

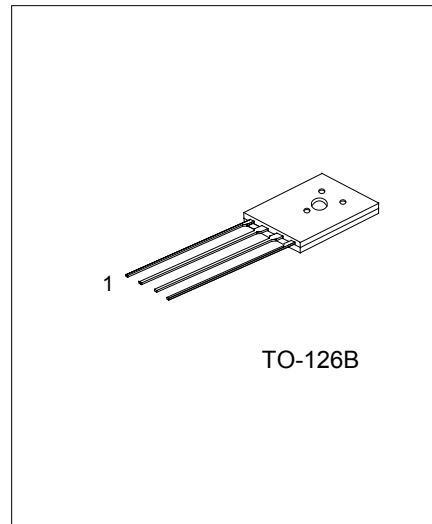
## MOTOR CONTROL CIRCUIT

## DESCRIPTION

The UTC AN6652 is an IC designed for the rotating speed control of a compact DC motor, which is used for a tape recorder, record player, etc.

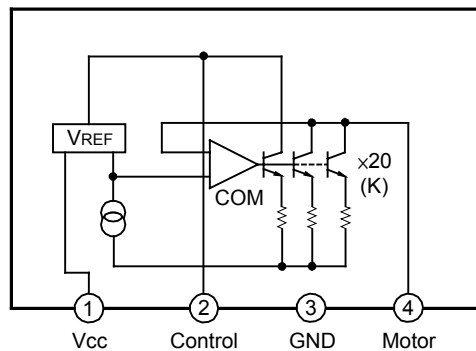
## FEATURES

- \*Small four-lead plastic package for compact motor. Fewer external parts.
- \*Stable low reference voltage (1.25V typ.), wide motor speed setting
- \*Highly stable operation over a wide range of supply voltage and torque supply voltage,  $V_{CC}=6V\sim 20V$
- \*Reverse voltage protection circuit is built-in.



1: Vcc 2: Control 3: GND 4: Motor

## BLOCK DIAGRAM

ABSOLUTE MAXIMUM RATINGS ( $T_a=25^\circ\text{C}$ )

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V_{CC}$	22	V
Supply Current	$I_{CC}^{*2}$	1.5	A
Power Dissipation	$P_D^{*1}$	1.3	W
Operating Temperature	$T_{opr}$	$-20\sim+75$	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	$-40\sim+150$	$^\circ\text{C}$

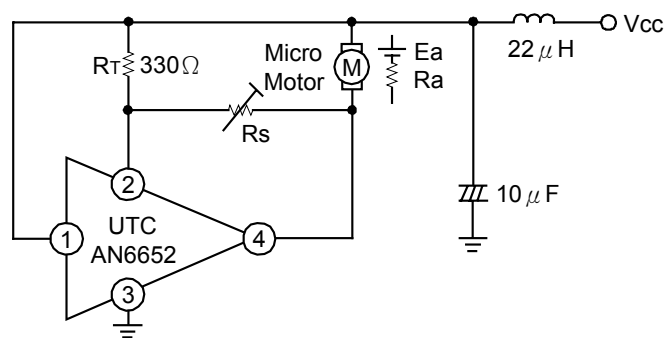
\*1.  $T_a = 25^\circ\text{C}$ , With a  $10 \times 10\text{mm}$  bakelite printed circuit board ( $35\mu\text{m}$  Cu leaf)

\*2.  $t \leq 5\text{s}$

## ELECTRICAL CHARACTERISTICS (Ta=25°C)

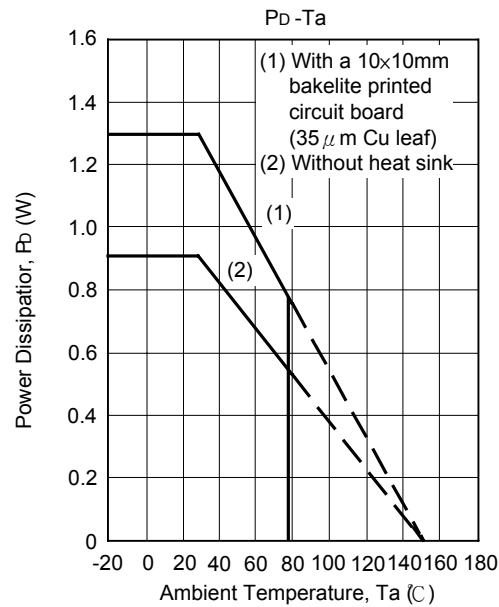
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Reference Voltage	V <sub>REF</sub>	V <sub>CC</sub> =12V, R <sub>a</sub> =1kΩ	1.15	1.25	1.40	V
Bias Current	I <sub>Bias</sub>	V <sub>CC</sub> =12V		0.1	1	mA
Current Proportional Constant	K	V <sub>CC</sub> =12V, I <sub>L</sub> =20mA	18	20	22	
Saturation Voltage	V <sub>sat</sub>	V <sub>CC</sub> =8.0V, R <sub>a</sub> =18Ω		1	2	V
Voltage Characteristics (1)	$\frac{\Delta V_{REF}}{V_{REF}} / V_{CC}$	V <sub>CC</sub> =9V~16V, R <sub>a</sub> =1kΩ	-0.6	-0.02	0.6	%/V
Voltage Characteristics (2)	$\frac{\Delta K}{K} / V_{CC}$	V <sub>CC</sub> =9V~16V, I <sub>L</sub> =20mA	-0.7	0.2	0.7	%/V
Current Characteristics (1)	$\frac{\Delta V_{REF}}{V_{REF}} / I_L$	I <sub>L</sub> =10 mA ~50mA	-0.1	-0.03	0.1	%/mA
Current Characteristics (2)	$\frac{\Delta K}{K} / I_L$	I <sub>L</sub> =50mA~100mA	-0.15	-0.01	0.15	%/mA
Temperature Characteristics (1)	$\frac{\Delta V_{REF}}{V_{REF}} / T_a$	T <sub>a</sub> =-20°C~+75°C, V <sub>CC</sub> =12V, R <sub>a</sub> =1kΩ		0.01		%/°C
Temperature Characteristics (2)	$\frac{\Delta K}{K} / T_a$	T <sub>a</sub> =-20°C~+75°C, I <sub>L</sub> =20mA		0.01		%/°C

## APPLICATION CIRCUIT



Motor Constants { Ka: Generation constant=2.4mV/rpm  
Ra: Internal resistor = 18Ω  
KT: Torque constant=200g·cm/A

## CHARACTERISTICS CURVE



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