



## AN6651

## LINEAR INTEGRATED CIRCUIT

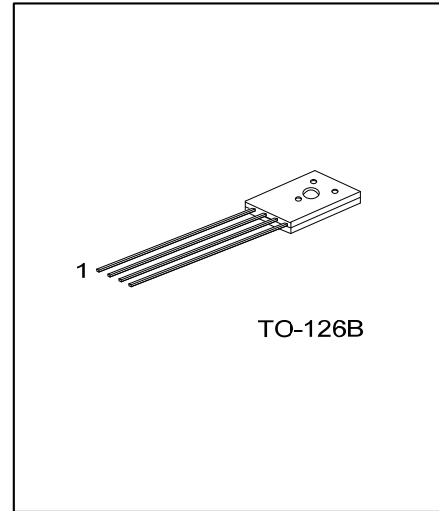
### MOTOR SPEED CONTROL CIRCUIT

#### 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:  $V_{CC}=3.5V \sim 14.4V$
- \*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



\*Pb-free plating product number: AN6651L

#### ORDERING INFORMATION

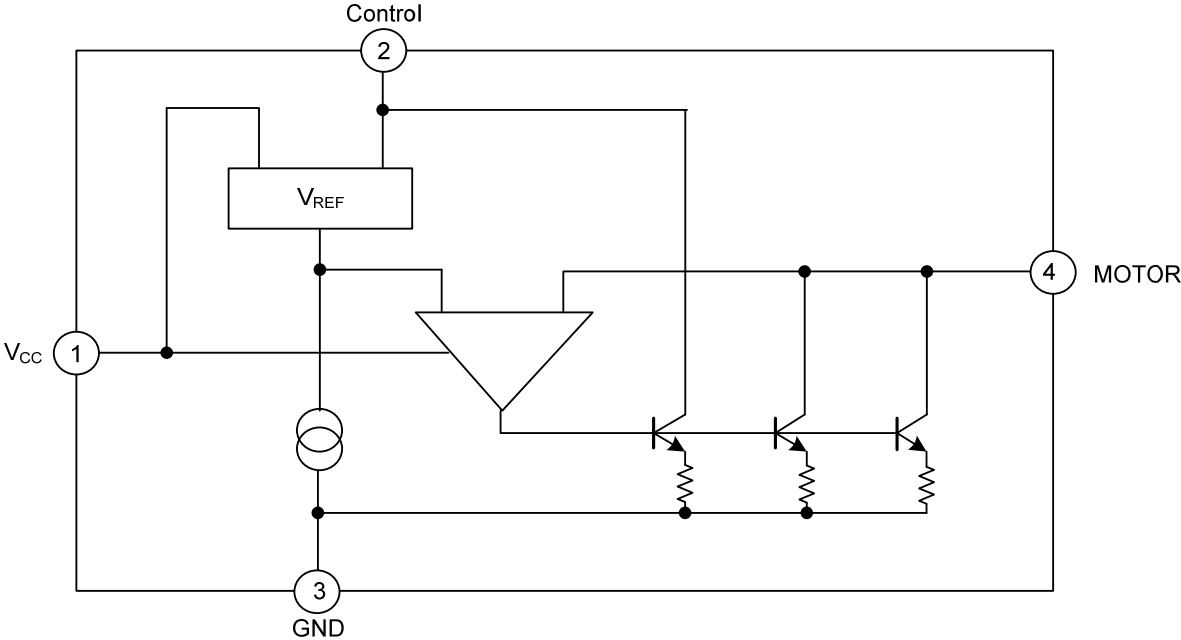
Ordering Number		Package	Packing
Normal	Lead Free Plating		
AN6651-T6B-K	AN6651L-T6B-K	TO-126B	Bulk

<p>AN6651L-T6B-K</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Lead Plating</p>	<p>(1) K: Bulk</p> <p>(2) T6B: TO-126B</p> <p>(3) L: Lead Free Plating, Blank: Pb/Sn</p>
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#### 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<sub>A</sub>=25°C)

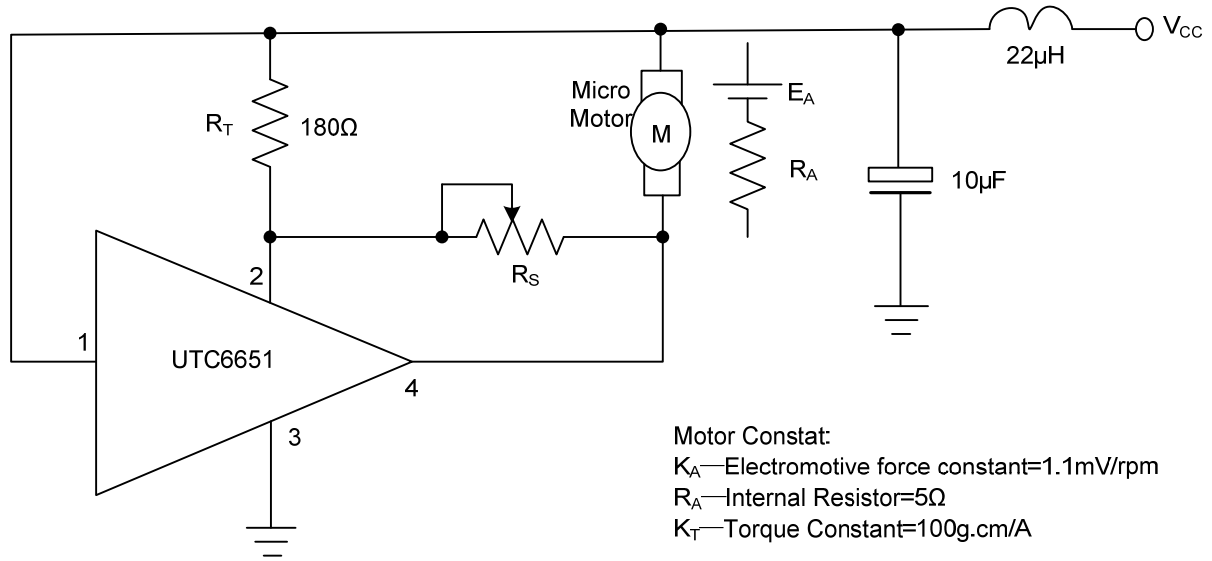
PARAMETER	SYMBOL	RATINGS	UNITS
Supply Voltage	V <sub>CC</sub>	14.4	V
Supply Current	t ≤ 5 sec I <sub>CC</sub>	2000	mA
Power Dissipation (T <sub>A</sub> =25°C)	P <sub>D</sub>	1300	mW
Terminal Voltage	V <sub>n-3</sub> (n=1,2,4)	-0.5 ~ +14.4	V
Terminal Current	I <sub>1</sub>	150	mA
	I <sub>2</sub>	100	
Terminal Current	t ≤ 5 sec I <sub>3</sub>	-2000(min)	
	I <sub>4</sub>	1750	
Operating Temperature	T <sub>OPR</sub>	-20 ~ +75	°C
Storage Temperature	T <sub>STG</sub>	-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.

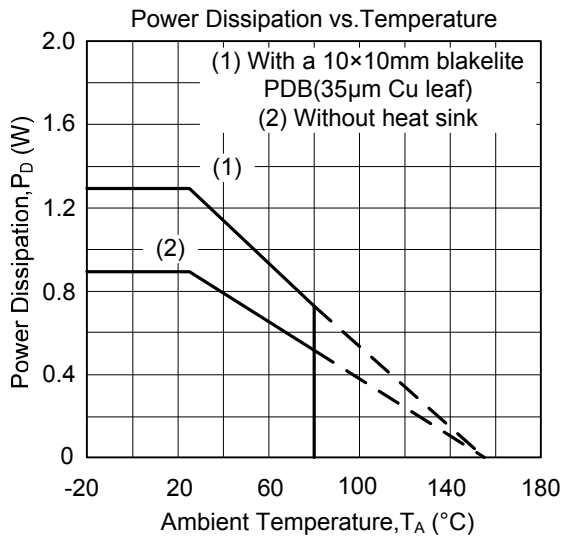
■ ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C, unless otherwise specified)

PARAMETER	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	1.00	1.15	V
Base Current	I <sub>BIAS</sub>	V <sub>CC</sub> =6V		0.8	1.8	mA
Current Proportional Constant	K	V <sub>CC</sub> =6V, ΔI <sub>4</sub> =40mA	35	40	45	
Saturation Voltage	V <sub>SAT</sub>	V <sub>CC</sub> =4.2V, R <sub>A</sub> =5.0kΩ		1.15	2.0	V
Voltage Characteristics 1	$\frac{\Delta V_{REF} / V_{REF}}{\Delta V_{CC}}$	V <sub>CC</sub> =3.5V~14V, R <sub>A</sub> =1kΩ		-0.1		μA
Voltage Characteristics 2	$\frac{\Delta K / K}{\Delta V_{CC}}$	V <sub>CC</sub> =3.5V~14V, ΔI <sub>4</sub> =40mA		0.2		%
Current Characteristics 1	$\frac{\Delta V_{REF} / V_{REF}}{\Delta I_4}$	I <sub>4</sub> =50mA~200mA		-0.02		
Current Characteristics 2	$\frac{\Delta K / K}{\Delta I_4}$				-0.01	KHz
Temperature Characteristics 1	$\frac{\Delta V_{REF} / V_{REF}}{\Delta T_A}$	T <sub>A</sub> =-20~+75°C, V <sub>CC</sub> =6V, R <sub>A</sub> =1kΩ		0.01		%/°C
Temperature Characteristics 2	$\frac{\Delta K / K}{\Delta T_A}$	T <sub>A</sub> =-20~+75°C, ΔI <sub>4</sub> =40mA		0.01		

■ TYPICAL APPLICATION CIRCUIT



■ TYPICAL CHARACTERISTICS



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