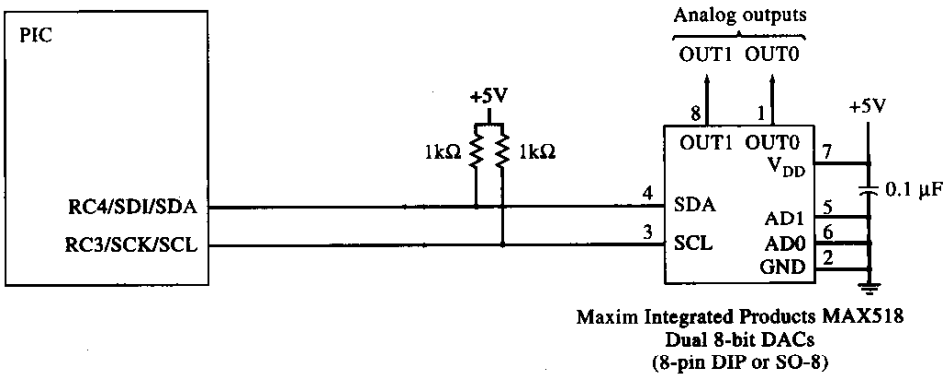
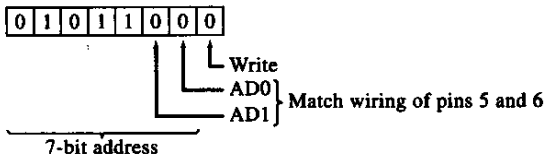
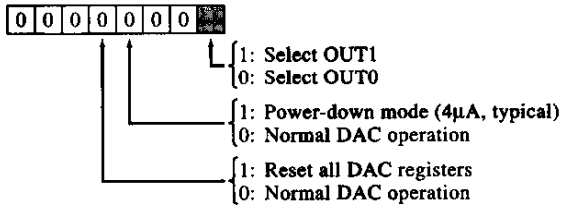


(a) Circuit



(b) First byte of message string



(c) Second byte

$$\text{Analog output voltage} = V_{DD} \times \frac{B}{256}$$

(d) Third byte, B

Figure 9-10 DAC output on I²C bus.

The analog voltage from the internal temperature transducer passes to a converter located in such close physical proximity that all of the potential problems of noise and ground voltage offsets are handled inside the chip, once and for all.

National Semiconductor's LM75 chip converts temperatures over the range of −25° to +100°C with ±2°C accuracy. The same part delivers ±3°C accuracy for temperatures down to −55°C and up to +125°C. For many applications, an even more important feature is its fine 0.5°C resolution, obtained with the support of a 9-bit ADC. Figure 9-11 illustrates the two's-complement form of the output. This 0.5°C resolution means that small temperature *differences* are measured within 0.5°C.