AN6341N

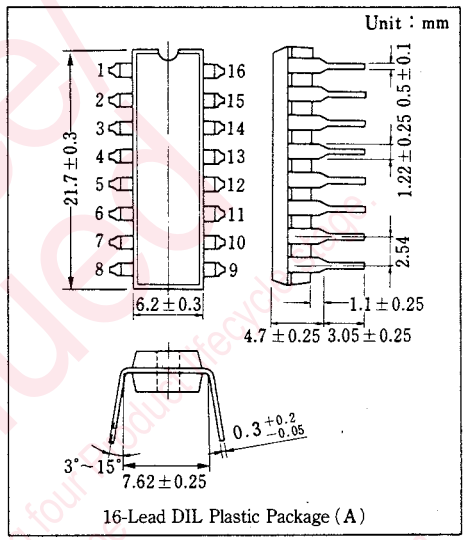
VTR Capstan Servo Control Circuit

■ Outline

The AN6341N is an integrated circuit designed for VTR's capstan servo control.

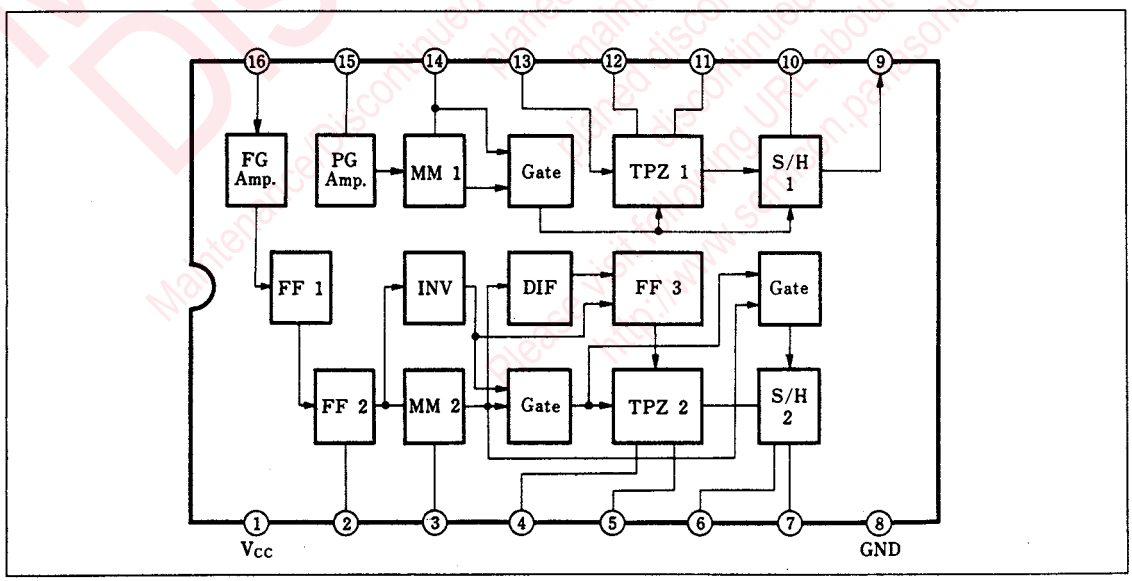
■ Features

- The function consist of:
  - Phase control circuit
  - Speed control circuit
  - Capstan FG divider ratio change circuit
- Sample & hold system speed control
- Supply voltage either 9V or 12V



16-Lead DIL Plastic Package (A)

■ Block Diagram



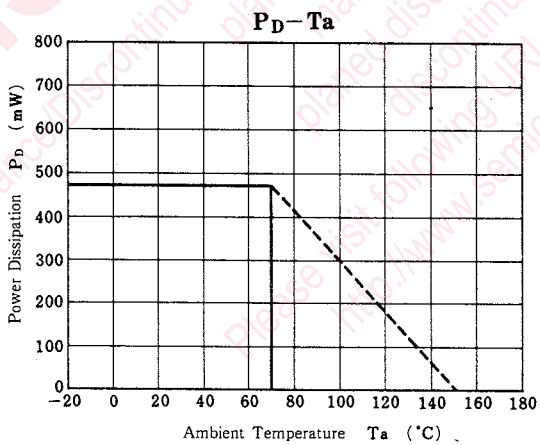
■ Absolute Maximum Ratings (Ta=25℃)

Item	Symbol	Rating	Unit
Supply voltage	V_{1-8}	14.4	V
Power dissipation	P_D	470	mW
Operating ambient temperature	T_{opr}	−20～+70	℃
Storage temperature	t_{stg}	−40～+150	℃

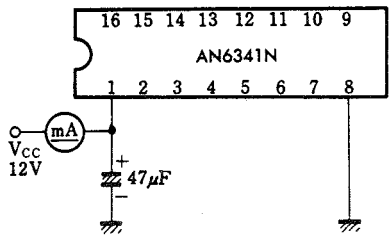
■ Electrical Characteristics (Ta=25℃)

Item	Symbol	Test Circuit	Condition	min.	typ.	max.	Unit
Circuit current	I_1	1	V_{1-8}=12V	18		34	mA
Sensitivity (PG Amp. Input)	$S_{(1)}$	2		50			mV_{o-p}
Sensitivity (trapezoidal wave input)	$S_{(2)}$	3		7			V_{o-p}
Reference voltage (phase trapezoidal wave)	$V_{REF(1)}$	4		2.7		3.7	V
High-level oltput voltage (S/H 1)	$V_{OH(1)}$	5		9			V
Low-level output voltage (S/H 1)	$V_{OL(1)}$	5				600	mV
Sensitivity (FG Amp. Input)	$S_{(3)}$	6	V_{cc}=12V	150			mV_{p-p}
Sensitivity (FF2 Switch)	$S_{(4)}$	6		5			V
Reference voltage (speed system trapezoidal wave)	$V_{REF(2)}$	7		2.7		3.7	V
High-level output voltage (S/H 2)	$V_{OH(2)}$	8		10			V
Low-level output voltage (S/H 2)	$V_{OL(2)}$	8				1.8	V

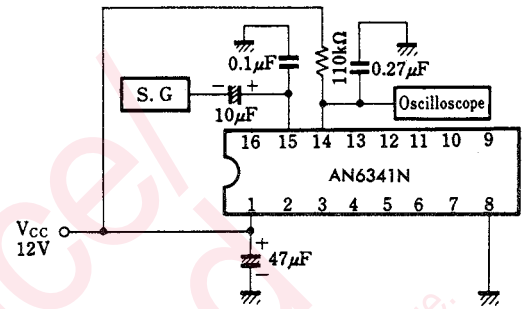
Note) Operating Supply Voltage Range $V_{cc(opr.)}$ =8.8～13V



Test Circuit 1 (I_1)

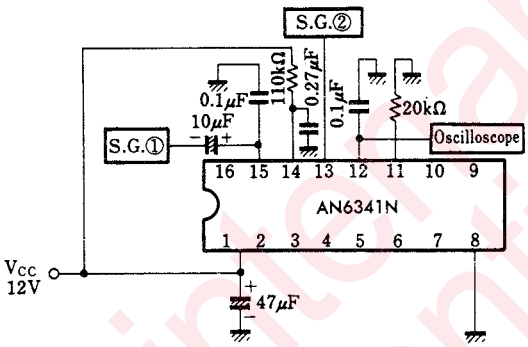


Test Circuit 2 ($S_{(1)}$)



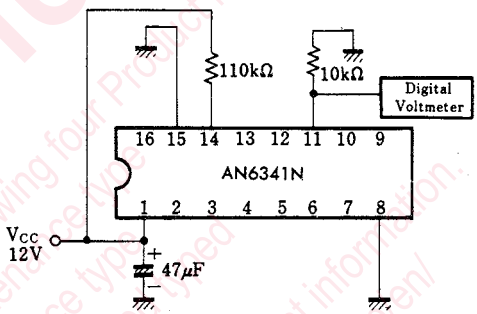
Note) Pin⑮ input
30Hz,50mVop duty 4%, Rectangular wave

Test Circuit 3 ($S_{(2)}$)

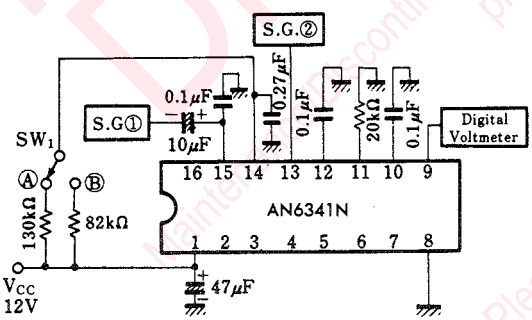


Note) Pin⑮ input(SG−1)
30Hz,50mVop duty 4% Rectangular wave
Pin⑬ input(SG−2)
30Hz,6Vop duty 50% Rectangular wave
However, rise timings for Pin⑮ input and Pin⑬ input are the same.

Test Circuit 4 ($V_{REF(1)}$)

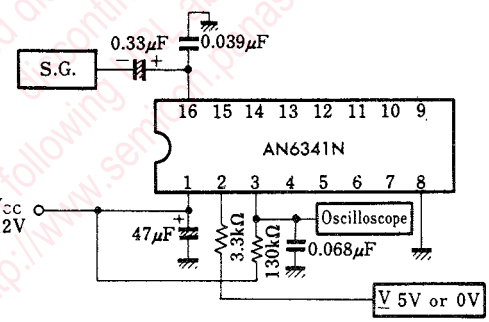


Test Circuit 5 ($V_{OH(1)}$, $V_{OL(1)}$)



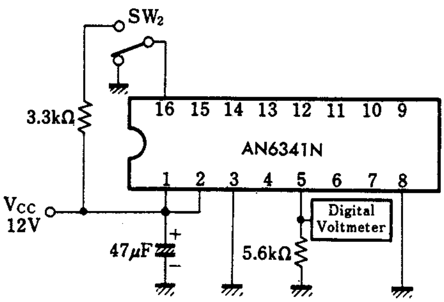
Note) Pin⑮ input
30Hz, 50mVp−p duty 4% Rectangular wave
Pin⑬ input
30Hz, 6Vop duty 50% Rectangular wave
However, rise timings for both signals are the same.
Shift SW1 to Ⓐ when measuring V_9−H and to Ⓑ when measuring V_7−L.

Test Circuit 6 ($S_{(3)}$, $S_{(4)}$)



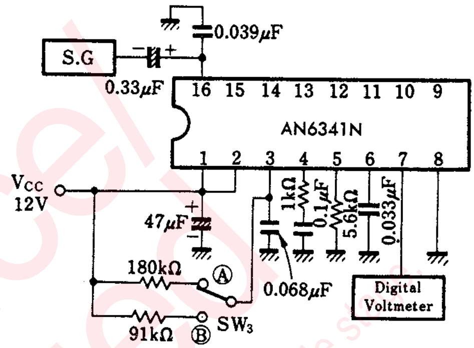
Note) Pin⑯ input
360Hz,100mVp−p Sine wave

Test Circuit 7 ($V_{REF(2)}$)



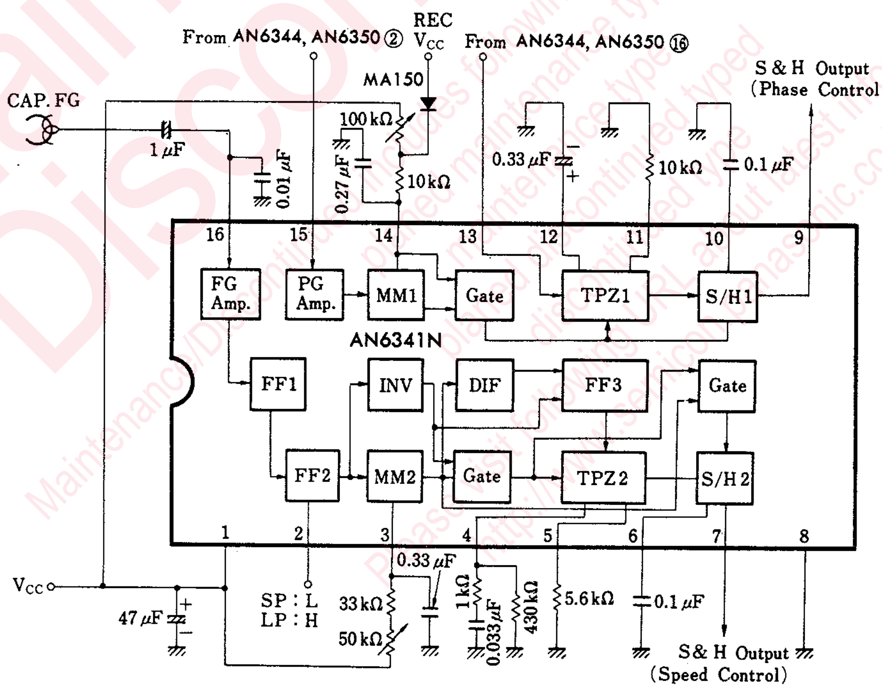
Note) When the Pin⑯ is set to GND, measure a Pin⑤ voltage. If it is 0V, change over SW_2 and measure the voltage.

Test Circuit 8 ($V_{OH(2)}$, $V_{OL(2)}$)



Note) Pin⑯ input
360Hz,150mVp−p Sine wave
Shift SW_3 to Ⓐ when measuring V_{7-H} and to Ⓑ when measuring V_{7-L}.

■ Application Circuit



■ Pin

Pin No.	Pin Name	Pin No.	Pin Name
1	V_{CC}	9	Phase Error Voltage
2	FF Select	10	S & H
3	Speed MM	11	Reference Voltage
4	Trapezoid	12	Trapezoid
5	Reference Voltage	13	Reference Input
6	S & H	14	Tracking MM
7	Speed Error Voltage	15	PG Input
8	GND	16	FG Input

Precautions for use

1. A motor start voltage should be 1.8 V or more.
2. For the speed system, change CR of the mono, multi, and trapezoidal wave in accordance with an input frequency

Speed system mono,multi, delay time $T=CR\ln 1.5$

Speed system trapezoidal inclination $T=(Vcc/3.2)\cdot CR$

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