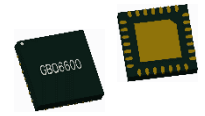


# Preliminary Datasheet

## GBQ6600: Smart RF Power Amplifier Bias Controller

### Four Programmable Temperature-Controlled DACs with Integrated MTP, Bias Switches, and Two DACs with Optional Switch Bypass



#### 1 Features

- 10-bit programmable output voltages with two segmental user-defined temperature-coefficients (TC) for thermal compensations
  - Configurable Break-point temperatures
  - Maximum TC range:  $-6\text{mV}/^{\circ}\text{C} \sim 6\text{mV}/^{\circ}\text{C}$ , with an incremental step of  $0.4\text{mV}/^{\circ}\text{C}$
- 2 local and remote diode temperature sensors
- Internal 128Bits MTP for autonomous operation
- Four analog outputs
  - Four monotonic DACs with  $1.8\text{mV}$  resolution
  - Output Range:  $-5.9\text{V}$  to  $-0.1\text{V}$  or  $0.1\text{V}$  to  $3.5\text{V}$
  - Configurable 4-step cutoff voltages
  - High current drive capability:  $50\text{mA}$
- Output switches
  - Fast switching time:  $120\text{ns}$
  - Low resistance option:  $1\text{ Ohm}$
- Built-in power on/off sequencing control
- SPI and I2C interface: standard and fast
- Specified temperature range :  $-40^{\circ}\text{C}$  to  $125^{\circ}\text{C}$

#### 3 Description

The GBQ6600 provides four programmable bias DACs with their own unique temperature compensation scheme to optimize RF power amplifiers performances and correct any temperature effects. The four DACs can be programmed by four independent, user defined two-segmented temperature-to-voltage transfer functions with controlled  $\pm$  bias voltage settings, in which the required control-codes are stored in the internal MTP without additional external circuitry. Once powered-up the bias controller automatically reloads the pre-defined bias settings to provide a complete and protected solution for settling and compensating bias voltages and providing required sourcing or sinking currents at high RF power applications. The GBQ6600 has four analog outputs that can be fast switched to the load through dedicated control pins. The output switching is designed for fast response required by 5G TDD applications and in combination with the device PA\_ON pin enables proper power sequencing and protection of depletion-mode transistors such as GaAs and GaN. The flexible DAC output ranges and built-in sequencing features allow the device to be used as a biasing solution for a large variety of transistor technologies such as LDMOS, GaAs and GaN.

#### 4 Ordering Information

Part No.	Description
GBQ6600	Smart Bias Controller, 32pin 5x5mm QFN, 7' Reel with 1500pcs

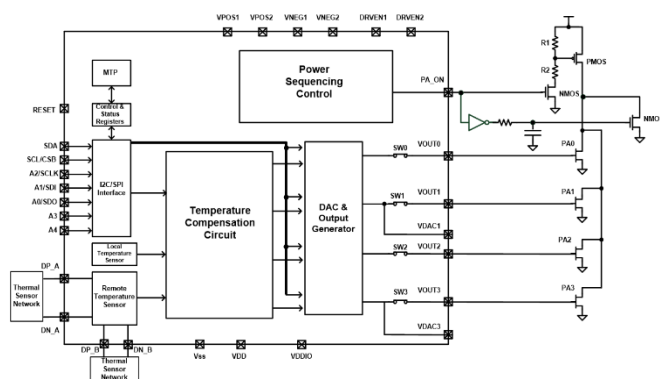


Figure 1. GBQ6600 Function Block Diagram

#### 2 Applications

- Communications Infrastructure 4G/5G system
- Bias Controllers for GaN/LDMOS/GaAs/HBT etc.