2.4 GHz Bluetooth OneChip™
USB Interface Solution

Model TR0760

The TR0760 Bluetooth OneChip offers a Universal Serial Bus (USB) interface. Designed to conserve power, the TR0760 is ideal for portable, embedded applications.

The TR0760 transmits data at up to 1 Mbps on the 2.4 GHz ISM band. A complete SoC solution, the TR0760 includes a 2.4 GHz spread spectrum transceiver, a baseband modem, 8051 processor, serial I/O, programmable GPIOs, 64 Kbytes Flash program memory, and 4 Kbytes of SRAM.
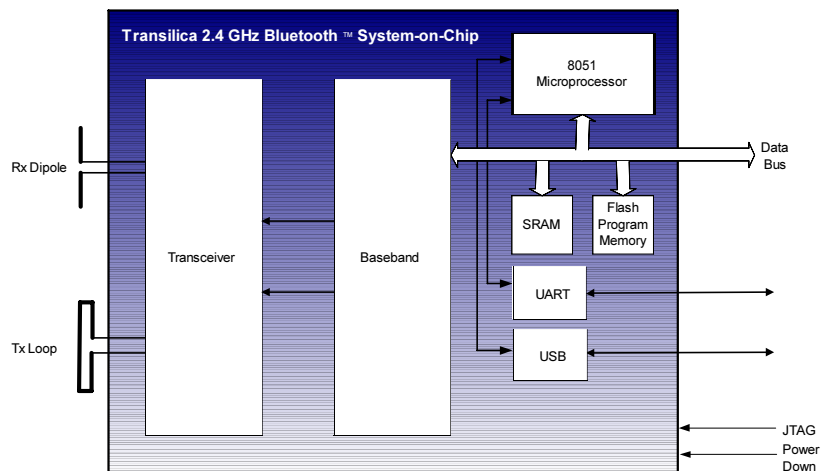
The chip's compact design is packaged for high volume and low cost manufacturing. Low power operation and minimal external component requirements make the TR0760 ideal for porable devices.

SOFTWARE

Transilica offers embedded software for wireless voice and data applications including Bluetooth 1.1 Certified LC, LM, L2CAP, SDP, and RFCOMM protocol stacks. The TR0760 OneChip can be programmed with the full stack through RFCOMM or the lower stack through HCI. Embedded profiles such as SPP, HSP, DUNP and custom applications are also available. OneChip products come with a limited use (customer-only) license for Transilica software.

EVALUATION KIT

Transilica offers evaluation kits containing hardware, software, and documentation.

FEATURES

- 2.4 GHz ISM band transceiver with integrated Bluetooth baseband logic
- 2.4 to 3.3 volt operation
- CMOS integrated circuit
- 1 Mbps data rate
- USB interface
- 10 meters (33 feet) transmission range
- Enhanced 8051 microprocessor
- On-board Flash program memory
- Internal SRAM
- Hold, Sniff, Park, Active, and Standby modes
- JTAG interface standard
- Low power consumption
- Sophisticated power management
- Compact packaging

BENEFITS

- Low cost
- Low power
- Small size
- Requires minimal external components

APPLICATIONS

- Digital Cameras
- Desktop and Notebook computers
- Personal Digital Assistants
- Printers
- Scanners

Transilica 2.4 GHz Bluetooth ™ System-on-Chip

TR0760 Specifications
Preliminary and Confidential

GENERAL

ABSOLUTE MAXIMUM RATINGS

Supply voltage	+3.6 VDC
Input RF	-10 dBm
Output RF Load VSWR @2.45 GHz	5:1
Operating ambient temperature	-20 to +85 °C
Storage temperature	-20 to +125 °C

*Exceeding these limits may result in malfunction and/or device damage.

RECOMMENDED OPERATING CONDITIONS

Supply voltage	+2.4 to +3.3 VDC
Operating temperature range	-20 to +85 °C

BASEBAND
PROCESSING CAPABILITIES

Microprocessor	Enhanced 8051 with four configurable 8-bit ports
Memory	4 Kbytes SRAM, 64 Kbytes Flash program memory
Power management	Sniff, Park, and Hold power saving modes

BLUETOOTH PACKET PROCESSING

Packets	ID, NULL, POLL, FHS
Asynchronous connection–less link	DM1, DM3, DM5, DH1, DH3, DH5, AUX1
Synchronous connection link	HV1, HV2, HV3, DV
Bit rate	1 Mbps raw, 723 Kbps maximum for single ACL
Security	Encryption and decryption engines
Authentication	Key generators, challenge-response
Scrambler/Descrambler	Bit level
Error Correction	FEC

PORTS

Number of serial ports	2
GPIO	28

TRANSCEIVER

ELECTRICAL
Frequency Synthesizer

VCO frequency range	2400 to 2483.5MHz
Frequency tolerance	±20 ppM
RF channels	79
Step size	1 MHz
Reference frequency	24 MHz
Frequency lock time	80 to 100 µs

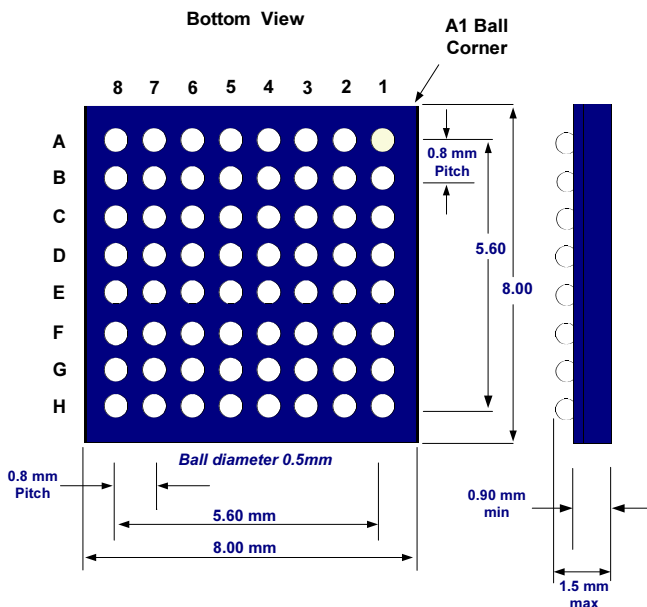#### *Transmitter*

Frequency range	2400 to 2483.5 MHz
Output power at antenna input	0 to 3 dBm
Spurious emission	Per FCC Part 15.205
Output impedance	300Ω
Modulation index	0.28 to 0.35
Bit rate	1000 Kbps
BT product	0.5

Receiver

RF frequency range	2400 to 2483.5 MHz
Step size	1 MHz
Input sensitivity	-82 dBm at 0.1% BER
Co-channel interference	11 dB typical
1st adjacent channel interference	0 dB typical
2nd adjacent channel interference	-35 dB typical
3rd adjacent channel interference	-48 dB typical
Image frequency interference	-20 dB typical
Adj. channel to image interference.	-20 dB typical
Image rejection	-40 to -35 dB minimum
Blocking rejection	-10 dBm (30 MHz to 2 GHz)
	-27 dBm (2 to 3 GHz)
	-10 dBm (3 to 12.6 GHz)
Input impedance	73Ω

PHYSICAL CHARACTERISTICS

Dimensions	8x8x1.5 millimeter
Packaging	8x8 64-ball grid array
Terminal positions	Per JESD 95-1, SPP-010

Bottom View — A1 Ball Corner

0.8 mm Pitch · 5.60 · 8.00 · Ball diameter 0.5mm · 0.8 mm Pitch · 5.60 mm · 8.00 mm · 0.90 mm min · 1.5 mm max