DATA SHEET

Part No.	AN20115A
Package Code No.	QFN044-P-0606C

Contents

AN20115A

Vertical driver IC for motion picture CCD image sensors

■ Overview

AN20115A is an IC which controls CCD vertical register and has eight 2-level output channels, six 3-level output channels, and one shutter driver channel. It corresponds to the 3 : 1 interlace drive and the 9-pixel addition drive.

■ Features

- Output drivers

2-level 20 Ω outputs	3 channels
2-level 50 Ω outputs	1 channel
2-level 1 280 Ω outputs	4 channels
3-level 20 Ω outputs	6 channels
VOD shutter driver 38 Ω	1 channel

■ Applications

- For digital still cameras

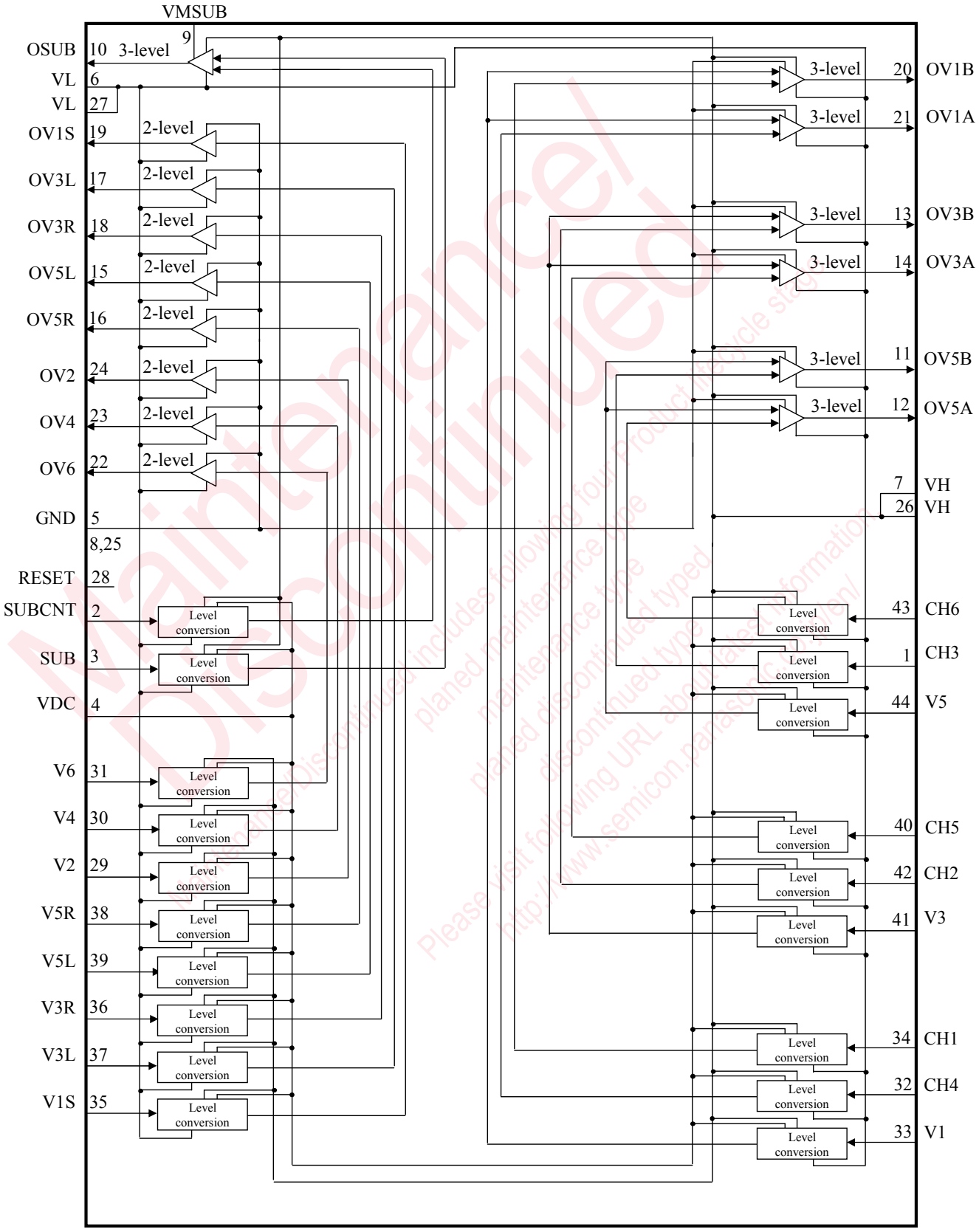
■ Package

- 44-pin plastic quad flat non-leaded package (QFN type)

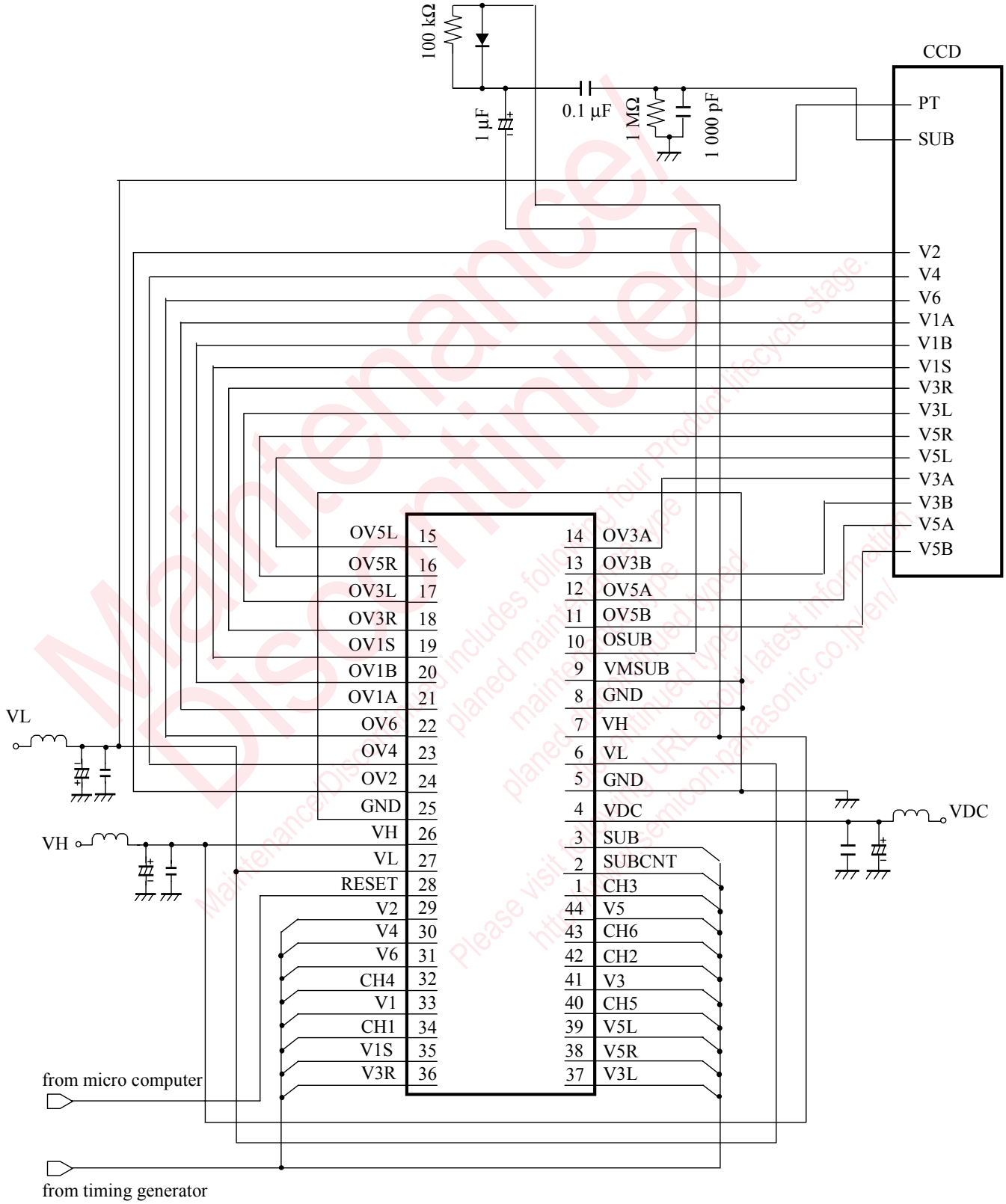
■ Type

- CMOS IC

■ Block Diagram



■ Application Circuit Example



Note) Insert bypass capacitors between each of the AN20115A power supply pins (VH, VL, VDC) and a ground with the lowest possible impedance.
Connect the AN20115A VL pin directly to the CCD PT pin.

■ Pin Descriptions

Pin No.	Pin name	Type	Description
1	CH3	Input	Charge pulse OV5B input (3.3 V CMOS level)
2	SUBCNT	Input	Pixel addition pulse OSUB input (3.3 V CMOS level)
3	SUB	Input	E-shutter pulse OSUB input (3.3 V CMOS level)
4	VDC	Power supply	Logic system power supply
5	GND	Ground	Logic system GND, output middle-level power supply
6	VL	Power supply	Output low level power supply
7	VH	Power supply	Output high level power supply
8	GND	Ground	Logic system GND, output middle-level power supply
9	VMSUB	Power supply	Output middle level power supply
10	OSUB	Output	Transfer pulse 3-level output (VH, VMSUB, VL)
11	OV5B	Output	Transfer pulse 3-level output (VH, GND, VL)
12	OV5A	Output	Transfer pulse 3-level output (VH, GND, VL)
13	OV3B	Output	Transfer pulse 3-level output (VH, GND, VL)
14	OV3A	Output	Transfer pulse 3-level output (VH, GND, VL)
15	OV5L	Output	Transfer pulse 2-level output (GND, VL)
16	OV5R	Output	Transfer pulse 2-level output (GND, VL)
17	OV3L	Output	Transfer pulse 2-level output (GND, VL)
18	OV3R	Output	Transfer pulse 2-level output (GND, VL)
19	OV1S	Output	Transfer pulse 2-level output (GND, VL)
20	OV1B	Output	Transfer pulse 3-level output (VH, GND, VL)
21	OV1A	Output	Transfer pulse 3-level output (VH, GND, VL)
22	OV6	Output	Transfer pulse 2-level output (GND, VL)
23	OV4	Output	Transfer pulse 2-level output (GND, VL)
24	OV2	Output	Transfer pulse 2-level output (GND, VL)
25	GND	Ground	Logic system GND, output middle-level power supply
26	VH	Power supply	Output high level power supply
27	VL	Power supply	Output low level power supply
28	RESET	Input	Reset input. Active Low reset (3.3 V CMOS level)
29	V2	Input	Transfer pulse OV2 input (3.3 V CMOS level)
30	V4	Input	Transfer pulse OV4 input (3.3 V CMOS level)
31	V6	Input	Transfer pulse OV6 input (3.3 V CMOS level)
32	CH4	Input	Charge pulse OV1A input (3.3 V CMOS level)
33	V1	Input	Transfer pulse OV1A, OV1B input (3.3 V CMOS level)
34	CH1	Input	Charge pulse OV1B input (3.3 V CMOS level)
35	V1S	Input	Transfer pulse OV1S input (3.3 V CMOS level)

■ Pin Descriptions (continued)

Pin No.	Pin name	Type	Description
36	V3R	Input	Transfer pulse OV3R input (3.3 V CMOS level)
37	V3L	Input	Transfer pulse OV3L input (3.3 V CMOS level)
38	V5R	Input	Transfer pulse OV5R input (3.3 V CMOS level)
39	V5L	Input	Transfer pulse OV5L input (3.3 V CMOS level)
40	CH5	Input	Charge pulse OV3A input (3.3 V CMOS level)
41	V3	Input	Transfer pulse OV3A, OV3B input (3.3 V CMOS level)
42	CH2	Input	Charge pulse OV3B input (3.3 V CMOS level)
43	CH6	Input	Charge pulse OV5A input (3.3 V CMOS level)
44	V5	Input	Transfer pulse OV5A, OV5B input (3.3 V CMOS level)

■ Absolute Maximum Ratings

A No.	Parameter	Symbol	Rating	Unit	Note
1	Supply voltage	VH-VL	23	V	*1
		VL	–8.0		
		VMSUB	–5.5 to +6.0		
		VDC	6.0		
2	Supply current	I(VH)	2.0	mA	—
		I(VL)	16		
		I(VMSUB)	–2.0 to +2.0		
		I(VDC)	4		
3	Power dissipation	P_D	176.5	mW	*2
4	Operating ambient temperature	T_{opr}	–20 to +75	°C	*3
5	Storage temperature	T_{stg}	–50 to +125	°C	*3
6	Input voltage	VI	– 0.3 to (VDC + 0.3)	V	—
7	Maximum load capacitance	CL	8 880	pF/pin	—

Note) *1: The values under the condition not exceeding the above absolute maximum ratings and the power dissipation.
*2: The power dissipation shown is the value at T_a = 75°C for the independent (unmounted) IC package without a heat sink.
*3: Except for the power dissipation, operating ambient temperature, and storage temperature, all ratings are for T_a = 25°C.

■ Operating Supply Voltage Range

Parameter	Symbol	Range	Unit	Note
Supply voltage range	VH	9.5 to 14.0	V	*1
	VDC	2.7 to 5.5		
	VL	–7.5 to –4.5		
	VMSUB	VL+2 to 5.0		*1, 2

Note) *1: The values under the condition not exceeding the above absolute maximum ratings and the power dissipation.
*2: VMSUB should be used at the same potential as the ground pins.
The IC will operate in the above VMSUB range. However, since testing is performed with connecting VMSUB pin to ground, full and thorough testing is recommended before use.

Request for your special attention and precautions in using the technical information and semiconductors described in this book

(1) If any of the products or technical information described in this book is to be exported or provided to non-residents, the laws and regulations of the exporting country, especially, those with regard to security export control, must be observed.

(2) The technical information described in this book is intended only to show the main characteristics and application circuit examples of the products, and no license is granted under any intellectual property right or other right owned by our company or any other company. Therefore, no responsibility is assumed by our company as to the infringement upon any such right owned by any other company which may arise as a result of the use of technical information described in this book.

(3) The products described in this book are intended to be used for standard applications or general electronic equipment (such as office equipment, communications equipment, measuring instruments and household appliances).
Consult our sales staff in advance for information on the following applications:
- Special applications (such as for airplanes, aerospace, automobiles, traffic control equipment, combustion equipment, life support systems and safety devices) in which exceptional quality and reliability are required, or if the failure or malfunction of the products may directly jeopardize life or harm the human body.
- Any applications other than the standard applications intended.

(4) The products and product specifications described in this book are subject to change without notice for modification and/or improvement. At the final stage of your design, purchasing, or use of the products, therefore, ask for the most up-to-date Product Standards in advance to make sure that the latest specifications satisfy your requirements.

(5) When designing your equipment, comply with the range of absolute maximum rating and the guaranteed operating conditions (operating power supply voltage and operating environment etc.). Especially, please be careful not to exceed the range of absolute maximum rating on the transient state, such as power-on, power-off and mode-switching. Otherwise, we will not be liable for any defect which may arise later in your equipment.
 Even when the products are used within the guaranteed values, take into the consideration of incidence of break down and failure mode, possible to occur to semiconductor products. Measures on the systems such as redundant design, arresting the spread of fire or preventing glitch are recommended in order to prevent physical injury, fire, social damages, for example, by using the products.

(6) Comply with the instructions for use in order to prevent breakdown and characteristics change due to external factors (ESD, EOS, thermal stress and mechanical stress) at the time of handling, mounting or at customer's process. When using products for which damp-proof packing is required, satisfy the conditions, such as shelf life and the elapsed time since first opening the packages.