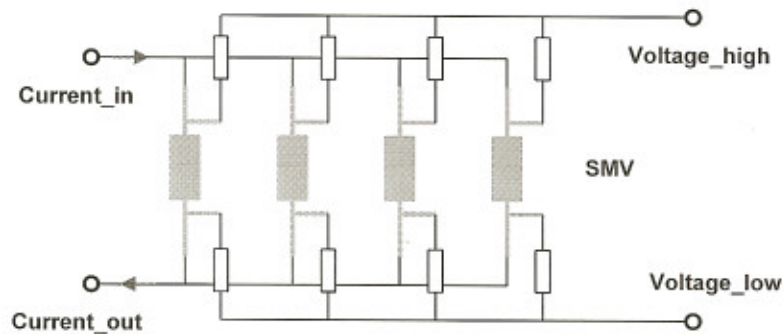


Parallel connection of four-terminal resistors



It is always possible to switch four-terminal resistors in parallel by connecting the current terminals. The question is where to measure the voltage. If all series resistances formed by the copper connections to the resistors (i.e. PC-board tracks) are equal then all resistors see the same current and in this case it is not important on which resistor the voltage is measured.

In reality this is not the case and the different resistors (SMVs) will see different currents (parts of the total current) which means that also the voltage on the single resistors may be different. The above shown circuit is eliminating this error completely by additional resistors switched into the sense lines and connected to a central sense point. These resistors may be higher than the four terminal resistor by a factor 100 to 10000 and 1% type is o.k. The circuit performs actually an averaging of all voltages and it can even tolerate total different resistance values and tolerances (i.e. $3 \cdot 10 \text{ m}\Omega + 1 \cdot 20 \text{ m}\Omega = 2.86 \text{ m}\Omega$).

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