AN6657, AN6657S

Micromotor Forward/Reverse Electronic Governors

■ Overview

The AN6657 and the AN6657S are electronic governor ICs capable of controlling the forward/reverse speed, fast forward, rewind, and start/stop of the micromotors used for the radio/cassette tape recorders, automatic answering telephone sets, and so on.

■ Features

- Operating supply voltage range : V_{CC}=4.5V to 14V
- Stable reference voltage (1.3V) and easy speed control
- Large starting torque and maximum control touque Good secular drift because of external power transistor
- Provided with the motor stop function : I_{CC}=20μA or less at stop time
- Capable of controlling forward/reverse rotation, fast forward/constant speed, and start/stop via 3 input pins
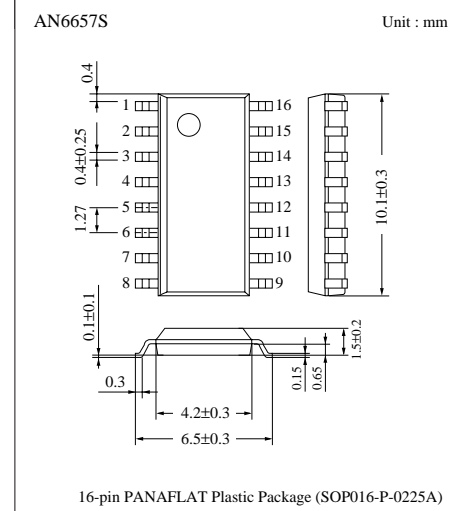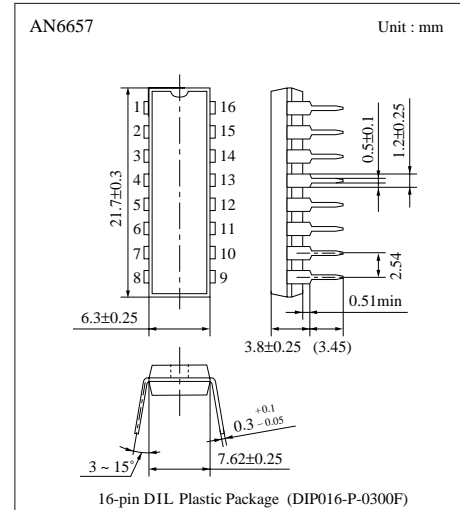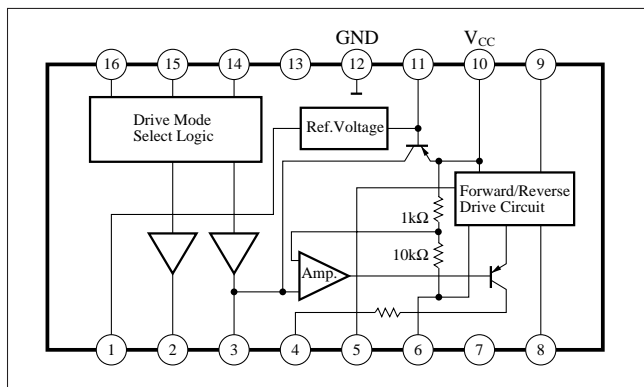
■ Applications

Speed control of the micromotors for the radio cassettes

Speed control of the micromotors for the microcassettes of the automatic answering telephone sets

Control of the tape loading motors for the DATs, etc.

■ Pin Name

Pin No.	Pin name	Pin No.	Pin name
1	Constant speed setting	9	Load characteristic setting
2	Speed control	10	V_{CC}
3	Speed control	11	To the pin 9
4	Phase compensation	12	GND pin
5	Motor drive⊕	13	NC
6	Collector connection	14	Start/Stop
7	Base connection	15	Forward/reverse
8	Motor drive⊖	16	Constant speed/FF

■ Block Diagram

AN6657   Unit : mm

16-pin DIL Plastic Package (DIP016-P-0300F)

AN6657S   Unit : mm

16-pin PANAFLAT Plastic Package (SOP016-P-0225A)

■ Absolute Maximum Ratings (Ta=25˚C)

Parameter		Symbol	Rating	Unit
Supply voltage		V_{CC}	14.4	V
Supply current		I_{CC}	50	mA
Output current		I_O	700	mA
Power dissipation	AN6657	P_D	500	mW
	AN6657S		380	
Operating ambient temperature		T_{opr}	−20 to +70	˚C
Storage temperature	AN6657	T_{stg}	−55 to +150	˚C
	AN6657S		−55 to +125	

■ Recommended Operating Range (Ta=25˚C)

Parameter	Symbol	Range
Operating supply voltage range	V_{CC}	4.5V to 14V

■ Electrical Characteristics (Ta=25˚C)

Parameter	Symbol	Condition	min	typ	max	Unit
Bias current	I_{bias}	V_{CC}=5V	——	4	10	mA
Prestart current	I_{stop}	V_{CC}=5V	——	——	20	μA
Reference voltage	V_{ref}	V_{CC}=5V	1.1	1.3	1.5	V
Start voltage	$V_{CC(s)}$	Supply voltage at which a 50mA current flows to Ra	——	——	3	V
Start current	I_{st}	V_{CC}=4.5V, Ra=13Ω	130	——	——	mA
Rated load r.p.m.	N_L	V_{CC}=5V, I_L=55mA, N=2000rpm	−10	0	10	%
Forward/reverse r.p.m. difference	ΔN_{Logi}	V_{CC}=5V, I_L=55mA, N=2000rpm	−5	0	5	%
FF/rated r.p.m. ratio	ΔN	V_{CC}=5V, I_L=55mA, N=4000rpm	1.85	2	2.15	times
R.p.m. characteristics on voltage change	ΔN_V	V_{CC}=4.5V to 9V, I_L=55mA	——	——	50	rpm/V
R.p.m. characteristics on load change	ΔN_L	V_{CC}=4.5V, I_L=55mA to 90mA	——	——	120	rpm
Select mode input H	V_H	V_{CC}=5V to 14V	3	——	6	V
Select mode input L	V_L	V_{CC}=5V to 14V	0	——	0.7	V
Current limiting starting voltage	V_{Lim}	V_{CC}=9V, R_T=1.3Ω	0.55	0.62	0.7	V
Ref. voltage temperature characteristic	$\Delta V_r/Ta$	V_{CC}=5V, Ta=0˚C to 60˚C	——	0.015	——	%/˚C

■ Application Circuit