

# Datasheet

## SDM11 – Post-Regulator

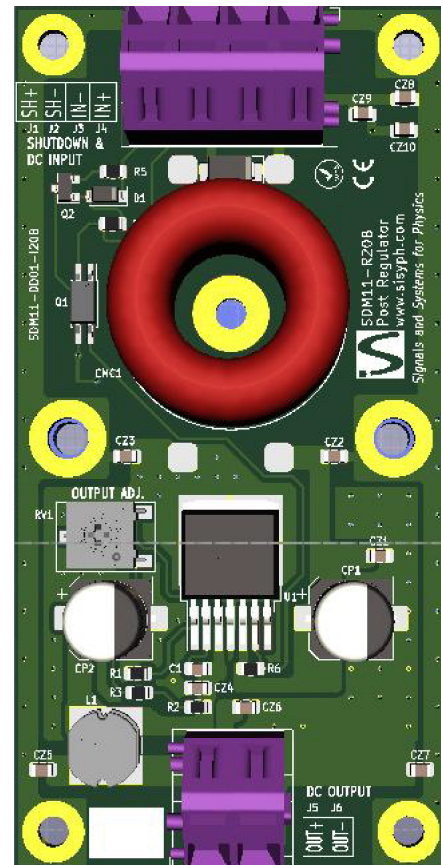
### SDM-Series – DIN Rail Mounting Modules

#### FEATURES

- Filtering noise from DC power modules:
  - low-noise internal post-regulator
  - common-mode rejection filter
  - power supply rejection filter
- Fixed or custom DC output voltage:
  - fixed: 3.3/5/12/15/24 V
  - custom: from 2.5 V to 32 V
- Internal current limitation:
  - 2.1 A (factory settings) or
  - from 1 A to 2 A (custom)
- Low dropout voltage : 500 mV
- Internal thermal limitation
- Floating outputs
- Isolated shutdown control input
- 35-mm rail mounting
- Easy wiring w/ spring-cage terminal blocks

#### APPLICATIONS

- Cost effective solution for power supply noise sensitive systems
- Switched mode power supply filtering
- Linear power supply replacement
- Ideal for rapid and reliable prototyping



## Important Notice

The specifications provided apply to the SMD11-R20B module. Information in this document is subject to change without notice. Copyright © SISYPH, 2020. All rights reserved.

## Specifications

Conditions:  $T_{amb} = 30\text{ }^{\circ}\text{C}$ , unless otherwise noted.

### DC Input

Terminal	Spring-cage terminal block (2x)
Admissible range	3 V to 33 V
Level abs. max. <sup>a</sup>	+36 V

### DC Output

Terminal	Spring-cage terminal block (2x)
Min. dropout voltage <sup>c</sup>	500 mV
Voltage range	2.5 V to 32 V
Current range	2 mA to 2100 mA
Minimal load current <sup>b</sup>	2 mA
Voltage adjust range	0 mV to 500 mV
Voltage noise spectral density <sup>d</sup>	$\leq 10\text{ nV}/\sqrt{\text{Hz}}$
Differential-mode rejection ratio <sup>d</sup>	$\geq 40\text{ dB}$
Common-mode rejection ratio <sup>d,e</sup>	$\geq 40\text{ dB}$

### Shutdown Control Input

Terminal	Spring-cage terminal block (2x)
Voltage range	0 V to +40 V
Input current	1 mA
High-level voltage	$\geq 3.3\text{ V}$
Low-level voltage	1 V

### Power Dissipation<sup>g</sup>

Dissipated power w/o heatsink <sup>f</sup>	1 W
Dissipated power w/ DIN rail mount	2 W

<sup>a</sup>Stresses above these specifications may cause permanent damage.

<sup>b</sup>This minimal load current must be provided to ensure proper biasing of the SDM11's power device.

<sup>c</sup> $DC_{IN} - DC_{OUT} \geq 500\text{ mV}$ .

<sup>d</sup> $f = 100\text{ kHz}$ .

<sup>e</sup>Not measured.

<sup>f</sup>Power device case's temperature  $\approx 60\text{ }^{\circ}\text{C}$ .

<sup>g</sup> $P_D \approx (DC_{IN} - DC_{OUT}) \times I_{OUT}$ .

### General Specifications

*This module is designed to be operated in laboratory environment.*

#### Operating

Temperature range	+15°C to +30°C
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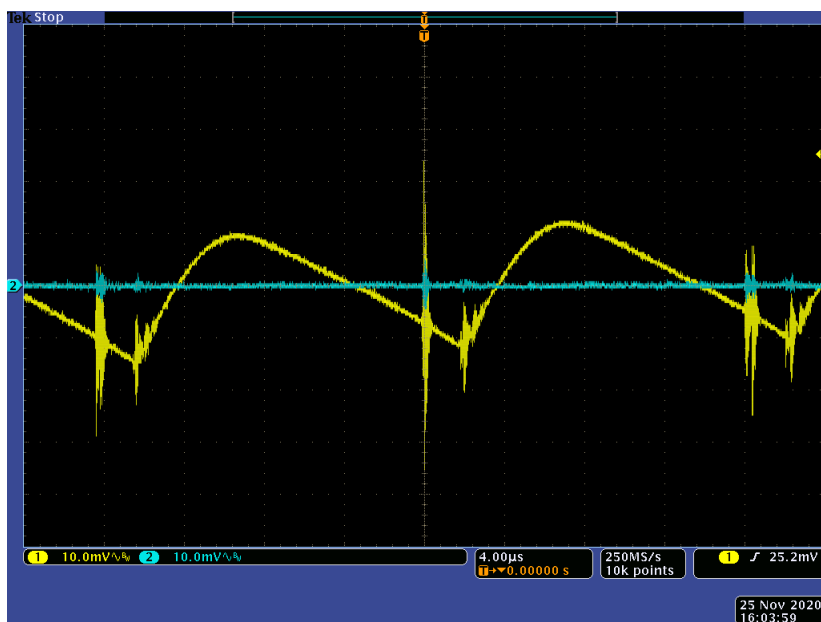
#### Physical Properties

Height (component side)	14 mm max.
Weight	≤ 0 g
PCB	2-layer FR4, 90 mm × 45 mm

#### Warranty

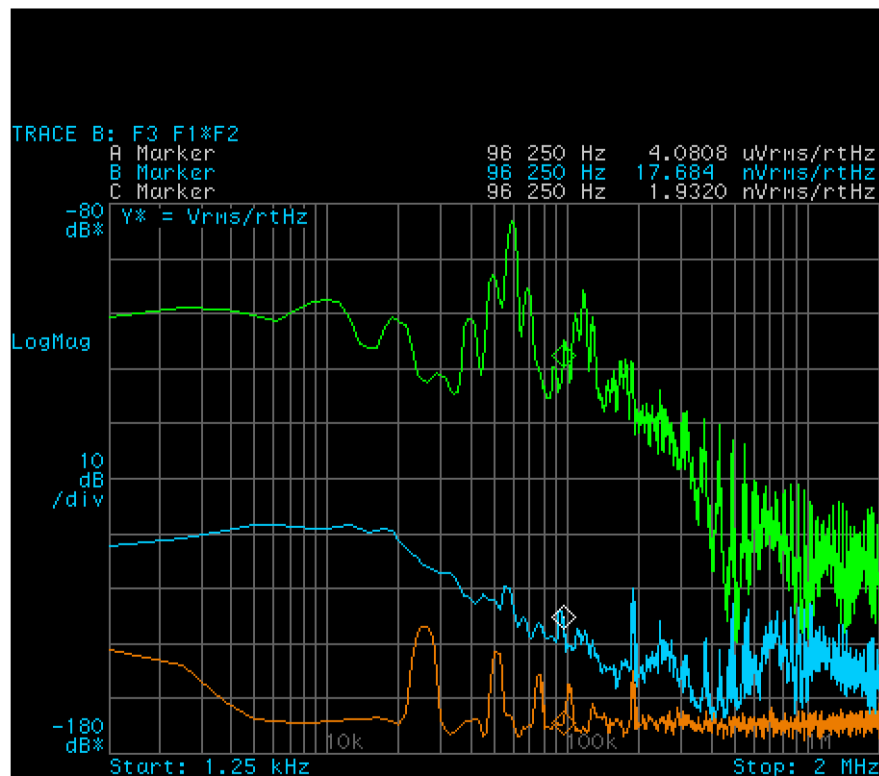
One (1) year parts and labor on defects

### Screenshots



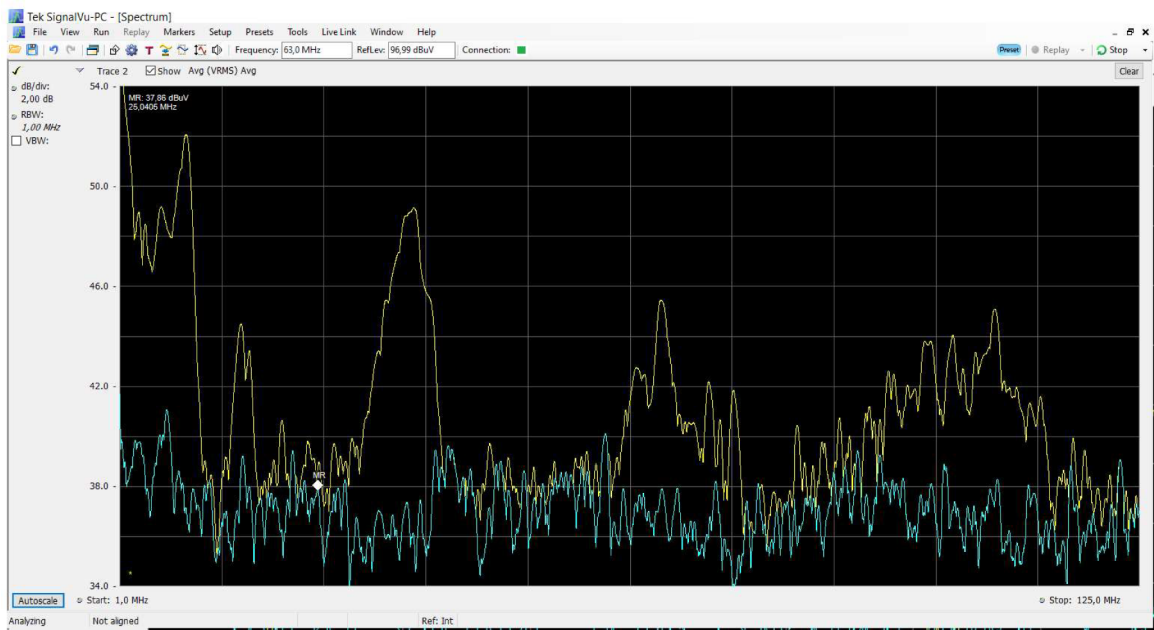
**Figure 1: Output Ripple** - The high-frequency ripple of the SMPS (yellow) is completely removed from the SDM11's output voltage (blue). The only remaining transients are the broadband components due to switching spikes, which are also attenuated about 20 dB.

Conditions: SDM11-15V , SMPS module : HDR-15-15 from *Mean-Well*,  $DC_{IN} = 15.8\text{ V}$ ,  $DC_{OUT} = 15\text{ V}$ ,  $I_{OUT} = 1\text{ A}$ ,  $R_{load} = 15\ \Omega$ ,  $C_{load} = 10\ \mu\text{F}$ .



**Figure 2: Output Noise - Low-frequency** - The spectral density of the SMPS's output noise (green) is attenuated over the entire frequency range: the spectral density of the SDM11 (blue) shows an attenuation of more than 65 dB at 50 kHz. and a noise level below  $10 \text{ nV}/\sqrt{\text{Hz}}$  above 100 kHz. The noise floor ( $2 \text{ nV}/\sqrt{\text{Hz}}$ ) of the measurement setup (orange) does not limit the resolution of the SDM11's output noise.

Conditions: SDM11-15V , SMPS module : HDR-15-15 from *Mean-Well*,  $DC_{IN} = 15.8 \text{ V}$ ,  $DC_{OUT} = 15 \text{ V}$ ,  $I_{OUT} = 1 \text{ A}$ ,  $R_{load} = 15 \Omega$ ,  $C_{load} = 10 \mu\text{F}$ , +20-dB preamplifier, HP89441 Vector Signal Analyzer.



**Figure 3: Output Noise - Broadband** - The power spectrum of the SMPS's output (yellow) reveals high-frequency components due to the switching spikes. The SDM11's output spectrum (blue) illustrates its ability to provide attenuation of this broadband noise. Conditions: SDM11-15V , SMPS module : HDR-15-15 from *Mean-Well*,  $DC_{IN} = 15.8\text{V}$ ,  $DC_{OUT} = 15\text{V}$ ,  $I_{OUT} = 1\text{A}$ ,  $R_{load} = 15\Omega$ ,  $C_{load} = 10\mu\text{F}$ .

### Ordering Information

#### DC-Output Voltage

SDM11-3V3-xx

SDM11-5V0-xx

SDM11-12V-xx

SDM11-15V-xx

SDM11-24V-xx

$DC_{OUT} = 3.3\text{ V}$

$DC_{OUT} = 5\text{ V}$

$DC_{OUT} = 12\text{ V}$

$DC_{OUT} = 15\text{ V}$

$DC_{OUT} = 24\text{ V}$

#### DIN-Rail Mounting Options

SDM11-xxx-NM

SDM11-xxx-DM

w/o mounting accessories.

w/ mounting accessories including:  
35-mm adapter, thermal insulator  
pad, M4 screws and washers (2x).

#### Example of Ordering Code

SDM11-15V-DM

$DC_{OUT} = 15\text{ V}$  DC output voltage  
with DIN rail mounting accessories.

### Document Identifier

SDM11-SS01-R20A