

AN6344

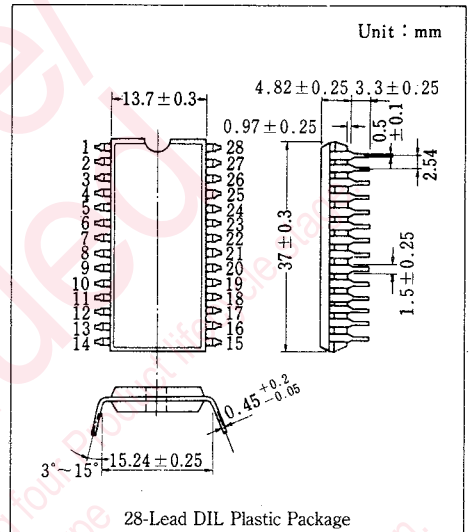
VTR Cylinder Servo Control Circuit

■ Outline

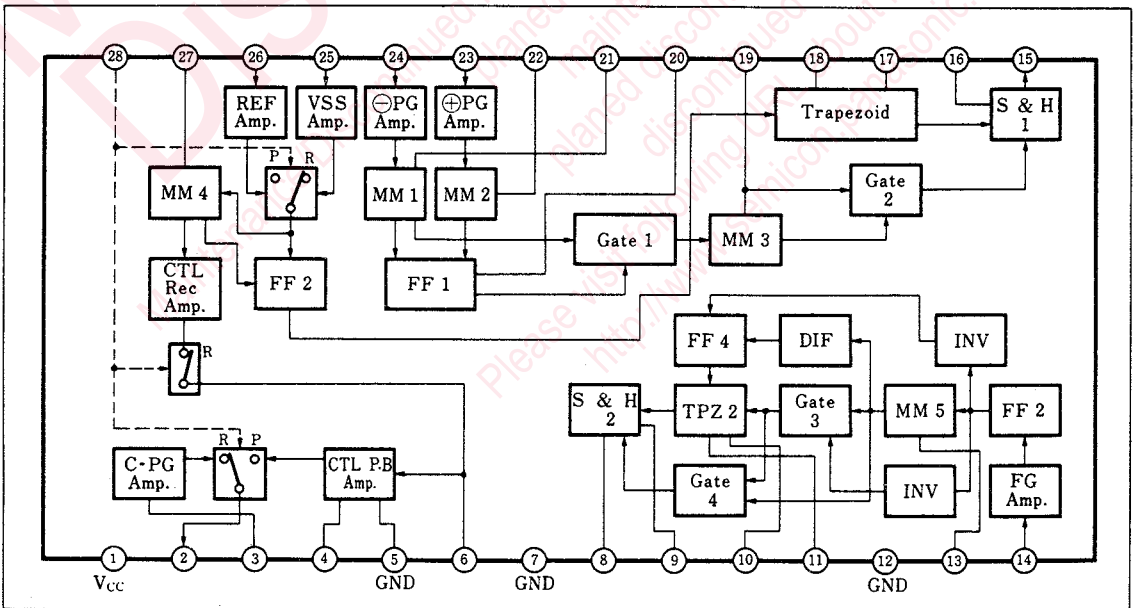
The AN6344 is an integrated circuit designed for VTR's cylinder servo control.

■ Features

- The functions consist of:
 - Phase control circuit
 - Speed control circuit
 - Control pass(CTL) recording playback amplifier circuit
 - Capstan PG amplifier circuit
- Sample hold system speed control
- Incorporating recording/playback switching circuit
- Supply voltage either 9V or 12V



■ Block Diagram



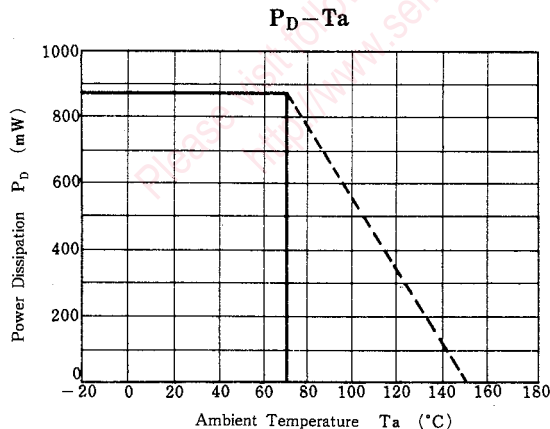
■ Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Rating	Unit
Supply Voltage	V_{1-7}	14.4	V
Power dissipation	P_D	880	mW
Operating ambient temperature	T_{opr}	-20 ~ +70	°C
Storage Temperature	T_{stg}	-40 ~ +150	°C

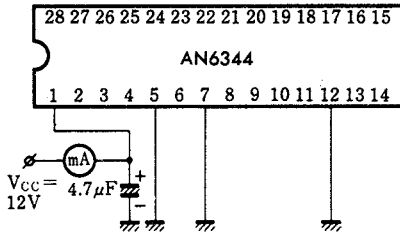
■ Electrical Characteristics (Ta=25°C)

Item	Symbol	Test Circuit	Condition	min.	typ.	max.	Unit
Circuit current	I_1	1	$V_{1-7}=12V$	33		65	mA
Sensitivity	PG ⊖ Amp. In	S(1)	2	$V_{CC}=12V, 30Hz$ duty 96%	1		V_{O-P}
	PG ⊕ Amp. In	S(2)	2		$V_{CC}=12V, 30Hz$ duty 4%	1	
	Cap PG Amp. In	S(3)	3	$V_{CC}=12V$		50	
	VSS Amp. In	S(4)	4		2		V_{O-P}
	REF Amp. In	S(5)	5		3		V_{O-P}
	REC/P.B. Switch	S(6)	6		5		V
Reference voltage (phase trapezoidal wave)	$V_{REF(1)}$	7		2.7		3.7	V
High-level output voltage (Head-SW)	$V_{OH(1)}$	2	$V_{CC}=12V, V_{I24}=2V_{P-P}, 30Hz$ duty 4%	9			V
Low-level output voltage (Head-SW)	$V_{OL(1)}$	2		$V_{I23}=2V_{P-P}, 30Hz$ duty 96%			600
High-level output voltage (REC CTL Amp.)	$V_{OH(2)}$	6	$V_{CC}=12V$		8		
Low-level output voltage (Rec CTL Amp.)	$V_{OL(2)}$	6				1	V
High-level output voltage (S/H1)	$V_{OH(3)}$	8	$V_{CC}=12V$	9			V
Low-level output voltage (S/H1)	$V_{OL(3)}$	8				600	mV
Voltage gain (CTL Amp.)	G_V	9	$V_{CC}=12V$	62		70	dB
Sensitivity (FG Amp. In)	S(7)	10		100			mV_{P-P}
Reference voltage(speed system trapezoidal wave)	$V_{REF(2)}$	11		2.7		3.7	V
High-level output voltage (S/H2)	$V_{OH(4)}$	12	$V_{CC}=12V$	10			V
Low-level output voltage (S/H2)	$V_{OL(4)}$	12				1.8	V
High-level output voltage (Cap PG)	$V_{OH(5)}$	3	$V_{CC}=12V$	4.4		6.6	V
Low-level output voltage (Cap PG)	$V_{OL(5)}$	3				600	mV

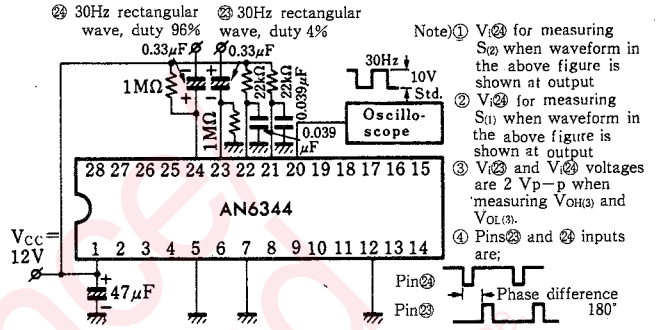
Note) Operating supply voltage range $V_{CC(opr)}=8.8\sim 13V$



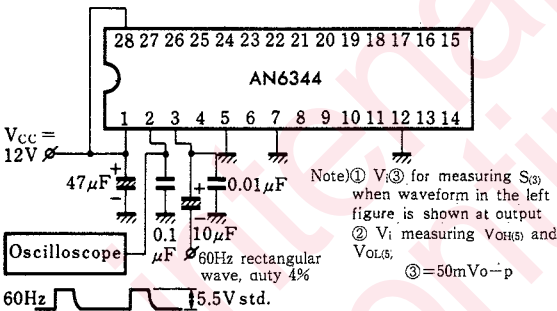
Test Circuit 1 (I₁)



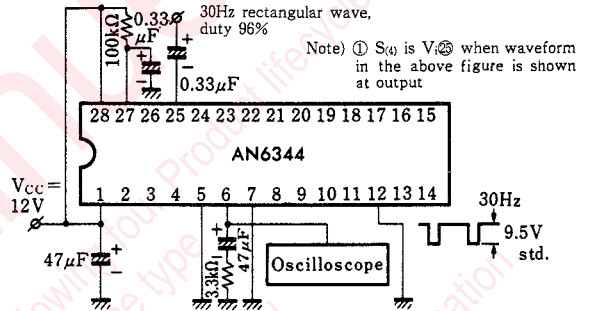
Test Circuit 2 (S₍₁₎, S₍₂₎, V_{OH(1)}, V_{OL(1)})



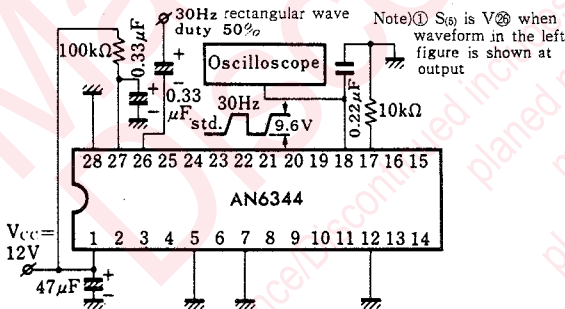
Test Circuit 3 (S₍₃₎, V_{OH(5)}, V_{OL(5)})



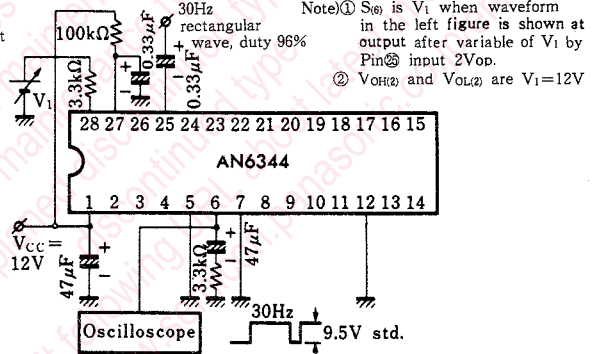
Test Circuit 4 (S₍₄₎)



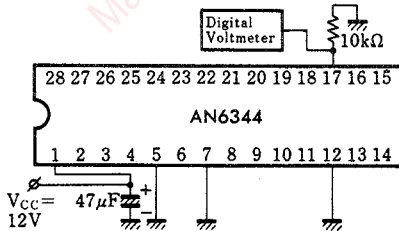
Test Circuit 5 (S₍₅₎)



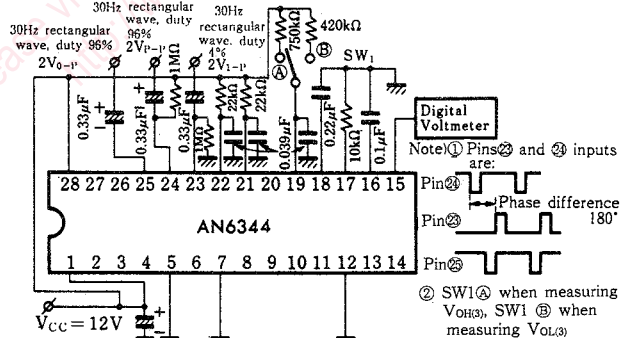
Test Circuit 6 (S₍₆₎, V_{OH(2)}, V_{OL(2)})



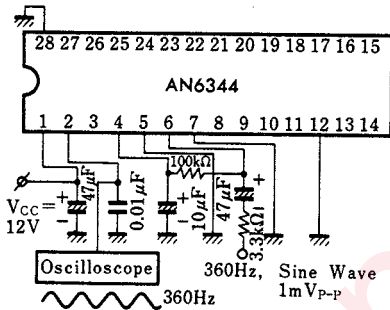
Test Circuit 7 (V_{REF(1)})



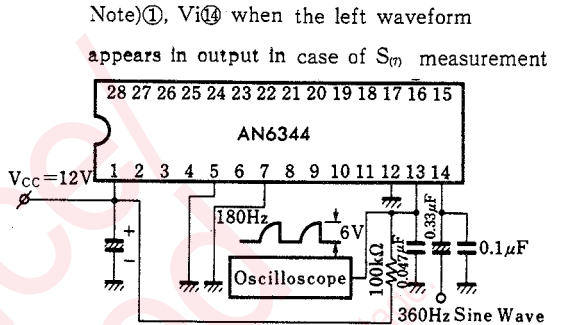
Test Circuit 8 (V_{OH(3)}, V_{OL(3)})



Test Circuit 9 (Gv)

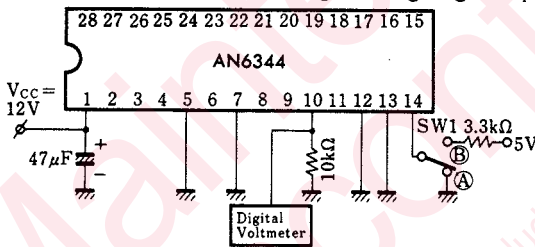


Test Circuit 10 (S₍₇₎)



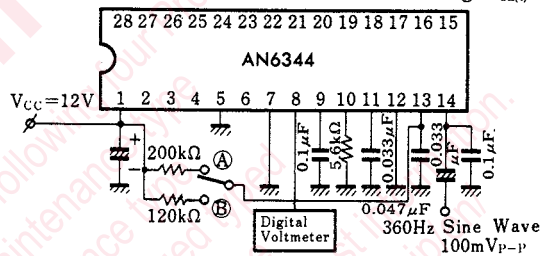
Test Circuit 11 (V_{REF(2)})

Note)① Measure with SW1 ④.
When an output voltage is "0", set SW1 to ⑤ and measure a voltage after giving two pulses.



Test Circuit 12 (V_{OH(4)}, V_{OL(4)})

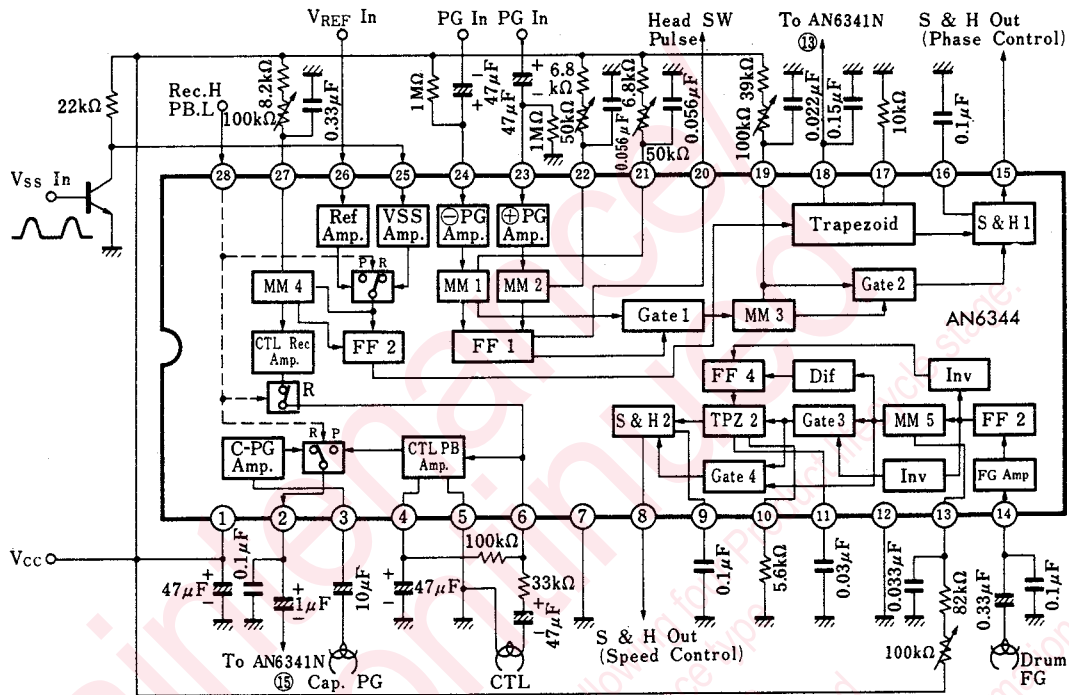
Note)① SW④ when measuring V_{OH(4)}, SW⑤ when measuring V_{OL(4)}



■ Pin

Pin No.	Pin Name	Pin No.	Pin Name
1	V _{cc}	15	Phase Error Voltage
2	PG Output	16	S & H
3	Cap. PG Input	17	Reference Voltage
4	CTL Amp.	18	Trapezoid
5	GND	19	Phase Mono Multi.
6	CTL Output or Input	20	Head SW
7	GND	21	PG Mono Multi.
8	Speed Error Voltage	22	PG Mono Multi.
9	S & H	23	PG Input
10	Reference Voltage	24	PG Input
11	Trapezoid	25	V _{ss} Input
12	GND	26	V _{REF} Input
13	Speed Mono Multi.	27	1/2 Mono Multi.
14	FG Input	28	Rec., P.B. Select

■ Application Circuit



Request for your special attention and precautions in using the technical information and semiconductors described in this book

- (1) If any of the products or technical information described in this book is to be exported or provided to non-residents, the laws and regulations of the exporting country, especially, those with regard to security export control, must be observed.
- (2) The technical information described in this book is intended only to show the main characteristics and application circuit examples of the products. No license is granted in and to any intellectual property right or other right owned by Panasonic Corporation or any other company. Therefore, no responsibility is assumed by our company as to the infringement upon any such right owned by any other company which may arise as a result of the use of technical information described in this book.
- (3) The products described in this book are intended to be used for standard applications or general electronic equipment (such as office equipment, communications equipment, measuring instruments and household appliances).
Consult our sales staff in advance for information on the following applications:
 - Special applications (such as for airplanes, aerospace, automobiles, traffic control equipment, combustion equipment, life support systems and safety devices) in which exceptional quality and reliability are required, or if the failure or malfunction of the products may directly jeopardize life or harm the human body.
 - Any applications other than the standard applications intended.
- (4) The products and product specifications described in this book are subject to change without notice for modification and/or improvement. At the final stage of your design, purchasing, or use of the products, therefore, ask for the most up-to-date Product Standards in advance to make sure that the latest specifications satisfy your requirements.
- (5) When designing your equipment, comply with the range of absolute maximum rating and the guaranteed operating conditions (operating power supply voltage and operating environment etc.). Especially, please be careful not to exceed the range of absolute maximum rating on the transient state, such as power-on, power-off and mode-switching. Otherwise, we will not be liable for any defect which may arise later in your equipment.
 - Even when the products are used within the guaranteed values, take into the consideration of incidence of break down and failure mode, possible to occur to semiconductor products. Measures on the systems such as redundant design, arresting the spread of fire or preventing glitch are recommended in order to prevent physical injury, fire, social damages, for example, by using the products.
- (6) Comply with the instructions for use in order to prevent breakdown and characteristics change due to external factors (ESD, EOS, thermal stress and mechanical stress) at the time of handling, mounting or at customer's process. When using products for which damp-proof packing is required, satisfy the conditions, such as shelf life and the elapsed time since first opening the packages.
- (7) This book may be not reprinted or reproduced whether wholly or partially, without the prior written permission of our company.

This datasheet has been downloaded from:

www.DatasheetCatalog.com

Datasheets for electronic components.