

**SANYO**

No. 4305A

Dual VCO

## Overview

The LC7444 consists of two independent VCO (voltage controlled oscillator) circuits.

These circuits support VCO operation with only the addition of external resistors that determine the oscillation range.

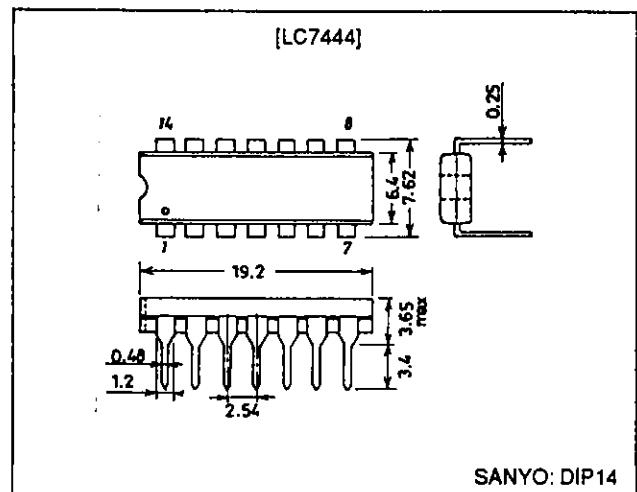
## Features

- Two independent VCO circuits
- The oscillator frequency range can be set with external resistors.
- Good linearity in the voltage - frequency conversion characteristics
- High-impedance oscillator control voltage input
- CMOS clock output
- Fabricated in a CMOS process for lower power
- Oscillator frequency range: 8 to 32 MHz
- Operating supply voltage:  $5\text{ V} \pm 10\%$
- Package: DIP14

## Package Dimensions

unit: mm

3003A-DIP14



## Specifications

Absolute Maximum Ratings at  $T_a = 25 \pm 2^\circ\text{C}$ ,  $V_{SS1} = V_{SS2} = 0\text{ V}$ ,  $V_{DD} = V_{DD1}, V_{DD2}$

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	$V_{DD\text{ max}}$		-0.3 to +7.0	V
Maximum input voltage	$V_{IN\text{ max}}$		-0.3 to $V_{DD} + 0.3$	V
Maximum output voltage	$V_{OUT\text{ max}}$		-0.3 to $V_{DD} + 0.3$	V
Allowable power dissipation	$P_d\text{ max}$		300	mW
Operating temperature	$T_{opr}$		-10 to +70	$^\circ\text{C}$
Storage temperature	$T_{stg}$		-55 to +125	$^\circ\text{C}$

Allowable Operating Ranges at  $T_a = -10$  to  $+70^\circ\text{C}$ ,  $V_{SS1} = V_{SS2} = 0\text{ V}$ ,  $V_{DD} = V_{DD1}, V_{DD2}$

Parameter	Symbol	Conditions	min	typ	max	Unit
Supply voltage	$V_{DD}$		4.5	5.0	5.5	V
Input high level voltage	$V_{IH}$	ENA1, ENA2	$0.7 V_{DD}$			V
Input low level voltage	$V_{IL}$	ENA1, ENA2			$0.3 V_{DD}$	V
Oscillator range resistors	Rrng	R1, R2	6.8		13	k $\Omega$

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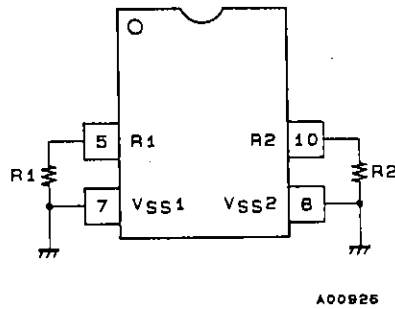
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110 JAPAN

# LC7444

**Electrical Characteristics at  $T_a = 25 \pm 2^\circ\text{C}$ ,  $V_{DD} = 5\text{ V} \pm 10\%$ ,  $V_{SS1} = V_{SS2} = 0\text{ V}$ ,  $V_{DD} = V_{DD1}, V_{DD2}$**

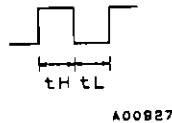
Parameter	Symbol	Conditions	min	typ	max	Unit
Output high level voltage	$V_{OH}$	OUT1, OUT2: $I_{OH} = -1\text{ mA}$	$V_{DD} - 0.4$			V
Output low level voltage	$V_{OL}$	OUT1, OUT2: $I_{OL} = 1\text{ mA}$			0.4	V
Quiescent current	$I_{DDS}$	$\overline{\text{ENA1}}, \overline{\text{ENA2}} = V_{DD}$ , FC1, FC2 = $V_{SS}$		2		mA
Operating current drain	$I_{DD}$	$R1 = R2 = 7.5\text{ k}\Omega$ , no output load, oscillator clock = 20 MHz		7		mA
Input leakage current	$I_{IH}, I_{IL}$		-1		+1	$\mu\text{A}$
Oscillator clock frequency operating range	$f_o$	$R1, R2 = 6.8\text{ k}\Omega$ , FC1, FC2 = $V_{SS}$ to $V_{DD}^{*1}$	16		32	MHz
		$R1, R2 = 13\text{ k}\Omega$ , FC1, FC2 = $V_{SS}$ to $V_{DD}^{*1}$	8		16	MHz
Duty	Du	*2		50		%

Note: 1.

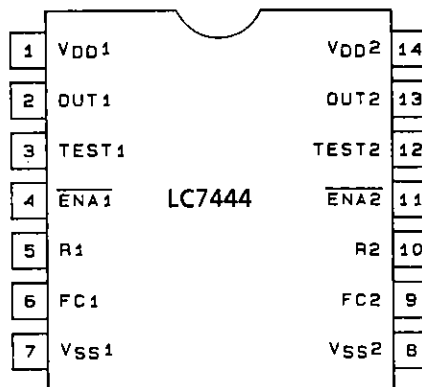


2. Duty: Du

$$Du = \frac{t_H}{t_H + t_L} \times 100$$



## Pin Assignment



Top view

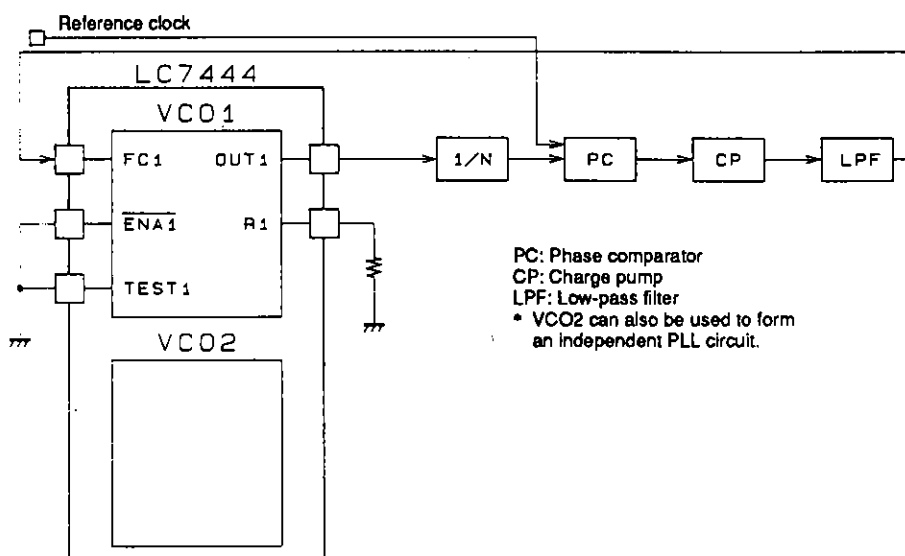
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Pin Functions

Pin No.	Symbol	Function
1	V <sub>DD1</sub>	Power supply
2	OUT1	VCO1 clock output
3	TEST1	Test pin. Must be tied low in normal operation.
4	ENA1	VCO1 enable input
5	R1	VCO1 oscillator range resistor
6	FC1	VCO1 control voltage input
7	V <sub>SS1</sub>	Ground

Pin No.	Symbol	Function
8	V <sub>SS2</sub>	Ground
9	FC2	VCO2 control voltage input
10	R2	VCO2 oscillator range resistor
11	ENA2	VCO2 enable input
12	TEST2	Test pin
13	OUT2	VCO2 clock output
14	V <sub>DD2</sub>	Power supply

Sample Application



A00825

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