

## Features

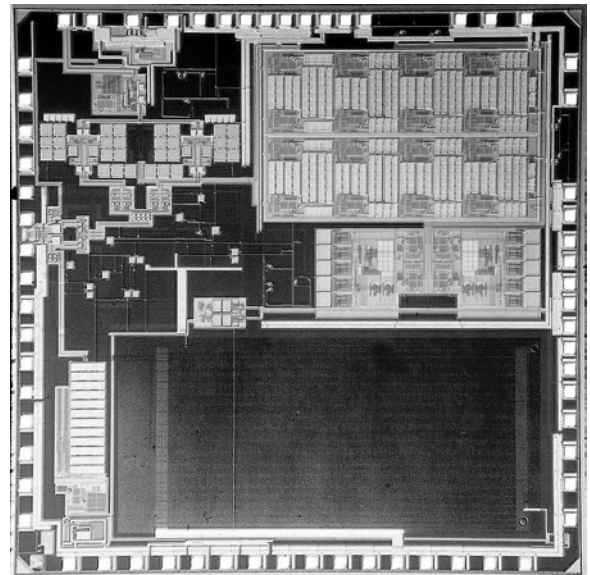
- High Integration Minimizes System Cost
- Data Rates To 28.8 Kbits/Sec
- FSK Operation Capable Of Frequency Hopping
- Programmable Power, Frequency And Tx/Rx/Standby
- Operates From Single 2.4V To 3.3V Power Supply
- High Performance On-chip Baseband Filtering
- Digital Encoding, Decoding, And Correlator
- 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

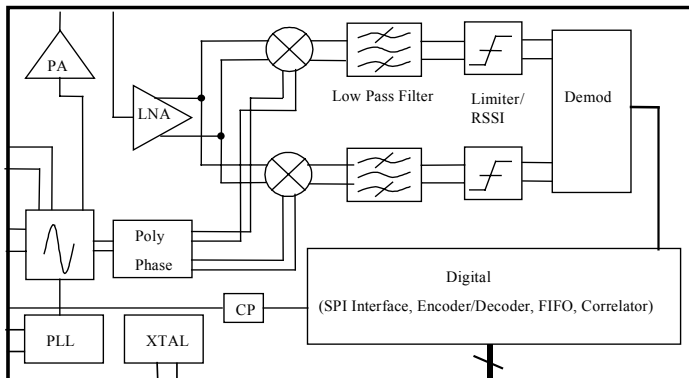
## Description

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

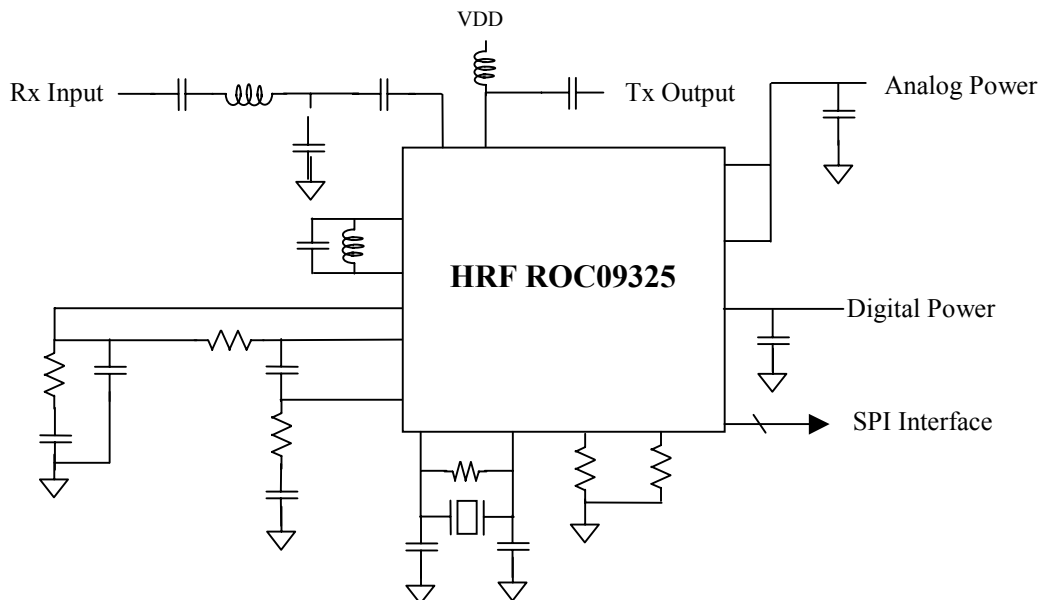
## Absolute Maximum Ratings<sup>1</sup>

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

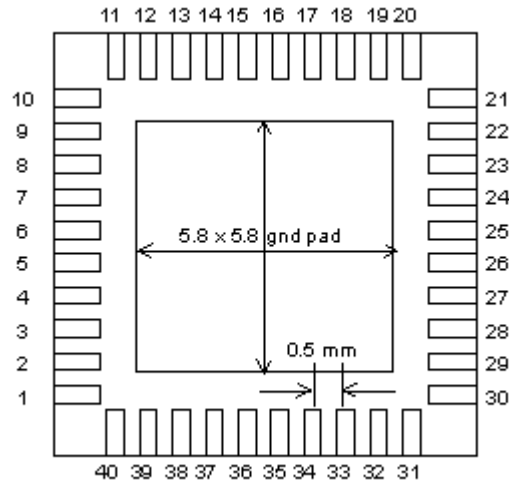
Note 1: Operation Of The HRF-ROC09325 Beyond Any Of These Parameters May Cause Permanent Damage.

**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

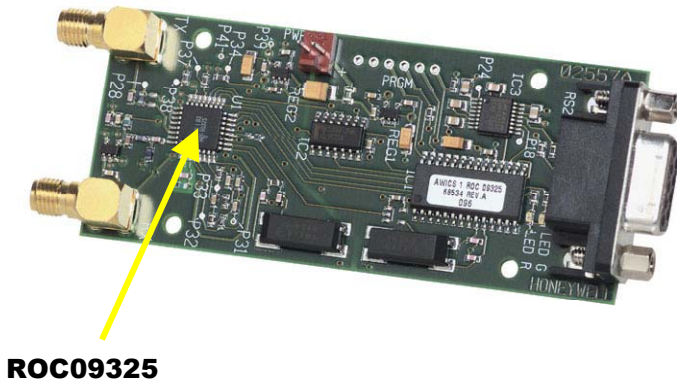
**HRF-ROC09325 40 Pin LPPC™ (7 mm X 7 mm) Package Pin List**

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

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