

# KA2402

# DC MOTOR SPEED CONTROLLER

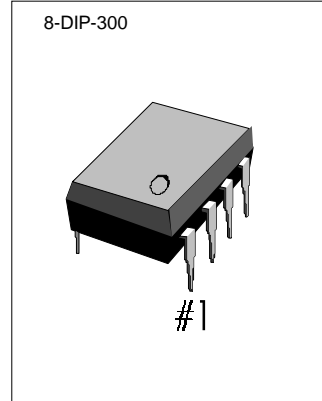
## INTRODUCTION

### 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:  $V_{CC}=1.8V \sim 8V$
- Capable of making the applicable set compact because of a minimum of 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-300	-20°C ~ +80°C

## BLOCK DIAGRAM

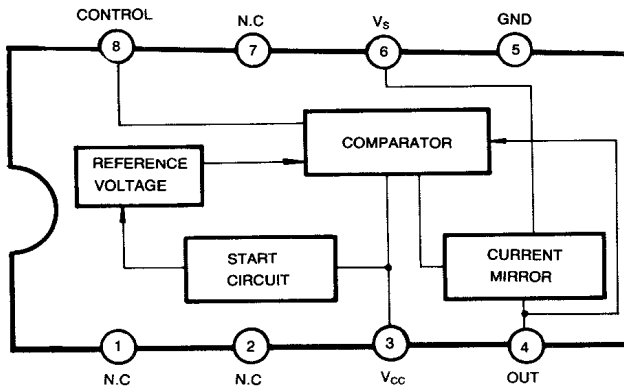


Fig. 1

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## ABSOLUTE MAXIMUM RATINGS (Ta = 25 °C)

Characteristic	Symbol	Value	Unit
Maximum Supply Voltage	V <sub>CC</sub>	10	V
Maximum Motor Current	I <sub>M(MAX)</sub>	700	mA
Power Dissipation	P <sub>D</sub>	600	mW
Operating Temperature	T <sub>OPR</sub>	-20 ~ +80	°C
Storage Temperature	T <sub>STG</sub>	-40 ~ +125	°C

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

Characteristic	Symbol	Value	Unit
Supply Voltage	V <sub>CC</sub>	1.8 ~ 8	V
Recommended Operating Temperature	T <sub>OPR</sub>	-20 ~ 60	°C

## ELECTRICAL CHARACTERISTICS (Ta = 25 °C)

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

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## TEST CIRCUIT

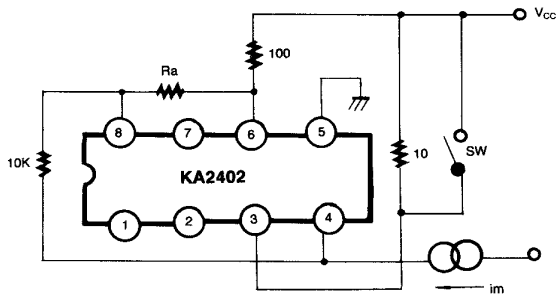


Fig. 2

## APPLICATION CIRCUIT

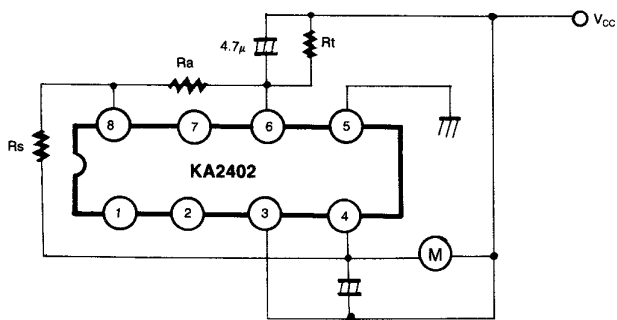
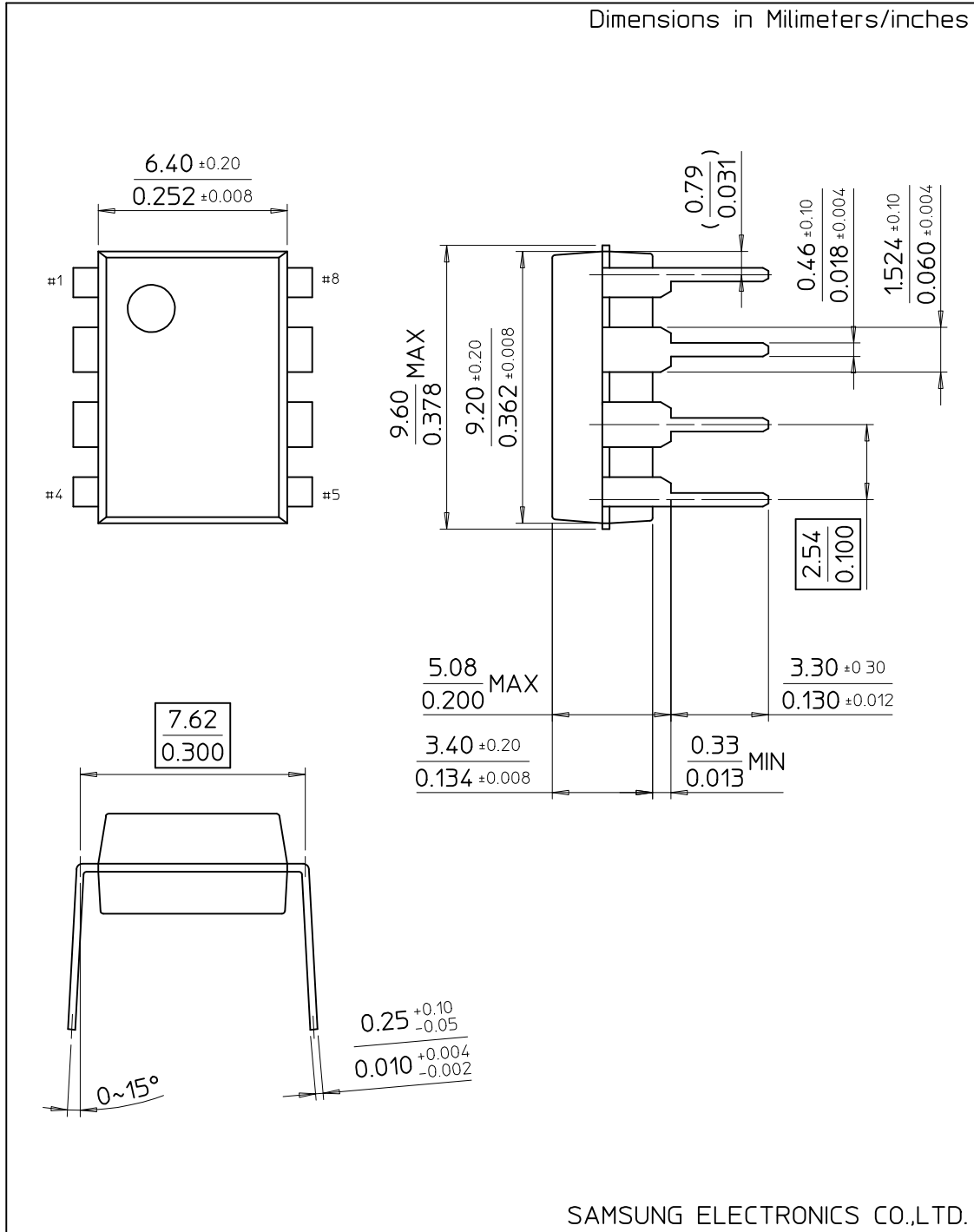


Fig. 3

# 8-DIP-300

Dimensions in Millimeters/inches



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