DESCRIPTION

The PT4302 is an ultra-low power OOK/ASK super heterodyne receiver for the 315/433.92 MHz frequency bands. It offers a high level of integration and requires only few external components. The PT4302 consists of a low-noise amplifier (LNA), a down-conversion mixer, an on-chip phase-locked loop (PLL) with integrated voltage-controlled oscillator (VCO) and loop filter, an OOK/ASK demodulator, a data filter, a data slicing comparator and an on-chip regulator. The PT4302 also implements a discrete one-step automatic gain control (AGC) that reduces the LNA gain when the RF input signal is greater than –68 dBm. The AGC circuitry can extend the dynamic range of received RF signal.

The PT4302 is available in a 16-pin SSOP package and is specified over the extended temperature range (–40 to +85°C).

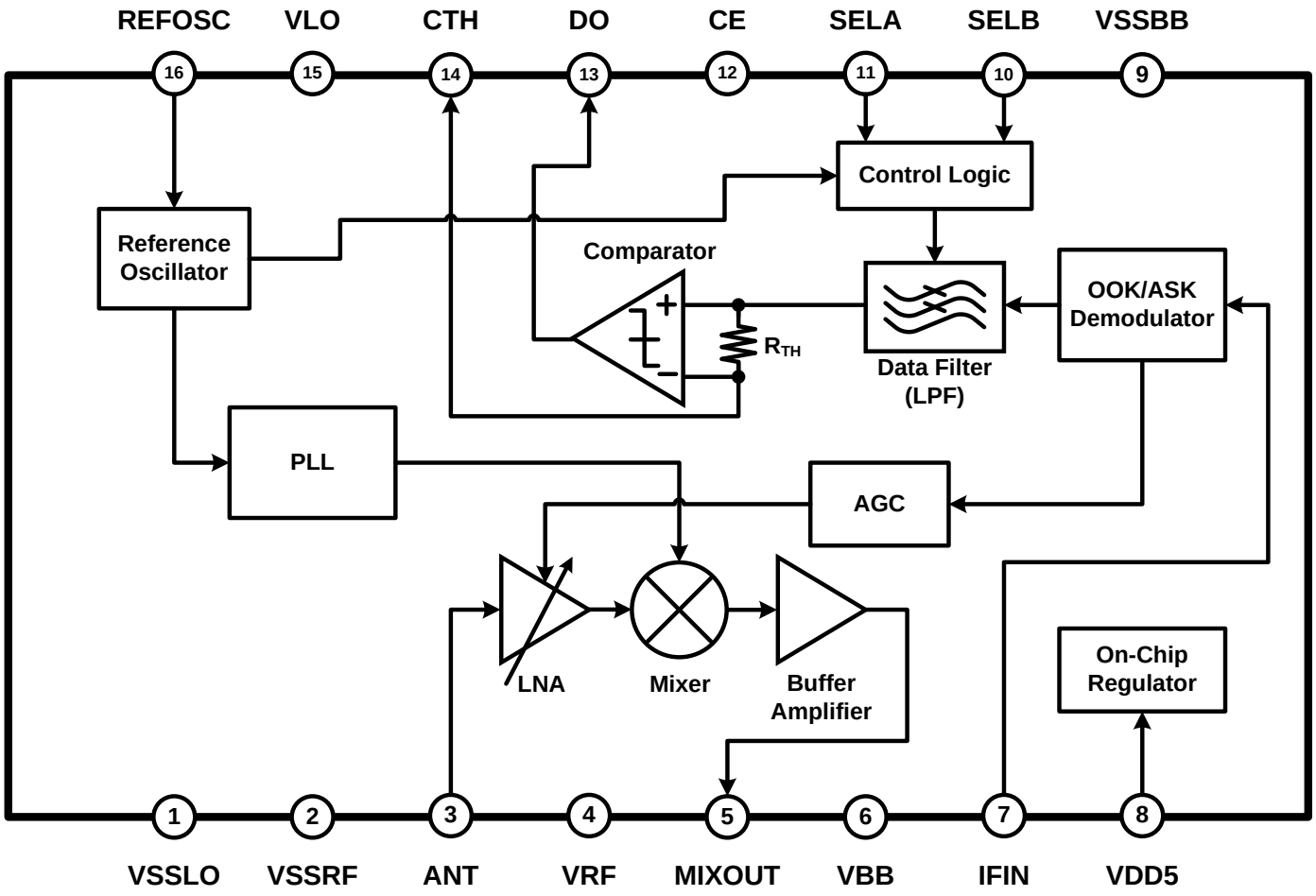
FEATURES

- Ultra-low power consumption: 2.7 mA for full operation (315 MHz)
- Few external components
- Excellent sensitivity of the order of –111 dBm (peak ASK signal level)
- 2.4 V to 5.5 V supply voltage range
- 250 MHz to 500 MHz frequency range
- Data rate up to 10 Kb/s

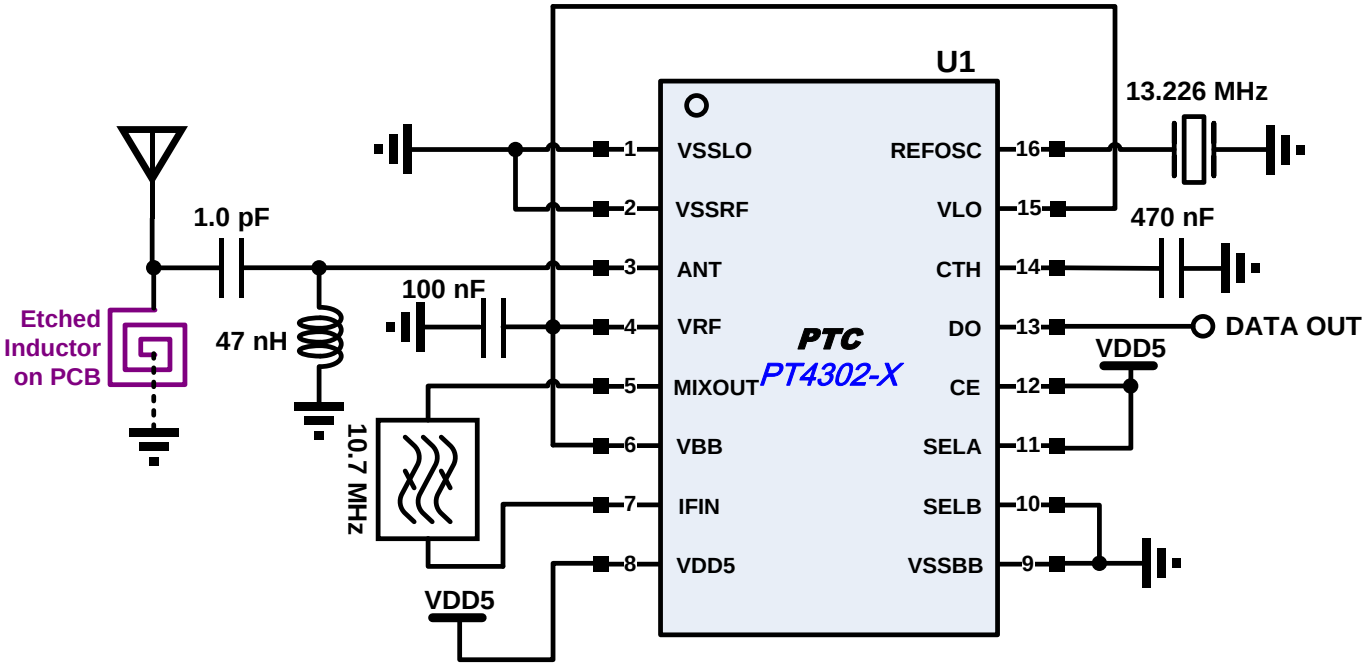
APPLICATIONS

- Automotive remote keyless entry (RKE)
- Remote control
- Garage door and gate openers
- Suitable for applications that meet either the European ETSI-300-220 or the North American FCC (Part 15) regulatory standards

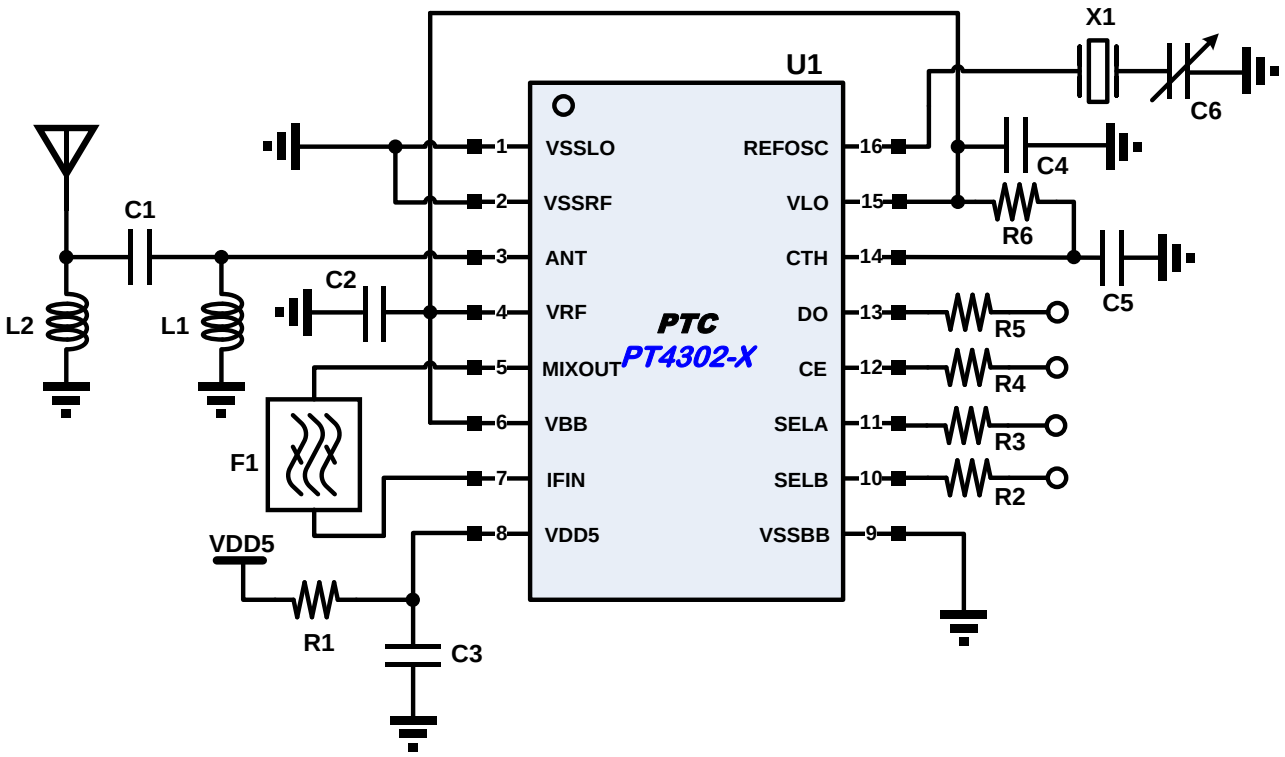
BLOCK DIAGRAM



433.92 MHZ RKE EXAMPLE



APPLICATION CIRCUIT



BILL OF MATERIALS

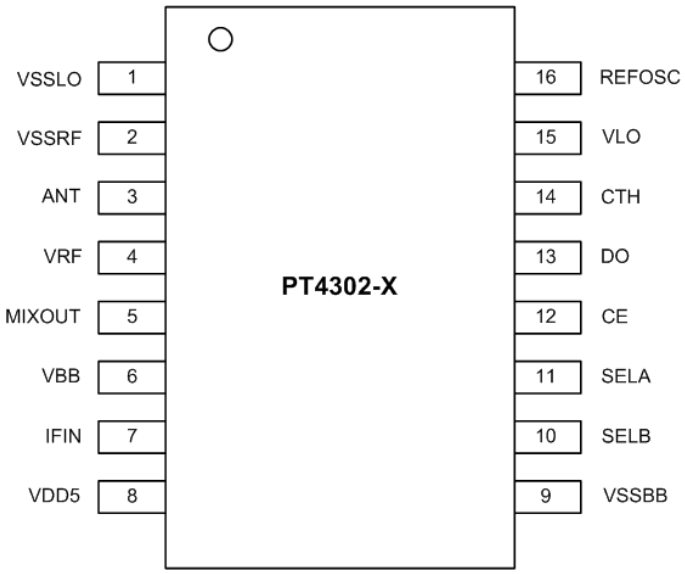
Part	Value		Unit	Description
	315 MHz	433.92 MHz		
L1	82 n	47 n	H	Antenna input matching, coil inductor
L2	39 n	27 n	H	Antenna ESD protection, coil inductor (optional)
C1	1.8 p	1.0 p	F	Antenna input matching
C2, C3, C4	100 n	100 n	F	Power supply de-coupling capacitor
C5	470 n	470 n	F	C_{TH} (affects coding type and start-up time)
C6	220 p	220 p	F	Depends on crystal oscillator vendor, for frequency fine tuning
R1	10	10	Ω	Power supply de-coupling resistor (optional)
R2, R3, R4, R5	10 K	10 K	Ω	MCU interface resistor (optional)
R6	8.2 M	8.2 M	Ω	For reducing data output noise (optional)
F1	10.7	10.7	MHz	Band-pass filter
X1	9.509	13.226	MHz	Reference crystal oscillator
U1	PT4302 IC	PT4302 IC	U1	Receiver chip

Notes:
1. L1 and C1 are the components for input matching network. They may have to be adjusted with different PCB layout and antenna requirement.
2. The value of C5 depends upon the data rate and coding pattern.
3. F1 is the 10.7 MHz ceramic filter. The recommended part number is Murata SFELA10M7HA00-B0.
4. The “optional” components are based on application requirements.

ORDER INFORMATION

Valid Part Number	Package Type	Top Code
PT4302-X	16 Pins, SSOP, 150 mil	PT4302-X

PIN CONFIGURATION



PIN DESCRIPTION

Pin Name	I/O	Description	Pin No.
VSSLO	G	Ground for LO portion	1
VSSRF	G	Ground for RF portion	2
ANT	I	RF input connection to antenna by a matching network	3
VRF	P	Supply voltage for RF portion	4
MIXOUT	O	Mixer IF output	5
VBB	P	Supply voltage for baseband chain	6
IFIN	I	IF stage input	7
VDD5	P	5 V supply voltage input	8
VSSBB	G	Ground for baseband chain	9
SELB	I	Data filter bandwidth select (Pin B)	10
SELA	I	Data filter bandwidth select (Pin A)	11
CE	I	Chip enable pin (pull HIGH to enable the chip)	12
DO	O	Data output	13
CTH	I/O	Data slicing threshold capacitor connection	14
VLO	P	Supply voltage for LO portion	15
REFOSC	I	Reference oscillator input pin	16

IMPORTANT NOTICE

Princeton Technology Corporation (PTC) reserves the right to make corrections, modifications, enhancements, improvements, and other changes to its products and to discontinue any product without notice at any time.
PTC cannot assume responsibility for use of any circuitry other than circuitry entirely embodied in a PTC product. No circuit patent licenses are implied.

Princeton Technology Corp.
2F, 233-1, Baociao Road,
Sindian Dist., New Taipei City 23145, Taiwan
Tel : 886-2-66296288
Fax: 886-2-29174598
http://www.princeton.com.tw