CT266

Universal VCO/Buffer for CT0 Designs

Approved Product

Features

- Wide range VCO (>70 MHz) for all CT0 designs
- Highly efficient on-chip buffer amplifier
- Real standby VCO with zero chip current consumption
- Transmit power cut-off for out-of-lock condition
- 2.0V to 5V working voltage supply
- Low current consumption
- Excellent frequency stability vs. VDD.
- 8 pin narrow SOIC package

Applications

This versatile VCO circuit with buffer chip can be used in general PLL frequency synthesizer applications such as: Cordless phone, CATV, AM/FM Radio, TV tuning, Satellite Receiver, and other telecommunication designs.

Product Description

The IMICT266 is extremely versatile for worldwide CT-0 cordless phone applications in matching all present associated PLL frequency synthesizer product designs. The VCO circuit provides a very easy way to build the particular high quality VCO (see application Figure 2). The on-chip highly efficient buffer amplifier will provide enough power to antenna or final power amplifier. This output is normally connected with a fixed low pass filter to remove unwanted harmonics. The VCO stand-by function stops all power consumption of the chip and buffer amplifier transmit power cut-off feature provides design choice to lock detection for monitoring transmitted power at out-of-lock condition of phase-locked loop (PLL) frequency synthesizer. This chip is designed at IMI using special CMOS processing technology that provides wide working supply voltage and low current consumption advantages.

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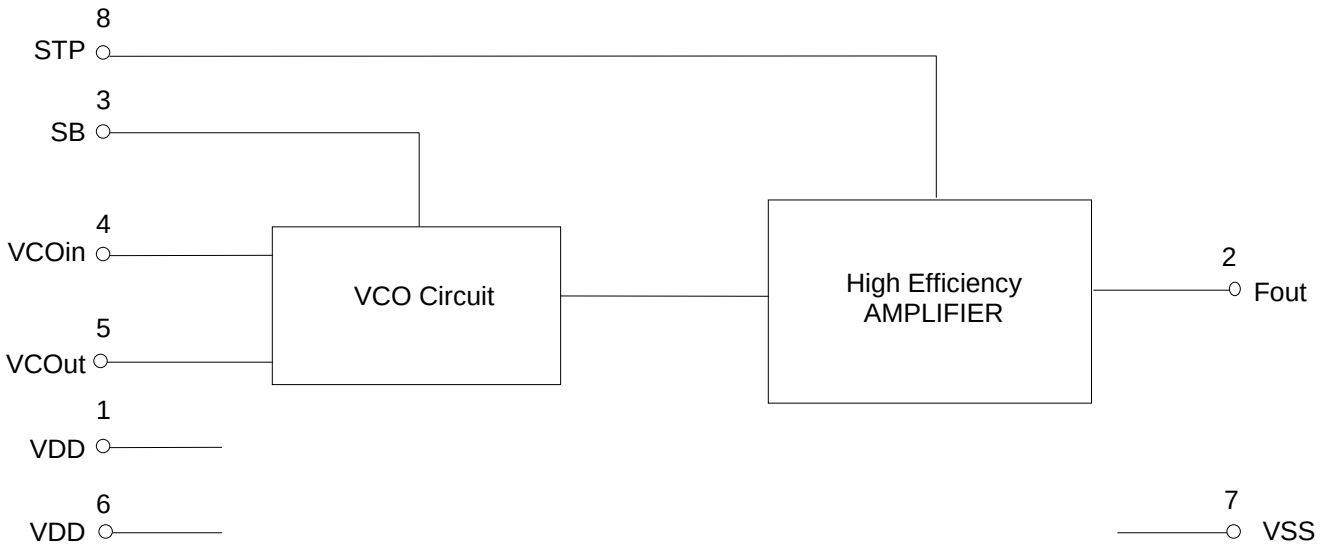

Figure 1. Block Diagram

Ordering Information

Part Number	Package Type	Production Flow
IMICT266DZB	8 PIN NARROW SOIC (150 MIL)	Industrial -40ºC TO + 85º C

Marking: Example:

IMI
CT266DZ
Date code
Lot #

IMICT266DZB

Flow
Industrial – 40 °C to + 85°C

Package
Z = Narrow SOIC (150 MIL)

Revision

IMI Device Number

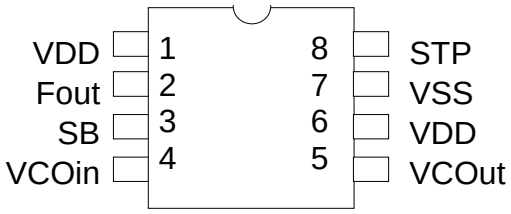

Figure 2. Narrow SOIC Package Pin Assignment

Pin Descriptions

Pin #	Pin Name	Description
2	Fout	This is a highly efficient output buffer of the VCO. Normally, it can be directly connected to a filter network for antenna matching purposes and to also reduce unwanted harmonics. See output power versus power supply voltage on Figure 3.
3	SB	The standby pin is used to save power consumption when not using transmit signal Output power. When it is low, the VCO is disabled, the chip has zero power consumption. This pin has an internal pull-down.
4 5	VCOin VCOut	These are input and output of the VCO. They are typically connected to a varactor and respective LC network to provide a tuned VCO circuit that operates between 46/49 MHz. See Figure 4 for circuit details.
7	VSS	Circuit ground pin.
1	VDD	Positive power supply pins (2.0V~5V).
6	VDD	
8	STP	Transmit power cut-off control pin. When it is high, transmit power is in standby. It can be controlled by lock detection (LD) of PLL frequency synthesizer to monitor transmit power of a out-of-lock condition. It has an internal pull-down resistor.

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Absolute Maximum Ratings

This device contains circuitry to protect the inputs against damage due to high static voltages or electric field; however, precaution should be taken to avoid application for any voltage higher than the maximum rated voltages to this circuit. For proper operation, Vin and Vout should be constrained to the range:

Vss<(Vin or Vout)<VDD

Unused inputs must always be tied to an appropriate logic voltage level (either VSS or VDD).

Voltage Relative to VSS:	-0.3V to 7V
Voltage Relative to VDD	0.3V
Storage Temperature:	-65ºC to 150ºC
Ambient Temperature:	-40ºC to 85ºC
Recommended Operating Range:	2.0-5V

Operating Characteristics

VDD = 5 Volts

				-40ºC		0ºC		25ºC			85ºC			
Characteristics		Symbol		Min	Max	Min	Max	Min	Typ	Max	Min	Max	Unit	Conditions
Dynamic	Pin	Cin		-	10			-	6	10	-	10	pF	
	Capacitance	Cout		-	10			-	6	10	-	10	pF	
	Input	VIL		1	1.5	-	1.5	-	2.75	1.5	-	1.5	Vdc	
	Voltages	VIH		3.5	-	3.5	-	3.5	2.75	-	3.5	-		
	Output	VOL		-	0.05	-	0.05	-	0.0	0.05	-	0.05	Vdc	
	Voltages	VOH		4.95	-	4.95	-	4.95	5.0	-	4.95	-		
Static	Output	IOL	Logic	2.4	-			2.0	2.8	-	1.6	-		
			OSCout	1.2	-			1.0	1.4	-	0.8	-	mA	VOL = 0.40
	Current	IOH	Logic	-2.4	-			-2.0	-2.8	-	-1.6	-	mA	VOH = 4.0
			OSCout	-1.2	-			-1.0	-1.4	-	-0.8	-	mA	VOH = 4.0
	Supply	IDD											mA	fosc=fin= 10 MHz
	Currents	ISB			150			-	40	150	-	150	µA	fosc=fin=0
		IPU							50				µA	VIL = 0

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VDD = 3 Volts

Characteristics		Symbol		-40ºC		0ºC		25ºC			85ºC		Unit	Conditions
				Min	Max	Min	Max	Min	Typ	Max	Min	Max		
Dynamic	Pin	Cin		-	10			-	6	10	-	10	pF	
	Capacitance	Cout		-	10			-	6	10	-	10	pF	
Static	Input	VIL		-	0.9			-	1.35	0.9	-	0.9	Vdc	
	Voltages	VIH		2.1	-			2.1	1.65	-	2.1	-		
	Output	VOL		-	0.05	-	0.05	-	0.0	0.05	-	0.05	Vdc	
	Voltages	VOH		2.95	-	2.95	-	2.95	3.0	-	2.95	-		
		IOL	Logic	1.6	-			1.4	2.0	-	0.8	-		
	Output		OSCout	0.8	-			0.7	1.0	-	0.4	-	mA	VOL = 0.30
	Current	IOH	Logic	-1.6	-			-1.4	-2.0	-	-0.8	-	mA	VOH = 2.4
			OSCout	-0.8	-			-0.7	-1.0	-	-0.4	-	mA	VOH = 2.4
	Supply	IDD											mA	fosc=fin= 10 MHz
	Currents	ISB		-	150			-	40	150	-	150	µA	fosc=fin=0
		IPU							30				µA	VIL = 0

Application Figures

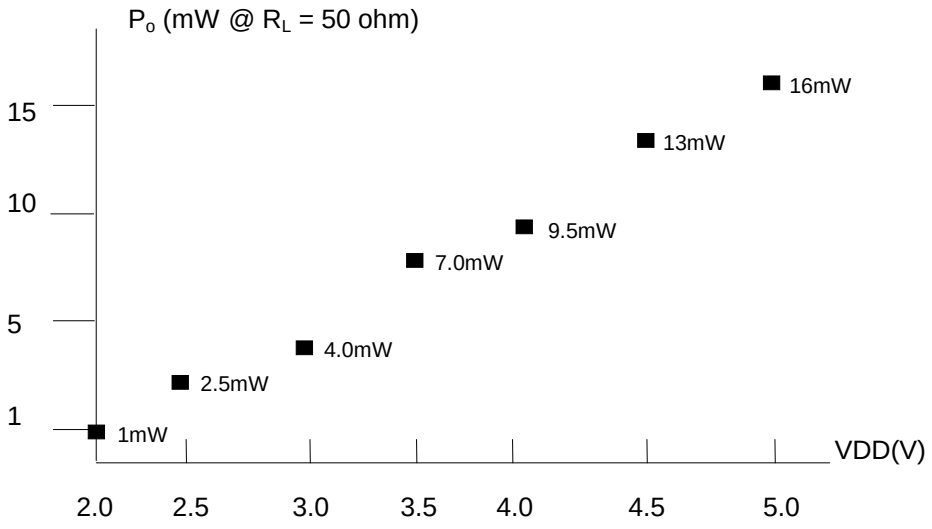


Figure 3. Transmit Power versus Supply Voltage

Application Figures (Cont.)

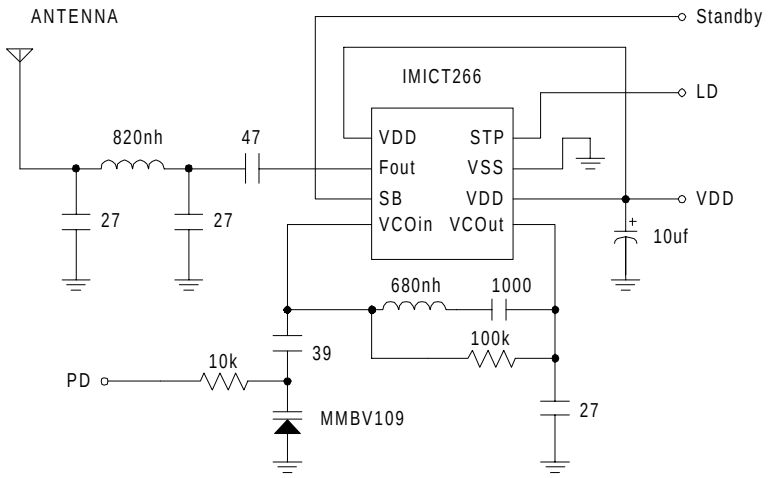
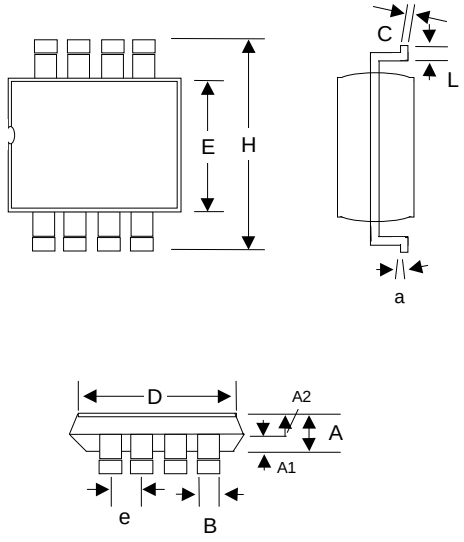


Figure 4. 46/49MHz VCO Design Example

Package Drawing and Dimensions



NARROW SOIC PACKAGE
(150 Mil)

8-Pin Narrow SOIC Outline Dimensions

	INCHES			MILLIMETERS		
SYMBOL	MIN	NOM	MAX	MIN	NOM	MAX
A	.061	.064	.068	1.55	1.63	1.73
A_1	.004	.006	.0098	0.127	0.15	0.25
A_2	.055	.058	.061	1.40	1.47	1.55
B	0.138	.016	.0192	0.35	0.41	0.49
C	.0075	.008	.0098	0.19	0.20	0.25
D	.189	.194	.196	4.80	4.93	4.98
E	.150	.155	.157	3.81	3.94	3.99
e	.050 BSC			1.27 BSC		
H	.230	.236	.244	5.84	5.99	6.20
L	.016	.025	.035	0.41	0.64	0.89
a	0°	5°	8°	0°	5°	8°

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