

**Abstract****ADAPTIVE RESISTOR TRIMMING CIRCUIT**

An integrated circuit includes a self-calibrating resistor circuit comprising a resistor string (103,104,105,106), a comparator (110), a state machine (113), a reference voltage source (V_{BG}), and a reference current source (I_{REF}). The current source typically comprises a voltage reference, typically a bandgap reference, and a temperature-independent resistor having a value R_{EXT} . In operation, a reference current I_{REF} flows through the resistor string. During a calibration period, the voltage across the string is compared to the bandgap reference voltage, V_{BG} , by the comparator, which controls the state of the state machine. The outputs of the state machine turn on or off the resistors in the string until the voltage across the string, V_R , is approximately equal to the reference voltage. The resistance of the resistor string is then equal to $R_{BG} = V_{BG}/I_{REF}$, which is proportional to R_{EXT} , and thus is typically independent of process and temperature. The final state of the state machine that produces R_{BG} may be used to control any resistor strings on the integrated circuit that need to be temperature and process independent. The calibration period may be repeated from time to time to track temperature variations.