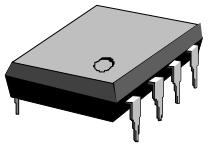
## INTRODUCTION

The S1A2402C01 is a Controller for speed control, or a general-purpose low-voltage compact DC motor for micro-cassette tape recorders, radio cassettes and their equivalents.

8–DIP–300



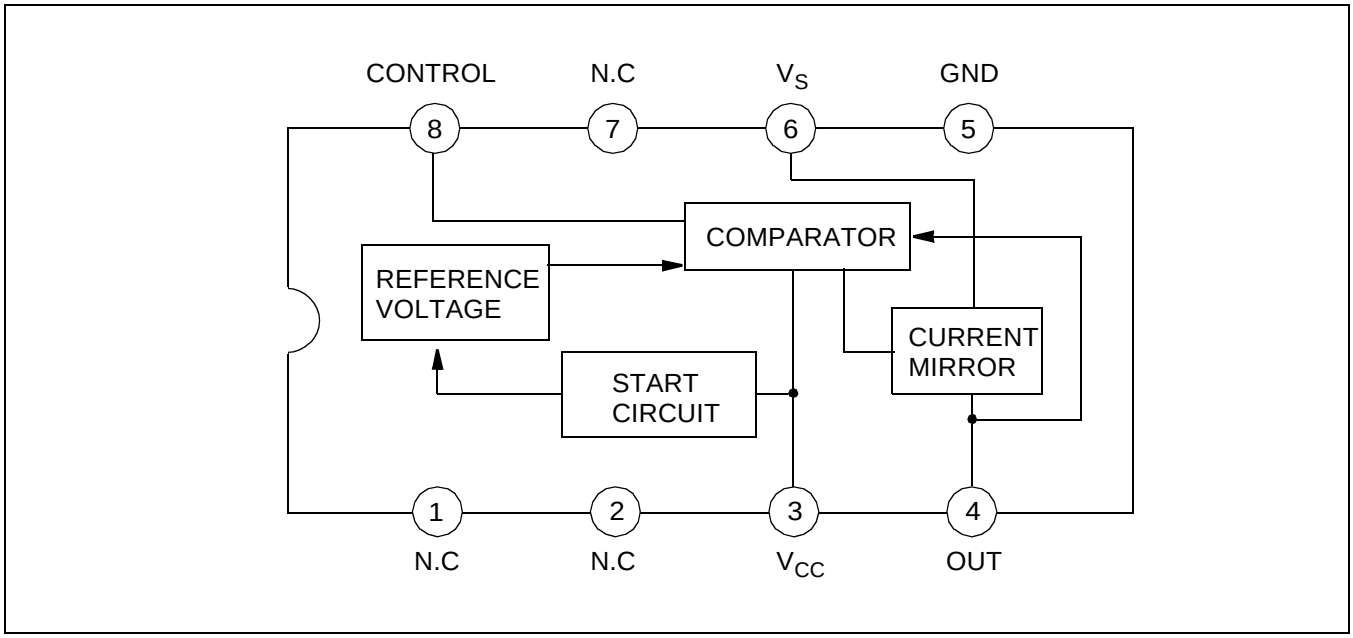

## FEATURES

- Operating supply voltage range:
  $V_{CC}$=1.8V – 8V
- Compact applicable set due to a minimum of external parts
- Easy speed adjustments
- Built-in stable low voltage reference:
  $V_{REF}$ = 0.2 V

## ORDERING INFORMATION

| Device | Package | Operating Temperature |
|---|---|---|
| S1A2402C01-D0B0 | 8–DIP–300 | –20°C – + 80°C |

## BLOCK DIAGRAM



## 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 |

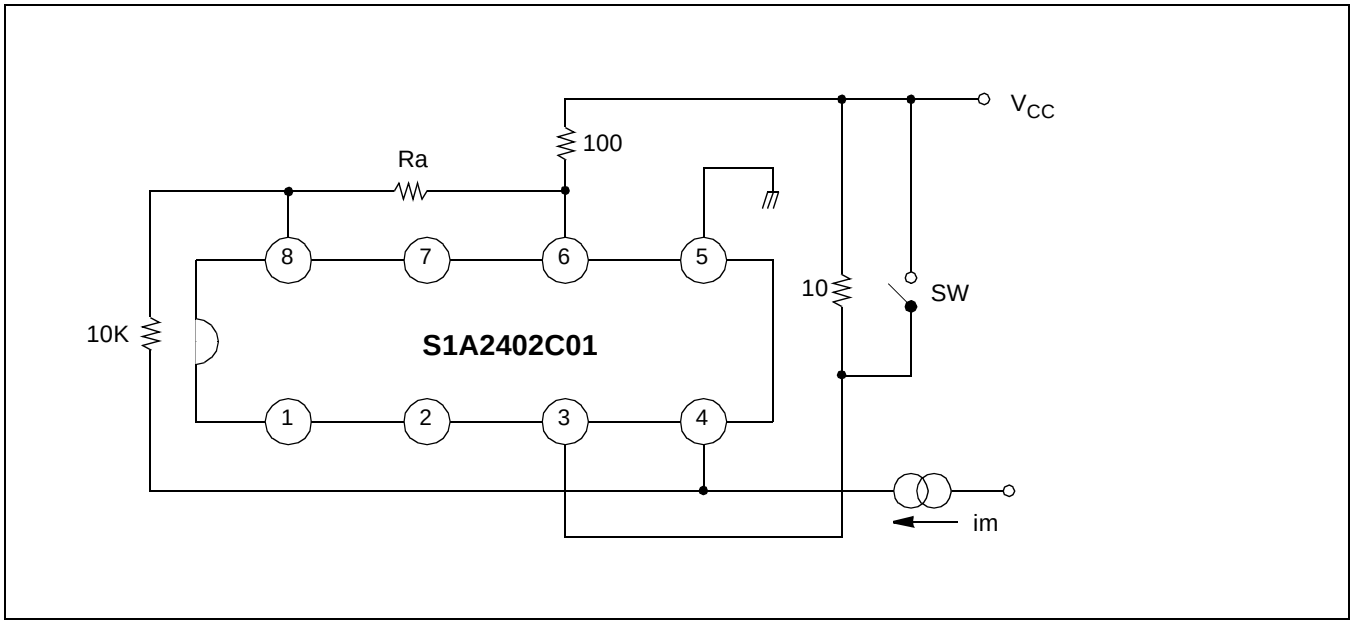
## RECOMMENDED OPERATING CONDITIONS (Ta = 25°C)

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Supply Voltage | $V_{CC}$ | 1.8 – 8 | V |
| Recommended Operating Temperature | $T_{OPR}$ | –20 – 60 | °C |

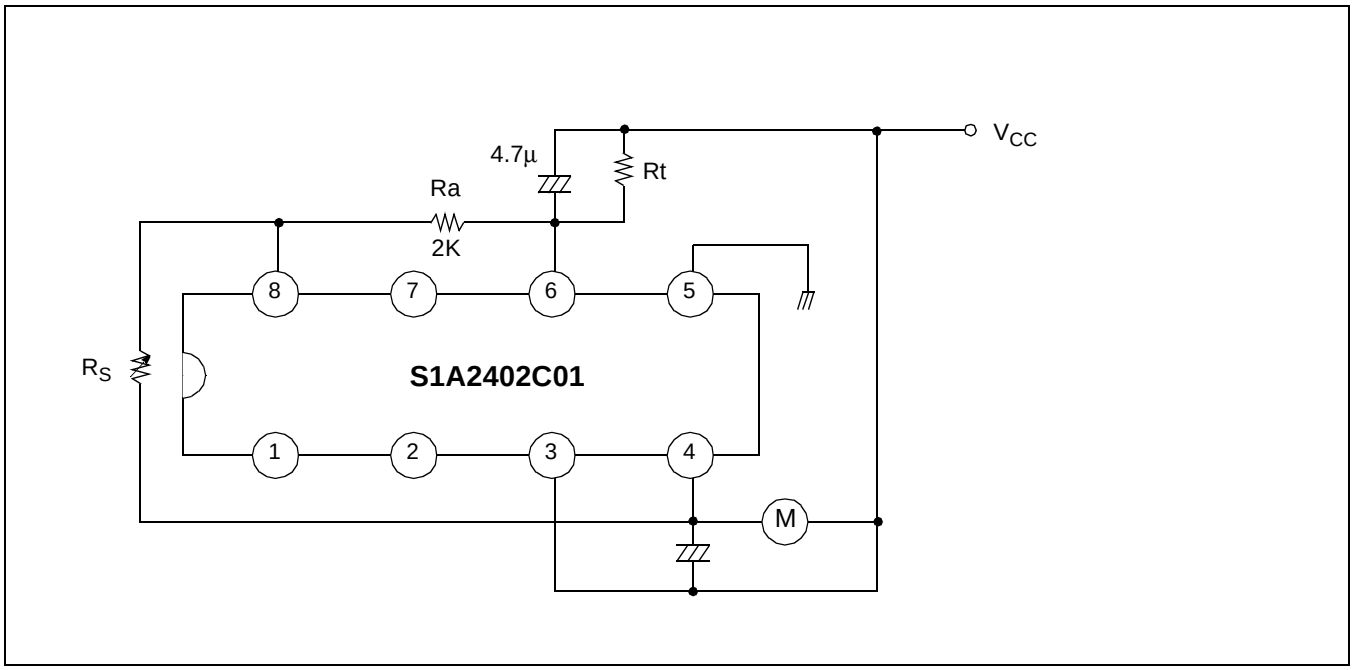
## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| 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<br>$I_M$ = 100mA | 45 | 50 | 55 | – |
| Saturation Voltage | $V_{(SAT)}$ | $V_{CC}$ = 3V, $I_M$ = 100mA | – | 0.13 | 0.3 | V |
| Voltage Characteristic of Reference Voltage | $\frac{\Delta V_{REF}}{V_{REF}}/\Delta V_{VCC}$ | $I_M$ = 100mA,<br>$V_{CC}$ = 1.8 – 8V (S1A2402C)<br>1.8 – 4.5V (S1A2402D) | – | 0.1 | – | %/V |
| Voltage Characteristic of Current Coefficient | $\frac{\Delta K}{K}/\Delta V_{CC}$ | $I_M$ = 50, 150mA<br>$V_{CC}$ = 1.8 – 8V (S1A2402C)<br>1.8 – 4.5V (S1A2402D) | – | 0.3 | – | %/V |
| Voltage Characteristic of Reference Voltage | $\frac{\Delta V_{REF}}{V_{REF}}/\Delta I_M$ | $I_M$ = 3V<br>$I_M$ =20 – 200mA | – | 0.005 | – | %/mA |
| Current Characteristic of Current Coefficient | $\frac{\Delta K}{K}/\Delta I_M$ | $V_{CC}$ = 3V, $I_M$ = 20, 50mA<br>– 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<br>Ta = – 20 – + 80°C | – | –0.008 | – | %/°C |
| Temperature Characteristic of Current Coefficient | $\frac{\Delta K}{K}/\Delta T_A$ | $V_{CC}$ = 3V, $I_M$ = 50 m, 150mA<br>Ta = – 20 – + 80°C | – | 0.02 | – | %/°C |

## TEST CIRCUIT




## APPLICATION CIRCUIT



# NOTES