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LR36682 Vertical Driver for 1/2" CCD

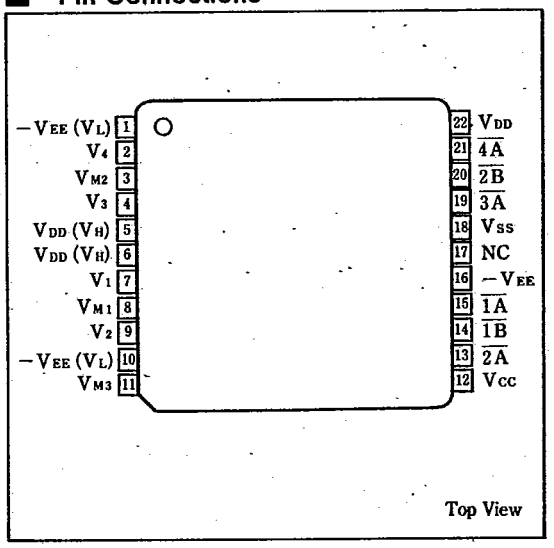
Description

The LR36682 is a V driver LSI for a CCD color area sensor which provides the voltage conversion from CMOS level (0 to 5V) to (−8 to 15V) and converts the impedance to drive a vertical shift register of CCD.

Features

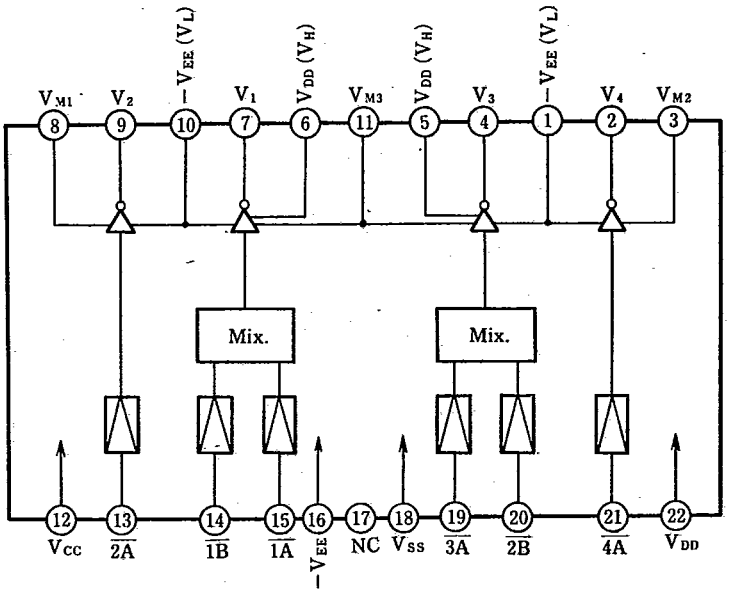
1. 2-level output : 2 circuits
   3-level output : 2 circuits
2. Supply voltage : V_{CC}=5.0V (TYP.)
   V_{DD}=14.0V (TYP.)
   $-V_{EE}$=−7.0V (TYP.)
3. 22-pin mini flat package

Pin Connections



Top View

Block Diagram



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■ Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Supply voltage	V_{CC}	$V_{SS}-0.3$ to $V_{SS}+6.0$	V
	V_{DD}	$V_{SS}-0.3$ to $V_{SS}+17.0$	V
	$-V_{EE}$	$V_{SS}-10.0$ to $V_{SS}-0.3$	V
	$V_{M1,2,3}$	$-V_{EE}$ to V_{DD}	V
Input voltage	V_{IN}	$V_{SS}-0.3$ to $V_{DD}+0.3$	V
DC load current	I_{ODC}	±5	mA
Power dissipation	P_D	300*	mW
Strage temperature	T_{stg}	−55 to +150	℃

* Ta=60℃

■ Recommended Operating Conditions

Parameter		Symbol	MIN.	TYP.	MAX.	Unit
Supply voltage		V_{CC}	4.5		5.5	V
		V_{DD}	9.0	14.0	15.0	
		$-V_{EE}$	−8.0	−7.0	−4.0	
		$V_{M1,2}$	0	2.0	4.0	
		V_{M3}	0	0	4.0	
Input voltage		V_{IN}	0		V_{CC}	V
Operating frequency	NTSC	f		15.734	900*	kHz
	PAL			15.625		
Operating temperature		T_{opr}	−20		+70	℃

* Within the period of 12H at the shutter mode.

■ DC Characteristics

(V_{CC}=5.0V, V_{DD}=14.0V, $-V_{EE}$=−7.0V, V_{M1}=V_{M2}=2.0V, V_{M3}=0V, referenced to V_{SS}, Ta=−20 to 70℃, See Basic Connection Diagram for others.)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit	Note
Input "Low" voltage	V_{IL}		0		1.0	V	
Input "High" voltage	V_{IH}		4.0		5.0	V	
Input "Low" current	I_{IL}	V_{IL}=0V			−1.0	μA	
Input "High" current	I_{IH}	V_{IH}=5V			1.0	μA	
Output "Low" voltage	V_{OL}	$\lvert I_{OL} \rvert$ <1μA			−6.95	V	
Output "High" voltage	V_{OH}	$\lvert I_{OH} \rvert$ <1μA	13.95			V	2
Output medium voltage	V_{OML1}	$\lvert I_{OML1} \rvert$ <1μA	1.95			V	1
	V_{OMH1}	$\lvert I_{OMH1} \rvert$ <1μA			2.05	V	1
	V_{OML2}	$\lvert I_{OML2} \rvert$ <1μA	−0.05			V	2
	V_{OMH2}	$\lvert I_{OMH2} \rvert$ <1μA			0.05	V	2
Output "Low" current	$\lvert I_{OL} \rvert$	V_{OL}=−6.9V	1.0			mA	
Output "High" current	$\lvert I_{OH} \rvert$	V_{OH}=13.9V	1.0			mA	2
Output medium current	$\lvert I_{OML1} \rvert$	V_{OML1}=1.9V	0.5			mA	1
	$\lvert I_{OMH1} \rvert$	V_{OMH1}=2.1V	0.5			mA	1
	$\lvert I_{OML2} \rvert$	V_{OML2}=−0.1V	0.5			mA	2
	$\lvert I_{OMH2} \rvert$	V_{OMH2}=0.1V	0.5			mA	2
Static current consumption	I_{CC}	All inputs are "Low", V_{CC}			200	μA	
	I_{DD}	All inputs are "Low", V_{DD}			5.0	mA	
	I_{EE}	All inputs are "Low", $-V_{EE}$			200	μA	
	I_{M1}	All inputs are "Low", V_{M1}, V_{M2}			200	μA	1
Dynamic current consumption	I_{dyn}	When in standard load operation		9	18	mA	

Note 1 : Applied to pins V_2 and V_4.
Note 2 : Applied to pins V_1 and V_3.

■ AC Characteristics

(V_{CC}=5.0V, V_{DD}=14.0V, $-V_{EE}$=−7.0V, V_{M1}=V_{M2}=V_{M3}=0 to 4V, C_h=2700pF, Ta=−20 to +70℃, See Basic Connection Diagram for others)

Parameter	Symbol	MIN.	TYP.	MAX.	Unit
Output rise time	T_{rM}		160	300	ns
	T_{rH}		160	300	ns
Output fall time	T_{fM}		160	300	ns
	T_{fL}		160	300	ns
Low level propagation delay time	T_{pHl}		250	600	ns
	T_{plL}		250	600	ns
High level propagation delay time	T_{pLl}		250	600	ns
	T_{plH}		250	600	ns

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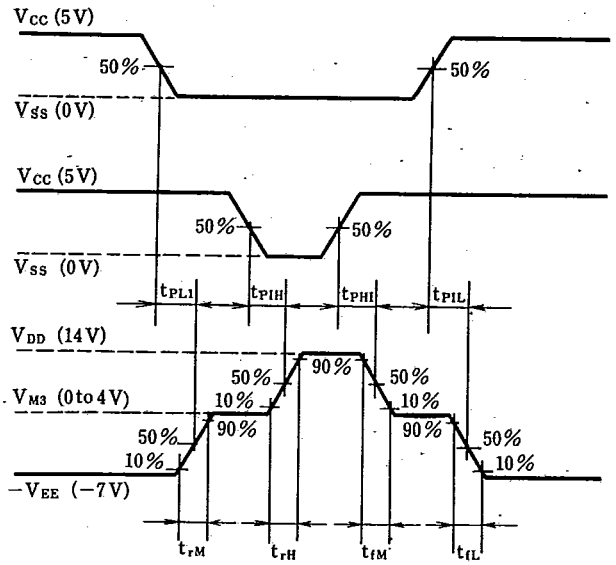
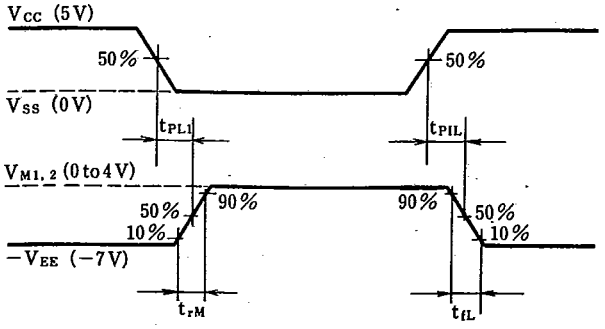
■ Timing Diagram

- Input $\overline{1A}$, $\overline{3A}$
- Input $\overline{1B}$, $\overline{2B}$
- Output V_1, V_3



- Input $\overline{2A}$, $\overline{4A}$
- Output V_2, V_4



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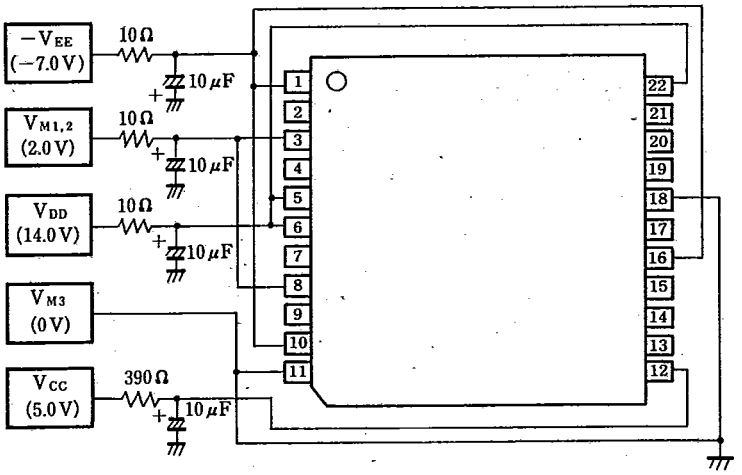
■ Basic Connection Diagram



■ Precaution

Use this LSI under the following conditions.

(1) 10 μF of capacitor should be applied between the power supply and V_{SS}.
V_{DD} (VH), $-V_{EE}$ (VL), V_{CC}, V_{DD}, $-V_{EE}$, V_{M1}, V_{M2}, V_{M3}

(2) Resistors should be applied to power supply pins in series.
- (a) 390Ω to V_{CC}.
- (b) 10Ω to V_H and V_{DD}.
- (c) 10Ω to V_L and $-V_{EE}$.
- (d) 10Ω to V_{M1}, V_{M2} and V_{M3}.

* 10 μF of capacitors and 10Ω of resistors are not needed when V_{M1}, V_{M2} and V_{M3} are used at the V_{SS} (GND) level.

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