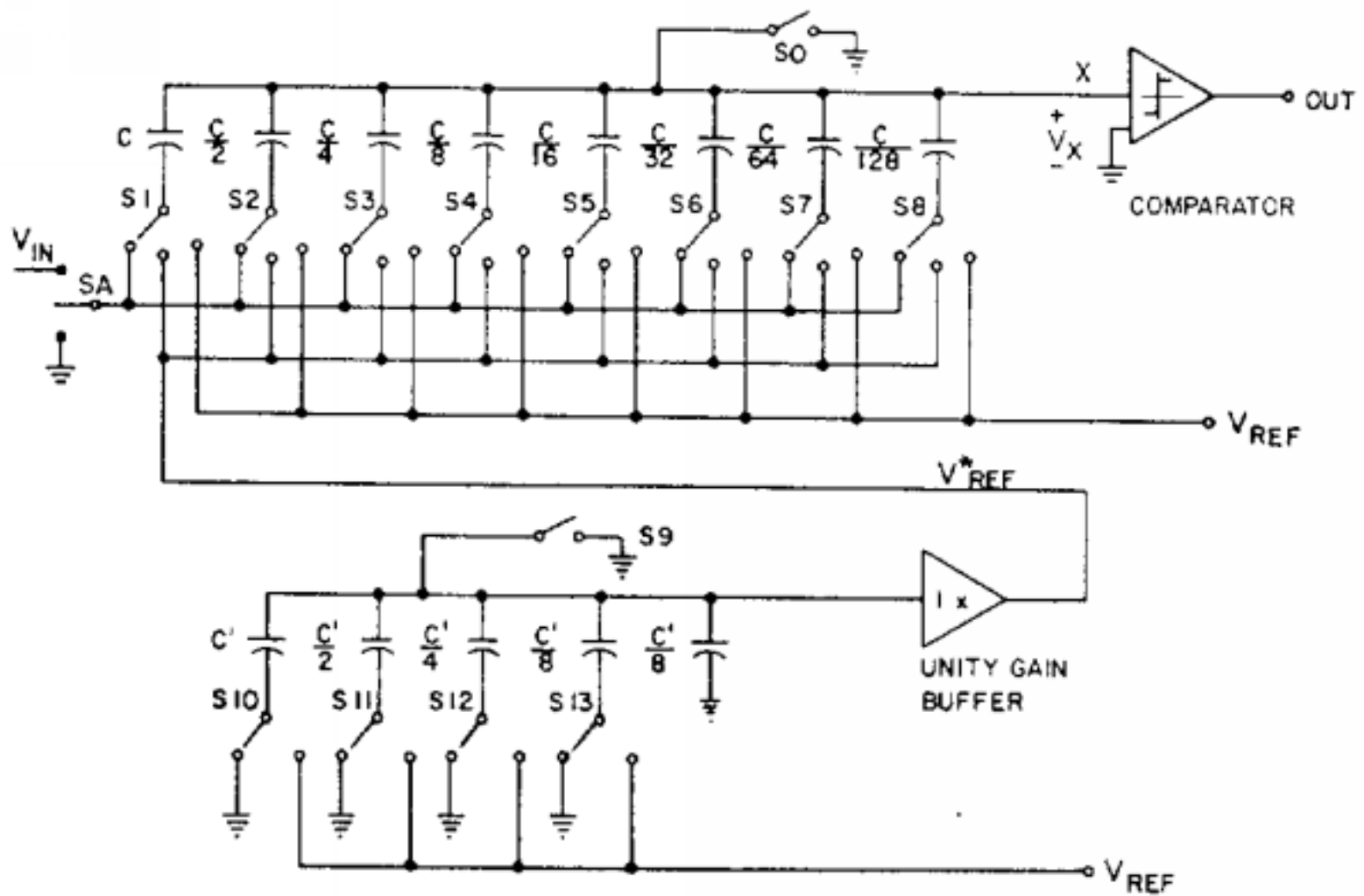


FIRST MOS VOICE ENCODER

ISSCC 1976



An All-MOS Companded PCM Voice Encoder

BIPOLAR TECHNOLOGY DOMINATED early IC technology although, ironically, it was the unfulfilled quest to build a FET that had led to the accidental invention of the point contact (bipolar) transistor. After years of development, the MOSFET finally began to have a commercial impact in digital circuits, although it was generally regarded as a less-capable analog cousin of the bipolar. This paper from 1976 demonstrates the advantages that accrue from recognizing that analog MOS technology is a different medium altogether. Exploiting excellent switches and matched capacitors, a complete successive-approximation companded PCM encoder meeting Bell System requirements is implemented, along with a sample-and-hold stage. This level of performance and integration would lead in a few years to an architectural change of telephone central office terminals from shared CODECs to per-channel CODECs. MOS would then become a dominating technology in voice channels.