



12-Bit 320MSPS IQ DAC in IBM SOI 180nm

IPS_I180_DAC12X2_320M

FEATURES

- 12bit, up to 320 MSPS
- Dual 2.5 V / 1.5 V Supply
- Low Power Consumption
63mW @ 320 MSPS
- Dynamic Range
72dBc SFDR @ $f_{out} = 20$ MHz
- IFS = 6mA with programmability
- Output voltage: 1Vppd
- Programmable loading
- Ultra Small Core Area: 410um X 620um= 0.25 mm²
- IBM 180nm SOI 1P4M

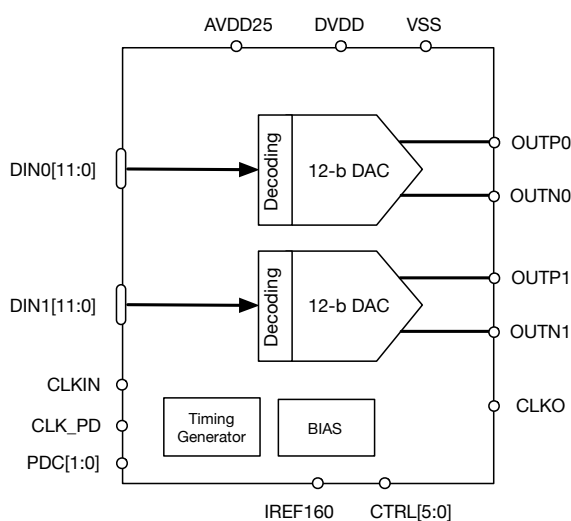


Figure 1. BLOCK DIAGRAM

APPLICATIONS

- WiFi / LTE / WiMax
- Wireless MIMO
- Digital Video
- Communication Transmit

GENERAL DESCRIPTION

IPS_I180_DAC12X2_320M is compact and low power 12-bit digital-to-analog converter silicon IP in IBM 180nm SOI process. It features two channel current steering DAC.

This IQ DAC IP is optimized for low power and small area. At 320 MHz conversation rate, it only consumes 63mW and occupies silicon area of 0.25 mm².

PIN DESCRIPTION**Pin Function Descriptions**

Index	Pin Name	I/O	Description
1	AVDD25	AP	Analog power supply 2.5V
2	DVDD	DP	Digital power supply 1.5V
3	VSS	DG	DAC ground
4	DI0[11:0], DI1[11:0]	DI	Digital inputs
5	CLKIN	DI	Clock input
6	IREF160	AI	Reference current input PMOS sent, NMOS received
7	OUTP0/OUTN0	AO	Channel 0 differential outputs (Channel I)
8	OUTP1/OUTN1	AO	Channel 1 differential outputs (Channel Q)
9	PDC[1:0]	DI	DAC channel power down control (logic 1 → power down)
10	CLK_PD	DI	CLK power down control (logic 1 → power down)
11	CTRL[5:0]	DI	Programmable control bits
12	CLKO	DI	DAC output clock

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

PHYSICAL DESCRIPTION

IP Macro Layout

