

# 100kHz Driver for NanoSpeed™ Variable Optic Attenuator

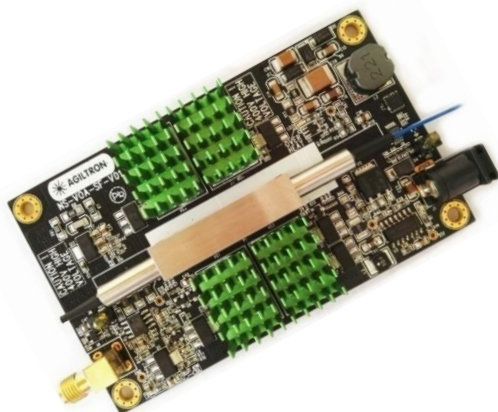
(Preliminary)

(patents pending)



DATASHEET

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## Features

- Fast response
- High repetition rate
- Push-Pull output design
- Low quiescent power consumption

## Applications

- NS-VOA
- Optical Modulator
- Variable beam splitter

This NS series of fast-speed driver is designed to control NS series of solid state variable optic attenuators (VOA). The push-pull output design is especially suitable for driving capacitive VOA loads, assuring the fast response time both on rising and falling of attenuation. The driver can be operated by 0-5V signal to control the attenuation of VOA.

The standard driver controls one individual VOA. Drivers controlling multiple VOAs are also available, please call Sales at (781) 935-1200 for more information.

## Specifications

| Parameter                                | Min | Typical | Max              | Unit |
|------------------------------------------|-----|---------|------------------|------|
| Response time (Rise) (Sr) <sup>[1]</sup> | 250 |         | 850              | ns   |
| Response time (Fall) (Sf) <sup>[2]</sup> | 250 |         | 850              | ns   |
| Repetition Rate                          | DC  |         | 100              | kHz  |
| Control signal for attenuation           | 0   |         | 5 <sup>[3]</sup> | V    |
| Power Consumption <sup>[4]</sup>         |     |         | 8                | W    |
| Power Supply                             | 12  |         | 24               | V    |
| Operating Temperature                    | -5  |         | 70               | °C   |
| Storage Temperature                      | -40 |         | 80               | °C   |
| Electrical Connector                     | SMA |         |                  | MHz  |

### Notes:

[1]: Response time (Rise): Begin of electronic signal to the completion of optic intensity change.

[2]: Response time (Fall): Begin of electronic signal to the completion of optic intensity change.

[3]: For full attenuation in VOA

[4]: Dependent on repetition frequency. Measured for the attenuation > 20dB at 100 kHz.

**Warning:** The device mounted on the PCB is an OEM module designed for system integration only, not for general uses. Do not touch the PCB by hand. The electrical static can kill the chips even without a power plug-in, and unpleasant electrical shock may also be felt. For laboratory use, please buy a protected Turnkey system.

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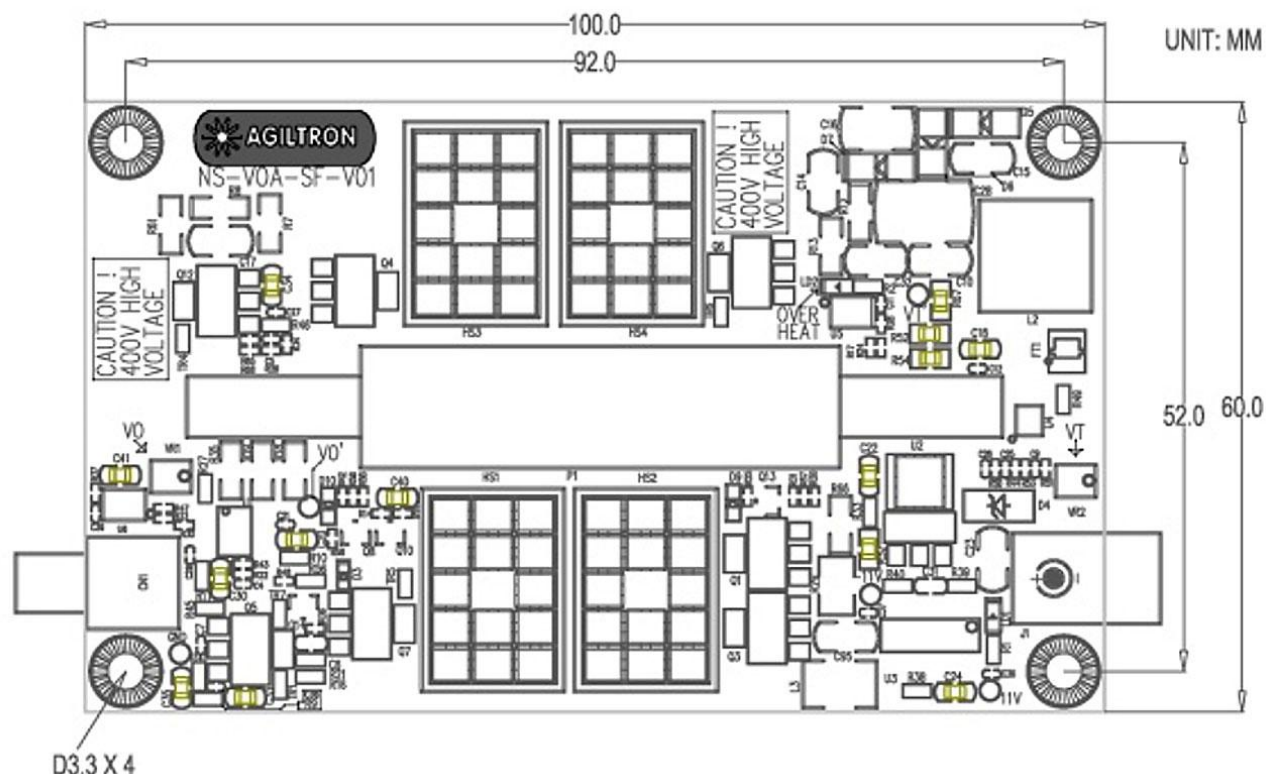
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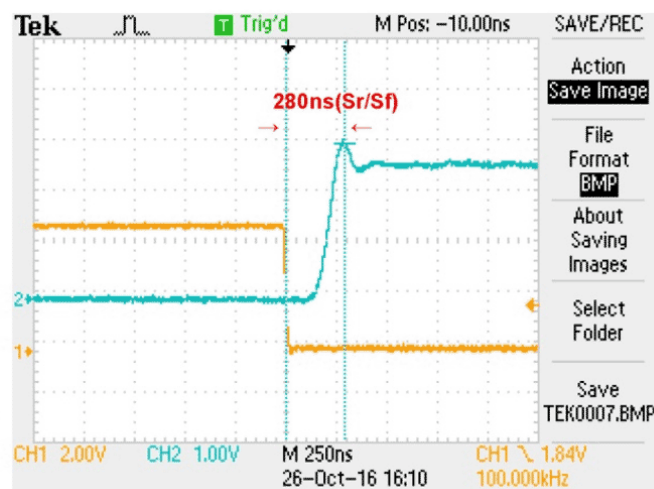
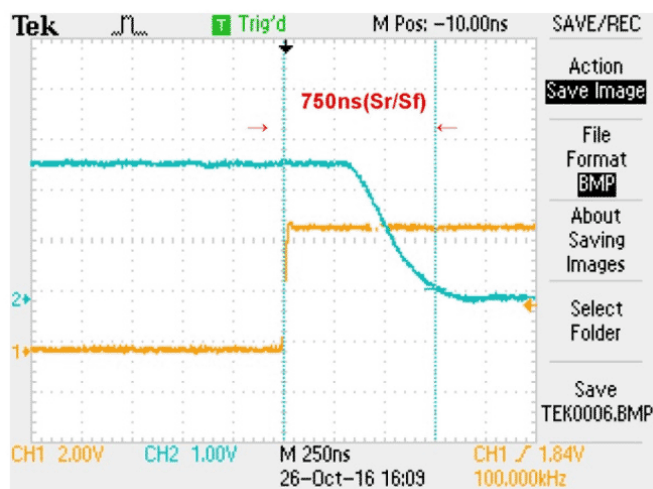
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### Mechanical Dimensions (mm)



\*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

### Response Time



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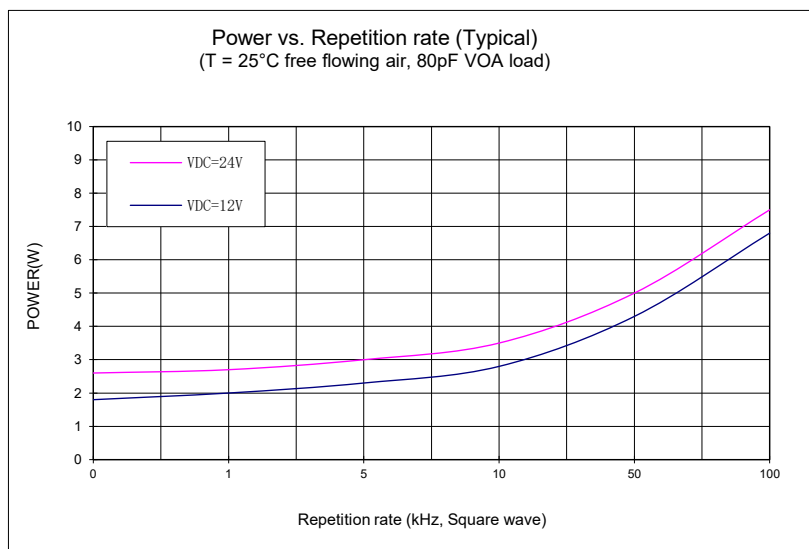
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### Power Consumption



### Ordering Information (Part Number)

|        | 1 1  | <input type="checkbox"/>     | 2 | <input type="checkbox"/>          | 1 | <input type="checkbox"/> <input type="checkbox"/> | <input type="checkbox"/> |
|--------|------|------------------------------|---|-----------------------------------|---|---------------------------------------------------|--------------------------|
| Prefix | Type | Repetition                   |   | Size                              |   | # of VOA                                          | Connector <sup>[1]</sup> |
| NVDR-  |      | DC-100kHz = 2<br>Special = 0 |   | 3.9"x2.4"x0.6" = 2<br>Special = 0 |   | Single VOA = 11<br>Special = 00                   | SMA = 2<br>Special = 0   |

[1]. The default connector configuration uses fiber with 0.9 mm buffer protection. The connector cannot be installed directly onto bare fiber because the bare fiber is prone to damage during shipping. However, the connector can be assembled on bare fiber if a 3 cm protective loose tube is added for reinforcement. The customer may remove this protective tube after testing. The optical power handling of a standard connector is less than 0.5 W for SMF-28 fiber and decreases further for smaller-core fibers.

#### Fiber Core Alignment

Note that the minimum attenuation for these devices depends on excellent core-to-core alignment when the connectors are mated. This is crucial for shorter wavelengths with smaller fiber core diameters that can increase the loss of many decibels above the specification if they are not perfectly aligned. Different vendors' connectors may not mate well with each other, especially for angled APC.

#### Fiber Cleanliness

Fibers with smaller core diameters (<5 µm) must be kept extremely clean, contamination at fiber-fiber interfaces, combined with the high optical power density, can lead to significant optical damage. This type of damage usually requires re-polishing or replacement of the connector.

#### Maximum Optical Input Power

Due to their small fiber core diameters for short wavelength and high photon energies, the damage thresholds for device is substantially reduced than the common 1550nm fiber. To avoid damage to the exposed fiber end faces and internal components, the optical input power should never exceed 20 mW for wavelengths shorter 650nm. We produce a special version to increase the how handling by expanding the core side at the fiber ends.

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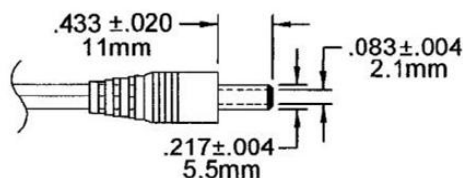
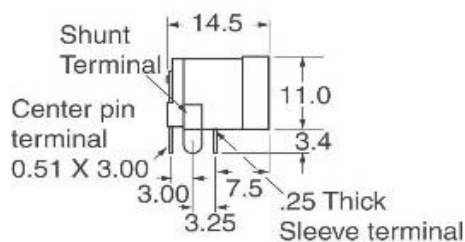
### DC Power Connection

#### Variation 1

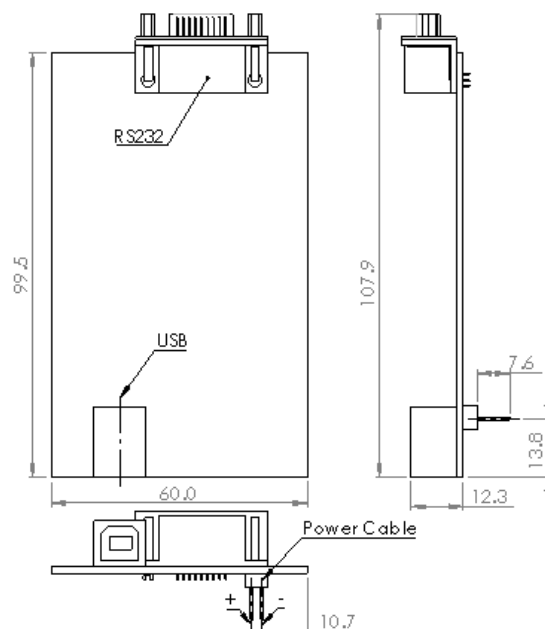
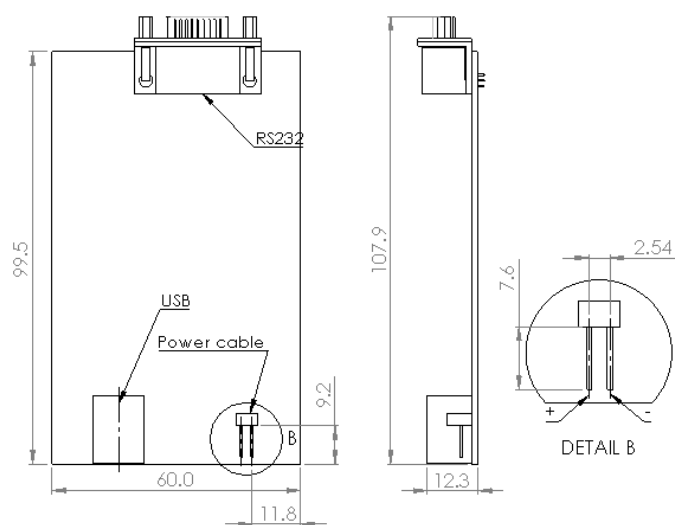
P/N: SC1313-ND

Power Barrel Connector Jack 2.00mm ID (0.079"),  
5.50mm OD (0.217") Through Hole, Right Angle

12V Wall Plug DC Power Supply Interface



#### Variation 2



**Note:** The DC Power Barrel Jack Connector can be replaced with a two-pin connector, available in two configurations: one with pins facing downward for direct PCB mounting and another for connection with a standard cable connector. This flexibility allows for integration into various system designs.

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### Typical Operation Instructions

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1. Connect a control signal to the SMA connector on the PCB.
2. Attach the accompanied power supply (typically a wall-pluggable unit).
3. The device should then function properly.

**Note:** Do not alter device factory settings.