

PCS3P6200A

Product Preview

Spread Spectrum EMI Reduction IC for HD Display

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 (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 3.3 V/2.5 V. 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, Industrial and Extended Industrial temperature range.

Application

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

Features

- 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: 3.3 V \pm 0.3 V
2.5 V \pm 0.125 V
- ModRate 85 KHz @ 72 MHz
- 6 Pin TSOT-26 package
- Commercial, Industrial and Extended Industrial Temperature Range
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

This document contains information on a product under development. ON Semiconductor reserves the right to change or discontinue this product without notice.



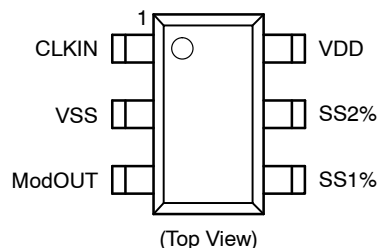
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TSOT-6
J SUFFIX
CASE 419AF

PIN CONFIGURATION



ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 6 of this data sheet.

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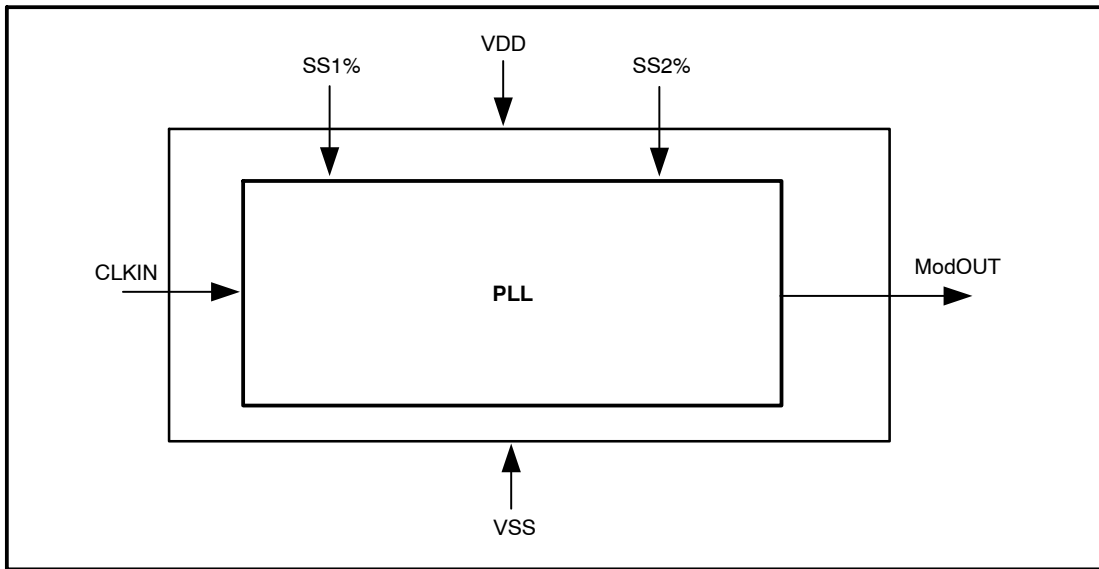


Figure 1. Block Diagram

Table 1. 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 <i>Frequency Deviation Selection Table</i> for details. Has an Internal pull-up resistor.
5	SS2%	I	Frequency Deviation Selection. Refer to <i>Frequency Deviation Selection Table</i> for details. Has an Internal pull-up resistor.
6	VDD	P	Power to entire chip.

Table 2. FREQUENCY DEVIATION SELECTION TABLE

SS2%	SS1%	Frequency Deviation
L	L	±1.50%
L	H	±1.25%
H	L	±0.75%
H	H	±1.00%

Table 3. 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

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

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Table 4. OPERATING CONDITIONS FOR 2.5 V AND 3.3 V 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	Commercial	0	+70	°C
		Industrial	-40	+85	
		Extended Industrial	-40	+105	
C _L	Load Capacitance		15	pF	

Table 5. DC ELECTRICAL CHARACTERISTICS FOR 2.5 V 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 = 2.5 V, I _{OL} = 8 mA)			0.6	V
V _{OH}	Output high voltage (VDD = 2.5 V, I _{OH} = -8 mA)	1.8			V
I _{DD}	Static supply current (Note 1)			4	mA
I _{CC}	Dynamic supply current, Unloaded Output		9	11	mA
V _{DD}	Operating voltage	2.375	2.5	2.625	V
t _{ON}	Power-up time (first locked cycle after power-up)			3	mS
C _{IN}	Input Capacitance		5		pF
Z _{OUT}	Output Impedance		40		Ω

1. CLKIN pin is pulled low.

Table 6. AC ELECTRICAL CHARACTERISTICS FOR 2.5 V SUPPLY

Symbol	Parameter	Min	Typ	Max	Unit
CLKIN	Input frequency	25		120	MHz
ModOUT	Output frequency	25		120	MHz
t _{LH} (Note 2)	Output rise time (measured from 0.7 V to 1.7 V)		2	2.7	nS
t _{HL} (Note 2)	Output fall time (measured from 1.7 V to 0.7 V)		1	1.5	nS
t _{JC}	Jitter (Cycle-to-cycle)		±250	±300	pS
t _D	Output duty cycle	40	50	60	%

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

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Table 7. DC ELECTRICAL CHARACTERISTICS FOR 3.3 V SUPPLY

Symbol	Parameter	Min	Typ	Max	Unit
V _{IL}	Input low voltage	VSS – 0.3		0.8	V
V _{IH}	Input high voltage	2.0		VDD + 0.3	V
I _{IL}	Input low current			–35	μA
I _{IH}	Input high current			35	μA
V _{OL}	Output low voltage (VDD = 3.3 V, I _{OL} = 8 mA)			0.4	V
V _{OH}	Output high voltage (VDD = 3.3 V, I _{OH} = –8 mA)	2.5			V
I _{DD}	Static supply current (Note 3)			4.5	mA
I _{CC}	Dynamic supply current, Unloaded Output		11	14	mA
V _{DD}	Operating voltage	3.0	3.3	3.6	V
t _{ON}	Power-up time (first locked cycle after power-up)			3	mS
C _{IN}	Input Capacitance		5		pF
Z _{OUT}	Output Impedance		35		Ω

3. CLKIN pin is pulled low.

Table 8. AC ELECTRICAL CHARACTERISTICS FOR 3.3 V SUPPLY (Note 5)

Symbol	Parameter	Min	Typ	Max	Unit
CLKIN	Input frequency	25		120	MHz
ModOUT	Output frequency	25		120	MHz
t _{LH} (Note 4)	Output rise time (measured from 0.8 V to 2.0 V)		1.3	2	nS
t _{HL} (Note 4)	Output fall time (measured at 2.0 V to 0.8 V)		0.9	1.3	nS
t _{JC}	Jitter (Cycle-to-cycle)		±225	±300	pS
t _D	Output duty cycle	45	50	55	%

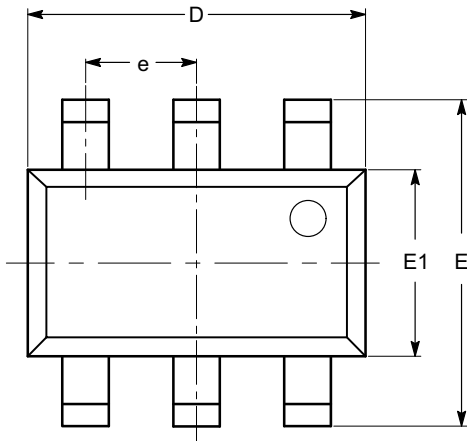
4. t_{LH} and t_{HL} are measured into a capacitive load of 15 pF.

5. All parameters are at an Extended Industrial temperature range unless otherwise stated.

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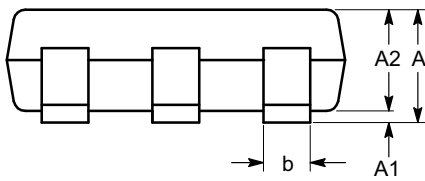
PACKAGE DIMENSIONS

TSOT-23, 6 LEAD
CASE 419AF-01
ISSUE O

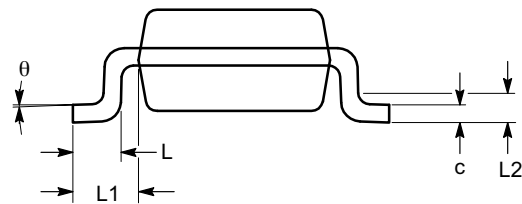


TOP VIEW

SYMBOL	MIN	NOM	MAX
A			1.00
A1	0.01	0.05	0.10
A2	0.80	0.87	0.90
b	0.30		0.45
c	0.12	0.15	0.20
D	2.90 BSC		
E	2.80 BSC		
E1	1.60 BSC		
e	0.95 TYP		
L	0.30	0.40	0.50
L1	0.60 REF		
L2	0.25 BSC		
θ	0°		8°



SIDE VIEW



END VIEW

Notes:


- (1) All dimensions are in millimeters. Angles in degrees.
- (2) Complies with JEDEC MO-193.

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Table 9. ORDERING INFORMATION

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
PCS3E6200AG-06JR	AC5LL	6-Pin TSOT-26, TAPE & REEL, Green	Extended Industrial

* LL = 2 Character LOT #

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