

SECAM discriminator IC

BA7007

The BA7007 is a SECAM discriminator suitable for use in video cassette recorders. The BA7007 includes a pre-limiter circuit, detector, slicer-tuning amplifier and comparator. By adding a ceramic filter, and LC circuit for the $f_H/2$ oscillation frequency, and a few resistors and capacitors it is possible to construct an extremely sensitive SECAM discriminator using a simple circuit with low space requirements that will lead to lower costs, and better performance and reliability.

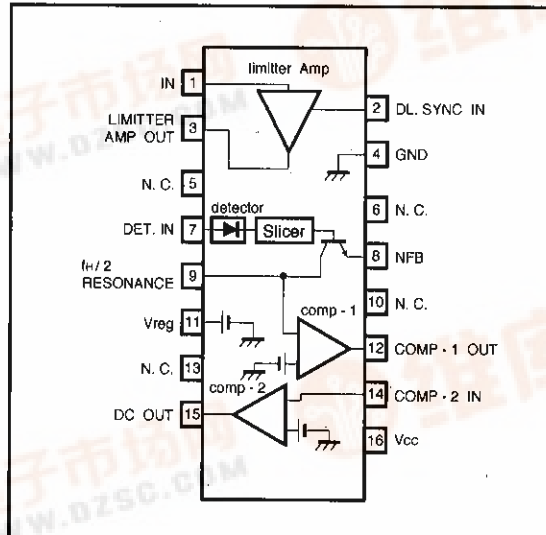
●Applications

SECAM discriminator for VCRs.

●Features

- 1)Extremely stable SECAM discrimination even with power supply and burst-signal input level fluctuations.
- 2)Digital conversion-type integration is used to ensure a large noise margin, and give high sensitivity.
- 3)Low variation in discriminator sensitivity means that adjustment is not necessary.
- 4)Few external components required.
- 5)Large current output capacity.

●Block diagram



● Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Power supply voltage	V _{CC}	15	V
Power dissipation	P _d	400*	mW
Operating temperature	T _{opr}	-25~75	°C
Storage temperature	T _{stg}	-55~125	°C

* Reduced by 4mW for each increase in Ta of 1°C over 25°C.

● Electrical characteristics (Unless otherwise specified Ta=25°C and V_{CC}=9V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions	Measurement Circuit
Quiescent current	I _Q	—	10	15	mA	Limiter amplifier off, no output	Fig.1
Limiter amplifier gain	G _{V1-4}	11	15	19	dB	V _{IN} =0.1V _{P-P} ; f=10kHz, R _L =100kΩ	Fig.1
Limiter amplifier maximum gain	V _{O4}	0.9	1.25	1.6	V _{P-P}	V _{IN} =0.1V _{P-P} ; f=10kHz, R _L =100kΩ	Fig.1
Extracted pulse threshold	V _{TH}	—	0.6	—	V	Pin 2 voltage	Fig.1
Tuning amplifier output voltage	V _{O10}	0.2	1.35	2.5	V _{P-P}	V=0.2V _{P-P} ; f=10kHz	Fig.1
Tuning amplifier supply voltage	V _{I10}	—	4.3	—	V	R _L =10kΩ	Fig.1
DC output voltage	V _{I5ON}	6.5	8.2	—	V	R _L =510Ω	Fig.1
DC output leakage voltage	V _{I5OFF}	—	0.0	0.5	V	R _L =100kΩ	Fig.1

● Measurement circuit

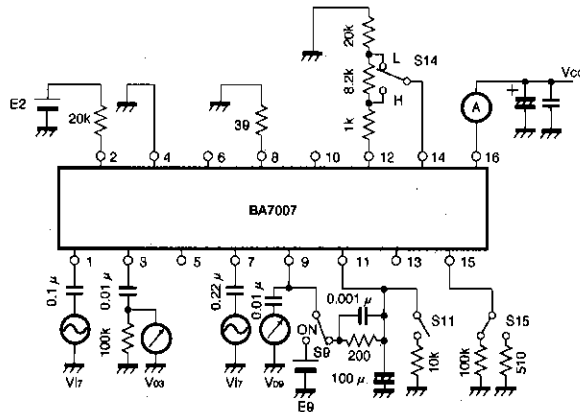


Fig.1

	E2	E9	S9	S11	S14	S15
I _{CC}	0	0	OFF	OPEN	L	100k
G _{V2-3} , V ₀₃	2.5V	0	OFF	OPEN	L	100k
V ₀₃	0	0	OFF	OPEN	L	100k
V _{I11}	0	0	OFF	CLOSE	L	100k
V _{I5 ON}	0	6.5V	ON	OPEN	H	510
V _{I5 OFF}	0	6.5V	ON	OPEN	L	100k

●Application example

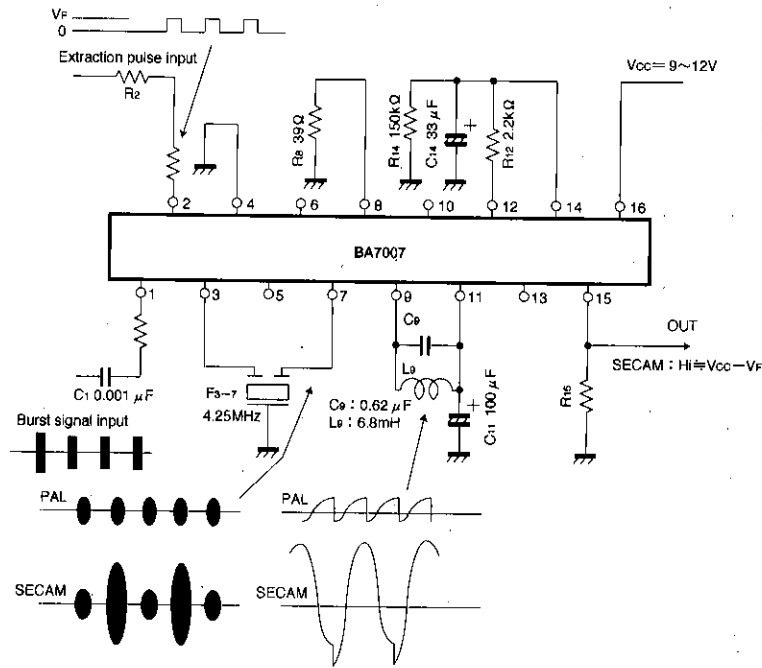
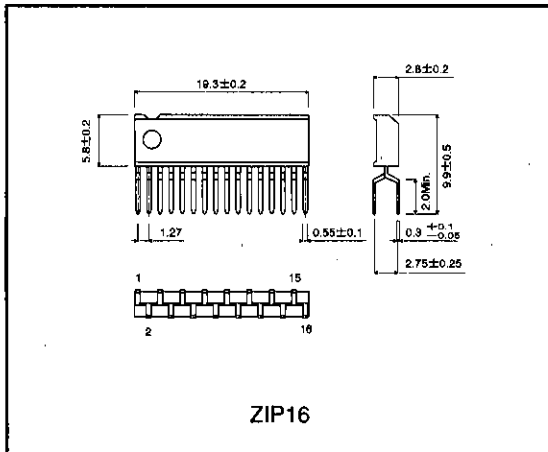


Fig.2

C ₁	Limiting amplifier input coupling capacitor
R ₂	Extraction pulse current limiting resistor
F ₃₋₇	4.25MHz band-pass filter (impedance: 1kΩ) (It is also possible to use a 4.4MHz filter, but there will be a slight drop in discrimination sensitivity). Input/output impedance: 1kΩ
R ₈	Resistor for adjusting the tuning amplifier output level
C ₉ L ₉	For 1/2 resonator circuit
C ₁₁	Ripple filter (for LC resonator circuit)
C ₁₂	Components that determine the discrimination time (charge/discharge time constant)
C ₁₄	Charging time constant = R ₁₂ and C ₁₄
R ₁₄	Discharge time constant = R ₁₄ and C ₁₄
R ₁₅	Resistor for absorption of output leakage

●External dimensions (Units: mm)



PAL/SECAM detector

VCR components