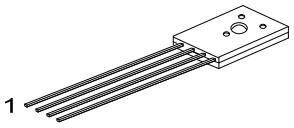
MOTOR SPEED CONTROL CIRCUIT



TO-126B

■ DESCRIPTION

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

■ FEATURES

*Wide operating supply voltage: V_{CC}=3.5V ~ 14.4V
*Small four-lead plastic packer for compact motor.
*Few external components
*Stable low reference voltage (1.0V, typical)
*Wide motor speed setting
*Reverse voltage protection circuit built-in

■ ORDERING INFORMATION

Ordering Number			Package	Packing
Normal	Lead Free	Halogen Free		
AN6651-T6B-K	AN6651L-T6B-K	AN6651G-T6B-K	TO-126B	Bulk

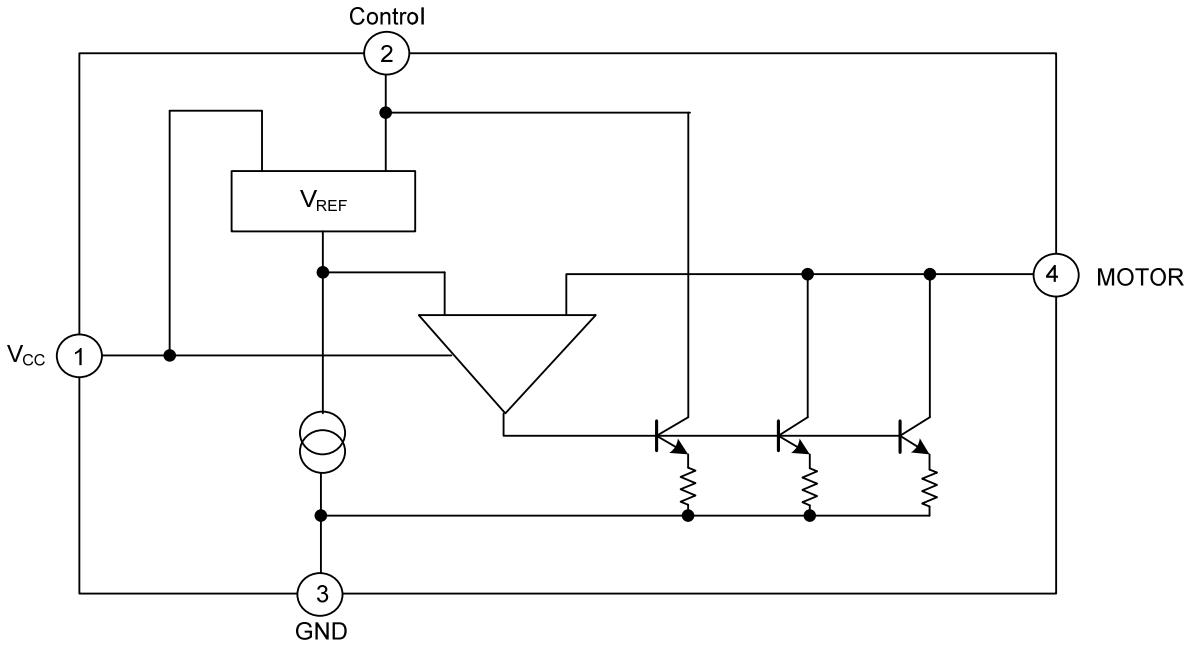
AN6651L-T6B-K
(1)Packing Type
(2)Package Type
(3)Lead Plating

(1) K: Bulk
(2) T6B: TO-126B
(3) L: Lead Free Plating, Blank: Pb/Sn,
G: Halogen Free

■ PIN DESCRIPTIONS

PIN NO.	PIN NAME	PIN FUNCTION
1	V_{CC}	Supply Voltage
2	CONTROL	Control signal input
3	GND	GND
4	MOTOR	Connected to the motor.

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C)

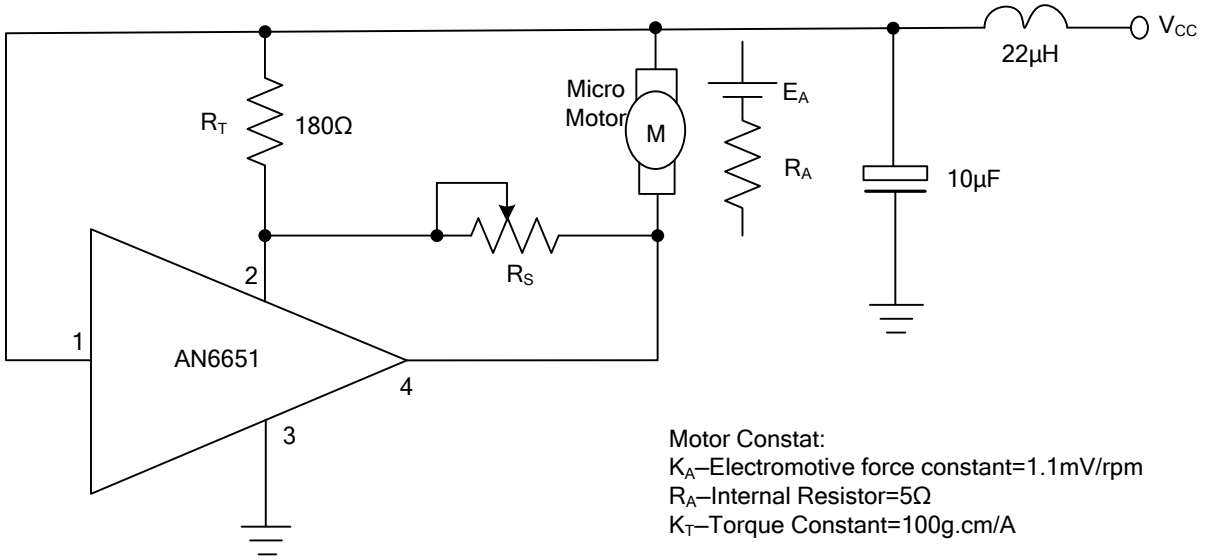
PARAMETER		SYMBOL	RATINGS	UNITS
Supply Voltage		V_{CC}	14.4	V
Supply Current	t ≤5 sec	I_{CC}	2000	mA
Power Dissipation (T_A=25°C)		P_D	1300	mW
Terminal Voltage		Vn-3 (n=1,2,4)	-0.5 ~ +14.4	V
Terminal Current		I_1	150	mA
		I_2	100	
Terminal Current	t ≤5 sec	I_3	-2000(min)	
		I_4	1750	
Operating Temperature		T_{OPR}	-20 ~ +75	°C
Storage Temperature		T_{STG}	-40 ~ +150	

Note Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS (T_A = 25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Reference Voltage	V_{REF}	V_{CC}=6V, R_A =1kΩ	0.85	1.00	1.15	V
Base Current	I_{BIAS}	V_{CC}=6V		0.8	1.8	mA
Current Proportional Constant	K	V_{CC}=6V, ΔI_4=40mA	35	40	45	
Saturation Voltage	V_{SAT}	V_{CC}=4.2V, R_A =5.0kΩ		1.15	2.0	V
Voltage Characteristics 1	$\frac{\Delta V_{REF} / V_{REF}}{\Delta V_{CC}}$	V_{CC}=3.5V~14V, R_A =1kΩ		-0.1		μA
Voltage Characteristics 2	$\frac{\Delta K / K}{\Delta V_{CC}}$	V_{CC}=3.5V~14V, ΔI_4=40mA		0.2		%
Current Characteristics 1	$\frac{\Delta V_{REF} / V_{REF}}{\Delta I_4}$	I_4=50mA~200mA		-0.02		
Current Characteristics 2	$\frac{\Delta K / K}{\Delta I_4}$			-0.01		KH_Z
Temperature Characteristics 1	$\frac{\Delta V_{REF} / V_{REF}}{\Delta T_A}$	T_A=-20~+75°C,V_{CC}=6V,R_A=1kΩ		0.01		%/°C
Temperature Characteristics 2	$\frac{\Delta K / K}{\Delta T_A}$	T_A=-20~+75°C, ΔI_4=40mA		0.01		

■ TYPICAL APPLICATION CIRCUIT



Motor Constat:
K_A–Electromotive force constant=1.1mV/rpm
R_A–Internal Resistor=5Ω
K_T–Torque Constant=100g.cm/A

■ TYPICAL CHARACTERISTICS