

40 MHz to 1300 MHz Wideband Integrated VCO with Differential Output

Description

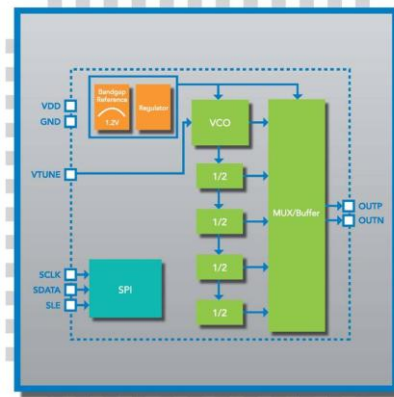
The EPX002-0 (Working Sample) is a wideband integrated voltage controlled oscillator (VCO) for wireless communication applications.

The inductor and varactor of the VCO circuit are integrated on-chip to reduce external components. The VCO consists of a varactor whose capacitance varies with the control voltage from 0.4 V to 2.4 V for fine tuning, and a 7-bit capacitor array for coarse tuning. The VCO typically oscillates from 650 MHz to 1300 MHz. The four dividers are integrated on-chip to support wideband applications. Each divider output, including the VCO output, is buffered.

Features

- +3.3V Single-Supply Operation
- Integrated Inductor and Varactors
- Wide Frequency Range
- Low Phase Noise
- Linearized VCO Gain

Functional Diagram



Contact Information

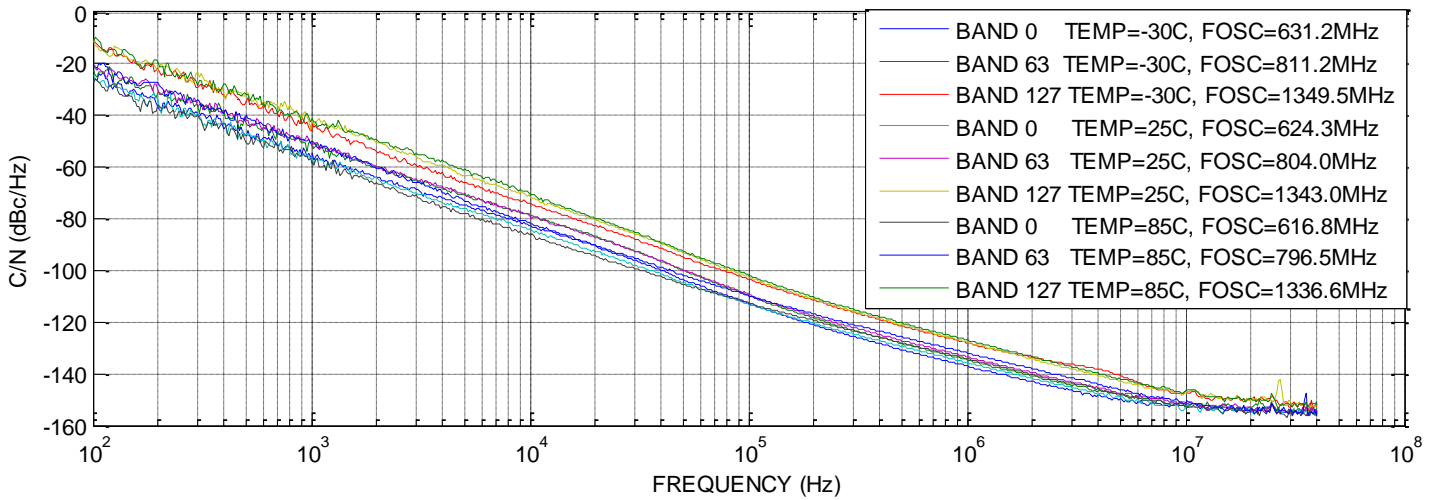
To request an evaluation board, please contact:
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DC/AC Measured Electric Characteristics

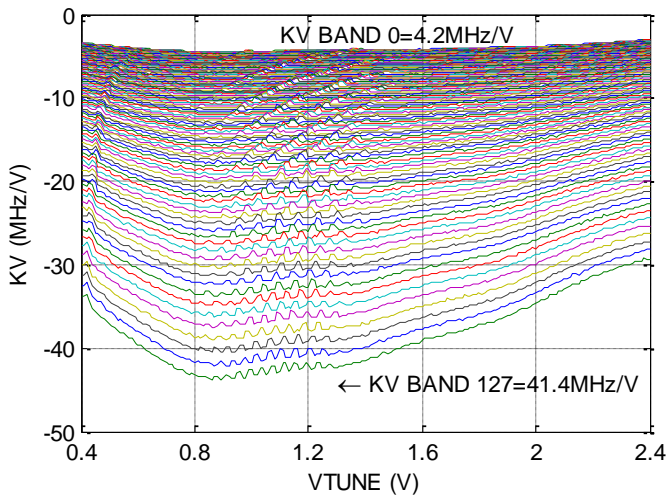
VDD (Supply Voltage) = 3.15 V to 3.45 V; TEMP (Temperature) = -30 °C to 85 °C; VTUNE (VCO Tuning Voltage) = 0.4 V to 2.4 V; VCO BAND = 0 to 127, unless otherwise noted. Typical conditions are VDD = 3.3 V; TEMP = 25 °C; VTUNE = 1.4 V; VCO BAND = 63.

Symbol	Parameter	Conditions	Min	Typ	Max	Units
ITOT	Total supply current	All dividers turned on	27.5	34.0	40.7	mA
IVCO	VCO supply current	Regulator and VCO are ON	9.1	15.1	20.5	mA
ISTB	Standby current		-	0	-	uA
POUT	Differential output power	With 50-ohm Microstrip line	-12.8	-7.94	-6.43	dBm
FOSC	VCO frequency tuning range	TEMP = 25 C	620.5	-	1384.5	MHz
FOSCT	VCO frequency temperature variation		98	128	137	kHz/C
KV	VCO gain	At VCO output	2.95	8.82	45.25	MHz/V
FPSH	VCO frequency supply pushing		-	830	8400	kHz/V
CNL_100K	Phase noise at lower band (offset=100 kHz)	FOSC = 625 MHz	-113.5	-113	-111.5	dBc/Hz
CNL_1M	Phase noise at lower band (offset=1 MHz)	FOSC = 625 MHz	-137.4	-135.5	-133.8	dBc/Hz
CNM_100K	Phase noise at middle band (offset=100 kHz)	FOSC = 800 MHz	-110.4	-109	-107.1	dBc/Hz
CNM_1M	Phase noise at middle band (offset=1 MHz)	FOSC = 800 MHz	-135.3	-133.5	-129.4	dBc/Hz
CNH_100K	Phase noise at higher band (offset=100 kHz)	FOSC = 1330 MHz	-104.6	102.5	-101.5	dBc/Hz
CNH_1M	Phase noise at higher band (offset=1 MHz)	FOSC = 1330 MHz	-130.6	128	-126.5	dBc/Hz

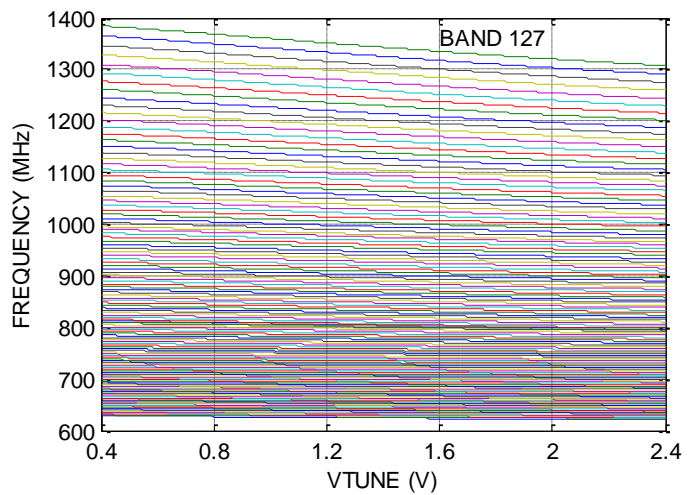
C/N vs Offset Frequency at TEMP = -30 C to 85 C, VTUNE=1.4V



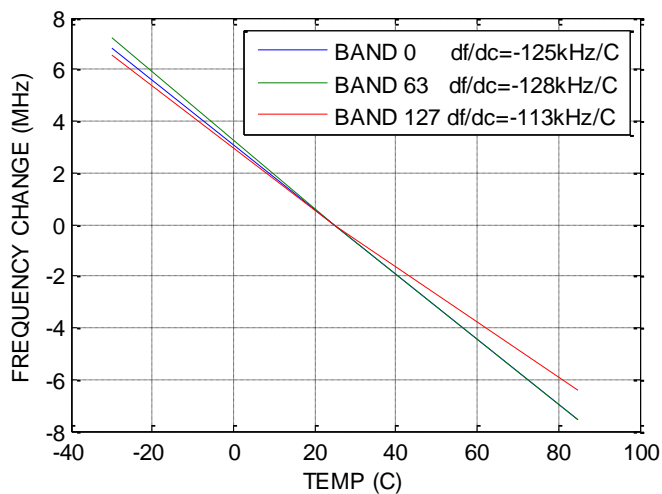
KV vs VTUNE at TEMP = 25 C



VCO Frequency Tuning vs VTUNE at TEMP =25 C



Frequency change vs TEMP at VTUNE=1.4V



Power Supply Pushing vs VTUNE at TEMP = 25 C VDD=3.15V to 3.45V

