AN8586SH

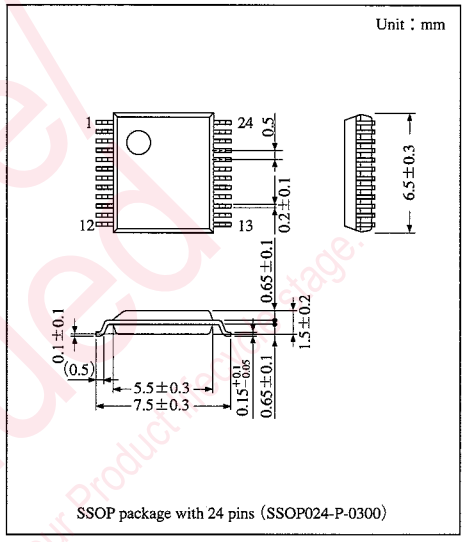
Cellular Telephone PLL IC Incorporating VCO

■ Overview

The AN8586SH is a mobile communication PLL IC (Bi-CMOS) incorporating a transmission VCO (TX IF : 90 MHz).

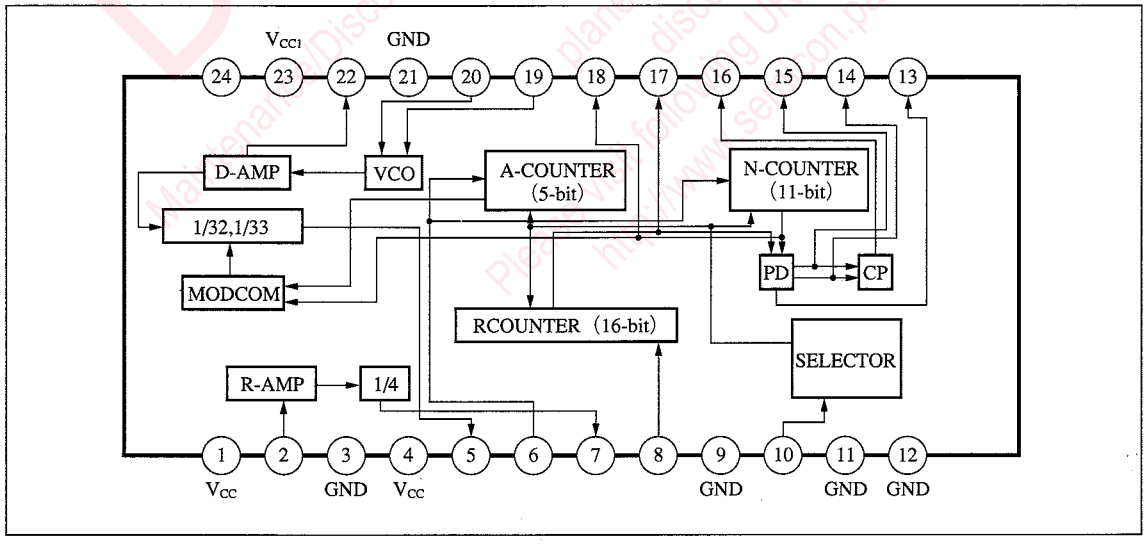
■ Features

- VCO components and a PLL are integrated into an IC.
- Small-outline surface-mount package with 0.5 mm pitch
- Provides for a product with fewer components.



SSOP package with 24 pins (SSOP024-P-0300)

■ Block Diagram



■ Pin Descriptions

Pin No.	Description	Pin No.	Description
1	V_{CC}	13	Lock detector output
2	Reference input	14	External phase detector output (1)
3	GND	15	External phase detector output (2)
4	V_{CC}	16	Phase detector output
5	Div. prescaler (1/32, 1/33) output	17	Ref. counter output
6	Div. counter input	18	Div. counter output
7	Ref. prescaler (1/4) output	19	RES1
8	Ref. counter input	20	RES2
9	GND	21	GND
10	Channel switching control	22	RF output
11	GND	23	$V_{CC}1$
12	GND	24	Regulator output (2.5V)

■ Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Rating	Unit
Supply voltage	V_{CC}	4.5	V
Supply current	I_{CC}	28	mA
Power dissipation	P_d	126	mW
Operating ambient temperature	T_{opr}	−20 to +75	℃
Storage temperature	T_{stg}	−55 to +125	℃

■ Recommended Operating Range

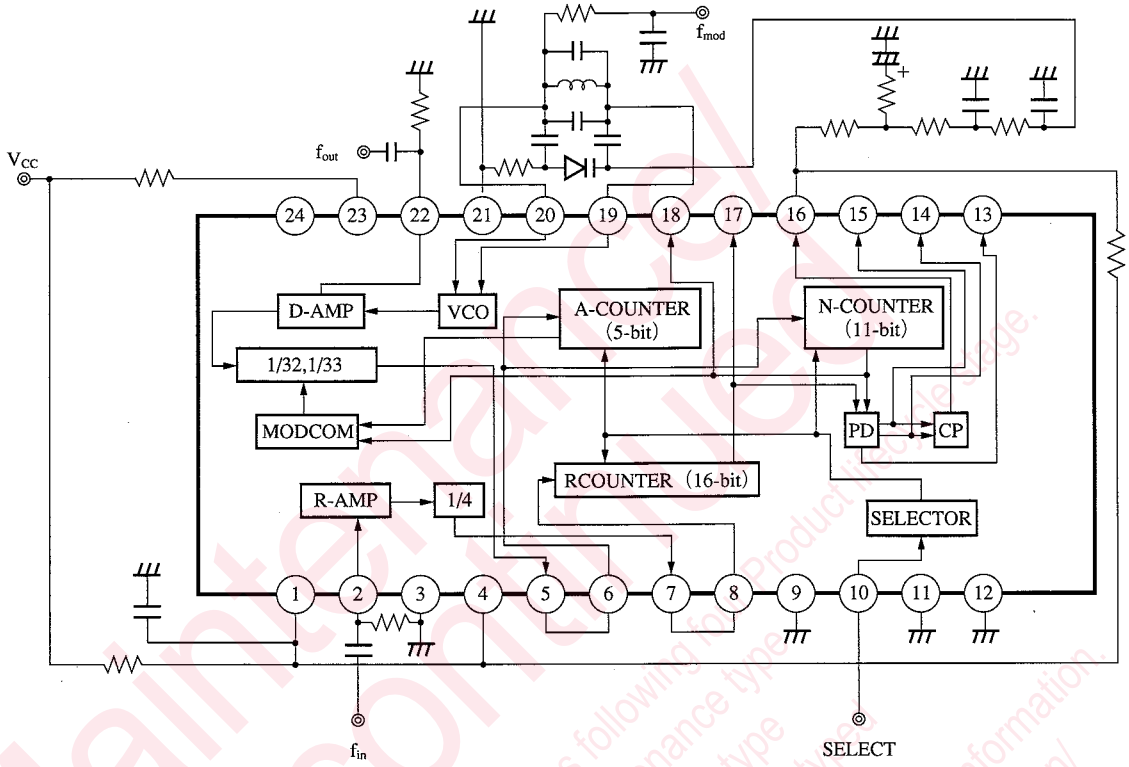
Parameter	Symbol	Range
Operating supply voltage range	V_{CC}	3.4V to 4.0V

■ Electrical Characteristics (Ta=25±2℃)

Parameter	Symbol	Condition	min	typ	max	Unit
Current consumption	I_{CC}	SELECT pin to V_{CC}	—	13.5	17	mA
Reference input level	Xin	fin=10~20MHz frout=fin/4	0.5	—	1.0	V_{P-P}
Power output (1)	Pout1	SELECT pin to V_{CC} (Pout : fout=90.0MHz)	−15	−12.6	—	dBm
Power output (2)	Pout2	SELECT pin to GND (Pout : fout=90.0MHz)	−15	−12.6	—	dBm
Output leak current	I_{LCP}	V_{CC1}=0V V_{CP}=3.7V, 0V	−1.0	0	1.0	μA
Output voltage (1)	V_{PCP}	V_{CC1}=0V I_{CP}=−1mA	2.9	3.35	3.8	V
Output voltage (2)	V_{NCP}	V_{CC1}=0V I_{CP}=1mA	−0.10	0.17	0.80	V

Note) Unless otherwise specified, V_{CC}=3.7V
Reference input : When the SELECT pin is connected to V_{CC}, f_{in}=12.8MHz, and Xin=0.7V_{P-P}.
When the SELECT pin is connected to GND, f_{in}=15.36MHz, and Xin=0.7V_{P-P}.

■ Application Circuit



■ Usage Note

Surge Breakdown Level

The following are design values for reference only (not guaranteed).
Condition : C=200pF, and R=0Ω

Pin No.	Positive breakdown level (V)
23	200 to 230

■ Counter Frequency Dividing Ratio

Status of SELECT	H	L
Ref counter	256	256
A counter	0	16
N counter	225	187

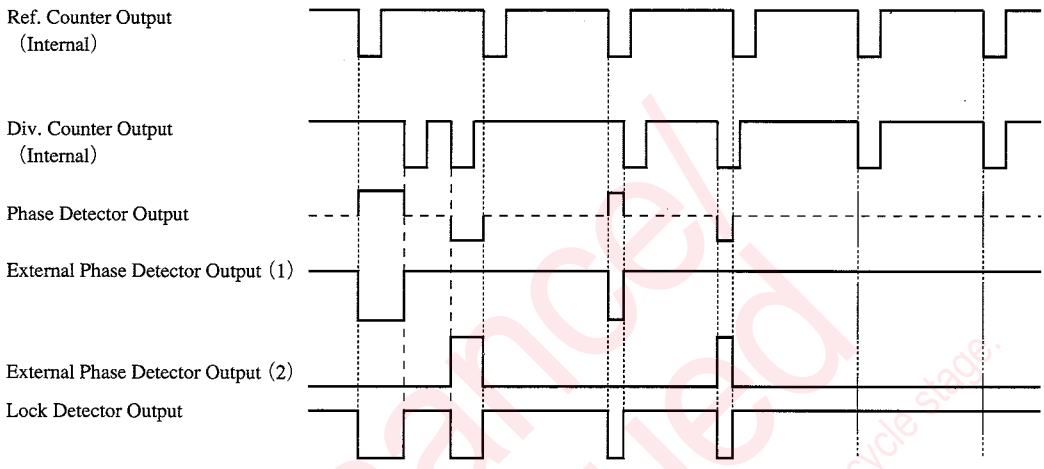
◎ VCO's oscillation frequency, fout, is calculated as follows :
fout = [(32×N) + A] × [(fin/4) ÷ R]

where R, A, and N are frequency dividing ratios of REF, A, and N counters respectively, and fin is the OSC frequency.
If fin is 12.8MHz, then [(fin/4) ÷ R] is 12.5kHz.

◎ Examples of frequency dividing are :
fout = 90MHz, SELECT = high, and fin = 12.80MHz
fout = 90MHz, SELECT = low, and fin = 15.36MHz

Note) The above are design values for reference only (not guaranteed).

■ PD Timechart



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