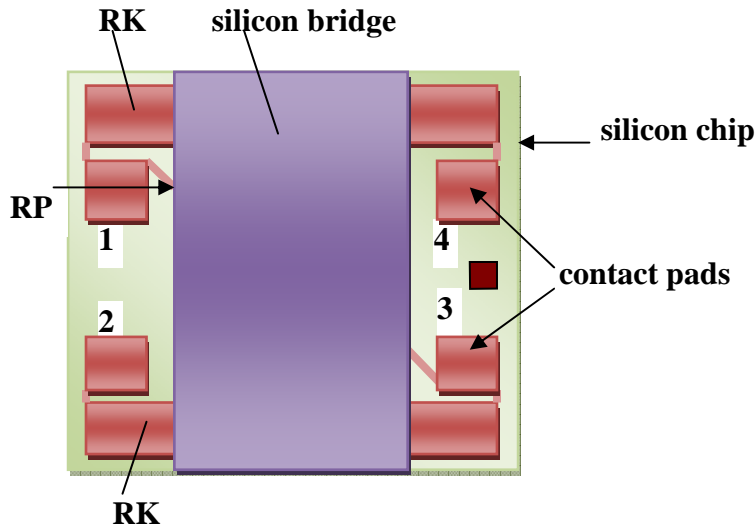


## Application notes for vacuum sensors HVS 03\_g, HVS 03\_k and HVS 03\_dual chip

Figure 1 demonstrates the setup of the MEMS vacuum sensor chips of the sensor types HVS 03\_g, HVS 03\_k and HVS 03\_dual chip. All these chips have generally the same chip design, but different geometrical dimensions in order to optimize the sensitivity for the various pressure ranges.

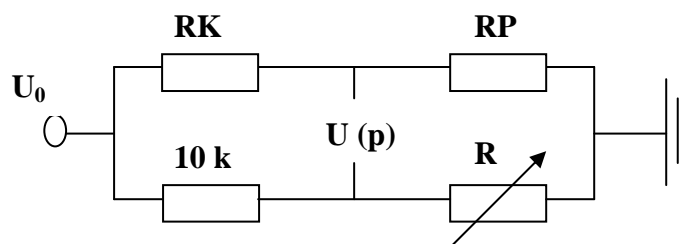


**Figure 1:** Top view on the MEMS vacuum sensor chips HVS 03\_g, HVS 03\_k and HVS 03\_dual chip, respectively

Figure 1 illustrates a top view on the MEMS silicon chips, which contain a measuring resistor RP (between the contact pads 1 and 3) and two compensation resistors RK (between the contact pads 1 and 4 or between 2 and 3, respectively). The measuring resistor is protected against thermal radiation by a micromechanically fabricated silicon bridge. The chip types HVS 03\_g and HVS 03\_dual chip are enclosed in a 12 pin TO8 housing, whereas the chip type HVS 03\_k is integrated in a 4 pin TO39 housing. The connections to the measuring and compensation resistors via the TO8 and TO39 pins, respectively, are shown in the test certificates. The measuring resistor RP and one of the compensation resistors can be integrated in a Wheatstone bridge circuit as shown in Figure 2. The Wheatstone bridge has to be balanced by using the potentiometer R at atmospheric pressure. The sensor types HVS 03\_g, HVS 03\_k show a pressure response  $U(p)$  typically ranging from 0 – 400 mV in the pressure range 1mbar -  $10^{-5}$  mbar. The sensor HVS 03\_dual chip contains two sensors: HVS 03\_g and HVS 04. The sensor HVS 03\_g is connected via the TO8 pins No. 5, 7 and 9, whereas HVS 04 is connected via the TO8 pins No. 1, 3 and 12 (see test certificate). The sensor HVS 04 is designed for pressure measurements in the range between 1000 mbar - 1 mbar. The recommended Wheatstone bridge voltage supplies  $U_0$  are summarized in Table 1:

Sensor type	HVS 03_g	HVS 03_k	HVS 04
Voltage supply $U_0$ [V]	2,7	2,4	4,0

**The voltage supply for the sensor HVS 04 must be switched off at pressures < 1 mbar; otherwise the sensor may be destroyed.**



**Figure 2:** Wheatstone bridge circuit with measuring resistor RP, compensation resistor RK and potentiometer R (for bridge balancing)