Features

- FCC approved method of EMI attenuation
- Generates a low EMI spread spectrum and a nonspread reference signal of the input clock frequency
- Optimized for input frequency range from 20 to 32 MHz
- Internal loop filter minimizes external components and board space
- Two selectable spread ranges
- Low inherent cycle-to-cycle jitter
- 3.3 V or 5 V operating voltage
- CMOS/TTL compatible inputs and outputs
- Ultra low power CMOS design: 5.50 mA @3.3 V
- Supports notebook VGA and other LCD timing controller applications
- SSON pin for Spread Spectrum On/Off and Standby Mode controls
- Available in 8-pin SOIC and TSSOP

Product Description

The P2560B is a versatile spread spectrum frequency modulator designed specifically for a wide range of clock frequencies. It reduces electromagnetic interference

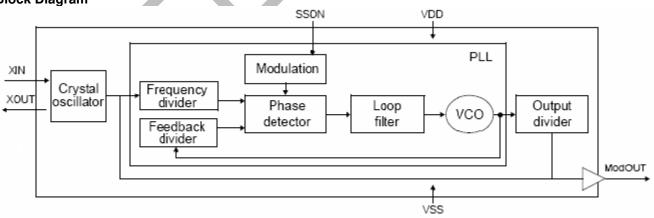
(EMI) at the clock source allowing system-wide reduction of EMI of downstream clock and data dependent signals. It allows significant system cost savings by reducing the number of circuit board layers and shielding traditionally required to pass EMI regulations.

The P2560B modulates the output of a single PLL in order to spread the bandwidth of a synthesized clock, thereby decreasing the peak amplitudes of its harmonics. This results in significantly lower system EMI compared to the typical narrow band signal produced by oscillators and most clock generators. Lowering EMI by increasing a signal's bandwidth is called spread spectrum clock generation.

The P2560B uses the most efficient and optimized modulation profile approved by the FCC and is implemented by using a proprietary all-digital method.

Applications

The P2560B is targeted toward the notebook VGA chip and other displays using an LVDS interface, PC peripheral devices, and embedded systems



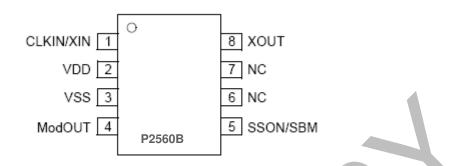
Block Diagram

Alliance Semiconductor

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November 2003

rev 1.0 Pin Configuration



Standby Mode Selection

CLKIN	SSON/SBM	Spread Spectrum	ModOUT	PLL	Mode
Disabled	0	N/A	Disabled	Disabled	Standby
Disabled	1	N/A	Disabled	Free running	Free running
Enabled	0	Off	Reference	Disabled	Buffer out
Enabled	1	On	Normal	Normal	Normal

Spread Range Selection, VDD = 3.3 V

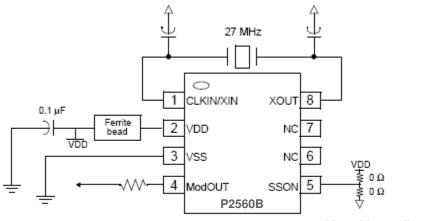
CLKIN frequency	Spreading range	Modulation rate
20 MHz	±1.16%	
25 MHz	±1.13%	
27 MHz	±1.11%	(CLKIN/10) * 20.83 kHz
30 MHz	±1.0%	
32 MHz	±1.0%	

Pin Description

Pin#	Pin Name	Туре	Description
1	XIN/CLK	-	Crystal connection or external reference frequency input. This pin has dual functions. It can be connected to either an external crystal or an external reference clock.
2	хоит	0	Crystal connection. If using an external reference, this pin must be left unconnected.
3	DIV2		Digital logic input used to select normal output mode or divide-by-2 output mode. When this pin is HIGH, the frequency of the output clock is the same as the input clock frequency. When it is tied LOW, the output frequency is half the input clock frequency. This pin has an internal pull-up resistor.
4	VSS	Р	Ground to entire chip.
5	SR0	I	Digital logic input used to select Spreading Range (Refer Spread Deviation Table). This pin has an internal pull-up resistor.
6	SSON#	I	Digital logic input used to enable Spread Spectrum function (Active LOW). Spread Spectrum function enabled when LOW, disabled when HIGH. This pin has an internal pull-low resistor.
7	MODOUT	0	Spread spectrum low EMI output.
8	VDD	Р	Power supply for the entire chip (5V).



Schematic for Notebook VGA Application



Use either pull-up or pull-down resistors with 0 $\Omega_{\rm \cdot}$

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Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
V_{DD}, V_{IN}	Voltage on any pin with respect to GND	-0.5 to +7.0	V
T _{STG}	Storage temperature	-65 to +125	°C
T _A	Operating temperature	0 to +70	°C

DC Electrical Characteristics

Symbol	Para	imeter	Min	Тур	Max	Unit
V _{IL}	Input low voltage		GND - 0.3		0.8	V
V _{IH}	Input high voltage		2.0	-	VDD + 0.3	
I _{IL}	Input low current (pull-up SSON/SBM)	resistor on inputs SR0 and	_		-35	μA
I _{IH}	Input high current		-	-	35	μA
l	XOUT output low	at 0.4 V, V _{DD} = 3.3V	-	3	-	mA
I _{XOL}	current	at 0.4 V, V_{DD} = 5.0 V	-	20	—	mA
I	XOUT output high	at 2.5 V, V _{DD} = 3.3 V	-	3	—	mA
I _{XOH}	current	at 4.5 V, V _{DD} = 5.0 V	—	20	—	mA
V	V _{OL} Output low voltage	V_{DD} = 3.3 V, I_{OL} = 20 mA	-	-	0.4	V
VOL		V _{DD} = 5.0 V, I _{OL} = 20 mA	-	-	—	V
V	Output high voltage	V_{DD} = 3.3 V, I_{OL} = 20 mA	2.5	-	—	V
V _{OH}	Output high voltage	V_{DD} = 5.0 V, I_{OL} = 20 mA	4.5	-	—	V
I _{DD}	Static supply current stan	dby mode	_	0.6	_	mA
		Normal mode:	fIN-min	fIN-typ	fIN-max	
I _{CC}	Dynamic supply current	3.3 V and 10 pF loading	3.2	_	7.0	mA
		5.0 V and 10 pF loading	6.2	_	13.6	mA
V _{DD}	Operating voltage		2.7	3.3	5.5	V
t _{on}	Power-up time (first locke	-	0.18	_	mS	
Z _{OUT}	Clock output impedance		-	50	_	Ω

AC Electrical Characteristics

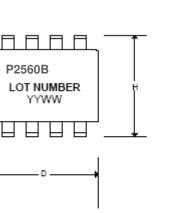
Symbol		Min	Тур	Max	Unit	
f _{IN}	Input frequency	Input frequency			32	MHz
fout	Output frequency		20	-	32	MHz
t., 1	t _{i H} 1 Output rise time	Measured at 0.8 V to 2.0 V	0.7	0.9	1.1	ns
t _{LH} 1 Output	Output lise time	Measured at 1.2 V to 3.75 V		0.75	-	ns
+ 1	Output fall time	Measured at 2.0 V to 0.8 V	0.6	0.8	1.0	ns
t _{HL} 1		Measured at 1.2 V to 3.75 V	-	0.75	-	ns
t _{JC}	Jitter (cycle to cycle)		-	-	360	ps
t⊳	Output duty cycle	Output duty cycle		50	55	%

MILLIMETERS

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Package Information



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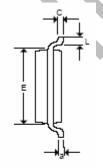
8-Pin SOIC

8-Pin TSSOP

SYMBOL

	MIN	NOR	MAX	MIN	NOR	MAX	
Α	0.057	0.064	0.071	1.45	1.63	1.80	
A1	0.004	0.007 <	0.010	0.10	0.18	0.25	
A2	0.053	0.061	0.069	1.35	1.55	1.75	
В	0.012	0.016	0.020	0.31	0.41	0.51	
С	0.004	0.006	0.010	0.10	0.15	0.25	
D	0.186	0.194	0.202	4.72	4.92	5.12	
E	0.148	0.156	0.164	3.75	3.95	4.15	
е	0.050	BSC	1.27	BSC			
н	0.224	0.236	0.248	5.70	6.00	6.30	
L	0.012	0.020	0.028	0.30	0.50	0.70	
a	0°	5°	8°	0°	5°	8°	
	Note: Controlling dimensions are millimeters. SOIC - 0.074 grams unit weight						

INCHES

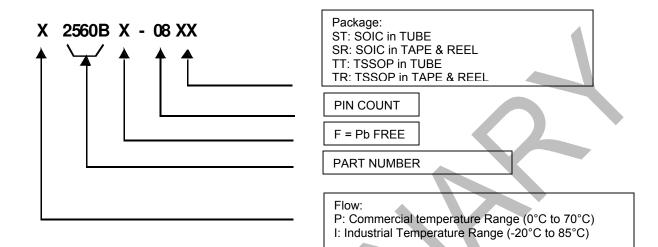


SYMBOL	INCHES			MILLIMETERS		
	MIN	NOR	МАХ	MIN	NOR	МАХ
Α	_	_	0.047	1	_	1.10
A1	0.002	-	0.006	0.05	-	0.15
A2	0.031	0.039	0.041	0.80	1.00	1.05
В	0.007	_	0.012	0.19	_	0.30
С	0.004	_	0.008	0.09	_	0.20
D	0.114	0.118	0.122	2.90	3.00	3.10
E	0.169	0.173	0.177	4.30	4.40	4.50
е	0.026	BSC	0.65	BSC		
Н	0.244	0.252	0.260	6.20	6.40	6.60
L	0.018	0.024	0.030	0.45	0.60	0.75
а	0°	-	8°	0°	-	8°
Note: Controlling dimensions are millimeters. TSSOP - 0.034 grams unit weight						



rev 1.0

Ordering Information



Examples

Ordering Code	Package Type	Operating Range
P2560B-08ST	8-pin 150mil SOIC	Commercial
I2560B-08SR	8-pin SOIC T&R	Industrial
P2560BF-08ST	8-pin TSSOP Tube	Commercial
I2560BF-08SR	8-pin TSSOP T&R	Industrial



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