

AN3917S

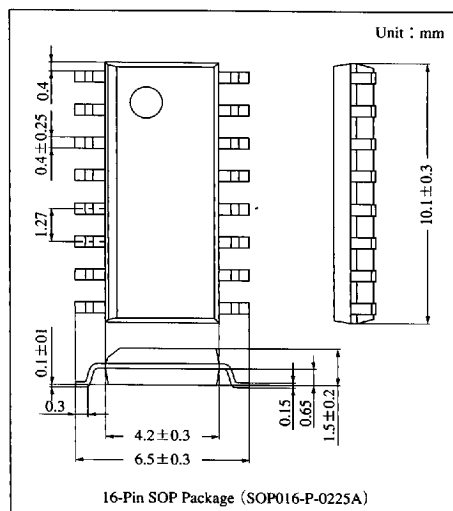
Crystal Oscillator IC with Built-in Multiplier (2 Times)

Overview

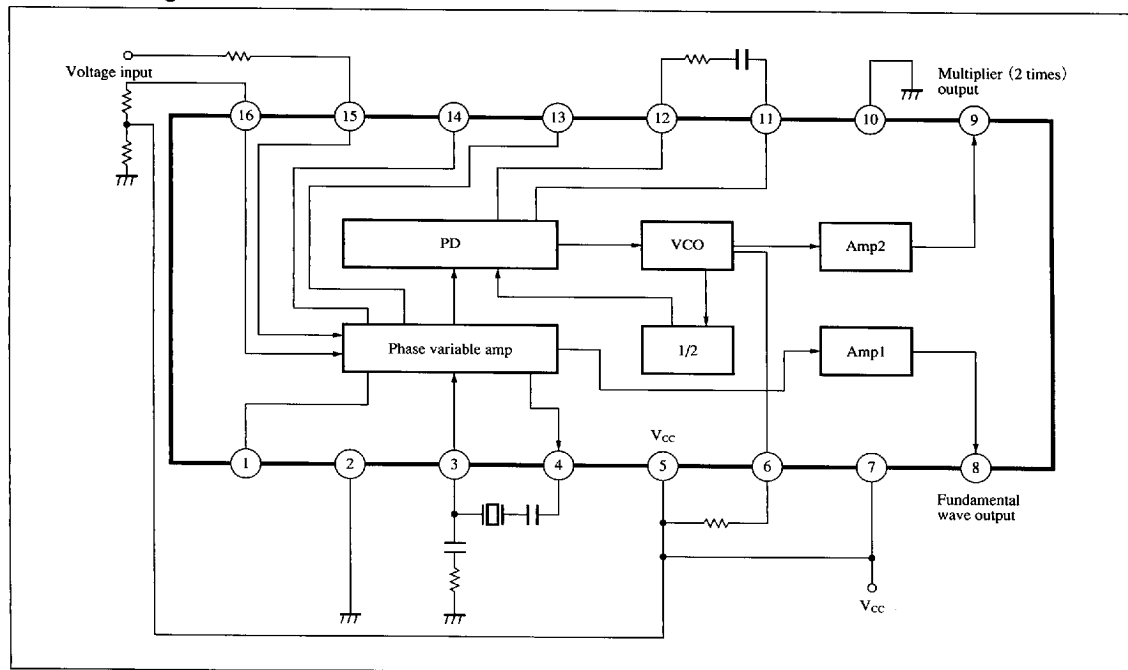
AN3917S is a voltage oscillator (VCO) IC using a quartz crystal.

Features

- Applicable to wide frequency range.
- Built-in fundamental wave output and multiplier (2 times) output
- Can also be used as a multiplier (2 times) for an external signal.
- Large output signal level



Block Diagram



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■ Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Supply voltage	V_{CC}	5.7	V
Supply current	I_{CC}	36	mA
Power dissipation ^{Note 2)}	P_D	180	mW
Operating ambient temperature ^{Note 1)}	T_{opr}	-20 to +75	°C
Storage temperature ^{Note 1)}	T_{stg}	-55 to +125	°C

Note 1) $T_a = 25^\circ\text{C}$ for other than storage temperature, operating ambient temperatures and power dissipation.

Note 2) Allowable power dissipation of the package at $T_a = 70^\circ\text{C}$.

■ Recommended Operating Range ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Range
Operating supply voltage range	V_{CC}	4.5V to 5.5V
Applicable frequency range	XTAL	13.2MHz to 21.5MHz 26.4MHz to 43.0MHz (using a multiplier [2 times])

■ Electrical Characteristics (unless otherwise specified, ambient temperature is $25 \pm 2^\circ\text{C}$)

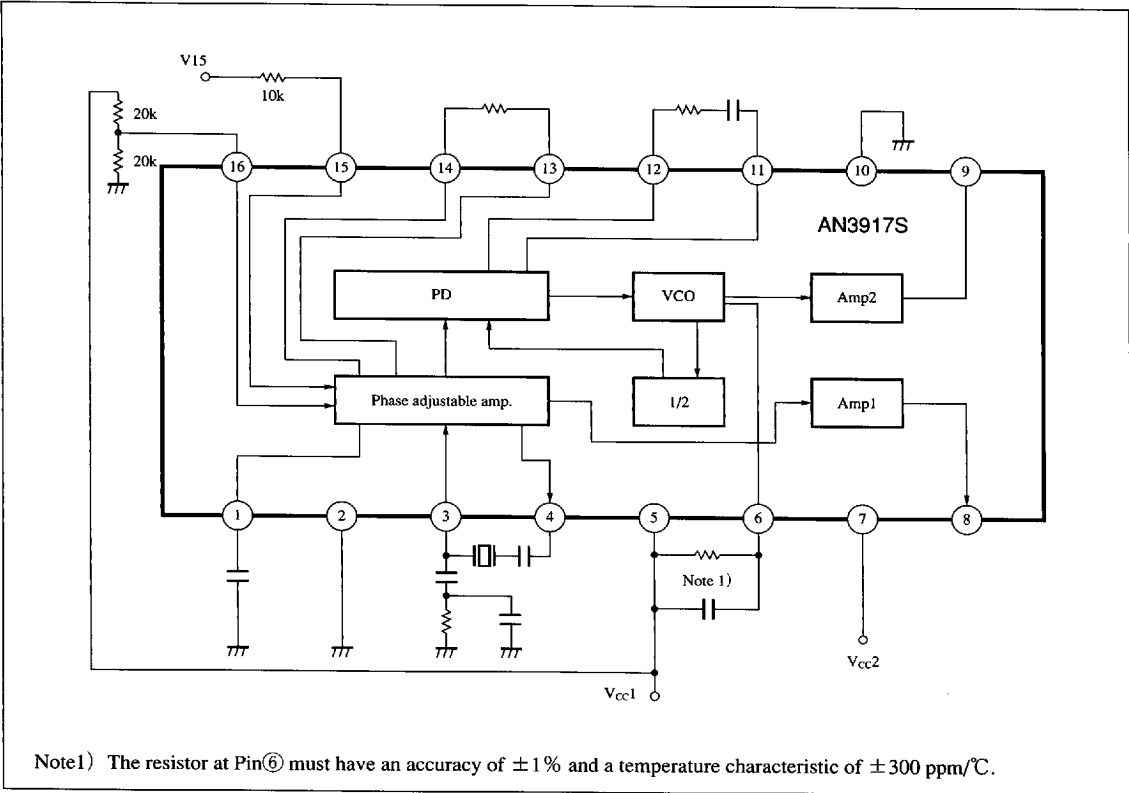
Parameter	Symbol	Condition	min	typ	max	Unit
Total circuit current	I_{tot}	$V_{15} = 2.5\text{V}$, $f_9 = 40.0092\text{MHz}$	20	26	32	mA
Center frequency	Δf_9	$V_{15} = 2.5\text{V}$, deviation from 40.0092MHz	-35	0	35	ppm
VCXO gain ($\Delta V = 0.1\text{V}$)	β	$V_{15} = 2.5 \rightarrow 2.4\text{V}$, variation in f_9	8	12	16	ppm
VCXO positive deviation	$+\Delta f_9$	$V_{15} = 4.5\text{V}$, deviation from 40.0092MHz	200	270	400	ppm
VCXO negative deviation	$-\Delta f_9$	$V_{15} = 0.5\text{V}$, deviation from 40.0092MHz	-1000	-650	-300	ppm
Output voltage at Pin⑧	V_{o8}	$V_{15} = 2.5\text{V}$, fundamental-wave component at Pin⑧ (20MHz)	3.3	4.0	—	V_{P-P}
Output voltage at Pin⑨V	V_{o9}	$V_{15} = 2.5\text{V}$, fundamental-wave component at Pin⑨ (40MHz)	3.1	3.5	—	V_{P-P}

Note) V_{CC} (at Pins⑤ and ⑦) = 5.0 V for all Parameters.

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■ Block Diagram

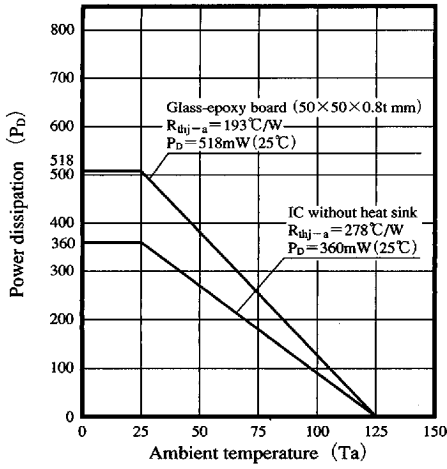


■ Pin Descriptions

Pin No.	Pin name	Pin No.	Pin name
1	Phase adjustment	9	VCO output (doubled frequency)
2	GND1 (analog)	10	GND2 (digital)
3	Phase adjustable amp. input	11	Phase detection output 1
4	Phase adjustable amp. output	12	Phase detection output 2
5	Vcc1 (analog)	13	Conversion gain adjustment 1
6	VCO frequency adjustment	14	Conversion gain adjustment 2
7	Vcc2 (digital)	15	VCO input (+)
8	VCO output (fundamental frequency)	16	VCO input (-)

■ Characteristics Curve

Power dissipation for SO-16D package
 $P_D - T_a$



V15 vs. output frequency in test circuit 1

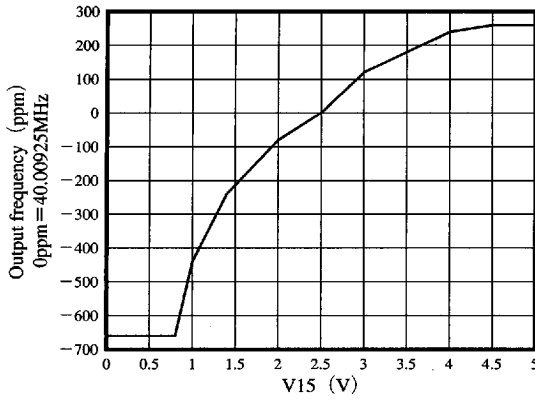


Fig.1 V15 vs. output frequency in test circuit 1

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