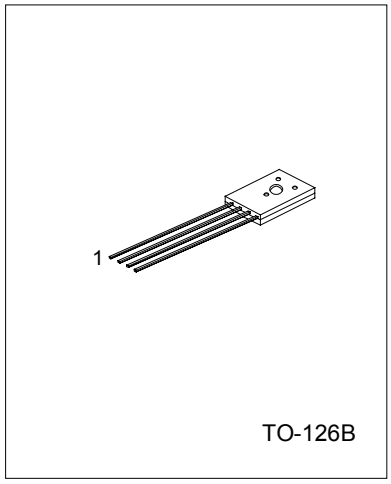
UTC AN6651 LINEAR INTEGRATED CIRCUIT

MOTOR SPEED CONTROL CIRCUIT



1: Vcc 2: CONTROL 3: GND 4: MOTOR

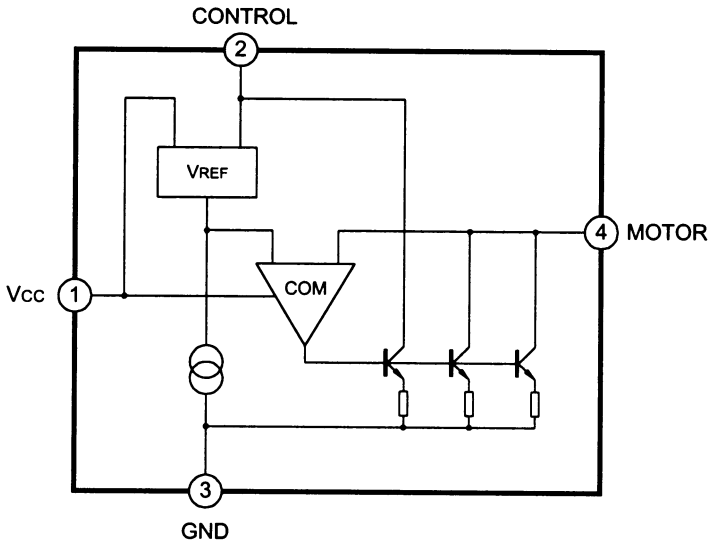
DESCRIPTION

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: Vcc=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

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	V_{CC}	14.4	V
Supply Current (note 1)	I_{CC}	2000	mA
Power Dissipation (Ta=25°C) (note 2)	P_D	1300	mW
Operating Temperature	T_{OPR}	-20 to +75	°C
Storage Temperature	T_{STG}	-40 to +150	°C
Terminal Voltage	Vn-3 (n=1,2,4)	-0.5 to +14.4	V
Terminal Current	I_1	150	mA
Terminal Current	I_2	100	mA
Terminal Current (note 1)	I_3	-2000 (MIN.)	mA
Terminal Current (note 1)	I_4	1750	mA

Note 1: t≤5 sec

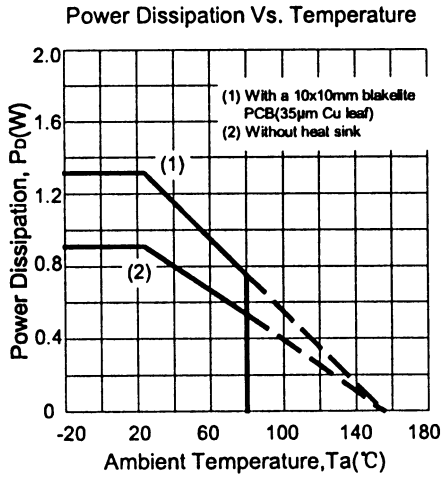
Note 2: Ta=25°C, with a 10 x 10 mm bakelite PCB (3.5μm Cu leaf)

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

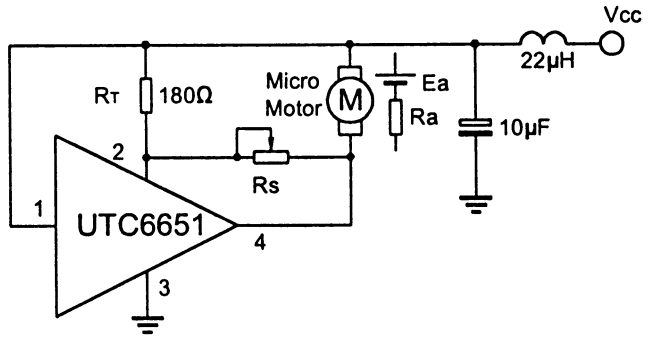
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Reference Voltage	Vref	V_{CC}=6V, Ra=1kΩ	0.85	1.00	1.15	V
Base Current	I_{bias}	V_{CC}=6V		0.8	1.8	mA
Current Proportional Constant	K	V_{CC}=6V, ΔI4=40mA	35	40	45	
Saturation Voltage	V_{SAT}	V_{CC}=4.2V,Ra=5.0Ω		1.15	2.0	V
Voltage Characteristics 1	$\frac{\Delta VREF}{VREF}$ / ΔVcc	V_{CC}=3.5V~14V Ra=1kΩ		-0.1		%/V
Voltage Characteristics 2	$\frac{\Delta K}{K}$ / ΔVcc	V_{CC}=3.5V~14V ΔI4=40mA		0.2		%/V
Current Characteristics 1	$\frac{\Delta VREF}{VREF}$ / ΔI4	I4=50mA~200mA		-0.02		%/mA
Current Characteristics 2	$\frac{\Delta K}{K}$ / ΔI4	I4=50mA~200mA		-0.01		%/mA
Temperature Characteristics 1	$\frac{\Delta VREF}{VREF}$ / ΔTa	Ta=-20~+75°C V_{CC}=6V Ra=1kΩ		0.01		%/°C

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Temperature Characteristics 2	$\frac{\Delta K}{K}$ / ΔTa	Ta=-20~+75°C ΔI4=40mA		0.01		%/°C

CHARACTERISTICS CURVE



APPLICATION CIRCUIT



Motor Constant:

Ka-- Electromotive force constant=1.1mV/rpm

Ra-- Internal Resistor=5Ω

KT=Torque Constant=100g.cm/A