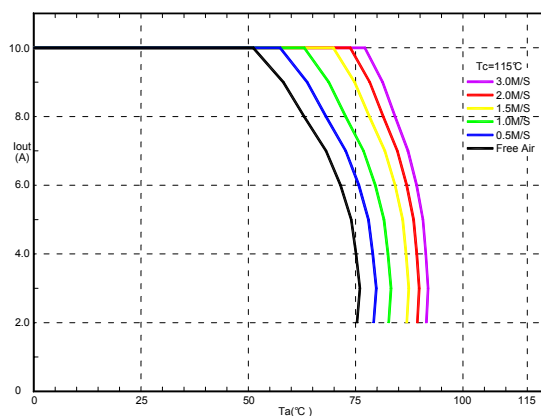
Power Loss Plot of NT48050N200-06



Power Loss Plot of NS48050N200-10

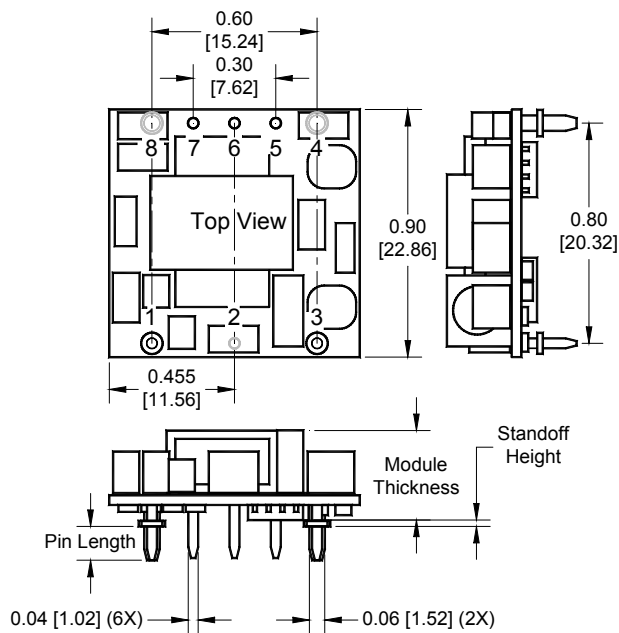


Derating Curve of NT48050N200-06 with Different Airflows



Derating Curve of NS48050N200-10 with Different Airflows

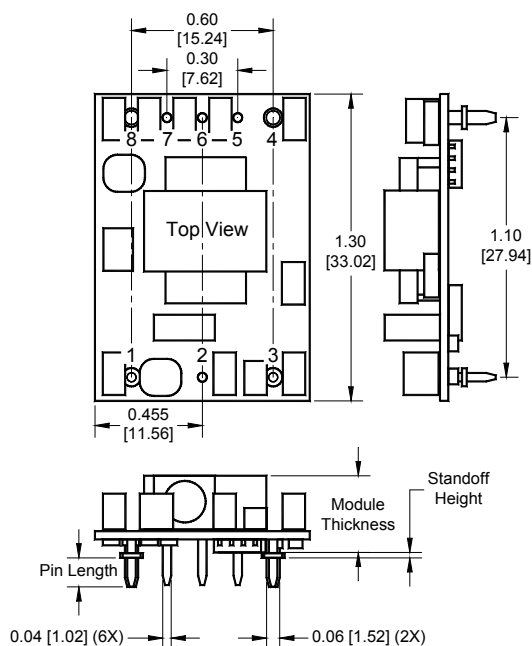
Important Note: General specifications and the performances referring to standard series only, no special customer specification display here except requested items.



Designation	Function Description	Pin #
+Vi	Positive Input	1
Remote	ON/OFF control	2
-Vi	Negative Input	3
-Vo	Negative Output	4
-S	Negative Remote Sense	5
TRIM	Output voltage adjust	6
+S	Positive Remote Sense	7
+Vo	Positive Output	8

**Dimensions:** Inches [mm]  
**Tolerances:** .xx±0.02 (.x±0.5)  
 .xxx±0.01 (.x±0.25)  
**Weight:** 8g  
**Base plate:** None  
**Pin material:** Copper alloy or Brass  
**Pin plating:** Gold over Nickel

**Dimensions and Pin Connections of NT Series 1/32 Brick**



Designation	Function Description	Pin #
+Vi	Positive Input	1
Remote	ON/OFF control	2
-Vi	Negative Input	3
-Vo	Negative Output	4
-S	Negative Remote Sense	5
TRIM	Output voltage adjust	6
+S	Positive Remote Sense	7
+Vo	Positive Output	8

**Dimensions:** Inches [mm]  
**Tolerances:** .xx±0.02 (.x±0.5)  
 .xxx±0.01 (.x±0.25)  
**Weight:** 10g  
**Base plate:** None  
**Pin material:** Copper alloy or Brass  
**Pin plating:** Gold over Nickel

**Dimensions and Pin Connections of NS Series 1/16 Brick**

- NOTE:**
1. It is recommended that the input is protected by fuses or other protection devices at the system board.
  2. ALL specifications are typical at nominal input, full load and 25°C unless otherwise noted.
  3. Specifications are subject to change without notice.
  4. Printed or downloaded datasheets are not subject to Glary document control.
  5. Product labels shown, including safety agency certificates, may vary based on the date of manufacture.
  6. Information provided in this documentation is for ordering purposes only.
  7. This product is not designed for use in critical life support systems, equipment used in hazardous environments, nuclear control systems or other such applications, which necessitate specific safety and regulatory standards other than the ones listed in this datasheet.

Important Note: General specifications and the performances referring to standard series only, no special customer specification display here except requested items.