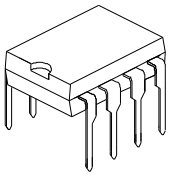
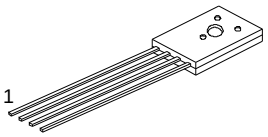
MOTOR SPEED CONTROL CIRCUIT



DIP-8



TO-126B

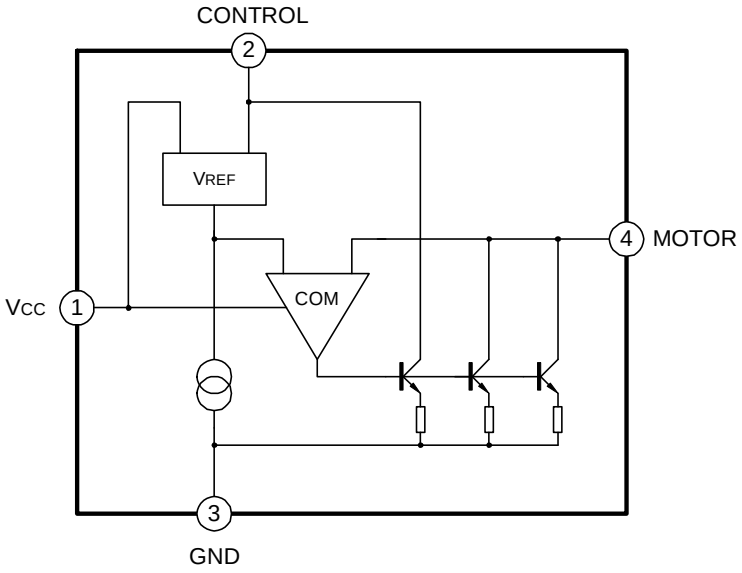
DESCRIPTION

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:Vcc=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)

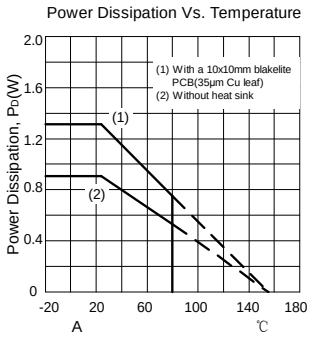
Characteristic	Symbol	Value	Unit
Supply Voltage	V_{CC}	14.4	V
Supply Current(note 1)	Icc	2000	mA
Power Dissipation(note 2)	P_D	1300	mW
Operating Temperature	Topr	-20 ~ +75	°C
Storage Temperature	Tstg	-40 ~ +150	°C

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

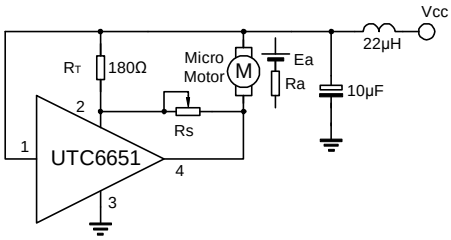
ELECTRICAL CHARACTERISTICS(Ta=25°C,unless otherwise specified)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Units
Reference Voltage	V_{REF}	V_{CC}=6V，Ra=1kΩ	0.85	1.0	1.15	V
Bias Current	I_{Bias}	Vcc=6V		0.8	1.8	mA
Current Proportional Constant	K	Vcc=6V,DI_4=40mA	35	40	45	
Saturation Voltage	V_{SAT}	V_{CC}=4.2V,Ra=5.0Ω		1.15	2	V
Voltage Characteristics 1	$\frac{\Delta V_{REF}}{V_{REF}} / Vcc$	V_{CC}=3.5V~14.0V,Ra=1kΩ		-0.1		%/V
Voltage Characteristics 2	$\frac{\Delta K}{K} / Vcc$	V_{CC}=3.5V~14.0V,DI_4=40mA		0.2		%/V
Current Characteristics 1	$\frac{\Delta V_{REF}}{V_{REF}} / I4$	I_4=50mA~200mA		-0.02		%/mA
Current Characteristics 2	$\frac{\Delta K}{K} / I4$	I_4=50mA~200mA		-0.01		%/mA
Temperature Characteristics 1	$\frac{\Delta V_{REF}}{V_{REF}} / Ta$	T_A=-20~+75°C, V_{CC}=6.0V Ra=1kΩ		0.01		%/°C
Temperature Characteristics 2	$\frac{\Delta K}{K} / Ta$	T_A=-20~+75°C, V_{CC}=6.0V DI_4=40mA		0.01		%/°C

CHARACTERISTICS CURVE



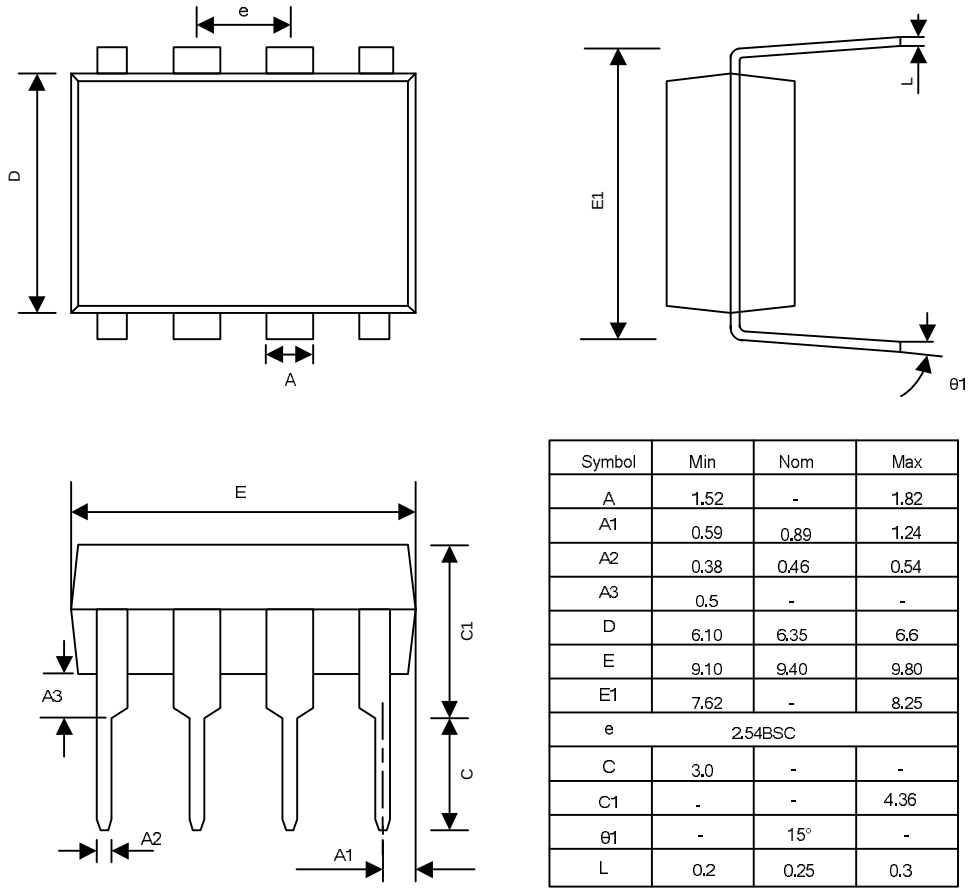
APPLICATION CIRCUIT



Motor Constant:
Ka-- Electromotive force constant=1.1mV/rpm
Ra-- Internal Resistor=5Ω
KT=Torque Constant=100g.cm/A

PACKAGE OUTLINE

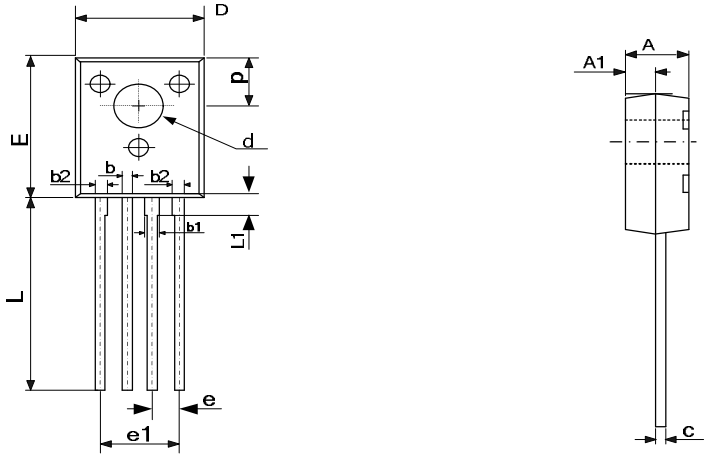
DIP-8-300-2.54 UNIT:mm



Symbol	Min	Nom	Max
A	1.52	-	1.82
A1	0.59	0.89	1.24
A2	0.38	0.46	0.54
A3	0.5	-	-
D	6.10	6.35	6.6
E	9.10	9.40	9.80
E1	7.62	-	8.25
e	2.54BSC		
C	3.0	-	-
C1	-	-	4.36
θ1	-	15°	-
L	0.2	0.25	0.3

PACKAGE OUTLINE

TO-126B UNIT:mm



Symbol	Min (mm)	Max(mm)	Symbol	Min(mm)	Max(mm)
A	3.000	3.400	E	10.800	11.200
A1	1.500	1.900	e	1.778TYP	
b	0.500	0.700	e1	5.234	5.434
b1	0.900	1.100	L	15.300	15.700
b2	0.600	0.800	L1	1.717	1.917
c	0.450	0.600	p	3.700	3.900
D	7.800	8.200	d	2.900	3.100