This paper presents a 10-bit SAR ADC using a variable window function to reduce the unnecessary switching in DAC network. At 10-MS/s and 1-V supply, the ADC consumes only 89 μW and achieves an SNDR of 79.06 dB, resulting in an FOM of 1.1 fJ/Conversion-step. The prototype is fabricated in a 0.18μm CMOS technology.