

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.

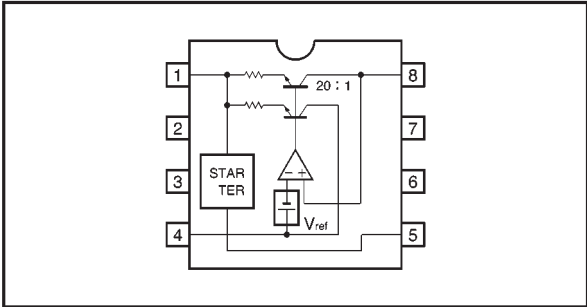
●Applications

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, $T_a = 25^\circ\text{C}$ and $V_{CC} = 12\text{V}$)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions	Measurement circuit
Bias current	I_4	0.5	0.8	1.2	mA	$R_M = 180\ \Omega$	Fig.1 (d)
Output saturation voltage	V_{SAT}	—	1.5	2.0	V	$V_{CC} = 4.2\text{V}$, $R_M = 4.4\ \Omega$	Fig.1 (c)
Reference voltage	V_{ref}	1.10	1.27	1.40	V	$I_M = 10\text{mA}$	Fig.1 (a)
Current constant	K	18	20	22	—	$R_{M1} = 44\ \Omega$, $R_{M2} = 33\ \Omega$	Fig.1 (b)
Reference voltage characteristic	$\frac{\Delta V_{ref}}{V_{ref}} / \Delta V_{CC}$	—	0.06	—	% / V	$I_M = 100\text{mA}$, $V_{CC} = 6.3 \sim 16\text{V}$	Fig.1 (a)
Current constant voltage characteristic	$\frac{\Delta K}{K} / \Delta V_{CC}$	—	0.4	—	% / V	$I_M = 100\text{mA}$, $V_{CC} = 6.3 \sim 16\text{V}$	Fig.1 (b)
Reference voltage current characteristic	$\frac{\Delta V_{ref}}{V_{ref}} / \Delta I_M$	—	-0.02	—	% / mA	$I_M = 30 \sim 200\text{mA}$	Fig.1 (a)
Current constant current characteristic	$\frac{\Delta K}{K} / \Delta I_M$	—	-0.02	—	% / mA	$I_M = 30 \sim 200\text{mA}$	Fig.1 (b)
Reference voltage temperature characteristic	$\frac{\Delta V_{ref}}{V_{ref}} / \Delta T_a$	—	0.01	—	% / $^\circ\text{C}$	$I_M = 100\text{mA}$, $T_a = -25 \sim 75^\circ\text{C}$	Fig.1 (a)
Current ratio temperature characteristic	$\frac{\Delta K}{K} / \Delta T_a$	—	0.01	—	% / $^\circ\text{C}$	$I_M = 100\text{mA}$, $T_a = -25 \sim 75^\circ\text{C}$	Fig.1 (b)

●Measurement circuits

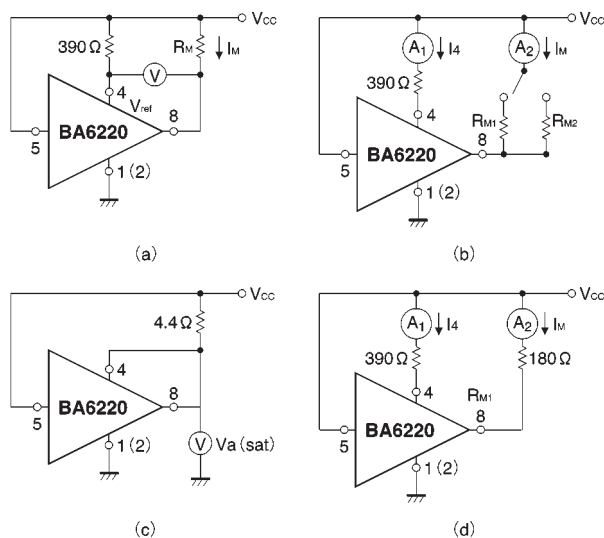


Fig.1

●Application example

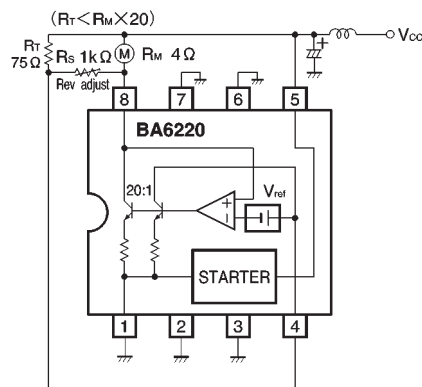


Fig.2

●External dimensions (Units: mm)

