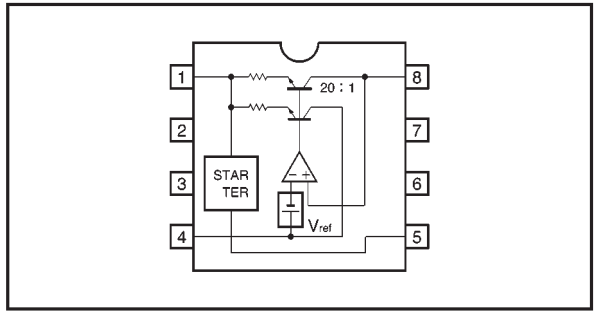
General use electronic governor
BA6220

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	Pd	1.4*	W	PCB : 9cm² t=1.0

* Reduced by 11.2 mW for each increase in Ta of 1℃ over 25℃.

●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, Ta = 25°C and V_{CC} = 12V)

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

●Measurement circuits

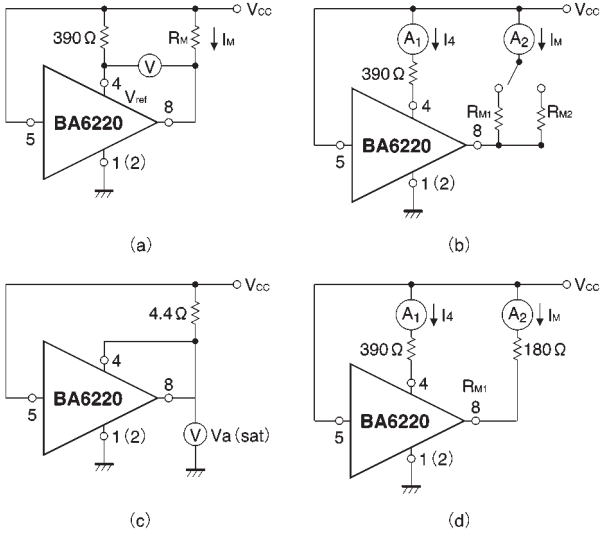


Fig.1

●Application example

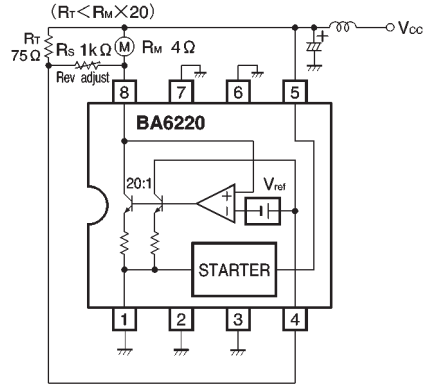
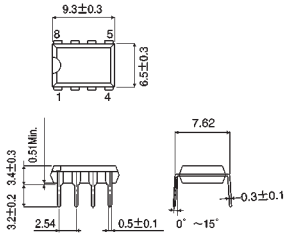


Fig.2

●External dimensions (Units: mm)



DIP8