

# AN2018S

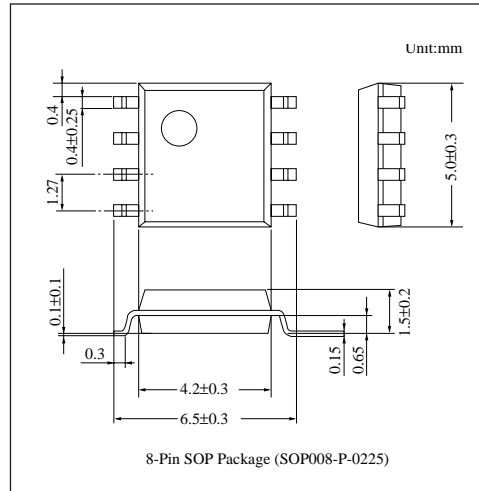
## Correlated Double Sampling IC

### ■ 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

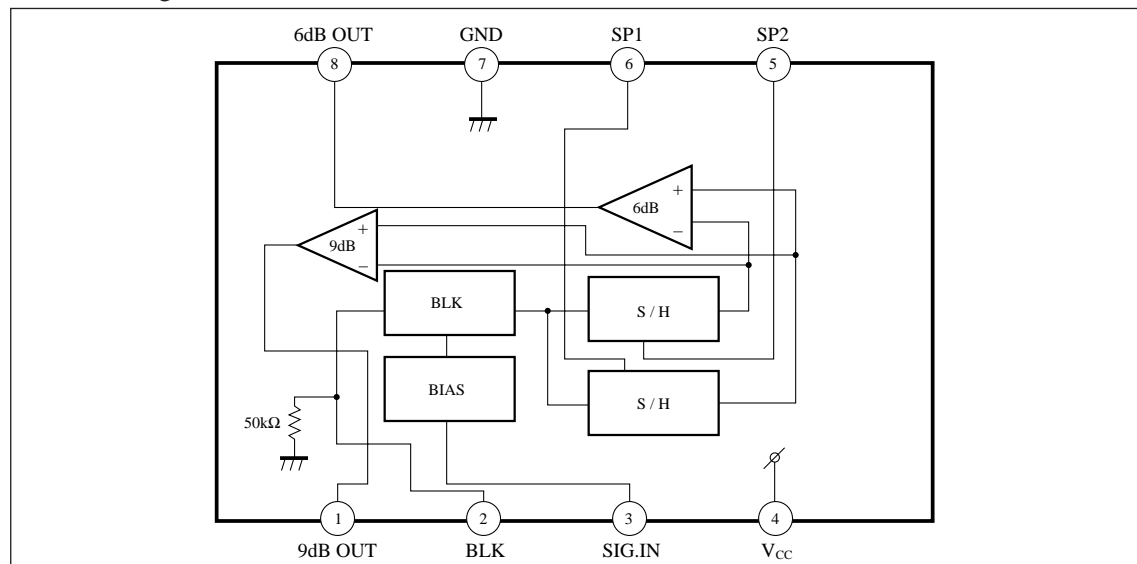
- Operating on low voltage ( $V_{CC}=4.8V$ ), consuming little current ( $I_{CC}=12.7mA$  typ.)
- Including a high-speed sampling circuit responding to 510-830H CCD
- 6dB or 9dB fixed gain
- 83-dB high S/N-ratio (at 6dB output)



### ■ 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 <sup>Note 1)</sup>	$T_{opr}$	-20 to +70	°C
Storage temperature <sup>Note 1)</sup>	$T_{stg}$	-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 <sub>P-P</sub>	5.0	6.0	7.0	dB
9dB amp. gain	$G_2$	Input level=300mV <sub>P-P</sub>	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		<ul style="list-style-type: none"> <li>•9-dB-amp. output CDS signal</li> <li>•Typical 1.55V DC output</li> <li>•90-Ω output impedance</li> </ul>
2	BLK	H 3.5V  L 0.5V		<ul style="list-style-type: none"> <li>•Blanking (Hclear) pulse input (from an AN2145 series only)</li> <li>•Active high</li> <li>•3.0V threshold voltage</li> <li>•50kΩ input impedance</li> <li>•Grounded or left open when not used</li> </ul>
3	SIG.IN	Black level: 2.6V		<ul style="list-style-type: none"> <li>•CCD signal input</li> <li>•CCD signal must be input through a capacitor.</li> <li>•The capacitor should preferably be 0.022µF.</li> <li>•2.6V typ. bias voltage</li> </ul>
4	V <sub>CC</sub>	4.8V	—	•Supply voltage
5	SP2	H 2.2V  L 0.8V		<ul style="list-style-type: none"> <li>•Sample-hold pulse input</li> <li>•Active high</li> <li>•1.5V threshold voltage</li> <li>•Sampling pulses are input in synchronization with the video timing of CCD signal at Pine.</li> </ul>
6	SP1	H 2.2V  L 0.8V		<ul style="list-style-type: none"> <li>•Sample-hold pulse input</li> <li>•Active high</li> <li>•1.5V threshold voltage</li> <li>•Sampling pulses are input in synchronization with the feed-through timing of CCD signal at Pine.</li> </ul>
7	GND	—	—	•Ground
8	6dB OUT	Black level: 1.6V	Same as for Pin <sub>q</sub> .	•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.