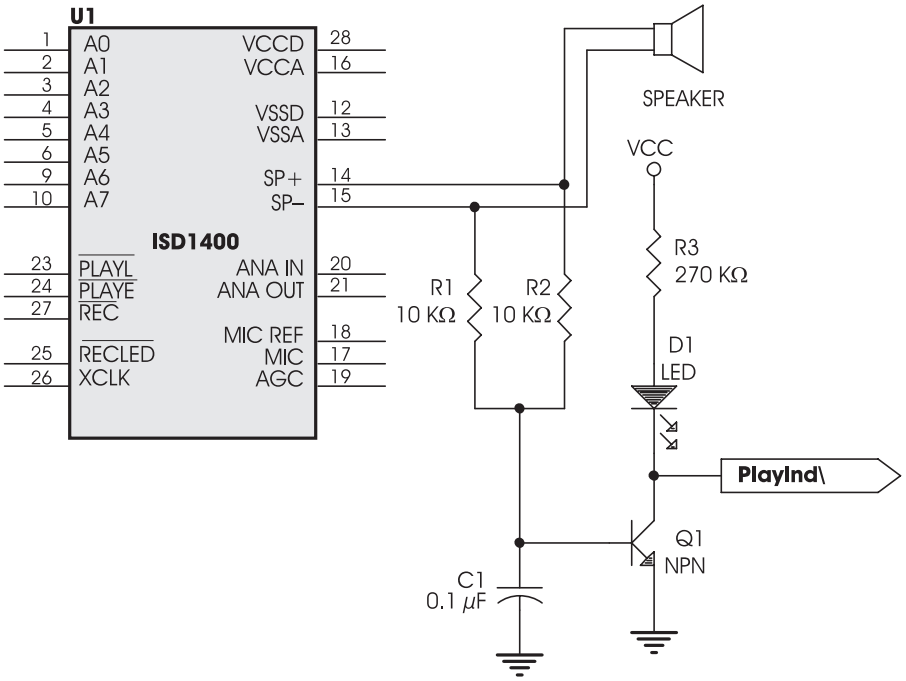
APPLICATION BRIEF 13 — USING SPEAKER OUTPUTS AS A PLAYBACK "RUN" INDICATOR IN THE ISD1100, ISD1200, AND ISD1400 DEVICES

Many applications require a signal to indicate when playback is occurring. An automatic announcement for a radio system, for instance, needs a signal to key the transmitter during the time the message is running. The ISD1100, ISD1200, and ISD1400 series of single-chip voice record/playback devices with their automatic power down feature can provide this function using the speaker outputs.

The speaker output pins of these ISD products power up to an average value of approximately 1.4 volts DC above the V_{SS} supply (which is usually at ground) during message playback. When the message stops at an End of Message location or the end of the analog memory space, the device automatically powers down, and the speaker output voltage falls to zero. This speaker bias voltage may be used to control an external circuit to provide a signal we may call PlayInd or PlayIndicator.

The circuit shown in Figure 15 exhibits one way this $\overline{\text{PlayInd}}$ signal may be derived. In this example R1 and R2 provide base current for Q1. Since the AC speaker voltage on SP+ is 180 degrees out of phase with the speaker voltage on SP–, the net result of the current flow into the base of Q1 will be as if a steady 1.4 volt signal were applied at each speaker pin. In Figure 15, each resistor will supply approximately 70 µA of base current or 140 µA total. If Q1 has a beta of 100 minimum, it can support at least 14 mA of collector current, enough to illuminate the LED as shown. Of course, a resistor may be substituted for the LED if a simple "1" and "0" switch is required. In this case, the signal at the collector of Q1 is the inversion of PlayInd or $\overline{\text{PlayInd}}$.

Figure 15: Playback Run Indicator for ISD1100, ISD1200, and ISD1400 Series



NOTE: *Only speaker circuit shown to simplify diagram. Other components required for the circuit to record and playback.*