

AN2018S

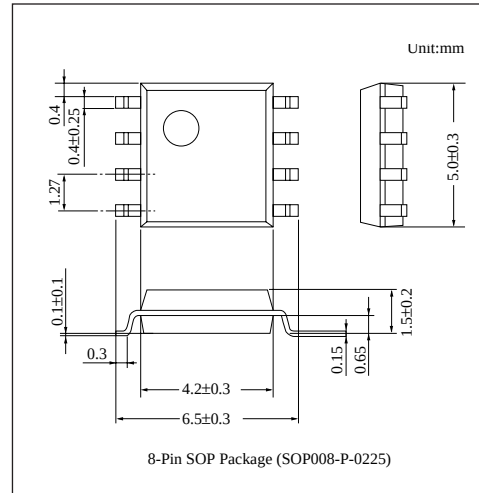
Correlated Double Sampling IC

■ Overview

The AN2018S is used to reduce noise in CCD image sensor output signal. It performs correlated double-sampling on image signal sent from a CCD sensor to output clearer image signal.

■ Features

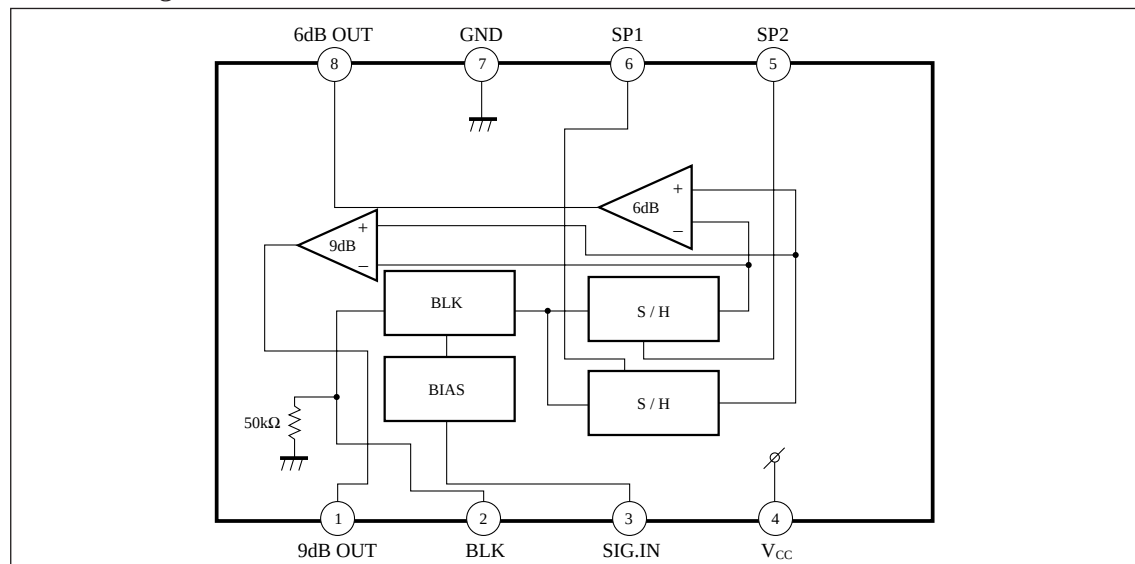
- Operating on low voltage ($V_{CC}=4.8V$), consuming little current ($I_{CC}=12.7mA$ typ.)
- Including a high-speed sampling circuit responding to 510-830H CCD
- 6dB or 9dB fixed gain
- 83-dB high S/N-ratio (at 6dB output)



■ Pin Descriptions

Pin No.	Pin name
1	CDS output (9dB)
2	Blanking pulse input
3	CCD signal input
4	V_{CC}
5	Sampling pulse input (2)
6	Sampling pulse input (1)
7	GND
8	CDS output (6dB)

■ Block Diagram



■ Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Supply voltage	V_{CC}	5.5	V
Supply current	I_{CC}	18	mA
Power dissipation	P_D	99	mW
Operating ambient temperature ^{Note 1)}	T_{opr}	-20 to +70	°C
Storage temperature ^{Note 1)}	T_{stg}	-55 to +125	°C

Note 1) $T_a=25^{\circ}\text{C}$ except operating ambient temperature and storage temperature.

■ Recommended Operating Range ($T_a=25^{\circ}\text{C}$)

Parameter	Symbol	Range
Operating supply voltage range	V_{CC}	4.5V to 5.1V

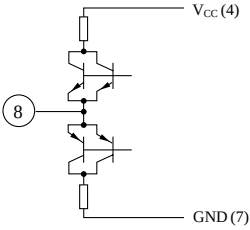
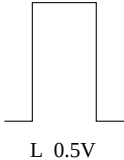
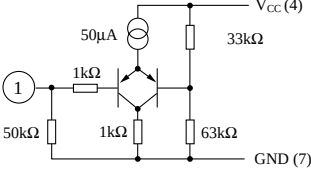
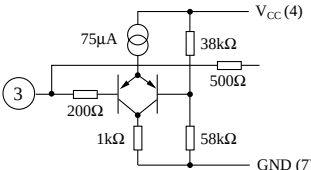
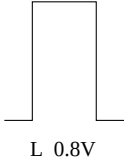
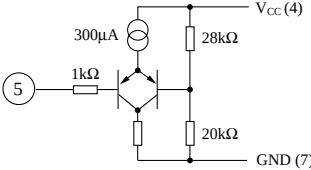
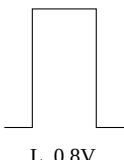
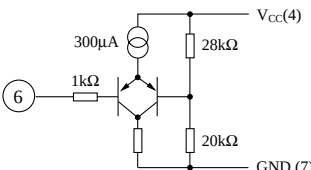
■ Electrical Characteristics ($V_{CC}=4.8\text{V}$, $T_a=25\pm 2^{\circ}\text{C}$)

Parameter	Symbol	Condition	min	typ	max	Unit
Supply current	I_{CC}	$V_{CC}=4.8\text{V}$	9.2	12.7	16.2	mA
Terminal voltage pin (3)	V_3	$V_{CC}=4.8\text{V}$ $P_{int}, y=4.8\text{V}$	2.48	2.63	2.78	V
Terminal voltage pin (8)	V_8	$V_{CC}=4.8\text{V}$ $P_{int}, y=4.8\text{V}$	1.30	1.60	1.90	V
Terminal voltage pin (1)	V_1	$V_{CC}=4.8\text{V}$ $P_{int}, y=4.8\text{V}$	1.25	1.55	1.85	V
6dB amp. gain	G_1	Input level=300mV _{p-p}	5.0	6.0	7.0	dB
9dB amp. gain	G_2	Input level=300mV _{p-p}	7.8	9.0	10.2	dB
AMP frequency characteristics *	f_C	$V_{CC}=4.8\text{V}$ $V_3=100\text{mV}_{p-p}$ 10MHz	—	-3.0	—	dB
AMP common mode rejection ratio *	CMR	$V_{CC}=4.8\text{V}$ $V_3=100\text{mV}_{p-p}$ 10MHz	—	-35	—	dB
Sampling pulse threshold (1)	V_{TH1}	$V_{CC}=4.8\text{V}$	0.8	1.5	2.2	V
Sampling pulse threshold (2)	V_{TH2}	$V_{CC}=4.8\text{V}$	0.8	1.5	2.2	V
Blanking pulse high level	V_{THB}	$V_{CC}=4.8\text{V}$ $V_3=300\text{mV}_{p-p}$	3.5	—	—	V

Note) The value in the above characteristics is not a guaranteed value, but reference one on design.

* The characteristics are of the amplifier itself.

Pin Descriptions

Pin No.	Pin name	DC voltage ($V_{CC}=5V$)	Equivalent circuit	Description
1	9dB OUT	Black level: 1.55V		•9-dB-amp. output CDS signal •Typical 1.55V DC output •90-Ω output impedance
2	BLK	H 3.5V  L 0.5V		•Blanking (Hclear) pulse input (from an AN2145 series only) •Active high •3.0V threshold voltage •50kΩ input impedance •Grounded or left open when not used
3	SIG.IN	Black level: 2.6V		•CCD signal input •CCD signal must be input through a capacitor. •The capacitor should preferably be 0.022μF. •2.6V typ. bias voltage
4	V_{CC}	4.8V		•Supply voltage
5	SP2	H 2.2V  L 0.8V		•Sample-hold pulse input •Active high •1.5V threshold voltage •Sampling pulses are input in synchronization with the video timing of CCD signal at Pine.
6	SP1	H 2.2V  L 0.8V		•Sample-hold pulse input •Active high •1.5V threshold voltage •Sampling pulses are input in synchronization with the feed-through timing of CCD signal at Pine.
7	GND			•Ground
8	6dB OUT	Black level: 1.6V	Same as for Pin _Q .	•6-dB-amp. output CDS signal

Note) The above characteristics value, measured at $V_{CC}=5V$, is not a guaranteed value, but reference one on design.