PulseCore

Giving you the edge

Low Frequency Timing-Safe™ Peak EMI reduction IC

General Features

- Low Frequency Clock distribution with Timing-Safe™ Peak EMI Reduction
- Input frequency range: 4MHz - 20MHz
- Zero input - output propagation delay
- Low-skew outputs
  - Output-output skew less than 250pS
  - Device-device skew less than 700pS
- Less than 200pS cycle-to-cycle jitter
- Available in 16pin, 150mil SOIC, 4.4mm TSSOP (ASM3P622S00E/K), and in 8pin, 150 mil SOIC, 4.4mm TSSOP Packages (ASM3P622S00A/B/J)
- 3.3V Operation
- Industrial temperature range
- Advanced CMOS technology
- The First True Drop-in Solution

Functional Description

ASM3P622S00A/B/J/E/K is a versatile, 3.3V Zero-delay buffer designed to distribute low frequency Timing-Safe™ clocks with Peak EMI reduction. ASM3P622S00E/K accepts one reference input and drives out eight low-skew clocks. It is available in a 16pin Package. The ASM3P622S00A/B/J is the eight-pin version and accepts one reference input and drives out one low-skew clock.

All parts have on-chip PLLs that lock to an input clock on the XIN/CLKIN pin. The PLL feedback is on-chip and is obtained from the CLKOUT pad, internal to the device.

Multiple ASM3P622S00E/K devices can accept the same input clock and distribute it. In this case, the skew between the outputs of the two devices is guaranteed to be less than 700pS.

All outputs have less than 200pS of Cycle-to-cycle jitter. The input and output propagation delay is guaranteed to be less than ±350pS, and the output-to-output skew is guaranteed to be less than 250pS.

Refer **"**Spread Spectrum Control and Input-Output Skew Table**"** for deviations and Input-Output Skew for ASM3P622S00A/B/J and ASM3P622S00E/K devices

The ASM3P622S00A/B/J and ASM3P622S00E/K are available in two different packages, as shown in the ordering information table.

Block Diagram

rev 0.4
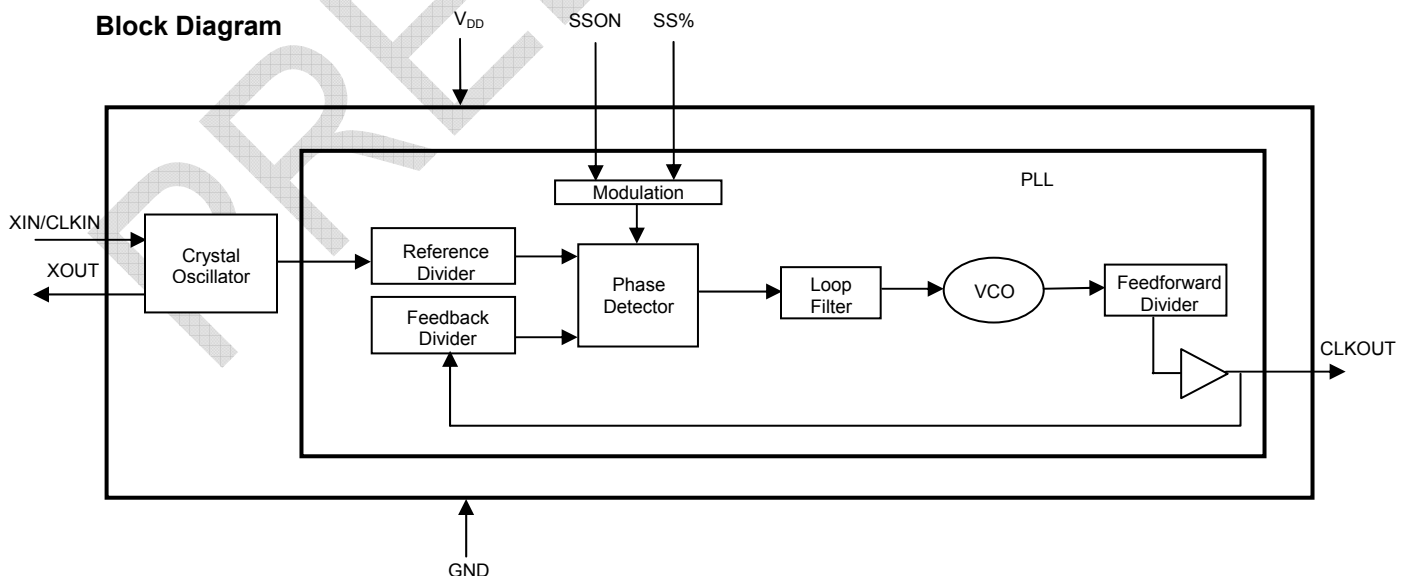
## Spread Spectrum Frequency Generation

The clocks in digital systems are typically square waves with a 50% duty cycle and as frequencies increase the edge rates also get faster. Analysis shows that a square wave is composed of fundamental frequency and harmonics. The fundamental frequency and harmonics generate the energy peaks that become the source of EMI. Regulatory agencies test electronic equipment by measuring the amount of peak energy radiated from the equipment. In fact, the peak level allowed decreases as the frequency increases. The standard methods of reducing EMI are to use shielding, filtering, multi-layer PCBs etc. These methods are expensive. Spread spectrum clocking reduces the peak energy by reducing the Q factor of the clock. This is done by slowly modulating the clock frequency. The ASM3P622S00A/B/J/E/K uses the center modulation spread spectrum technique in which the modulated output frequency varies above and below the reference frequency with a specified modulation rate. With center modulation, the average frequency is the same as the unmodulated frequency and there is no performance degradation

Timing-Safe™ technology

Timing-Safe™ technology is the ability to modulate a clock source with Spread Spectrum technology and maintain synchronization with any associated data path.

Pin Configuration

Notice: The information in this document is subject to change without notice.
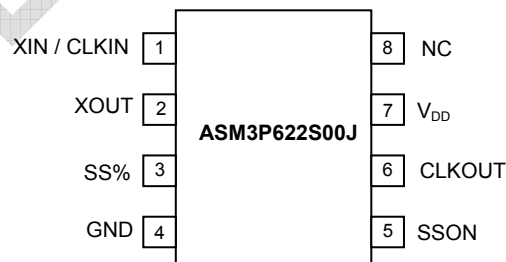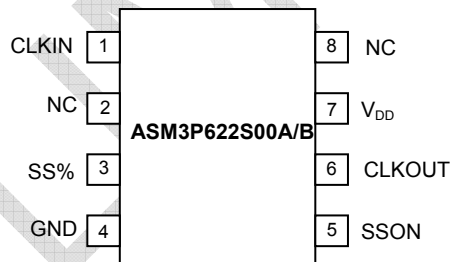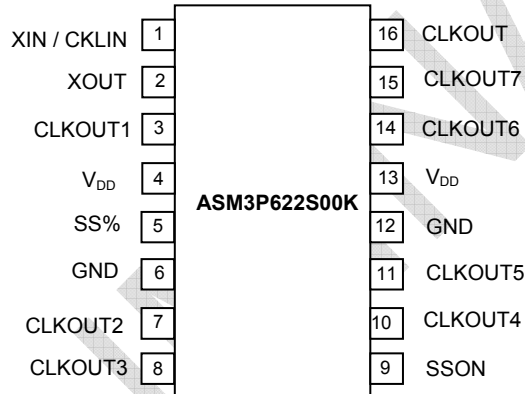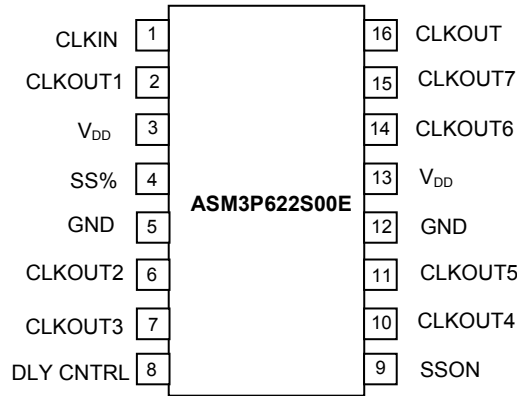
Pin Description for ASM3P622S00A/B

Pin #	Pin Name	Description
1	CLKIN	Input reference frequency, 5V tolerant input
2	NC	No Connect
3	SS%[2]	Spread Spectrum Selection
4	GND	Ground
5	SSON[2]	Spread Spectrum enable and disable option When SSON is HIGH, the spread spectrum is enabled and when LOW, it turns off the spread spectrum.
6	CLKOUT[1]	Buffered clock output
7	V_{DD}	3.3V supply
8	NC	No Connect

Notes: 1. Weak pull-down on all outputs
2. Weak pull-up on these Inputs
3. Buffered clock output is Timing-Safe™

Pin Description for ASM3P622S00J

Pin #	Pin Name	Description
1	XIN/CLKIN	Crystal connection or external reference frequency input. This pin has dual functions. It can be connected either to an external crystal or an external reference clock.
2	XOUT	Crystal connection. If using an external reference, this pin must be left unconnected.
3	SS%[2]	Spread Spectrum Selection
4	GND	Ground
5	SSON[2]	Spread Spectrum enable and disable option When SSON is HIGH, the spread spectrum is enabled and when LOW, it turns off the spread spectrum.
6	CLKOUT[1]	Buffered clock output
7	V_{DD}	3.3V supply
8	NC	No Connect

Notes: 1. Weak pull-down on all outputs
2. Weak pull-up on these Inputs
3. Buffered clock output is Timing-Safe™

Pin Description for ASM3P622S00E

Pin #	Pin Name	Description
1	CLKIN	Input reference frequency, 5V tolerant input
2	CLKOUT1[1]	Buffered clock output
3	V_{DD}	3.3V supply
4	SS%[2]	Spread Spectrum Selection
5	GND	Ground
6	CLKOUT2[1]	Buffered clock output
7	CLKOUT3[1]	Buffered clock output
8	DLY CNTRL	The pin is used to skew the outputs such that they align with the input. The skew is in the range of 100-200pS
9	SSON[3]	Spread Spectrum enable and disable option. When SSON is HIGH, the spread spectrum is enabled and when LOW, it turns off the spread spectrum.
10	CLKOUT4[1]	Buffered clock output
11	CLKOUT5[1]	Buffered clock output
12	GND	Ground
13	V_{DD}	3.3V supply
14	CLKOUT6[1]	Buffered clock output
15	CLKOUT7[1]	Buffered clock output
16	CLKOUT[1]	Buffered clock output

Notes: 1. Weak pull-down on all outputs
2. Weak pull-up on these Inputs
3. Buffered clock outputs are Timing-Safe™

Notice: The information in this document is subject to change without notice.

Pin Description for ASM3P622S00K

Pin #	Pin Name	Description
1	XIN/CLKIN	Crystal connection or external reference frequency input. This pin has dual functions. It can be connected either to an external crystal or an external reference clock.
2	XOUT	Crystal connection. If using an external reference, this pin must be left unconnected.
3	CLKOUT1[1]	Buffered clock output
4	V_{DD}	3.3V supply
5	SS%[2]	Spread Spectrum Selection
6	GND	Ground
7	CLKOUT2[1]	Buffered clock output
8	CLKOUT3[1]	Buffered clock output
9	SSON[2]	Spread Spectrum enable and disable option. When SSON is HIGH, the spread spectrum is enabled and when LOW, it turns off the spread spectrum.
10	CLKOUT4[1]	Buffered clock output
11	CLKOUT5[1]	Buffered clock output
12	GND	Ground
13	V_{DD}	3.3V supply
14	CLKOUT6[1]	Buffered clock output
15	CLKOUT7[1]	Buffered clock output
16	CLKOUT[1]	Buffered clock output

Notes: 1. Weak pull-down on all outputs
    2. Weak pull-up on these Inputs
    3. Buffered clock outputs are Timing-Safe™

Spread Spectrum Control and Input-Output Skew Table

Device	Input Frequency	SS %	Deviation	Input-Output Skew($\pm T_{SKEW}$)
ASM3P622S00A/B/J/E/K	12MHz	0	±0.25 %	0.063
		1	±0.50 %	0.125

Note: T_{SKEW} is measured in units of the Clock Period

Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
VDD	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 ASM3P622S00A/B/J/E/K Devices

Parameter	Description	Min	Max	Unit
VDD	Supply Voltage	3.0	3.6	V
T_A	Operating Temperature (Ambient Temperature)	-40	+85	°C
C_L	Load Capacitance		30	pF
C_{IN}	Input Capacitance		7	pF

Electrical Characteristics for ASM3P622S00A/B/J/E/K

Parameter	Description	Test Conditions	Min	Typ	Max	Unit
V_{IL}	Input LOW Voltage[1]				0.8	V
V_{IH}	Input HIGH Voltage[1]		2.0			V
I_{IL}	Input LOW Current	V_{IN} = 0V			50	µA
I_{IH}	Input HIGH Current	V_{IN} = VDD			100	µA
V_{OL}	Output LOW Voltage[2]	I_{OL} = 8mA			0.4	V
V_{OH}	Output HIGH Voltage[2]	I_{OH} = -8mA	2.4			V
I_{DD}	Supply Current	Unloaded outputs		15		mA
Z_o	Output Impedance			23		Ω

Note: 1. CLKIN input has a threshold voltage of VDD/2
2. Parameter is guaranteed by design and characterization. Not 100% tested in production

Switching Characteristics for ASM3P622S00A/B/J/E/K[1]

| Parameter	Description	Test Conditions	Min	Typ	Max	Unit
$1/t_1$	Output Frequency	30pF load	4		20	MHz
	Duty Cycle [2] = $(t_2 / t_1) * 100$	Measured at VDD/2	40	50	60	%
t_3	Output Rise Time [2]	Measured between 0.8V and 2.0V			2.5	nS
t_4	Output Fall Time [2]	Measured between 2.0V and 0.8V			2.5	nS
t_5	Output-to-output skew [2]	All outputs equally loaded			250	pS
t_6	Delay, CLKIN Rising Edge to CLKOUT Rising Edge [2]	Measured at VDD /2			±350	pS
t_7	Device-to-Device Skew [2]	Measured at VDD/2 on the CLKOUT pins of the device			700	pS
t_J	Cycle-to-cycle jitter [2]	Loaded outputs			200	pS
t_{LOCK}	PLL Lock Time [2]	Stable power supply, valid clock presented on CLKIN pin			1.0	mS

Note: 1. All parameters specified with loaded outputs.
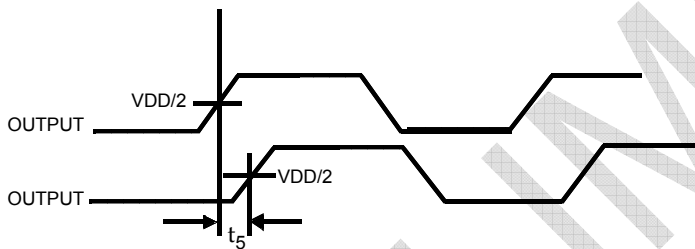2. Parameter is guaranteed by design and characterization. Not 100% tested in production

Notice: The information in this document is subject to change without notice.

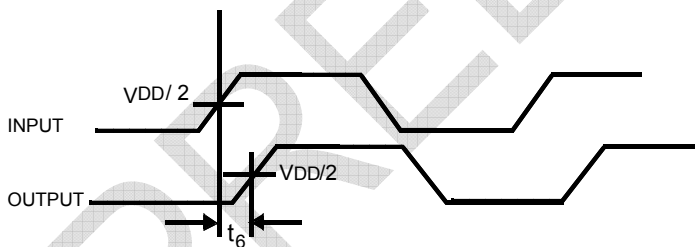**Switching Waveforms**

Duty Cycle Timing
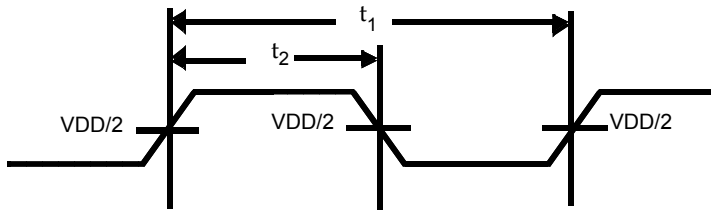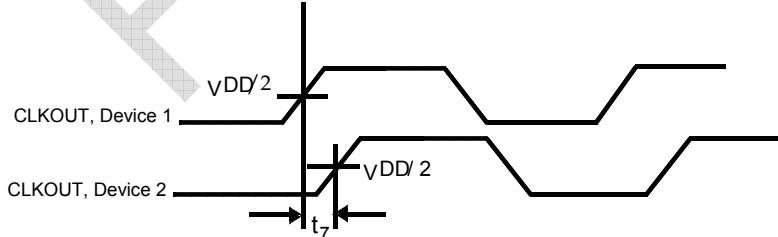

All Outputs Rise/Fall Time
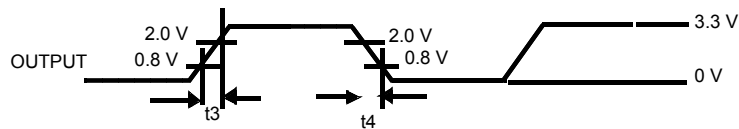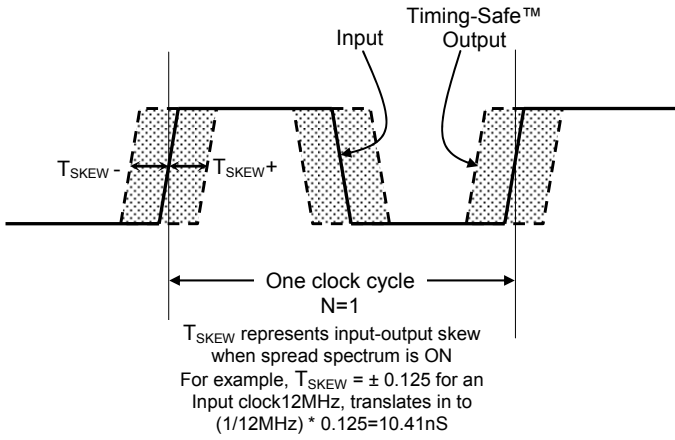

Output - Output Skew

Input - Output Propagation Delay

Device - Device Skew

Input-Output Skew

T$_{SKEW}$ represents input-output skew when spread spectrum is ON
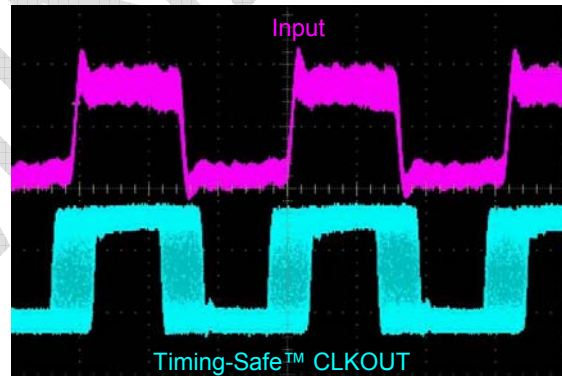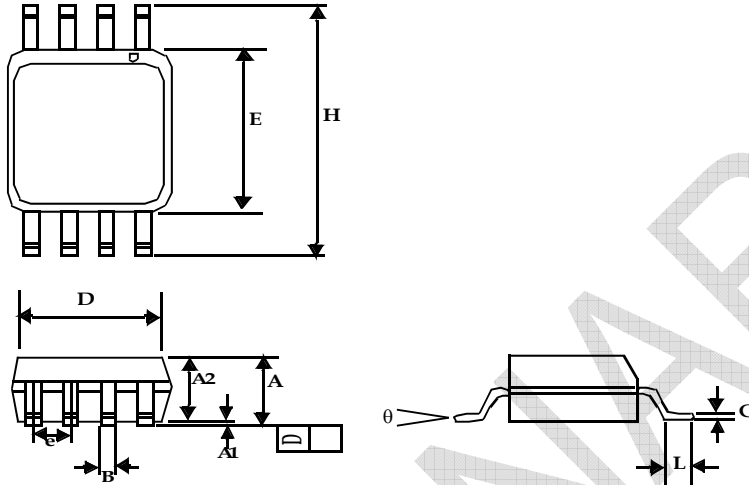For example, T$_{SKEW}$ = ± 0.125 for an Input clock12MHz, translates in to (1/12MHz) * 0.125=10.41nS

Test Circuit
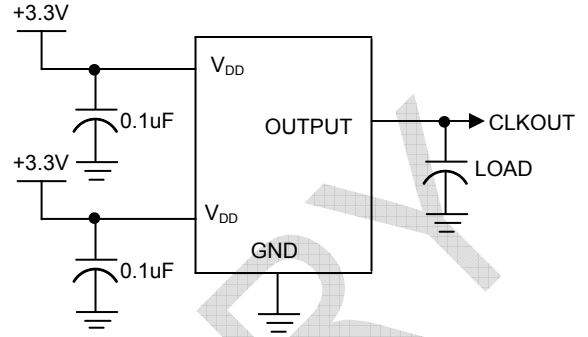
A Typical example of Timing-Safe™ waveform

Giving you the edge

Package Information

8-lead (150-mil) SOIC Package

Symbol	Dimensions			
	Inches		**Millimeters**	
	Min	**Max**	**Min**	**Max**
A1	0.004	0.010	0.10	0.25
A	0.053	0.069	1.35	1.75
A2	0.049	0.059	1.25	1.50
B	0.012	0.020	0.31	0.51
C	0.007	0.010	0.18	0.25
D	0.193 BSC		4.90 BSC	
E	0.154 BSC		3.91 BSC	
e	0.050 BSC		1.27 BSC	
H	0.236 BSC		6.00 BSC	
L	0.016	0.050	0.41	1.27
θ	0°	8°	0°	8°

Giving you the edge

8-lead TSSOP (4.40-MM Body)
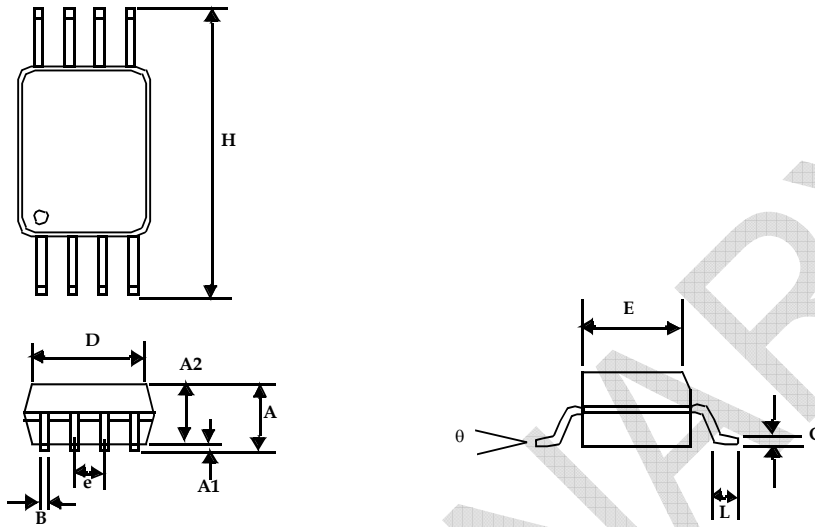
Symbol	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
A		0.043		1.10
A1	0.002	0.006	0.05	0.15
A2	0.033	0.037	0.85	0.95
B	0.008	0.012	0.19	0.30
c	0.004	0.008	0.09	0.20
D	0.114	0.122	2.90	3.10
E	0.169	0.177	4.30	4.50
e	0.026 BSC		0.65 BSC	
H	0.252 BSC		6.40 BSC	
L	0.020	0.028	0.50	0.70
θ	0°	8°	0°	8°

16-lead (150 Mil) Molded SOIC Package
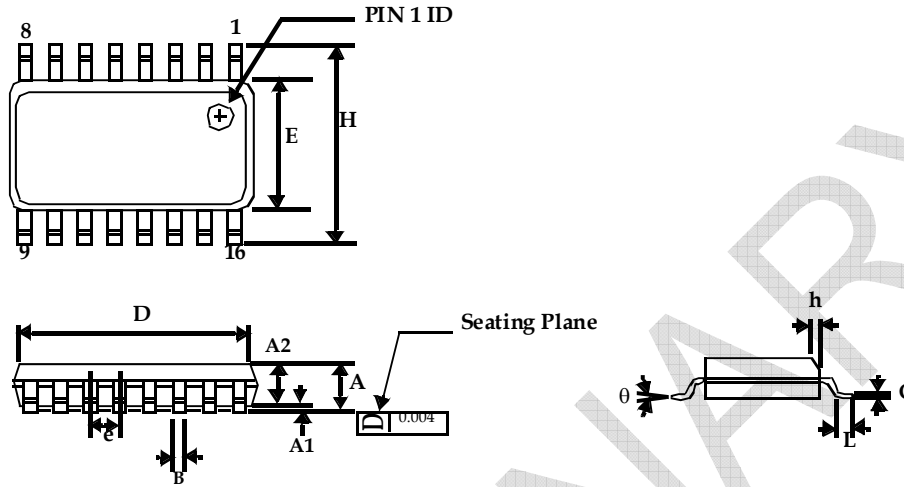
Symbol	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.053	0.069	1.35	1.75
A1	0.004	0.010	0.10	0.25
A2	0.049	0.059	1.25	1.50
B	0.013	0.022	0.33	0.53
C	0.008	0.012	0.19	0.27
D	0.386	0.394	9.80	10.01
E	0.150	0.157	3.80	4.00
e	0.050 BSC		1.27 BSC	
H	0.228	0.244	5.80	6.20
h	0.010	0.016	0.25	0.41
L	0.016	0.035	0.40	0.89
θ	0°	8°	0°	8°

Giving you the edge

16-lead TSSOP (4.40-MM Body)
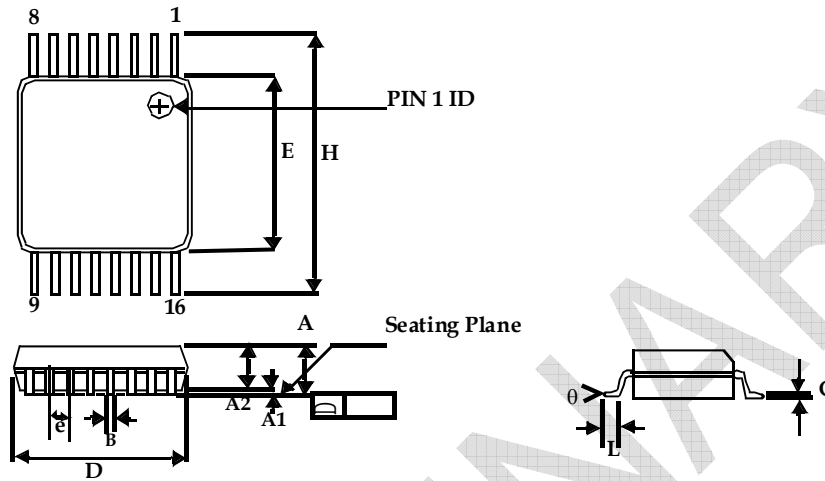
Symbol	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
A		0.043		1.20
A1	0.002	0.006	0.05	0.15
A2	0.031	0.041	0.80	1.05
B	0.007	0.012	0.19	0.30
C	0.004	0.008	0.09	0.20
D	0.193	0.201	4.90	5.10
E	0.169	0.177	4.30	4.50
e	0.026 BSC		0.65 BSC	
H	0.252 BSC		6.40 BSC	
L	0.020	0.030	0.50	0.75
θ	0°	8°	0°	8°

Ordering Codes

Ordering Code	Marking	Package Type	Temperature
ASM3P622S00AF-08-ST	3P622S00AF	8-pin 150-mil SOIC-TUBE, Pb Free	Commercial
ASM3I622S00AF-08-ST	3I622S00AF	8-pin 150-mil SOIC-TUBE, Pb Free	Industrial
ASM3P622S00AF-08-SR	3P622S00AF	8-pin 150-mil SOIC-TAPE & REEL, Pb Free	Commercial
ASM3I622S00AF-08-SR	3I622S00AF	8-pin 150-mil SOIC-TAPE & REEL, Pb Free	Industrial
ASM3P622S00AF-08-TT	3P622S00AF	8-pin 4.4-mm TSSOP - TUBE, Pb Free	Commercial
ASM3I622S00AF-08-TT	3I622S00AF	8-pin 4.4-mm TSSOP - TUBE, Pb Free	Industrial
ASM3P622S00AF-08-TR	3P622S00AF	8-pin 4.4-mm TSSOP - TAPE & REEL, Pb Free	Commercial
ASM3I622S00AF-08-TR	3I622S00AF	8-pin 4.4-mm TSSOP - TAPE & REEL, Pb Free	Industrial
ASM3P622S00BF-08-ST	3P622S00BF	8-pin 150-mil SOIC-TUBE, Pb Free	Commercial
ASM3I622S00BF-08-ST	3I622S00BF	8-pin 150-mil SOIC-TUBE, Pb Free	Industrial
ASM3P622S00BF-08-SR	3P622S00BF	8-pin 150-mil SOIC-TAPE & REEL, Pb Free	Commercial
ASM3I622S00BF-08-SR	3I622S00BF	8-pin 150-mil SOIC-TAPE & REEL, Pb Free	Industrial
ASM3P622S00BF-08-TT	3P622S00BF	8-pin 4.4-mm TSSOP - TUBE, Pb Free	Commercial
ASM3I622S00BF-08-TT	3I622S00BF	8-pin 4.4-mm TSSOP - TUBE, Pb Free	Industrial
ASM3P622S00BF-08-TR	3P622S00BF	8-pin 4.4-mm TSSOP - TAPE & REEL, Pb Free	Commercial
ASM3I622S00BF-08-TR	3I622S00BF	8-pin 4.4-mm TSSOP - TAPE & REEL, Pb Free	Industrial
ASM3P622S00JF-08-ST	3P622S00JF	8-pin 150-mil SOIC-TUBE, Pb Free	Commercial
ASM3I622S00JF-08-ST	3I622S00JF	8-pin 150-mil SOIC-TUBE, Pb Free	Industrial
ASM3P622S00JF-08-SR	3P622S00JF	8-pin 150-mil SOIC-TAPE & REEL, Pb Free	Commercial
ASM3I622S00JF-08-SR	3I622S00JF	8-pin 150-mil SOIC-TAPE & REEL, Pb Free	Industrial
ASM3P622S00JF-08-TT	3P622S00JF	8-pin 4.4-mm TSSOP - TUBE, Pb Free	Commercial
ASM3I622S00JF-08-TT	3I622S00JF	8-pin 4.4-mm TSSOP - TUBE, Pb Free	Industrial
ASM3P622S00JF-08-TR	3P622S00JF	8-pin 4.4-mm TSSOP - TAPE & REEL, Pb Free	Commercial
ASM3I622S00JF-08-TR	3I622S00JF	8-pin 4.4-mm TSSOP - TAPE & REEL, Pb Free	Industrial
ASM3P622S00EF-16-ST	3P622S00EF	16-pin 150-mil SOIC-TUBE, Pb Free	Commercial
ASM3I622S00EF-16-ST	3I622S00EF	16-pin 150-mil SOIC-TUBE, Pb Free	Industrial
ASM3P622S00EF-16-SR	3P622S00EF	16-pin 150-mil SOIC-TAPE & REEL, Pb Free	Commercial
ASM3I622S00EF-16-SR	3I622S00EF	16-pin 150-mil SOIC-TAPE & REEL, Pb Free	Industrial
ASM3P622S00EF-16-TT	3P622S00EF	16-pin 4.4-mm TSSOP - TUBE, Pb Free	Commercial
ASM3I622S00EF-16-TT	3I622S00EF	16-pin 4.4-mm TSSOP - TUBE, Pb Free	Industrial
ASM3P622S00EF-16-TR	3P622S00EF	16-pin 4.4-mm TSSOP - TAPE & REEL, Pb Free	Commercial
ASM3I622S00EF-16-TR	3I622S00EF	16-pin 4.4-mm TSSOP - TAPE & REEL, Pb Free	Industrial
ASM3P622S00KF-16-ST	3P622S00KF	16-pin 150-mil SOIC-TUBE, Green	Commercial

Ordering Codes (cont'd)

Ordering Code	Marking	Package Type	Temperature
ASM3I622S00KF-16-ST	3I622S00KF	16-pin 150-mil SOIC-TUBE, Green	Industrial
ASM3P622S00KF-16-SR	3P622S00KF	16-pin 150-mil SOIC-TAPE & REEL, Green	Commercial
ASM3I622S00KF-16-SR	3I622S00KF	16-pin 150-mil SOIC-TAPE & REEL, Green	Industrial
ASM3P622S00KF-16-TT	3P622S00KF	16-pin 4.4-mm TSSOP - TUBE, Green	Commercial
ASM3I622S00KF-16-TT	3I622S00KF	16-pin 4.4-mm TSSOP - TUBE, Green	Industrial
ASM3P622S00KF-16-TR	3P622S00KF	16-pin 4.4-mm TSSOP - TAPE & REEL, Green	Commercial
ASM3I622S00KF-16-TR	3I622S00KF	16-pin 4.4-mm TSSOP - TAPE & REEL, Green	Industrial
ASM3P622S00AG-08-ST	3P622S00AG	8-pin 150-mil SOIC-TUBE, Pb Free	Commercial
ASM3I622S00AG-08-ST	3I622S00AG	8-pin 150-mil SOIC-TUBE, Pb Free	Industrial
ASM3P622S00AG-08-SR	3P622S00AG	8-pin 150-mil SOIC-TAPE & REEL, Pb Free	Commercial
ASM3I622S00AG-08-SR	3I622S00AG	8-pin 150-mil SOIC-TAPE & REEL, Pb Free	Industrial
ASM3P622S00AG-08-TT	3P622S00AG	8-pin 4.4-mm TSSOP - TUBE, Pb Free	Commercial
ASM3I622S00AG-08-TT	3I622S00AG	8-pin 4.4-mm TSSOP - TUBE, Pb Free	Industrial
ASM3P622S00AG-08-TR	3P622S00AG	8-pin 4.4-mm TSSOP - TAPE & REEL, Pb Free	Commercial
ASM3I622S00AG-08-TR	3I622S00AG	8-pin 4.4-mm TSSOP - TAPE & REEL, Pb Free	Industrial
ASM3P622S00BG-08-ST	3P622S00BG	8-pin 150-mil SOIC-TUBE, Pb Free	Commercial
ASM3I622S00BG-08-ST	3I622S00BG	8-pin 150-mil SOIC-TUBE, Pb Free	Industrial
ASM3P622S00BG-08-SR	3P622S00BG	8-pin 150-mil SOIC-TAPE & REEL, Pb Free	Commercial
ASM3I622S00BG-08-SR	3I622S00BG	8-pin 150-mil SOIC-TAPE & REEL, Pb Free	Industrial
ASM3P622S00BG-08-TT	3P622S00BG	8-pin 4.4-mm TSSOP - TUBE, Pb Free	Commercial
ASM3I622S00BG-08-TT	3I622S00BG	8-pin 4.4-mm TSSOP - TUBE, Pb Free	Industrial
ASM3P622S00BG-08-TR	3P622S00BG	8-pin 4.4-mm TSSOP - TAPE & REEL, Pb Free	Commercial
ASM3I622S00BG-08-TR	3I622S00BG	8-pin 4.4-mm TSSOP - TAPE & REEL, Pb Free	Industrial
ASM3P622S00JG-08-ST	3P622S00JG	8-pin 150-mil SOIC-TUBE, Pb Free	Commercial
ASM3I622S00JG-08-ST	3I622S00JG	8-pin 150-mil SOIC-TUBE, Pb Free	Industrial
ASM3P622S00JG-08-SR	3P622S00JG	8-pin 150-mil SOIC-TAPE & REEL, Pb Free	Commercial
ASM3I622S00JG-08-SR	3I622S00JG	8-pin 150-mil SOIC-TAPE & REEL, Pb Free	Industrial
ASM3P622S00JG-08-TT	3P622S00JG	8-pin 4.4-mm TSSOP - TUBE, Pb Free	Commercial
ASM3I622S00JG-08-TT	3I622S00JG	8-pin 4.4-mm TSSOP - TUBE, Pb Free	Industrial
ASM3P622S00JG-08-TR	3P622S00JG	8-pin 4.4-mm TSSOP - TAPE & REEL, Pb Free	Commercial
ASM3I622S00JG-08-TR	3I622S00JG	8-pin 4.4-mm TSSOP - TAPE & REEL, Pb Free	Industrial
ASM3P622S00EG-16-ST	3P622S00EG	16-pin 150-mil SOIC-TUBE, Green	Commercial
ASM3I622S00EG-16-ST	3I622S00EG	16-pin 150-mil SOIC-TUBE, Green	Industrial
ASM3P622S00EG-16-SR	3P622S00EG	16-pin 150-mil SOIC-TAPE & REEL, Green	Commercial

Notice: The information in this document is subject to change without notice.

Ordering Codes (cont'd)

Ordering Code	Marking	Package Type	Temperature
ASM3I622S00EG-16-SR	3I622S00EG	16-pin 150-mil SOIC-TAPE & REEL, Green	Industrial
ASM3P622S00EG-16-TT	3P622S00EG	16-pin 4.4-mm TSSOP - TUBE, Green	Commercial
ASM3I622S00EG-16-TT	3I622S00EG	16-pin 4.4-mm TSSOP - TUBE, Green	Industrial
ASM3P622S00EG-16-TR	3P622S00EG	16-pin 4.4-mm TSSOP - TAPE & REEL, Green	Commercial
ASM3I622S00EG-16-TR	3I622S00EG	16-pin 4.4-mm TSSOP - TAPE & REEL, Green	Industrial
ASM3P622S00KG-16-ST	3P622S00KG	16-pin 150-mil SOIC-TUBE, Green	Commercial
ASM3I622S00KG-16-ST	3I622S00KG	16-pin 150-mil SOIC-TUBE, Green	Industrial
ASM3P622S00KG-16-SR	3P622S00KG	16-pin 150-mil SOIC-TAPE & REEL, Green	Commercial
ASM3I622S00KG-16-SR	3I622S00KG	16-pin 150-mil SOIC-TAPE & REEL, Green	Industrial
ASM3P622S00KG-16-TT	3P622S00KG	16-pin 4.4-mm TSSOP - TUBE, Green	Commercial
ASM3I622S00KG-16-TT	3I622S00KG	16-pin 4.4-mm TSSOP - TUBE, Green	Industrial
ASM3P622S00KG-16-TR	3P622S00KG	16-pin 4.4-mm TSSOP - TAPE & REEL, Green	Commercial
ASM3I622S00KG-16-TR	3I622S00KG	16-pin 4.4-mm TSSOP - TAPE & REEL, Green	Industrial

Device Ordering Information

A S M 3 P 6 2 2 S 0 0 B F - 0 8 - T R

R = Tape & Reel, T = Tube or Tray

O = SOT	U = MSOP
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   I= Industrial   P or n/c = Commercial
  (-40C to +125C)   (-40C to +85C)   (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

Licensed under US patent #5,488,627, #6,646,463 and #5,631,920.

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Note: This product utilizes US Patent # 6,646,463 Impedance Emulator Patent issued to PulseCore Semiconductor, dated 11-11-2003
Timing-Safe™ US Patent Pending.

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