

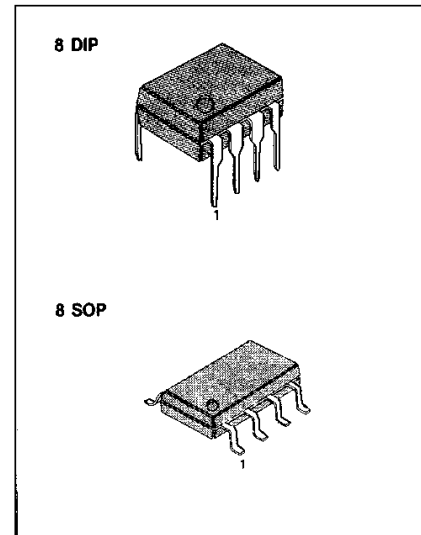
LOW VOLTAGE DC MOTOR SPEED CONTROLLER

USE

- Speed control or general-purpose low-voltage compact DC motor for microcassette tape recorders, radio cassettes and their equivalents.

FEATURES

- **Operating supply voltage range**
KA2402: $V_{CC} = 1.8V \sim 8V$
KA2402D: $V_{CC} = 1.8V \sim 4.5V$
- **Capable of making the applicable set compact because of a minimum to adjust speed.**
- **Easy to adjust speed.**
- **Built-in stable low reference power meeting the requirements for 2 speeds .**
- $V_{REF} = 0.2V$



ORDERING INFORMATION

Device	Package	Operating Temperature
KA2402	8 DIP	- 20°C ~ + 80°C
KA2402D	8 SOP	

BLOCK DIAGRAM

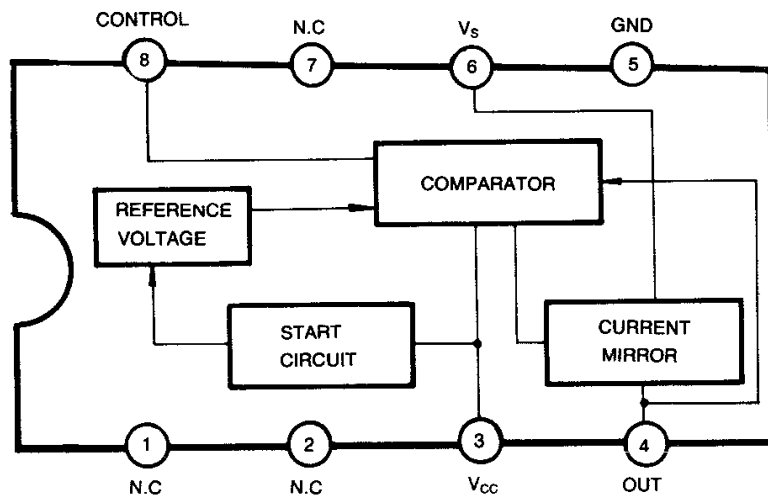


Fig. 1

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Characteristic	Symbol	Value	Unit
Maximum Supply Voltage	V_{CC}	10	V
Maximum Motor Current	I_M (MAX)	700	mA
Power Dissipation	P_D	600	mW
Operating Temperature	T_{OPR}	-20 ~ +80	°C
Storage Temperature	T_{STG}	-40 ~ +125	°C

RECOMMENDED OPERATING CONDITIONS (Ta = 25°C)

Characteristic	Symbol	Value		Unit
Supply Voltage	V_{CC}	KA2402	1.8 ~ 8	V
		KA2402D	1.8 ~ 4.5	
Recommended Operating Temperature	T_{OPR}	-20 ~ 60		°C

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Reference Voltage	V_{REF}	$V_{CC} = 3V, I_M = 100mA$	0.18	0.2	0.22	V
Circuit Current	I_{CC}	$V_{CC} = 3V, I_M = 100mA$		2.4	6.0	mA
Current Coefficient	K	$V_{CC} = 3V, I_M = 50mA$ $I_M = 100mA$	45	50	55	
Saturation Voltage	V_{SAT}	$V_{CC} = 3V, I_M = 100mA$		0.13	0.3	V
Voltage Characteristic of Reference Voltage	$\frac{\Delta V_{REF}}{V_{REF}} / \Delta V_{CC}$	$I_M = 100mA$ $V_{CC} = 1.8 \sim 8V$ (KA2402) $1.8 \sim 4.5V$ (KA2402D)		0.1		%/V
Voltage Characteristic of Current Coefficient	$\frac{\Delta K}{K} / \Delta V_{CC}$	$I_M = 50, 150mA$ $V_{CC} = 1.8 \sim 8V$ (KA2402) $1.8 \sim 4.5V$ (KA2402D)		0.3		%/V
Voltage Characteristic of Reference Voltage	$\frac{\Delta V_{REF}}{V_{REF}} / \Delta I_M$	$I_M = 3V$ $I_M = 20 \sim 200mA$		0.005		%/mA
Current Characteristic of Current Coefficient	$\frac{\Delta K}{K} / \Delta I_M$	$V_{CC} = 3V, I_M = 20, 50mA$ $-170, 200mA$		-0.07		%/mA
Temperature Characteristic of Reference Voltage	$\frac{\Delta V_{REF}}{V_{REF}} / \Delta T_a$	$V_{CC} = 3V, I_M = 100mA$ $T_a = -20 \sim +80^\circ C$		-0.008		%/°C
Temperature Characteristic of Current Coefficient	$\frac{\Delta K}{K} / \Delta T_a$	$V_{CC} = 3V, I_M = 50m, 150mA$ $T_a = -20 \sim +80^\circ C$		0.02		%/°C

TEST CIRCUIT

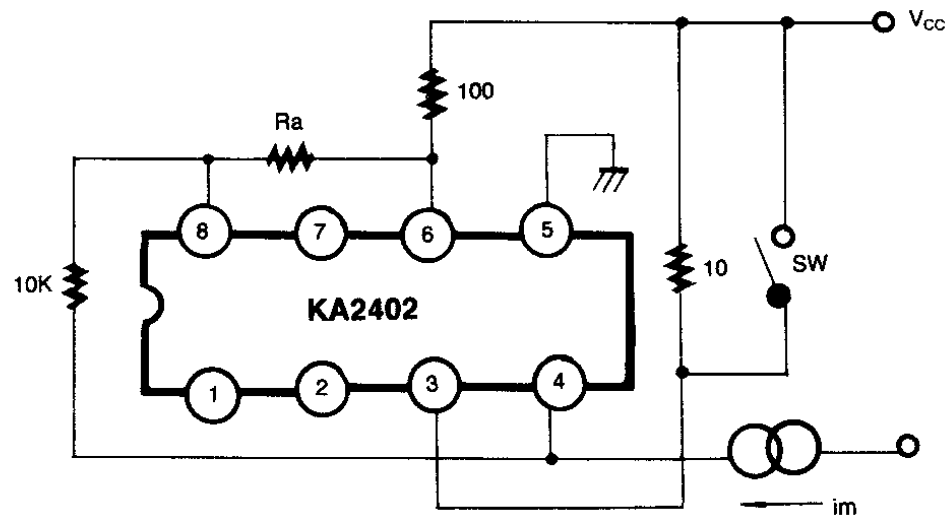


Fig. 2

APPLICATION CIRCUIT

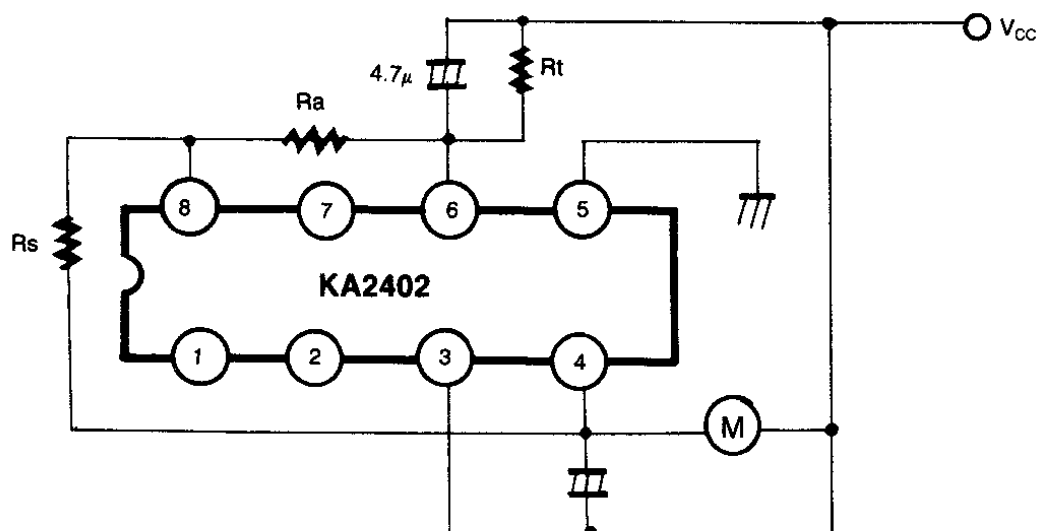


Fig. 3