

# 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. ( $I_o = 2.0\text{mA}$ )
- 3) Various DC motors can be driven by changing the external CR time constants.

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

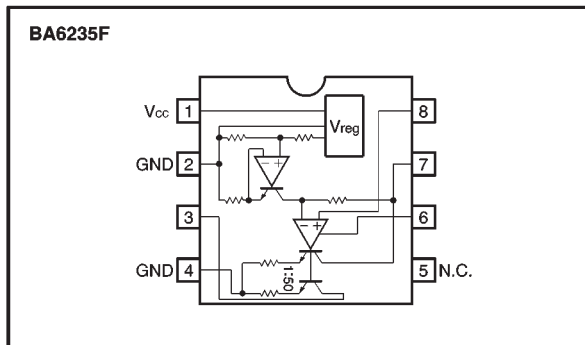
Parameter	Symbol	Limits	Unit
Power supply voltage	$V_{cc}$	8.0	V
Power dissipation	BA6235F $P_d$	350*	mW
Operating temperature	$T_{opr}$	$-20 \sim +75$	$^\circ\text{C}$
Storage temperature	$T_{stg}$	$-55 \sim +125$	$^\circ\text{C}$

\* Reduced by 3.5 mW for each increase in  $T_a$  of  $1^\circ\text{C}$  over  $25^\circ\text{C}$ .

●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

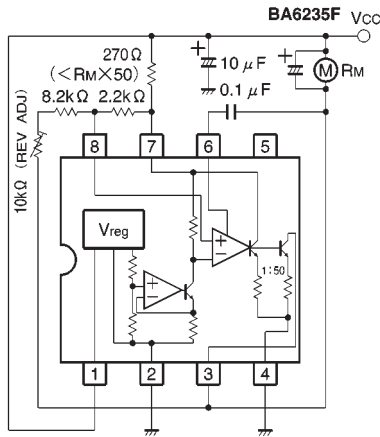
●Block diagram



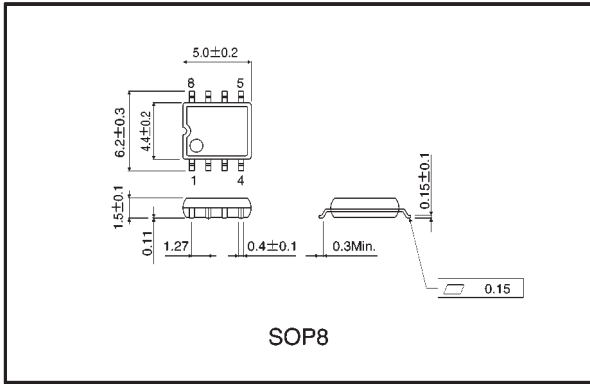
●Electrical characteristics (unless otherwise noted, Ta = 25°C and Vcc = 3.0V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Supply current	I <sub>o</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, T <sub>a</sub> =-20~+75°C
Current ratio vs. temperature	$\frac{\Delta K}{K} / \Delta T_a$	—	0.02	—	% / °C	I <sub>M</sub> =50~150mA, T <sub>a</sub> =-20~+75°C

●Application example



● External dimensions (Units: mm)



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Datasheets for electronic components.