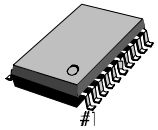
GENERAL DESCRIPTION

The KS7220 is designed for Driving Vertical register of CCD Image Sensor.

20 -SOP - 375



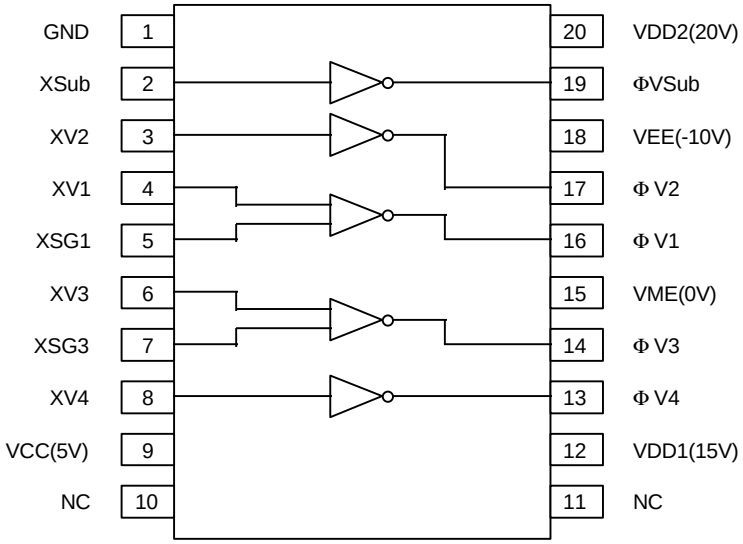
FEATURES

- Includes 4-Channel Vertical Clock Driver
- Includes 1-Channel Sub Driver
- Applied to B/W & Color
- Applied to NTSC & PAL

ORDERING INFORMATION

Device	Package	Operating Temperature
KS7220	20-SOP-375	- 20 °C ~ +75 °C

BLOCK DIAGRAM



PIN DESCRIPTION

No	Symbol	I/O	Description	Remark
1	GND	-	GROUND	
2	XSUB	I	OUTPUT CONTROL (Vsub)	
3	XV2	I	OUTPUT CONTROL (ΦV2)	
4	XV1	I	OUTPUT CONTROL (ΦV1)	
5	XSG1	I	OUTPUT CONTROL (ΦV1)	
6	XV3	I	OUTPUT CONTROL (ΦV3)	
7	XSG3	I	OUTPUT CONTROL (ΦV3)	
8	XV4	I	OUTPUT CONTROL (ΦV4)	
9	VCC	I	POWER (5V)	
10	NC	-	NO CONNECTION	
11	NC	-	NO CONNECTION	
12	VDD1	-	POWER (15V)	
13	ΦV4	O	High Voltage Output (2 level :VME, VEE)	
14	ΦV3	O	High Voltage Output (3 level :VME, VEE, VHH)	
15	VME	-	POWER (0V)	
16	ΦV1	O	High Voltage Output (3 level :VME, VEE,VHH)	
17	ΦV2	O	High Voltage Output (2 level : VME, VEE)	
18	VEE	-	POWER (-10V)	
19	ΦVSub	O	High Voltage Output (2 level :VEE, VHH)	
20	VDD2	-	POWER (20V)	

ABSOLUTE MAXIMUM RATINGS (Ta = 25 °C)

Characteristics	Symbol	Min	Max	Unit
Supply Voltage	GND,VCC,VME,VDD1,VEE	VDD2-35	VDD2+0.3	V
Input Voltage	VIN	GND-0.3	VDD2+0.3	
Output Voltage	ΦV1,V3	VEE-0.3	VDD2+0.3	
	ΦV2,V4	VEE-0.3	VDD2+0.3	
	ΦVSub	VEE-0.3	VDD2+0.3	
Operating Temperature	Topr	-20	+75	°C
Storage Temperature	Tstg	-40	+125	

LOGIC FUNCTION TABLE

XSG1,3	XV1,3	Φ V1, 3
H	L	VME
H	H	VEE
L	L	VDD1
L	H	HIMP

XV2,4	Φ V2, 4
H	VEE
L	VME

XSub	Φ Vsub
H	VEE
L	VDD2

* HIMP = HIGH IMPEDANCE
* VME = 0V
* VDD1 = 15V
* VDD2 = 20V

ELECTRICAL CHARACTERISTICS

(VCC = 5V, VEE = -10V, VME = 0V, VDD1 = 15V, VDD2 = 20V, Ta = 25 °C)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Input High Voltage	VIH		3.5	-	-	V
Input Low Voltage	VIL		-	-	1.0	
Input Current	IIN		-	1.0	-	μA
Output Current	IOEE	ΦV1~4=-9.5V	-	-36	-24	mA
	IOME1	ΦV1~4=-0.5V	10	15	-	
	IOME2	ΦV1.3= 0.5V	-	-15	-10	
	IODD1	ΦV1.3=14,5V	12	18	-	
	IOSDD2	ΦVsub=19.5V	8	12	-	
	IOSEE	ΦVsub=-9.5V	-	-18	-12	

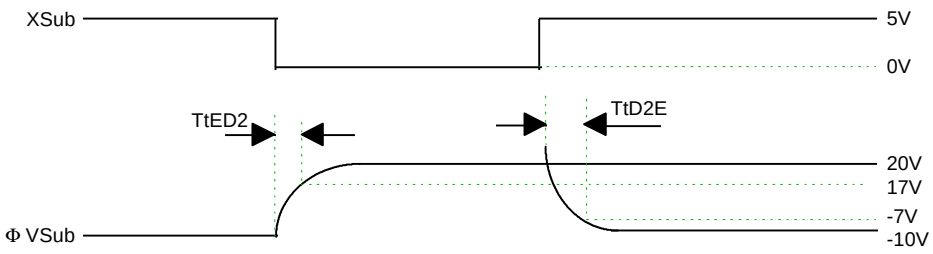
TRANSIENT CHARACTERISTICS

(V_{CC}=5V, V_{EE}=-10V, VME=0V, V_{DD1}=15V, V_{DD2}=20V, Ta=25°C)

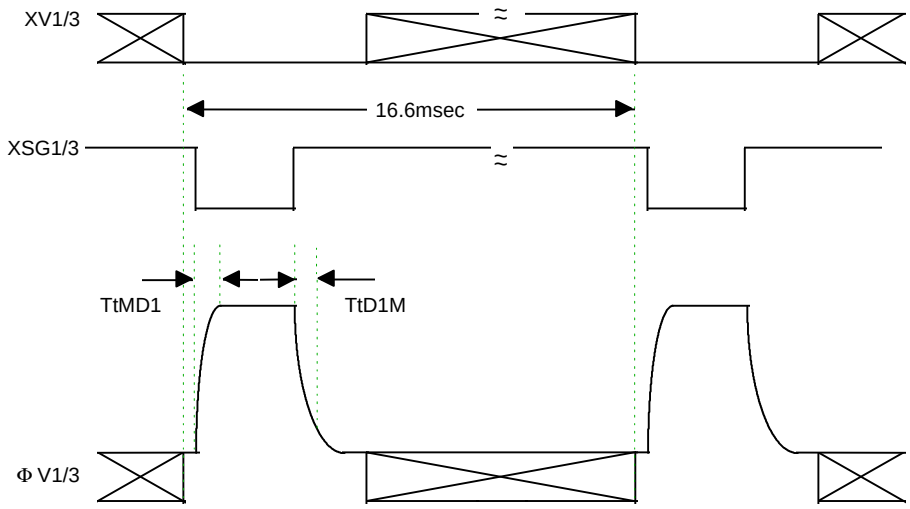
Characteristics	Transient	Symbol	Typ	Max	Unit
Rising Time	VEE → VME (-0.5V)	TtEM	600	1000	nSEC
Falling Time	VME → VEE (-9.5V)	TtME	300	500	
Rising Time	VEE → VDD1 (-14V)	TtMD1	600	1000	
Falling Time	VDD1 → VME (1.0V)	TtD1M	700	1000	
Rising Time	VEE → VDD2 (17.0V)	TtED2	120	200	
Falling Time	VDD→ VCC (-7.0V)	TtD2E	120	200	

TIMING DIAGRAM

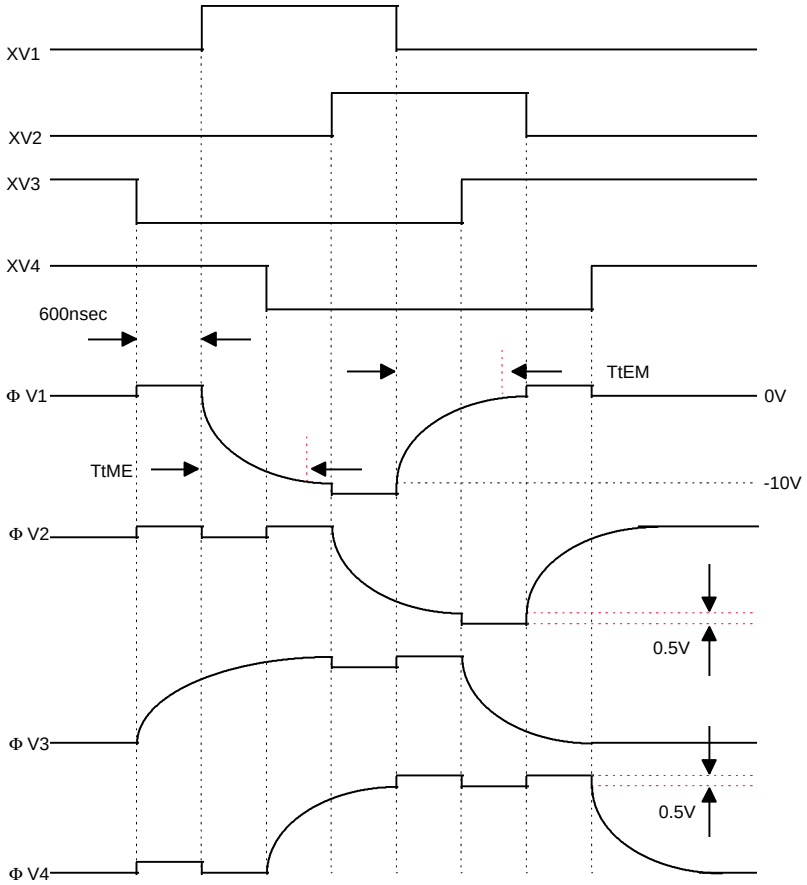
1) TIMING CHART 1 (XSub ---> ΦVSub)



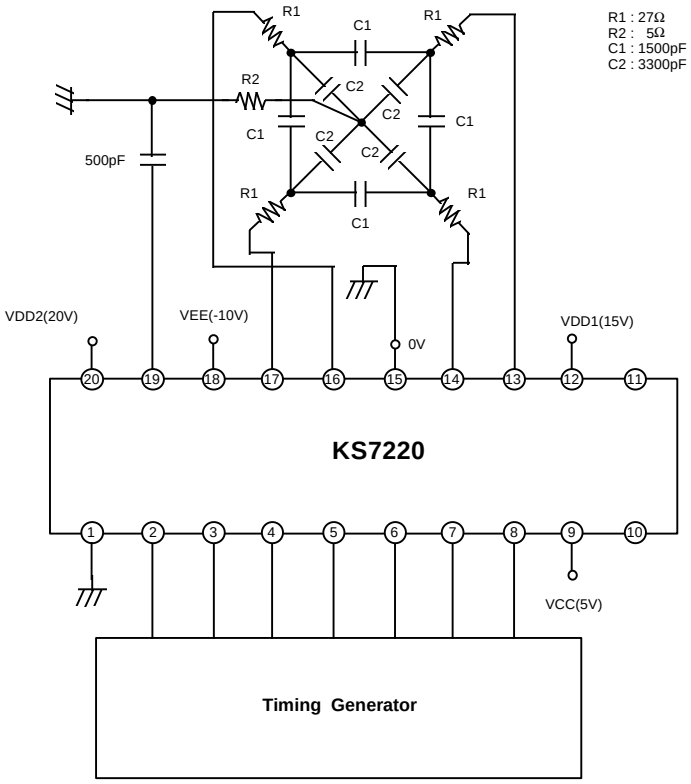
2) TIMING CHART 2 (XV1/3, XSG1/3 ---> ΦV1/3)



3) TIMING CHART 3 (XV1,2,3,4 ---> ΦV1,2,3,4)

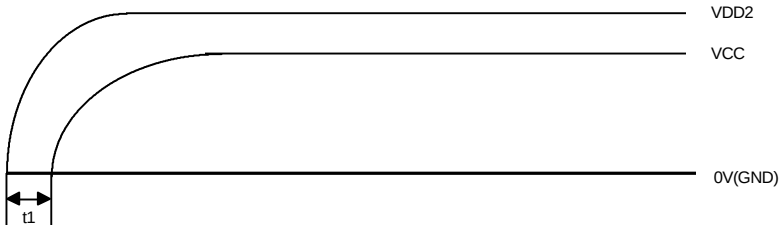


APPLICATION CIRCUIT



VDD1,VDD2,VEE POWER SUPPLIES AT THE APPLICATION CIRCUIT

VCC,VDD2 Supplies at the application under the following condition.



* 0 < t1
* Care for ; if t1<0 then device must be damaged by the Latch-up

PACKAGE DIMENSION

20-SOP-375 unit : mm