

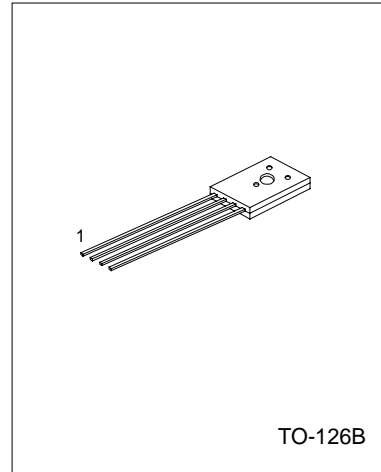
**MOTOR SPEED CONTROL CIRCUIT**

**DESCRIPTION**

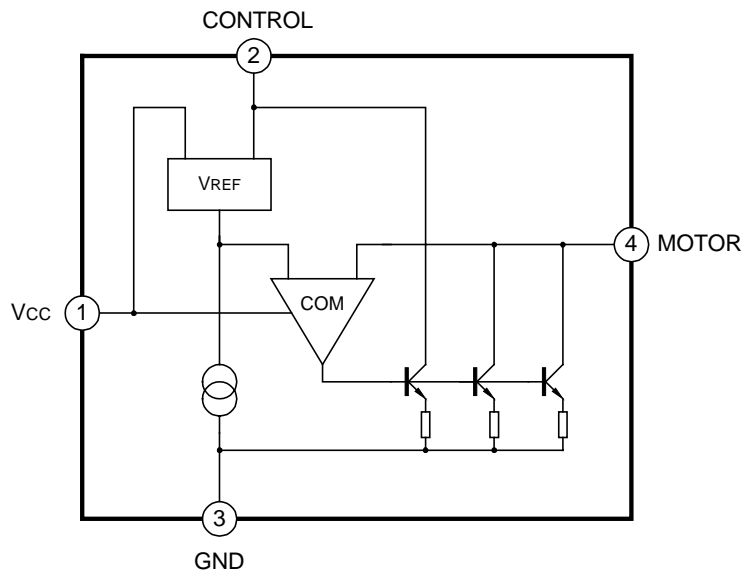
The UTC6651 is a monolithic integrated circuit designed for the rotating speed control of a compact DC motor which is used for a tape recorder, recoder player etc.

**FEATURES**

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



**BLOCK DIAGRAM**



**ABSOLUTE MAXIMUM RATINGS**(Ta=25°C)

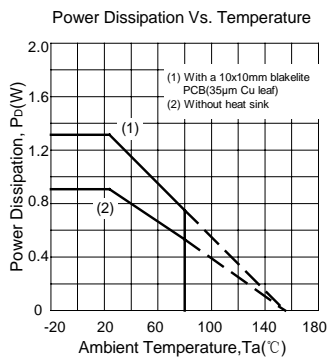
Characteristic	Symbol	Value	Unit
Supply Voltage	Vcc	14.4	V
Supply Current(note 1)	Icc	2000	mA
Power Dissipation(note 2)	P <sub>D</sub>	1300	mW
Operating Temperature	T <sub>opr</sub>	-20 ~ +75	°C
Storage Temperature	T <sub>stg</sub>	-40 ~ +150	°C

NOTE: 1. Ta=25°C, with a 10x10 mm bakelite PCB(3.5µm Cu leaf)  
 2. Test time < 5seconds.

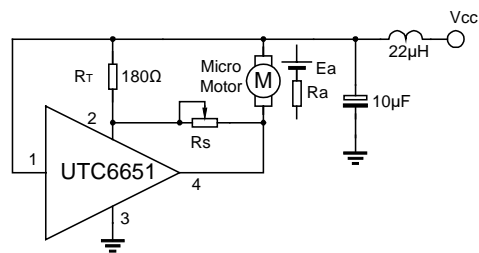
**ELECTRICAL CHARACTERISTICS**(Ta=25°C, unless otherwise specified)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Units
Reference Voltage	V <sub>REF</sub>	V <sub>CC</sub> =6V, R <sub>a</sub> =1kΩ	0.85	1.0	1.15	V
Bias Current	I <sub>Bias</sub>	V <sub>CC</sub> =6V		0.8	1.8	mA
Current Proportional Constant	K	V <sub>CC</sub> =6V, I <sub>L</sub> =40mA	35	40	45	
Saturation Voltage	V <sub>SAT</sub>	V <sub>CC</sub> =4.2V, R <sub>a</sub> =5.0Ω		1.15	2	V
Voltage Characteristics 1	$\frac{\Delta V_{REF}}{V_{REF}} / V_{CC}$	V <sub>CC</sub> =3.5V~14.0V, R <sub>a</sub> =1kΩ		-0.1		%/V
Voltage Characteristics 2	$\frac{\Delta K}{K} / V_{CC}$	V <sub>CC</sub> =3.5V~14.0V, I <sub>L</sub> =40mA		0.2		%/V
Current Characteristics 1	$\frac{\Delta V_{REF}}{V_{REF}} / I_L$	I <sub>L</sub> =50mA~200mA		-0.02		%/mA
Current Characteristics 2	$\frac{\Delta K}{K} / I_L$	I <sub>L</sub> =50mA~200mA		-0.01		%/mA
Temperature Characteristics 1	$\frac{\Delta V_{REF}}{V_{REF}} / T_A$	T <sub>A</sub> =-20~+75°C, V <sub>CC</sub> =6.0V R <sub>a</sub> =1kΩ		0.01		%/°C
Temperature Characteristics 2	$\frac{\Delta K}{K} / T_A$	T <sub>A</sub> =-20~+75°C, V <sub>CC</sub> =6.0V I <sub>L</sub> =40mA		0.01		%/°C

**CHARACTERISTICS CURVE**



**APPLICATION CIRCUIT**



Motor Constant:  
 K<sub>a</sub>-- Electromotive force constant=1.1mV/rpm  
 R<sub>a</sub>-- Internal Resistor=5Ω  
 K<sub>T</sub>=Torque Constant=100g.cm/A