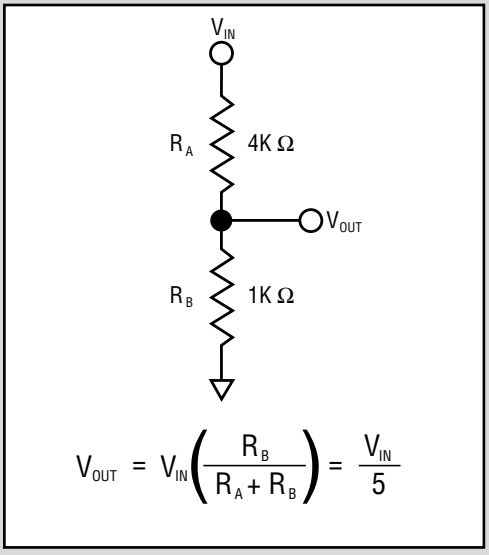
NETWORK PRODUCTS

THE NETWORK ADVANTAGE

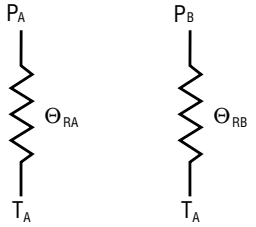
Resistor networks offer distinct advantages over discrete resistors.

Board space Savings. In applications such as terminators where lead routing is straightforward, both DIPs and SIPs can reduce board real estate requirements.

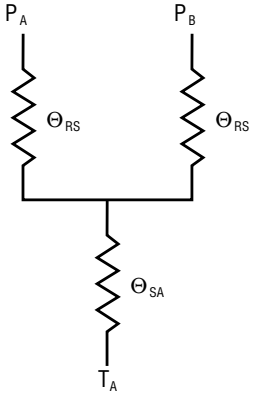
Improved Temperature Tracking. Significantly improved temperature tracking between resistors occurs in three ways. Consider the voltage divider and thermal models shown:



The thermal model for the discrete resistors shows that each resistor rises above ambient independently. In the voltage divider example, the power dissipation in R_A is 4 times the power dissipation in R_B. Assuming that each discrete resistor's thermal resistance to ambient is about the same, the difference in temperature rise will be 4:1. Depending on the values of V_{IN} and R_A and R_B, this could result in a severe temperature tracking problem.



Thermal Model for
Discrete Resistors



Thermal Model for
a Network

Using a network, the temperature tracking problem is improved in three ways:

1. The thermal resistance of each resistor to the substrate is very low since the alumina substrate and the resistor materials have excellent thermal conductivity compared to air. This means that the temperature rise of each resistor above the substrate will be very low and the individual resistors will track much better, even with unequal power dissipations.
2. The resistors located on a single substrate will no longer be subject to the independent influence of cooling air, board hot spots, and convection currents. The large thermal resistance from substrate to air is virtually identical for both resistors.
3. Temperature tracking is not a function of absolute TCR.