

IMICT269/270

COMPLETE CT-0 FREQUENCY SYNTHESIZER

Feb. 1996

CMOS LSI

Complete Frequency Synthesizer For Worldwide CT-0 Designs

PRODUCT DESCRIPTION

IMICT269/270 are complete PLL frequency synthesizers for worldwide CT-0 cordless phone designs with eight existing different country frequency standards programmed in ROM. IMICT269 and IMICT270 are matched pair chips to be used in Base-set and Hand-set designs respectively. Each device contains two independent PLL/VCO frequency synthesizers with a common crystal oscillator and reference divider to generate CT-0 transmit and receive frequency pairs. On-chip channel counter gives two methods of frequency channel selection; either through a single trig pulse increment or by a short 5(or4) bit serial programming word. Three country code jumping pins combine to select 1 of 8 different country CT-0 frequency standards. IMICT269 and IMICT270 have the same package pinouts except their ROMs inside.

The on-chip high efficient transmit amplifier has enough power to meet all CT-0 RF power specifications at the antenna. The VCO STBY function stops all power consumption of the transmit channel. Transmit enable pin (TxEN) can be used with the transmit PLL LD pin to stop transmit power amplifier at the transmit PLL out-of-lock condition. "Psave" allows for stopping all the rest of circuits besides STBY control. These products are designed in IMI special

CMOS processing technology and have wide working supply voltage and low current consumption advantages.

PRODUCT FEATURES

- Dual PLL/VCO synthesizers normalized for worldwide CT-0 cordless phone designs;
- Channel selection with either 5 (or 4) bit serial programming or push button single pulse channel circular step increment;
- Matched pair of chips for Base (IMICT269) and Handset (IMICT270) designs;
- High efficiency of on-chip transmit power amplifier;
- Real standby with zero current consumption on transmit channel;
- Transmit PLL lock detection and transmit power cut-off protection at out-of-lock condition;
- Power saving mode for further power saving besides transmit power standby;
- 2.7V to 5V working voltage;
- Low current consumption;
- Working Temperature: -40°C TO + 85° C;
- Space saving 28 pin SSOP package.

APPLICATIONS

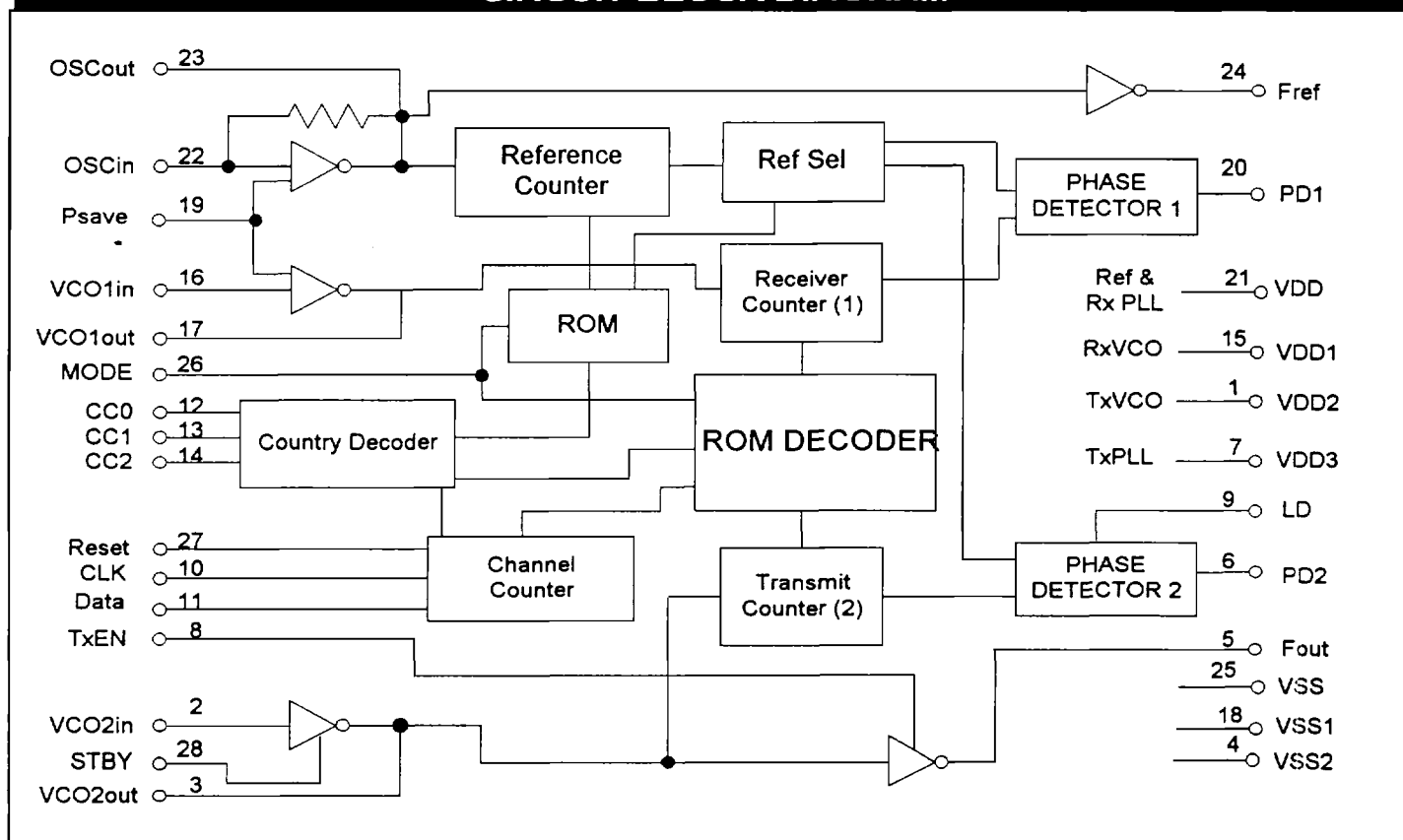
The devices are specially designed to operate in CT-0 cordless phones of the following countries:

Country	Freq. (MHz)	# Channels	Ref. Fref. (kHz)	1st IF (MHz)
USA	43/49	(25)	5	10.695
Korea	46/49	(15)	5	10.695
PRC	45/48	(10)	5	10.695
Australia	30/39	(10)	5	10.695
Spain	31/41	(12)	5	10.695
France	26/41	(15)	6.25	10.70
Netherlands	31/40	(12)	6.25	10.70
U.K.	1.7/47	(8)	1 / 6.25	10.70

Feb. 1996

CMOS LSI

Complete Frequency Synthesizer For Worldwide CT-0 Designs

CIRCUIT BLOCK DIAGRAM**MAXIMUM RATINGS**

Voltage Relative to VSS:	-0.3V to 7V
Voltage Relative to VDD	0.3V
Storage Temperature:	-65°C to 150°C
Ambient Temperature:	-40°C to 85°C
Recommended Operating Range:	2.7-5.5V

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 of any voltage higher than the maximum rated voltages to this circuit. For proper operation, Vin and Vout should be constrained to the range:

$$V_{SS} < (V_{in} \text{ or } V_{out}) < V_{DD}$$

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

Feb. 1996

CMOS LSI

Complete Frequency Synthesizer For Worldwide CT-0 Designs

PIN DESCRIPTIONS

<u>PIN #</u>	<u>NAME</u>	<u>DESCRIPTION</u>
22	OSCin	These pins are used to form a reference oscillator (and 2nd LO) when connected to an external parallel resonant crystal. For phase detector reference frequency of 5kHz, a 10.240 MHz crystal is used. And an 11.150 MHz crystal is used when the phase detector reference frequency is 6.25 kHz. OSCin can also be AC coupled from an external reference signal.
23	OS Cout	
24	Fref	Crystal OSC buffered output can be used to drive the 2nd mixer or as system clock.
5	Fout	This is the amplified output of VCO2. It has an output impedance near 50 ohms and can be directly connected to a band-pass filter or antenna impedance matching circuit such as duplexer. See output power versus power supply on Fig. 1.
28	STBY	When standby is low, the transmit VCO is disabled; this pin is used to stop the whole transmit channel (VCO2 & following power amplifier) power consumption when transmit channel STBY is needed .
19	Psave	When Psave is low, it is used to turn the crystal OS and receive VCO1 off for sleep mode waiting incoming calls in order to increase battery life, under the STBY condition.
16	VCOin1	These are inputs and outputs of the receive and transmit VCOs. They are typically connected to a "PI" Tank circuit with appropriate capacitors & a varactor to make a VCO as shown in the 25 channel USA CT-0 design in the example shown in Fig. 2.
17	VCOout1	
2	VCOin2	
3	VCOout2	
20	PD1	Phase detector single-ended tristate current charge pump outputs designed for driving transmit and receive VCOs through passive Lowpass filters to make PLL loops. They are designed for VCO's with positive (MHz / volt) tuning characteristics.
6	PD2	
9	LD	Tx PLL Lock Detection. An open drain N channel output which requires an external pull up resistor (100k~500k ohm) in design to show a lock condition. A low indicates an out of lock condition.
21	VDD	Rx PLL loop & Ref Oscillator positive power supply.
15	VDD1	Rx VCO positive power supply.
1	VDD2	Tx VCO positive power supply
7	VDD3	TX PLL loop positive power supply.

(Note: All VDDs are internally connected in the chips and they can not be used individually.)

Feb. 1996

CMOS LSI

Complete Frequency Synthesizer For Worldwide CT-0 Designs

PIN DESCRIPTIONS (continued)

<u>PIN #</u>	<u>NAME</u>	<u>DESCRIPTION</u>																																													
4	VSS2	Power supply GND for TX VCO & PLL																																													
18	VSS1	Power supply GND for Rx VCO & PLL																																													
25	VSS	Power supply GND for Ref OSC (Note: They are connected inside the chips.)																																													
8	TxEN	Transmit power amplifier enable. When high, the transmit output signal is turned on; When low, transmit power is off (Tx VCO2 is still on). It can be controlled by the LD directly or through uP to stop RF signal transmission whenever the TX PLL out-of-lock condition occurs.																																													
12	CC0	Country code jump pins select 1 of 8 country CT-0 cordless phone standard frequency sets. These three pins should always be connected to high or low.																																													
13	CC1																																														
14	CC2																																														
		<table><tr><td>CC2</td><td>CC1</td><td>CC0</td><td>Country</td><td># of Channels</td></tr><tr><td>0</td><td>0</td><td>0</td><td>USA</td><td>25</td></tr><tr><td>0</td><td>0</td><td>1</td><td>Korea</td><td>15</td></tr><tr><td>0</td><td>1</td><td>0</td><td>PRC</td><td>10</td></tr><tr><td>0</td><td>1</td><td>1</td><td>Australia</td><td>10</td></tr><tr><td>1</td><td>0</td><td>0</td><td>Spain</td><td>12</td></tr><tr><td>1</td><td>0</td><td>1</td><td>France</td><td>15</td></tr><tr><td>1</td><td>1</td><td>0</td><td>Netherlands</td><td>12</td></tr><tr><td>1</td><td>1</td><td>1</td><td>UK</td><td>8</td></tr></table>	CC2	CC1	CC0	Country	# of Channels	0	0	0	USA	25	0	0	1	Korea	15	0	1	0	PRC	10	0	1	1	Australia	10	1	0	0	Spain	12	1	0	1	France	15	1	1	0	Netherlands	12	1	1	1	UK	8
CC2	CC1	CC0	Country	# of Channels																																											
0	0	0	USA	25																																											
0	0	1	Korea	15																																											
0	1	0	PRC	10																																											
0	1	1	Australia	10																																											
1	0	0	Spain	12																																											
1	0	1	France	15																																											
1	1	0	Netherlands	12																																											
1	1	1	UK	8																																											
10	Clock	This is a positive edge triggered input. If Mode pin is set to "1", this input is a clock for serially loading the data on the Data pin. If Mode pin is set to "0", this input clock trigs the channel counter to the next consecutive channel No. (there is a smith trigger circuit on this input pin to aid the input key debouncing).																																													
27	Reset	A low pulse on this pin always resets the channel counter to channel 1. If this pin is bypassed to ground with a 0.1uF capacitor, the chip has a power on reset default to channel 1. This pin has an internal pull-up resistor.																																													
11	Data	This pin is the Data input when Mode is high for serial programming the channe counter register. It is better connected to "high" when using channel step increment mode.																																													

Feb. 1996

CMOS LSI

Complete Frequency Synthesizer For Worldwide CT-0 Designs

PIN DESCRIPTIONS (continued)

PIN#	NAME	DESCRIPTION
26	Mode	Programming Mode. Low = channel increment mode; High = serial input data mode. It should be "low" for that the Clock pin increments the channel counter in step. The counter will be circulated to channel 1 after the highest valid channel number. It should be "High" for that serial programming in which logic signals on the Data pin are serially shifted into the channel counter register by the positive transitions of the clock signal. For example as the following:

SERIAL PROGRAMING EXAMPLE FOR U.S.A. 25 CHANNEL (COUNTRY CODE 0 0 0)**The channel counter state corresponding to channel No. is as the following:**

Counter State (B4 B3 B2 B1 B0)	Channel No.	Counter State (B4 B3 B2 B1 B0)	Channel No.
0 0 0 0 0	1	0 1 1 0 1	14
0 0 0 0 1	2	0 1 1 1 0	15
0 0 0 1 0	3	0 1 1 1 1	16
0 0 0 1 1	4	1 0 0 0 0	17
0 0 1 0 0	5	1 0 0 0 1	18
0 0 1 0 1	6	1 0 0 1 0	19
0 0 1 1 0	7	1 0 0 1 1	20
0 0 1 1 1	8	1 0 1 0 0	21
0 1 0 0 0	9	1 0 1 0 1	22
0 1 0 0 1	10	1 0 1 1 0	23
0 1 0 1 0	11	1 0 1 1 1	24
0 1 0 1 1	12	1 1 0 0 0	25
0 1 1 0 0	13		

Note: Programmed channel counter states which are not within the defined valid channel number range of the country frequency tables (1~8) will all be set to channel 1. For example, 11001 (channel 26) to 11111 (channel 32) will be set to channel 1. By the way, when the chip is used in other than the US 25 CH application, the B5 bit can be treated as a "don't care" and only 4 bits need to be programmed.

IMICT269/270

COMPLETE CT-0 FREQUENCY SYNTHESIZER

Feb. 1996

CMOS LSI

Complete Frequency Synthesizer For Worldwide CT-0 Designs

OPERATING CHARACTERISTICS															
VDD = 5 VOLTS															
Characteristics		Symbol		-40°C		0°C		25°C			85°C		Unit	Conditions	
				Min	Max	Min	Max	Min	Typ	Max	Min	Max			
Dynamic	Pin Capacitance	Cin		-	10			-	6	10	-	10	pF		
		Cout		-	10			-	6	10	-	10	pF		
Static	Input Voltages	VIL		1	1.5	-	1.5	-	2.75	1.5	-	1.5	Vdc		
		VIH		3.5	-	3.5	-	3.5	2.75	-	3.5	-			
	Output Voltages	VOL		-	0.05	-	0.05	-	0.0	0.05	-	0.05	Vdc		
		VOH		4.95	-	4.95	-	4.95	5.0	-	4.95	-			
	Output Current	IOL	Logic	2.4	-			2.0	2.8	-	1.6	-	mA	VOL = 0.40	
			OS Cout	1.2	-			1.0	1.4	-	0.8	-			
		IOH	Logic	-2.4	-			-2.0	-2.8	-	-1.6	-	mA	VOH = 4.0	
			OS Cout	-1.2	-			-1.0	-1.4	-	-0.8	-			
	Supply Currents	IDD											mA	fosc=fin= 10 MHz	
		ISB				150			-	40	150	-	150	μA	fosc=fin=0
		IPU								50				μA	VIL = 0

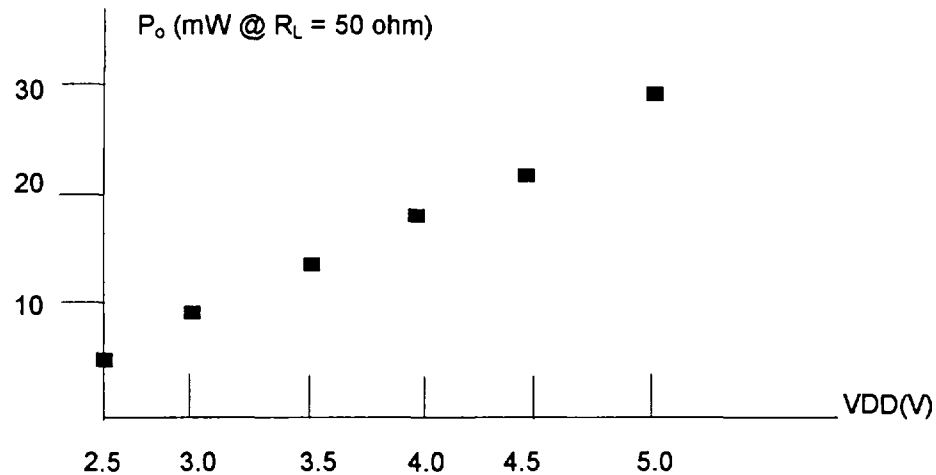
VDD = 3 VOLTS														
Characteristics		Symbol		-40°C		0°C		25°C			85°C		Unit	Conditions
				Min	Max	Min	Max	Min	Typ	Max	Min	Max		
Dynamic	Pin	Cin		-	10			-	6	10	-	10	pF	
	Capacitance	Cout		-	10			-	6	10	-	10	pF	
Static	Input Voltages	VIL		-	0.9			-	1.35	0.9	-	0.9	Vdc	
		VIH		2.1	-			2.1	1.65	-	2.1	-		
	Output Voltages	VOL		-	0.05	-	0.05	-	0.0	0.05	-	0.05	Vdc	
		VOH		2.95	-	2.95	-	2.95	3.0	-	2.95	-		
	Output Current	IOL	Logic	1.6	-			1.4	2.0	-	0.8	-	mA	VOL = 0.30
			OScout	0.8	-			0.7	1.0	-	0.4	-		
		IOH	Logic	-1.6	-			-1.4	-2.0	-	-0.8	-	mA	VOH = 2.4
			OScout	-0.8	-			-0.7	-1.0	-	-0.4	-		
	Supply Currents	IDD											mA	fosc=fin= 10 MHz
		ISB		-	150			-	40	150	-	150	μA	fosc=fin=C
		IPU							30				μA	VIL = 0

INTERNATIONAL MICROCIRCUITS, INC. 525 LOS COCHES ST.
MILPITAS, CA 95035 TEL: 408-263-6300 FAX 408-263-6571

Feb. 1996

CMOS LSI

Complete Frequency Synthesizer For Worldwide CT-0 Designs

APPLICATION FIGURES**Figure 1. Transmit Power versus Supply Voltage**

COMPLETE CT-0 FREQUENCY SYNTHESIZER

Feb. 1996

CMOS LSI
Complete Frequency Synthesizer For Worldwide CT-0 Designs

APPLICATION FIGURES (Cont.)

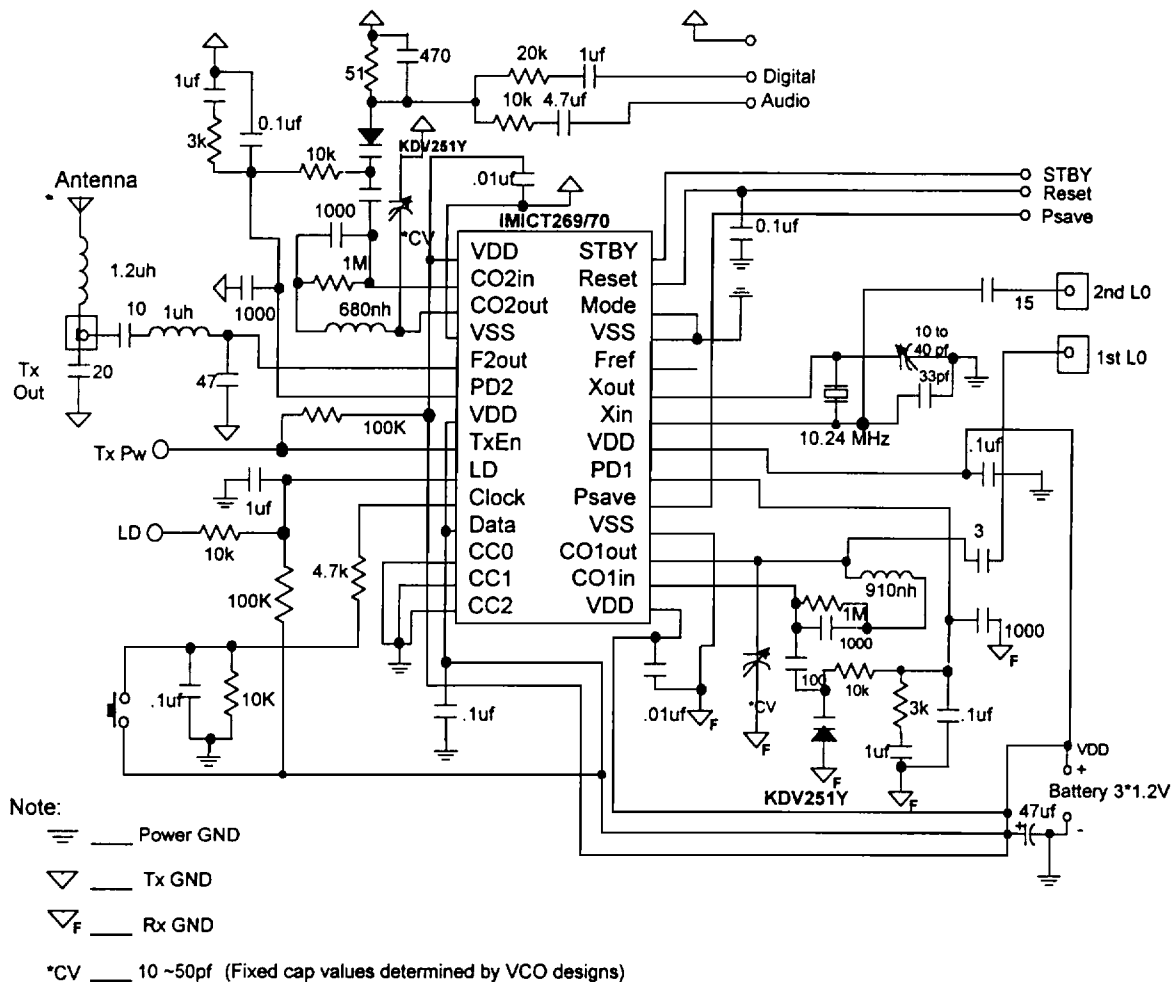


Figure 2. U.S.A 25 Channel CT-0 Design Example

Feb. 1996

CMOS LSI

Complete Frequency Synthesizer For Worldwide CT-0 Designs

WORLDWIDE CT-0 FREQUENCY TABLES (1-8)*Table 1 U.S.A. (CC2,CC1,CC0 = 000)*

U.S.A. CT-0 Base Set Frequency					U.S.A. CT-0 Hand Set Frequency			
Channel Number	Tx Channel Frequency (MHz)	Tx Counter Value (Ref. Freq.=5.00 kHz)	Rx 1st LO Frequency (MHz) [1st IF=10.695 MHz]	Rx Counter Value (Ref. Freq.=5.00 kHz)	Tx Channel Frequency (MHz)	Tx Counter Value (Ref. Freq.=5.00 kHz)	Rx 1st LO Frequency (MHz) [1st IF=10.695 MHz]	Rx Counter Value (Ref. Freq.=5.00 kHz)
1	46.610	9322	38.975	7795	49.670	9934	35.915	7183
2	46.630	9326	38.150	7830	49.845	9969	35.935	7187
3	46.670	9334	38.165	7833	49.860	9972	35.975	7195
4	46.710	9342	39.075	7815	49.770	9954	36.015	7203
5	46.730	9346	39.180	7836	49.875	9975	36.035	7207
6	46.770	9354	39.135	7827	49.830	9966	36.075	7215
7	49.830	9366	39.195	7839	49.890	9978	36.135	7227
8	46.870	9374	39.235	7847	49.930	9986	36.175	7235
9	46.930	9386	39.295	7859	49.990	9998	36.235	7247
10	46.970	9394	39.275	7855	49.970	9994	36.275	7255
11	43.720	8744	38.065	7613	48.760	9752	33.025	6605
12	43.740	8748	38.145	7529	49.840	9768	33.045	6609
13	43.820	8764	38.165	7633	48.860	9772	33.125	6625
14	43.840	8768	38.225	7645	48.920	9784	33.145	6629
15	43.920	8784	38.325	7665	49.020	9804	33.225	6645
16	43.960	8792	38.385	7677	49.080	9816	33.265	6653
17	44.120	8824	38.405	7681	49.100	9820	33.425	6685
18	44.160	8832	38.465	7693	49.160	9832	33.465	6693
19	44.180	8836	38.505	7701	49.200	9840	33.485	6697
20	44.200	8840	38.545	7709	49.240	9848	33.505	6701
21	44.320	8864	38.585	7717	49.280	9856	33.625	6725
22	44.360	8872	38.665	7733	49.360	9872	33.665	6733
23	44.400	8880	38.705	7741	49.400	9880	33.705	6741
24	44.460	8892	38.765	7753	49.460	9892	33.765	6753
25	44.480	8896	38.805	7761	49.500	9900	33.785	6757

Table 2 KOREA (CC2,CC1,CC0 = 001)

Korea CT-0 Base Set Frequency					Korea CT-0 Hand Set Frequency			
Channel Number	Tx Channel Frequency (MHz)	Tx Counter Value (Ref. Freq.=5.00 kHz)	Rx 1st LO Frequency (MHz) [1st IF=10.695 MHz]	Rx Counter Value (Ref. Freq.=5.00 kHz)	Tx Channel Frequency (MHz)	Tx Counter Value (Ref. Freq.=5.00 kHz)	Rx 1st LO Frequency (MHz) [1st IF=10.695 MHz]	Rx Counter Value (Ref. Freq.=5.00 kHz)
1	46.610	9322	38.975	7795	49.670	9934	35.915	7183
2	46.630	9326	38.150	7830	49.845	9969	35.935	7187
3	46.670	9334	38.165	7833	49.860	9972	35.975	7195
4	46.710	9342	39.075	7815	49.770	9954	36.015	7203
5	46.730	9346	39.180	7836	49.875	9975	36.035	7207
6	46.770	9354	39.135	7827	49.830	9966	36.075	7215
7	49.830	9366	39.195	7839	49.890	9978	36.135	7227
8	46.870	9374	39.235	7847	49.930	9986	36.175	7235
9	46.930	9386	39.295	7859	49.990	9998	36.235	7247

IMICT269/270

COMPLETE CT-0 FREQUENCY SYNTHESIZER

Feb. 1996

CMOS LSI

Complete Frequency Synthesizer For Worldwide CT-0 Designs

Table 2 Korea (CC2, CC1, CC0 = 001)(Cont.)

10	46.970	9394	39.275	7855	49.970	9994	36.275	7255
11	46.510	9302	39.000	7800	49.695	9939	35.815	7163
12	46.530	9306	39.015	7803	49.710	9942	35.835	7167
13	46.550	9310	39.030	7806	49.725	9945	35.855	7171
14	46.570	9314	39.045	7809	49.740	9948	35.875	7175
15	46.590	9318	39.060	7812	49.755	9951	35.895	7179

Table 3 P.R.C. (CC2, CC1, CC0 = 010)

P.R.C. CT-0 Base Set Frequency					P.R.C. CT-0 Hand Set Frequency			
Channel Number	Tx Channel Frequency (MHz)	Tx Counter Value (Ref. Freq.=5.00 kHz)	Rx 1st LO Frequency (MHz) [1st IF=10.695 MHz]	Rx Counter Value (Ref. Freq.=5.00 kHz)	Tx Channel Frequency (MHz)	Tx Counter Value (Ref. Freq.=5.00 kHz)	Rx 1st LO Frequency (MHz) [1st IF=10.695 MHz]	Rx Counter Value (Ref. Freq.=5.00 kHz)
1	45.250	9050	37.555	7511	48.250	9650	34.555	6911
2	45.275	9055	37.580	7516	48.275	9655	34.580	6916
3	45.300	9060	37.605	7521	48.300	9660	34.605	6921
4	45.325	9065	37.630	7526	48.625	9665	34.630	6926
5	45.350	9070	37.655	7531	48.350	9670	34.655	6931
6	45.375	9075	37.680	7536	48.375	9675	34.680	6936
7	45.400	9080	37.705	7541	48.400	9680	34.705	6941
8	45.425	9085	37.730	7546	48.425	9685	34.730	6946
9	45.450	9090	37.755	7551	48.450	9690	34.755	6951
10	45.475	9095	37.780	7556	48.475	9695	34.780	6956

Table 4 Australia (CC2, CC1, CC0 = 011)

Australia CT-0 Base Set Frequency					Australia CT-0 Hand Set Frequency			
Channel Number	Tx Channel Frequency (MHz)	Tx Counter Value (Ref. Freq.=5.00 kHz)	Rx 1st LO Frequency (MHz) [1st IF=10.695 MHz]	Rx Counter Value (Ref. Freq.=5.00 kHz)	Tx Channel Frequency (MHz)	Tx Counter Value (Ref. Freq.=5.00 kHz)	Rx 1st LO Frequency (MHz) [1st IF=10.695 MHz]	Rx Counter Value (Ref. Freq.=5.00 kHz)
1	30.075	6015	29.080	5816	39.775	7955	19.380	3876
2	30.125	3025	29.130	5826	39.825	7965	19.430	3886
3	30.175	6035	29.180	5836	39.875	7975	19.480	3896
4	30.225	6045	29.230	5846	39.925	7985	19.530	3906
5	30.275	6055	29.280	5856	39.975	7995	19.580	3916
6	30.100	6020	29.105	5821	39.800	7960	19.405	3881
7	30.150	6030	29.155	5831	39.850	7970	19.455	3891
8	30.200	6040	29.205	5841	39.900	7980	19.505	3901
9	30.250	6050	29.255	5851	39.950	7990	19.555	3911
10	30.300	6060	29.305	5861	40.000	8000	19.605	3921

Table 5 Spain (CC2, CC1, CC0 = 100)

Spain CT-0 Base Set Frequency					Spain CT-0 Hand Set Frequency			
Channel Number	Tx Channel Frequency (MHz)	Tx Counter Value (Ref. Freq.=5.00 kHz)	Rx 1st LO Frequency (MHz) [1st IF=10.695 MHz]	Rx Counter Value (Ref. Freq.=5.00 kHz)	Tx Channel Frequency (MHz)	Tx Counter Value (Ref. Freq.=5.00 kHz)	Rx 1st LO Frequency (MHz) [1st IF=10.695 MHz]	Rx Counter Value (Ref. Freq.=5.00 kHz)
1	31.025	6205	29.230	5846	39.925	7985	20.330	4066
2	31.050	6210	29.255	5851	39.950	7990	20.355	4071

INTERNATIONAL MICROCIRCUITS, INC. 525 LOS COCHES ST.
MILPITAS, CA 95035 TEL: 408-263-6300 FAX 408-263-6571

IMICT269/270

COMPLETE CT-0 FREQUENCY SYNTHESIZER

Feb. 1996

CMOS LSI

Complete Frequency Synthesizer For Worldwide CT-0 Designs

Table 5 Spain (CC2,CC1,CC0 = 100) (Cont.)

3	31.075	6215	29.280	5856	39.975	7995	20.380	4076
4	31.100	6220	29.305	5861	40.000	8000	20.405	4081
5	31.125	6225	29.330	5866	40.025	8005	20.430	4086
6	31.150	6230	29.355	5871	40.050	8010	20.455	4091
7	31.175	6235	29.380	5876	40.075	8015	20.480	4096
8	31.200	6240	29.405	5881	40.400	8020	20.505	4101
9	31.250	6250	29.455	5891	40.150	8030	20.555	4111
10	31.275	6255	29.480	5896	40.175	8035	20.580	4116
11	31.300	6260	29.505	5901	40.200	8040	20.605	4121
12	31.325	6265	29.530	5906	40.225	8045	20.630	4126

Table 6 France (CC2,CC1,CC0 = 101)

France CT-0 Base Set Frequency					France CT-0 Hand Set Frequency			
Channel Number	Tx Channel Frequency (MHz)	Tx Counter Value (Ref.Freq.=6.25 kHz)	Rx 1st LO Frequency (MHz) [1st IF=10.7 MHz]	Rx Counter Value(Ref. Freq.=6.25kHz)	Tx Channel Frequency (MHz)	Tx Counter Value (Ref. Freq.=6.25 kHz)	Rx 1st LO Frequency (MHz) [1st IF=10.7 MHz]	Rx Counter Value (Ref. Freq.=6.25 kHz)
1	26.4875	4238	30.7875	4926	41.4875	6638	37.1875	5950
2	26.4750	4236	30.7750	4924	41.4750	6636	37.1750	5848
3	26.4625	4234	30.7625	4922	41.4625	6634	37.1625	5946
4	26.4500	4232	30.7500	4920	41.4500	6632	37.1500	5944
5	26.4375	4230	30.7375	4918	41.4375	6630	37.1375	5942
6	26.4250	4228	30.7250	4916	41.4250	6628	37.1250	5940
7	26.4125	4226	30.7125	4914	41.4125	6626	37.1125	5938
8	26.4000	4224	30.7000	4912	41.4000	6624	37.1000	5936
9	26.3875	4222	30.6875	4910	41.3875	6622	37.0875	5934
10	26.3750	4220	30.6750	4908	41.3750	6620	37.0750	5932
11	26.3625	4218	30.6625	4906	41.3625	6618	37.0625	5930
12	26.3500	4216	30.6500	4904	41.3500	6616	37.0500	5928
13	26.3375	4214	30.6375	4902	41.3375	6614	37.0375	5926
14	26.3250	4212	30.6250	4900	41.3250	6612	37.0250	5924
15	26.3125	4210	30.6125	4898	41.3125	6610	37.0125	5922

Table 7 Netherlands (CC2,CC1,CC0 = 110)

Netherland CT-0 Base Set Frequency					Netherland CT-0 Hand Set Frequency			
Channel Number	Tx Channel Frequency (MHz)	Tx Counter Value (Ref.Freq.=6.25 kHz)	Rx 1st LO Frequency (MHz) [1st IF=10.7 MHz]	Rx Counter Value(Ref. Freq.=6.25kHz)	Tx Channel Frequency (MHz)	Tx Counter Value (Ref. Freq.=6.25 kHz)	Rx 1st LO Frequency (MHz) [1st IF=10.7 MHz]	Rx Counter Value (Ref. Freq.=6.25 kHz)
1	31.0375	4966	29.2375	4678	39.9375	6390	20.3375	3254
2	31.0625	4970	29.2625	4682	39.9625	6394	20.3625	3258
3	31.0875	4974	29.2875	4686	39.9875	6398	20.3875	3262
4	31.1125	4978	29.3125	4690	40.0125	6402	20.4125	3266
5	31.1375	4982	29.3375	4694	40.0375	6406	20.4375	3270
6	31.1625	4986	29.3625	4698	40.0625	6410	20.4625	3274
7	31.1875	4990	29.3875	4702	40.0875	6414	20.4875	3278
8	31.2125	4994	29.4125	4706	40.1125	6418	20.5125	3282
9	31.2375	4998	29.4375	4710	40.1375	6422	20.5375	3286

IMICT269/270

COMPLETE CT-0 FREQUENCY SYNTHESIZER

Feb. 1996

CMOS LSI

Complete Frequency Synthesizer For Worldwide CT-0 Designs

Table 7 Netherlands (CC2,CC1,CC0 = 110)(Cont.)

10	31.2625	5002	29.4625	4714	40.1625	6426	20.5625	3290
11	31.2875	5006	29.4875	4718	40.1875	6430	20.5875	3294
12	31.3125	5010	29.5125	4722	40.2125	6434	20.6125	3298

Table 8 U.K. (CC2,CC1,CC0 = 111)

U.K. CT-0 Base Set Frequency					U.K. CT-0 Hand Set Frequency			
Channel Number	Tx Channel Frequency (MHz)	Tx Counter Value (Ref.Freq.=1.00 kHz)	Rx 1st LO Frequency (MHz) [1st IF=10.7 MHz]	Rx Counter Value(Ref. Freq.=6.25 kHz)	Tx Channel Frequency (MHz)	Tx Counter Value Ref. Freq.=6.25 kHz	Rx 1st LO Frequency (MHz) [1st IF=10.7 MHz]	Rx Counter Value (Ref. Freq.=1.00 kHz)
1	1.6420	1642	36.75625	5881	47.45625	7593	12.342	12342
2	1.6620	1662	36.76875	5883	47.46875	7595	12.362	12362
3	1.6820	1682	36.78125	5885	47.48125	7597	12.382	12382
4	1.7020	1702	36.79375	5887	47.49375	7599	12.402	12402
5	1.7220	1722	36.80625	5889	47.50625	7601	12.422	12422
6	1.7420	1742	36.81875	5891	47.51875	7603	12.442	12442
7	1.7620	1762	36.83125	5893	47.53125	7605	12.462	12462
8	1.7820	1782	36.84375	5895	47.54375	7607	12.482	12482

CONNECTION DIAGRAM

VDD2	1	28	Standby
VCO2in	2	27	Reset
VCO2out	3	26	Mode
VSS2	4	25	VSS
Fout2	5	24	Fref
PD2	6	23	OSCout
VDD3	7	22	OSCin
TxEn	8	21	VDD
LD	9	20	PD1
Clock	10	19	Psave
Data	11	18	VSS1
CC0	12	17	VCO1out
CC1	13	16	VCO1in
CC2	14	15	VDD1

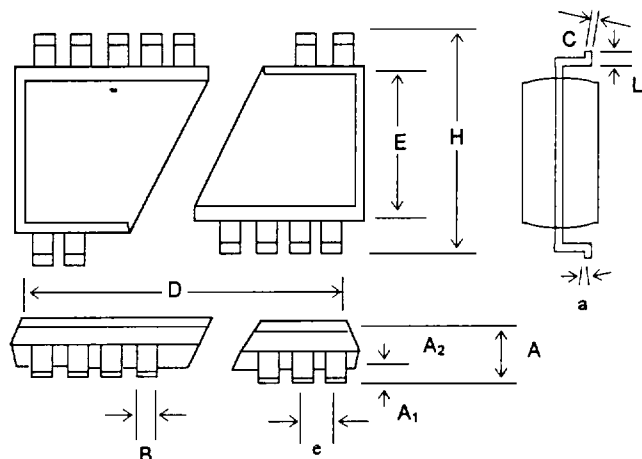
IMICT269/270

COMPLETE CT-0 FREQUENCY SYNTHESIZER

Feb. 1996

CMOS LSI
Complete Frequency Synthesizer For Worldwide CT-0 Designs

PACKAGE DRAWING AND DIMENSIONS



28 PIN SSOP OUTLINE DIMENSIONS

SYMBOL	INCHES			MILLIMETERS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.08	0.073	0.078	1.73	1.8	1.99
A ₁	0.002	0.005	0.008	0.05	0.13	0.21
A ₂	0.066	0.068	0.070	1.68	1.73	1.78
B	0.010	0.012	0.015	0.25	0.30	0.38
C	0.005	0.006	0.009	0.13	0.15	0.22
D	0.397	0.402	0.407	10.07	10.20	10.33
E	0.205	0.209	0.212	5.20	5.30	5.38
e	0.0256 BSC			0.65 BSC		
H	0.301	0.307	0.311	7.65	7.80	7.90
a	0°	4°	8°	0°	4°	8°
L	0.022	0.030	0.037	0.55	0.75	0.95

ORDERING INFORMATION

Part Number	Package Type	Production Flow
IMICT269xYB	28 PIN SSOP	INDUSTRIAL -40°C TO + 85° C

Note: The "x" following the IMI Device Number denotes the device revision. The ordering part number is formed by a combination of device number, device revision, package style, and screening as shown below.

Marking: Example: IMI
CT269xYB or CT270xYB
Date code
Lot #

IMICT269xYB

Flow
B = Industrial, -40°C to 85°C

Package
Y = SSOP

Revision

IMI Device Number