

General use electronic governor

BA6220

The BA6220 is a monolithic IC designed for controlling the speed of general-purpose DC motors.

The IC consists of a reference voltage generator, current multiplier, comparator, and start-up circuit. The speed of DC motor is controlled by detecting the counter-electromotive force generated by the motor.

Various DC motors can be driven by changing the external constants. A large power dissipation is allowed by grounding the pin connected with the IC substrate.

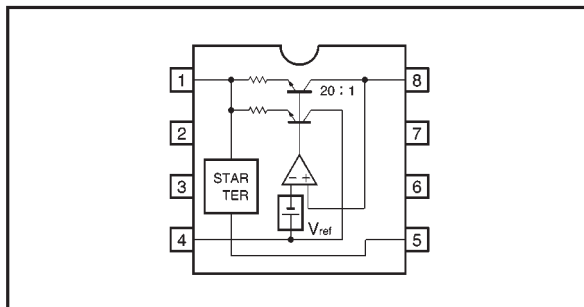
●Applications

Radio cassette tape recorders

●Features

- 1) Wide range of operating voltage. (3.5~16V)
- 2) Large starting torque at low supply voltage.
- 3) Large power dissipation allowable by using the PCB as a heat sink.
- 4) Various DC motors can be driven by changing the external constants.

●Block diagram



●Absolute maximum ratings (Ta = 25°C)

| Parameter | Symbol | Limits | Unit | Conditions |
|----------------------|-----------------|--------|------|------------------------------|
| Power supply voltage | V _{cc} | 18 | V | — |
| Power dissipation | P _d | 1.4* | W | PCB : 9cm ² t=1.0 |

* Reduced by 11.2 mW for each increase in Ta of 1°C over 25°C.

●Recommended operating conditions (Ta = 25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|----------------------|-----------------|------|------|------|------|---------------|
| Power supply voltage | V _{cc} | 3.5 | — | 16 | V | Load: 8g - cm |

●Electrical characteristics (unless otherwise noted, Ta = 25°C and Vcc = 12V)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions | Measurement circuit |
|--|--|------|-------|------|--------|---|---------------------|
| Bias current | I ₄ | 0.5 | 0.8 | 1.2 | mA | R _M =180Ω | Fig.1 (d) |
| Output saturation voltage | V _{SAT} | — | 1.5 | 2.0 | V | V _{CC} =4.2V, R _M =4.4Ω | Fig.1 (c) |
| Reference voltage | V _{ref} | 1.10 | 1.27 | 1.40 | V | I _M =10mA | Fig.1 (a) |
| Current constant | K | 18 | 20 | 22 | — | R _{M1} =44Ω, R _{M2} =33Ω | Fig.1 (b) |
| Reference voltage characteristic | $\frac{\Delta V_{ref}}{V_{ref}} / \Delta V_{CC}$ | — | 0.06 | — | % / V | I _M =100mA, V _{CC} =6.3~16V | Fig.1 (a) |
| Current constant voltage characteristic | $\frac{\Delta K}{K} / \Delta V_{CC}$ | — | 0.4 | — | % / V | I _M =100mA, V _{CC} =6.3~16V | Fig.1 (b) |
| Reference voltage current characteristic | $\frac{\Delta V_{ref}}{V_{ref}} / \Delta I_M$ | — | -0.02 | — | % / mA | I _M =30~200mA | Fig.1 (a) |
| Current constant current characteristic | $\frac{\Delta K}{K} / \Delta I_M$ | — | -0.02 | — | % / mA | I _M =30~200mA | Fig.1 (b) |
| Reference voltage temperature characteristic | $\frac{\Delta V_{ref}}{V_{ref}} / \Delta T_a$ | — | 0.01 | — | % / °C | I _M =100mA, T _a =-25~75°C | Fig.1 (a) |
| Current ratio temperature characteristic | $\frac{\Delta K}{K} / \Delta T_a$ | — | 0.01 | — | % / °C | I _M =100mA, T _a =-25~75°C | Fig.1 (b) |

●Measurement circuits

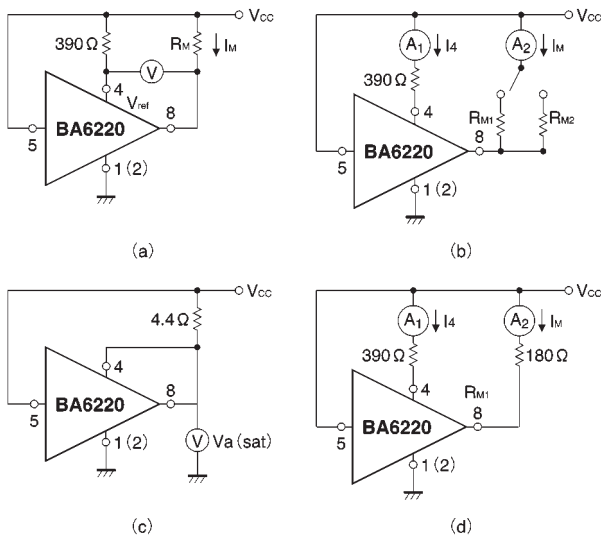


Fig.1

●Application example

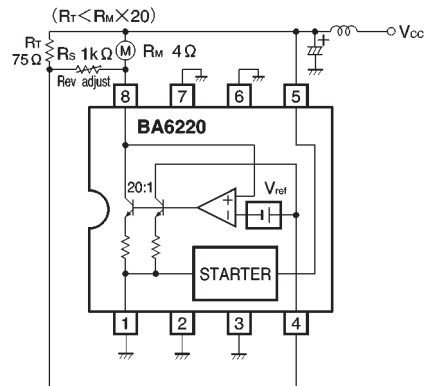


Fig.2

● External dimensions (Units: mm)

