FG system speed servo controller BA6302A / BA6302AF / BA6303 / BA6303F

The BA6302A/AF and BA6303/F are FG-system servo control ICs suitable for controlling the speed of VCR motors. They contain a hysteresis FG amplifier section, an S / H system F / V conversion section, an error amplifier section, and an inverter section.

Motor speed can be set with a high degree of freedom by an external CR. The start-up circuit allows quick and precise motor starting.

Motor speed can be controlled precisely at different levels by installing an FG program counter between the FG amplifier output and the F / V conversion input.

Applications

Speed control of various motors including capstan motors, drum head motors, and reel motors

Features

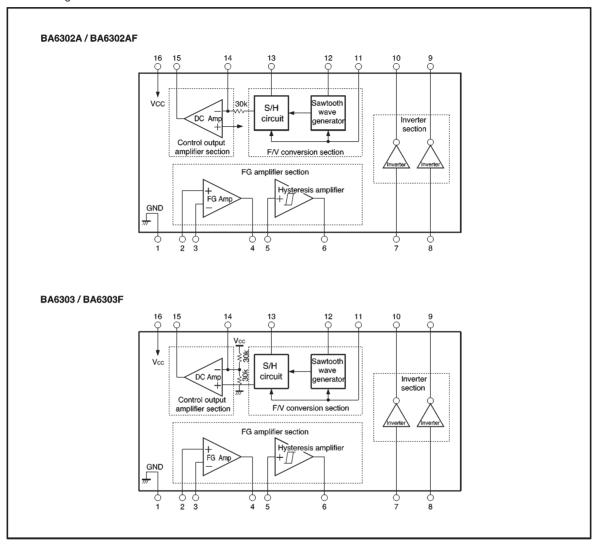
- S / H system F / V converter allows speed setting with a stable external CR.
- High hysteresis FG amplifier with high noise resistance.
- Start-up circuit allows quick and precise motor starting.
- Motor speed can be controlled at different levels by installing an FG program counter.
- 5) Low current dissipation. (Vcc=9V, Iq=2.3mA Typ.)
- Stable operation with either 5, 9, or 12V supply voltage.
- 7) Two versatile inverters are built in.

● Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits	Unit
Power supply voltage	Vcc	15	V
Power dissipation	Pd	450*	mW
Operating temperature	Topr	−20~ +60	°C
Storage temperature Tstg		-55~+125	°C
Inverter circuit load current	lL	10	mA

^{*} Reduced by 4.5 mW for each increase in Ta of 1°C over 25°C.

Block diagram



●Electrical characteristics (unless otherwise noted, Ta = 25°C, Vcc=9V)

Parameter		Symbol	Min.	Тур.	Max.	Unit	Conditions
Operating power supply voltage		Vcc	4.5	_	13.0	V	
Quiescent current	BA6302A / AF	- la	1.7	2.6	3.4	mA	
	BA6303 / F		1.4	2.3	3.1		
⟨FG amplifier s	section〉						
DC bias potential		VFGB	1.1	1.3	1.5	V	
Base bias current		lbb1	_	80	320	nA	
Open loop voltage gain		Avo1	65	75	_	dB	R _{FG} =1MΩ
Output level		VFGO	2.0	2.6	3.0	V _{P-P}	R _{FG} =100kΩ
Hysteresis comparator bias current		bb2	_	600	1200	nA	
Mid-hysteresis voltage accuracy		ΔVhym	-140	-60	+30	mV	Electric potential difference from pin3
Hysteresis voltage width		V _{hyw}	40	60	80	mV	
Hysteresis amplifier output level		Vhyo	6.5	7.3	_	V _{P-P}	R _L =10kΩ
〈F/V conversion	n section>						
Output temperature coefficient		ΔV _{FVT}	_	160	_	ppm / ℃	V _{FVO} =4.5V
Output drift		ΔVFVO	_	0	_	mV	V _{FVO} =4.5V
Pin12 base current		Іььз	_	25	100	nA	
Pin13 base current		lbb4	_	15	60	nA	
Conversion efficiency		ΔFV	_	30	_	mV / Hz	R _T =120kΩ C _T =0.1 μF F _G =100Hz
⟨Control outpu	t amplifier section〉						
DC amplifier open loop gain		Gvo2	49	55	_	dB	
Mid-bias voltage		Vв	4.2	4.6	5.0	V	
DC amplifier output level	BA6302A / AF	VDCO	6.1	6.3			R _{DC} =∞, R _L =20kΩ
	BA6303 / F			_	_	_	
(Inverter circui	t〉						
Input threshold voltage		Vтн	1.5	_	3.5	V	
Input impedance		Rin	20	30	_	kΩ	
Output saturation voltage		Vsat	_	0.2	0.3	V	RL=10kΩ, VIN=Vcc
Output leakage voltage		lι	_	0	1	μΑ	VcE=13.0V, VIN=0V

External dimensions (Units: mm)

