

# 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.

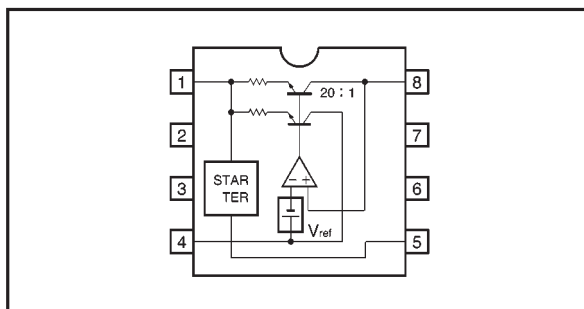
### ●Applications

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 <sub>cc</sub>	18	V	—
Power dissipation	P <sub>d</sub>	1.4*	W	PCB : 9cm <sup>2</sup> 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 <sub>cc</sub>	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 <sub>4</sub>	0.5	0.8	1.2	mA	R <sub>M</sub> =180Ω	Fig.1 (d)
Output saturation voltage	V <sub>SAT</sub>	—	1.5	2.0	V	V <sub>CC</sub> =4.2V, R <sub>M</sub> =4.4Ω	Fig.1 (c)
Reference voltage	V <sub>ref</sub>	1.10	1.27	1.40	V	I <sub>M</sub> =10mA	Fig.1 (a)
Current constant	K	18	20	22	—	R <sub>M1</sub> =44Ω, R <sub>M2</sub> =33Ω	Fig.1 (b)
Reference voltage characteristic	$\frac{\Delta V_{ref}}{V_{ref}} / \Delta V_{CC}$	—	0.06	—	% / V	I <sub>M</sub> =100mA, V <sub>CC</sub> =6.3~16V	Fig.1 (a)
Current constant voltage characteristic	$\frac{\Delta K}{K} / \Delta V_{CC}$	—	0.4	—	% / V	I <sub>M</sub> =100mA, V <sub>CC</sub> =6.3~16V	Fig.1 (b)
Reference voltage current characteristic	$\frac{\Delta V_{ref}}{V_{ref}} / \Delta I_M$	—	-0.02	—	% / mA	I <sub>M</sub> =30~200mA	Fig.1 (a)
Current constant current characteristic	$\frac{\Delta K}{K} / \Delta I_M$	—	-0.02	—	% / mA	I <sub>M</sub> =30~200mA	Fig.1 (b)
Reference voltage temperature characteristic	$\frac{\Delta V_{ref}}{V_{ref}} / \Delta T_a$	—	0.01	—	% / °C	I <sub>M</sub> =100mA, T <sub>a</sub> =-25~75°C	Fig.1 (a)
Current ratio temperature characteristic	$\frac{\Delta K}{K} / \Delta T_a$	—	0.01	—	% / °C	I <sub>M</sub> =100mA, T <sub>a</sub> =-25~75°C	Fig.1 (b)

●Measurement circuits

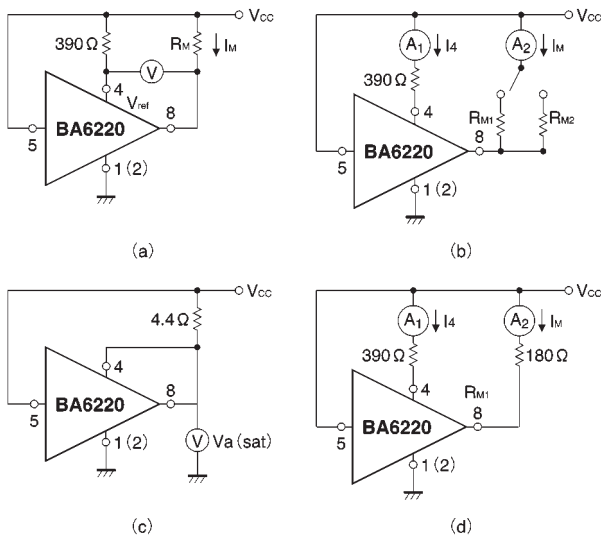


Fig.1

●Application example

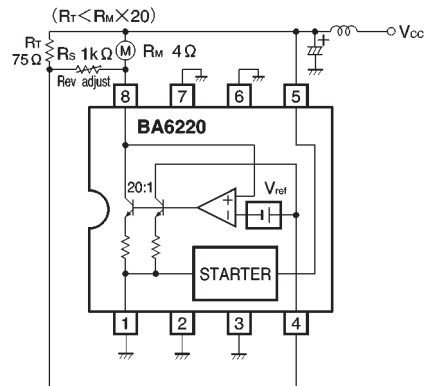
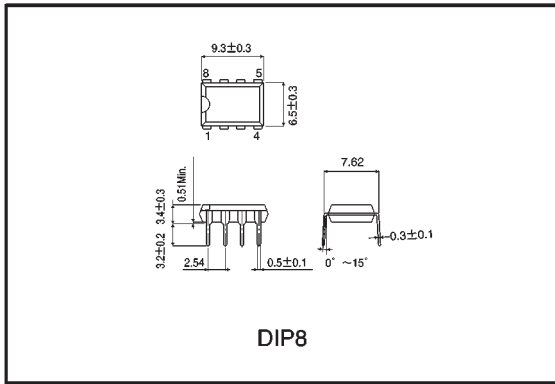


Fig.2

● External dimensions (Units: mm)



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Datasheets for electronic components.