$$R_{T-DECR} = \frac{(V_{O-REQ} - 0.7)*15}{(V_{O-NOM} - V_{O-REQ})} - 1 \quad [k\Omega]$$

where,

$R_{T-DECR}$ = Required value of trim-down resistor [kΩ]

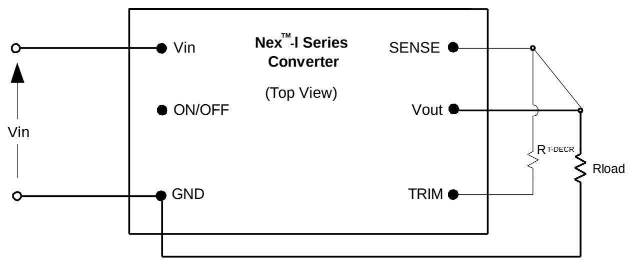


*Fig. D: Configuration for programming output voltage.*

Tables 1 and 2 provide the values of resistor for trimming up and down respectively. Standard 1% and 5% resistors can be used for trimming. Ground pin of the trim resistor should be connected directly to the converter GND pin (Pin 5) with no voltage drop in between. In Table 1 and Table 2, Δ is a percentage of increase or decrease of $V_{O-NOM}$.

| Δ | Nominal value of output voltage $V_{0-NOM}$ [V] | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| [%] | 1.0 | 1.2 | 1.5 | 1.8 | 2.0 | 2.5 | 3.3 | 5.0 |
| 1 | 1049 | 874 | 699 | 582 | 524 | 419 | 317 | 209 |
| 2 | 524 | 437 | 349 | 291 | 262 | 209 | 158 | 104 |
| 3 | 349 | 291 | 232 | 193 | 174 | 139 | 105 | 69 |
| 4 | 262 | 218 | 174 | 145 | 130 | 104 | 79 | 52 |
| 5 | 209 | 174 | 139 | 116 | 104 | 83 | 63 | 41 |
| 6 | 174 | 145 | 116 | 96 | 87 | 69 | 52 | 34 |
| 7 | 149 | 124 | 99 | 82 | 74 | 59 | 44 | 29 |
| 8 | 130 | 108 | 87 | 72 | 65 | 52 | 39 | 25 |
| 9 | 116 | 96 | 77 | 64 | 57 | 46 | 34 | 22 |
| 10 | 104 | 87 | 69 | 57 | 52 | 41 | 31 | 20 |

*Table1: Trim-up Resistor RT-INCR [kΩ]*

| Δ | Nominal value of output voltage $V_{0-NOM}$ [V] | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| [%] | 1.0 | 1.2 | 1.5 | 1.8 | 2.0 | 2.5 | 3.3 | 5.0 |
| -1 | 434 | 609 | 784 | 901 | 959 | 1064 | 1166 | 1274 |
| -2 | 209 | 297 | 384 | 442 | 472 | 524 | 575 | 629 |
| -3 | 134 | 192 | 251 | 290 | 309 | 344 | 378 | 414 |
| -4 | 97 | 140 | 184 | 213 | 228 | 254 | 279 | 307 |
| -5 | 74 | 109 | 144 | 167 | 179 | 200 | 220 | 242 |
| -6 | 59 | 88 | 117 | 137 | 147 | 164 | 181 | 199 |
| -7 | 48 | 73 | 98 | 115 | 123 | 138 | 153 | 168 |
| -8 | 40 | 62 | 84 | 99 | 106 | 119 | 132 | 145 |
| -9 | 34 | 53 | 73 | 86 | 92 | 104 | 115 | 127 |
| -10 | 29 | 47 | 64 | 76 | 82 | 92 | 102 | 113 |

*Table 2: Trim-down Resistor RT-DECR [kΩ]*

# 3. PROTECTION FEATURES

## 3.1. INPUT UNDERVOLTAGE LOCKOUT

Input undervoltage lockout is standard with this converter. The converter will shut down when the input voltage drops below a pre-determined voltage; it will start automatically when Vin returns to a specified range.

The input voltage must be at least 9.6 V (typically 9 V) for the converter to turn on. Once the converter has been turned on, it will shut off when the input voltage drops below typically 8.5 V.

## 3.2. OUTPUT OVERCURRENT PROTECTION (OCP)

The converter is protected against overcurrent and short-circuit conditions. Upon sensing an over-current condition, the converter will enter hiccup mode. Once an overload or short-circuit condition is removed, Vout will return to nominal value.

## 3.3. OVER-TEMPERATURE PROTECTION (OTP)

The converter will shut down under an over-temperature condition to protect itself from overheating caused by operation outside the thermal derating curves, or operation in abnormal conditions such as system fan failure. After the converter has cooled to a safe operating temperature, it will automatically restart.

## 3.4. SAFETY REQUIREMENTS

The converter meets North American and International safety regulatory requirements per UL60950 and EN60950. The maximum DC voltage between any two pins is Vin under all operating conditions. Therefore, the unit has ELV (extra low voltage) output; it meets SELV requirements under the condition that all input voltages are ELV.

The converter is not internally fused. To comply with safety agencies requirements, a recognized fuse with a maximum rating of 15 Amps must be used in series with the input line.

# 4. CHARACTERIZATION

## 4.1. GENERAL INFORMATION

The converter has been characterized for many operational aspects, to include thermal derating (maximum load current as a function of ambient temperature and airflow) for vertical and horizontal mounting, efficiency, start-up and shutdown parameters, output ripple and noise, transient response to load step-change, overload and short circuit.

The figures are numbered as Fig. x.y, where x indicates the different output voltages, and y associates with specific plots (y = 1 for the vertical thermal derating, …). For example, Fig. x.1 will refer to the vertical thermal derating for all the output voltages in general.

The following pages contain specific plots or waveforms associated with the converter. Additional comments for specific data are provided below.

## 4.2. TEST CONDITIONS

All thermal and efficiency data presented were taken with the converter soldered to a test board, specifically a 0.060" thick printed wiring board (PWB) with four layers. The top and bottom layers were not metalized. The two inner layers, comprising two-ounce copper, were used to provide traces for connectivity to the converter.

The lack of metalization on the outer layers as well as the limited thermal connection ensured that heat transfer from the converter to the PWB was minimized. This provides a worst-case but consistent scenario for thermal derating purposes.

All measurements requiring airflow were made in vertical and horizontal wind tunnel facilities using Infrared (IR) thermography and thermocouples for thermometry.

Ensuring components on the converter do not exceed their ratings is important to maintaining high reliability. If one anticipates operating the converter at or close to the maximum loads specified in the derating curves, it is prudent to check actual operating temperatures in the application. Thermographic imaging is preferable; if this capability is not available, then thermocouples may be used. Bel Power Solutions recommends the use of AWG #40 gauge thermocouples to ensure measurement accuracy. Careful routing of the thermocouple leads will further minimize measurement error. Refer to Fig. E for optimum measuring thermocouple location.

### 4.3. THERMAL DERATING

Load current vs. ambient temperature and airflow rates are given in Figs. x.1 to x.2 for maximum temperature of 110°C. Ambient temperature was varied between 25°C and 85°C, with airflow rates from 30 to 500 LFM (0.15 m/s to 2.5 m/s), and vertical and horizontal converter mounting. The airflow during the testing is parallel to the short axis of the converter, going from pin 1 and pin 6 to pins 2 – 5.

For each set of conditions, the maximum load current was defined as the lowest of:

(i) The output current at which either any MOSFET temperature did not exceed a maximum specified temperature (110 °C) as indicated by the thermographic image, or

(ii) The maximum current rating of the converter (10 A)

During normal operation, derating curves with maximum FET temperature less than or equal to 110 °C should not be exceeded. Temperature on the PCB at the thermocouple location shown in Fig. E should not exceed 110 °C in order to operate inside the derating curves.

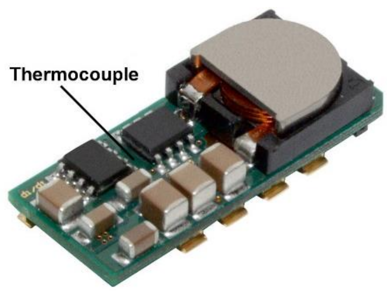


*Fig. E: Location of the thermocouple for thermal testing.*

### 4.4. EFFICIENCY

Figure x.3 shows the efficiency vs. load current plot for ambient temperature of 25 ºC, airflow rate of 200 LFM (1 m/s) and input voltages of 9.6 V, 12 V, and 14 V.

### 4.5. POWER DISSIPATION

Fig. x.4 shows the power dissipation vs. load current plot for Ta = 25 ºC, airflow rate of 200 LFM (1 m/s) with vertical mounting and input voltages of 9.6 V, 12 V. and 14 V.

### 4.6. RIPPLE AND NOISE

The output voltage ripple waveform is measured at full rated load current. Note that all output voltage waveforms are measured across a 1 μF ceramic capacitor.

The output voltage ripple and input reflected ripple current waveforms are obtained using the test setup shown in Fig. F.

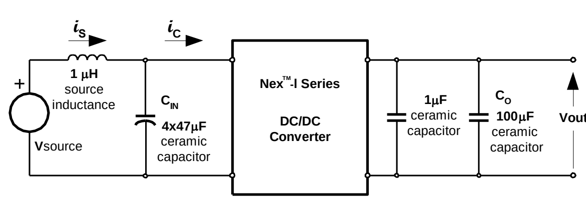


*Fig. F: Test setup for measuring input reflected ripple currents, is and ic and output voltage ripple.*

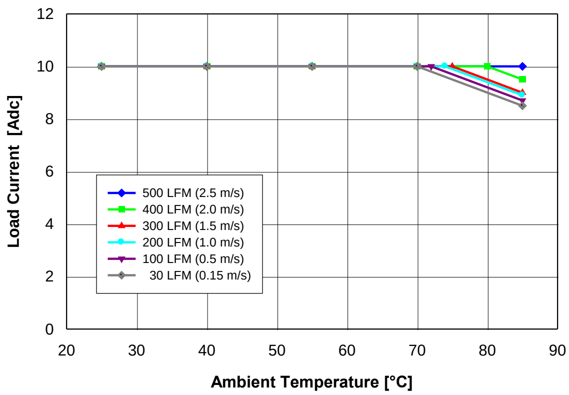


*Fig. 5.0V.1: Available load current vs. ambient temperature and airflow rates for YNL12S10050 converter mounted vertically with Vin = 12 V, and maximum MOSFET temperature ≤ 110 °C.*

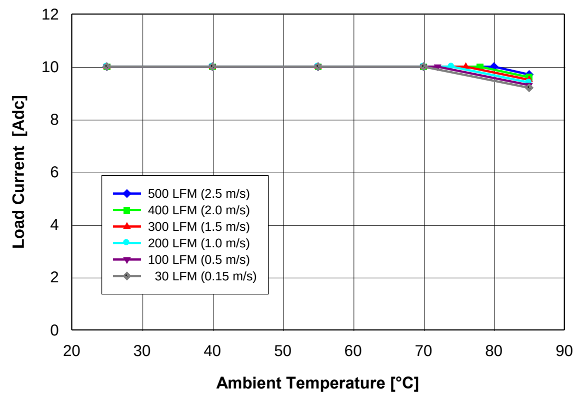


*Fig. 5.0V.2: Available load current vs. ambient temperature and airflow rates for YNL12S10050 converter mounted horizontally with Vin = 12 V, and maximum MOSFET temperature ≤ 110 °C.*

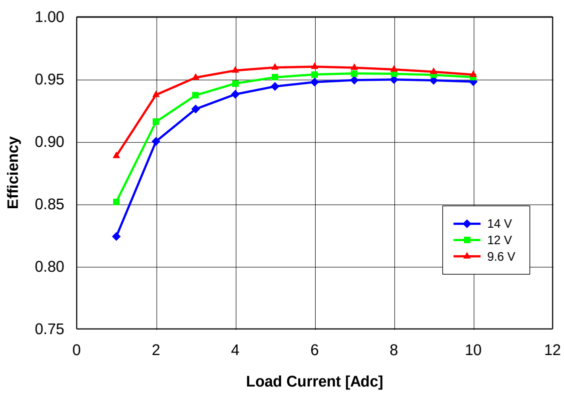


*Fig. 5.0V.3: Efficiency vs. load current and input voltage for YNL12S10050 converter mounted vertically with air flowing at a rate of 200 LFM (1 m/s) and Ta = 25 °C.*

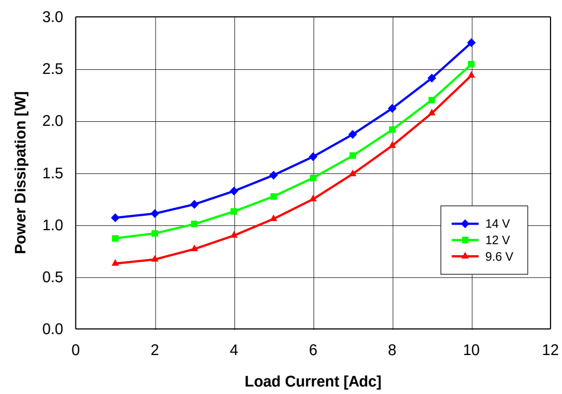


*Fig. 5.0V.4: Power loss vs. load current and input voltage for YNL12S10050 converter mounted vertically with air flowing at a rate of 200 LFM (1 m/s) and Ta = 25 °C.*

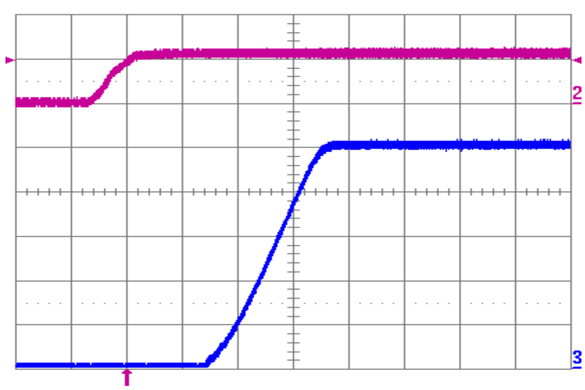


*Fig. 5.0V.5: Turn-on transient (YNL12S10050) with application of Vin at full rated load current (resistive) and 100 µF external capacitance at Vin = 12 V. Top trace: Vin (10 V/div.); Bottom trace: output voltage (1 V/div.); Time scale: 2 ms/div.*

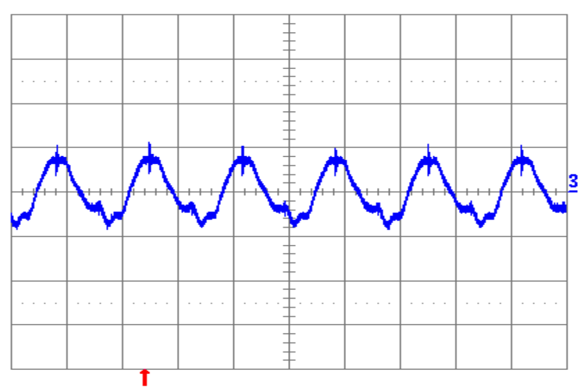


*Fig. 5.0V.6: Output voltage ripple (20 mV/div.) at full rated load current into a resistive load with external capacitance 100 µF ceramic + 1 µF ceramic and Vin = 12V (YNL12S10050). Time scale: 2 µs/div.*

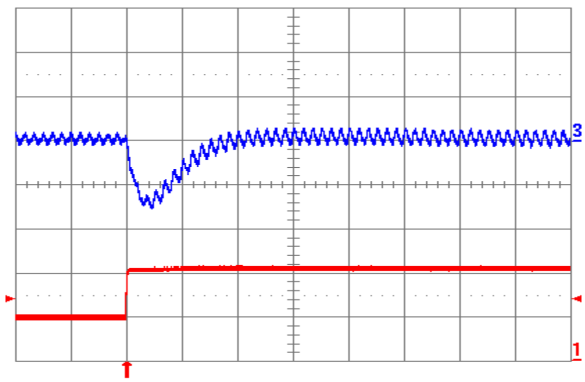


*Fig. 5.0V.7: Output voltage response (YNL12S10050) to positive load current step change from 5 A to 10 A with slew rate of 5 A/µs at Vin = 12 V. Top trace: output voltage (100 mV/div.); Bottom trace: load current (5 A/div.). Co = 100µF ceramic. Time scale: 20 µs/div.*

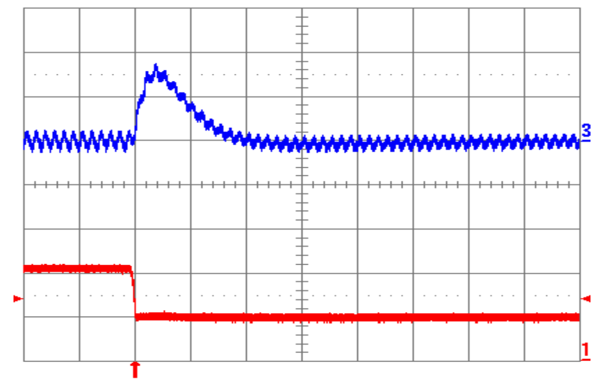


*Fig. 5.0V.8: Output voltage response (YNL12S10050) to negative load current step change from 10 A to 5 A with slew rate of -5 A/µs at Vin = 12 V. Top trace: output voltage (100 mV/div.); Bottom trace: load current (5 A/div.). Co = 100 µF ceramic. Time scale: 20 µs/div.*

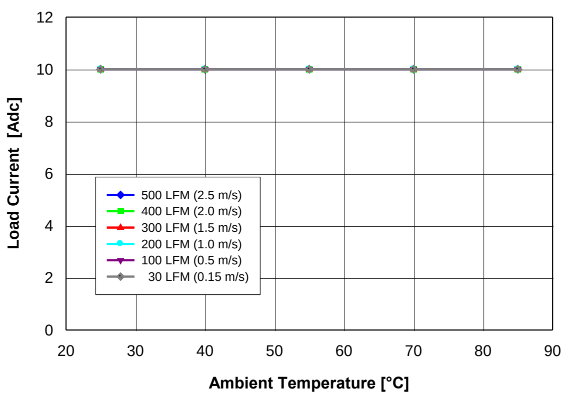


*Fig. 3.3V.1: Available load current vs. ambient temperature and airflow rates for YNL12S10033 converter mounted vertically with Vin = 12 V, and maximum MOSFET temperature ≤ 110 °C.*

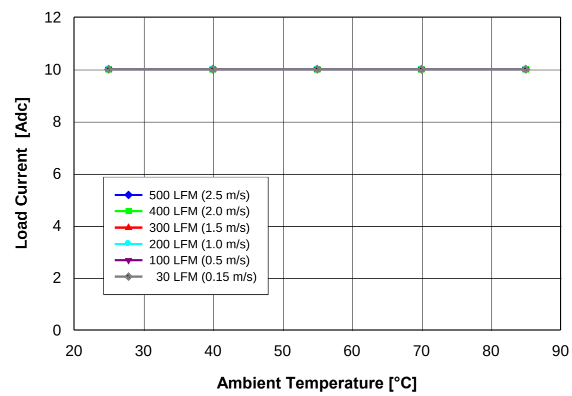


*Fig. 3.3V.2: Available load current vs. ambient temperature and airflow rates for YNL12S10033 converter mounted horizontally with Vin = 12 V, and maximum MOSFET temperature ≤ 110 °C.*

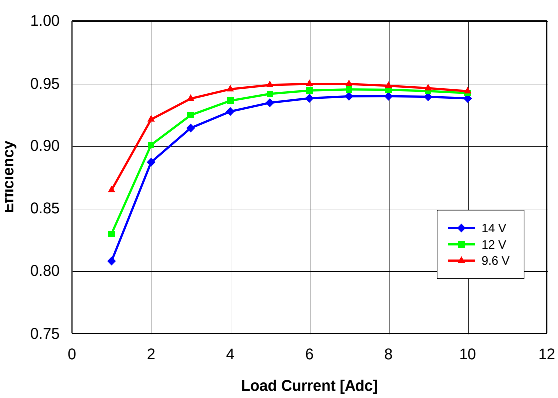


*Fig. 3.3V.3: Efficiency vs. load current and input voltage for YNL12S10033 converter mounted vertically with air flowing at a rate of 200 LFM (1 m/s) and Ta = 25 °C.*

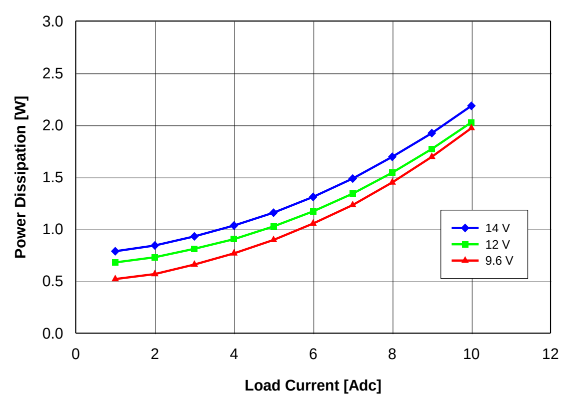


*Fig. 3.3V.4: Power loss vs. load current and input voltage for YNL12S10033 converter mounted vertically with air flowing at a rate of 200 LFM (1 m/s) and Ta = 25 °C.*

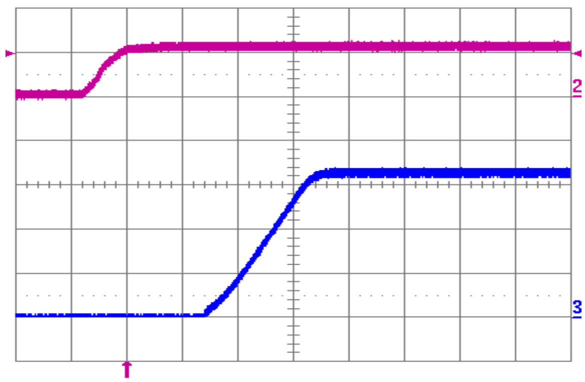


*Fig. 3.3V.5: Turn-on transient (YNL12S10033) with application of Vin at full rated load current (resistive) and 100 µF external capacitance at Vin = 12 V. Top trace: Vin (10 V/div.); Bottom trace: output voltage (1 V/div.); Time scale: 2 ms/div.*

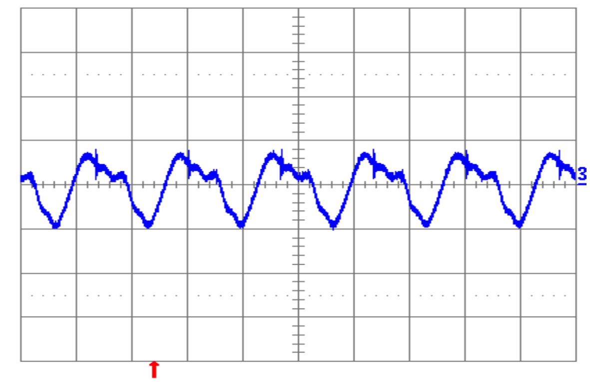


*Fig. 3.3V.6: Output voltage ripple (20 mV/div.) at full rated load current into a resistive load with external capacitance 100 µF ceramic + 1 µF ceramic and Vin = 12 V (YNL12S10033). Time scale: 2 µs/div.*

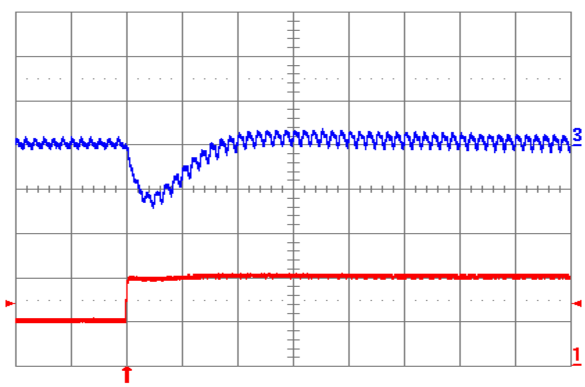


*Fig. 3.3V.7: Output voltage response (YNL12S10033) to positive load current step change from 5 A to 10 A with slew rate of 5 A/µs at Vin = 12 V. Top trace: output voltage (100 mV/div.); Bottom trace: load current (5 A/div.). Co = 100 µF ceramic. Time scale: 20 µs/div.*

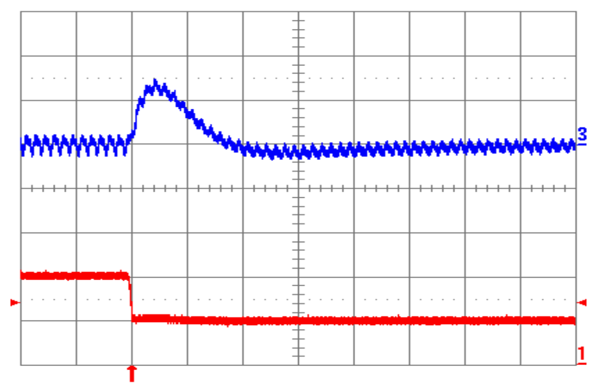


*Fig. 3.3V.8: Output voltage response (YNL12S10033) to negative load current step change from 10 A to 5 A with slew rate of -5 A/µs at Vin = 12 V. Top trace: output voltage (100 mV/div.); Bottom trace: load current (5 A/div.). Co = 100 µF ceramic. Time scale: 20 µs/div.*

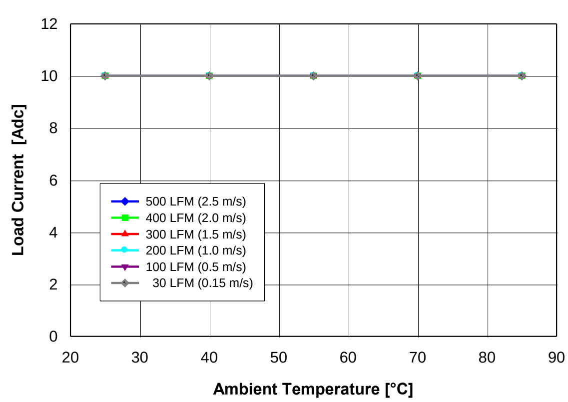


*Fig. 2.5V.1: Available load current vs. ambient temperature and airflow rates for YNL12S10025 converter mounted vertically with Vin = 12 V, and maximum MOSFET temperature ≤ 110 °C.*

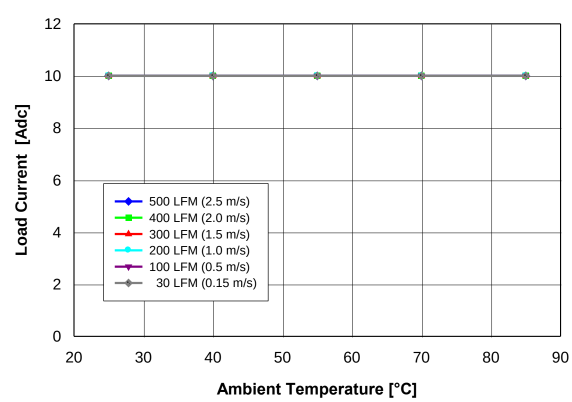


*Fig. 2.5V.2: Available load current vs. ambient temperature and airflow rates for YNL12S10025 converter mounted horizontally with Vin = 12 V, and maximum MOSFET temperature ≤ 110 °C.*

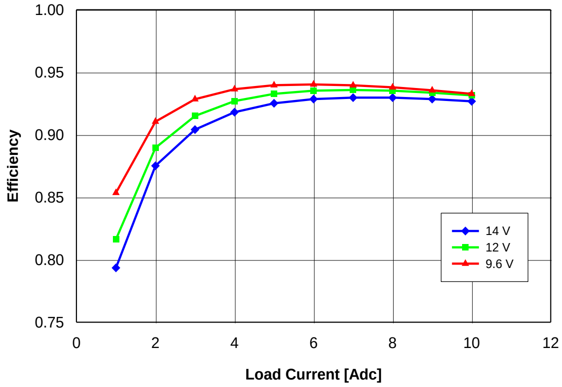


*Fig. 2.5V.3: Efficiency vs. load current and input voltage for YNL12S10025 converter mounted vertically with air flowing at a rate of 200 LFM (1 m/s) and Ta = 25 °C.*

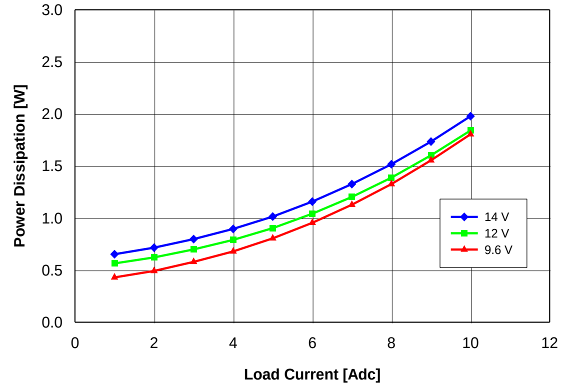


*Fig. 2.5V.4: Power loss vs. load current and input voltage for YNL12S10025 converter mounted vertically with air flowing at a rate of 200 LFM (1 m/s) and Ta = 25 °C.*

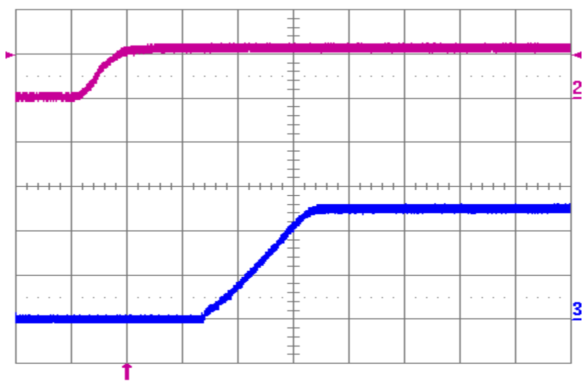


*Fig. 2.5V.5: Turn-on transient (YNL12S10025) with application of Vin at full rated load current (resistive) and 100 µF external capacitance at Vin = 12 V. Top trace: Vin (10 V/div.); Bottom trace: output voltage (1 V/div.); Time scale: 2 ms/div.*

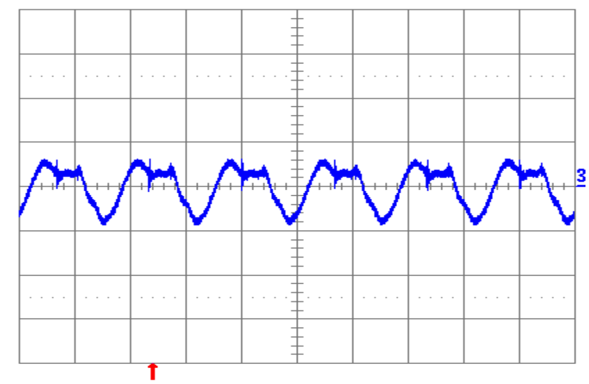


*Fig. 2.5V.6: Output voltage ripple (20 mV/div.) at full rated load current into a resistive load with external capacitance 100 µF ceramic + 1 µF ceramic and Vin = 12 V (YNL12S10025). Time scale: 2 µs/div.*

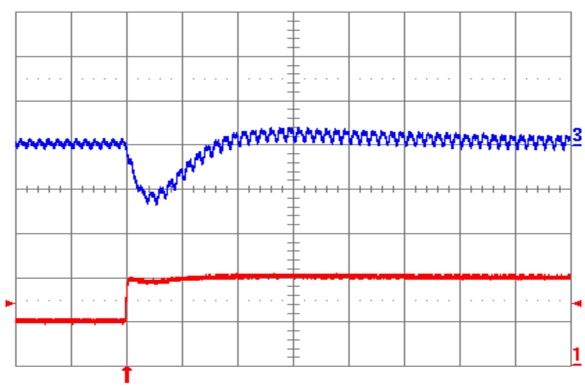


*Fig. 2.5V.7: Output voltage response (YNL12S10025) to positive load current step change from 5 A to 10 A with slew rate of 5 A/µs at Vin = 12 V. Top trace: output voltage (100 mV/div.); Bottom trace: load current (5 A/div.). Co = 100 µF ceramic. Time scale: 20 µs/div.*

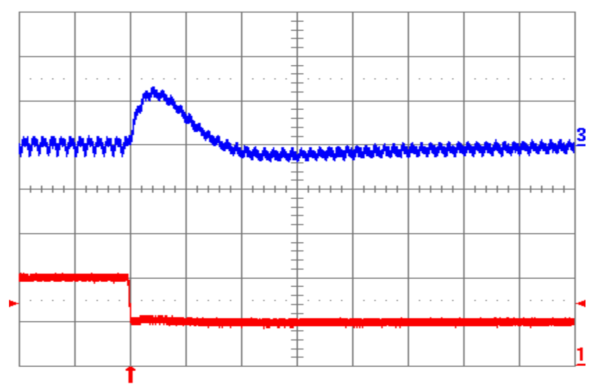


*Fig. 2.5V.8: Output voltage response (YNL12S10025) to negative load current step change from 10 A to 5 A with slew rate of -5 A/µs at Vin = 12 V. Top trace: output voltage (100 mV/div.); Bottom trace: load current (5 A/div.). Co = 100 µF ceramic. Time scale: 20 µs/div.*

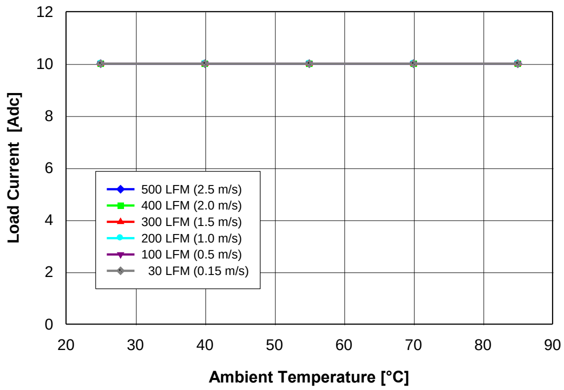


*Fig. 2.0V.1: Available load current vs. ambient temperature and airflow rates for YNL12S10020 converter mounted vertically with Vin = 12 V, and maximum MOSFET temperature ≤ 110 °C.*

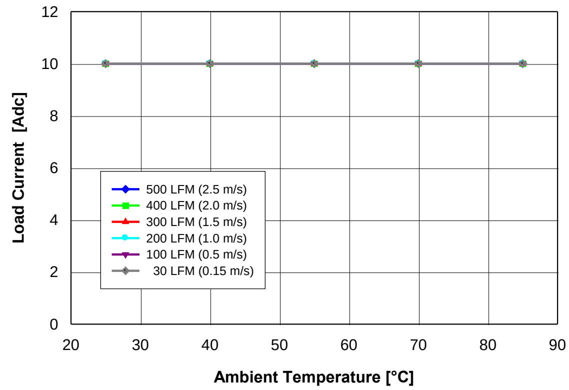


*Fig. 2.0V.2: Available load current vs. ambient temperature and airflow rates for YNL12S10020 converter mounted horizontally with Vin = 12 V, and maximum MOSFET temperature ≤ 110 °C.*

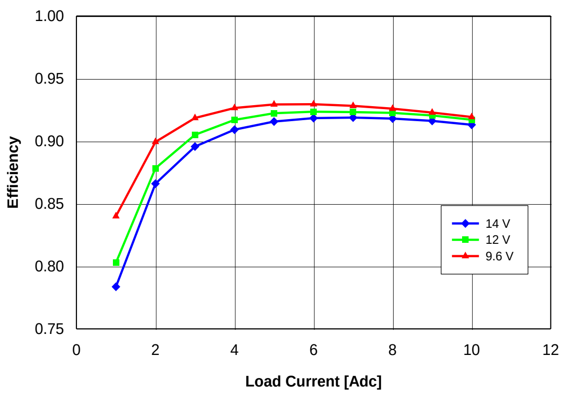


*Fig. 2.0V.3: Efficiency vs. load current and input voltage for YNL12S10020 converter mounted vertically with air flowing at a rate of 200 LFM (1 m/s) and Ta = 25 °C.*

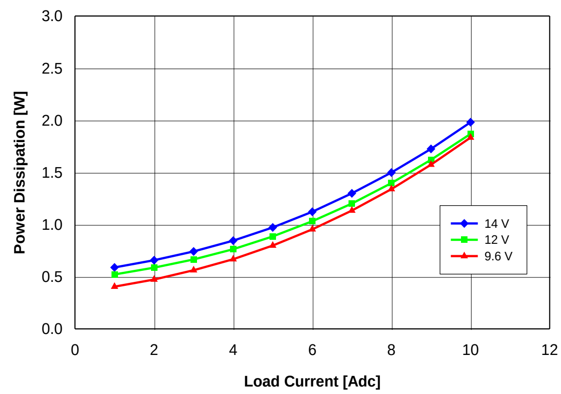


*Fig. 2.0V.4: Power loss vs. load current and input voltage for YNL12S10020 converter mounted vertically with air flowing at a rate of 200 LFM (1 m/s) and Ta = 25 °C.*

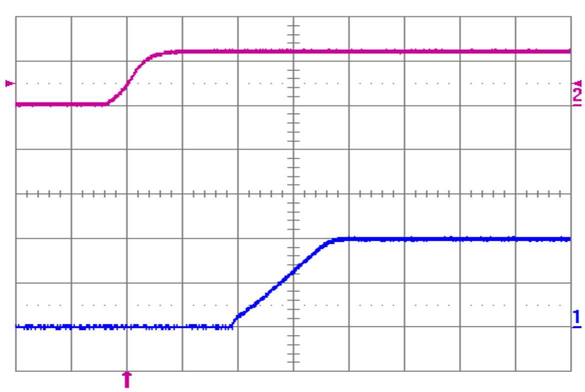

*Fig. 2.0V.5: Turn-on transient (YNL12S10020) with application of Vin at full rated load current (resistive) and 100 µF external capacitance at Vin = 12 V. Top trace: Vin (10 V/div.); Bottom trace: output voltage (1 V/div.); Time scale: 2 ms/div.*

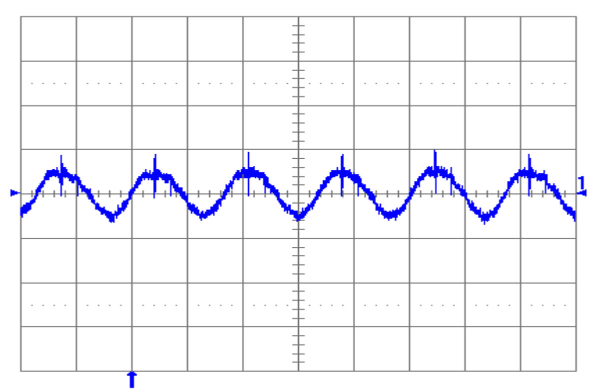

*Fig. 2.0V.6: Output voltage ripple (20 mV/div.) at full rated load current into a resistive load with external capacitance 100 µF ceramic + 1 µF ceramic and Vin = 12 V (YNL12S10020). Time scale: 2 µs/div.*

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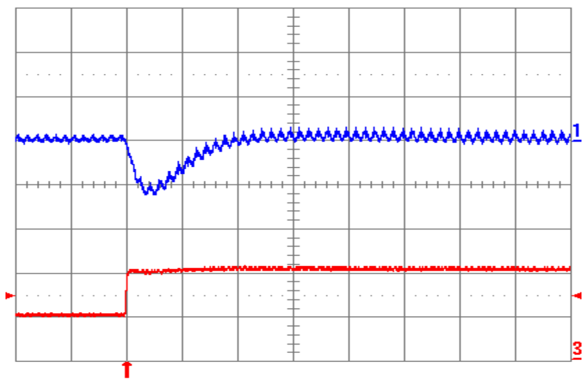


*Fig. 2.0V.7: Output voltage response (YNL12S10020) to positive load current step change from 5 A to 10 A with slew rate of 5 A/µs at Vin = 12 V. Top trace: output voltage (100 mV/div.); Bottom trace: load current (5 A/div.). Co = 100 µF ceramic. Time scale: 20 µs/div.*

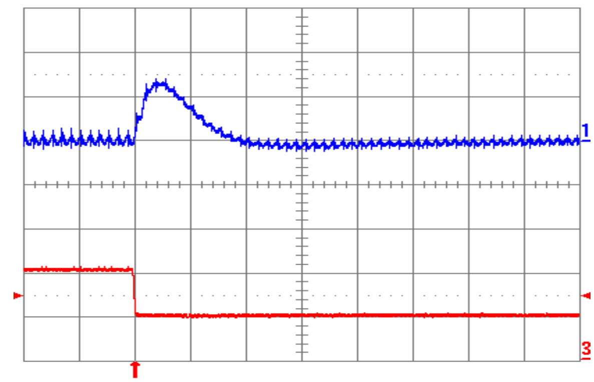


*Fig. 2.0V.8: Output voltage response (YNL12S10020) to negative load current step change from 10 A to 5 A with slew rate of -5 A/µs at Vin = 12 V. Top trace: output voltage (100 mV/div.); Bottom trace: load current (5 A/div.). Co = 100 µF ceramic. Time scale: 20 µs/div.*

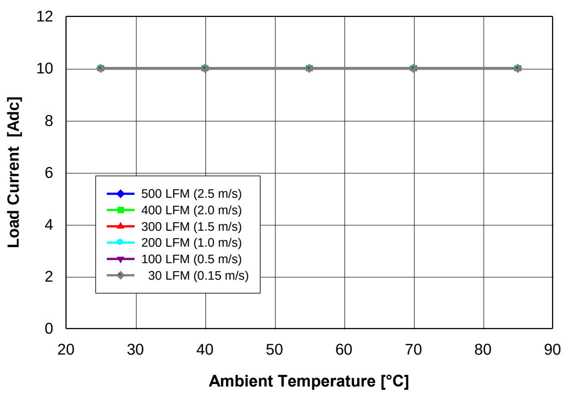


*Fig. 1.8V.1: Available load current vs. ambient temperature and airflow rates YNL12S10018 converter mounted vertically with Vin = 12 V, and maximum MOSFET temperature ≤ 110 °C.*

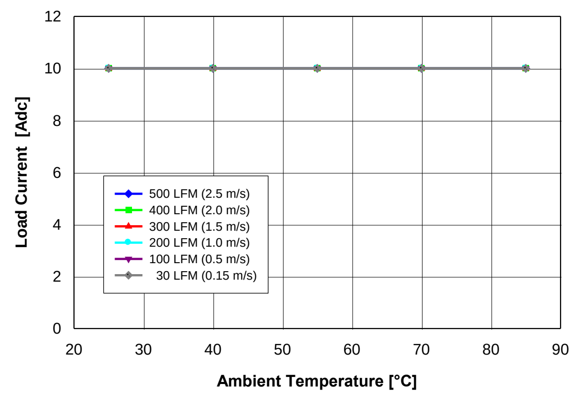


*Fig. 1.8V.2: Available load current vs. ambient temperature and airflow rates for YNL12S10018 converter mounted horizontally with Vin = 12 V, and maximum MOSFET temperature ≤ 110 °C.*

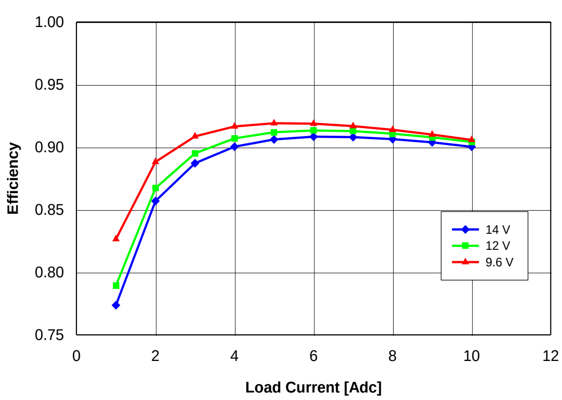


*Fig. 1.8V.3: Efficiency vs. load current and input voltage for YNL12S10018 converter mounted vertically with air flowing at a rate of 200 LFM (1 m/s) and Ta = 25 °C.*

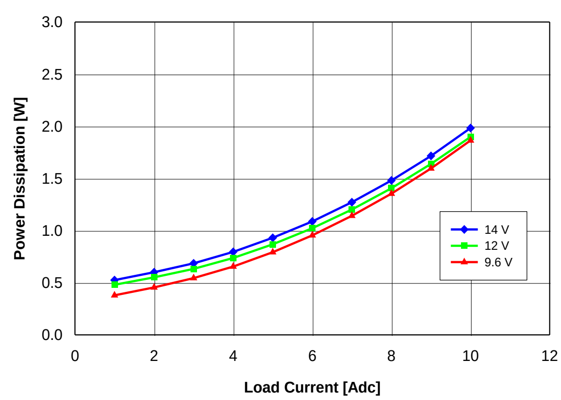


*Fig. 1.8V.4: Power loss vs. load current and input voltage for YNL12S10018 converter mounted vertically with air flowing at a rate of 200 LFM (1 m/s) and Ta = 25 °C.*

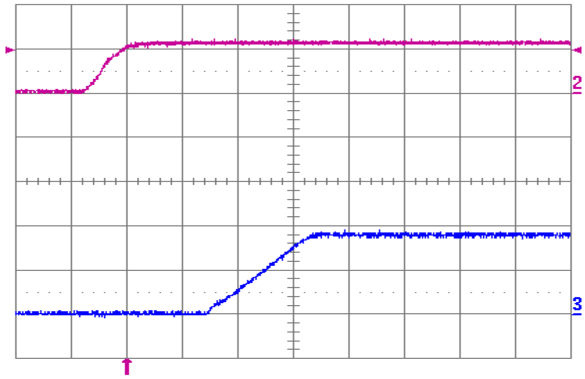


Fig. 1.8V.5: Turn-on transient (YNL12S10018) with application of Vin at full rated load current (resistive) and 100 µF external capacitance at Vin = 12 V. Top trace: Vin (10 V/div.); Bottom trace: output voltage (1 V/div.); Time scale: 2 ms/div.

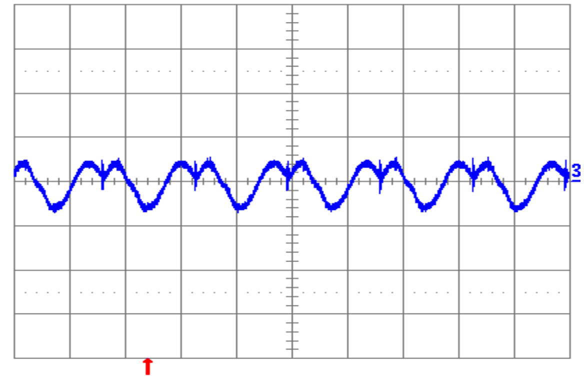


Fig. 1.8V.6: Output voltage ripple (20 mV/div.) at full rated load current into a resistive load with external capacitance 100 µF ceramic + 1 µF ceramic and Vin = 12 V (YNL12S10018). Time scale: 2 µs/div.

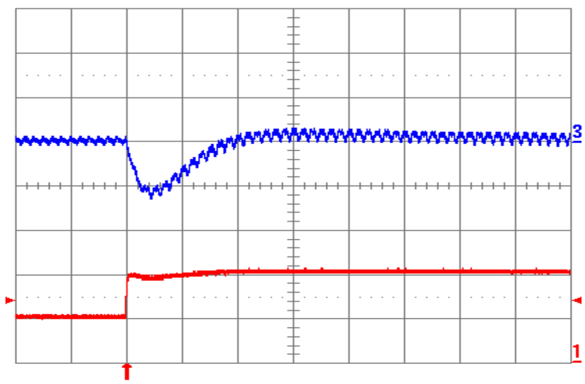


Fig. 1.8V.7: Output voltage response (YNL12S10018) to positive load current step change from 5 A to 10 A with slew rate of 5 A/µs at Vin = 12 V. Top trace: output voltage (100 mV/div.); Bottom trace: load current (5 A/div.). Co = 100 µF ceramic. Time scale: 20 µs/div.

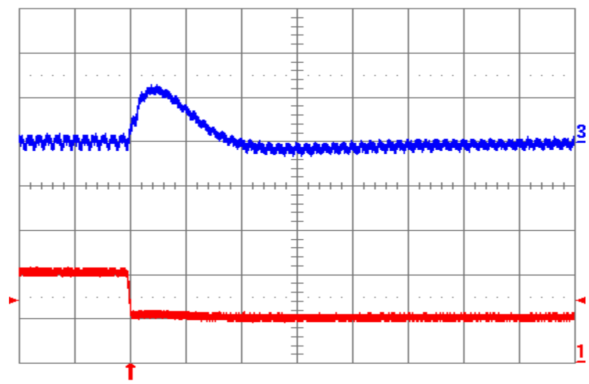


Fig. 1.8V.8: Output voltage response (YNL12S10018) to negative load current step change from 10 A to 5 A with slew rate of -5 A/µs at Vin = 12 V. Top trace: output voltage (100 mV/div.); Bottom trace: load current (5 A/div.). Co = 100 µF ceramic. Time scale: 20 µs/div.

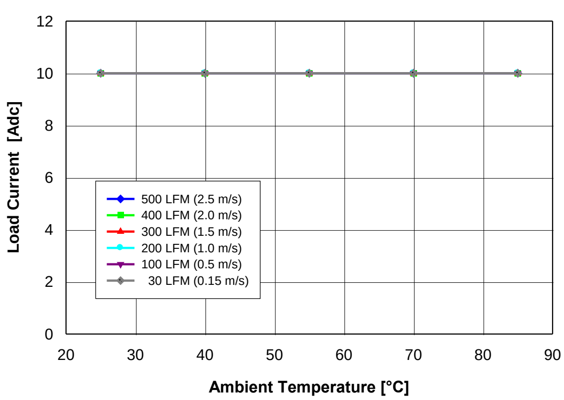


Fig. 1.5V.1: Available load current vs. ambient temperature and airflow rates for YNL12S10015 converter mounted vertically with Vin = 12 V, and maximum MOSFET temperature ≤ 110 °C.

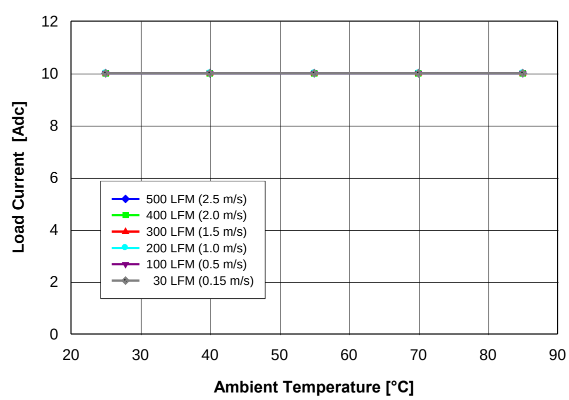


Fig. 1.5V.2: Available load current vs. ambient temperature and airflow rates for YNL12S10015 converter mounted horizontally with Vin = 12 V, and maximum MOSFET temperature ≤ 110 °C.

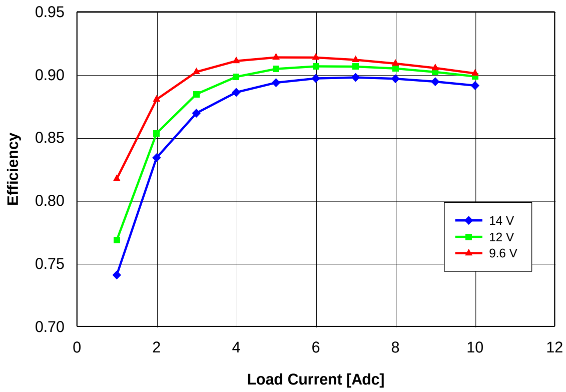


Fig. 1.5V.3: Efficiency vs. load current and input voltage for YNL05S10015 converter mounted vertically with air flowing at a rate of 200 LFM (1 m/s) and Ta = 25 °C.

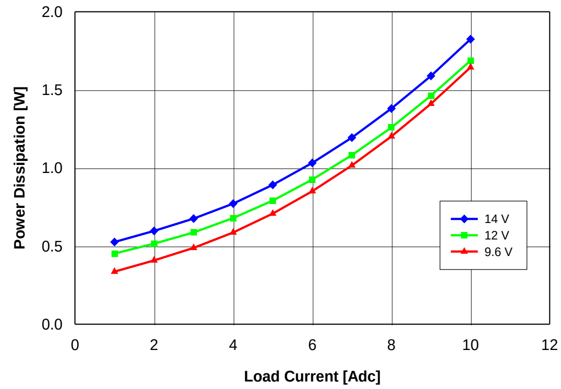


Fig. 1.5V.4: Power loss vs. load current and input voltage for YNL12S10015 converter mounted vertically with air flowing at a rate of 200 LFM (1 m/s) and Ta = 25 °C.

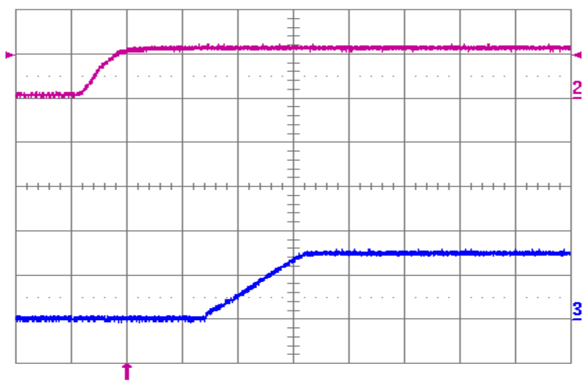


Fig. 1.5V.5: Turn-on transient (YNL12S10015) with application of Vin at full rated load current (resistive) and 100 µF external capacitance at Vin = 12 V. Top trace: Vin (10 V/div.); Bottom trace: output voltage (1 V/div.); Time scale: 2 ms/div.

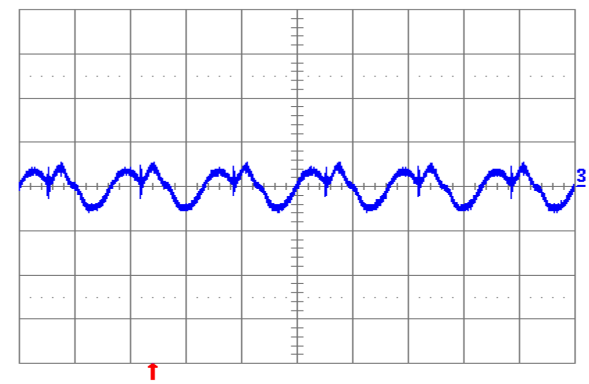


Fig. 1.5V.6: Output voltage ripple (20 mV/div.) at full rated load current into a resistive load with external capacitance 100 µF ceramic + 1 µF ceramic and Vin = 12 V (YNL12S10015). Time scale: 2 µs/div.

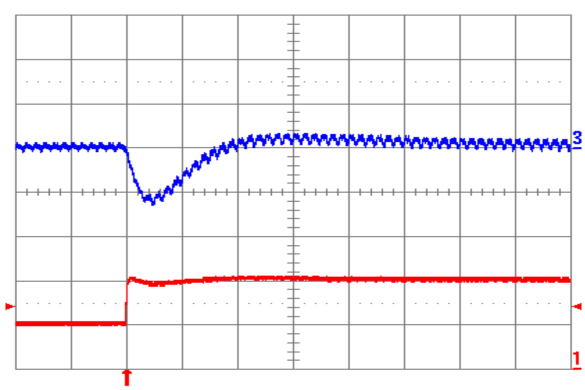


Fig. 1.5V.7: Output voltage response (YNL12S10015) to positive load current step change from 5 A to 10 A with slew rate of 5 A/µs at Vin = 12 V. Top trace: output voltage (100 mV/div.); Bottom trace: load current (5 A/div.). Co = 100 µF ceramic. Time scale: 20 µs/div.

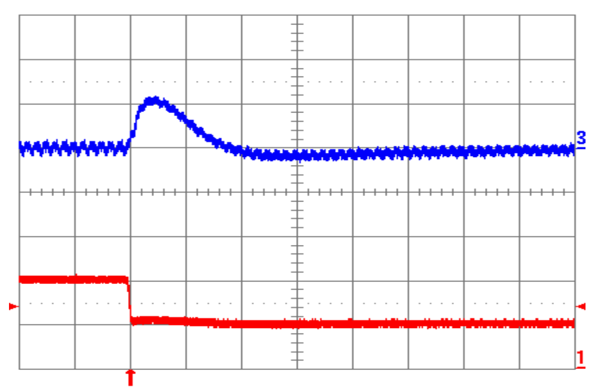


Fig. 1.5V.8: Output voltage response (YNL12S10015) to negative load current step change from 10 A to 5 A with slew rate of -5 A/µs at Vin = 12 V. Top trace: output voltage (100 mV/div.); Bottom trace: load current (5 A/div.). Co = 100 µF ceramic. Time scale: 20 µs/div.

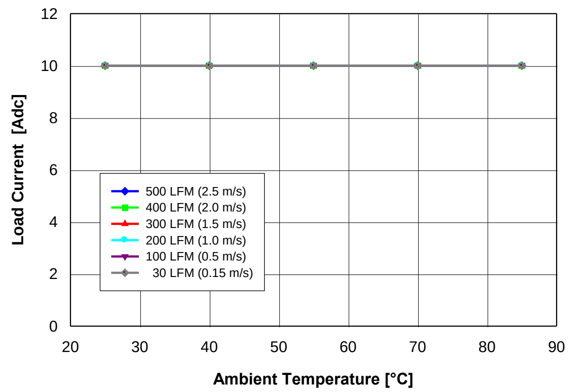


*Fig. 1.2V.1: Available load current vs. ambient temperature and airflow rates for YNL12S10012 converter mounted vertically with Vin = 12 V, and maximum MOSFET temperature ≤ 110 °C.*

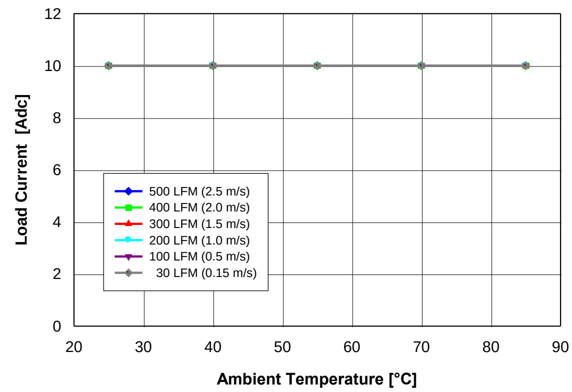


*Fig. 1.2V.2: Available load current vs. ambient temperature and airflow rates for YNL12S10012 converter mounted horizontally with Vin = 12 V, and maximum MOSFET temperature ≤ 110 °C.*

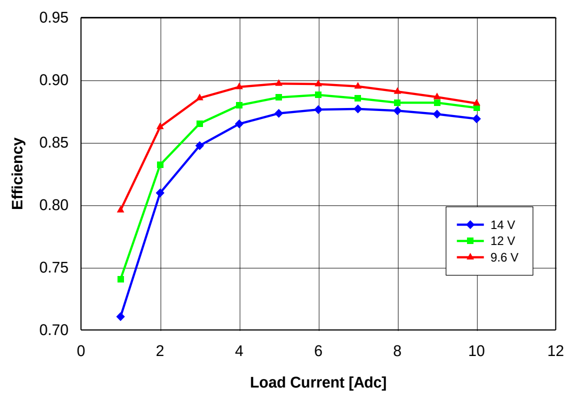


*Fig. 1.2V.3: Efficiency vs. load current and input voltage for YNL12S10012 converter mounted vertically with air flowing at a rate of 200 LFM (1 m/s) and Ta = 25 °C.*

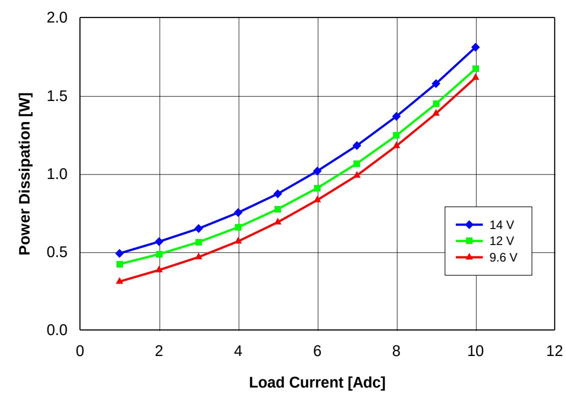


*Fig. 1.2V.4: Power loss vs. load current and input voltage for YNL12S10012 converter mounted vertically with air flowing at a rate of 200 LFM (1 m/s) and Ta = 25 °C.*

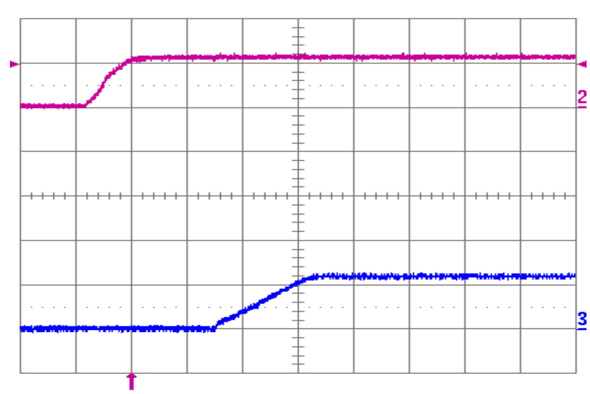


*Fig. 1.2V.5: Turn-on transient (YNL12S10012) with application of Vin at full rated load current (resistive) and 100 μF external capacitance at Vin = 12 V. Top trace: Vin (10 V/div.); Bottom trace: output voltage (1 V/div.); Time scale: 2 ms/div.*

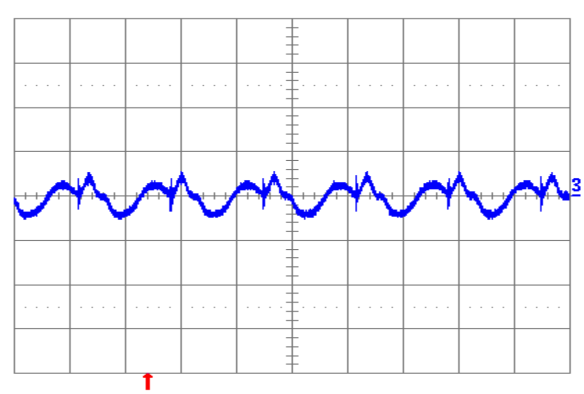


*Fig. 1.2V.6: Output voltage ripple (20 mV/div.) at full rated load current into a resistive load with external capacitance 100 μF ceramic + 1 μF ceramic and Vin = 12 V (YNL12S10012). Time scale: 2 μs/div.*

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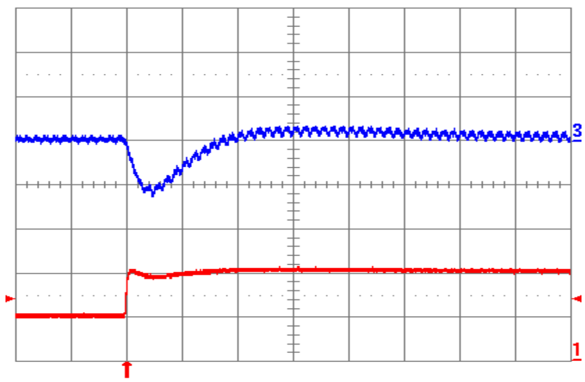


Fig. 1.2V.7: Output voltage response (YNL12S10012) to positive load current step change from 5 A to 10 A with slew rate of 5 A/µs at Vin = 12 V. Top trace: output voltage (100 mV/div.); Bottom trace: load current (5 A/div.). Co = 100 µF ceramic. Time scale: 20 µs/div.

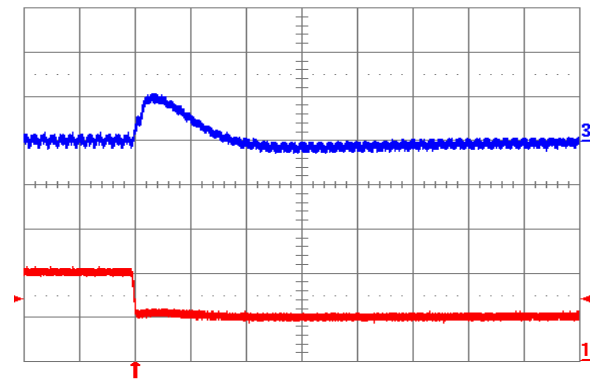


Fig. 1.2V.8: Output voltage response (YNL12S10012) to negative load current step change from 10 A to 5 A with slew rate of -5 A/µs at Vin = 12 V. Top trace: output voltage (100 mV/div.); Bottom trace: load current (5 A/div.). Co = 100 µF ceramic. Time scale: 20 µs/div.

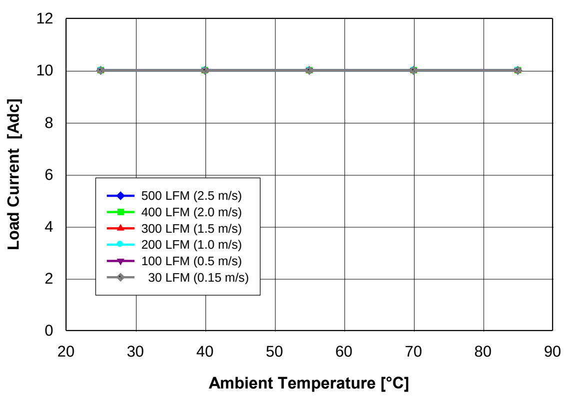


Fig. 1.0V.1: Available load current vs. ambient temperature and airflow rates for YNL12S10010 converter mounted vertically with Vin = 12 V, and maximum MOSFET temperature ≤ 110 °C.

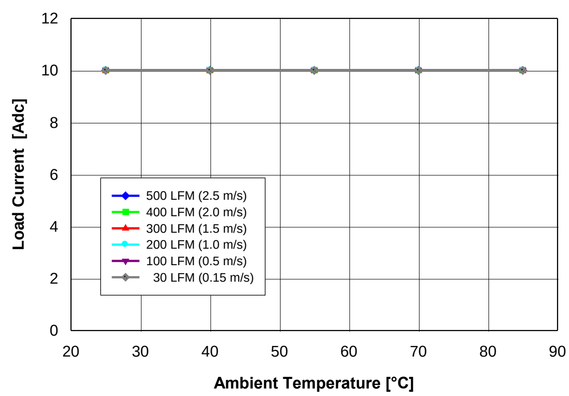


Fig. 1.0V.2: Available load current vs. ambient temperature and airflow rates for YNL12S10010 converter mounted horizontally with Vin = 12 V, and maximum MOSFET temperature ≤ 110 °C.

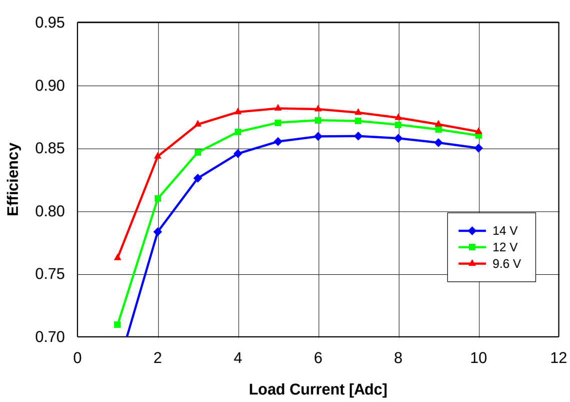


Fig. 1.0V.3: Efficiency vs. load current and input voltage for YNL05S10010 converter mounted vertically with air flowing at a rate of 200 LFM (1 m/s) and Ta = 25 °C.

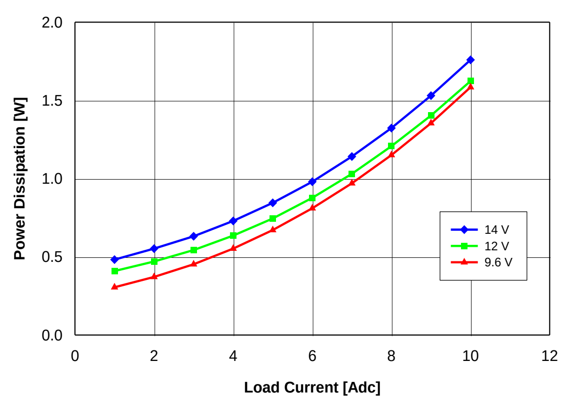


Fig. 1.0V.4: Power loss vs. load current and input voltage for YNL12S10010 converter mounted vertically with air flowing at a rate of 200 LFM (1 m/s) and Ta = 25 °C.

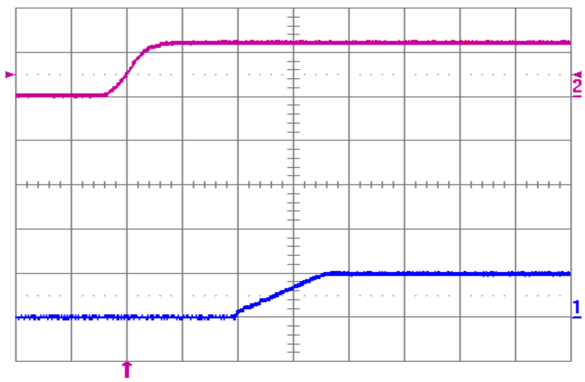


*Fig. 1.0V.5: Turn-on transient (YNL12S10010) with application of Vin at full rated load current (resistive) and 100 µF external capacitance at Vin = 12 V. Top trace: Vin (10 V/div.); Bottom trace: output voltage (1 V/div.); Time scale: 2 ms/div.*

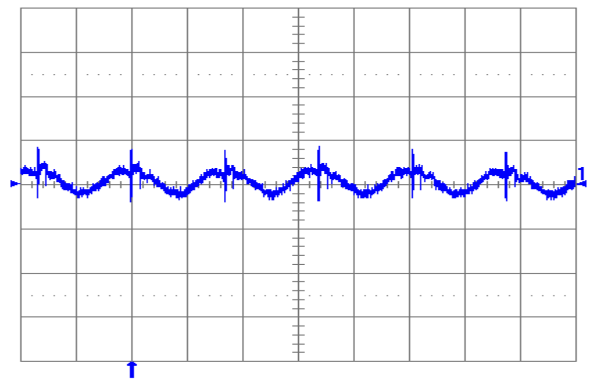


*Fig. 1.0V.6: Output voltage ripple (20 mV/div.) at full rated load current into a resistive load with external capacitance 100 µF ceramic + 1 µF ceramic and Vin = 12 V (YNL12S10010). Time scale: 2 µs/div.*

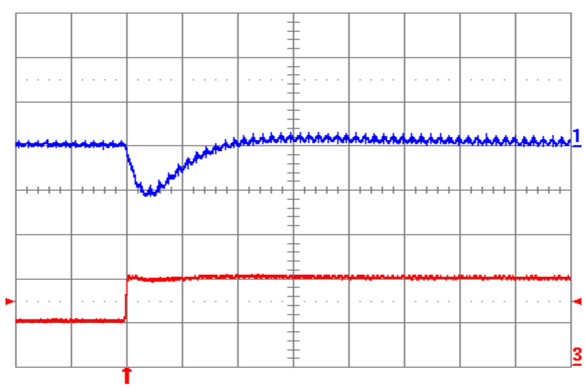


*Fig. 1.0V.7: Output voltage response (YNL12S10010) to positive load current step change from 5 A to 10 A with slew rate of 5 A/µs at Vin = 12 V. Top trace: output voltage (100 mV/div.); Bottom trace: load current (5 A/div.). Co = 100 µF ceramic. Time scale: 20 µs/div.*

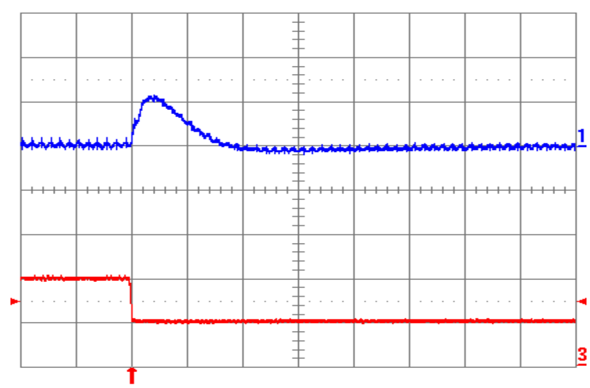


*Fig. 1.0V.8: Output voltage response (YNL12S10010) to negative load current step change from 10 A to 5 A with slew rate of -5 A/µs at Vin = 12 V. Top trace: output voltage (100 mV/div.); Bottom trace: load current (5 A/div.). Co = 100 µF ceramic. Time scale: 20 µs/div.*

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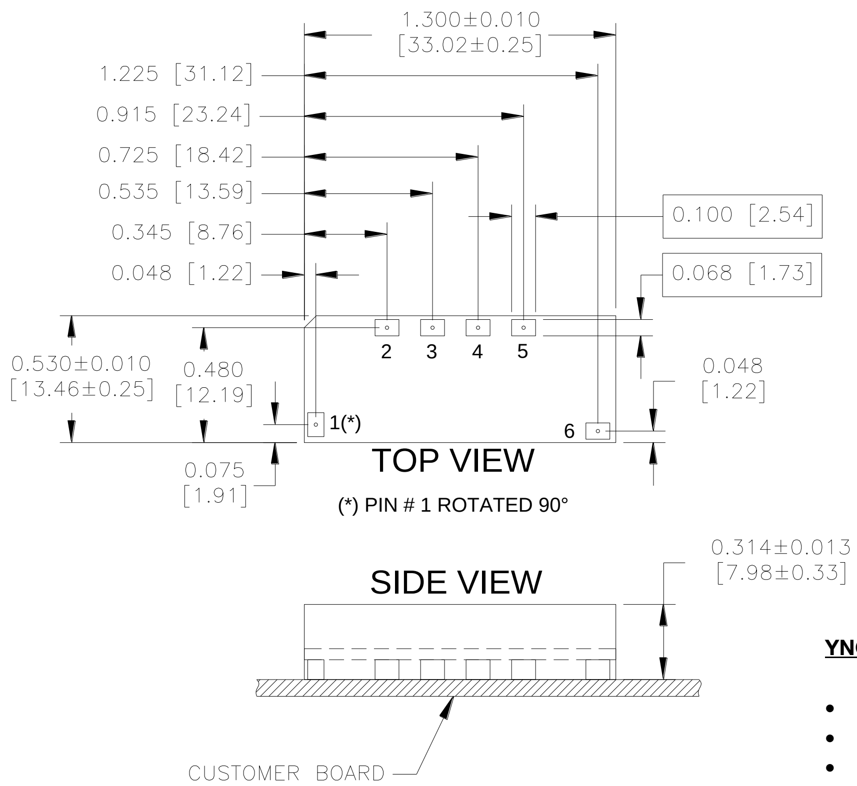
## Physical Information




*YNC12S Pinout (Surface Mount)*

| PAD/PIN CONNECTIONS | |
|---|---|
| **Pad/Pin #** | **Function** |
| 1 | ON/OFF |
| 2 | SENSE |
| 3 | TRIM |
| 4 | Vout |
| 5 | GND |
| 6 | Vin |

**YNC12S Platform Notes**

- All dimensions are in inches [mm]
- Connector Material: Copper
- Connector Finish: Gold over Nickel
- Module Weight: 0.22 oz [6.12 g]
- Module Height: 0.327" Max., 0.301" Min.
- Recommended Surface-Mount Pads:
  Min. 0.080" X 0.112" [2.03 x 2.84]

## Ordering Information

| PRODUCT SERIES | INPUT VOLTAGE | MOUNTING SCHEME | RATED LOAD CURRENT | OUTPUT VOLTAGE | | ENABLE LOGIC | ROHS COMPATIBLE |
|---|---|---|---|---|---|---|---|
| **YNL** | **12** | **S** | **10** | **018** | **–** | **0** | |
| Y-Series | 9.6 – 14<br>VDC | S ⇒ Surface-<br>Mount | 10 A<br>(1.0 to 5.0 VDC) | 010 ⇒ 1.0 V<br>012 ⇒ 1.2 V<br>015 ⇒ 1.5 V<br>018 ⇒ 1.8 V<br>020 ⇒ 2.0 V<br>025 ⇒ 2.5 V<br>033 ⇒ 3.3 V<br>050 ⇒ 5.0 V | | 0 ⇒ Standard<br>(Positive Logic)<br><br>D ⇒ Opposite of<br>Standard<br>(Negative Logic) | No Suffix ⇒ RoHS<br>lead-solder-exempt<br>compliant<br><br>G ⇒ RoHS compliant<br>for all six substances |

The example above describes P/N YNL12S10018-0: 9.6 V – 14 V input, surface mount, 10 A @ 1.8 V output, standard enable logic, and the RoHS lead-solder-exemption feature. Please consult factory regarding availability of a specific version.

Model numbers highlighted in yellow or shaded are not recommended for new designs.

## For more information on these products consult: tech.support@psbel.com

**NUCLEAR AND MEDICAL APPLICATIONS** - Products are not designed or intended for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems.

**TECHNICAL REVISIONS** - The appearance of products, including safety agency certifications pictured on labels, may change depending on the date manufactured. Specifications are subject to change without notice.

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