

SECAM chroma signal processor for VHS VCRs

BA7107/BA7107F/BA7107S

The BA7107, BA7107F and BA7107S are monolithic ICs that incorporate the principle circuits required for SECAM chroma signal processing. The ICs are divided into recording system and playback system blocks.

The recording system consists of a REC EQ amplifier, a divide-by-four circuit, a limiter amplifier, an anti-bell amplifier, and a REC sync gate, and the playback system consists of PB EQ amplifier, a multiply-by-four circuit (two multiply-by-two circuits), a limiter amplifier, a bell amplifier, and a PB sync gate. Switching between the recording and playback systems is accomplished by switching power supplies.

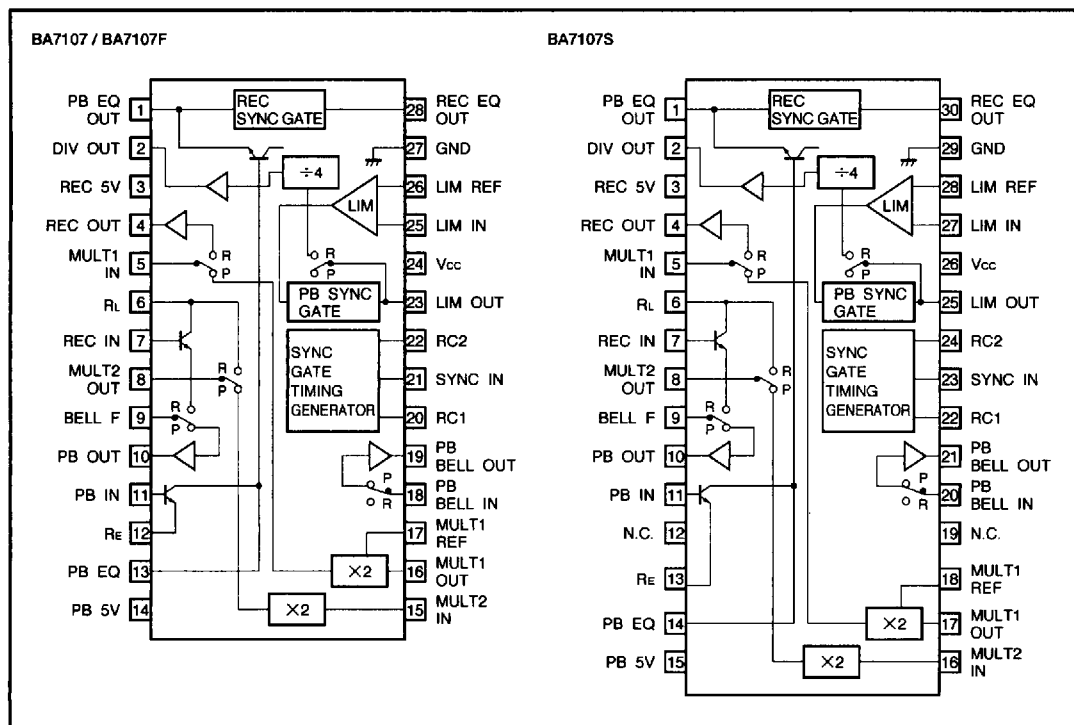
●Applications

SECAM and VHS format video cassette recorders

●Features

- 1) Recording and playback processor for SECAM chroma signals can be constructed using a single IC.
- 2) Switching between the recording and playback systems is accomplished by switching power supplies.
- 3) Operates off a 5V power supply voltage and is suitable for use in low voltage portable sets.
- 4) Available in SOP, DIP and SDIP packages (BA7107F: SOP28, BA7107: DIP28 and BA7107S: SDIP30).

●Block diagram



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ROHM

● Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Power supply voltage	V _{CC}	6.5	V
Power dissipation	BA7107	1000 *	mW
	BA7107F / S	600 *	
Operating temperature	T _{opr}	-10~65	°C
Storage temperature	T _{stg}	-55~125	°C

* Reduced by 10mW (BA7107) and 6mW (BA7107F/S) for each increase in Ta of 1°C over 25°C.

● Electrical characteristics (Unless otherwise specified : Ta=25°C, V_{CC}=5V, REC system: REC5V=5V, PB system: PB5V=5V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Power supply voltage	V _{CC}	4.5	5	5.5	V	Common power supply and same voltage for REC and PB
Limiter amplifier output level (pin 23)	V _{OLIM}	0.75	1.10	1.45	V	f _{IN} =4.3MHz, V _{IN} =10mV (25pin)
Limiter amplifier gain (pin 23)	G _{VLM}	38	52	62	dB	f _{IN} =4.3MHz, V _{IN} =0.5mV (25pin)
F/F output level (pin 2)	V _{O (F/F)}	0.35	0.50	0.65	V _{P-P}	f _{IN} =4.3MHz, V _{IN} =10mV (25pin)
REC gate isolation (pin 1)	I _{SOR}	-25	-40	—	dB	f _{IN} =1MHz, V _{IN} =0.5V _{P-P} (28pin)
PB gate isolation (pin 23)	I _{SOP}	-20	-30	—	dB	f _{IN} =4.3MHz, V _{IN} =0.5mV (25pin)
2-stage multiplier output level (pin 16)	V _{O (X2)}	0.25	0.4	0.55	V _{P-P}	f _{IN} =1MHz, V _{IN} =0.2V _{P-P} (5pin)
1st harmonic distortion (pin 16)	D _{1 (X2)}	—	-30	-20	dB	f _{IN} =1MHz, V _{IN} =0.2V _{P-P} (5pin)
3rd harmonic distortion (pin 16)	D _{2 (X2)}	—	-35	-20	dB	f _{IN} =1MHz, V _{IN} =0.2V _{P-P} (5pin)
4-stage multiplier output level (pin 8)	V _{O (X4)}	0.09	0.14	0.25	V _{P-P}	f _{IN} =2MHz, V _{IN} =0.3V _{P-P} (15pin)
1st harmonic distortion (pin 8)	D _{1 (X4)}	—	-30	-20	dB	f _{IN} =2MHz, V _{IN} =0.3V _{P-P} (15pin)
3rd harmonic distortion (pin 8)	D _{2 (X4)}	—	-35	-20	dB	f _{IN} =2MHz, V _{IN} =0.3V _{P-P} (15pin)
Quiescent current (PB mode)	I _{Q (PB)}	—	38	52	mA	—
Quiescent current (REC mode)	I _{Q (REC)}	—	40	52	mA	—
REC gate amplifier gain (pin 1)	G _{VRG}	7.5	9.5	11.5	dB	f _{IN} =1MHz, V _{IN} =70mV (28pin)
SYNC threshold voltage (pin 21)	V _{TH}	1.0	1.35	2.0	V	Voltage at which SYNC gate operates.
Chroma killer level	V _{CK}	—	4.7	4.9	V	f _{IN} =1.1MHz, V _{IN} =0.2V _{P-P} (5pin)
Pin 20 timing (pin 20)	T ₁	48	56	64	μs	R _T =100kΩ, C _T =1000pF, SYNC IN : 21pin
Pin 22 timing (pin 22)	T ₂	4.4	5.2	6.0	μs	R _T =120kΩ, C _T =33pF, SYNC IN : 21pin
Gate output offset (pin 1, pin 23)	V _{OSG}	-0.1	—	0.1	V	V _{IN} =0V for both REC and PB

* Pin numbers are for the DIP (BA7107) and SOP (BA7107F) packages.

●Application example
BA7107/BA7107F



Fig.2

●Electrical characteristic curves

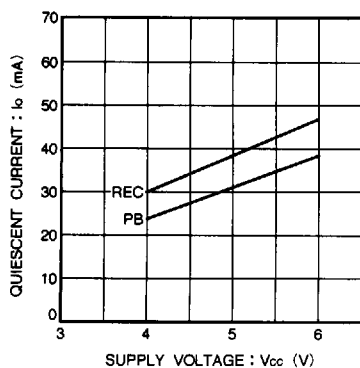


Fig. 7 Quiescent current vs. supply voltage characteristic

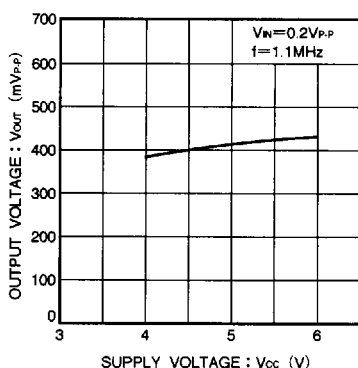


Fig. 8 2-stage multiplier circuit output level vs. supply voltage characteristic

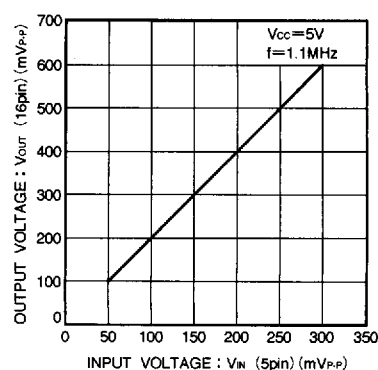


Fig. 9 2-stage multiplier circuit input voltage vs. output voltage characteristic

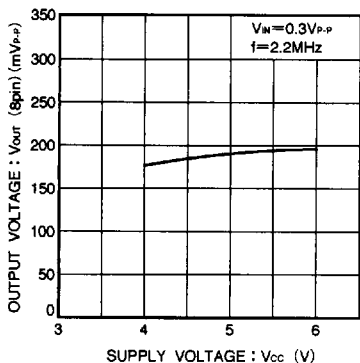


Fig. 10 4-stage multiplier circuit output voltage vs. supply voltage characteristic

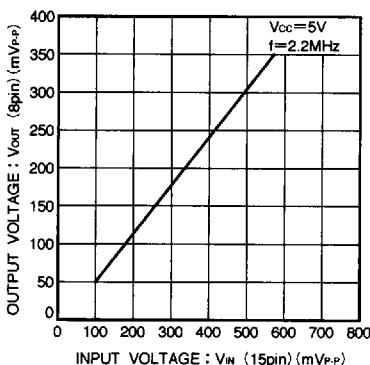


Fig. 11 4-stage multiplier circuit input voltage vs. input voltage characteristic

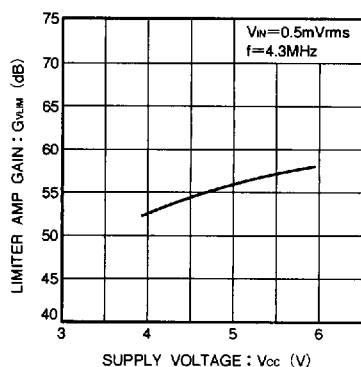


Fig. 12 Limiter amplifier gain vs. supply voltage characteristic

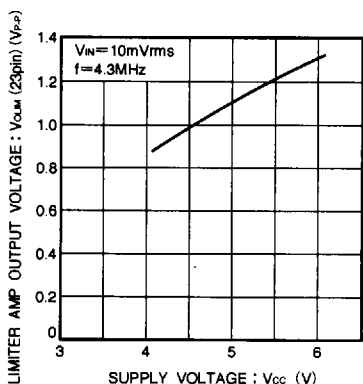


Fig. 13 Limiter amplifier output voltage vs. supply voltage characteristic

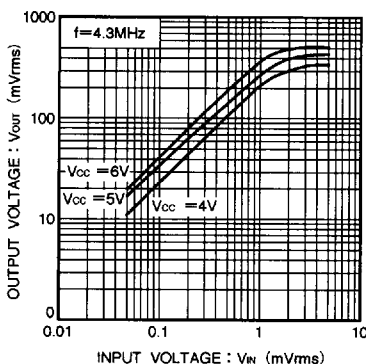


Fig. 14 Limiter amplifier gain vs. input voltage characteristic

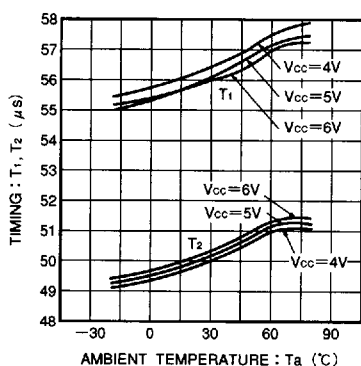
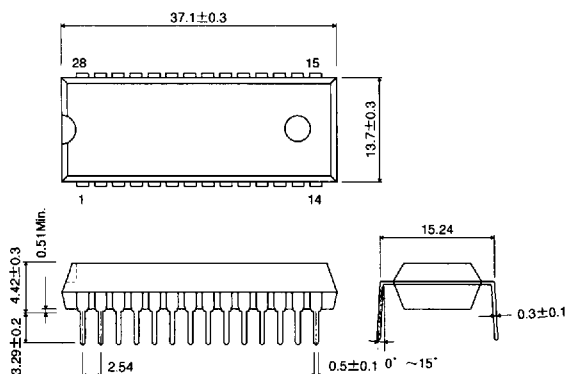


Fig. 15 One-shot timing period vs. ambient temperature characteristic

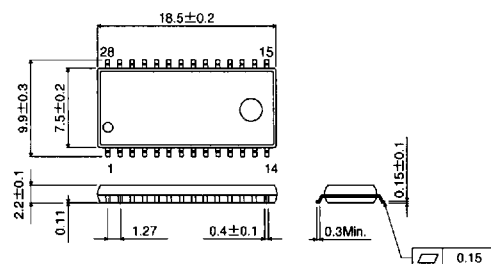
● External dimensions (Units: mm)

BA7107



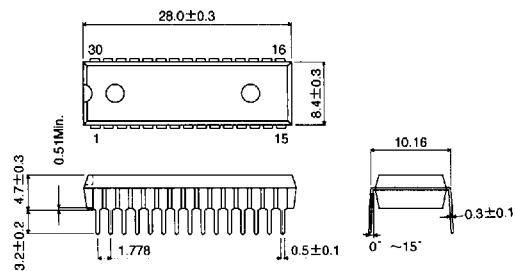
DIP28

BA7107F



SOP28

BA7107S



SDIP30