

VND5T100AJ evaluation board

Data brief — production data

Features

| Parameter | Symbol | Value | Unit |
|------------------------------|------------|---------|---------------|
| Max transient supply voltage | V_{CC} | 58 | V |
| Operating voltage range | V_{CC} | 8 to 36 | V |
| Typ On-State resistance | R_{ON} | 100 | m Ω |
| Current limitation (typ) | I_{LIMH} | 22 | A |
| Off-state supply current | I_S | 2 | $\mu A^{(1)}$ |

1. Typical value with all loads connected.

- Simple single IC application board dedicated for VND5T100AJ-E
- Provides thermal heat-sinking for ease of use in prototyping.
- Provides electrical connectivity for easy prototyping

Description

EV-VND5T100AJ provides you an easy way to connect ST's surface mounted VIPower® drivers into your existing prototype circuitry. This evaluation board comes pre-assembled with VND5T100AJ-E high-side driver.

The VND5T100AJ-E is a monolithic device made using STMicroelectronics® VIPower® technology, intended for driving resistive or inductive loads with one side connected to ground.

Active V_{CC} pin voltage clamp protects the device against low energy spikes. This device integrates an analog current sense which delivers a current proportional to the load current.

Fault conditions such as overload, overtemperature or short to V_{CC} are reported via the current sense pin. Output current limitation protects the device in overload condition. The device latches off in case of overload or thermal

shutdown. The device is reset by a low level pass on the fault reset standby pin.

A permanent low level on the inputs and fault reset standby pin disables all outputs and sets the device in standby mode.

Figure 1. VND5T100AJ evaluation board

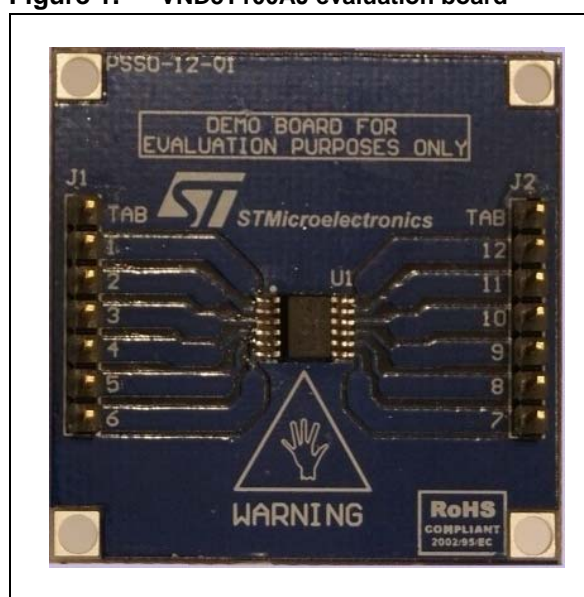


Table 1. Device summary

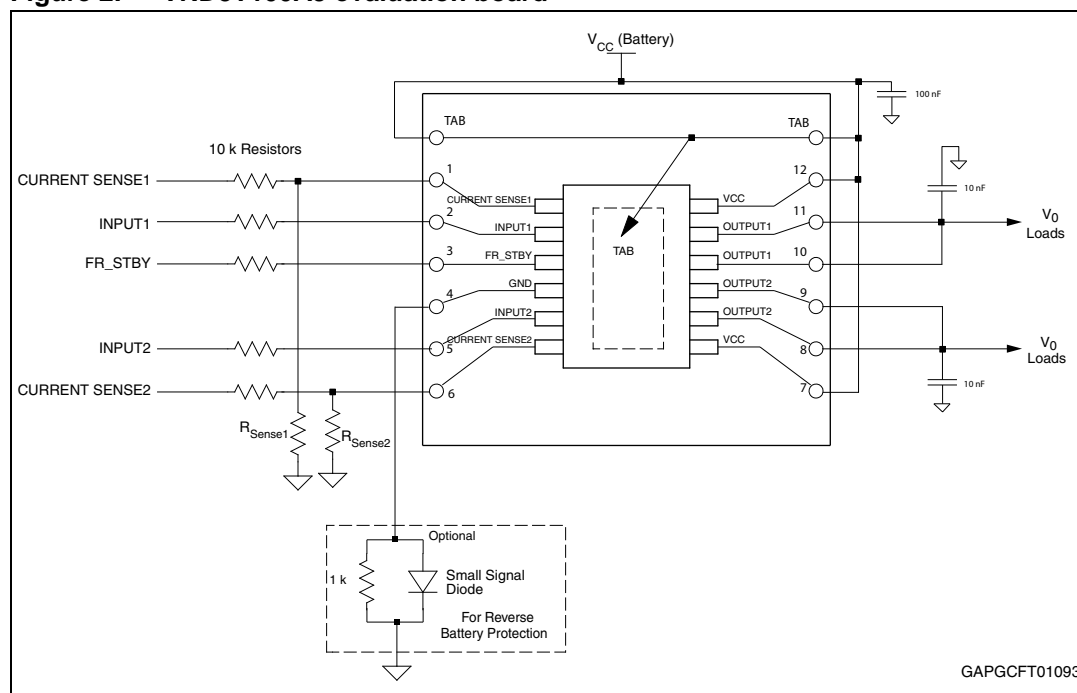
| Order code | Reference |
|---------------|-----------------------------|
| EV-VND5T100AJ | VND5T100AJ evaluation board |

1 Design recommendations

This evaluation board provides mounting solution and some heat sinking capability for prototype development, but there are still external components that are required to make these devices work in any application. For further information on how the evaluation board has to be used you can refer to the AN4210 (see [Appendix A: Reference documents](#)).

[Figure 2](#) illustrates the necessary components for any application.

Figure 2. VND5T100AJ evaluation board



ST has produced a user manual for safe designs using ST's VIPower devices. This is UM1557 (see [Appendix A: Reference documents](#)). UM1557 is a VIPower Hardware design guide that provides all necessary information to successfully design your circuit using our VIPower drivers.

All designs have different needs and requirements. Whatever design you decide to use, it will still need to be verified in order to meet your application specifications. ST implies no guarantee or warranty (see [Appendix A: Reference documents](#)).

2 Thermal data

Table 2. VND5T100AJ-E thermal data

| Symbol | Parameter | Max. value | Unit |
|---------------|---|------------|------|
| $R_{thj-amb}$ | Thermal resistance junction-ambient (MAX) | 31.5 | °C/W |

Table 3. PCB specifications

| Parameter | Value | Unit |
|-------------------------|-------------|------|
| Board dimensions | 38 x 38 | mm |
| Number of Cu layer | 2 | — |
| Layer Cu thickness | 70 | μm |
| Board finish thickness | 1.6 +/- 10% | mm |
| Board Material | FR4 | — |
| Thermal vias separation | 1.2 | mm |
| Thermal vias diameter | 0.3 /- 0.08 | mm |

3 Board connector reference

Figure 3. Board layout

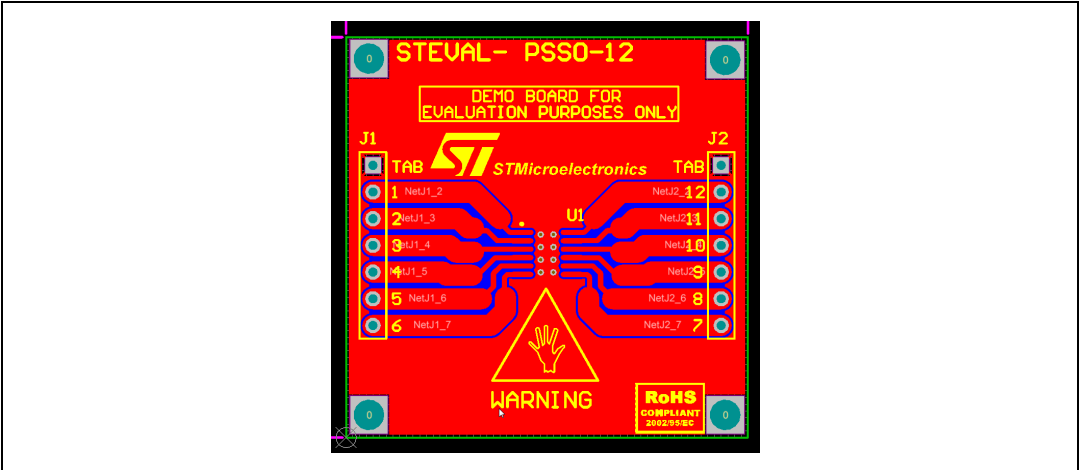


Table 4. Board connector specification

| Connector | Board lead number | Device pin function ⁽¹⁾ |
|-----------|-------------------|------------------------------------|
| J1 | TAB | V _{CC} |
| J1 | 1 | CURRENT SENSE1 |
| J1 | 2 | INPUT1 |
| J1 | 3 | FR_STBY |
| J1 | 4 | GND |
| J1 | 5 | INPUT2 |
| J1 | 6 | CURRENT SENSE2 |
| J2 | TAB | V _{CC} |
| J2 | 7 | V _{CC} |
| J2 | 8 | OUTPUT2 |
| J2 | 9 | OUTPUT2 |
| J2 | 10 | OUTPUT1 |
| J2 | 11 | OUTPUT1 |
| J2 | 12 | V _{CC} |

1. For further clarification on pin functions please refer to the related datasheet (see [Appendix A: Reference documents](#)).

4 Package information

4.1 ECOPACK[®] packages

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK[®] packages, depending on their level of environmental compliance. ECOPACK[®] specifications, grade definitions and product status are available at: www.st.com.

ECOPACK[®] is an ST trademark.

Appendix A Reference documents

1. Double channel high-side driver with analog current sense for 24 V automotive applications (VND5T100AJ-E, DocID 018513)
2. VIPower MO-5T: high-side switches for 24V systems (UM1557, DocID 023521)
3. PowerSSO-12 devices evaluation board (AN4210, DocID 023963)
4. Evaluation Product Licence Agreement on www.st.com

Revision history

Table 5. Document revision history

| Date | Revision | Changes |
|-------------|----------|------------------|
| 26-Nov-2012 | 1 | Initial release. |

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