



Description

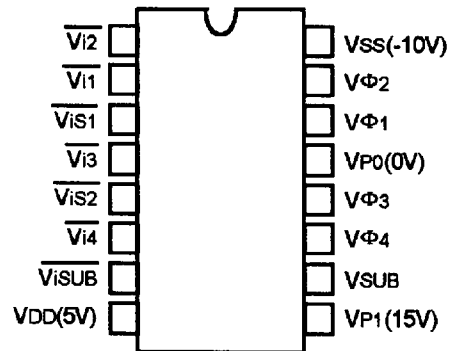
The GCD1001S is a clock driver for the vertical resistor drive of CCD.

GCD1001S is well suited for the B/W or color CCD camera/camcorder in NTSC or PAL system.

Feature

- 4 channel vertical clock driver and 1 channel substrate driver.
- Implemented with high voltage(50V) and high performance CMOS process.

Pin Configuration



16SSOP

Absolute Maximum Ratings (Ta = 25°C)

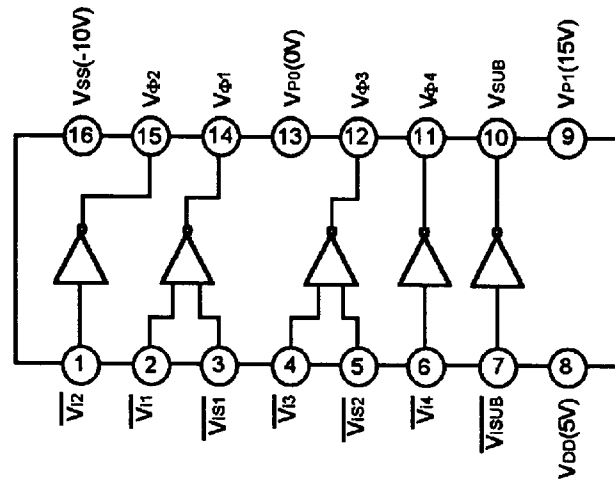
Parameter	Symbol	Rating	Unit
Supply Voltage	V _{SS}	Reference voltage	V
	V _{DD} , V _{PO} , V _{P1}	V _{SS} -0.3 to V _{SS} +35	V
Input voltage	V _I	V _{SS} -0.3 to V _{DD} +0.3	V
Output voltage	V _{O2} , V _{O4}	V _{SS} -0.3 to V _{P0} +0.3	V
	V _{O1} , T _{O3} , T _{Sub}	V _{SS} -0.3 to V _{P1} +0.3	V
Operating temperature	T _{OPR}	-25 to +85	°C
Storage temperature	T _{STG}	-40 to +125	°C

Recommended Operating Conditions

Parameter	Symbol	Rating	Unit
Supply Voltage	V _{DD}	V _{SS} +15	V
	V _{PO}	V _{SS} +10	V
	V _{P1}	V _{SS} +25	V
Operating temperature	T _{OPR}	-20 to +75	°C



Block Diagram and Pin Configuration (Top View)



Truth Table

Input				Output		
$\overline{Vi1,3}$	$\overline{ViS1,2}$	$\overline{Vi2,4}$	$\overline{ViSUB}$	$V01,3$	$V02,4$	$Vsub$
L L H H	L H L H			VP1 VP0 *Z VSS		
		L H			VP0 VSS	
			L H			VP1 VSS

*Z is high impedance.

DC Characteristics ($T_A=25^\circ C$, $V_{DD}=5V$, $V_{SS}=-10V$, $V_{P0}=0V$, $V_{P1}=15V$)

Item	Symbol	Test Condition	Min	Typ	Max	Unit
Input high voltage	V_{IP1}		3.5			V
Input low voltage	V_{ISS}				1.5	V
Output high voltage	$V_{\phi P1}$	$I_{\phi P1} = -20 \mu A$	14.9	15		V
Output middle voltage	$V_{\phi P0}$	$I_{\phi P0} = -20 \mu A$		0	0.1	V
Output middle voltage	$V_{\phi P0}$	$I_{\phi P0} = 20 \mu A$	-0.1	0		V
Output low voltage	V_{ISS}	$I_{\phi SS} = 20 \mu A$		-10	-9.9	V
Input current	I_{IN}			1.0		μA
Power supply current	I_{P0}			0.3	0.5	mA
Power supply current	I_{P1}			0.15	0.3	mA
Power supply current	I_{P0}			4.5	5.0	mA

Pin Description

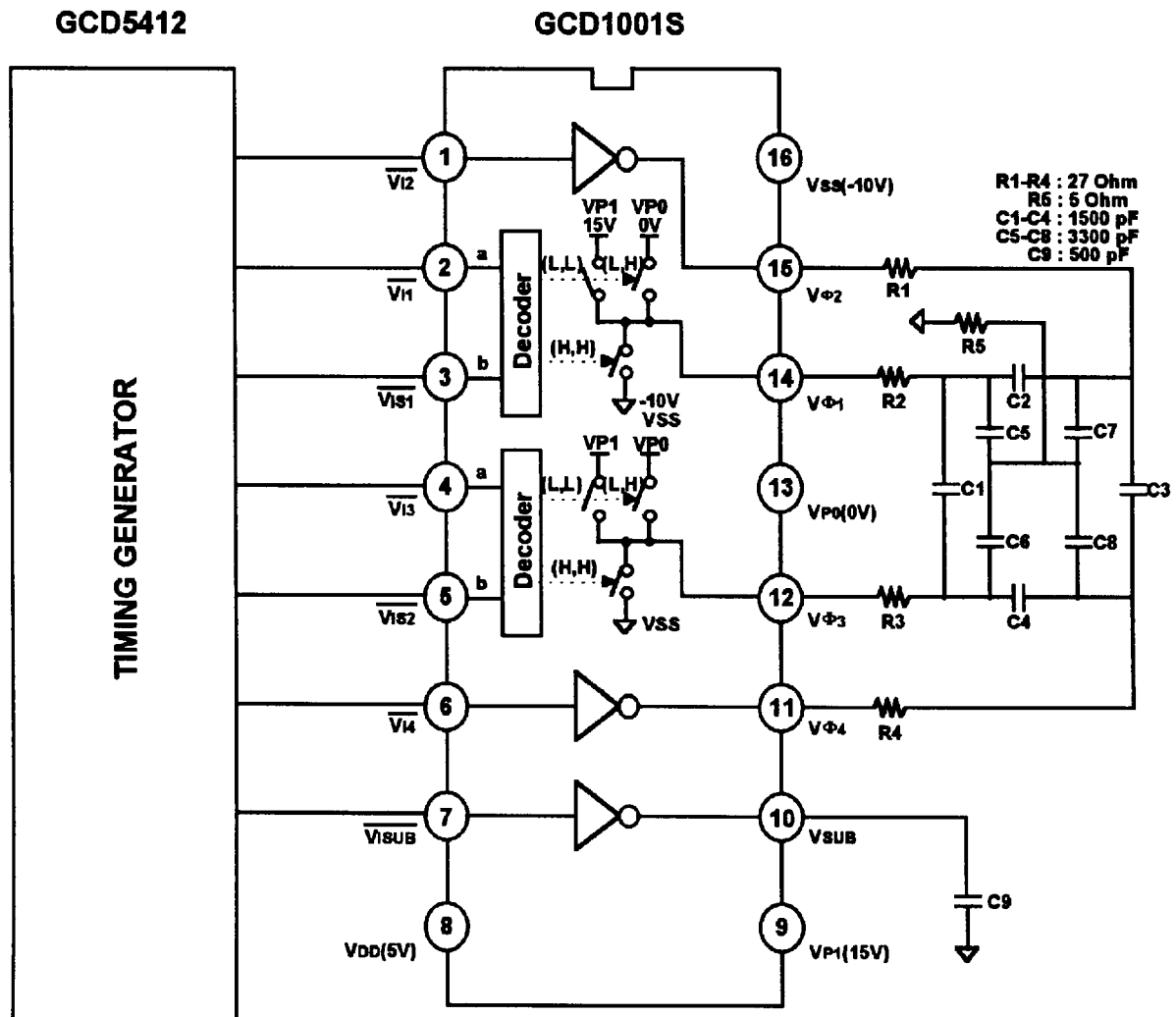
No.	Symbol	I/O	Description
1	$\overline{Vi2}$	I	Output control (V02)
2	$\overline{Vi1}$	I	Output control (V01)
3	$\overline{ViS1}$	I	Output control (V01)
4	$\overline{Vi3}$	I	Output control (V03)
5	$\overline{ViS2}$	I	Output control (V03)
6	$\overline{Vi4}$	I	Output control (V04)
7	$\overline{ViSUB}$	I	Output control (VSub)
8	VDD	-	Power supply (5V)
9	VP1	-	Power supply (15V)
10	VSUB	O	Output (2 level : VP1, VSS)
11	VΦ4	O	Output (2 level : VP0, VSS)
12	VΦ3	O	Output (3 level : VP1, VP0, VSS)
13	VP0	-	Power supply (0V)
14	VΦ1	O	Output (3 level : VP1, VP0, VSS)
15	VΦ2	O	Output (2 level : VP0, VSS)
16	VSS	-	Power supply (-10V)

Switching Characteristics

(See the Test Circuit $T_A = 25^\circ\text{C}$, $VP1=15\text{V}$, $VP0=0\text{V}$, $V_{DD}=5\text{V}$, $V_{SS}=-10\text{V}$)

Item	Symbol	Conditions	Max.	Min.	Unit
Output Current	I_L	V01 to 4 = -9.5V	-25		mA
Output Current	I_{M1}	V01 to 4 = -0.5V		10	mA
Output Current	I_{M2}	V01, 3 = 0.5V	-9		mA
Output Current	I_H	V01, 3 = 14.5V		12	mA
Output Current	I_{SL}	VSub = -9.5V	-12		mA
Output Current	I	VSub = 14.5V		12	mA
Rise time VSS → VP0	T_{TLM}	V01 to 4 = -0.5V After input transient	1000		ns
Fall time VP0 → VSS	T_{TML}	V01, 3 = -9.5V After input transient	1000		ns
Rise time VP0 → VP1	T_{TMH}	V01, 3 = 14V After input transient	1000		ns
Fall time VP1 → VP0	T_{THM}	V01, 3 = 1V After input transient	1000		ns
Rise time VP0 → VP1	T_{TLHH}	VSub = 14V	200		ns
Fall time VP1 → VSS	T_{THHL}	VSub = -9.5V	200		ns
Coupling amplitude (middle level)	V_{COM}	V01 to 4	0.5		V
Coupling amplitude (low level)	V_{COL}	V01 to 4	0.5		V

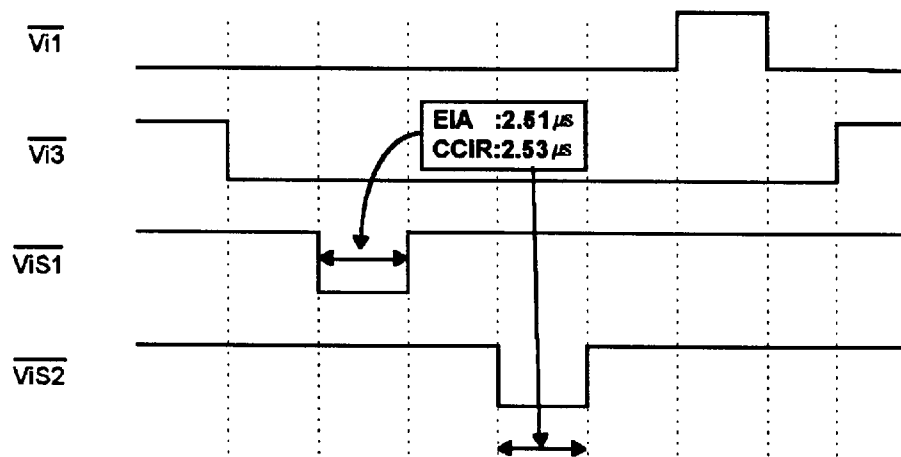
Test Circuit



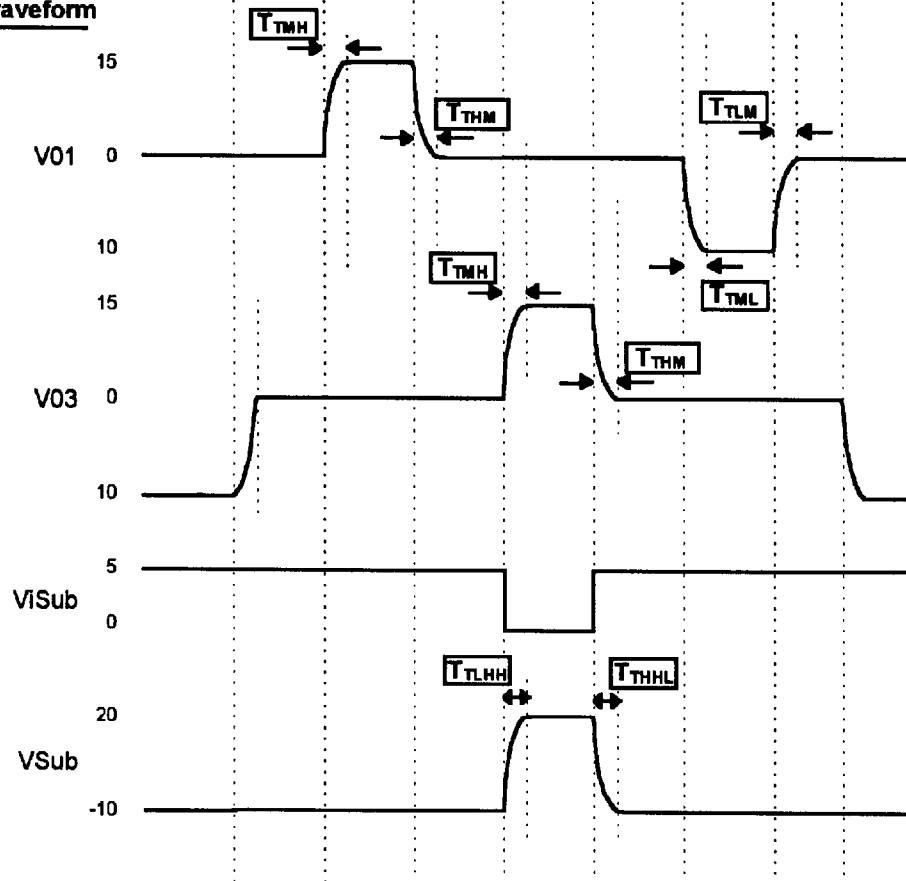
*(L, H) means the on-status of the switch when a = "L", b = "H".

Test Circuit I/O Waveform Diagram

Input waveform

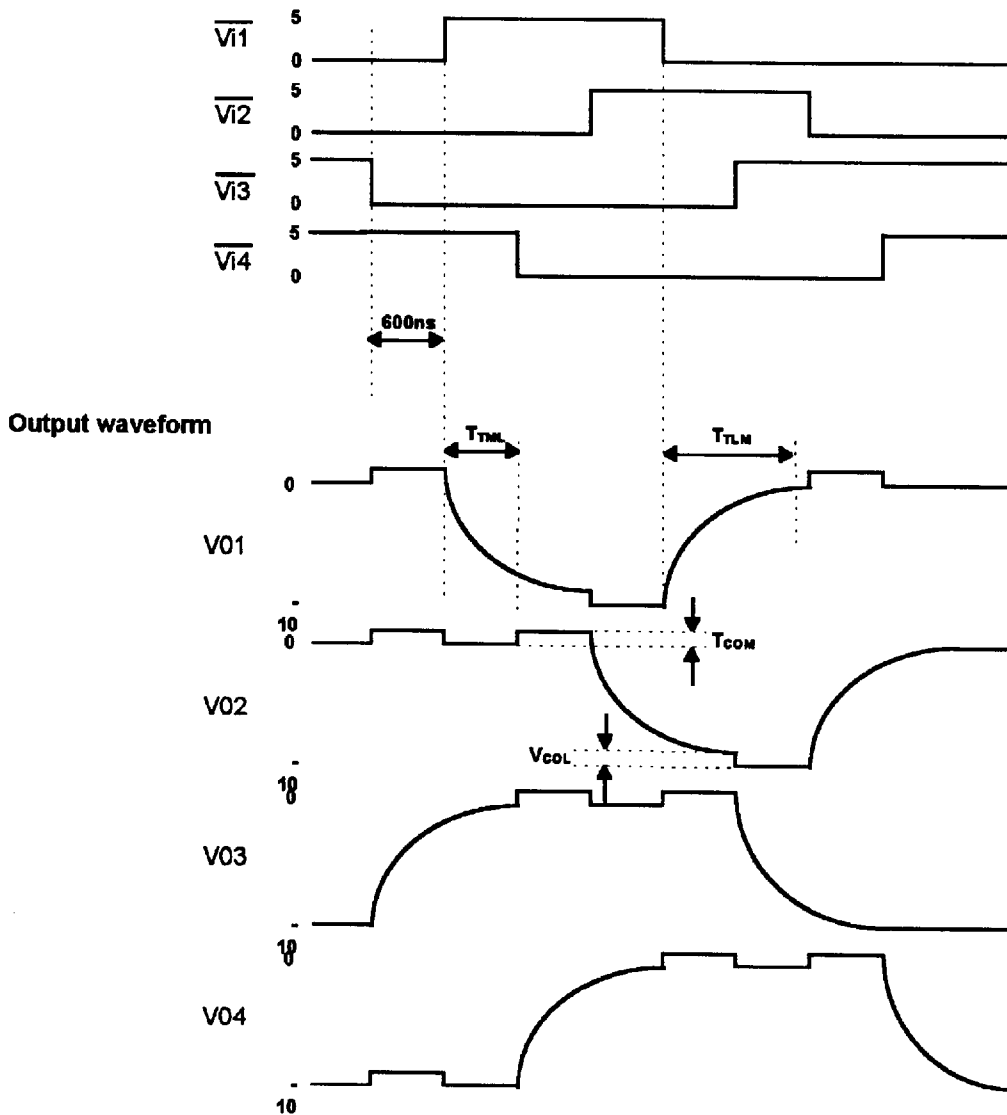


Output waveform



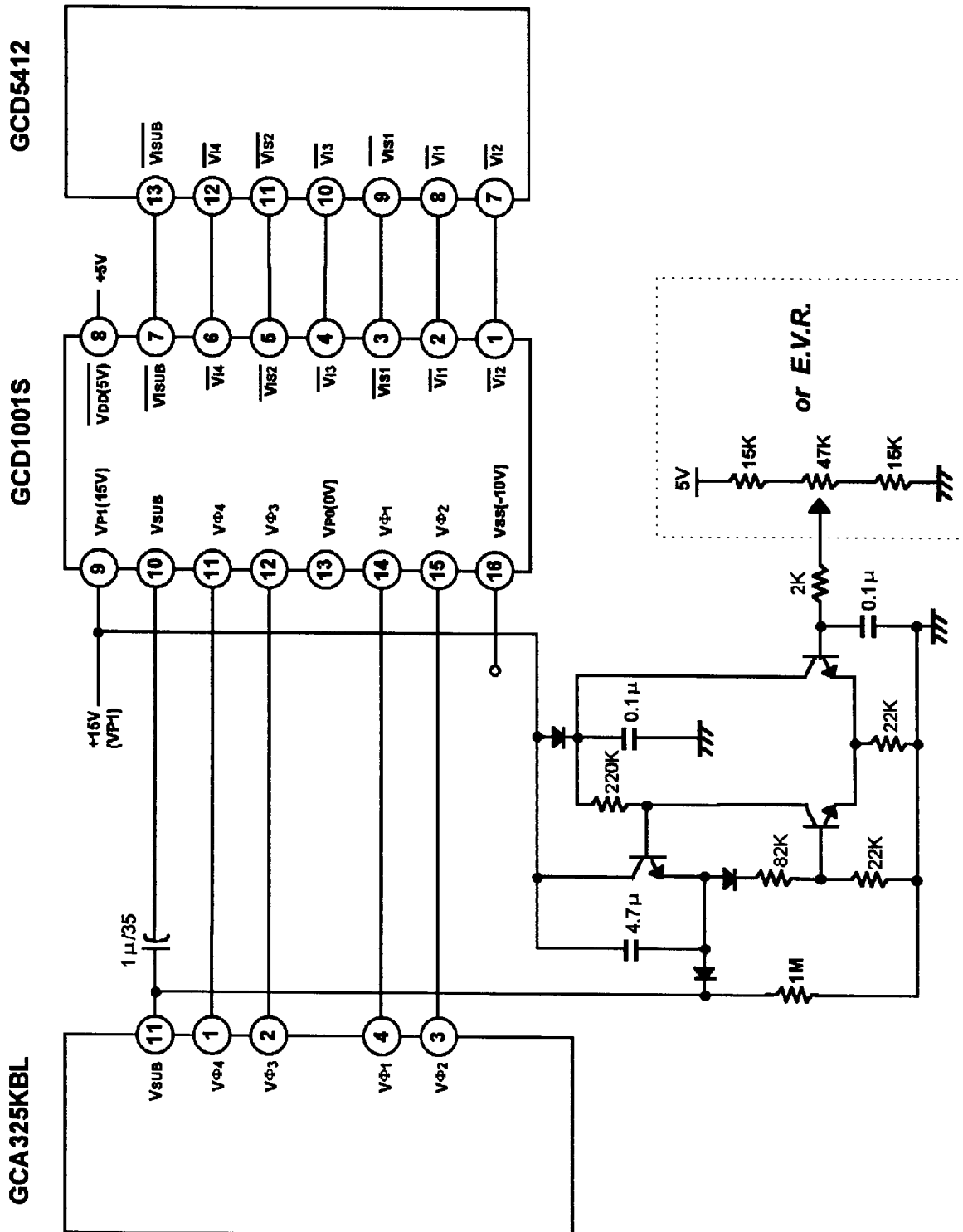


Input waveform
(Repeat Cycle 16.7kHz)



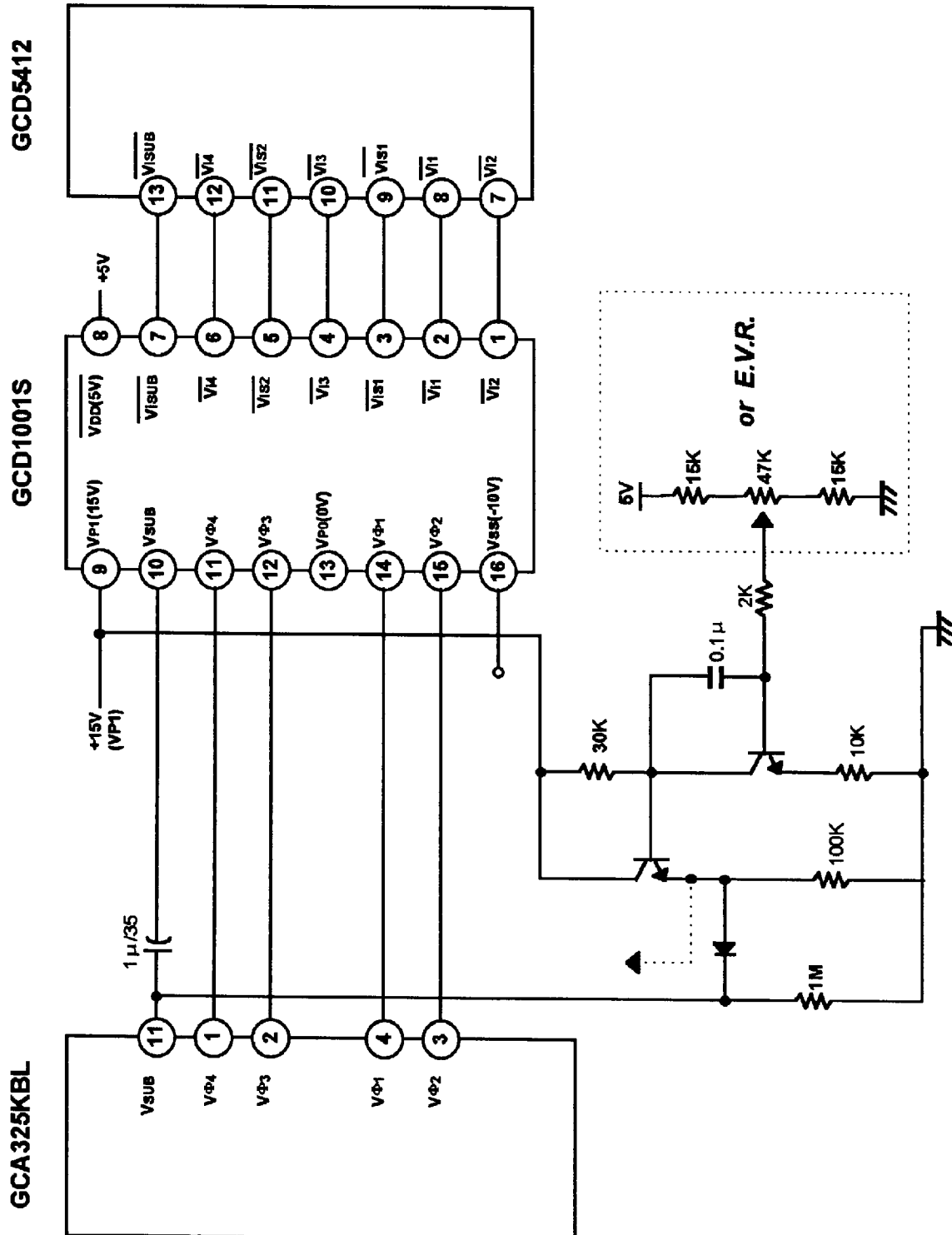


Application Circuit I





Application Circuit II





16 SSOP

Unit: inches(mm)

