



Koheron HV100 is a ±100 V high-voltage amplifier with ultra-low output noise (< 50 μ V_{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 V/µs. Operating from a single 24 V supply, the HV100 can drive up to 100 mA and is stable with large capacitive loads.

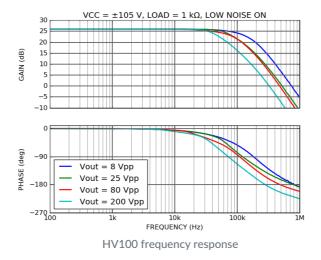
Specifications

Gain, BandwidthVoltage gain20 V/VVoltage gain drift15 ppm/°C3 dB small-signal bandwidth vout = 8 Vpp in 1 kΩ load, Low noise ON100 kHzInput100 kHzInput1 kΩCouplingDCInput voltage range-5 V to 5 VOutput voltage range-100 V to 100 VOutput voltage range5 ΩCoutput impedance100 mACoutput voltage range-50 mAOutput voltage range-50 mAOutput voltage noise density LitkHz, Low noise OFF-500 mV//Hz		HV100
Voltage gain drift15 ppm/°C3 dB small-signal bandwidth Vout = 8 V _{pp} in 1 kΩ load, Low noise ON100 kHzInput100 kHzInput1 kΩCouplingDCInput voltage range-5 V to 5 VOutput voltage range-100 V to 100 VOutput impedance5 ΩOutput impedance5 ΩOutput impedance5 ΩOutput voltage range-100 V to 100 VOutput voltage range-100 V to 100 VOutput impedance5 ΩOutput voltage range-100 mAContinuous sinking current VOUT = +100 V, T = 25 °C-50 mAOutput voltage noise density 1 kHz, Low noise ON<150 nV//Hz	Gain, Bandwidth	
$3 dB small-signal bandwidthV_{out} = 8 V_{pp} in 1 k\Omega look HzInput100 kHzInput1 k\OmegaInput impedance1 k\OmegaCouplingDCInput voltage range-5 V to 5 VOutput-100 V to 100 VOutput voltage range-100 V to 100 VOutput impedance5 \OmegaContinuous sourcing currentVOUT = +100 V, T = 25 °C100 mAOutput voltage noise densityLKHz, Low noise ON-50 nV/v/Hz$	Voltage gain	20 V/V
$V_{out} = 8 V_{pp} in 1 k\Omega load,Low noise ON100 kHzInputInputInput impedance1 kQCouplingDCInput voltage range-5 V to 5 VOutput-5 V to 100 VOutput voltage range-100 V to 100 VOutput impedance5 QContinuous sourcing currentVOUT = +100 V, T = 25 °C100 mAOutput voltage noise densityr kHz, Low noise ON-50 nV/v/HzOutput voltage noise density< 200 nV/v/Hz$	Voltage gain drift	15 ppm/°C
Input impedance $1 k\Omega$ CouplingDCInput voltage range $-5 V to 5 V$ Output $-5 V to 5 V$ Output voltage range $-100 V to 100 V$ Output voltage range 5Ω Continuous sourcing current $V OUT = +100 V, T = 25 ^{\circ} C$ 100mA Continuous sinking current $V OUT = +100 V, T = 25 ^{\circ} C$ -50mA Output voltage noise density $< 200 \text{nV} / / \text{Hz}$	V_{out} = 8 V_{pp} in 1 k Ω load,	100 kHz
CouplingDCInput voltage range $-5 \vee to 5 \vee$ OutputOutputOutput voltage range $-100 \vee to 100 \vee$ Output impedance 5Ω Continuous sourcing current $VOUT = +100 \vee, T = 25 \circ C$ 100 mA Continuous sinking current $VOUT = +100 \vee, T = 25 \circ C$ -50 mA Output voltage noise density $1 \text{ kHz}, Low noise ON$ $< 200 \text{ mV///Hz}$	Input	
Input voltage range $-5 \lor to 5 \lor$ OutputOutput voltage range $-100 \lor to 100 \lor$ Output voltage range $-100 \lor to 100 \lor$ Output impedance 5Ω Continuous sourcing current $VOUT = +100 \lor, T = 25 \degree C$ $100 mA$ Continuous sinking current $VOUT = +100 \lor, T = 25 \degree C$ $-50 mA$ Output voltage noise density $1 kHz, Low noise ON$ $< 150 nV/\sqrt{Hz}$	Input impedance	1 kΩ
OutputOutput voltage range $-100 \vee to 100 \vee$ Output impedance 5Ω Continuous sourcing current $VOUT = +100 \vee, T = 25 \circ C$ 100 mA Continuous sinking current $VOUT = +100 \vee, T = 25 \circ C$ -50 mA Output voltage noise density $1 \text{kHz, Low noise ON}$ $< 150 \text{nV}/\sqrt{\text{Hz}}$	Coupling	DC
Output voltage range $-100 V to 100 V$ Output impedance 5Ω Continuous sourcing current $VOUT = +100 V, T = 25 °C$ $100 mA$ Continuous sinking current $VOUT = +100 V, T = 25 °C$ $-50 mA$ Output voltage noise density $1 kHz, Low noise ON$ $< 150 nV/\sqrt{Hz}$	Input voltage range	-5 V to 5 V
Output impedance 5Ω Continuous sourcing current VOUT = +100 V, T = 25 °C100 mAContinuous sinking current VOUT = +100 V, T = 25 °C-50 mAOutput voltage noise density 1 kHz, Low noise ON< 150 nV/ \sqrt{Hz} Output voltage noise density $< 200 nV/\sqrt{Hz}$	Output	
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VOUT = +100 V, T = 25 °C-50 mAOutput voltage noise density 1 kHz, Low noise ON< 150 nV/ \sqrt{Hz} Output voltage noise density < 200 nV/ \sqrt{Hz}		100 mA
1 kHz, Low noise ON Output voltage noise density < 200 pV/s/Hz		-50 mA
		< 150 nV/√Hz
		< 200 nV/√Hz
Output voltage noise 10 Hz - 100 kHz, Low noise ON < 50 μV _{rms}		< 50 µV _{rms}
Slew rate $19 V/\mu s$ $19 V/\mu s$		19 V/µs
Power supply	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

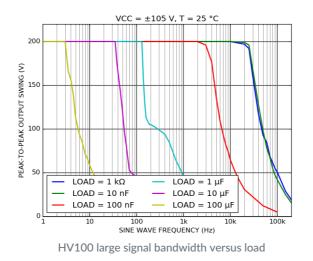


Large signal response

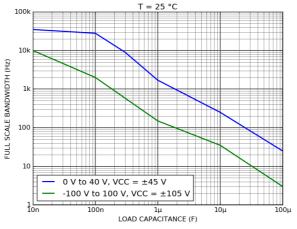
Output is shutdown when the amplifier junction temperature exceeds about 125 °C. The amplifier junction temperature depends on the baseplate temperature, the output current, and the output waveform.

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.





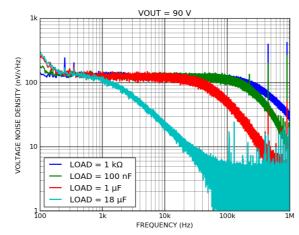
Full-scale bandwidth versus capacitive load:



HV100 fullscale bandwidth versus capacitive load

Output noise

Output voltage noise density measured for various output voltage loads:



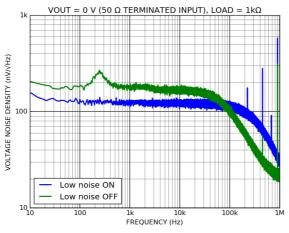
HV100 output voltage noise density versus load

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





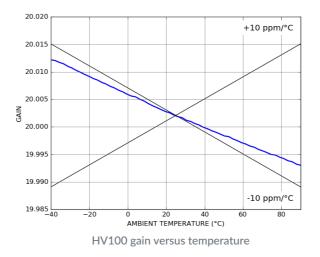
in exchange for a lower bandwidth and a higher voltage noise density:



HV100 output voltage noise density versus low noise setting

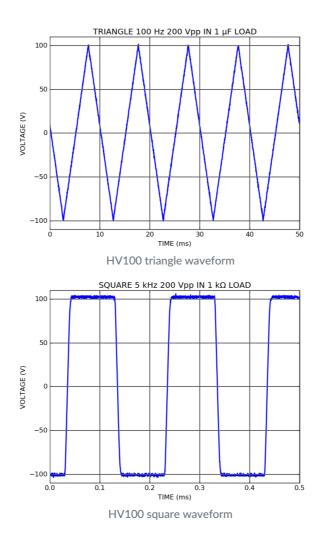
Gain versus temperature

Amplifier gain versus ambient temperature, measured driving 100 V in 1 k $\!\Omega$ load:



Waveform examples







Ordering codes

PRODUCT NUMBER

HV100

ATTRIBUTE

None