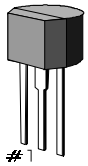
INTRODUCTION

The KA2404B is a monolithic integrated circuit designed for DC motor speed controllers.

TO–92L



FEATURES

- Suitable for DC motor speed controllers of cassette tape recorders and radio cassettes
- Excellent stability of each characteristics against ambient temperature
- High output current
- Low quiescent Current (1.3mA: Typ)
- Low reference voltage
- Wide operating supply voltage range (V_{CC} = 4V ~ 12V)

ORDERING INFORMATION

Device	Package	Operating Temperature
KA2404B	TO–92L	–20°C ~ +70°C

BLOCK DIAGRAM

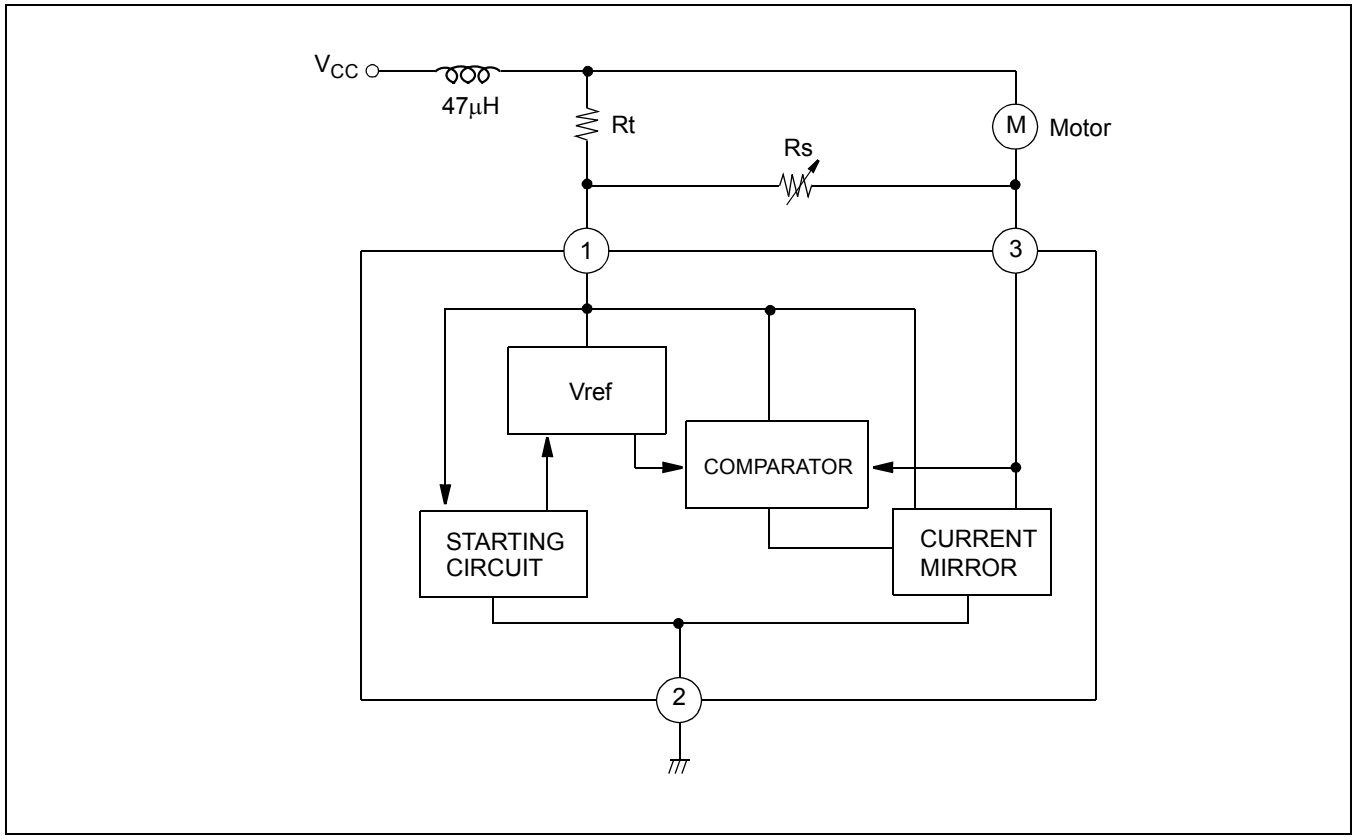


Figure 1.

ABSOLUTE MAXIMUM RATINGS (Ta = 20°C)

Characteristics	Symbol	Value	Unit
Supply Voltage	V_{CC}	16	V
Circuit Current	I3	2 (Note 1)	A
Power Dissipation	$P_{D(TO-92L)}$	800	mW
Operating Temperature	TOPR	-20 ~ +70	°C
Storage Temperature	TSTG	-40 ~ +125	°C

NOTE: t > 5 sec

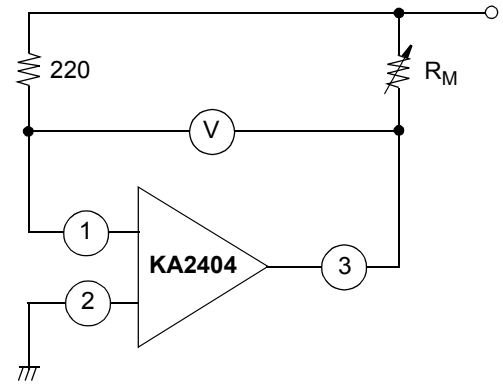
ELECTRICAL CHARACTERISTICS

(Ta = 25°C, Vcc = 9 V, unless otherwise specified)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit	Fig
Reference Voltage	V_{REF}	I_3 = 10mA	1.10	1.27	1.04	V	2
Quiescent Circuit Current	I_{CCQ}	Rm = 180Ω	0.8	1.3	1.8	mA	4
Current Coefficient	K	Rm_1 = 44Ω Rm_2 = 33Ω	16	18	20	–	3
Voltage Characteristic of Current Coefficient	$\frac{\Delta V_{REF}}{V_{REF}}/\Delta Vcc$	I_3 = 100mA V_{CC} =4 ~ 12V	–	0.4	–	%/V	3
Voltage Characteristic of Reference Voltage	$\frac{\Delta K}{K}/\Delta Vcc$	I_3 = 100mA V_{CC} =4 ~ 12V	–	0.06	–	%/V	2
Current Characteristic of Current Coefficient	$\frac{\Delta V_{REF}}{V_{REF}}/\Delta Vcc$	I_3 = 30 ~ 200mA	–	–0.02	–	%/mA	3
Current Characteristic of Reference Voltage	$\frac{\Delta K}{K}/\Delta I_M$	I_3 = 30 ~ 200mA	–	–0.02	–	%/mA	2
Temperature Characteristics of Current Coefficient	$\frac{\Delta V_{REF}}{V_{REF}}/\Delta T_A$	I_3 = 100mA T_a = -20 ~ +75	–	0.01	–	%/°C	3
Temperature Characteristics of Reference Voltage	$\frac{\Delta K}{K}/\Delta T_A$	I_3 = 100mA T_a = -20 ~ +75	–	0.01	–	%/°C	2

TEST CIRCUIT 1

Reference Voltage

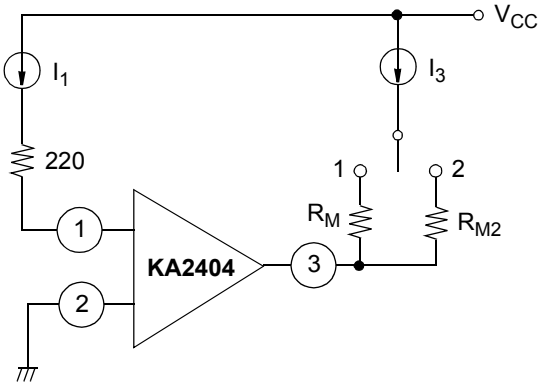


V_{REF}, V_{REF} Vcc, V_{REF} I_3
V_{REF} V_{REF}
V_{REF} Ta
V_{REF}

Figure 2.

TEST CIRCUIT 2

Current Coefficient



K, K Vcc, K I_3
K
K Ta
K

$$K = \frac{I_3\ (SW\ 2) - (SW\ 1)}{I_1\ (SW\ 2) - (SW\ 1)}$$

Figure 3.

TEST CIRCUIT 3

Quiescent Circuit Current

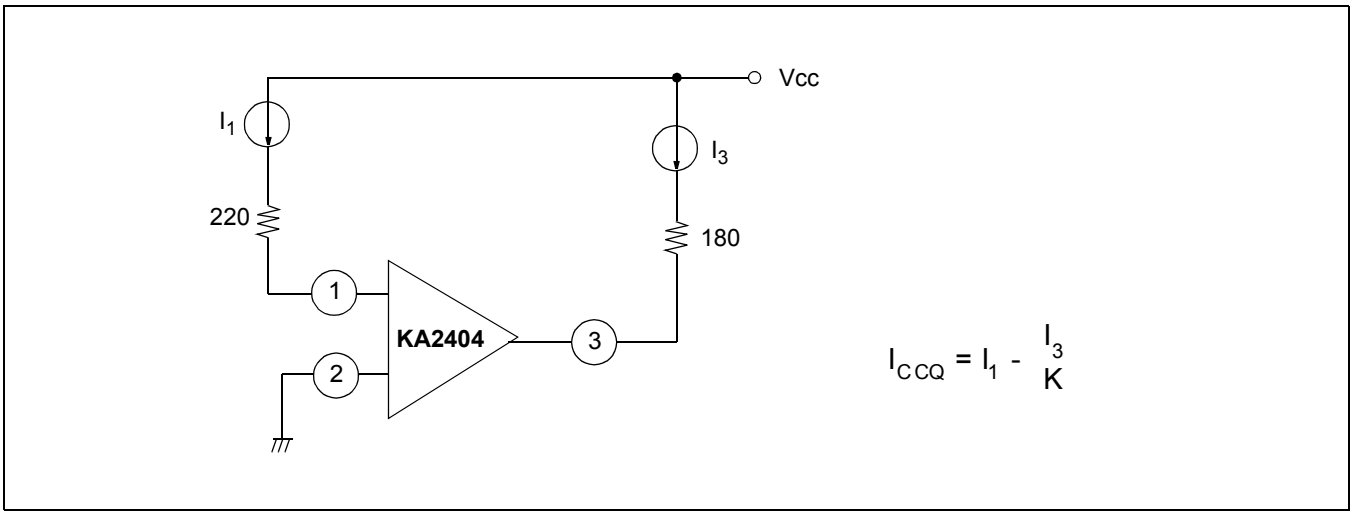
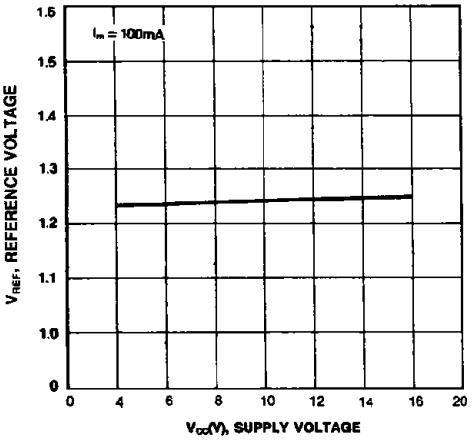
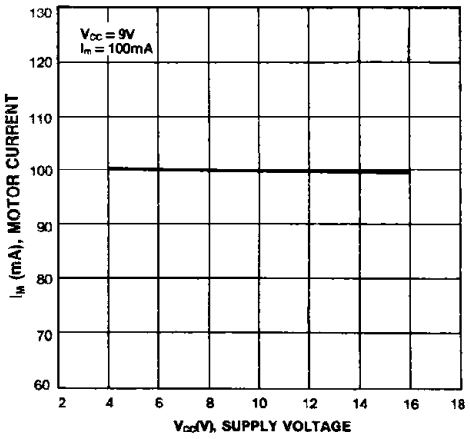


Figure 4.

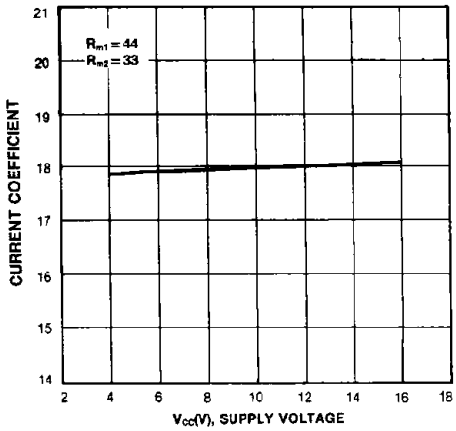
REFERENCE VOLTAGE-SUPPLY VOLTAGE



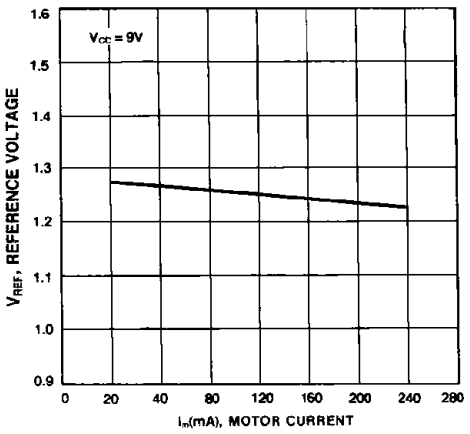
MOTOR CURRENT-SUPPLY VOLTAGE



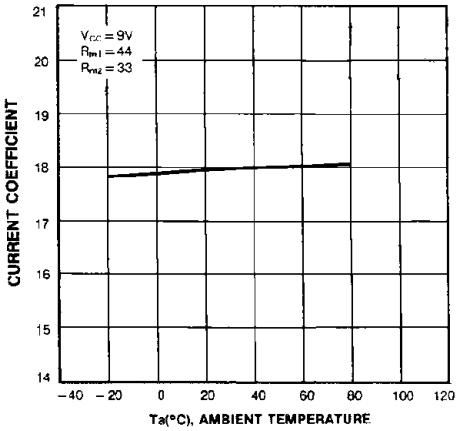
CURRENT COEFFICIENT-SUPPLY VOLTAGE



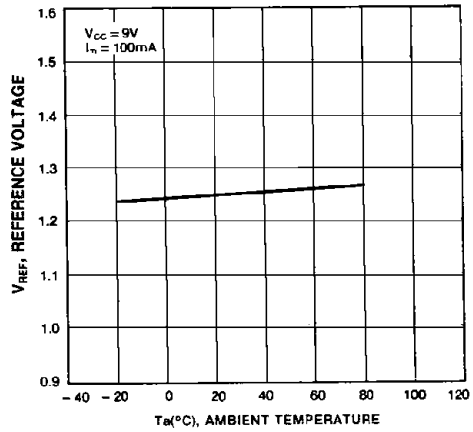
REFERENCE VOLTAGE-MOTOR CURRENT



CURRENT COEFFICIENT-AMBIENT TEMPERATURE

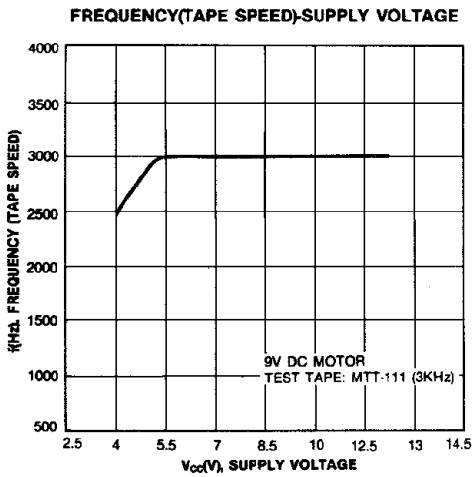


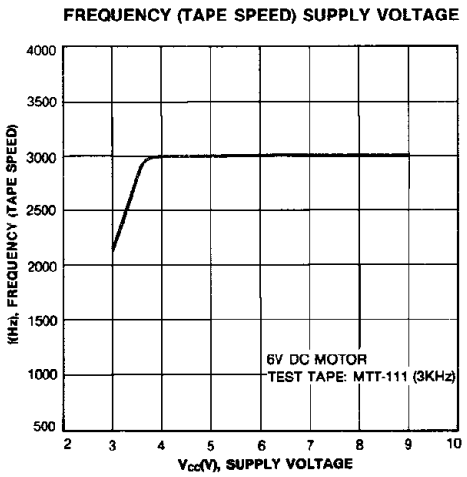
REFERENCE VOLTAGE-AMBIENT TEMPERATURE



SAMSUNG ELECTRONICS

(APPLICATION CHARACTERISTICS)





APPLICATION CIRCUIT

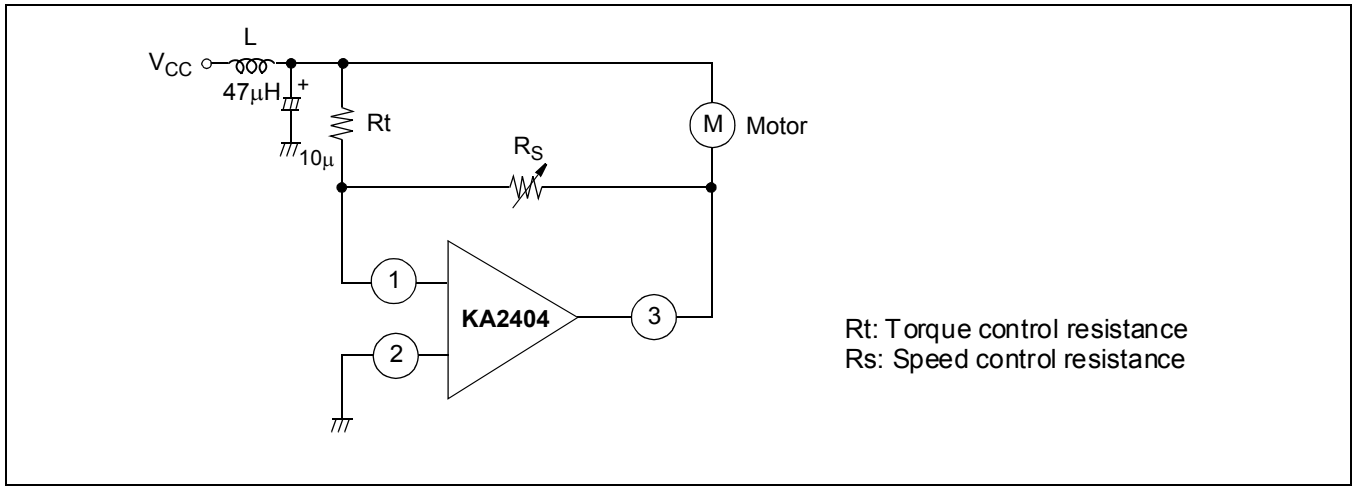


Figure 5.

NOTES