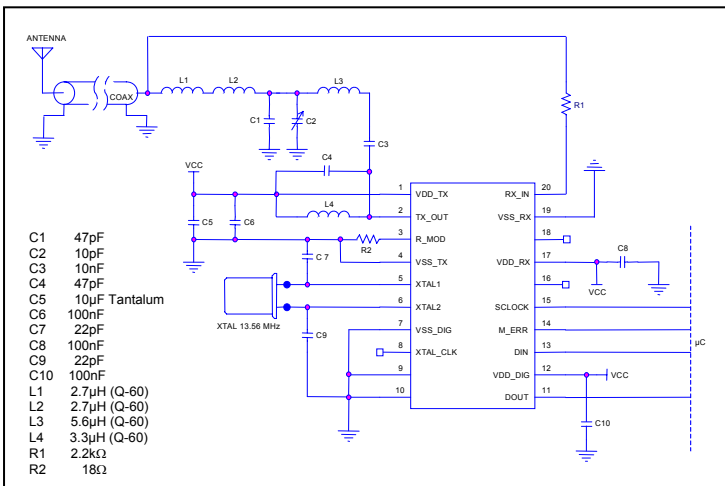


## HF Reader System Series 6000 S6700 Multi-Protocol Transceiver IC



The S6700 Multi Protocol Transceiver IC enables a broad range of 13.56MHz RFID interrogator designs for portable and stationary readers. This low power consumption device supports multiple RF communication protocols, minimizes onboard power requirements and reduces parts count in a final reader product.

Part number	RI-R6C-001A
Operating Frequency	13.56MHz
Supported RF Communication Protocols	<ul style="list-style-type: none"> <li>- Tag-it HF</li> <li>- ISO 15693-2 (e.g. Tag-it HF-I)</li> <li>- ISO 14443-2 (Type A)</li> <li>- Transparent (directly switched according to input pin)</li> </ul>
Operating Voltage	3.3V - 5V DC $\pm$ 10%
Current Consumption	Transmit: < 200 mA Stand-by: - Oscillator on < 15 mA - Oscillator off < 50 $\mu$ A
Transmitter power	200mW at 5V DC operating voltage
Transmitter modulation	ASK, 10% to 100% selectable through external components
Antenna Impedance	50 Ohm at 13.56MHz
Receive channels	ASK 423.75kHz, ASK 847kHz, FSK 423.75kHz/484.29kHz selectable
Communication Interface	Serial interface, CMOS compatible
Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +125°C
Package / Pincount	SSOP 20
Packing / Delivery	Tape-on-Reel, 2000 units per reel



Recommended application schematic

### Pin description

Pin	Symbol	Description
1	VDD_TX	Transmitter power supply
2	TX_OUT	Output transistor drain connection
3	R_MOD	External resistor to set 10% modulation depth mode
4	VSS_TX	Transmitter section ground
5	XTAL1	Pin 1 of Xtal resonator
6	XTAL2	Pin 2 of Xtal resonator, external clock input
7	VSS_DIG	Digital section ground
8	XTAL_CLK	Buffered output of Xtal oscillator
9	Not used	Grounded for normal operation
10	Not used	Grounded for normal operation
11	DOUT	Data output for serial link
12	VDD_DIG	Digital section power supply
13	DIN	Data input for serial link
14	M_ERR	Manchester Protocol error flag
15	SCLK	Serial link clock
16	Not used	Leave open for normal operation
17	VDD_RX	Receiver section power supply
18	Not used	Leave open for normal operation
19	VSS_RX	Receiver section ground
20	RX_IN	Receiver input

For more information, contact the sales office or distributor nearest you. This contact information can be found on our web site at: <http://www.ti-rfid.com>

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**PACKAGING INFORMATION**

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish	MSL Peak Temp (3)	Op Temp (°C)	Top-Side Markings (4)	Samples
RI-R6C-001A-03	ACTIVE	SSOP	DB	20	2000	TBD	Call TI	Call TI	-40 to 85		Samples

(1) The marketing status values are defined as follows:

**ACTIVE:** Product device recommended for new designs.

**LIFEBUY:** TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

**NRND:** Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

**PREVIEW:** Device has been announced but is not in production. Samples may or may not be available.

**OBSOLETE:** TI has discontinued the production of the device.

(2) Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

**TBD:** The Pb-Free/Green conversion plan has not been defined.

**Pb-Free (RoHS):** TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

**Pb-Free (RoHS Exempt):** This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

**Green (RoHS & no Sb/Br):** TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

(3) MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

(4) Multiple Top-Side Markings will be inside parentheses. Only one Top-Side Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Top-Side Marking for that device.

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# DB0020A



# PACKAGE OUTLINE

## SSOP - 2 mm max height

SMALL OUTLINE PACKAGE



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### NOTES:

1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. This dimension does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.15 mm per side.
4. This dimension does not include interlead flash. Interlead flash shall not exceed 0.25 mm per side.
5. Reference JEDEC registration MO-150.

# EXAMPLE BOARD LAYOUT

DB0020A

SSOP - 2 mm max height

SMALL OUTLINE PACKAGE



LAND PATTERN EXAMPLE  
EXPOSED METAL SHOWN  
SCALE: 10X



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NOTES: (continued)

- 6. Publication IPC-7351 may have alternate designs.
- 7. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

# EXAMPLE STENCIL DESIGN

DB0020A

SSOP - 2 mm max height

SMALL OUTLINE PACKAGE



SOLDER PASTE EXAMPLE  
BASED ON 0.125 mm THICK STENCIL  
SCALE: 10X

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NOTES: (continued)

8. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.
9. Board assembly site may have different recommendations for stencil design.

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