



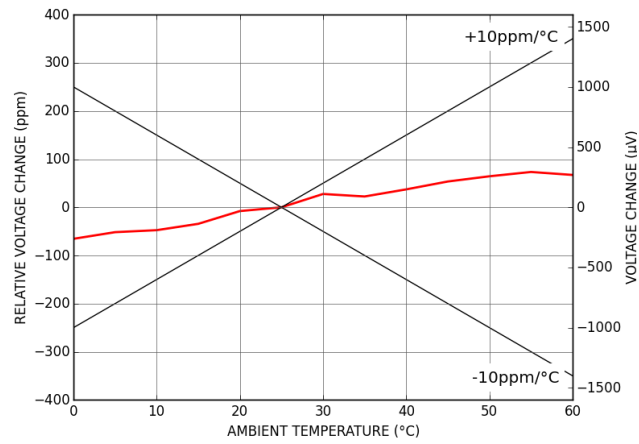
Koheron VREF100 is a quad-channel voltage source that can be adjusted from -5 V to 5 V. It can source or sink up to 40 mA on each channel. Each channel has a coarse and a fine trimmer with a settability of 20  $\mu$ V. Thanks to its low wideband noise and high stability, the VREF100 can be used to bias sensitive devices such as VCOs or Mach-Zehnder modulators.

## Specifications

VREF100-50	
Number of channels	4
Output voltage range	-5 V to 5 V
Current driving capability	40 mA (source or sink)
Voltage noise density 10 kHz	1.3 nV/ $\sqrt{\text{Hz}}$
RMS noise 10 Hz to 1 MHz	2 $\mu\text{V}_{\text{rms}}$
24 h stability	50 $\mu\text{V}$
Load regulation	35 $\mu\text{V}/\text{mA}$
Temperature coefficient	5 ppm/ $^{\circ}\text{C}$
Fine adjustment range	$\pm 50$ mV
Other	
Outside dimensions	75 mm x 50 mm x 12 mm
Weight	34 g
Positive supply voltage	9 V
Negative supply voltage	-9 V
Operating temperature	0 $^{\circ}\text{C}$ to 40 $^{\circ}\text{C}$

## Temperature coefficient

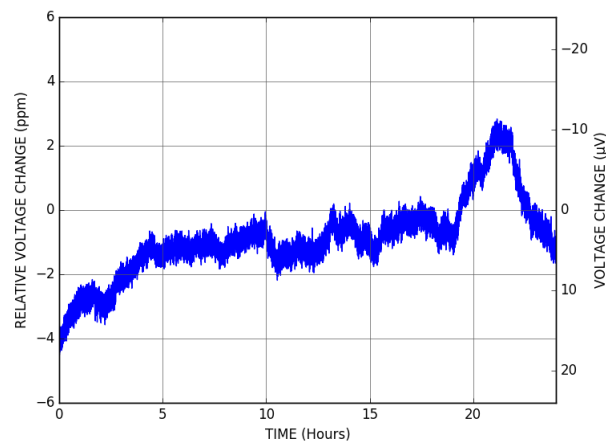
The graph below shows the variation of the output voltage of the VREF100 (set to -4 V) when the temperature varies from 0 to 60  $^{\circ}\text{C}$ . Temperature coefficient is about 10  $\mu\text{V}/^{\circ}\text{C}$ .



VREF100 temperature coefficient

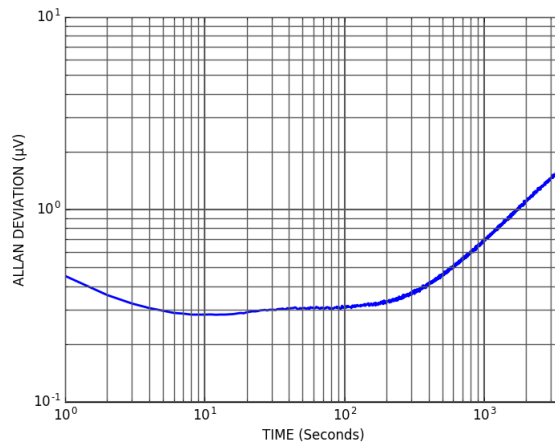
## Voltage stability

Voltage stability of the VREF100 has been measured at a temperature of 25 °C and an output voltage of -4 V over 24 hours:



VREF100 voltage stability

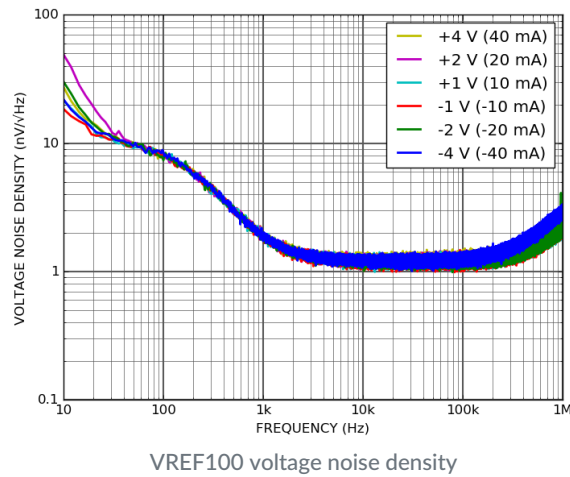
The corresponding Allan deviation is shown below. A minimum Allan deviation of 300 nV is seen between 5 and 100 seconds.



VREF100 allan deviation

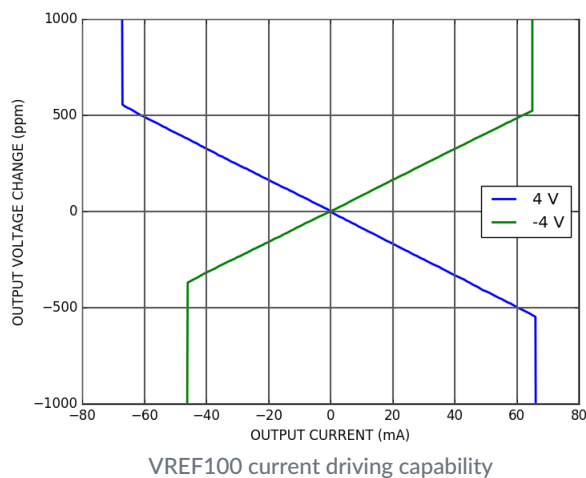
## Voltage noise density

The graph below shows the output voltage noise density of the VREF100 when driving a 100  $\Omega$  load at different output voltages.



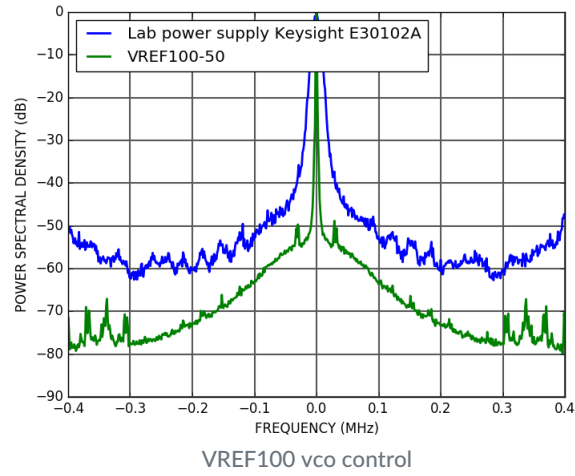
## Current driving capability

At 4 V output voltage, the VREF100 sources or sinks up to 60 mA. At -4 V output voltage, it sinks up to 40 mA and sources up to 60 mA.



## Application: Voltage Controlled Oscillator (VCO) control

We used the VREF100-50 to control a Minicircuits ROS-2500 Voltage Controlled Oscillator. The VCO is controlled with 4 V, which gives a VCO output frequency of 1.7 GHz.



## Ordering codes

PRODUCT NUMBER	ATTRIBUTE
VREF100-50	None