

Radio On A Chip Transceiver 900 MHz Frequency Agile With 8051 Micro Controller

Description

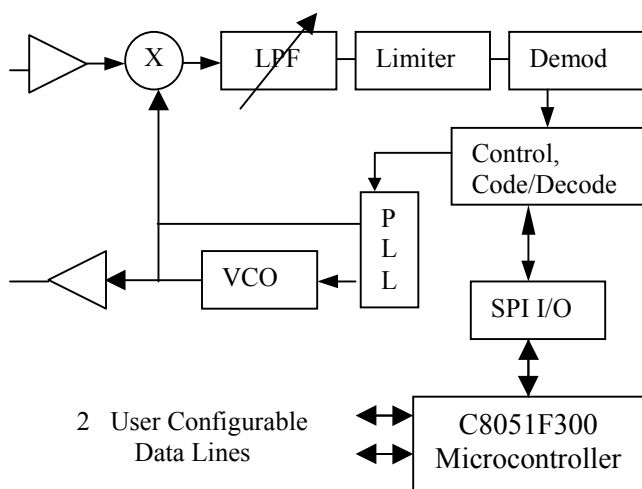
The Honeywell HRF-ROC09325S is a half-duplex transceiver plus an 8051 based Cygnal C8051F300 microcontroller in a single 52 pin leadless TAPP package for use in digital data applications. Built-in microcontroller connection for control and data transfer, eliminate the need for additional ICs, while integrated data code/decode reduces the instruction set requirements on the microcontroller. The HRF-ROC09325S is ideally suited for use in battery powered wireless applications for data communication. Adjustable data rates, filter bandwidths and detection levels allow the IC to be used in a wide variety of high sensitivity / high EMI environments. Operational characteristics of the microcontroller are detailed at the following site:

<http://www.cygnal.com/products/C8051F300.htm>

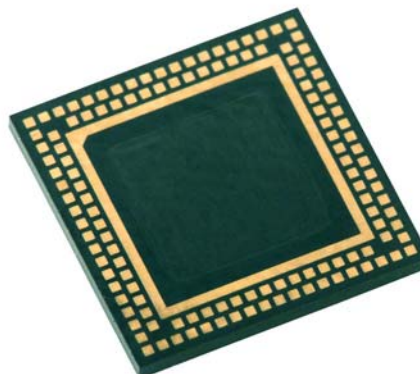
Features

- Transceiver and Micro Controller in Single Package
- Data Rates to 28.8kbps – Single Package Design
- Adjustable detection bandwidths, data rates
- Programmable Output Power Levels
- Space Saving 7 X 9 mm LPCC Package
- Adjustable gain, detection level/ hysteresis
- Low and high beta FSK detection modes
- Integrated Manchester coding/decoding
- Programmable Frequency And Tx/Rx/Standby
- Operates From Single 2.4-3.3V Power Supply
- Surface Mount Leadless Plastic Packaging
- Low Standby Current Consumption
- 8051 microcontroller with built-in direct sensor interface

Functional Schematic



Product Photo



RF Electrical Specifications @ + 25°C

Parameter	Test Condition	Frequency	Minimum	Typical	Maximum	Units
Rx Sensitivity		300-900 MHz		-75		dBm
1db Compression	Vdd = 3V	300-900 MHz		-30		dBm
Input IP3	Vdd = 3V	300-900 MHz		-15		dBm
Tx Output Power	Vdd = 3V	300-900 MHz		+3		dBm
Data Rate, Tx / Rx	Continuous Packetized Data			28.8		Kbps
Channel Rejection	Adjacent Channels	Fc +/- 250 KHz		60		dB
Max Detection BW	IQ Baseband FilterPassband			250		KHz
Control/Data I/O	Serial Peripheral Interface (SPI). Direct Connection To Microcontroller/Microprocessor			10		MHz

DC Electrical Specifications @ + 25°C

Parameter	Minimum	Typical	Maximum	Units
V _{DD} Power Supply Voltage	2.4	3.0	3.5	V
Power Supply Current During Tx, Output Power Dependant (915 MHz) * includes 8051 micro ctrlr.	16	31		mA
Power Supply Current (I _{DD}) During Rx (915 MHz)	22	28		mA
Standby Current Consumption		<1		uA
CMOS Logic Level (0)	0		0.7	V
CMOS Logic Level (1)	1.7		V _{DD}	V
Input Leakage Current			2	nA

Absolute Maximum Ratings¹

Parameter	Absolute Maximum	Units
Maximum Input Power	-	-
V _{DD}	+ 3.5	V
ESD Voltage (Human Body Model)	200	V
Operating Temperature	- 40 to + 85	Degrees C
Storage Temperature	- 40 to + 150	Degrees C

(Note 1) Operation Of The HRF-ROC09325S Beyond Any Of These Parameters May Cause Permanent Damage.

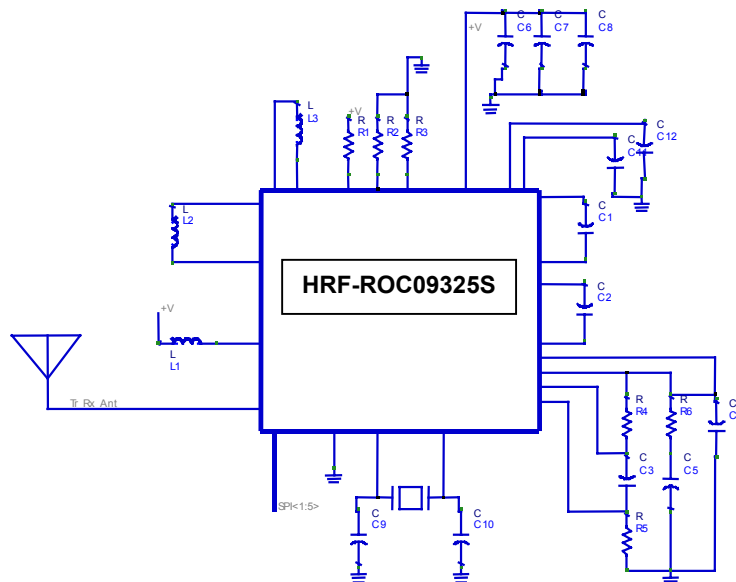
ESD Protection: The HRF-ROC09325S Contains reduced ESD Protection Circuitry for sensitive RF I/O. Precautions Should Be Taken During Handling/Assembly Until Protected By External Circuitry or Housings

HRF-ROC09325S

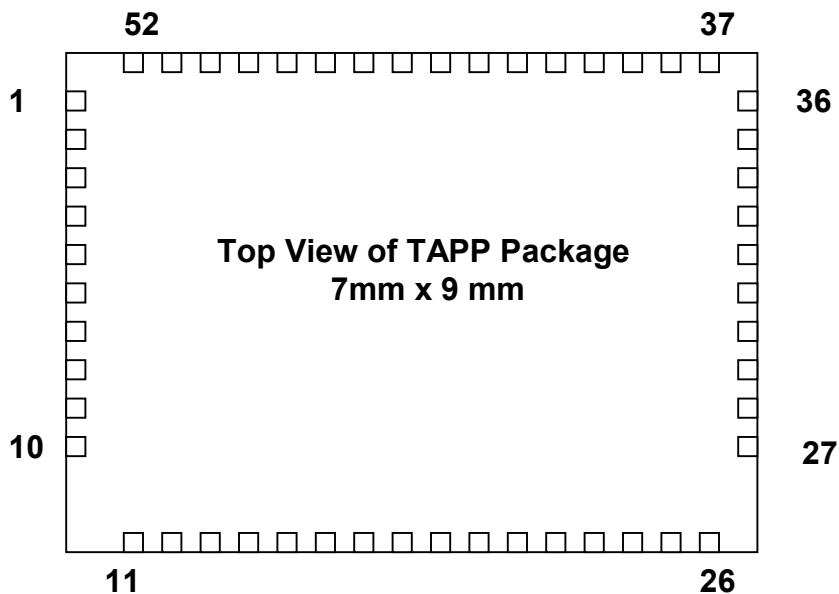
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Advance Information

Typical Application



Package Outline



Web Site: www.mysoiservices.com
Email: mysoiservices@honeywell.com

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Honeywell
Solid State Electronics Center
12001 State Highway 55
Plymouth, Minnesota 55441-4799
1-800-323-8295

Pin Configuration

HRF-ROC09325S Pin TAPP™ (9 mm X 7 mm) Package Pin List

* RF/Digital ground is provided through backside slug pad.

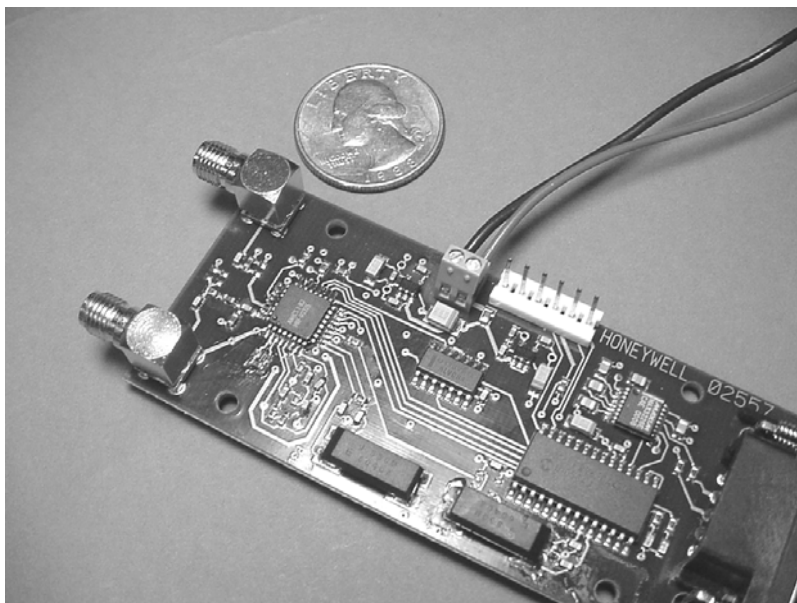
Name	Pin #	Function	Name	Pin #	Function
NC	1	NC	P0.4 (uC)	27	P0.4 (uC)
VSSVCO	2	VSSVCO	P0.5 (uC)	28	P0.5 (uC)
TP	3	TP	RST (uC)	29	RST (uC)
TM	4	TM	NC	30	NC
VSSVCO	5	VSSVCO	SPISSN	31	SPISSN
MOD3	6	MOD3	NC	32	NC
MOD1	7	MOD1	REXT_BE	33	REXT_BE
VDDVCO	8	VDDVCO	RSSI_Q	34	RSSI_Q
TX_DATA_1	9	TX_DATA_1	RSSI_I	35	RSSI_I
PD OUT	10	PD OUT	NC	36	NC
CLK1	11	CLK1	NC	37	NC
CLK2	12	CLK2	NC	38	NC
VDDPLL_DIG	13	VDDPLL_DIG	TX EN	39	TX EN
XTALDIV2	14	XTALDIV2	RX EN	40	RX EN
VSSPLL_DIG	15	VSSPLL_DIG	NC	41	NC
RX OUT	16	RX OUT	VSS BB	42	VSS BB
TX_DATA_V	17	TX_DATA_V	VDD BB	43	VDD BB
REXT_PLL	18	REXT_PLL	VDDMIX	44	VDDMIX
SPIDATAOUT	19	SPIDATAOUT	VSS MIX	45	VSS MIX
NC	20	NC	MIX_QP	46	MIX_QP
DIG DATA_IN	21	DIG DATA_IN	MIX_QN	47	MIX_QN
NC	22	NC	REXT_FE	48	REXT_FE
NC	23	NC	VSS PA	49	VSS PA
NC	24	NC	PA OUT	50	PA OUT
VDD (uC)	25	VDD (uC)	VDD PA	51	VDD PA
NC	26	NC	LNA IN	52	LNA IN

HRF-ROC09325S

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Advance Information

Engineering Evaluation Board



The engineering evaluation board provides for a RS232 connection using the in package 8051 based micro controller as the interface between the HRF-ROC09325S and the RS232 port. Using the software provided and a PC, control of test data, operating frequency, power levels and all internal registers is available for early product development/prototyping. The board operates from a single +6 to +9 volt supply and provides separate RF Rx/Tx ports.

Ordering Information

Ordering Number	Product
HRF-ROC09325S -B	Delivered In Chip Tubes
HRF-ROC09325S -T	Delivered On Tape And Reel ²
HRF-ROC09325S -E	Engineering Evaluation Board

Note 2: Contact Honeywell for details

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Web Site: www.mysoiservices.com
Email: mysoiservices@honeywell.com

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Honeywell
Solid State Electronics Center
12001 State Highway 55
Plymouth, Minnesota 55441-4799
1-800-323-8295