



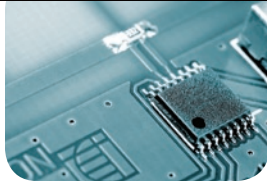
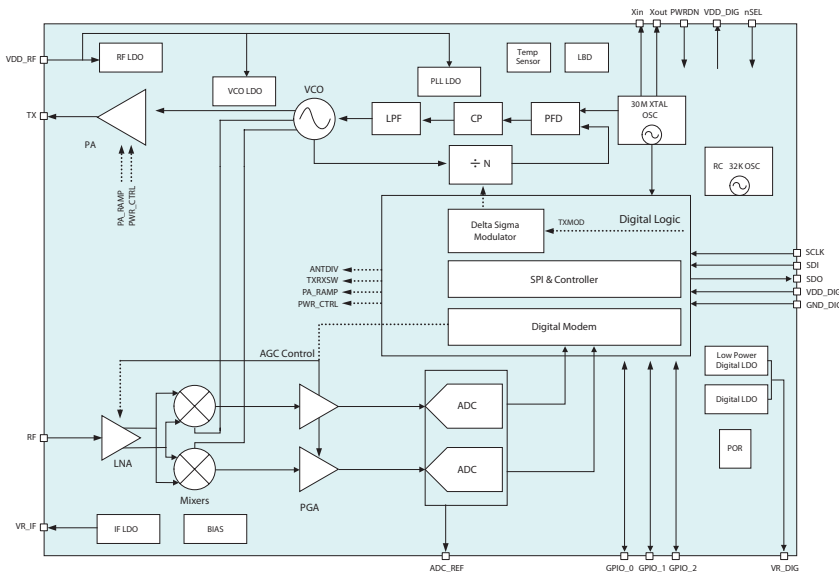
IA4430/31/32 EZRadioPRO™

Universal ISM Band Transceiver

DESCRIPTION

Integration's IA443x series of transceivers are members of the new EZRadioPRO™ product family. While retaining all the attractive features of the earlier products such as high integration, low cost, flexibility, low BOM, and easy design-in, these parts are targeted to more sophisticated applications and offer several enhanced parameters and features, including continuous frequency coverage from 240-960MHz, and output power up to +20dBm. Also included are built-in features like wake-up timer, low battery detector, transmit and receive data FIFOs, power-on reset circuit, and general purpose digital I/Os. The chip incorporates a high performance ADC and digital modem which perform demodulation, filtering, and packet handling in the digital domain, making it ideal for configuration to multiple applications. These features simplify the task of the system designer and allow the use of lower-end microcontrollers. The 4432 has configurable output power from +11 to +20dBm and is ideal for Frequency Hopping Systems where maximum range is desired. The 4430/31 have configurable output power from -8 to +13dBm. Both the 4431 and 4432 comply with FCC and ETSI requirements when used in any of the standard ISM Bands. Only a 30MHz crystal and supply bypass capacitors are necessary as external components, making the devices ideal for high volume production in applications where size and cost are important.

FUNCTIONAL BLOCK DIAGRAM



PRODUCT FEATURES

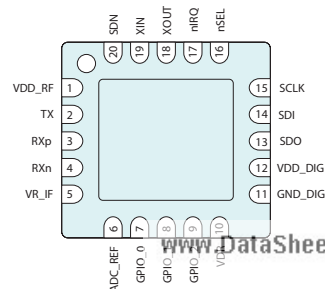
- Frequency Range = 240-960MHz
- Sensitivity = -117dBm
- Data Rate = 1-128kbps
- +13dBm Max Output Power Version (Configurable -8 to +13dBm)
- +20dBm Max Output Power Version (Configurable +11 to +20dBm)
- Power Supply = 1.8-3.6V
- Ultra Low Power Sleep Mode
- Digital RSSI
- 20-Pin QFN Package
- 20-Chip Crystal Tuning
- Green Lead Free package
- Wake-On-Radio
- Auto-Frequency Calibration (AFC)
- Configurable Packet Structure
- Preamble Quality Detector
- TX & RX 64 byte FIFOs
- Low Battery Detector
- Low Power Consumption
 - 17mA Receive
 - 21mA Transmit @+13dBm (IA4431)
 - 60mA Transmit @+20dBm (IA4432)
- Low BOM
- -40°C - +85°C Temperature Range
- Integrated Voltage Regulators
- Antenna Diversity & TR Switch Control

TYPICAL APPLICATIONS

- Remote control
- Home security and alarm
- Wireless PC peripherals
- Toy control
- Remote keyless entry
- Health monitors
- Industrial control
- Telemetry
- Personal data logging
- Remote meter reading
- Home automation
- Sensor networks

PIN DIAGRAM

QFN-20





GENERAL DEVICE SPECIFICATIONS

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
V_{DD}	Supply voltage range		1.8	3.3	3.6	V
$I_{SHUTDWN}$	SLEEP mode currents	Regulator OFF. Depends only on process leakage		10		nA
I_{STBY}		Low power regulator ON (Register values retained)		325		nA
I_{TUNE}	TUNE mode current			8.5		mA
I_{RX}	RX mode current			17		mA
I_{TX}	TX mode current	VDD=3.3V, +13 dBm	IA4430	21		mA
		VDD=3.3V, +13 dBm	IA4431	21		mA
		VDD=3.3V, +1 dBm	IA4431	13		mA
		VDD=3.3V, +20 dBm	IA4432	60		mA
F_{SYNTH}	Frequency range		IA4430	900	960	MHz
			IA4431	240	960	MHz
			IA4432	240	960	MHz
ΔF	Frequency resolution			312.5		Hz
BR	Modulation data rate		1		128	kb/s
Δf_{FSK}	Modulation deviation	At maximum PLL BW	± 1		± 160	kHz
t_{LOCK}	Synthesizer settling time	Any frequency, including VCO CAL		200		μs
$L\phi(f_M)$	Phase noise	$\Delta F = 10$ kHz		-80		dBc/Hz
		$\Delta F = 100$ kHz		-90		dBc/Hz
		$\Delta F = 1$ MHz		-115		dBc/Hz
		$\Delta F = 10$ MHz		-130		dBc/Hz
P_{TX}	Output power	For both High and Low Bands (240-960 MHz), Output Power Controlled by TXPWR[2:0] Register	IA4430	+13		dBm
			IA4431	+13		dBm
			IA4432	+20		dBm
P_{RX_2}	RX sensitivity	(BER < 0.1%) (2 kbps, $\Delta f_{FSK} = \pm 5$ kHz)		-117		dBm
		(BER < 0.1%) (40 kbps, $\Delta f_{FSK} = \pm 20$ kHz)		-106		dBm
C/I_{1-CH}	± 1 -Ch Offset Selectivity	Desired Ref Signal 3 dB above sensitivity. Interferer and desired modulated with 40 kbps $\Delta f_{FSK} = 20$ kHz GFSK with BT = 0.5, channel spacing = 150 kHz. (BER < 0.1%)		-31		dB
C/I_{2-CH}	± 2 -Ch Offset Selectivity			-35		dB
C/I_{3-CH}	$\geq \pm 3$ Ch Offset Selectivity			-40		dB
$1M_{BLOCK}$	Blocking at 1 MHz	Desired Ref Signal 3 dB above sensitivity. Interferer and desired modulated with 40 kbps $\Delta f_{FSK} = 20$ kHz GFSK with BT = 0.5		-52		dB
$5M_{BLOCK}$	Blocking at 5 MHz			-61		dB
$10M_{BLOCK}$	Blocking at 10 MHz			-64		dB
P_{OB-TX1}	Spurious Emissions	< 1 GHz			-50	dBc
		1 GHz – 12.75 GHz			-70	dBc
P_{2HARM}	Harmonics			-42		dBc
P_{3HARM}				-42		dBc

