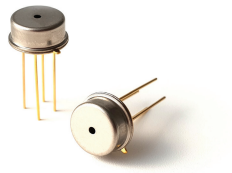
Vacuum Sensors

HEIMANN Sensor
HEIMANN SENSOR GMBH



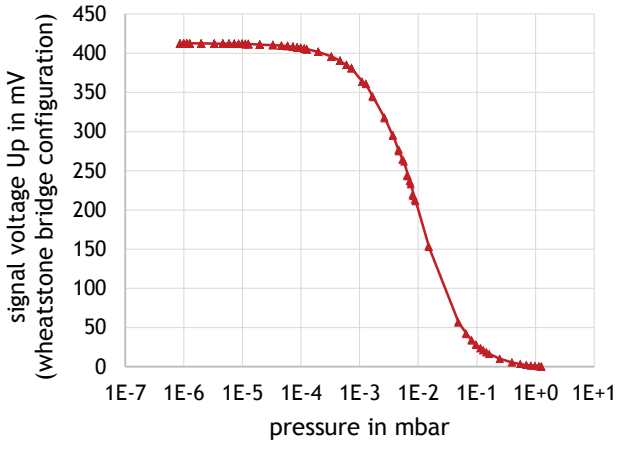
HVS Series – TO-39

MEMS Type Pirani Vacuum Sensors

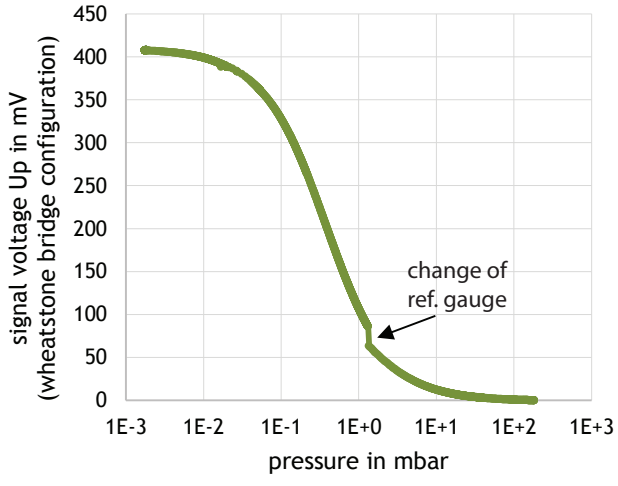
The HVS Series is the vacuum sensing series of Heimann. These miniature Pirani-type vacuum sensors allow measurements in a pressure range starting from 1000 to 10^{-3} mbar (HVS 04) and 10 down to 10^{-5} mbar (HVS 03k). These sensors are built in small and robust TO-39 metal housing.

Common operation modes for this sensor type comprise either constant voltage or constant temperature mode. Regarding the constant temperature mode, we suggest a circuit for a constant resistant ratio (see next page).

HVS 03k Characteristics

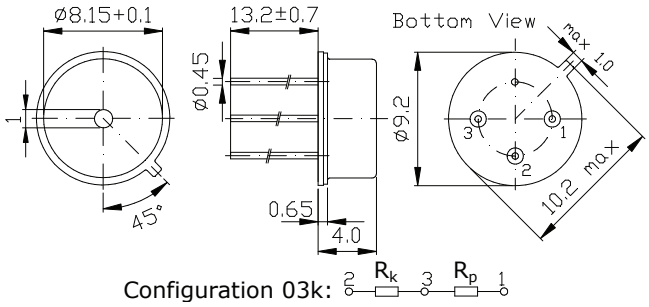


HVS 04 Characteristics



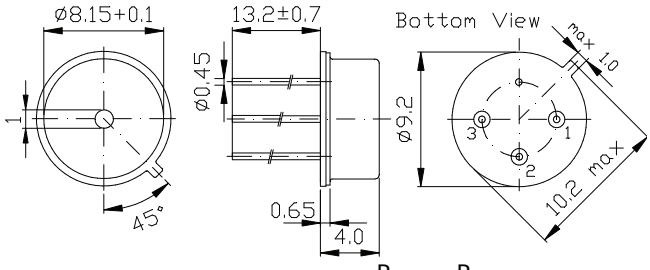
Dimensions and PIN-Configuration

HVS 03k



Configuration 03k: 2 R_k 3 R_p 1

HVS 04



Configuration 04: 2 R_k 1 R_p 3

Characteristics

	HVS 03k	HVS 04 (single)	Unit
Housing	TO-39	TO-39	
Chip size	4.0²	1.0²	mm²
Max. signal voltage U_p	400	410	mV
Resistance sensor chip R_p	9	1	kOhm
On chip reference resistor R_k	9	1	kOhm
Supply voltage U_0 [a)]	3.2	2	V
Operating temperature	-20 … 120		°C
Storage temperature	-40 … 120		°C

a) Bridge circuit

Ordering Information

HVS	Heimann Vacuum Sensor
03g, 03k, 04	Chip type and package type (TO-8 / TO-39)

E.g.: **HVS 03k**
HVS 04 (Single)

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Vacuum Sensors

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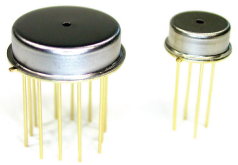


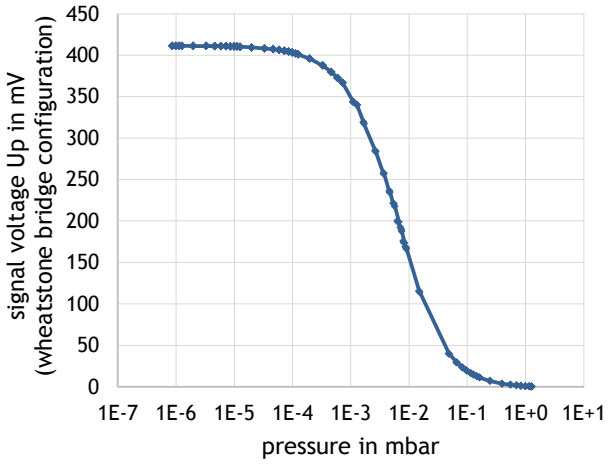
HVS Series - TO-8

MEMS Type Pirani Vacuum Sensors

The HVS Series is the vacuum sensing series of Heimann. These miniature Pirani-type vacuum sensors allow measurements in a pressure range starting from 1000 to 10^{-3} mbar (HVS 04) and 10 down to 10^{-5} mbar (HVS 03k). These sensors are built in small and robust TO-8 metal housings.

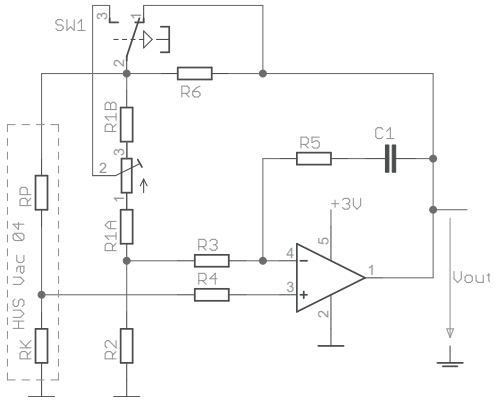
Combining the HVS 03g and HVS 04 type chip in one TO-8 housing results in a dual-chip model with an extended pressure measurement range.

HVS 03g Characteristics

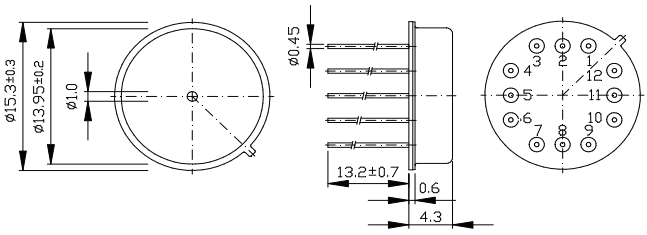


Constant Temperature Readout Circuit

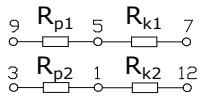
The constant resistance readout is commonly used as it can reduce - however not eliminate - unwanted signal drift caused by changing ambient temperature. It is best suited for rough and fine vacuum regimes. The op-amp is part of a control loop which keeps R_p and R_k at a certain temperature difference.



Dimensions and PIN-Configuration

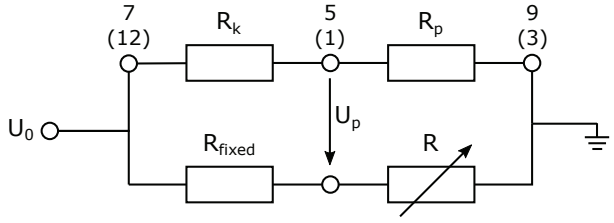


Configuration:



03g-Chip
04-Chip

Wheatstone Bridge Configuration



One possible readout is the wheatstone bridge arrangement. The output voltage U_p should be balanced (Up = 0 V) at atmospheric pressure (1013 mbar) by using the potentiometer R. The resistance R_p is changing with pressure p and therefore U_p is changing as well.

The wheatstone bridge is recommended for high vacuum measurements and low power operation, but requires an advanced calibration.

Characteristics

	HVS 03g +HVS 04 (dual)	Unit
Housing	TO-8	
Chip size	$5.0^2 + 1.0^2$	mm²
Signal voltage U_P	370 + 410	mV
Resistance sensor chip R_p	9 + 1	kOhm
On chip reference resistor R_K	9 + 1	kOhm
Supply voltage U_0 [a)]	2	V
Operating temperature	-20 ... 120	°C
Storage temperature	-40 ... 120	°C

a) Bridge circuit

Ordering Information

HVS	Heimann Vacuum Sensor
03g, 03k, 04	Chip type and package type (TO-8 / TO-39)

E.g.: **HVS 03g + HVS 04 (Dual)**

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