Features

- FCC approved method of EMI attenuation.
- Generates a 1X low EMI spread spectrum clock of the input frequency.
- Input frequency range: 20MHz –34MHz.
- Internal loop filter minimizes external components and board space.
- Frequency deviation: -1.5%
- Low inherent cycle-to-cycle jitter.
- 3.3V operating voltage.
- TTL or CMOS compatible inputs and outputs.
- Ultra-low power CMOS design.
  - TBD mA @ 3.3V, 25MHz
  - TBD mA @ 3.3V, 31MHz
- Pinout compatible with Cypress CY25811. Products are available for industrial temperature range.
- Available in 8-pin SOIC and TSSOP.

Product Description

The ASM3P5821A is a versatile spread spectrum frequency modulator designed specifically for input clock frequencies in the range of 20MHz – 34MHz. The ASM3P5821A can generate an EMI reduced clock from crystal, ceramic resonator, or system clock. The ASM3P5821A offers a percentage deviation of –1.5%.

The ASM3P5821A reduces electromagnetic interference (EMI) at the clock source, allowing system wide reduction of EMI of down stream clock and data dependent signals. The ASM3P5821A allows significant system cost savings by reducing the number of circuit board layers ferrite beads, shielding and other passive components that are traditionally required to pass EMI regulations.

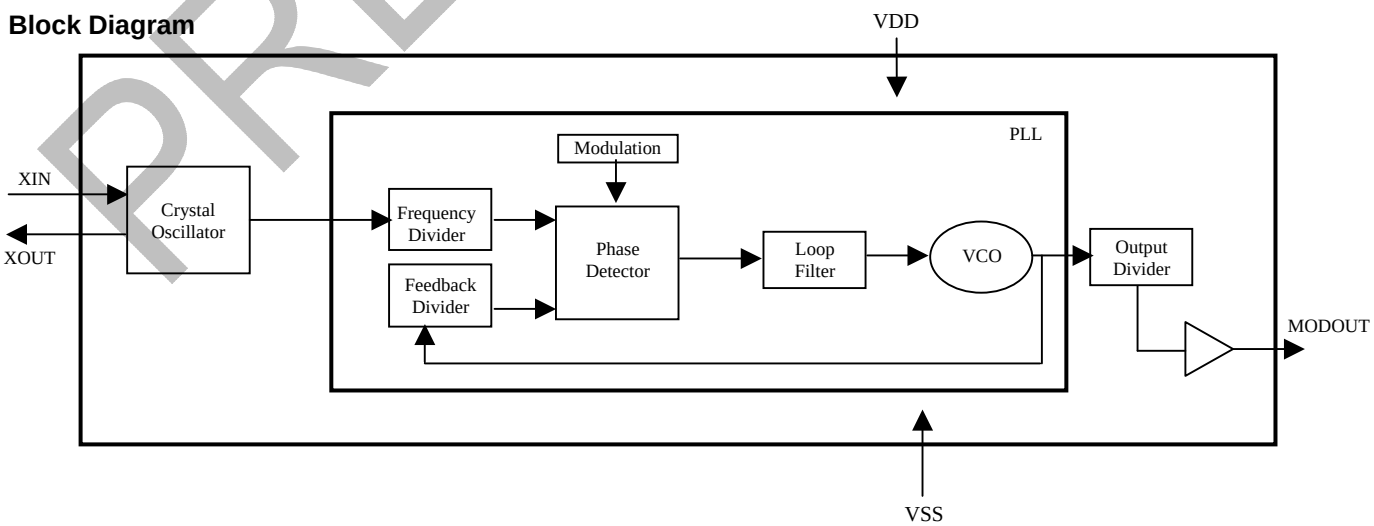
The ASM3P5821A uses the most efficient and optimized modulation profile approved by the FCC and is implemented in a proprietary all digital method.

The ASM3P5821A modulates the output of a single PLL in order to "spread" the bandwidth of a synthesized clock, and more importantly, decreases 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 frequency generators. Lowering EMI by increasing a signal's bandwidth is called 'spread spectrum clock generation'.

Applications

The ASM3P5821A is targeted towards EMI management for high speed digital applications such as PC peripheral devices, consumer electronics and embedded controller systems.

Block Diagram



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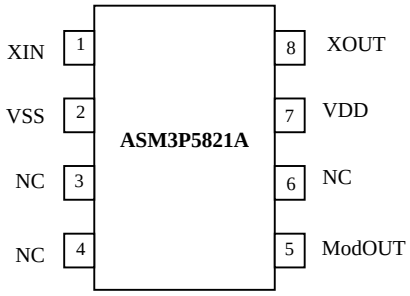
Pin Configuration



Pin Description

Pin#	Pin Name	Type	Description
1	XIN	I	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	VSS	P	Ground to entire chip.
3	NC		No Connect.
4	NC		No Connect.
5	MODOUT	O	Spread spectrum low EMI output.
6	NC		No Connect.
7	VDD	P	Power supply for the entire chip (3.3V).
8	XOUT	O	Crystal connection. If using an external reference clock, this pin must be left unconnected.

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Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
VDD, 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
Note: These are stress ratings only and functional operation is not implied. Exposure to absolute maximum ratings for extended periods may affect device reliability.			

DC Electrical Characteristics

Symbol	Parameter	Min	Typ	Max	Unit
V_{IL}	Input low voltage	GND – 0.3	-	TBD	V
V_{IH}	Input high voltage	TBD	-	V_{DD} + 0.3	V
I_{IL}	Input low current		TBD		µA
I_{IH}	Input high current		TBD		µA
I_{XOL}	XOUT output low current (@0.4V, V_{DD}=3.3V)		TBD		mA
I_{XOH}	XOUT output high current (@ 2.5V, V_{DD}=3.3V)		TBD		mA
V_{OL}	Output low voltage (V_{DD} = 3.3V, I_{OL} = 4mA)		TBD		V
V_{OH}	Output high voltage (V_{DD} = 3.3V, I_{OH} = 4mA)		TBD		V
I_{CC}	Dynamic supply current normal mode (3.3V and 10pF loading)		TBD		mA
I_{DD}	Static supply current standby mode				µA
V_{DD}	Operating voltage	TBD	3.3	TBD	V
t_{ON}	Power up time (first locked clock cycle after power up)	-	TBD	-	mS
Z_{OUT}	Clock out impedance	-	TBD	-	Ω

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AC Electrical Characteristics

Symbol	Parameter	Min	Typ	Max	Unit
XIN	Input frequency	20	25/31	34	MHz
MODOUT	Output frequency	20	25/31	34	MHz
t_{LH}*	Output rise time (measured at 0.8V to 2.0V)				ns
t_{HL}*	Output fall time (measured at 2.0V to 0.8V)				ns
t_{JC}	Jitter (cycle to cycle)	-	-	TBD	ps
t_D	Output duty cycle	-	TBD	-	%

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

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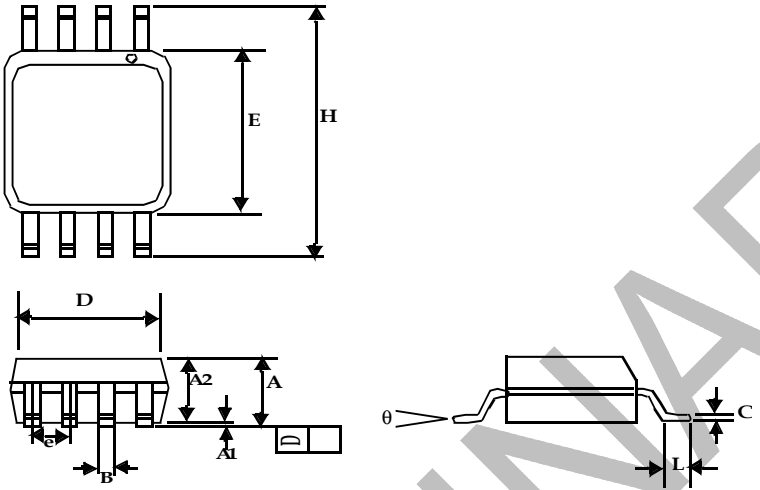
Package Information

8-Pin SOIC



Symbol	Dimensions in inches		Dimensions in millimeters	
	Min	Max	Min	Max
A	0.057	0.071	1.45	1.80
A1	0.004	0.010	0.10	0.25
A2	0.053	0.069	1.35	1.75
B	0.012	0.020	0.31	0.51
C	0.004	0.01	0.10	0.25
D	0.186	0.202	4.72	5.12
E	0.148	0.164	3.75	4.15
e	0.050 BSC		1.27 BSC	
H	0.224	0.248	5.70	6.30
L	0.012	0.028	0.30	0.70
□	0°	8°	0°	8°

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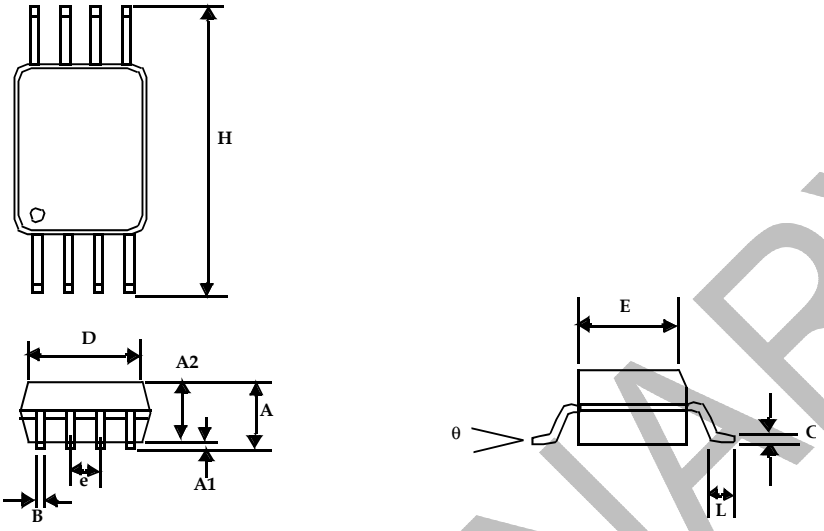
8-Pin TSSOP



	Dimensions in inches		Dimensions in millimeters	
Symbol	Min	Max	Min	Max
A	0.047			1.10
A1	0.002	0.006	0.05	0.15
A2	0.031	0.041	0.80	1.05
B	0.007	0.012	0.19	0.30
C	0.004	0.008	0.09	0.20
D	0.114	0.122	2.90	3.10
E	0.169	0.177	4.30	4.50
e	0.026 BSC		0.65 BSC	
H	0.244	0.260	6.20	6.60
L	0.018	0.030	0.45	0.75
θ	0°	8°	0°	8°

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