

Koheron HV100 is a ± 100 V high-voltage amplifier with ultra-low output noise ($< 50 \mu\text{V}_{\text{rms}}$ in 10 Hz - 100 kHz bandwidth). It provides a fixed gain of 20 with 100 kHz small-signal bandwidth and a slew rate of $19 \text{ V}/\mu\text{s}$. Operating from a single 24 V supply, the HV100 can drive up to 100 mA and is stable with large capacitive loads.

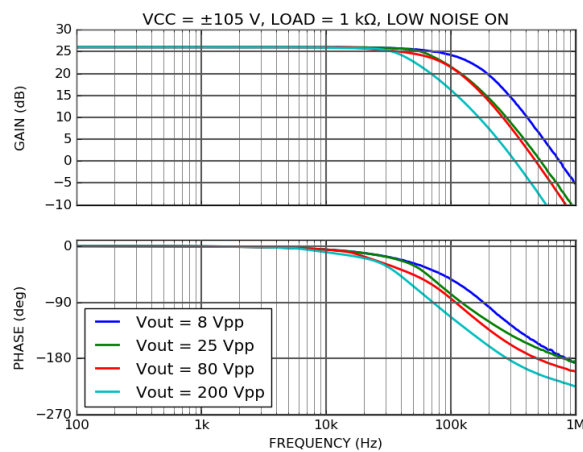
Specifications

HV100

Gain, Bandwidth	
Voltage gain	20 V/V
Voltage gain drift	15 ppm/°C
3 dB small-signal bandwidth $V_{\text{out}} = 8 \text{ V}_{\text{pp}}$ in 1 k Ω load, Low noise ON	100 kHz
Input	
Input impedance	1 k Ω
Coupling	DC
Input voltage range	-5 V to 5 V
Output	
Output voltage range	-100 V to 100 V
Output impedance	5 Ω
Continuous sourcing current $V_{\text{OUT}} = +100 \text{ V}$, $T = 25^\circ\text{C}$	100 mA
Continuous sinking current $V_{\text{OUT}} = +100 \text{ V}$, $T = 25^\circ\text{C}$	-50 mA
Output voltage noise density 1 kHz, Low noise ON	$< 150 \text{ nV}/\sqrt{\text{Hz}}$
Output voltage noise density 1 kHz, Low noise OFF	$< 200 \text{ nV}/\sqrt{\text{Hz}}$
Output voltage noise 10 Hz - 100 kHz, Low noise ON	$< 50 \mu\text{V}_{\text{rms}}$
Slew rate $200 \text{ V}_{\text{pp}}$ in 1 k Ω load	$19 \text{ V}/\mu\text{s}$
Power supply	

Supply voltage	19 V to 33 V, nom. 24 V
Quiescent current output enabled 24 V supply, Low noise ON	150 mA
Quiescent current output disabled 24 V supply, Low noise ON	25 mA
Supply current 24 V supply	1.5 A
Other	
Outside dimensions	103 mm x 60 mm x 21 mm
Weight	113 g
Operating temperature	-40 °C to 85 °C

Frequency response

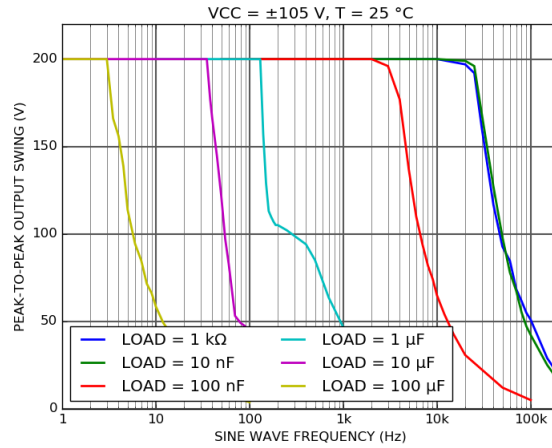


HV100 frequency response

Large signal response

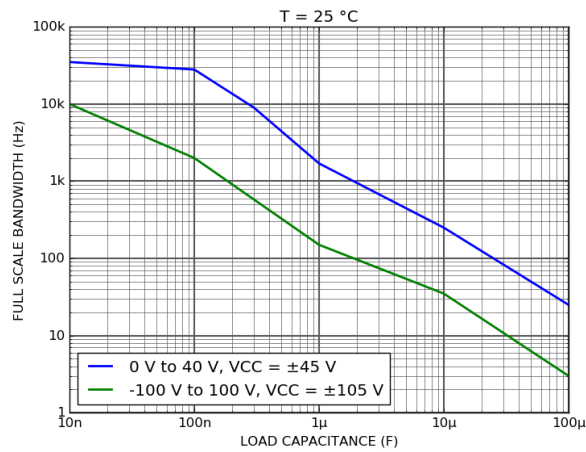
Output is shutdown when the amplifier junction temperature exceeds about 125 °C. The amplifier junction temperature depends on the baseplate temperature, the output current, and the output waveform.

As a reference, we plot for various loads the peak-to-peak output voltage for a sinewave undistorted and uninterrupted by thermal shutdown. The baseplate temperature is 25 °C.



HV100 large signal bandwidth versus load

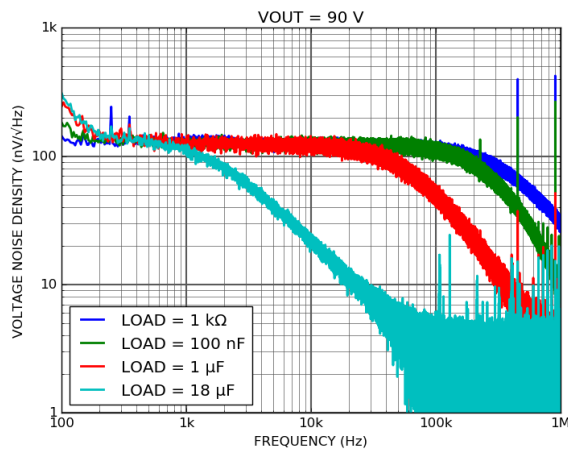
Full-scale bandwidth versus capacitive load:



HV100 fullscale bandwidth versus capacitive load

Output noise

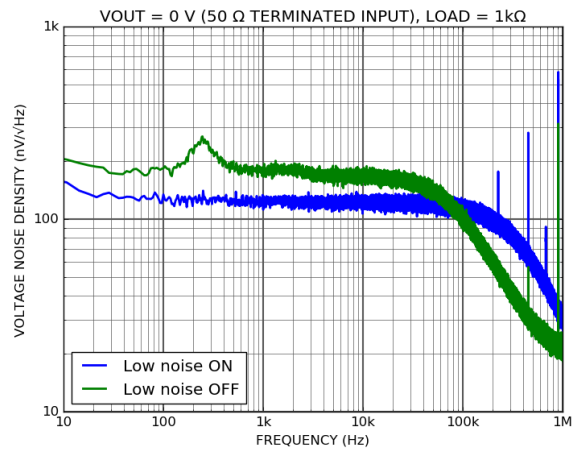
Output voltage noise density measured for various output voltage loads:



HV100 output voltage noise density versus load

When the low noise configuration switch is set to OFF, the quiescent current decreases from 135 mA to 50 mA

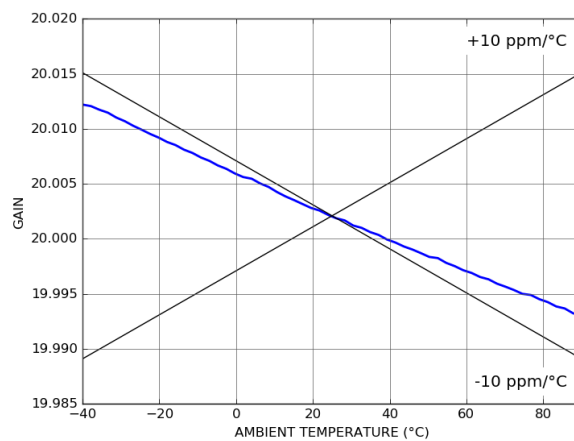
in exchange for a lower bandwidth and a higher voltage noise density:



HV100 output voltage noise density versus low noise setting

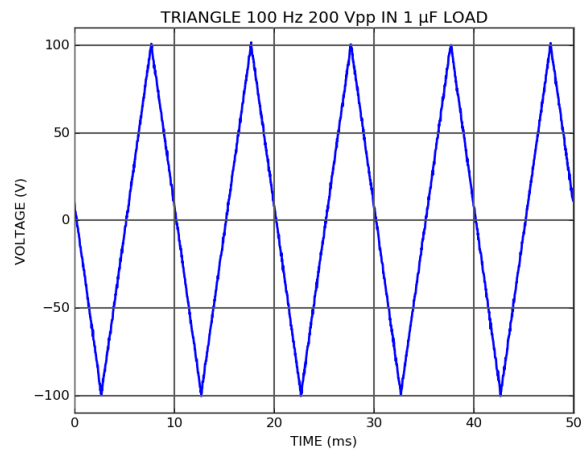
Gain versus temperature

Amplifier gain versus ambient temperature, measured driving 100 V in 1 k Ω load:

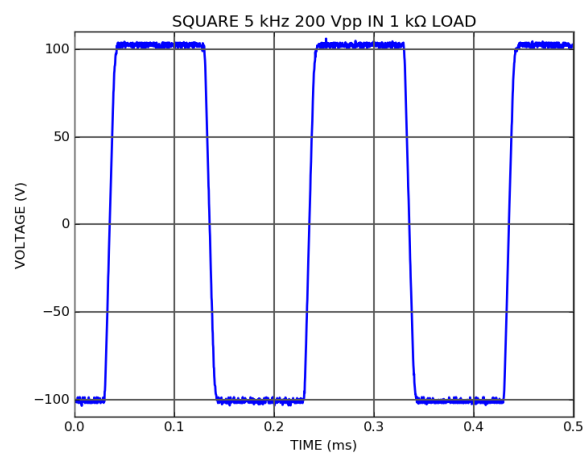


HV100 gain versus temperature

Waveform examples



HV100 triangle waveform



HV100 square waveform

Ordering codes

PRODUCT NUMBER	ATTRIBUTE
HV100	None