

# AS0212

## Transceiver 3.3GHz-5GHz

### DESCRIPTION

The ARGO Semi AS0212 IP is a transceiver that operates in the frequency band of 3.3-5 GHz. It can be used for Sub-6GHz Cellular, LTE and 5G NR systems. It supports 256 QAM modulation and channel bandwidths up to 400 MHz.

### APPLICATIONS

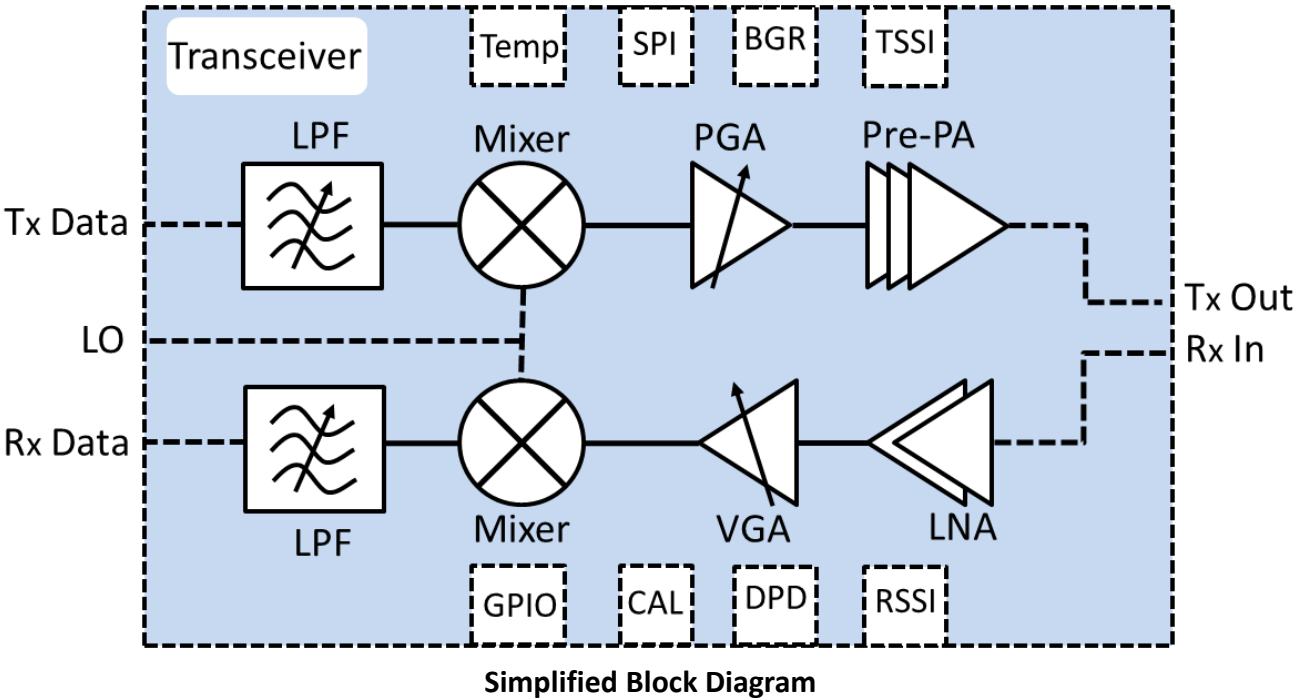
- ✓ 5G NR sub6GHz
- ✓ LTE

### 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: 3.3 GHz up to 4.9 GHz
- ✓ Tx bandwidth: 5 MHz up to 400 MHz
- ✓ Rx bandwidth: 5 MHz up to 400 MHz
- ✓ Time Division Duplex (TDD) supported
- ✓ Supports 256 QAM
- ✓ TX EVM = -46 dB including PLL IPN
- ✓ TX Output power (1dB CP): 11dBm
- ✓ Tx/Rx voltage supply: 1.8V / 0.8V
- ✓ Tx core power consumption: 117mW
- ✓ Rx core power consumption: 73mW
- ✓ 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 mm<sup>2</sup>



# AS0212

## Transceiver 3.3 GHz-4.9 GHz



Table 1

Transmitter Characteristics					
Parameter	Minimum	Typical	Maximum	Units	Comments
Center frequency	3300		5000	MHz	
BW support	5		400	MHz	5, 10, 20, 50, 100, 200, 400
Maximum output power		11		dBm	O1dBCP
Maximum Input power			2	dBm	I1dBCP
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 <sup>2</sup>	

Table 2

Receiver Characteristics					
Parameter	Minimum	Typical	Maximum	Units	Comments
Center frequency	3300		5000	MHz	
BW support	5		400	MHz	5, 10, 20, 50, 100, 200, 400
Cascaded noise figure (de-embedded)	2.04	2.49		dB	external inductor
	2.61	3.06		dB	internal inductor
	2.23	2.68		dB	external LNA(10dB gain/1.5dB NF)
Cascaded voltage gain		39.52	42.05	dB	
Gain step			0.5	dB	
BW ripple			1.5	dB	
IIP3		-16		dBm	max RF gain, 0dB BB gain
IIP2		55		dBm	max RF gain, input power -18dBm per tone, calibrated
input 1dBCP		-23		dBm	max RF gain, 0dB BB gain
max output power			8.5	dBm	O1dBCP
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		mm2	

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		1.2		GHz	
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	

