

## A low power bandgap voltage reference for low-dropout regulator

### ABSTRACT

A low power Bandgap Voltage Reference (BGR) is designed to supply a voltage reference for a low voltage Low-Dropout Regulator (LDO). This bandgap design consists of a bandgap core circuit, an output stage and a start-up circuit. The output of the bandgap adopted sub-1V voltage reference through the output stage circuit. The bandgap is simulated using 0.13  $\mu\text{m}$  CMOS process. This BGR circuit provides voltage reference of  $64\text{mV} \pm 1\text{mV}$  over  $-25^{\circ}\text{C}$  to  $120^{\circ}\text{C}$  temperature range. The power supply of this BGR circuit is 1.20 V and the total current is 20  $\mu\text{A}$ , thus resulting a low total power consumption of 24  $\mu\text{W}$ . The total layout area for this bandgap design is  $66 \mu\text{m} \times 100 \mu\text{m}$ .

**Keyword:** Bandgap voltage reference; BGR; Low voltage; Output stage; Start-up circuit