

## Features

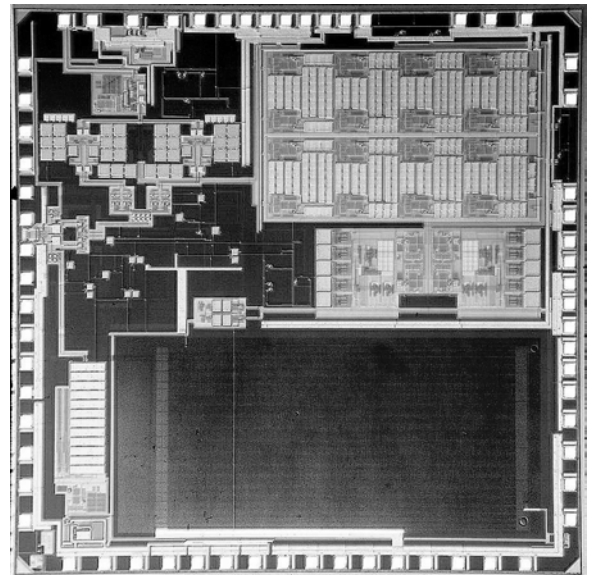
- High Integration Minimizes System Cost
- Data Rates To 28.8 Kbits/Sec
- FSK Operation Capable Of Frequency Hopping
- Programmable Power, Frequency And Tx/Rx/Standby
- Operates From Single 2.4V To 3.3V Power Supply
- High Performance On-chip Baseband Filtering
- Digital Encoding, Decoding, And Correlator
- Surface Mount Leadless Plastic Packaging
- Direct Down Conversion (Zero IF) Receiver

# Radio On A Chip 300 – 928 MHz FSK Transceiver Frequency Agile With SPI Bus Interface

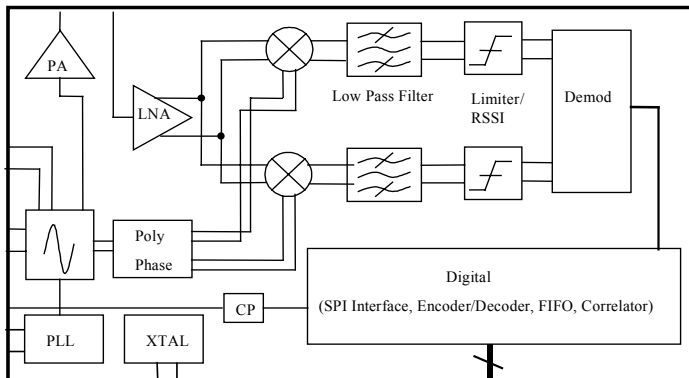
## Description

The Honeywell HRF-ROC09325 is a programmable transceiver for use in digital data applications. Direct microprocessor connections for control and data transfer simplify product development. The HRF-ROC09325 is ideally suited for use in battery powered wireless applications in conjunction with microprocessors for data communication.

## Product Photo



## Functional Schematic



## RF Electrical Specifications @ + 25°C

Parameter	Test Condition	Frequency	Minimum	Typical	Maximum	Units
Rx Sensitivity		300– 928 MHz		-70*		dBm
1db Compression	Vdd = 3V	300– 928 MHz		-20		dBm
Input IP3	Vdd = 3V	300– 928 MHz		-5		dBm
Tx Output Power	Vdd = 3V	300– 928 MHz		+4*		dBm
Data Rate, Tx / Rx	Continuous Data			19.2	28.8	Kbps
Channel Rejection	Adjacent Channels	Fc +/- 200KHz		75		dB
Detection Bandwidth	Iq Baseband FilterPassband			100		KHz
Control/Data I/O	Serial Peripheral Interface (SPI). Direct Connection To Microcontroller/Microprocessor			10		MHz

\*Additional sensitivity/output power possible with use of supplementary LNA or Power Amp.

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## DC Electrical Specifications @ + 25°C

Parameter	Minimum	Typical	Maximum	Units
V <sub>DD</sub> Power Supply Voltage	2.4	3.0	3.3	V
Power Supply Current During Tx, Output Power Dependant (915 MHz)	16	26		mA
Power Supply Current (I <sub>DD</sub> ) During Rx (915MHz)	22	29		mA
CMOS Logic Level (0)	0		0.7	V
CMOS Logic Level (1)	1.7		V <sub>DD</sub>	V
Input Leakage Current (Standby Mode)			0.7	mA

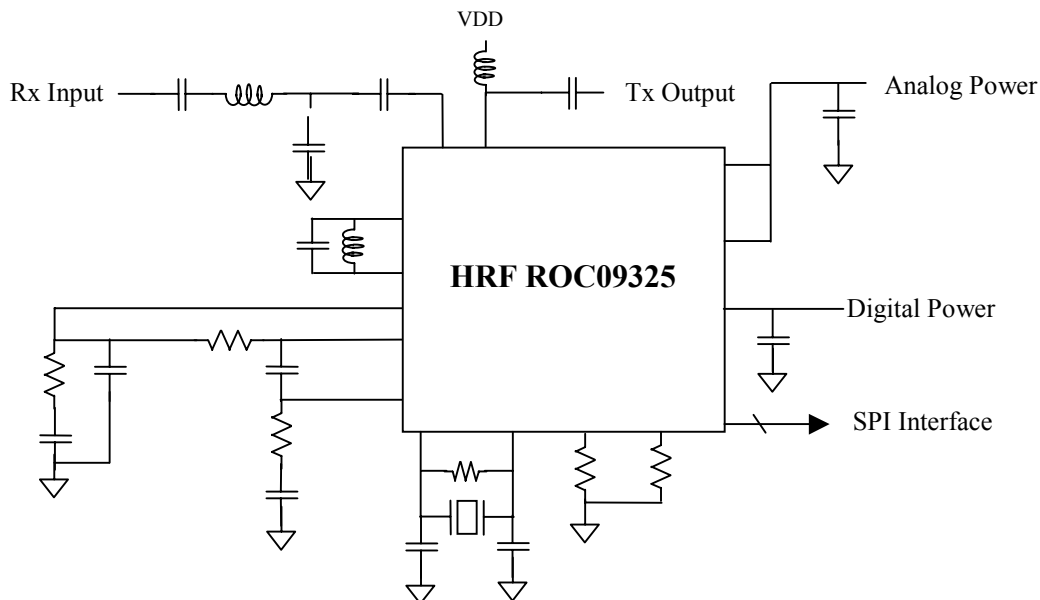
## Absolute Maximum Ratings<sup>1</sup>

Parameter	Absolute Maximum	Units
Maximum Input Power	-	-
V <sub>DD</sub>	+ 3.6	V
ESD Voltage (Human Body Model)	TBD	V
Operating Temperature	- 40 to + 85	Degrees C
Storage Temperature	- 40 to + 150	Degrees C

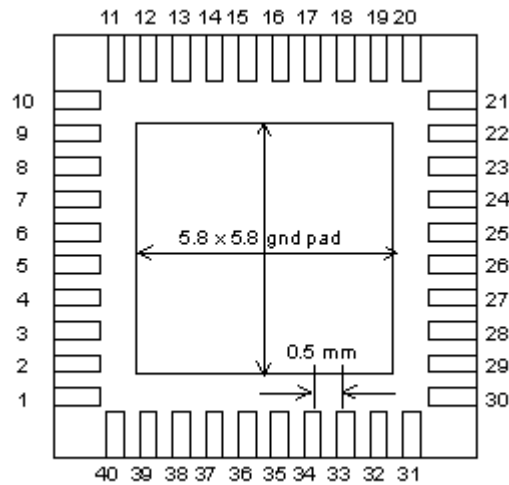
Note 1: Operation Of The HRF-ROC09325 Beyond Any Of These Parameters May Cause Permanent Damage.

**ESD Protection:** Although the HRF-ROC09325 Contains ESD Protection Circuitry, Conventional Precautions Should Be Taken To Ensure that The Absolute Maximum Ratings Are Not Exceeded.

## Typical Application



## Package Outline



**Bottom View, 40 pin, 7.0 x 7.0 x 1.0mm  
LPPC™ Package**

Backside ground pad is required as the low inductance ground return for both RF and digital signals. Additionally, this provides a direct connection to the die for enhanced thermal dissipation.

## Pin Configuration

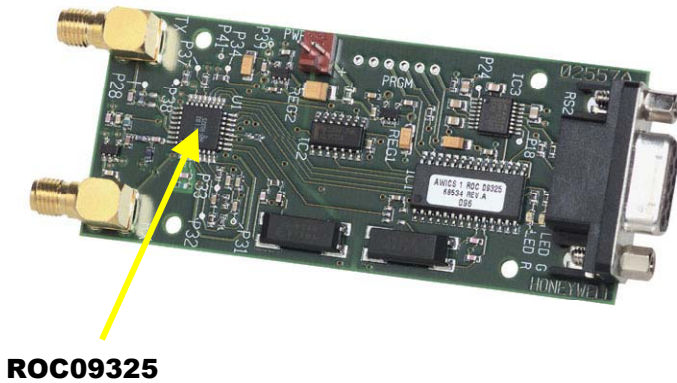
**HRF-ROC09325 40 Pin LPPC™ (7 mm X 7 mm) Package Pin List**

Name	LPCC Pin	Name	LPCC Pin
LNA_RF_IN	1	DIG_DATA_IN	21
GROUND*	2	SPI_DATA_IN	22
VCO_TANK_P	3	RESET	23
VCO_TANK_M	4	SPI_CLK	24
VMOD3	5	SPI_INT_OUT	25
VMOD1	6	REXT_BE	26
VDD_VCO	7	RSSI_Q	27
TX_DATA_I	8	RSSI_I	28
PD_OUT	9	TX_ENABLE_OUT	29
GROUND*	10	RX_ENABLE_OUT	30
CLK1	11	GROUND*	31
CLK2	12	NO CONNECTION	32
GROUND*	13	VDD_BaseBand	33
VDD_PLLDIG	14	NO CONNECTION	34
XTALDIV2_OUT	15	VDD Mixer	35
RX_OUT	16	NO CONNECTION	36
TX_DATA	17	REXT_Frontend	37
REXT_PLL	18	PA_RF_OUT	38
SPI_DATA_OUT	19	VDD_PA	39
SPI_SSN	20	GROUND*	40

\* Ground pins are added to aid in signal isolation. Primary RF/Digital ground is provided through backside slug pad.

## Engineering Evaluation Board

The engineering evaluation board provides for a RS232 connection using a PIC microcontroller as the interface between the HRF-ROC09325 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-ROC09325-B	Delivered In Chip Tubes
HRF-ROC09325-T	Delivered On Tape And Reel <sup>2</sup>
HRF-ROC09325-E	Engineering Evaluation Board

Note 2: Contact Honeywell for details

Honeywell reserves the right to make changes to improve reliability, function or design. Honeywell does not assume any liability arising out of the application or use of any product or circuit described herein; neither does it convey any license under its patent rights nor the rights of others.

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