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_Q = 2.0mA)
3) Various DC motors can be driven by changing the external CR time constants.

●Absolute maximum ratings (Ta = 25°C)

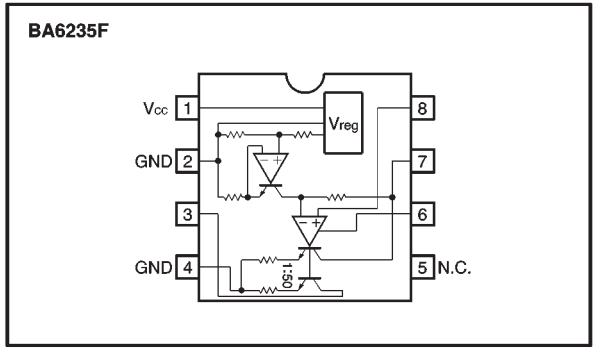
Parameter		Symbol	Limits	Unit
Power supply voltage		V_{CC}	8.0	V
Power dissipation	BA6235F	Pd	350*	mW
Operating temperature		Topr	−20～+75	℃
Storage temperature		Tstg	−55～+125	℃

* Reduced by 3.5 mW for each increase in Ta of 1℃ over 25℃.

●Recommended operating conditions (Ta = 25°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

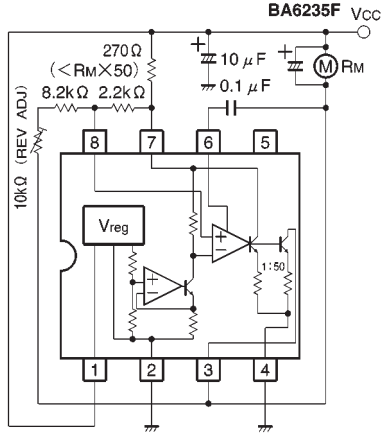
●Block diagram



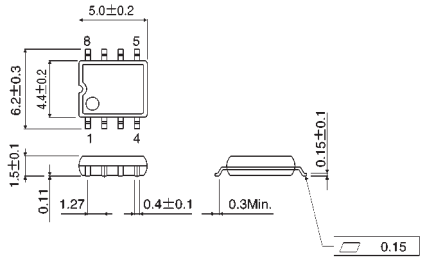
●Electrical characteristics (unless otherwise noted, Ta = 25°C and V_{CC} = 3.0V)

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

●Application example



●External dimensions (Units: mm)



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