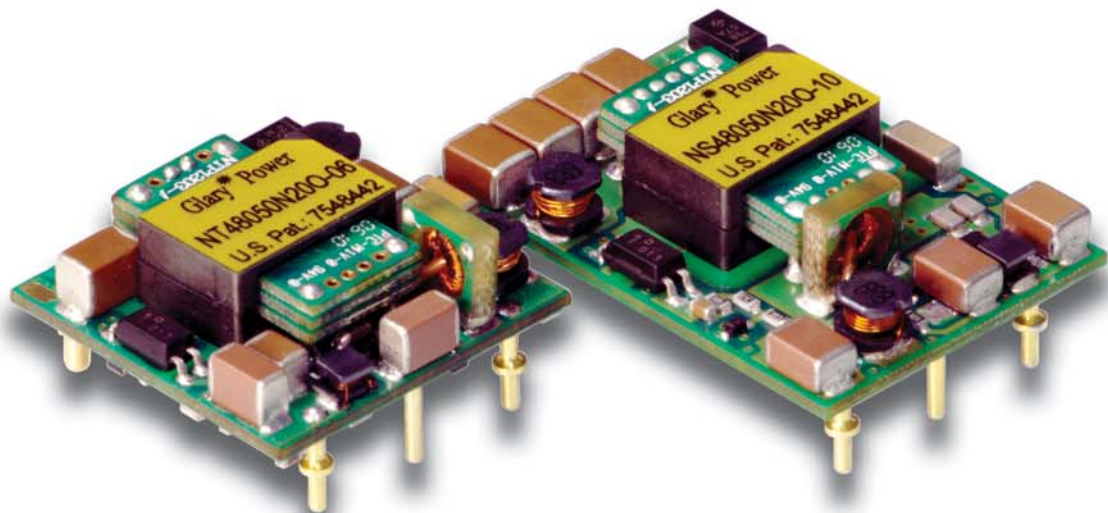
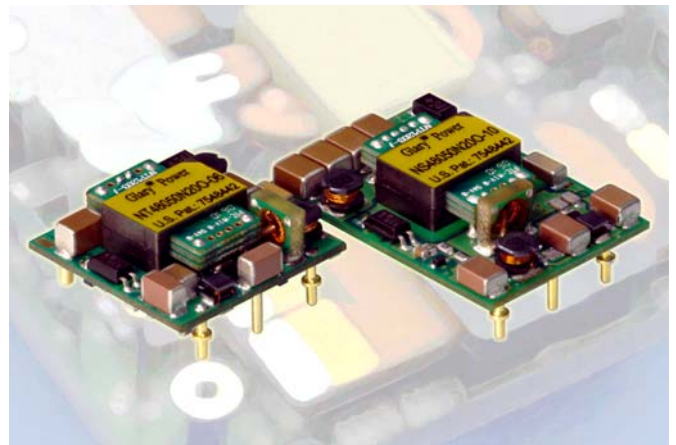


The Rise of Technology Convergence





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 | 48V Models 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 _{EXT} = 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 _{NOM} | 3mA Max |
| Latch-State Input Current | V _{NOM} | 8mA Max |
| Input Capacitance | 48V Models | 2.2uF Max |

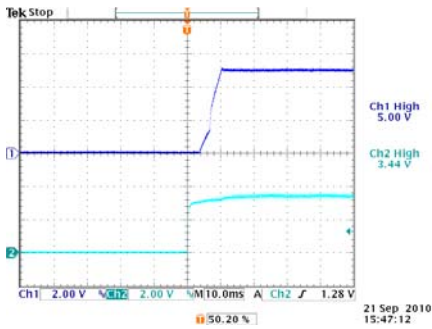
| GENERAL SPECIFICATION | | |
|-----------------------|----------------|-----------------------------------|
| Conversion Efficiency | Typical | See table |
| Switching Frequency | Typical | 400KHz |
| MTBF | Bellcore | 7.6×10 ⁶ hrs @GB/25°C. |
| | TR-332 issue 6 | (NT48050P100-06) |
| OTP | Internal | 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 _o |
| Over Voltage Protection | V _{NOM} , 10% Load | 115~130 %V _o |
| Output Current Limits | V _{NOM} | 105%~125% |
| Voltage Trim | V _{NOM} , 10% Load | ±10% |
| Input Ripple Rejection (<1KHz) | V _{NOM} , Full Load | -50dB |
| Step Load (2.5A/uS) | 75%~100% Load | 300mV/500uS |
| Start-Up Delay Time | V _{NOM} , Full Load | 20mS/250mS |

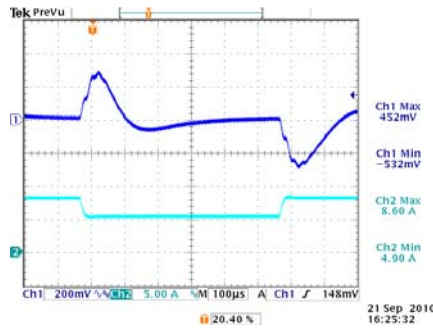
| CONTROL FUNCTIONS | | |
|-------------------------------------|------------|-----------------|
| Remote Control | Logic High | +3.0V to +6.5V |
| | Logic Low | 0V to +1.0V |
| Input Current of Remote Control Pin | | -0.5mA ~ +1.5mA |

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

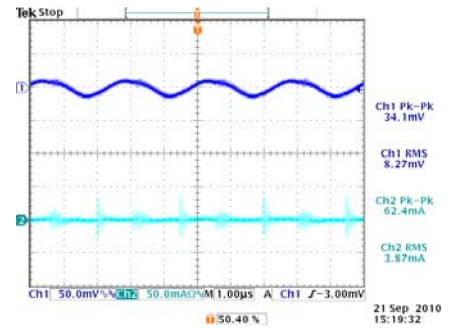
Neat Converter Family



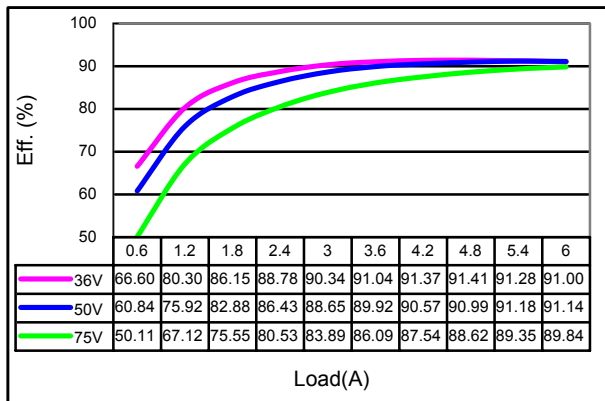
Start-Up Waveform
(V_{IN} : 50V, Load: 8A)



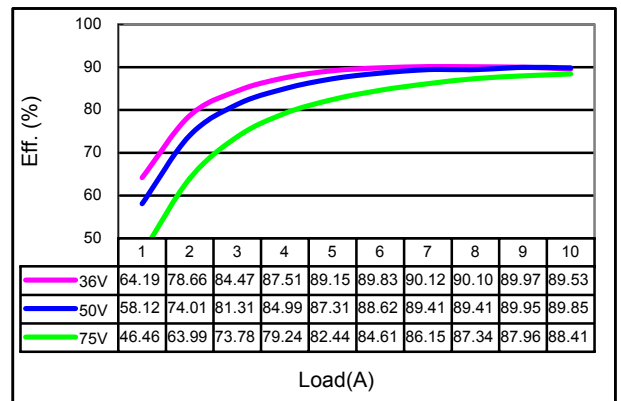
Transient Response
(V_{IN} : 50V, Load: 8A/6A@2.5A/ μ S)



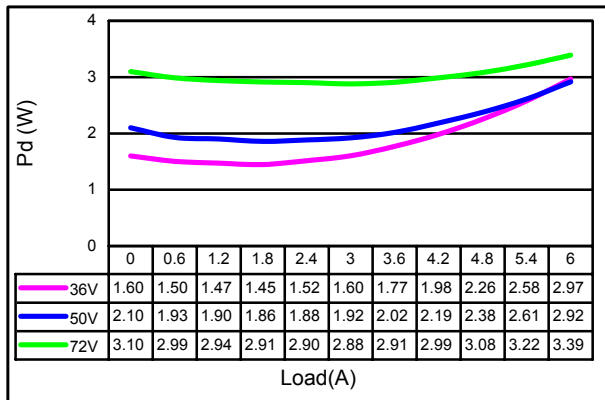
Output Ripple/Noise and Input Ripple Current
(V_{IN} : 50V, Load: 8A, L_{IN} =10uH)



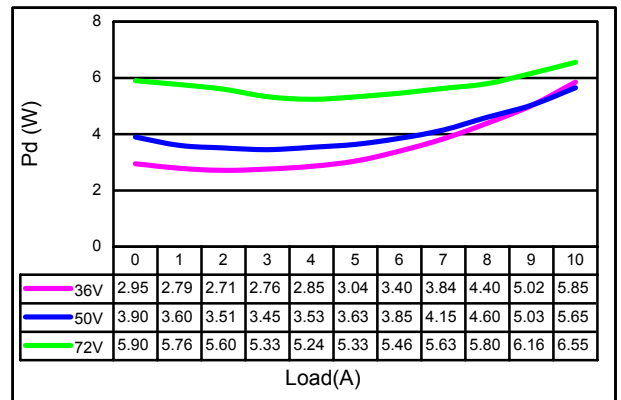
Efficiency Plot of NT48050N200-06



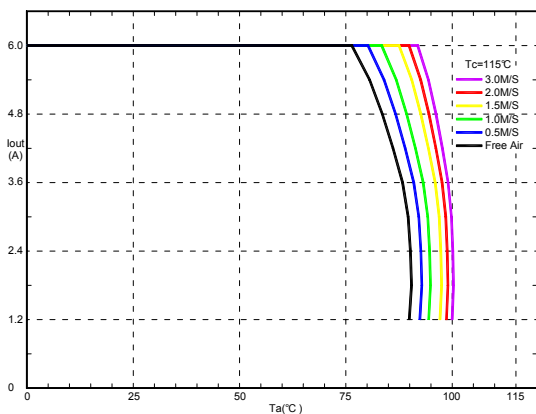
Efficiency Plot of NS48050N200-10



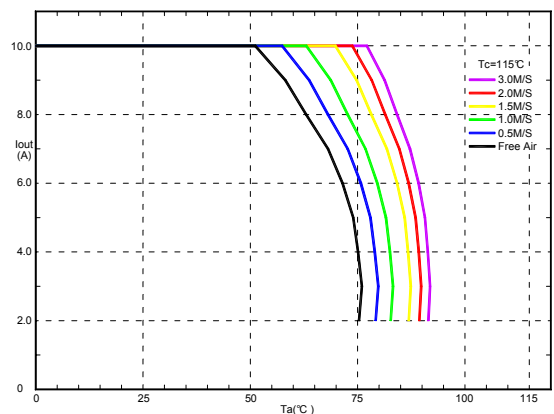
Power Loss Plot of NT48050N200-06



Power Loss Plot of NS48050N200-10

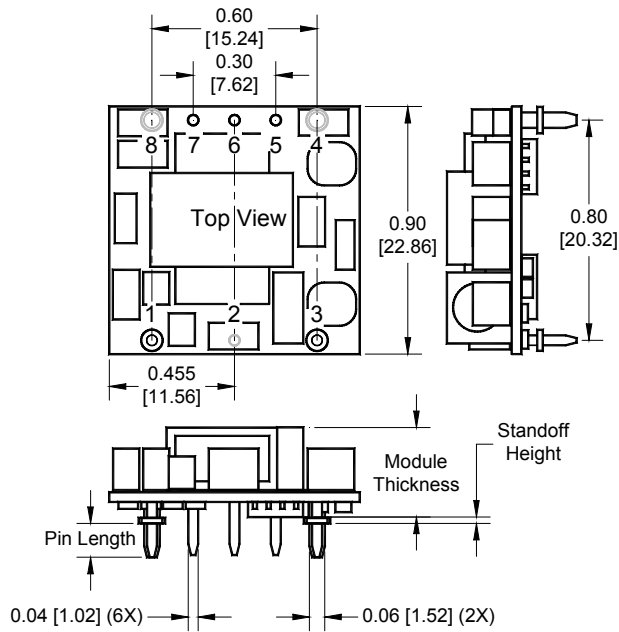


Derating Curve of NT48050N200-06 with Different Airflows



Derating Curve of NS48050N200-10 with Different Airflows

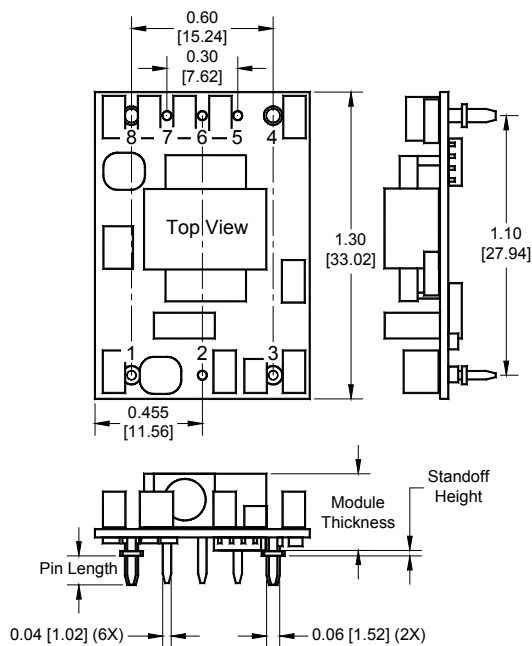
Important Note: General specifications and the performances referring to standard series only, no special customer specification display here except requested items.



| 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.