SPIREA

inspiring the wireless world

BlueTraC™

Bluetooth™ Radio Transceiver

Sweden • USA • Finland

BlueTraC™
Bluetooth Radio Transceiver
Requires no external passive components

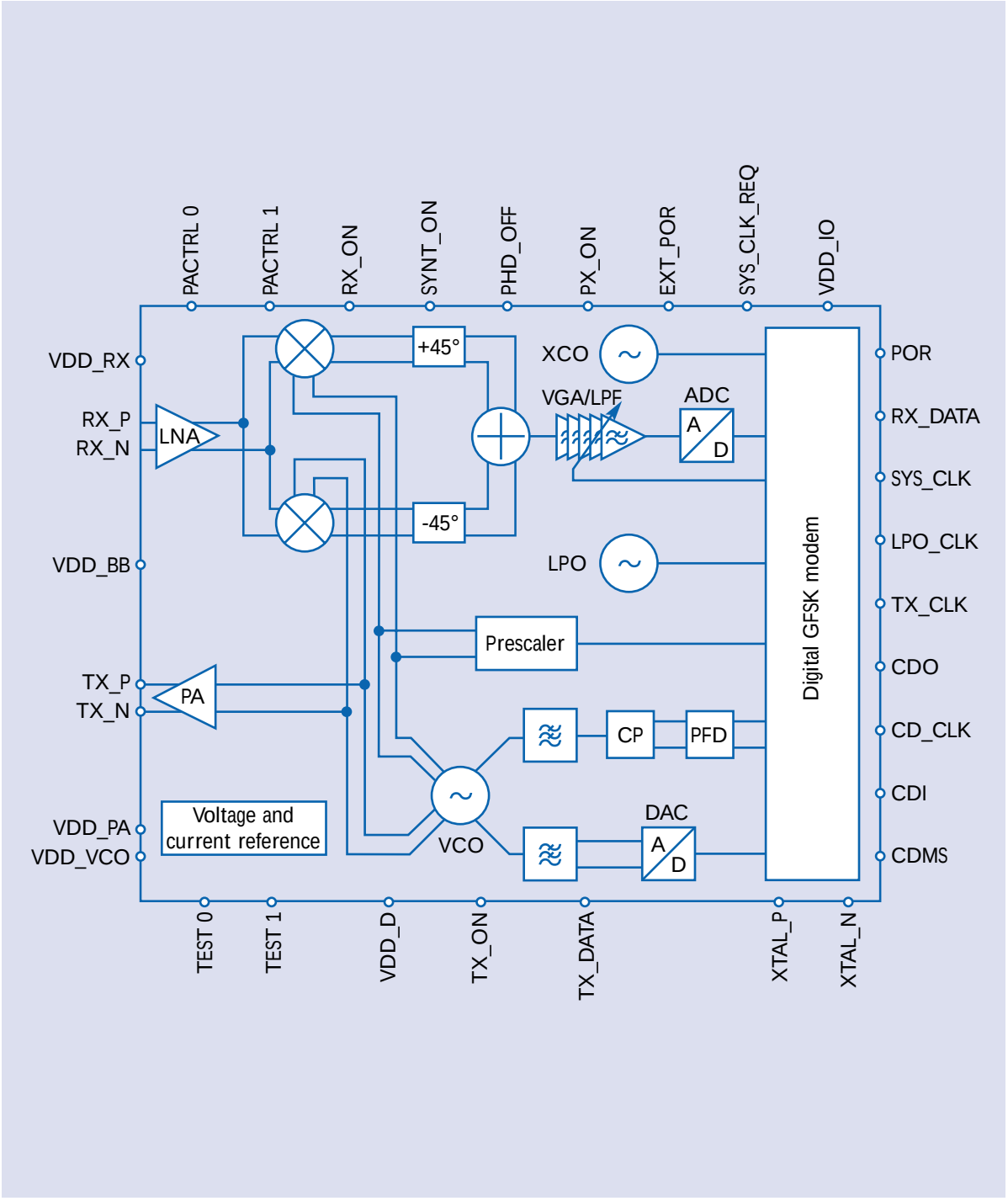
Product Description

BlueTraC™ is a true ”Radio-on-a-chip” Bluetooth transceiver. The design is based on an efficient architecture incorporating Spirea's CMOS design expertise making the solution both reliable and area efficient. From the architecture and system design levels down to the block and circuit design levels, BlueTraC™ incorporates dynamic power management and adopts a mixed signal CMOS design strategy achieving the highest level of integration.

Key Features

1. A cost effective Bluetooth Radio Solution.
2. Compliant with Bluetooth radio specification 1.1.
3. Requires no external passive components.
4. Fully integrated VCO and loop filter.
5. Low supply voltage.
6. Low power consumption.
7. TX output power control.
8. CMOS 0.18µm implementation.
9. Robust design, insensitive to process and temperature variations.
10. Supports industry standard radio interfaces uni- and bidirectional BlueRF.

BlueTraC™ Radio Transceiver Block Schematic and Pin Description



Absolute Maximum Ratings

Temperature

Parameter	Min	Typ	Max	Unit
Storage temperature	-40		+125	°C
Operating temperature	-30		+ 85	°C

Power Supply

Parameter	Min	Typ	Max	Unit
Supply voltage VDD		3.3*	V	
Applied voltage to all other pins	-0.3		VDD+0.3	V

Recommended Operating Conditions

Temperature

Parameter	Min	Typ	Max	Unit
Operating temperature	-10	+23	+75	°C

Power Supply

Parameter	Min	Typ	Max	Unit
Supply voltage VDD	1.6	1.8	2.0	V

Electrical Characteristics

General Specifications

Parameter	Min	Typ	Max	Unit
Supply Current, Transmit mode		24	28	mA
Supply Current, Receive mode		18	22	mA
Supply Current, Synt active only		14	16	mA
Supply Current, Sleep mode		10	50	µA
Capacitance, digital inputs			2	pF
Leakage current, digital inputs			5	µA
Output high voltage, digital output	0.8xVDD		VDD	V
Output low voltage, digital output			0.2xVDD	V
Ref_CLK tolerance	-20		20	ppm

*BlueTraC Core @ 1.8V, I/O´s @ 3.3V.

Electrical Characteristics

RF Specifications

Parameter	Min	Typ	Max	Unit
Frequency range	2.402		2.495	GHz
VCO locking time		50	80	µS
Receive Signal Strength Indicator		32-level digital		

Receiver

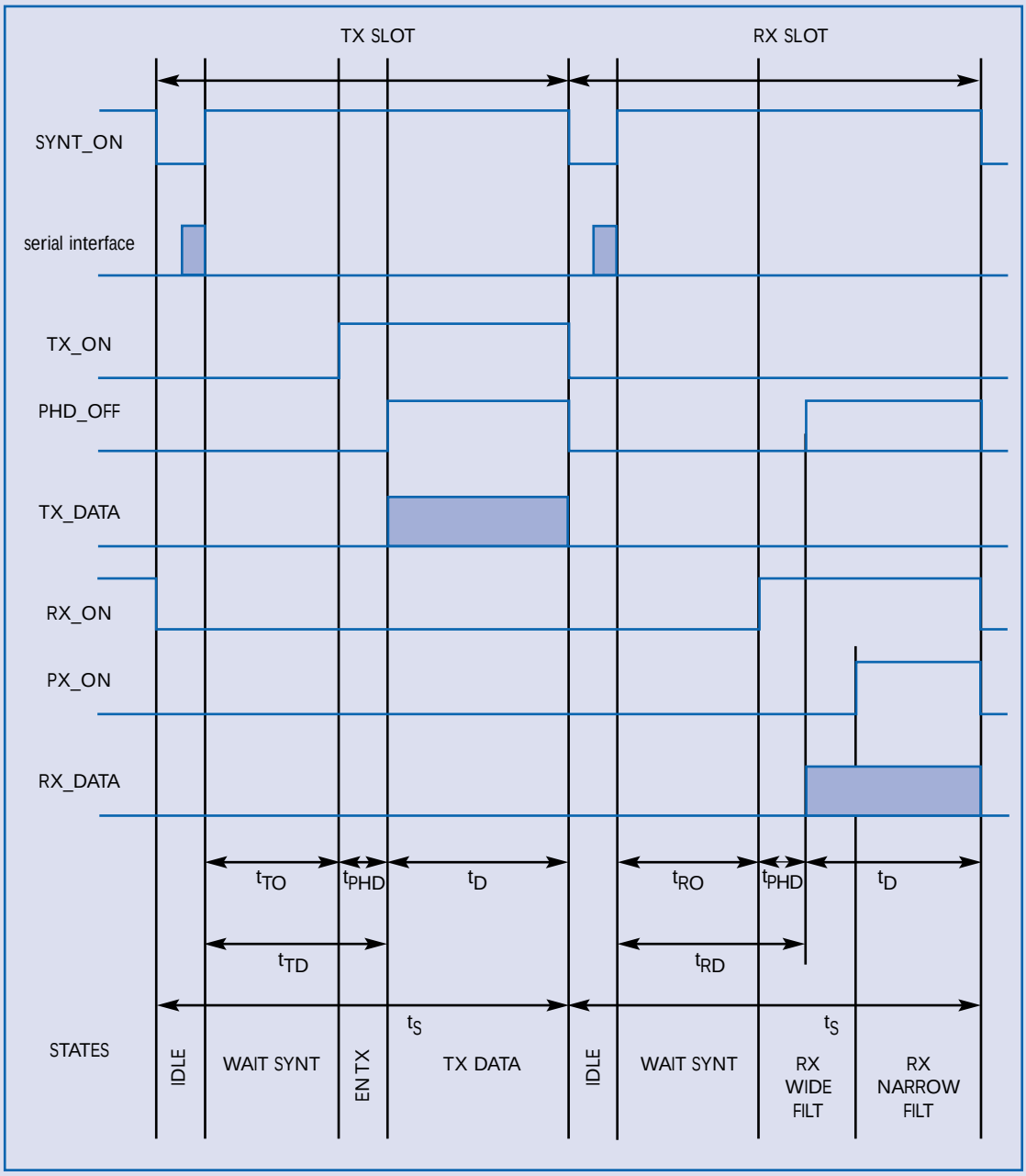
Parameter	Min	Typ	Max	Unit
Sensitivity @ BER 0.1%		-84		dBm
Cutoff level @ BER 0.1%		-20	0	dBm
Input IP3 3rd order intercept		-15		dBm
C/I Co-channel @ BER 0.1%			11	dB
C/I 1MHz, adjacent channel selectivity			-3	dB
C/I 2MHz, adjacent channel selectivity			-30	dB
C/I 3MHz, adjacent channel selectivity			-40	dB
Out-of-band blocking, 30-2000MHz	-10			dBm
Out-of-band blocking, 2000-2399MHz	-27			dBm
Out-of-band blocking, 2498-3000MHz	-27			dBm
Out-of-band blocking, 3.00-12.75GHz	-10			dBm
Spurious Emissions, 30MHz-1000MHz			-57	dBm
Spurious Emissions, 1.00-12.75GHz			-47	dBm

Transmitter

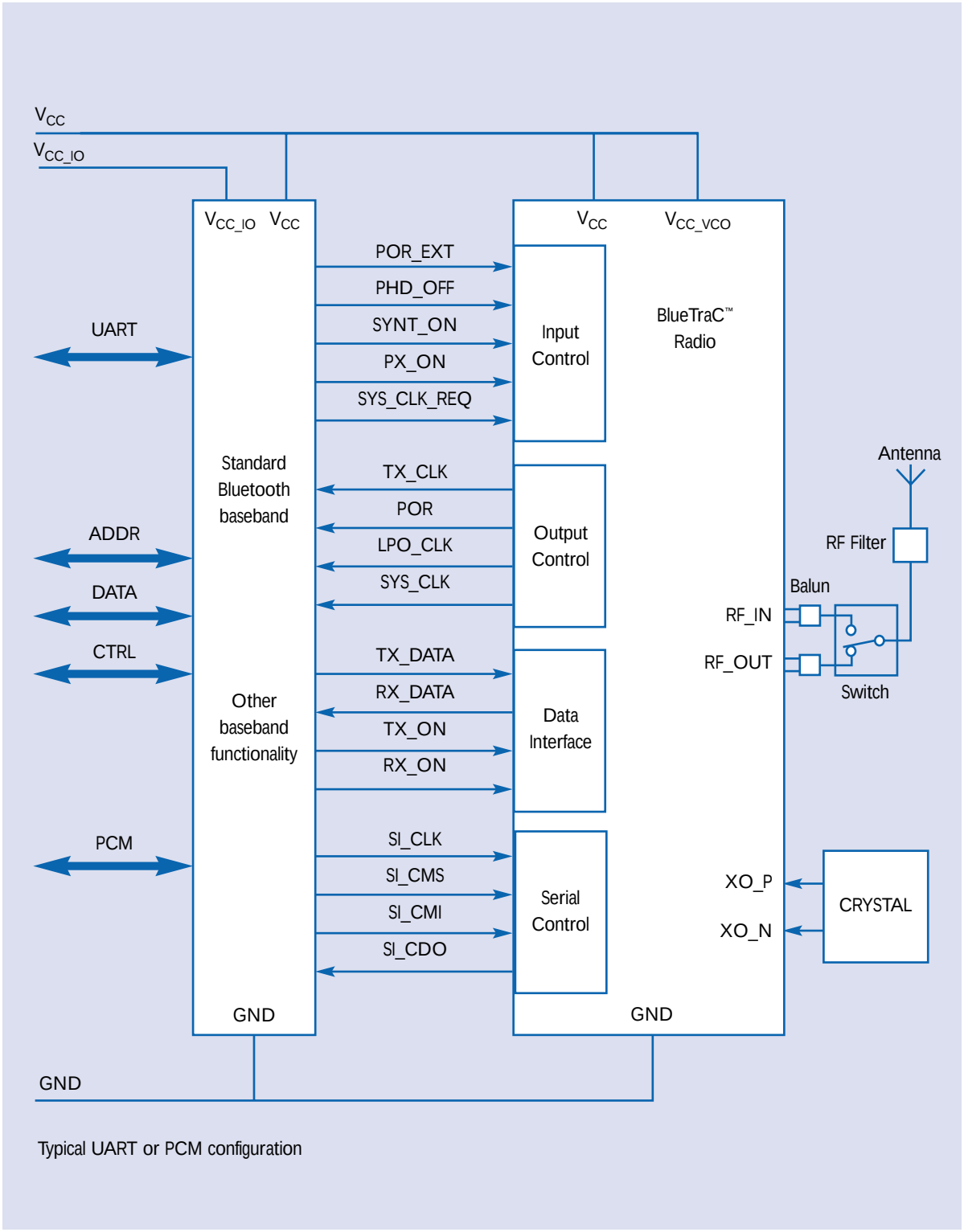
Parameter	Min	Typ	Max	Unit
RF Output Power*	-24	0	4	dBm
Frequency modulation	140		175	kHz
Transmit carrier drift, 1 slot package			25	kHz
Transmit carrier drift, 3 slot package			40	kHz
Transmit carrier drift, 5 slot package			40	kHz
In-band spurious emission, 500kHz			-20	dB
Spurious emissions, 30MHz-1GHz			-36	dBm
Spurious emissions, 1.00-12.75GHz			-30	dBm
Spurious emissions, 1.8-1.9GHz			-47	dBm
Spurious emissions, 5.15-5.30GHz			-47	dBm

*Programmable TX output power. The transceiver supports Bluetooth class 2 and 3 operation.

Timing Diagram



Typical Application Example



Typical UART or PCM configuration

SPIREA

inspiring the wireless world

About Spirea

- Wireless communications
- Expertise in RF CMOS
- Focus on low cost solutions

Headquarters
SPIREA AB
Norgegatan 2
SE-164 32 Kista, Sweden
Phone: + 46 8 633 25 00
Fax: + 46 8 633 25 40
E-mail: info@spirea.com

Branch Offices
SPIREA USA
P.O. Box 1436
Cary, North Carolina 27511-5307, USA

SPIREA FINLAND
Tekniikantie 12
SF-02150 Espoo, Finland
Phone: + 358 9 251 722 31
Fax: + 358 9 251 722 32