

Spread Spectrum EMI reduction IC for HD Display

Features

- Custom Clock Generator for Display Systems
- Wide Operating Frequency Range covering most of the pixel frequencies
- Generates a low EMI 1x Output
- Frequency range: 25 MHz - 120 MHz
- 4 Frequency Deviation selection options
 $\pm 1.50\%$, $\pm 1.25\%$, $\pm 0.75\%$, $\pm 1.00\%$
- Supply voltage : 3.3V $\pm$ 0.3V
2.5V $\pm$ 0.125V
- ModRate 85KHz @ 72MHz
- 6 Pin TSOT-26 package
- Commercial and Industrial Temperature range

(EMI) at the clock source, allowing system wide reduction of EMI of all clock dependent signals. PCS3P6200A allows significant system cost savings by reducing the number of circuit board layers, ferrite beads, shielding that are traditionally required to pass EMI regulations.

The Supply Voltage of the Device is 3.3V/2.5V. It has two Spread Selection Pins, SS1% and SS2% to select among the four possible deviation options. The Frequency Deviation across the Frequency range remains within $\pm 10\%$ of the selected deviation. *Refer to the Frequency Deviation Selection Table for details.* The Device is available in a 6 Pin TSOT-26 Package, over Commercial and Industrial temperature range.

Product Description

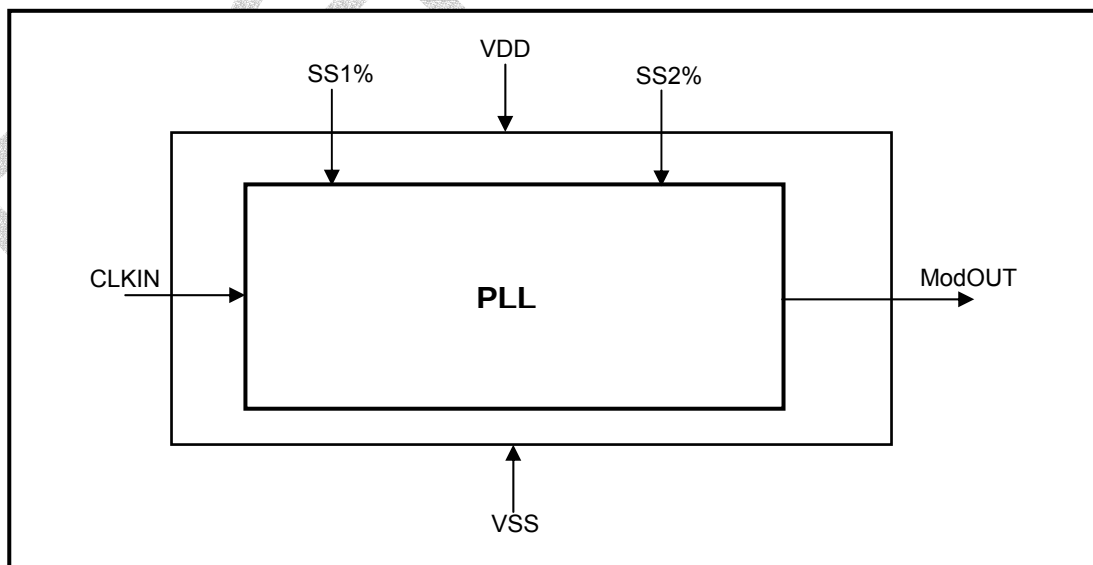
PCS3P6200A is a versatile spread spectrum modulator designed specifically for a wide range of clock frequencies. The device addresses the need of a low EMI clock generator for use in display systems covering wide choice of pixel frequencies.

PCS3P6200A reduces electromagnetic interference

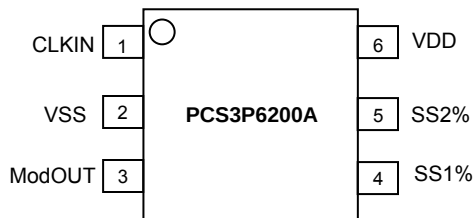
Application

PCS3P6200A is targeted for use in a broad range of applications including Liquid Crystal and Plasma Displays

Block Diagram



Pin Configuration (6L TSOT- 26 Package)



Pin Description

Pin#	Pin Name	Type	Description
1	CLKIN	I	External Reference Clock Input.
2	VSS	P	Ground to entire chip
3	ModOUT	O	Modulated Frequency Output
4	SS1%	I	Frequency Deviation Selection. Refer to "Frequency Deviation Selection Table" for details. Has an Internal pull-up resistor.
5	SS2%	I	Frequency Deviation Selection. Refer to "Frequency Deviation Selection Table" for details. Has an Internal pull-up resistor.
6	VDD	P	Power to entire chip

Frequency Deviation Selection Table

SS2%	SS1%	Frequency Deviation
L	L	$\pm 1.50\%$
L	H	$\pm 1.25\%$
H	L	$\pm 0.75\%$
H	H	$\pm 1.00\%$

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Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
V_{DD}, V_{IN}	Voltage on any pin with respect to Ground	-0.5 to +4.6	V
T_{STG}	Storage temperature	-65 to +125	°C
T_s	Max. Soldering Temperature (10 sec)	260	°C
T_J	Junction Temperature	150	°C
T_{DV}	Static Discharge Voltage (As per JEDEC STD22- A114-B)	2	KV

Note: These are stress ratings only and are not implied for functional use. Exposure to absolute maximum ratings for prolonged periods of time may affect device reliability.

Operating Conditions for 2.5V and 3.3V Supply Voltage

Parameter	Description	Min	Max	Unit
$V_{DD(2.5)}$	Supply Voltage	2.375	2.625	V
$V_{DD(3.3)}$		3.0	3.6	
T_A	Operating Temperature (Ambient Temperature)	-40	+85	°C
C_L	Load Capacitance		15	pF

DC Electrical Characteristics for 2.5V Supply

Symbol	Parameter	Min	Typ	Max	Unit
V_{IL}	Input low voltage	VSS - 0.3		0.7	V
V_{IH}	Input high voltage	1.7		VDD + 0.3	V
I_{IL}	Input low current			-35	μA
I_{IH}	Input high current			35	μA
V_{OL}	Output low voltage (VDD = 2.5V, I_{OL} = 8 mA)			0.6	V
V_{OH}	Output high voltage (VDD = 2.5V, I_{OH} = -8 mA)	1.8			V
I_{DD}	Static supply current*			4	mA
I_{CC}	Dynamic supply current (2.5V and no load)		11		mA
V_{DD}	Operating voltage	2.375	2.5	2.625	V
t_{ON}	Power-up time (first locked cycle after power-up)			5	mS
C_{IN}	Input Capacitance		5		pF
Z_{OUT}	Output Impedance		40		Ω

* CLKIN pin is pulled low

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AC Electrical Characteristics for 2.5V Supply

Symbol	Parameter	Min	Typ	Max	Unit
CLKIN	Input frequency	25		120	MHz
ModOUT	Output frequency	25		120	MHz
t_{LH}^*	Output rise time (measured from 0.7V to 1.7V)		2.2		nS
t_{HL}^*	Output fall time (measured from 1.7V to 0.7V)		1.2		nS
t_{JC}	Jitter (Cycle to cycle)		± 250		pS
t_D	Output duty cycle	40	50	60	%

* t_{LH} and t_{HL} are measured into a capacitive load of 15pF

DC Electrical Characteristics for 3.3V Supply

Symbol	Parameter	Min	Typ	Max	Unit
V_{IL}	Input low voltage	$V_{SS} - 0.3$		0.8	V
V_{IH}	Input high voltage	2.0		$V_{DD} + 0.3$	V
I_{IL}	Input low current			-35	μA
I_{IH}	Input high current			35	μA
V_{OL}	Output low voltage ($V_{DD} = 3.3V$, $I_{OL} = 8 mA$)			0.4	V
V_{OH}	Output high voltage ($V_{DD} = 3.3V$, $I_{OH} = -8 mA$)	2.5			V
I_{DD}	Static supply current*			4.5	mA
I_{CC}	Dynamic supply current (3.3V and no load)		14		mA
V_{DD}	Operating voltage	3.0	3.3	3.6	V
t_{ON}	Power-up time (first locked cycle after power-up)			5	mS
C_{IN}	Input Capacitance		5		pF
Z_{OUT}	Output Impedance		40		Ω

* CLKIN pin is pulled low

AC Electrical Characteristics for 3.3V Supply

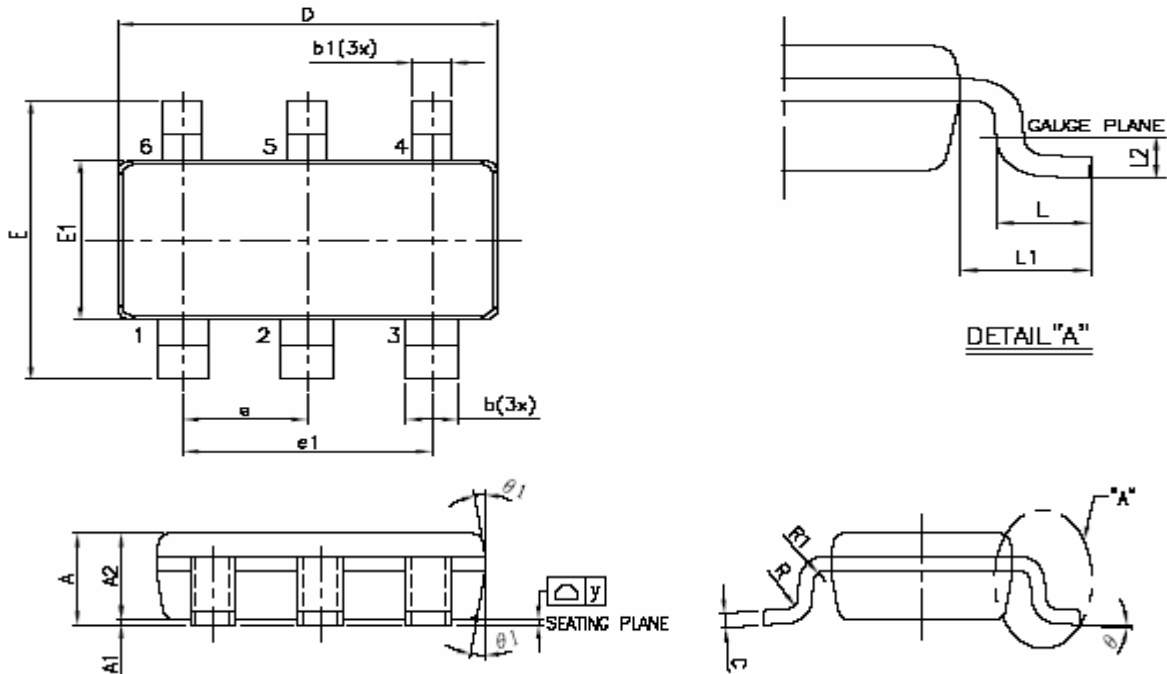
Symbol	Parameter	Min	Typ	Max	Unit
CLKIN	Input frequency	25		120	MHz
ModOUT	Output frequency	25		120	MHz
t_{LH}^*	Output rise time (measured from 0.8 to 2.0V)		1.5		nS
t_{HL}^*	Output fall time (measured at 2.0V to 0.8V)		1.1		nS
t_{JC}	Jitter (Cycle to cycle)		± 225		pS
t_D	Output duty cycle	45	50	55	%

* t_{LH} and t_{HL} are measured into a capacitive load of 15pF

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Package Information

6L TSOT26



Symbol	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.0295	0.035	0.75	0.90
A1	0.00	0.0039	0.00	0.10
A2	0.0275	0.0314	0.70	0.80
b	0.0157	0.0197	0.40	0.50
b1	0.0118	0.0157	0.30	0.40
c	0.0031	0.0078	0.08	0.20
D	0.1141		2.90 REF	
E	0.1023	0.1181	2.60	3.00
E1	0.0590	0.0069	1.50	1.70
e	0.0374		0.95 BSC	
e1	0.0748		1.90 BSC	
L	0.0118	0.0236	0.30	0.60
L1	0.0236 REF		0.60 REF	
L2	0.0098 BSC		0.25 BSC	
R	0.0039		0.10	
R1	0.0039	0.0098	0.10	0.25
θ	0°	8°	0°	8°
y		0.0039		0.10

Ordering Codes

Part Number	Marking	Package Type	Temperature
PCS3P6200AG-06JR	AC4LL	6-Pin TSOT-26, TAPE & REEL, Green	Commercial
PCS3I6200AG-06JR	AC2LL	6-Pin TSOT-26, TAPE & REEL, Green	Industrial

LL = 2 Character LOT #

Device Ordering Information

P C S 3 P 6 2 0 0 A G - 0 6 J R

R = Tape & Reel, T = Tube or Tray

O = TSOT23	U = MSOP	J = TSOT26
S = SOIC	E = TQFP	
T = TSSOP	L = LQFP	
A = SSOP	U = MSOP	
V = TVSOP	P = PDIP	
B = BGA	D = QSOP	
Q = QFN	X = SC-70	

DEVICE PIN COUNT

F = LEAD FREE AND RoHS COMPLIANT PART
G = GREEN PACKAGE, LEAD FREE, and RoHS

PART NUMBER

X = Automotive (-40C to +125C) I = Industrial (-40C to +85C) P or n/c = Commercial (0C to +70C)

1 = Reserved	6 = Power Management
2 = Non PLL based	7 = Power Management
3 = EMI Reduction	8 = Power Management
4 = DDR support products	9 = Hi Performance
5 = STD Zero Delay Buffer	0 = Reserved

PulseCore Semiconductor Mixed Signal Product



PulseCore Semiconductor Corporation
1715 S. Bascom Ave Suite 200
Campbell, CA 95008
Tel: 408-879-9077
Fax: 408-879-9018
www.pulsecoresemi.com

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Preliminary Information
Part Number: PCS3P6200A
Document Version: 0.2

Note: This product utilizes US Patent # 6,646,463 Impedance Emulator Patent issued to PulseCore Semiconductor, dated 11-11-2003
Many PulseCore Semiconductor products are protected by issued patents or by applications for patent

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