



DESCRIPTION

The AA87222 is a vertical driver with 3 levels of output voltage processed in a standard CMOS.

FEATURES

- 3 Levels of Output Voltage, 15V, 0V and -8.5V
- 3.3V / 5V Input Voltage

APPLICATIONS

- CCD Image Sensors

BLOCK DIAGRAM

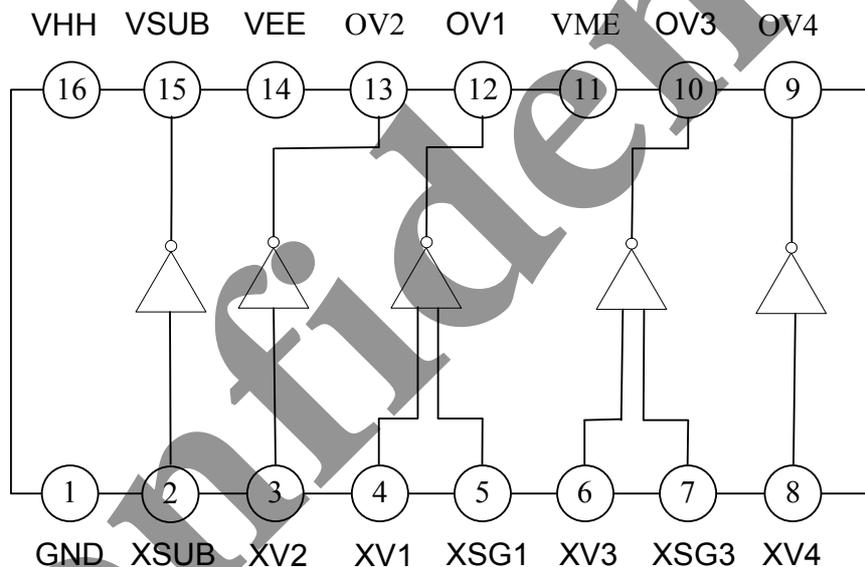


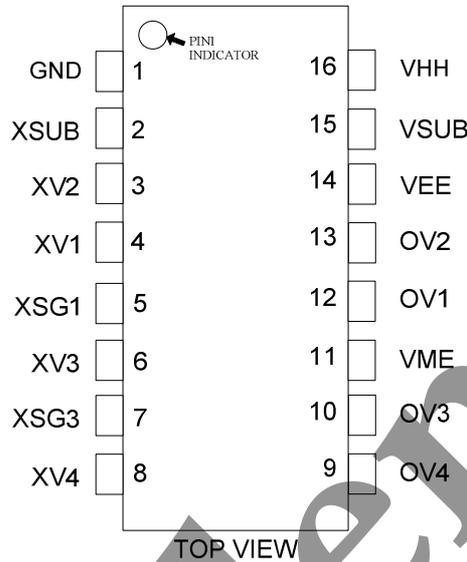


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■ PIN DESCRIPTION



PIN NO.	PIN NAME	FUNCTION
POWER		
16	VHH	+15V Power Supply
1	GND	Power Supply Ground
14	VEE	-8.5V Power Supply
11	VME	0V Power Supply
INPUT SIGNAL		
2	XSUB	Input Signal --Control VSUB
4	XV1	Input Signal --Control OV1
3	XV2	Input Signal --Control OV2
6	XV3	Input Signal --Control OV3
8	XV4	Input Signal --Control OV4
5	XSG1	Input Signal --Control OV1
7	XSG3	Input Signal --Control OV3



PIN NO.	PIN NAME	FUNCTION
OUTPUT SIGNAL		
15	VSUB	Output Signal—2 Level, VEE & VHH
12	OV1	Output Signal—3 Level, VEE, VHH & VME
13	OV2	Output Signal —2 Level, VEE & VME
10	OV3	Output Signal—3 Level, VEE, VHH & VME
9	OV4	Output Signal —2 Level, VEE & VME

■ ELECTRICAL PERFORMANCE

ABSOLUTE MAXIMUM RATINGS

T_a=25°C

SYMBOL	PARAMETER	LIMITS			UNIT
		MIN	TYP	MAX	
V _{EE}	Supply Voltage	-10		0	V
V _{HH}		-0.3		VEE+30	V
V _{ME}		VEE-0.3		3	V
V _I	Input Voltage	-0.3		VHH+0.3	V
OV1, OV3, VSUB	Output Voltage	VEE-0.3		VHH+0.3	V
OV2, OV4		VEE-0.3		VME+0.3	V
T _A	Operating Ambient Temperature	-25		85	°C
T _S	Storage Temperature	-45		125	°C

NOTE: Stress above those listed under "Absolute Maximum Rating" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational section of this specification is not implied. Exposure to absolute maximum rating conditions for the extended periods of time may affect device reliability.



■ LOGIC TRUTH TABLE

INPUT				OUTPUT		
XV1, 3	XSG1, 3	XV2, 4	XSUB	OV1, 3	OV2, 4	VSUB
L	L	X	X	VHH	X	X
H	L	X	X	Z	X	X
L	H	X	X	VME	X	X
H	H	X	X	VEE	X	X
X	X	L	X	X	VME	X
X	X	H	X	X	VEE	X
X	X	X	L	X	X	VHH
X	X	X	H	X	X	VEE



■ DC CHARACTERISTICS

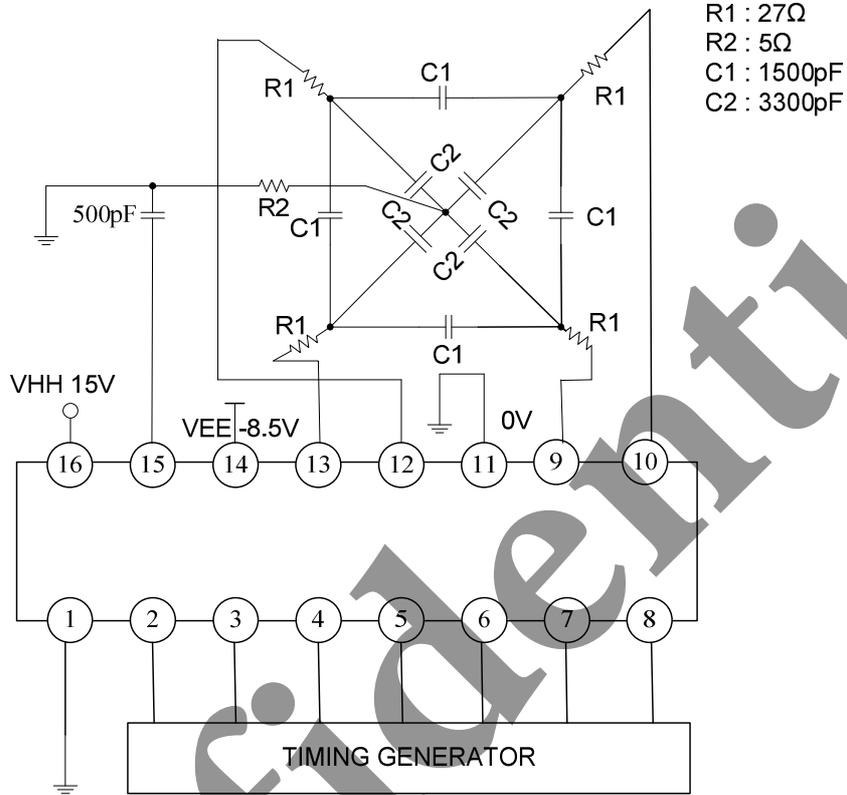
Ta = 25°C , VHH=15, VME=GND, VEE=-8.5V

SYMBOL	PARAMETER	TEST CONDITION	LIMITS			UNIT
			MIN	TYP	MAX	
V _{HH}	Power Supply		14.5	15	15.5	V
V _{EE}			-9.5	-8.5	-7.5	V
I _{HH}	Supply Current	(*1)		2.4	6	mA
I _{EE}			-8	-4.2		mA
I _{ME}				0.6	2.5	mA
V _{IH}	Input Voltage		2.3			V
V _{IL}					1.3	V
I _I	Input Current	VIN=0~5V (*2)	-1	0	1	uA
I _{OL}	Output Current	OV1~4=-8.0V	24	30		mA
I _{OM1}		OV1~4=-0.5V		-18	-25	mA
I _{OM2}		OV1,3=0.5V		18	25	mA
I _{OH}		OV1,3=14.5V		-15	-25	mA
I _{OSL}		VSUB=-8.0V		21	30	mA
I _{OSH}		VSUB=14.5V		-10	-30	mA

NOTE

- 1.Refer the measurement circuit. Shutter speed: 1/40us
- 2.XV1~ 4, XSG1, 3, XSUB pins

■ MEASUREMENT CIRCUIT



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AC CHARACTERISTICS

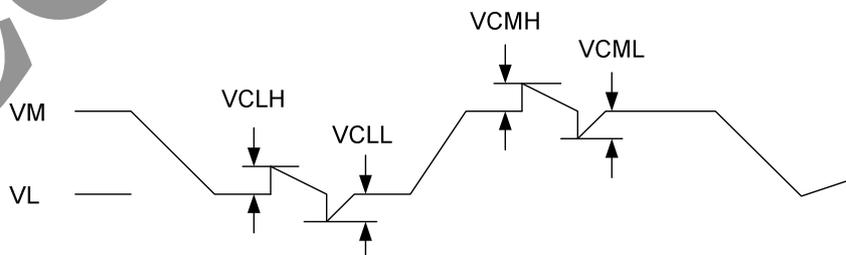
Ta = 25°C , VHH=15, VME=GND, VEE=-8.5V

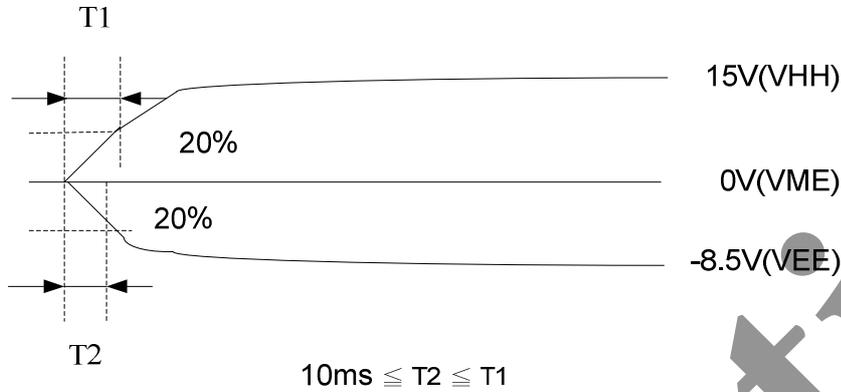
SYMBOL	PARAMETER	TEST CONDITION	LIMITS			UNIT
			MIN	TYP	MAX	
T _{PLM}	Delay Time	No Load (*1)	30	70	100	nS
T _{PMH}			30	70	100	nS
T _{PLH}			30	70	100	nS
T _{PML}			30	70	100	nS
T _{PHM}			30	70	100	nS
T _{PHL}			30	70	100	nS
T _{TLM}	Transition Time	VEE→VME (*1)	170	250	330	nS
T _{TMH}		VME→VHH (*1)	190	240	310	nS
T _{TLH}		VEE→VHH (*1)	100	150	210	nS
T _{TML}		VME→VEE (*1)	100	200	310	nS
T _{THM}		VHH→VME (*1)	60	110	170	nS
T _{THL}		VHH→VEE (*1)	90	140	210	nS
V _{CLH} , V _{CLL} V _{CMH} , V _{CML}	Output Noise Voltage	(*2)			0.5	V

NOTE

- 1.Refer Timing Diagram
- 2.Refer Noise Diagram

NOISE DIAGRAM





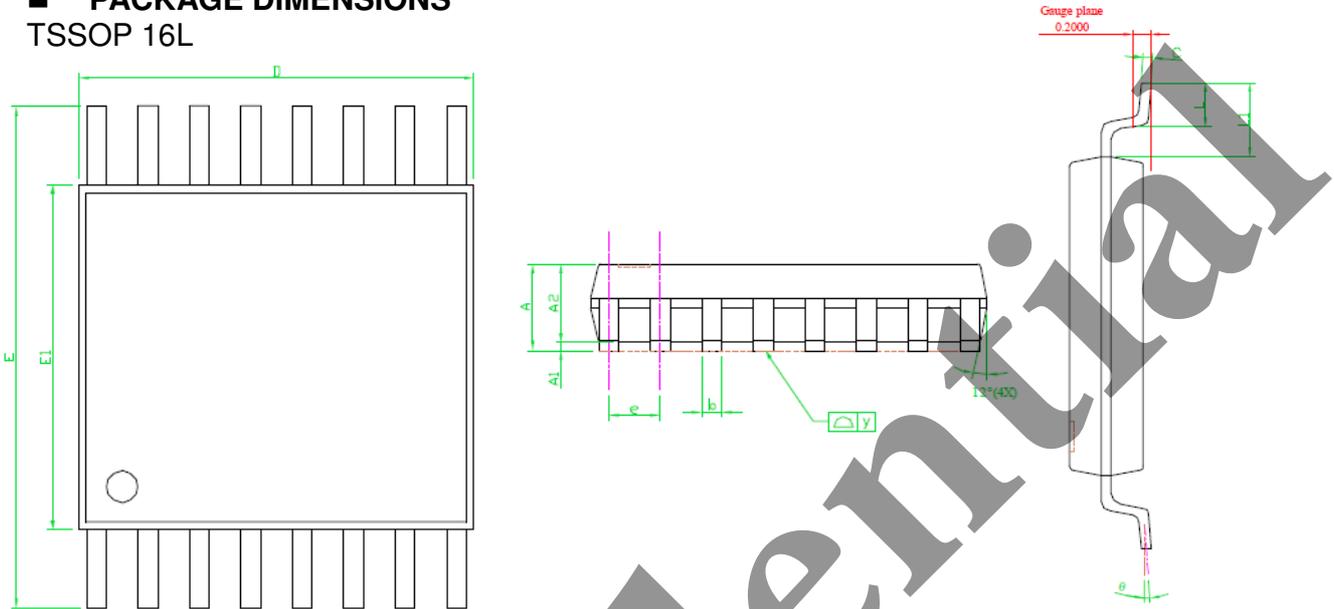
■ ORDERING INFORMATION

ORDER NO.	PACKAGE	PACKING	ONE REEL Q'TY	MARK CHART			
AA87222A	TSSOP 16L	Tape & Reel	2,500ea	<table border="1"> <tr> <td>AA87222</td> </tr> <tr> <td>XXXX</td> </tr> <tr> <td>A</td> </tr> </table>	AA87222	XXXX	A
AA87222							
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■ PACKAGE DIMENSIONS

TSSOP 16L



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	---	---	1.2	---	---	0.048
A1	0.05	---	0.15	0.002	---	0.006
A2	0.8	1	1.05	0.031	0.039	0.041
b	0.19	---	0.3	0.007	---	0.012
C	0.09	---	0.2	0.004	---	0.008
D	4.9	5	5.1	0.193	0.197	0.201
E	6.2	6.4	6.6	0.244	0.252	0.26
E1	4.3	4.4	4.5	0.169	0.173	0.177
e	---	0.65	---	---	0.026	---
L	0.45	0.6	0.75	0.018	0.024	0.03
y	---	---	0.1	---	---	0.004
θ	0°	---	8°	0°	---	8°
L1	0.9	1	1.1	0.035	0.039	0.043

NOTE

1. PACKAGE BODY SIZES EXCLUDE MOLD FLASH PROTRUSIONS OR GATE BURRS.
2. TOLERANCE ± 0.1 mm (4 mil) UNLESS OTHERWISE SPECIFIED
3. COPLANARITY: 0.1 mm
4. CONTROLLING DIMENSION IS MILLIMETER CONVERTED INCH DIMENSIONS ARE NOT NECESSARILY EXACT



■ **NOTES ON USE**

- The application circuit examples explain typical applications of the products, and do not guarantee the success of any specific mass-production design.
- Application circuit diagrams and circuit constants contained herein are shown as examples of standard use and operation. Please pay careful attention to the peripheral conditions when designing circuits and deciding upon circuit constants in the set.
- Take account of common impedance when designing the earth line on a printed wiring board.

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