

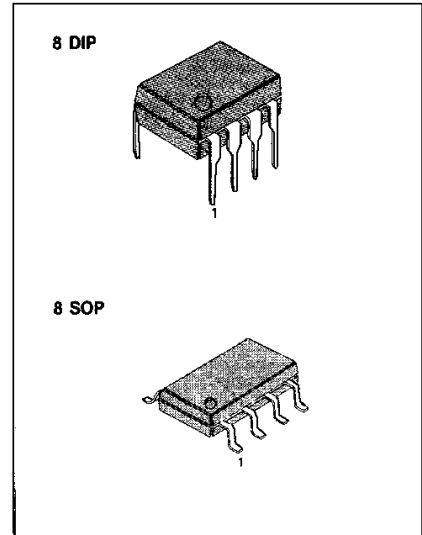
LOW VOLTAGE DC MOTOR SPEED CONTROLLER

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

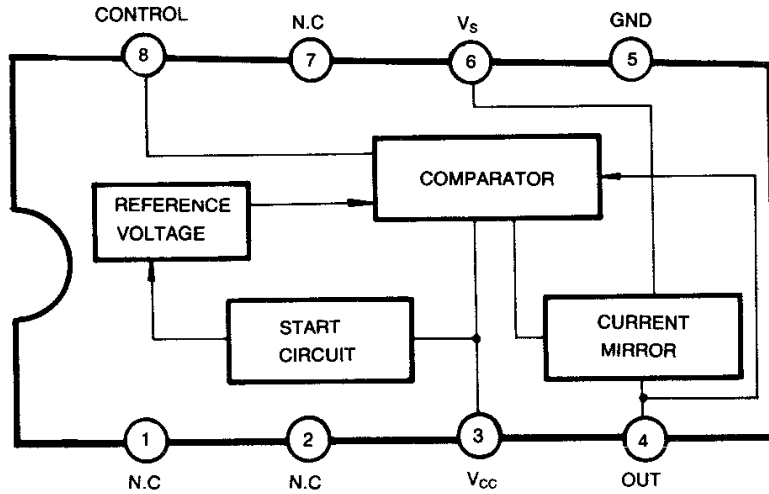


Fig. 1

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 ~ 8V (KA2402) 1.8 ~ 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 ~ 8V (KA2402) 1.8 ~ 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 ~ 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 ~ +80°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 ~ +80°C | | 0.02 | | %/°C |

TEST CIRCUIT

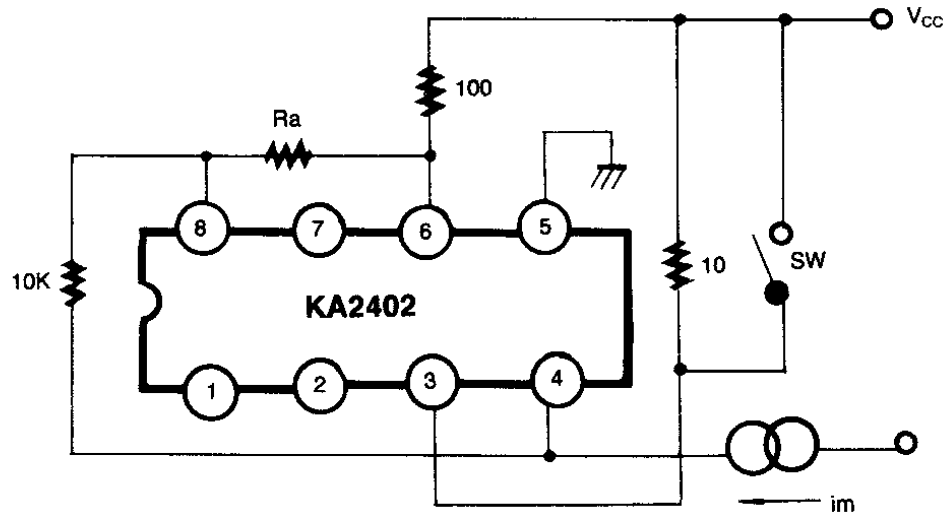


Fig. 2

APPLICATION CIRCUIT

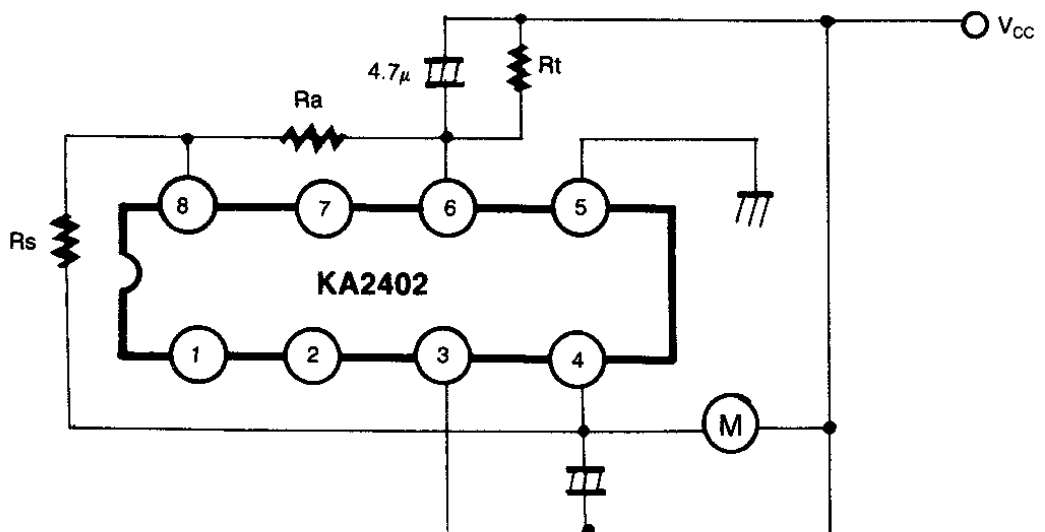


Fig. 3