

AN007**Manufactures of external components used with
Chipcon RFICs**by P. M. Evjen

Keywords

- *Component manufacturers*
- *Varactors*
- *Inductors*
- *Ceramic filters*
- *SAW filters*
- *Power amplifiers and switches*
- *Narrow band demodulators*
- *Discriminators*
- *VCO modules*

Introduction

Although the RF IC's provided by Chipcon are highly integrated, a few external components are required. This application note gives suggestions of manufacturers that provide these products.

The most critical part of the design is usually the VCO tank. This application note gives suggestions for the varactor and the high-Q inductor. In very demanding applications the inductor can be replaced by a coaxial resonator to increase narrow band performance.

SAW filters are used at the front end to improve the selectivity and blocking performance of the receiver. The ceramic filter (455 kHz) is used to achieve better adjacent channel rejection and close-in selectivity.

For applications requiring better sensitivity using CC1000, and external LNA can be added. Very low current discrete transistors are suggested for this use.

For applications requiring higher output power than the integrated transmitter can deliver an external PA is necessary. Suggestions for various amplifiers along with RX/TX switches are given. An RX/TX switch must also be used if the SAW filter is inserted in the receive path only.

In narrow-band systems an external demodulator at 455 kHz may be required, combined with a 10.7 MHz first IF filter.

For wide-band systems the filtering and demodulation is usually done at 10.7 MHz.

Please also refer to AN005 *Selecting system parameters and system configurations using CC400 / CC900* for further advice on circuit configurations.

Chipcon is a supplier of RFICs for all kinds of short range wireless communication devices. Chipcon has a world-wide distribution network.

Manufacturers and suggested devices

Function	Manufacturer	Suggested device	Notes
Varactor	TOKO www.toko.com	KV1832C KV1848K	400 MHz 900 MHz
	Infineon www.infineon.com	BBY57-03W BBY53-03W	400 MHz 900 MHz
	M/A-COM www.macom.com	MA4ST340	400 MHz
	Alpha Industries www.alphaind.com		
	Hitachi www.hitachi.co.jp	HVC350B	400 MHz
	Toshiba www.toshiba.com/taec		
	Panasonic	MA2SV01	400 MHz
	Xetex www.zetex.com	ZMV932	400 MHz
VCO Inductor	Murata www.murata.com	LQN21A10N LQN21A3N3 LQN21A2N7	434 MHz, CC400/CC900 869 MHz, CC400/CC900 915 MHz, CC400/CC900
	Coilcraft www.coilcraft.com	0805HQ series	CC400/CC900
	TOKO www.toko.com		
	AVX/KYOCERA www.avxcorp.com	L08052R2DEW L08051R8DEW	915 MHz 915 MHz
	KOA www.koanet.co.jp	KL732ATE56NJ KL732ATE33NJ KL732ATE4N7J	315 MHz, CC1000 433 MHz, CC1000 868/915 MHz, CC1000
	Pulse www.pulseeng.com	PE-0805CM series	434 MHz
	Chilisin www.chilisin.com.tw	CLH1608T4N7S-S	868/915 MHz, CC1000
Coaxial resonator	Trans-Tech www.trans-techinc.com		Use for high Q VCO tank
	PicoFarad www.picofarad.com		
	EPCOS		
	Vitelec www.vitelec.co.uk		
Ceramic filter 455 kHz	Murata www.murata.com	CFUCG455D	455 kHz IF
	TOKO www.toko.com		
	AVX www.avxcorp.com		
	Samsung www.sem.samsung.com		
SAW filter	Murata www.murata.com	SAFC434MC70T SAFC869MF70T SAFC915MA70N	434 MHz 869 MHz 915 MHz

	EPCOS www.epcos.com	B3550 / B3560 B3570 – B3573 B3569 B3568	434 MHz 869 MHz 915 MHz 869 MHz, internally match to 50ohm, wide filter, but very good GSM supression
	Fujitsu www.edevice.fujitsu.com	F5CH-915M00- L2JW	915 MHz
	Toycom www.toyocom.com	TQS-907A-7R	
	RF Monolithics www.rfm.com		
	JRC / NJR www.njr.com		
	Samsung www.sem.samsung.com		
	Daewoo	DF-400-C1	
	Sanyo		
	Temex www.temex-components.com		Already matched for 50 ohms
	Hitachi		
	Vectron / Telefilter		
	NEC		
	Kony		
Narrow band demodulator (455 kHz)	Toshiba	TA31136	
	Motorola	MC3361 MC3371/3372	
	Samsung	KA8514	
	TOKO www.toko.com	TK83361M	
Wide band demodulator (10.7 MHz)	Philips	SA626 SA636 SA639	
Crystal / ceramic filter 10.7 MHz	Murata www.murata.com		10.7 MHz filter for use with external wide band and narrow band demodulator
	TOKO www.toko.com		
Discriminator	Murata www.murata.com		For use with external narrow band demodulator at 455 kHz or wide band at 10.7 MHz
	TOKO www.toko.com		
Si BJT for LNA	NEC	2SC5408	
	Infineon www.infineon.com	BFP405	
	Philips http://www.semiconductors.philips.com/	BFG403W BFG505	
	Vishay Telefunken www.vishay.com	BFR280 S822T	
MMIC PA	ST Microelectronics www.st.com	TSH690	
	Micrel	MRFIC2006	

	Maxim http://www.maxim-ic.com/	MAX2430	
	RF Micro Devices	RF2162	
	Mini-Circuits www.minicircuits.com	ERA-5	
	Micro Linear	MC2751	
	Texas Instruments www.ti.com	TRF8011	
GaAs FET for PA	Stanford Microdevices www.stanfordmicro.com		
	EiC www.eiccorp.com		
Si BJT for PA	Agilent (HP)	HBFP-0450	
	Infineon (Siemens) www.infineon.com	BFP450 / BFP490	
	Philips http://www.semiconductors.philips.com/	BFG480W	
External T/R switch	NEC www.cel.com	UPG152TA/153TB	
	Hittite www.hittite.com	HMC154S8	
	Alpha Industries www.alphaind.com	AS170-92	
	Peregrine Semiconductor www.peregrine-semi.com	PE4210/4220/4230	
	M/A-COM www.macom.com		
	ITT Gaastek	ITT106AJ	
	Philips http://www.semiconductors.philips.com/	SA630, BF1108	
VCO module	Murata www.murata.com		
	Vari-L http://www.vari-l.com/		
	Mini-Circuits www.minicircuits.com		
	Korea Sangshin Electric Co.,Ltd http://www.koreasangshin.com/		
	Maxim http://www.maxim-ic.com/		

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The above list should not be considered to be complete, and your input to improve this information is appreciated. Please contact us at wireless@chipcon.com.

This application note is written by the staff of Chipcon to the courtesy of our customers. Chipcon is a world-wide supplier of RFICs. For further information on the products from Chipcon please contact us or visit our web site. An updated list of distributors is also available at our web site.

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