IPSmart

14-Bit 1MSPS DAC in GSMC110nm

IPS_GS110_DAC14_1M

FEATURES

- **Wide Supply Range 1.7 V to 5.6V**
- **14bit, up to 1 MSPS Conversion Rate**
- **Low Power Consumption**
  680 uA @ 1 MSPS
- **Wide output range: 0.1 to 0.9 of Supply voltage**
- **Drive 15K/50pF loading**
- **Ultra Small Core Area: 250um X 300um= 0.075 mm^2**
- **GSMC 110nm 1P5M**

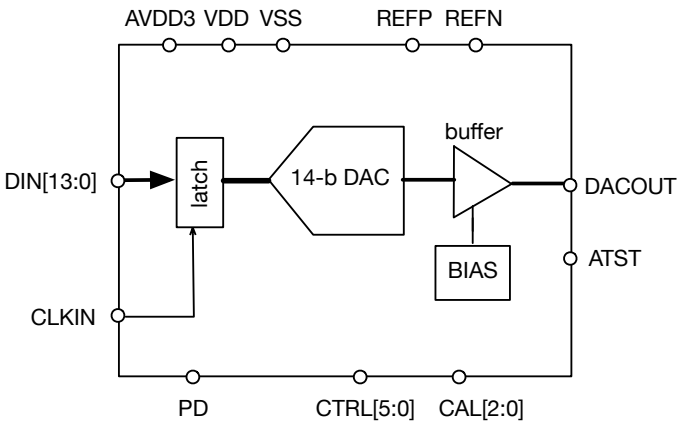

Figure 1. BLOCK DIAGRAM

APPLICATIONS

- **General purpose digital to analog converter**
- **Battery monitory system**
- **Housekeeping**
- **Auxiliary functionality**

GENERAL DESCRIPTION

IPS_GS110_DAC14_1M is compact and low power 14-bit digital-to-analog converter silicon IP. It features wide range input supply voltage from 1.7V to 5.6V. Its single-end output ranges from 0.1 to 0.9 of supply voltage.

This DAC IP is self-biased and optimized for low power and small area. At 1 MHz conversation rate, it only consumes 680uA to drive 15K/50pF loading and occupies silicon area of 0.075 mm^2.

PIN DESCRIPTION

Index	Pin Name	I/O	Description
1	AVDD3	AP	Analog power supply 1.9V to 5.6V
2	VDD	DP	Digital power supply 1.5V
3	VSS	DG	DAC ground
4	REFP	AI	Positive reference voltage connecting to AVDD3
5	REFN	AI	Negative reference voltage connecting to VSS
6	DIN[13:0]	DI	Digital inputs
7	CLKIN	DI	Clock input up to 1MHz
8	DACOUT	AO	Single end DAC output voltage
9	PD	DI	DAC power down control (logic 0 → power up, logic 1 → power down)
10	CTRL[5:0]	DI	Internal current and speed control bits
11	CAL[2:0]	DI	Cap mismatch calibration control bits
12	ATST	AO	Analog test output

P: Power, **G:** Ground, **A**: Analog, **D**: Digital, **I**: input, **O**: Output

IP Macro Layout