Motor Control Circuit CL6651

■ General Description

The CL6651 is a monolithic integrated circuit that provides motor speed control, reverse voltage protection, and stable reference voltage. This IC is specially designed for tape recorder and recorder player.

The CL6651 is available in plastic TO -126B package.

■ Features

- Small 4-lead Plastic Package for Compact Motor
- Few External Components
- Stable Low Reference Voltage (1.0V, Typ)
- Wide Motor Speed Control
- Highly Stable Operation over a Wide Range of
- Supply Voltage, VCC=3.5V to 14.4V
- Reverse Voltage Protection Circuit Built-in

■ Applications

- Tape Recorder
- Recorder Player

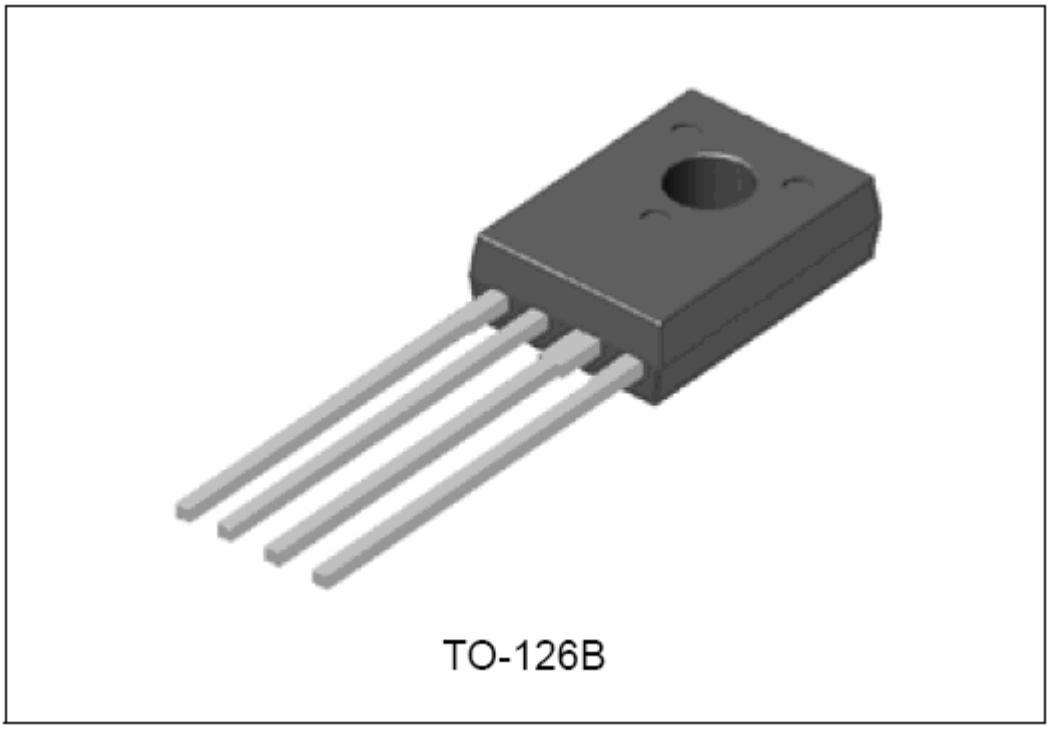


Figure 1. The package type of CL6651

■ Function Block

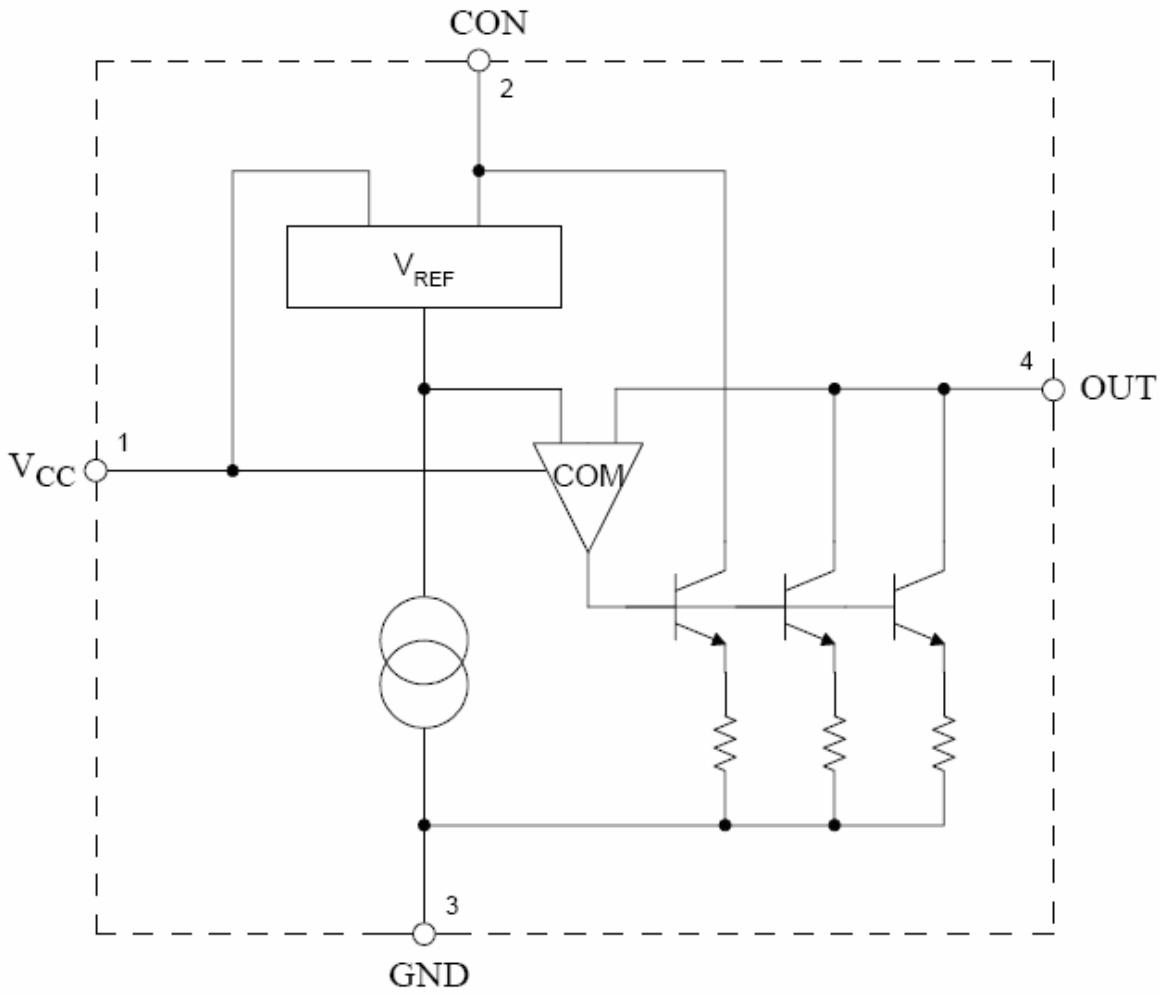


Figure 2. Functional Block Diagram of CL6651

■ Pin Configuration

U Package
(TO-126B)

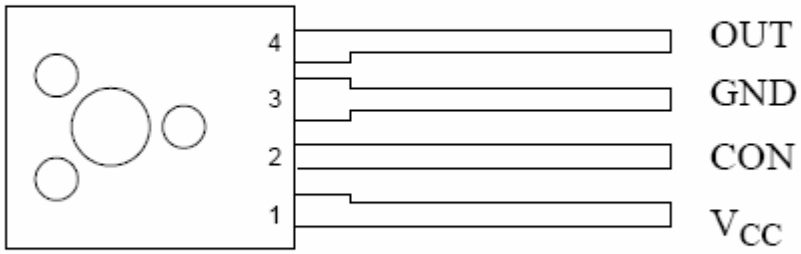
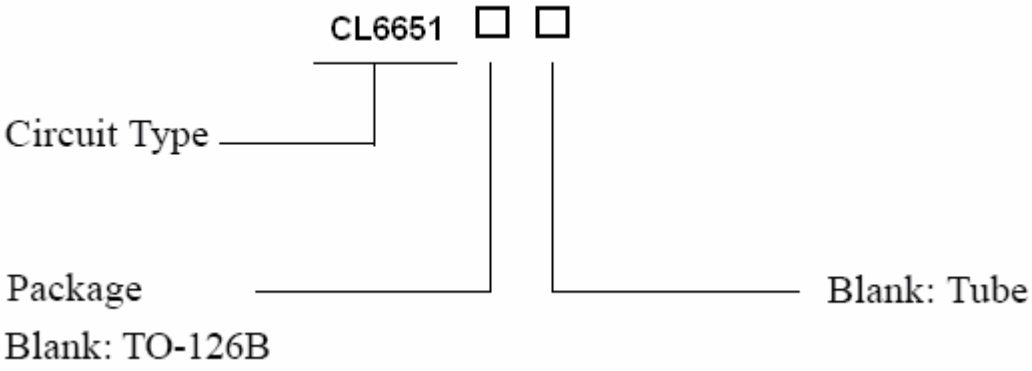


Figure 3. Pin Configuration of AN6651 (Top View)

■ Pin Description

Pin Number	Pin Name	Function
1	VCC	Supply voltage
2	CON	Supply voltage
3	GND	Supply voltage
4	OUT	Supply voltage

■ Ordering Information



Package	Temperature Range	Part Number	Marking ID	Packing Type
TO-126B	0℃~ +70℃	CL6651-E1	CL6651	Tube

■ Absolute Maximum Ratings (Note1)

Parameter	Symbol	Value	Unit
Supply Voltage	VCC	16	V
Supply Current	ICC	500 (Note 2)	mA
Power Dissipation	PD	1300	mW
Storage Temperature Range	Tstg	-40 to 150	℃

Note 1: Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "Recommended Operating Conditions" is not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.
Note 2: The transient startup/shutdown current is allowed to exceed 1.0A.

■ Recommended Operating Conditions

Parameter	**Symbol**	**Min**	**Max**	**Unit**
Supply Voltage	VCC	3.5	14.4	V
Ambient Operating Temperature	TA	0	+70	℃

■ Electrical Characteristics

(VCC=6V, TA=25℃, unless otherwise specified.)

Parameter	Symbol	Condition	Min	Type	Max	Unit
Reference Voltage	VREF	VCC=6V, RA=1k (Figure 6)	0.9	1.0	1.1	V
Bias Current	IBIAS	VCC=6V (Figure 5)		0.9	1.8	mA
Current Coefficient	K	VCC=6V, I4=40mA (Figure 4) (Note 3)	35		45	
Saturation Voltage	VSAT	VCC=4.2V, RA=5		1.1	2	V
Voltage Characteristic of Reference Voltage	(VREF/VREF)/ ΔVCC	VCC=3.5 to 14V, RA=1k		-0.02		%/V
Voltage Characteristic of Current Coefficient	(K/K)/ VCC	VCC=3.5 to 14V, I4=40mA		0.39		%/V
Current Characteristic of Reference Voltage	(VREF/VREF)/ I4	I4=50 to 200mA		-0.06		%/mA
Current Characteristic of Current Coefficient	(K/K)/ I4	I4=50 to 200mA		-0.01		%/mA
Temperature Characteristic of Reference Voltage	(VREF/VREF)/ TA	VCC=6V, RA=1k TA=0 to 70 ℃		0.01		%/ ℃
Temperature Characteristic of Current Coefficient	(K/K)/ TA	VCC=6V, I4=40mA TA=0 to 70 ℃		0.01		%/ ℃

Note 3: I4 is the motor driver current, please see Figures 4 and 5.

■ Test Circuit

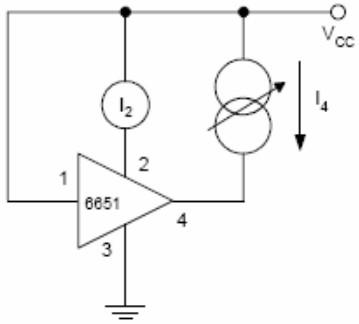


Figure 4. Test Circuit 1 ($K = \Delta I_4/\Delta I_2$)

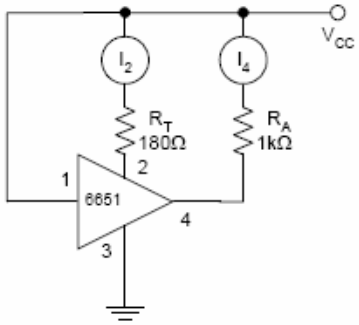


Figure 5. Test Circuit 2 ($I_{BIAS}=I_2-I_4/K$)

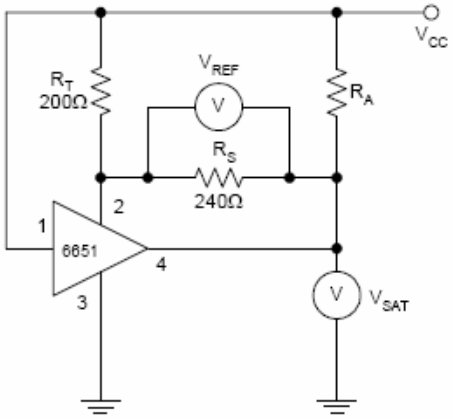
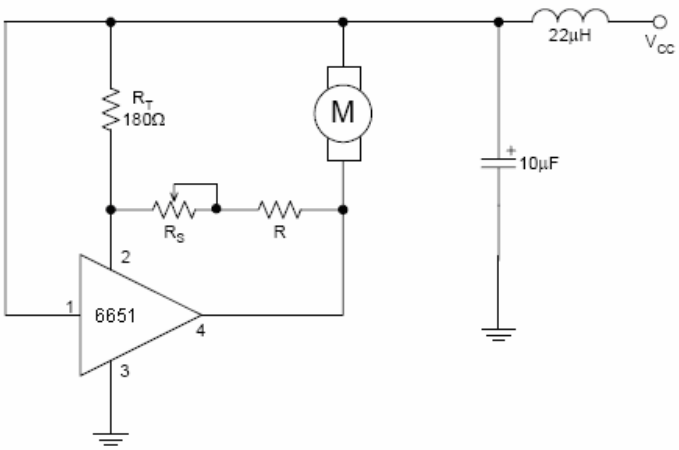


Figure 6. Test Circuit 3

■ Typical Application

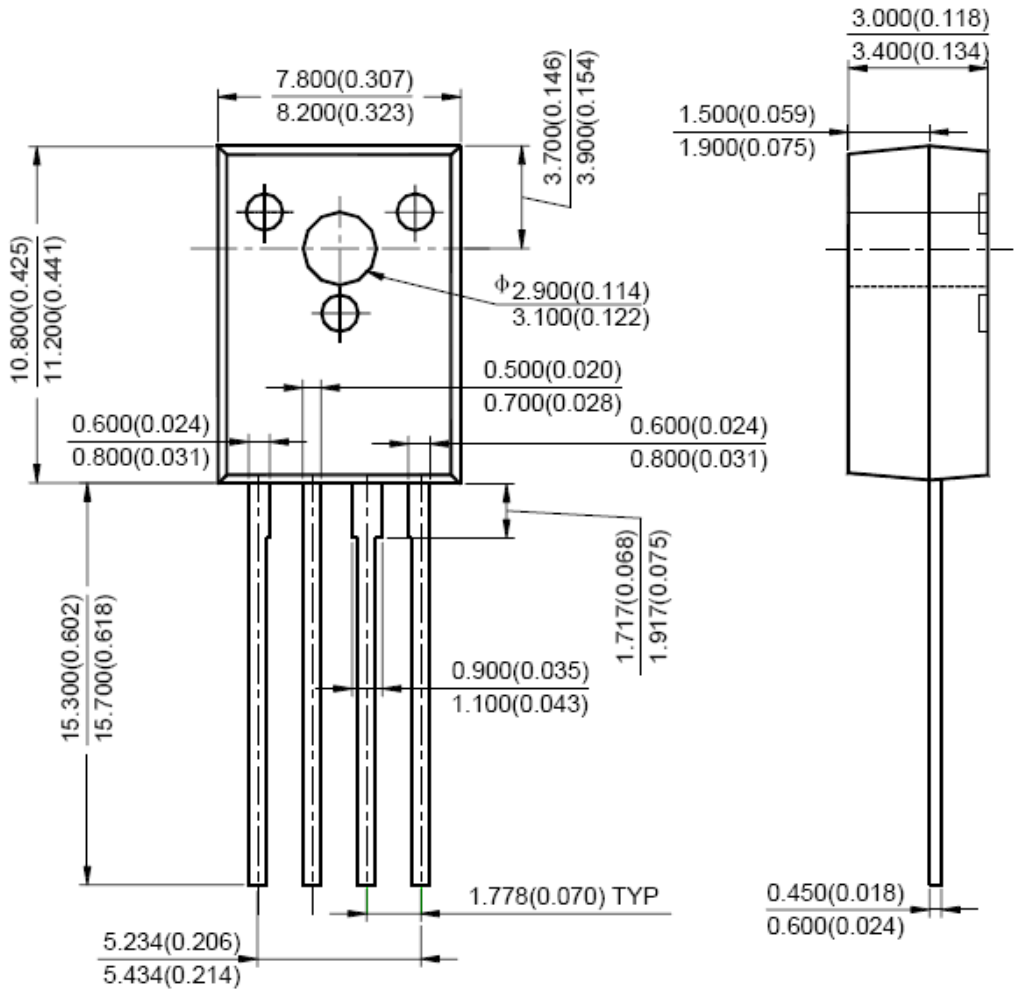


Motor (6V DC Motor) constants
K_A: Electromotive force constant
= 1.1mV/rpm
R_A: Internal resistor = 5Ω
K_T: Torque constant = 100g.cm/A

Figure 7. Typical Application of CL6651

■ Mechanical Dimensions

TO-126B **Unit: mm(inch)**



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