AN8585SH

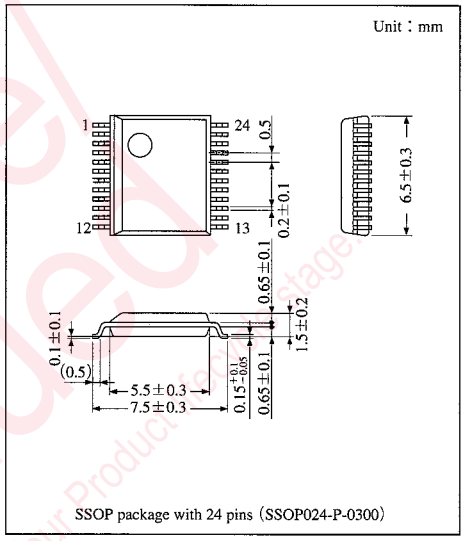
Cellular Telephone PLL IC Incorporating VCO

■ Overview

The AN8585SH is a mobile communication PLL IC incorporating a transmission VCO (TX IF : 145 MHz).

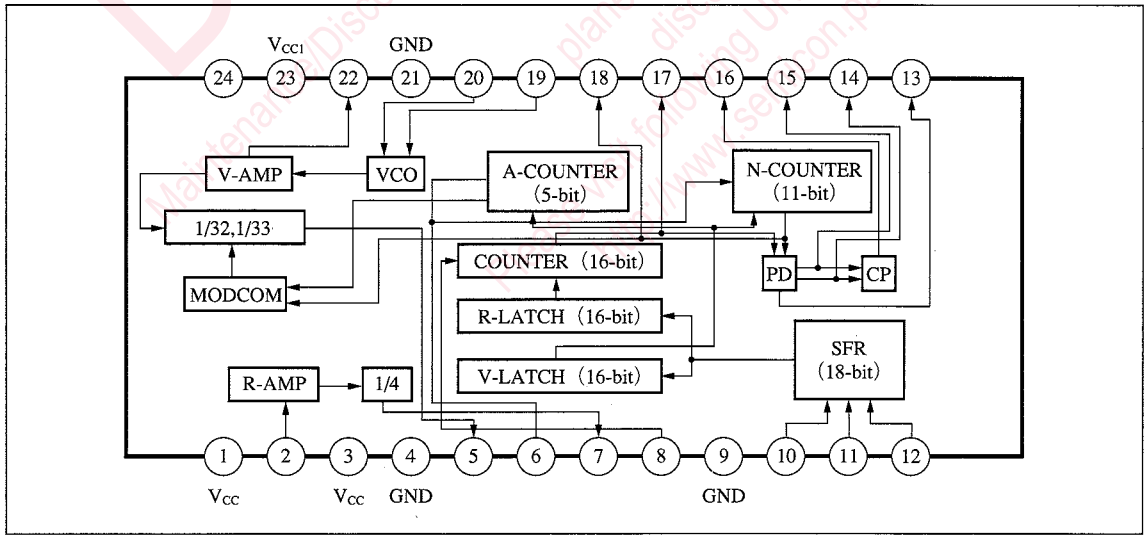
■ Features

- 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	VAR prescaler (1/32, 1/33) output	17	REF counter output
6	VAR counter input	18	VAR counter output
7	REF prescaler (1/4) output	19	RES1
8	REF counter input	20	RES2
9	GND	21	GND
10	Strobe input	22	RF output
11	Clock input	23	$V_{CC}1$
12	CH data input	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	130	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}	For f_{out}=145M, Hz	—	16.5	19	mA
Reference input level	X_{in}	f_{in}=10~20MHz, $f_{rout}=f_{in}/4$	0.5	—	1.0	V_{P-P}
Power output	P_{out}	For f_{out}=145MHz (P_{out}：f_{out}=145MHzのレベル)	−12	−8.5	—	dBm
RF output level (1)	V_{O2}	For f_{out}=145MHz, $V_{O2}=P_{O2}-P_{out}$ ($P_{O2}=2\times f_{out}$)	—	—	−5	dBc
RF output level (2)	V_{O3}	For f_{out}=145MHz, $V_{O3}=P_{O3}-P_{out}$ ($P_{O3}=3\times f_{out}$)	—	—	−5	dBc
V_F voltage	V_F	For f_{out}=145MHz	1.1	1.6	2.1	V

Note) Unless otherwise specified, V_{CC}=3.7 V, f_{in} : 12.8MHz, and X_{in} : 0.7V_{P-P}.

■ Electrical Characteristics (Design Values for Reference) (Ta = 25 ± 2℃)

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

Parameter	Symbol	Condition	min	typ	max	Unit
S/N	S/N	f_{out} = 145MHz, f_{mod} = 1kHz, f_{DEV} = ±1.75kHz	40	50	—	dB
Distortion	THD	f_{out} = 145MHz, f_{mod} = 1kHz, f_{DEV} = ±1.5kHz	—	−45	−40	dB
Modulation sensitivity	V_R	f_{out} = 145MHz, f_{mod} = 1kHz, f_{DEV} = ±1.75kHz	—	−24	−21	dBs
Modulation f. characteristics	Mf	f_{out} = 145MHz, f_{mod} = 20Hz ~ 4kHz (1kHz = 0dB)	−3	0	1	dB
Power-ON rise time	T_L	f_{out} = 145MHz	30	40	50	msec
RF output level (3)	V_{O10}	f_{out} = 145MHz, $V_{O10} = P_{O10} - P_{OUT}$, $P_{O10} = 10 \times f_{OUT}$	—	—	−38	dBc
RF output level (4)	V_{O11}	f_{out} = 145MHz, $V_{O11} = P_{O11} - P_{OUT}$, $P_{O11} = 11 \times f_{OUT}$	—	—	−38	dBc
RF output level (5)	V_{O12}	f_{out} = 145MHz, $V_{O12} = P_{O12} - P_{OUT}$, $P_{O12} = 12 \times f_{OUT}$	—	—	−38	dBc
C/N	C/N	f_{out} = 145MHz, 12.5kHz separation, 8kHz band	64	68	—	dB
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 f_{in} : 12.8MHz, and $X_{in} = 0.7V_{P-P}$.

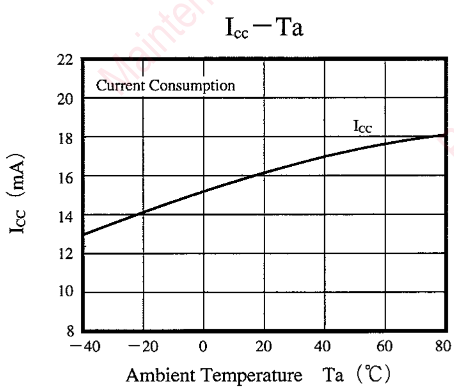
■ Usage Note

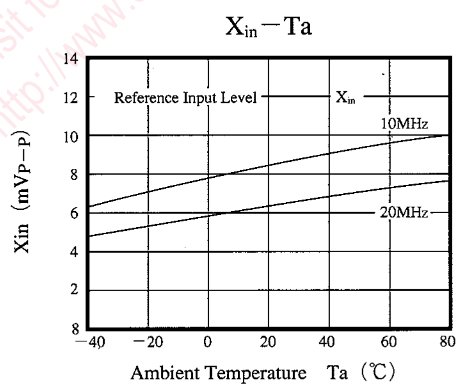
Surge Breakdown Levels

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

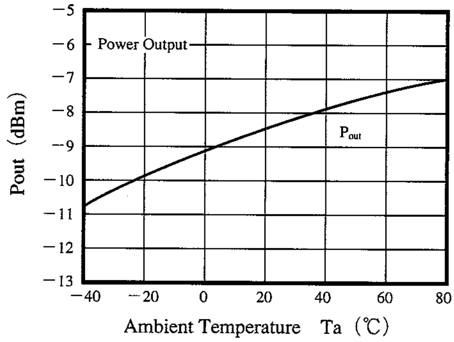
Pin No.	Positive breakdown level (V)
4	200 to 210
14	200 to 270
23	180 to 230

■ Characteristics Curve

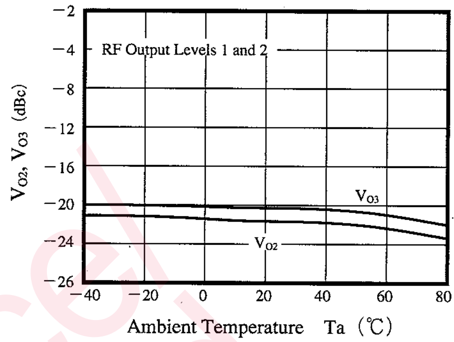




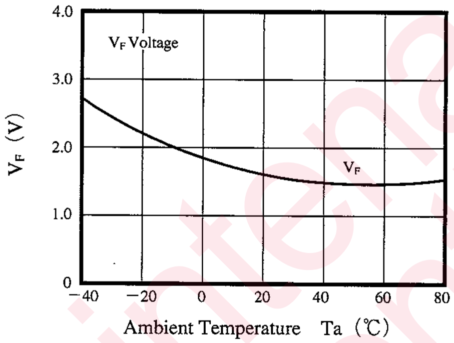
P_{out} — Ta



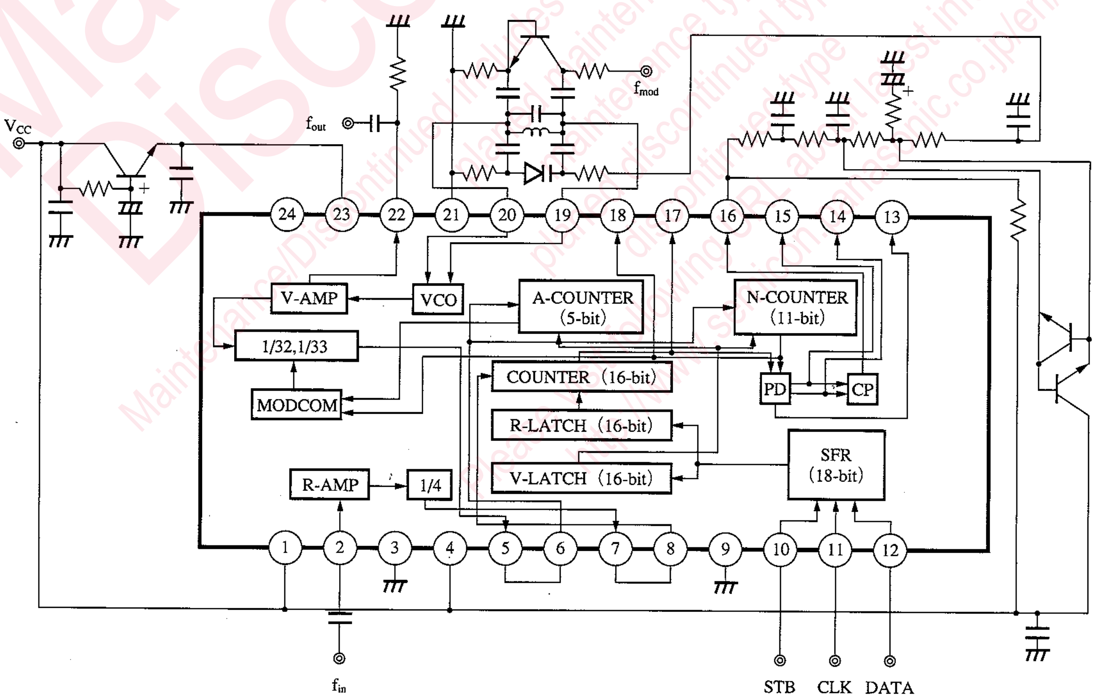
V_{O2}, V_{O3} — Ta



V_F — Ta



■ Application Circuit



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