

# AN2042SB

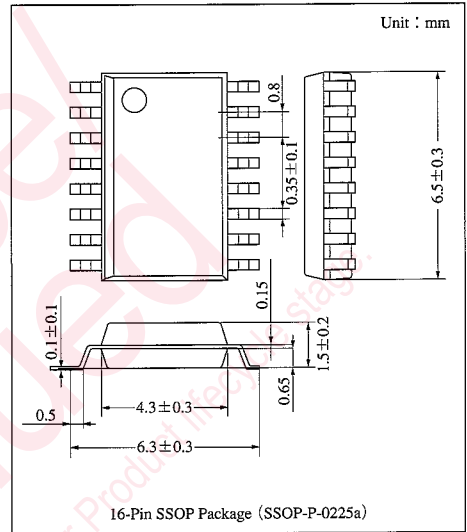
## Filter IC for CCD Video Camera Signal Processing

### Overview

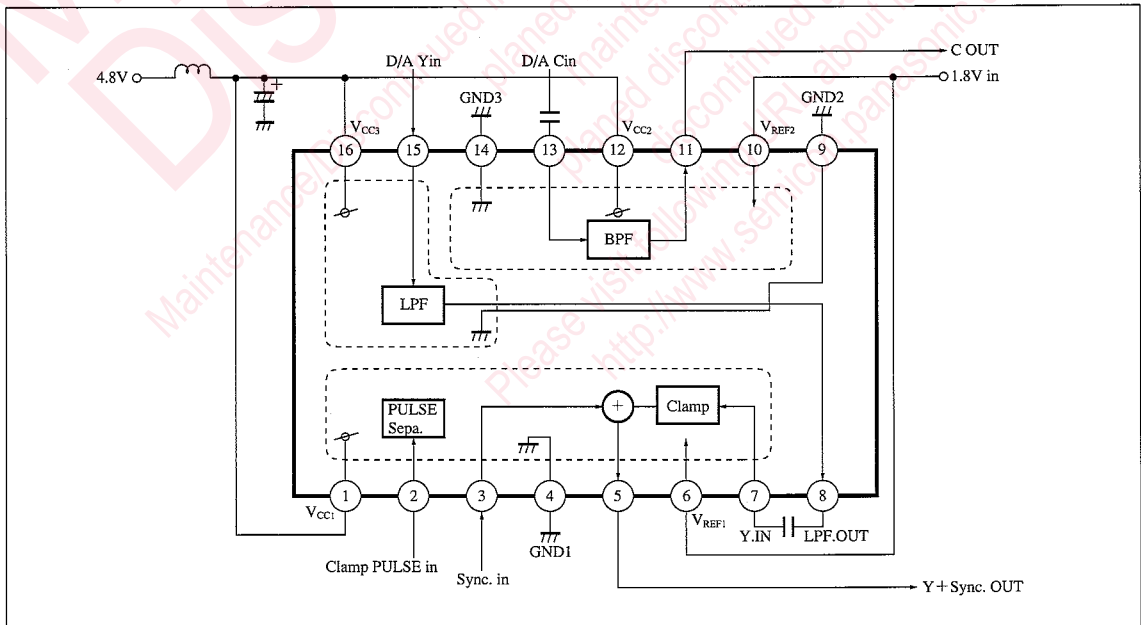
The AN2042SB is a filter IC to be used in a latter stage of CCD video camera signal processing. It filters and outputs the luminance and chroma signals sent from a DSP.

### Features

- Built-in LPF for brightness signal
- Built-in BPF for chroma signal
- Built-in synchronous signal mixer



### Block Diagram



### ■ Pin Descriptions

Pin No.	Pin name	Pin No.	Pin name
1	V <sub>CC1</sub>	9	GND2
2	Clamp pulse input	10	Reference voltage input 2
3	SYNC pulse input	11	Chroma signal output
4	GND1	12	V <sub>CC2</sub>
5	Luminance + sync. signal output	13	D/A converter chroma signal input
6	Reference voltage input 1	14	GND3
7	Luminance signal input	15	D/A converter luminance signal input
8	Luminance LPF output	16	V <sub>CC3</sub>

### ■ Absolute Maximum Ratings (T<sub>a</sub> = 25°C)

Parameter	Symbol	Rating	Unit
Supply voltage	V <sub>CC</sub>	5.5	V
Supply current	I <sub>CC</sub>	15	mA
Power dissipation	P <sub>D</sub>	83	mW
Operating ambient temperature <sup>note)</sup>	T <sub>opr</sub>	-20 to +75	°C
Storage temperature <sup>note)</sup>	T <sub>stg</sub>	-55 to +125	°C

Note) T<sub>a</sub> = 25°C except operating temperature ambient and storage temperature.

### ■ Recommended Operating Range (T<sub>a</sub> = 25°C)

Parameter	Symbol	Range
Operating supply voltage range	V <sub>CC</sub>	4.5V to 5.1V

### ■ Electrical Characteristics (V<sub>CC</sub> = 4.8V, T<sub>a</sub> = 25 ± 2°C)

Parameter	Symbol	Condition	min	typ	max	Unit
Supply current	I <sub>CC</sub>	V <sub>CC1</sub> = V <sub>CC2</sub> = V <sub>CC3</sub> = 4.8V	7.0	10.0	13.0	mA
Clamp pulse separation level	THCP2	V <sub>CC1</sub> = V <sub>CC2</sub> = V <sub>CC3</sub> = 4.8V	1.1	1.5	1.9	V
SYNC pulse separation level	THSYNC	V <sub>CC1</sub> = V <sub>CC2</sub> = V <sub>CC3</sub> = 4.8V	1.1	1.5	1.9	V
Y filter input-output gain	GYLPF	input = Sine 100kHz, 700mV <sub>P-P</sub>	-1.3	0	1.3	dB
Y filter amplitude characteristics	FYLPF	input = Sine 6MHz, 700mV <sub>P-P</sub>	-7.0	-4.5	-2.0	dB
Y group-delay characteristics	DYLPF	input = Sine 1MHz, 700mV <sub>P-P</sub>	95	130	165	ns
C filter input-output gain	GCBPF	input = Sine 3.58MHz, 500mV <sub>P-P</sub>	-2.3	-1.0	0.3	dB
C filter amplitude characteristics (1)	FCBPF1	input = Sine 1MHz, 500mV <sub>P-P</sub>	-14	-8	-4	dB
C filter amplitude characteristics (2)	FCBPF2	input = Sine 10MHz, 500mV <sub>P-P</sub>	-14	-8	-4	dB
Y amp. gain	GYAMP	input = Sine 100kHz, 700mV <sub>P-P</sub>	-1.2	0	1.2	dB
Y amp. dynamic range	DYAMP	input = 10STEP, 1500mV <sub>P-P</sub>	1200	—	—	mV
SYNC level	SYNC	Pin⑦ = C - GND Pin③ = SYNC Pulse	260	286	312	mV

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**Pin Descriptions**

Pin No.	Symbol	Waveform	Equivalent circuit	Description
1	V <sub>CC1</sub>			Power supply
2	CP2 IN	<p>Input waveform</p>		Clamp pulse (CP2) input. 1.5V threshold. Grounded when not used.
3	SYNC IN	<p>Output waveform</p>		SYNC pulse input. Connect high (to V <sub>CC</sub> ) when not used. 1.5V threshold. Sync. signal (approx. 266 mV <sub>PP</sub> ) is mixed to NTSC-signal at Pin⑤.
4	GND1			Ground
5	Y+SYNC OUT	<p>Output waveform</p>		Y+SYNC signal output. 2.3V typ. DC output. 50-Ω output impedance. A luminance signal (Y signal) input at Pin⑦ is mixed with a sync. signal and those mixed signals are output.
6	V <sub>REF1</sub>			Reference voltage input (1.8V typ.)

■ Pin Descriptions (cont.)

Pin No.	Symbol	Waveform	Equivalent circuit	Description
7	Y IN	<p>Input waveform</p>		<p>Clamp input for Y-signal passed LPF. This pin is coupled to Pin ⑧ through an external capacitor. The input signal is mixed with a sync. signal, and those mixed signals, are output at Pin ⑤.</p>
8	YLP OUT	<p>Output waveform</p>		<p>Y signal output having passed through the LPF. 65-Ω output impedance. The DC output is Pin ⑮ voltage <math>-V_D</math> D/A converter-output Y signal that was input at Pin ⑮ passes through the LPF and then output at this pin.</p>
9	GND2	—	—	Ground
10	V <sub>REF2</sub>	—	—	Reference voltage input (1.8V typ.)
11	C OUT	<p>Output waveform</p>		<p>Chroma signal output having passed through the BPF. 2.0V DC output. 65-Ω output impedance. D/A converter-output chroma signal that was input at Pin ⑬ passes through the BPF and then output at this pin.</p>
12	V <sub>CC2</sub>	—	—	Power supply

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■ Pin Descriptions (cont.)

Pin No.	Symbol	Waveform	Equivalent circuit	Description
13	D/A C IN	<p>Output waveform</p>		<p>D/A converter-output chroma signal input which is input through an external capacitor.                      DC input bias is <math>V_{REF}</math> plus <math>V_D</math> (2.5V typ.)                      The input at this pin passes through the internal BPF and then is output at Pin①.</p>
14	GND3			Ground
15	D/A Y IN	<p>Output waveform</p>		<p>D/A converter-output Y-signal input.                      1.8 to 4.3V input dynamic range.                      The input at this pin passes through the internal LPF and then is output at Pin⑧.</p>
16	V <sub>CC3</sub>			Power supply

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