

DC MOTOR SPEED CONTROLLER

The KA2407 is a monolithic integrated circuit designed for DC motor speed controllers.

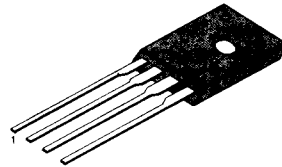
FEATURES

- High stable operation over a wide range of supply voltage;
 $V_{CC} = 3.5V \sim 14.4V$
- Stable low reference voltage (1.0V Typ) for wide motor speed setting
- A minimum number of external parts required
- Small four-lead plastic package for compact motor
- Reverse voltage protection circuit

APPLICATIONS

- Tape recorders & recorder players
- Home stereos
- Car components

TO-126



ORDERING INFORMATION

Device	Package	Operating Temperature
KA2407	TO-126	$-20^{\circ}\text{C} \sim +70^{\circ}\text{C}$

BLOCK DIAGRAM

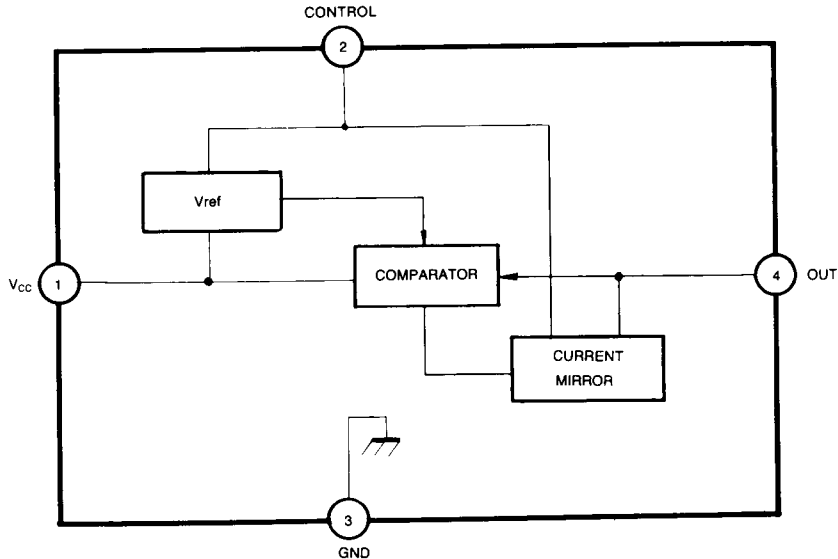


Fig. 1

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Characteristic	Symbol	Value	Unit
Supply Voltage	V _{CC}	14.4	V
Supply Current	I _{CC} (Note 1)	2	A
Power Dissipation	P _D (Note 2)	1.3	W
Operating Temperature	T _{OPR}	- 20 ~ + 75	°C
Storage Temperature	T _{STG}	- 40 ~ + 150	°C

(Note 1): t ≤ 5 sec

(Note 2): Ta = 25°C, With a 100 × 100mm bakelite printed circuit board (35μm Cu leaf)

ELECTRICAL CHARACTERISTICS (Ta = 25°C, V_{CC} = 6V)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit	Test Circuit
Reference Voltage	V _{REF}	Ra = 1KΩ	0.85	1.0	1.15	V	1
Quiescent Circuit Current	I _{CCQ}			0.8	1.8	mA	3
Current Coefficient	K	ΔI ₄ = 40mA	35	40	45		2
Saturation Voltage	V _{SAT}	V _{CC} = 4.2V, Ra = 5Ω		1.15	2	V	1
Voltage Characteristic of Reference Voltage	$\frac{\Delta V_{REF}}{V_{REF}} / \Delta V_{CC}$	V _{CC} = 3.5V ~ 14V, Ra = 1KΩ		- 0.1		%/V	1
Voltage Characteristic of Current Coefficient	$\frac{\Delta K}{K} / \Delta V_{CC}$	V _{CC} = 3.5V ~ 14V, ΔI ₄ = 40mA		0.1		%/V	2
Current Characteristic of Reference Voltage	$\frac{\Delta V_{REF}}{V_{REF}} / \Delta I_4$	I ₄ = 50mA ~ 200mA		- 0.02		%/mA	1
Current Characteristic of Current Coefficient	$\frac{\Delta K}{K} / \Delta I_4$	I ₄ = 50mA ~ 200mA		- 0.01		%/mA	2
Temperature Characteristic of Reference Voltage	$\frac{\Delta V_{REF}}{V_{REF}} / \Delta T_a$	Ta = - 20 ~ + 75°C, Ra = 1KΩ		0.01		%/°C	1
Temperature Characteristic of Current Coefficient	$\frac{\Delta K}{K} / \Delta T_a$	Ta = - 20 ~ + 75°C, ΔI ₄ = 40mA		0.01		%/°C	2

TEST CIRCUIT 1

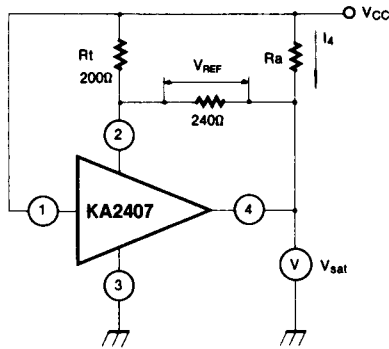


Fig. 2

$$V_{REF}, V_{SAT}, \frac{\Delta V_{REF}}{V_{REF}}/V_{CC}, \frac{\Delta V_{REF}}{V_{REF}}/I_A, \frac{\Delta V_{REF}}{V_{REF}}/T_a,$$

TEST CIRCUIT 2

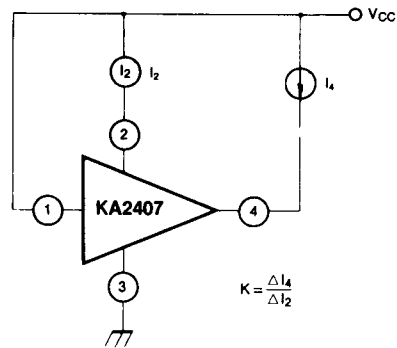


Fig. 3

$$K, \frac{\Delta K}{K}/V_{CC}, \frac{\Delta K}{K}/I_A, \frac{\Delta K}{K}/T_a$$

TEST CIRCUIT 3

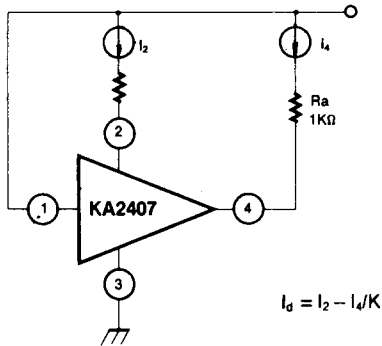
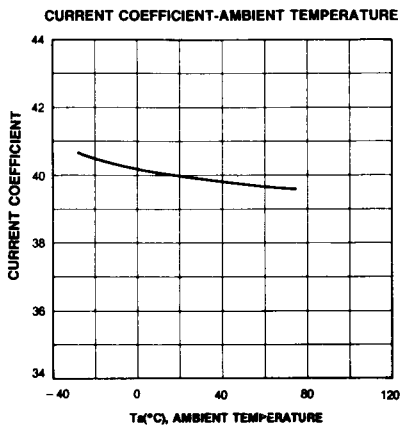
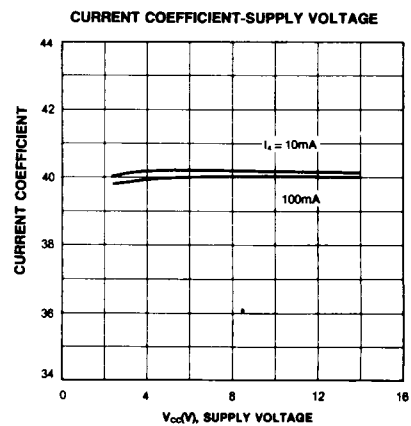
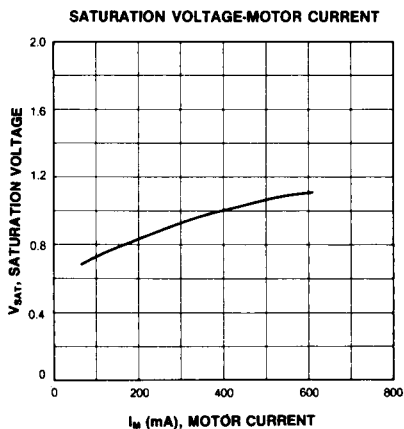
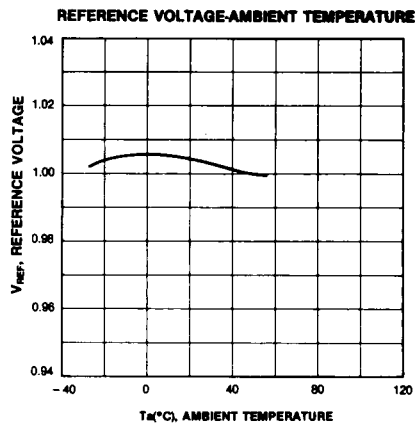
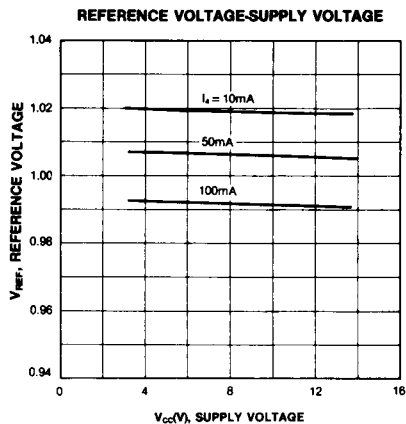


Fig. 4



APPLICATION CIRCUIT

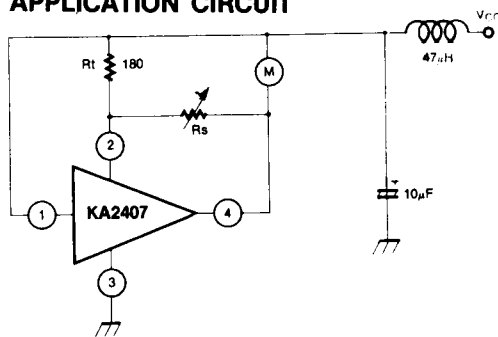


Fig. 5