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**Motor driver ICs**

# 3V electronic governor

## BA6235F

The BA6235F is an IC for controlling the speed of low voltage DC motors. It consists of a reference voltage generator, current multiplier, and DC amplifier. 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 CR time constants.

●Applications

3V radio cassette tape recorders

Micro-cassette tape recorders

●Features

1) Wide range of operating voltage. (1.8 ~ 5V)

2) Low current consumption. ( $I_{0} = 2.0\text{mA}$ )

3) Various DC motors can be driven by changing the external CR time constants.

●Absolute maximum ratings ( $T_a = 25^{\circ}\text{C}$ )

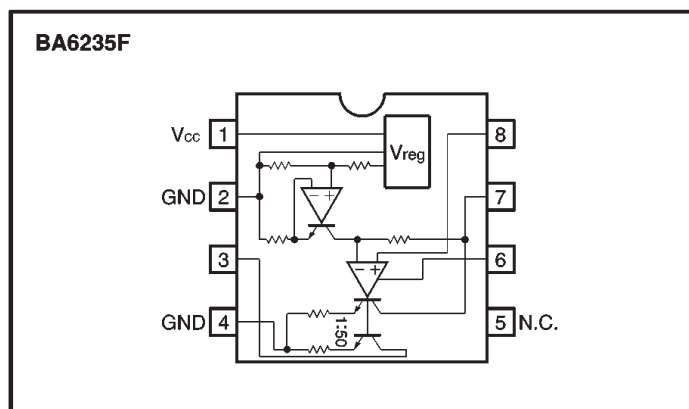
| Parameter             | Symbol        | Limits   | Unit |
|-----------------------|---------------|----------|------|
| Power supply voltage  | $V_{CC}$      | 8.0      | V    |
| Power dissipation     | BA6235F $P_d$ | 350*     | mW   |
| Operating temperature | $T_{opr}$     | -20~+75  | °C   |
| Storage temperature   | $T_{stg}$     | -55~+125 | °C   |

\* Reduced by 3.5 mW for each increase in  $T_a$  of 1°C over 25°C.

●Recommended operating conditions ( $T_a = 25^{\circ}\text{C}$ )

| Parameter             | Symbol   | Min. | Typ. | Max. | Unit |
|-----------------------|----------|------|------|------|------|
| Power supply voltage  | $V_{CC}$ | 1.8  | 3.0  | 5.0  | V    |
| Maximum motor current | $I_M$    | —    | —    | 800  | mA   |

●Block diagram



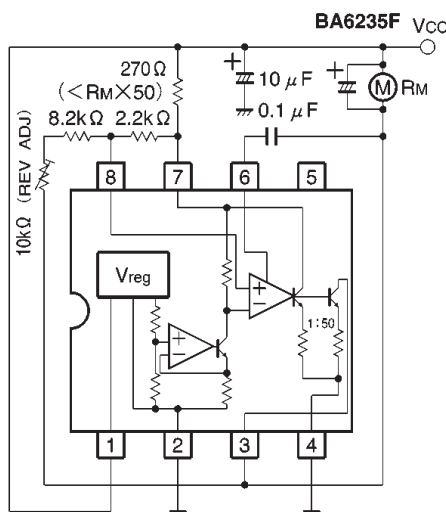
**Motor driver ICs**

**BA6235F**

●Electrical characteristics (unless otherwise noted, Ta = 25°C and Vcc = 3.0V)

| Parameter                         | Symbol   | Min. | Typ.  | Max. | Unit   | Conditions  |
|-----------------------------------|--|------|-------|------|--------|---|
| Supply current                    | I <sub>Q</sub>                                   | —    | 2.0   | 5.5  | mA     | I <sub>M</sub> =0mA                                 |
| Output saturation voltage         | V <sub>O sat</sub>                               | —    | 0.1   | 0.3  | V      | I <sub>M</sub> =120mA                               |
| Reference voltage                 | V <sub>ref</sub>                                 | 165  | 190   | 215  | mV     | I <sub>M</sub> =120mA                               |
| Current ratio                     | K  | 45   | 50    | 55   | —      | I <sub>M</sub> =50~150mA                            |
| Reference voltage vs. voltage     | $\frac{\Delta V_{ref}}{V_{ref}} / \Delta V_{CC}$ | —    | 0.1   | —    | % / V  | I <sub>M</sub> =120mA, V <sub>CC</sub> =1.8~3.5V    |
| Current ratio vs. voltage         | $\frac{\Delta K}{K} / \Delta V_{CC}$             | —    | 0.1   | —    | % / V  | I <sub>M</sub> =50~150mA, V <sub>CC</sub> =1.8~3.5V |
| Reference voltage vs. current     | $\frac{\Delta V_{ref}}{V_{ref}} / \Delta I_M$    | —    | 0.002 | —    | % / mA | I <sub>M</sub> =20~200mA                            |
| Current ratio vs. current         | $\frac{\Delta K}{K} / \Delta I_M$                | —    | 0.05  | —    | % / mA | I <sub>M</sub> =20~200mA                            |
| Reference voltage vs. temperature | $\frac{\Delta V_{ref}}{V_{ref}} / \Delta T_a$    | —    | 0.02  | —    | % / °C | I <sub>M</sub> =120mA, Ta=-20~+75°C                 |
| Current ratio vs. temperature     | $\frac{\Delta K}{K} / \Delta T_a$                | —    | 0.02  | —    | % / °C | I <sub>M</sub> =50~150mA, Ta=-20~+75°C              |

●Application example



● External dimensions (Units: mm)

