

AN6651

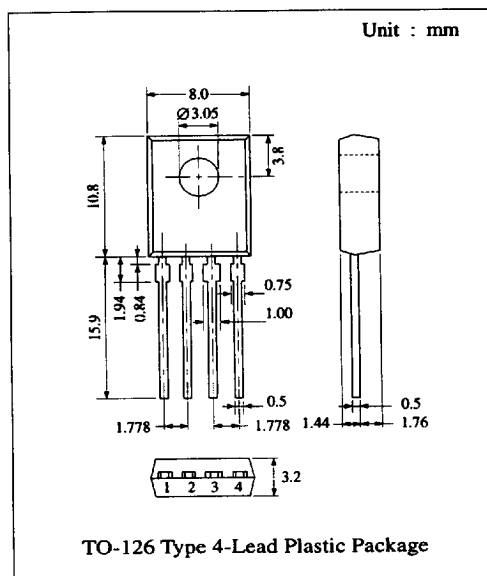
Motor Control Circuit

■ Description

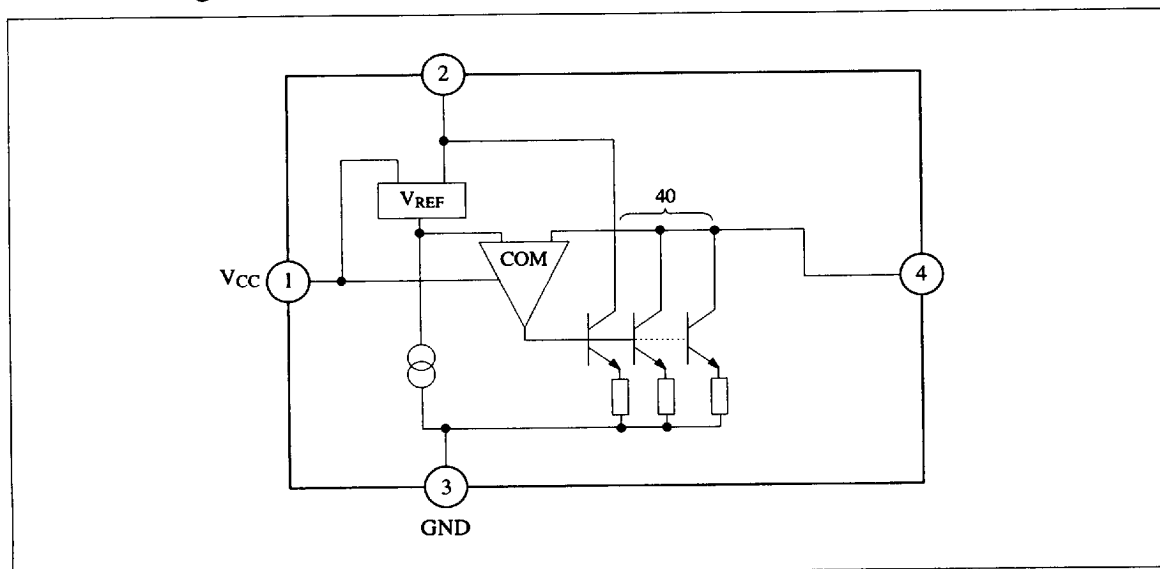
The AN6651 is a monolithic integrated circuit designed for the rotating speed control of a compact DC motor which is used for a tape recorder, record player, etc.

■ Features

- Small four-lead plastic package for compact motor
- Fewer external parts
- Stable low reference voltage (1.0V typ.), wide motor speed setting
- Highly stable operation over a wide range of supply voltage and torque supply voltage, $V_{CC} = 3.5V \sim 14.4V$
- Reverse voltage protection circuit
- Good torque characteristics



■ Block Diagram



■ Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Rating	Unit
Supply Voltage	V _{CC}	14.4	V
Supply Current	I _{CC} * 2	2000	mA
Power Dissipation	P _D * 1	1300	mW
Operating Ambient Temperature	Topr	-20 ~ +75	°C
Storage Temperature	Tstg	-40 ~ +150	°C

*1) Ta = 25°C, with a 10mm x 10mm bakelite printed circuit board (35μm Cu leaf) *2) t ≤ 5s
Operating Supply Voltage Range: V_{CC} = 3.5V ~ 14.4V

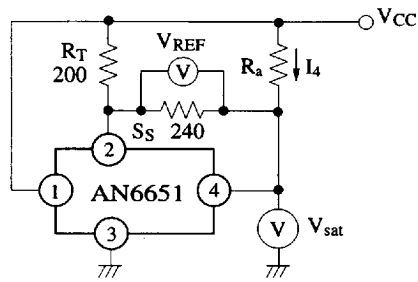
■ Electrical Characteristics (Ta=25°C)

Item	Symbol	Test Circuit	Condition	min.	typ.	max.	Unit
Reference Voltage	V _{REF}	1	V _{CC} = 6V, R _a = 1kΩ	0.85	1.0	1.15	V
Bias Current	I _{Bias}	3	V _{CC} = 6V		0.8	1.8	mA
Current Proportional Constant	K	2	V _{CC} = 6V, ΔI ₄ = 40mA	35	40	45	
Saturation Voltage	V _{sat}	1	V _{CC} = 4.2V, R _a = 5.0Ω		1.5	2	V
Voltage Characteristics (1)	$\frac{\Delta V_{REF}}{V_{REF}} / V_{CC}$	1	V _{CC} = 3.5 ~ 14V, R _a = 1kΩ		-0.1		%/V
Voltage Characteristics (2)	$\frac{\Delta K}{K} / V_{CC}$	2	V _{CC} = 3.5 ~ 14V, ΔI ₄ = 40mA		0.2		%/V
Current Characteristics (1)	$\frac{\Delta V_{REF}}{V_{REF}} / I_4$	1	I ₄ = 50mA ~ 200mA		-0.02		%/mA
Current Characteristics (2)	$\frac{\Delta K}{K} / I_4$	2	I ₄ = 50mA ~ 200mA		-0.01		%/mA
Temperature Characteristics (1)	$\frac{\Delta V_{REF}}{V_{REF}} / T_a$	1	T _a = -20°C ~ 75°C, V _{CC} = 6V, R _a = 1kΩ		0.01		%/°C
Temperature Characteristics (2)	$\frac{\Delta K}{K} / T_a$	2	T _a = -20°C ~ 75°C, ΔI ₄ = 40mA		0.01		%/°C

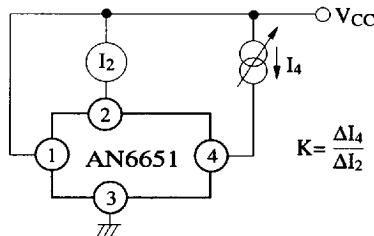
■ Pin

Pin No	Pin Name
1	V _{CC}
2	Control Pin
3	GND
4	Motor Pin

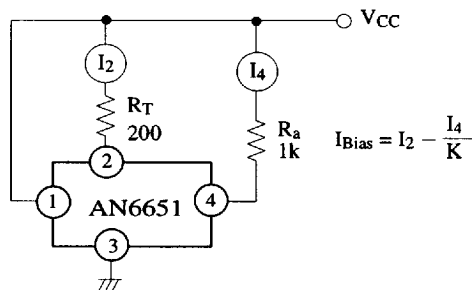
Test Circuit 1 (V_{REF} , V_{sat} , $\frac{\Delta V_{REF}}{V_{REF}}/V_{CC}$, $\frac{\Delta V_{REF}}{V_{REF}}/I_4$, $\frac{\Delta V_{REF}}{V_{REF}}/T_a$)



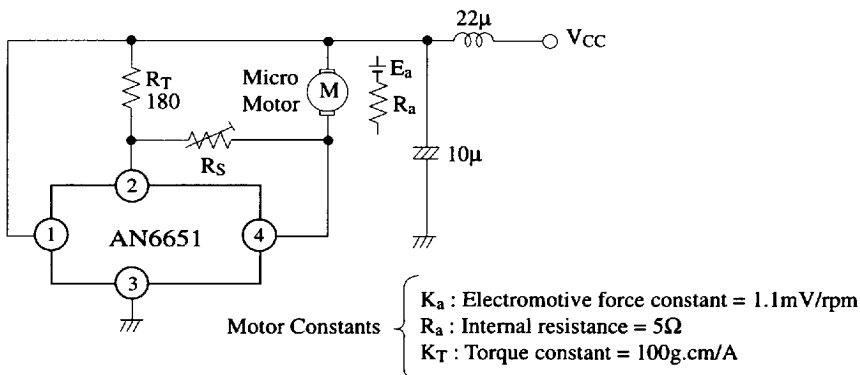
Test Circuit 2 (K , $\frac{\Delta K}{K}/V_{CC}$, $\frac{\Delta K}{K}/I_4$, $\frac{\Delta K}{K}/T_a$)



Test Circuit 3 (I_{Bias})



Application Circuit



■ Characteristics Curve

