

DESCRIPTION

The ARGO Semi AS0213 IP is a Transceiver that operates in the frequency of 4.9 GHz - 7.2 GHz. It can be used for fast access points, in routers and extenders.

It supports 4K QAM, Multi-Link Operation and channel bandwidths up to 320 MHz. It can be extended up to 640 MHz for DPD calibration, doubling the maximum Wi-Fi peak speed compared to Wi-Fi 6/6E ancestors.

APPLICATIONS

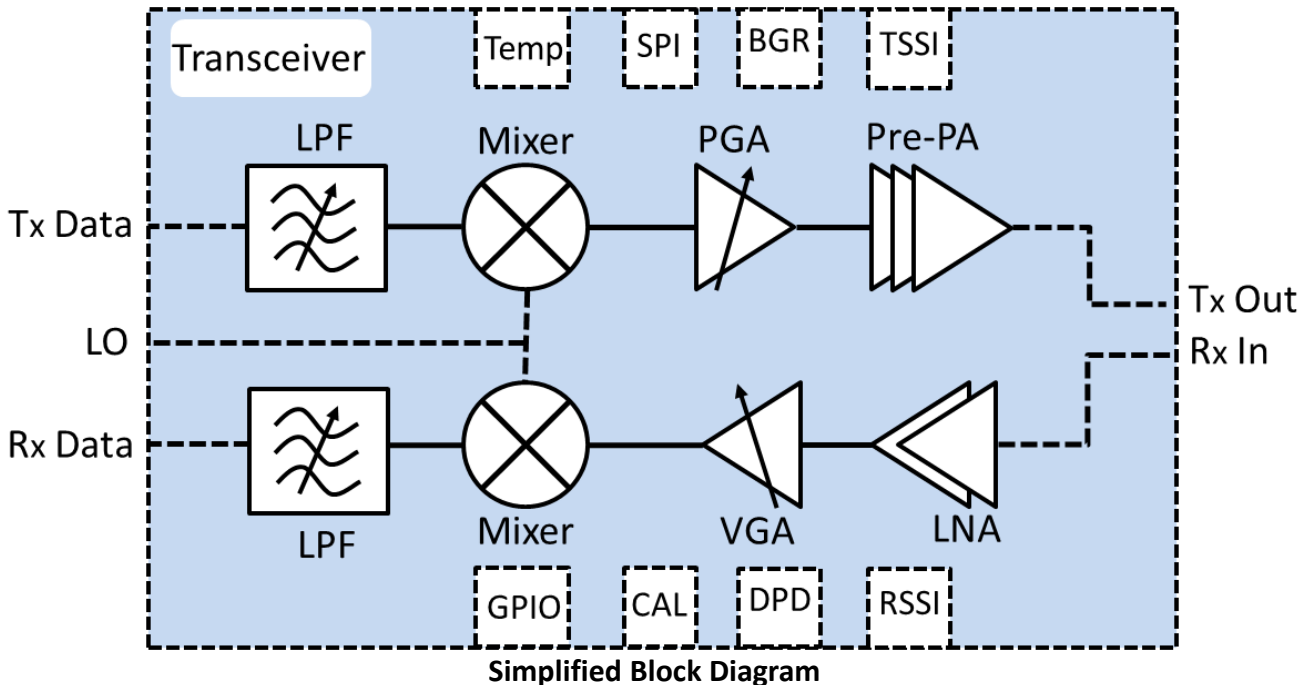
- WiFi6/6E
- IEEE 802.11.ax

ABOUT ARGO SEMICONDUCTORS

Argo Semiconductors offers high quality RF IP products operating in the frequency region between 2GHz and 10GHz. Argo’s team has a long experience on Wi-Fi RF silicon product development and cellular RF silicon product development, bringing billions of chips to the market. Leveraging on these capabilities and building on its solid IP base, Argo helps its customers develop products that can meet the most stringent requirements, while shrinking the development time. IP customization is possible upon request

FEATURES

- ✓ Programmable frequency up/down conversion
- ✓ RF freq range: 4.9 GHz to 7.2 GHz
- ✓ Tx bandwidth: 5 MHz to 320 MHz
- ✓ Rx bandwidth: 5 MHz to 320 MHz
- ✓ Time Division Duplex (TDD) supported
- ✓ Supports 4096 QAM
- ✓ TX EVM = -46 dB including PLL IPN
- ✓ TX Output power (1dB CP): 11 dBm
- ✓ Tx/Rx voltage supply: 1.8 V / 0.8 V
- ✓ Tx core power consumption: 117 mW
- ✓ Rx core power consumption: 73 mW
- ✓ Sleep mode supported
- ✓ Support for calibration feedback path (DPD and antenna, Rcal, RCcal, LOFT, IQcal, TSSI, RX DCO cal, IP2 cal)
- ✓ Technology node: GF 22FDX CMOS SOI
- ✓ Total area for 1 core : 3.5 mm²



AS0213

Transceiver 4.9 GHz - 7.2 GHz

Table 1

Transmitter Characteristics					
Parameter	Minimum	Typical	Maximum	Units	Comments
Center frequency	4900		7200	MHz	
BW support	5		320	MHz	5, 10, 15, 20, 25, 30, 40, 50, 60, 80, 90, 100, 160, 200, 320
Maximum output power		11		dBm	O1dBBCP
Maximum Input power			2	dBm	I1dBBCP
Cascaded gain range			32	dB	
Gain step			0.5	dB	6-bit gain control
Gain Step accuracy	-0.3		0.3	dB	
Power variation over process	-2		2	dB	
Power variation over temperature	-1.5		1.5	dB	
Output load		50		Ohm	
Flatness	-2		2	dB	BW=400MHz, uncompensated
Output harmonics			-33	dBm	2nd, 3rd harmonics
IMD3		65		dBm	Max gain, total output two tones each 20,40 space @total-3dBm@3.8G
Settling time	180		260	ns	
Gain change time			200	ns	depends on gain setting
Carrier leakage		-52	-35	dBc	Uncalibrated
sideband suppression		-38			Uncalibrated
Power consumption		117		mW	55mA from 1.8V, 15mA from 1.22V
Area		1.21		mm ²	

Table 2

Receiver Characteristics					
Parameter	Minimum	Typical	Maximum	Units	Comments
Center frequency	4900		7200	MHz	
BW support	5		320	MHz	5, 10, 15, 20, 25, 30, 40, 50, 60, 80, 90, 100, 160, 200, 320
Cascaded noise figure (de-embedded)	1.94	2.47		dB	external inductor
	2.51	3.04		dB	internal inductor
	2.13	2.66		dB	external LNA(10dB gain/1.5dB NF)
Cascaded voltage gain	-24.06	41.63	45	dB	
Gain step			0.5	dB	
BW ripple			1.5	dB	
IIP3		-18.3		dBm	max RF gain, 0dB BB gain
IIP2		55		dBm	max RF gain, input power -18dBm per tone, calibrated
input 1dBBCP		-27		dBm	max RF gain, 0dB BB gain
max output power			8.5	dBm	O1dBBCP
Noise floor		-139		dBm/Hz	in reference to RX BW
Settling time			500	ns	0-100%
Gain change time			300	ns	0-100%
Spur suppression		-60		dBc	Pout=-10~-20dBm output power, Max Gain
DC offset		-55		dBc	calibrated(min<Gain<max)
Power consumption		73		mW	60mA from 1.22V
Area		1.4		mm ²	

Table 3

Other Characteristics					
Parameter	Minimum	Typical	Maximum	Units	Comments
DPD feedback path attenuation			40	dB	
Temperature sensor range	-40		140	deg C	
Temperature sensor resolution		2		mV/degC	
Feedback BW		900		MHz	
Rx LDO output voltage	0.85		1	V	
Rx LDO PSRR		39		dB	1MHz
VDD1		1.8		V	from external DC to DC with heavy cap filtering
VDD2		1.22		V	
TX/RX port isolation		35		dB	

