

Input Select Decoding for PI6C2408 (-1, -1H, -4)

SEL2	SEL1	OUTA [1-4]	OUTB [1-4]	Output Source	PLL
0	0	3-State	3-State	PLL	OFF
0	1	PLL	3-State	PLL	ON
1	0	CLKIN	CLKIN	CLKIN	OFF
1	1	PLL	PLL	PLL	ON

Input Select Decoding for PI6C2408 (-2, -3)

SEL2	SEL1	OUTA [1-4]	OUTB [1-4]	Output Source	PLL
0	0	3-State	3-State	PLL	OFF
0	1	PLL	3-State	PLL	ON
1	0	CLKIN	CLKIN/2	CLKIN	OFF
1	1	PLL	PLL	PLL	ON

Input Select Decoding for PI6C2408-6

SEL2	SEL1	OUTA [1-4]	OUTB [1-4]	Output Source	PLL
0	0	3-State	3-State	PLL	OFF
0	1	CLKIN	CLKIN/2	CLKIN	OFF
1	0	PLL	PLL	PLL	ON
1	1	PLL	PLL/2	PLL	ON

PI6C2408 Configurations

Device	Feedback From	OUTA [1-4] Frequency	OUTB [1-4] Frequency
PI6C2408-1	OUTA or OUTB	CLKIN	CLKIN
PI6C2408-1H	OUTA or OUTB	CLKIN	CLKIN
PI6C2408-2	OUTA	CLKIN	CLKIN/2
PI6C2408-2	OUTB	2X CLKIN	CLKIN
PI6C2408-3	OUTA	2X CLKIN	CLKIN or $\overline{\text{CLKIN}}$ ⁽¹⁾
PI6C2408-3	OUTB	4X CLKIN	2X CLKIN
PI6C2408-4	OUTA or OUTB	2X CLKIN	2X CLKIN
PI6C2408-6	OUTA	CLKIN	CLKIN or CLKIN/2
PI6C2408-6	OUTB	CLKIN or 2X CLKIN	CLKIN

Note:

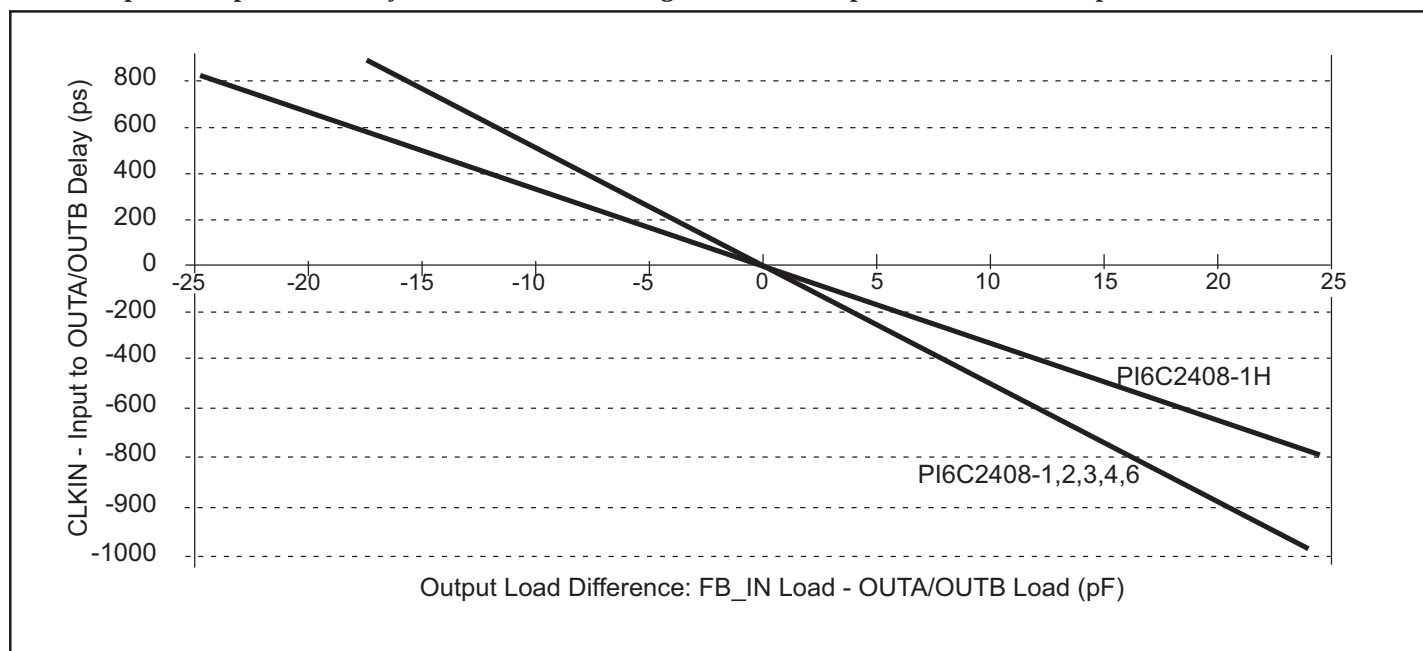
1. Output phase is indeterminant (0° or 180° from CLKIN)

Pin Description

Pin	Signal	Description
1	CLKIN	Input clock reference frequency (weak pull-down)
2, 3, 14, 15	OUTA[1-4]	Clock output, Bank A (weak pull-down)
4, 13	V _{DD}	3.3V supply
5, 12	GND	Ground
6, 7, 10, 11	OUTB[1-4]	Clock output, Bank B (weak pull-down)
8	SEL2	Select input, bit 2 (weak pull-up)
9	SEL1	Select input, bit 1 (weak pull-up)
16	FB_IN	PLL feedback input

Zero Delay and Skew Control

CLKIN Input to Output Bank Delay vs. Difference in Loading between FB_IN pin and OUTA/OUTB pins



The relationship between loading of the FB_IN signal and other outputs determines the input-output delay. Zero delay is achieved when all outputs, including feedback, are loaded equally.

Maximum Ratings

Supply Voltage to Ground Potential	-0.5V to +7.0V
DC Input Voltage (Except CLKIN)	-0.5V to V _{DD} + 0.5V
DC Input Voltage CLKIN	-0.5 to 7V
Storage Temperature	-65°C to +150°C
Maximum Soldering Temperature (10 seconds)	260°C
Junction Temperature	150°C
Static Discharge Voltage (per MIL-STD-883, Method 3015)	>2000V

Operating Conditions

Parameter	Description		Min.	Max.	Units
V _{DD}	Supply Voltage	Commercial	3.0	3.6	V
		Industrial	3.135	3.465	
T _A	Commerical Operating Temperature		0	70	°C
	Industrial Operating Temperature		−40	85	
C _L	Load Capacitance, below 100 MHz		—	30	pF
	Load Capacitance, from 100 MHz to 140MHz		—	15	
C _{IN}	Input Capacitance		—	7	

DC Electrical Characteristics for Industrial Temperature Devices

Parameter	Description	Test Conditions	Min.	Max.	Units
V _{IL}	Input LOW Voltage			0.8	V
V _{IH}	Input HIGH Voltage		2.0		
I _{IL}	Input LOW Current	V _{IN} = 0V		50.0	μA
I _{IH}	Input HIGH Current	V _{IN} = V _{DD}		100.0	
V _{OL}	Output LOW Voltage	I _{OL} = 8mA (−1, −2, −3, −4, −6); I _{OL} = 12mA (−1H)		0.4	V
V _{OH}	Output HIGH Voltage	I _{OH} = −8mA (−1, −2, −3, −4, −6); I _{OH} = −12mA (−1H)	2.4		
I _{DD} (PD mode)	Pwr Dwn Supply Current	SEL1 = 0 (−1, −2, −3, −4, −1H); SEL2 = 0 (−6)		25.0	μA
I _{DD}	Supply Current	Unloaded outputs 100 MHz, Select inputs at V _{DD} or GND		54.0	mA
				70.0 (−1H)	
		Unloaded outputs 66 MHz, CLKIN, except (−1H)		39.0	
		Unloaded outputs 33MHz, CLKIN, except (−1H)		20.0	

AC Electrical Characteristics for Industrial Temperature Devices

Parameters	Name	Test Conditions	Min.	Typ.	Max.	Units
F _O	Output Frequency	30pF load	10		100	MHz
		15pF load			140	
t _{DC}	Duty Cycle ⁽¹⁾ (-1, -2, -3, -4, -6)	Measured at V _{DD} /2, F _{OUT} <66.67MHz 30pF load	40	50	60	%
		Measured at V _{DD} /2, F _{OUT} <140 MHz 15pF load				
		Measured at V _{DD} /2, F _{OUT} <45 MHz 30pF load	45		55	
	Duty Cycle ⁽¹⁾ (-1H)	Measured at V _{DD} /2, F _{OUT} <66.67MHz 30pF load	45			
		Measured at V _{DD} /2, F _{OUT} <140 MHz 15pF load	40		60	
		Measured at V _{DD} /2, F _{OUT} <45MHz 30pF load	45		55	
t _R	Rise Time ⁽¹⁾ (-1, -2, -4, -6)	Measured between 0.8V and 2.0V, 30pF load			2.5	ns
		Measured between 0.8V and 2.0V, 15pF load			1.8	
	Rise Time ⁽¹⁾ (-1H)	Measured between 0.8V and 2.0V, 30pF load			1.6	
t _F	Fall Time ⁽¹⁾ (-1, -2, -4, -6)	Measured between 0.8V and 2.0V, 30pF load			2.2	
		Measured between 0.8V and 2.0V, 15pF load			1.5	
	Fall Time ⁽¹⁾ (-1H)	Measured between 0.8V and 2.0V, 30pF load			1.25	
t _{SK(O)}	Output to Output Skew ⁽¹⁾ within same Bank	All outputs equally loaded			250	ps
	Output Bank A to Output Bank B Skew ⁽¹⁾				400	
t ₀	Delay, CLKIN Rising Edge to FB_IN Rising Edge ⁽¹⁾	Measured at V _{DD} /2			900	
t _{SK(D)}	Device-to-Device Skew ⁽¹⁾	Measured at V _{DD} /2 on FB_IN pins of devices		0	500	
t _{SLEW}	Output Slew Rate ⁽¹⁾	Measured between 0.8V & 2.0V on -1H device using Test Crt #2	1			V/ns
t _{JIT}	Cycle-to-Cycle Jitter ⁽¹⁾ (-1, -1H, -4)	Measured at 66.67 MHz, loaded 30pF load			250	ps
		Measured at 140 MHz, loaded 15pF load			150	
	Cycle-to-Cycle Jitter ⁽¹⁾ (-2, -6)	Measured at 66.67 MHz, loaded 30pF load			400	
t _{LOCK}	PLL Lock Time ⁽¹⁾	Stable power supply, valid clocks presented on CLKIN and FB_IN pins			1.0	ms

Notes:

1. See Switching Waveforms on page 7.

DC Electrical Characteristics for Commercial Temperature Devices

Parameter	Description	Test Conditions	Min.	Max.	Units
V _{IL}	Input LOW Voltage	—	—	0.8	V
V _{IH}	Input HIGH Voltage	—	2.0	—	
I _{IL}	Input LOW Current	V _{IN} = 0V	—	50	μA
I _{IH}	Input HIGH Current	V _{IN} = V _{DD}	—	100	
V _{OL}	Output LOW Voltage	I _{OL} = 8mA (–1, –2, –3, –4, –6); I _{OL} = 12mA (–1H)	—	0.4	V
V _{OH}	Output HIGH Voltage	I _{OH} = –8mA (–1, –2, –3, –4, –6); I _{OH} = –12mA (–1H)	2.4	—	
I _{DD} (PD mode)	Power Down Supply Current	SEL1 = 0 (–1, –2, –3, –4, –1H); SEL2 = 0 (–6)	—	12	μA
I _{DD}	Supply Current	Unloaded outputs, 66.67 MHz, Select inputs at V _{DD} or GND	—	39	mA
I _{DD}	Supply Current	Unloaded outputs 100 MHz Select Inputs @ V _{DD} or GND	—	54	

AC Electrical Characteristics for Commercial Temperature Device

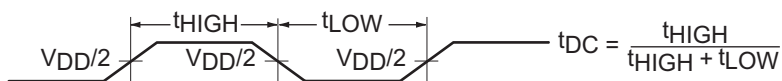
Parameters	Name	Test Conditions	Min.	Typ.	Max.	Units
F _O	Output Frequency	30pF load	10		100	MHz
		15pF load			140	
t _{DC}	Duty Cycle ⁽¹⁾ (–1H)	Measured at V _{DD} /2, for high drive output	45	50	55	%
	Duty Cycle (–1, –2, –3, –4, –6)	Measured at V _{DD} /2, for normal drive output	40	50	60	
t _R	Rise Time ⁽¹⁾ @30pF	Measured between 0.8V and 2.0V			2.5	ns
	Rise Time ⁽¹⁾ @15pF	Measured between 0.8V and 2.0V			1.8	
	Rise Time ⁽¹⁾ @30pF (–1H)	Measured between 0.8V and 2.0V			1.5	
t _F	Fall Time ⁽¹⁾ @30pF	Measured between 0.8V and 2.0V			2.2	ns
	Fall Time ⁽¹⁾ @15pF	Measured between 0.8V and 2.0V			1.5	
	Fall Time ⁽¹⁾ @30pF (–1H)	Measured between 0.8V and 2.0V			1.25	
t _{SK(O)}	Output-to-Output Skew ⁽¹⁾ within same bank	All outputs equally loaded, V _{DD} /2			250	ps
	Output Bank A to Output Bank B Skew	All outputs equally loaded, V _{DD} /2			400	
t ₀	Input-to-Output Delay, CLKIN Rising Edge to FB_IN Rising Edge ⁽¹⁾	Measured at V _{DD} /2			900	
t _{SK(D)}	Device to Device Skew ⁽¹⁾	Measured at V _{DD} /2 on FB_IN pins of devices		0	500	
t _{SLEW}	Output Slew Rate ⁽¹⁾	Measured between 0.8V and 2.0V on –1H device using Test Circuit #2	1			V/ns
t _{JIT}	Cycle-to-Cycle Jitter ⁽¹⁾ (–1, –1H, –4)	Measured at 66.67 MHz, loaded 30pF outputs			250	ps
		Measured at 140 MHz, loaded 15pF outputs			150	
	Cycle-to-Cycle Jitter ⁽¹⁾ (–2, –3, –6)	Measured at 66.7 MHz, loaded 30pF outputs			400	
t _{LOCK}	PLL Lock Time ⁽¹⁾	Stable power supply, valid clocks presented on CLKIN and FB_IN pins			1.0	ms

Notes:

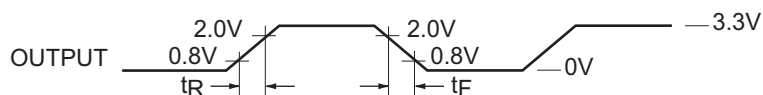
1. See Switching Waveforms on page 7.

Switching Waveforms

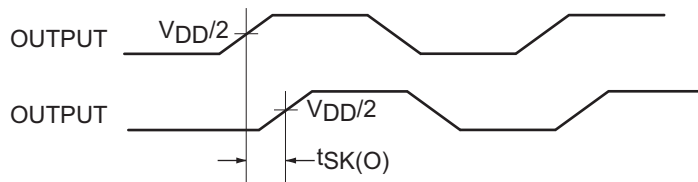
Duty Cycle Timing



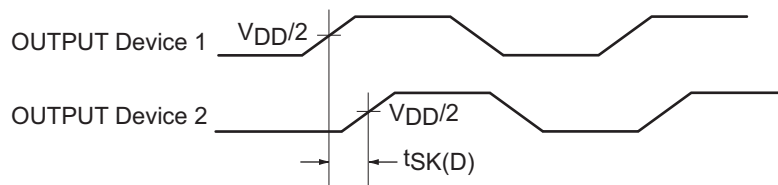
All Outputs Rise/Fall Time



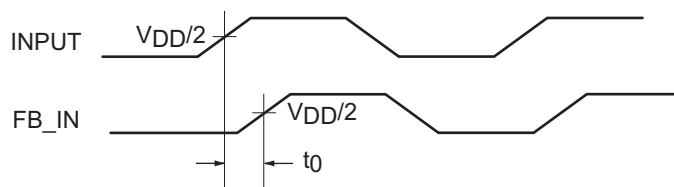
Output-Output Skew



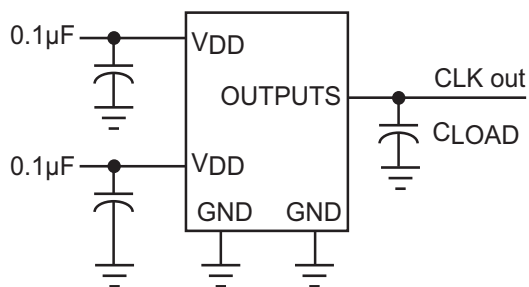
Device-Device Skew



Input-Output Propagation Delay

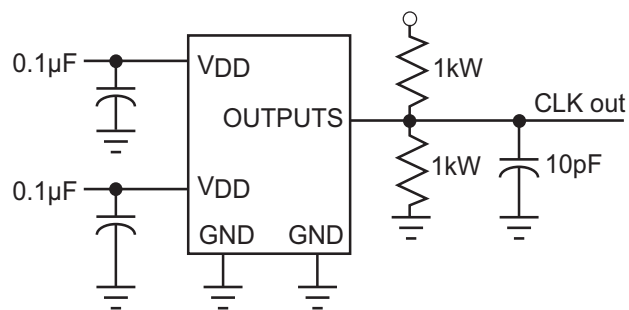


Test Circuit 1

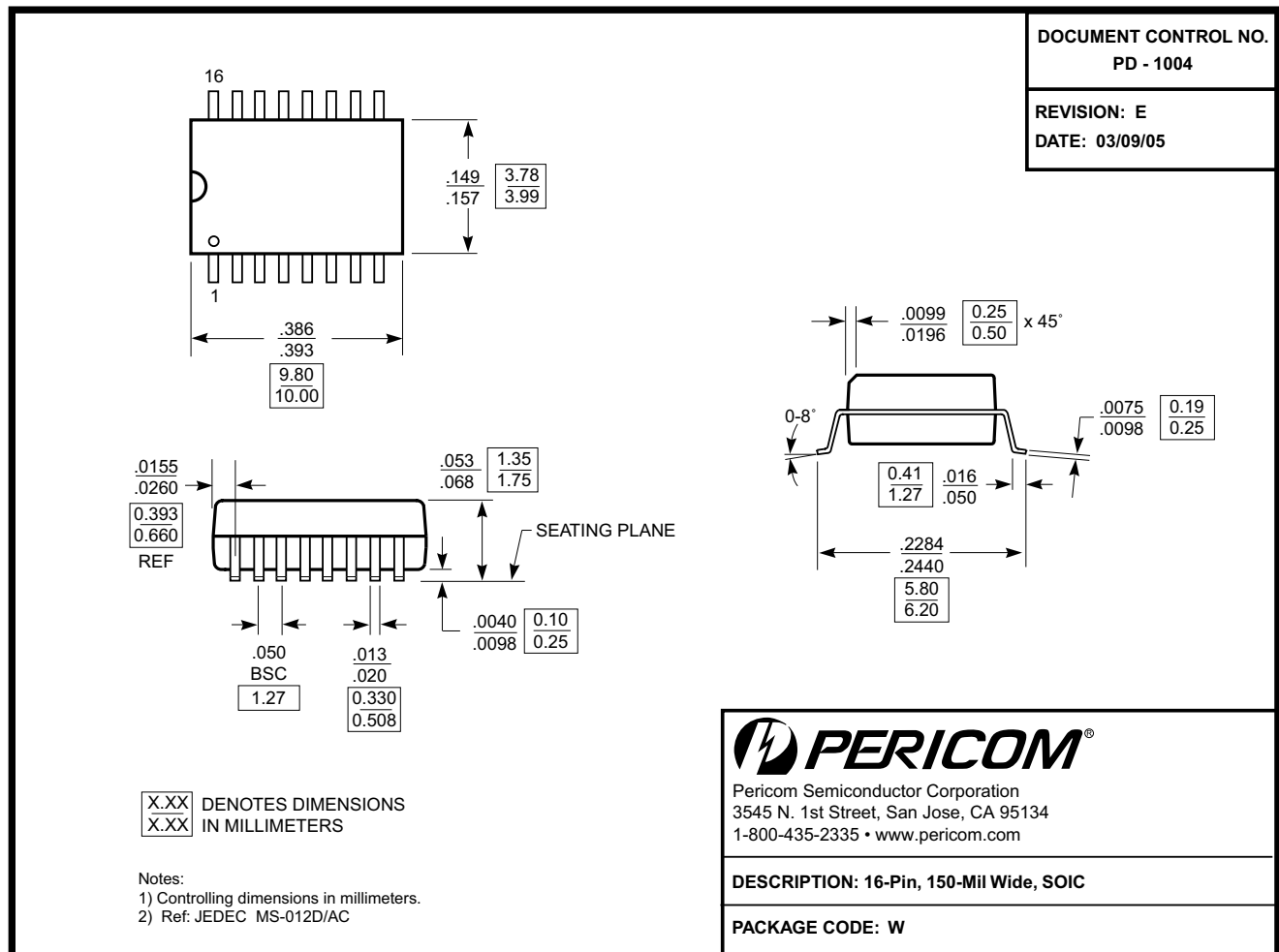


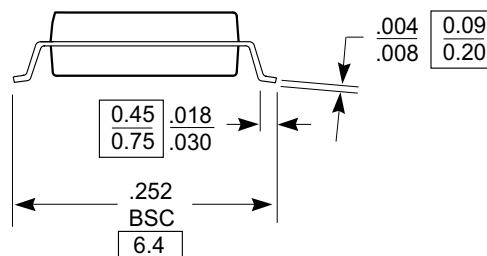
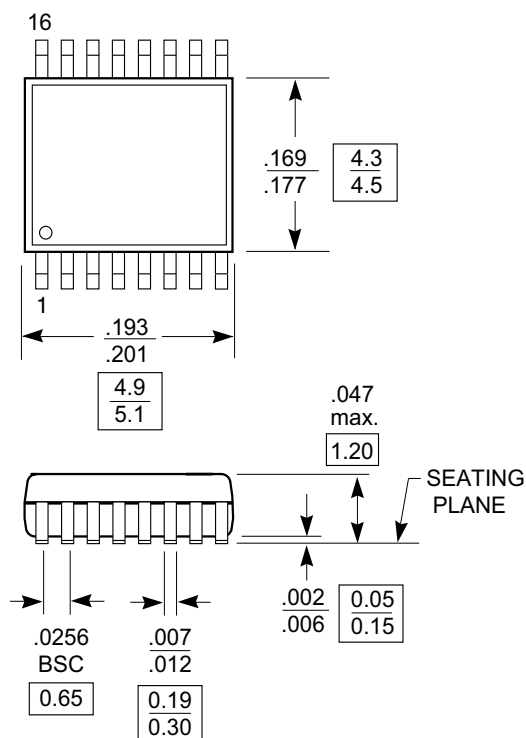
Test Circuit for all parameters except t_{SLEW}

Test Circuit 2



Test Circuit for t_{SLEW} , Output slew rate on -1H device

16-Pin SOIC (W) Package


16-Pin TSSOP (L) Package

Note:

1. Package Outline Exclusive of Mold Flash and Metal Burr
2. Controlling dimensions in millimeters
3. Ref: JEDEC MO-153F/AB

DOCUMENT CONTROL NO.
PD - 1310

REVISION: E
DATE: 03/09/05



Pericom Semiconductor Corporation
3545 N. 1st Street, San Jose, CA 95134
1-800-435-2335 • www.pericom.com

DESCRIPTION: 16-Pin, 173-Mil Wide, TSSOP

PACKAGE CODE: L

Ordering Information (Commercial Temperature Device)

Ordering Code	Package	Description	Operating Range
PI6C2408-1WE	W	Pb-free & Green, 16-pin 150-mil SOIC	Commercial
PI6C2408-1HWE	W	Pb-free & Green, 16-pin 150-mil SOIC	Commercial
PI6C2408-2WE	W	Pb-free & Green, 16-pin 150-mil SOIC	Commercial
PI6C2408-3W	W	16-pin 150-mil SOIC	Commercial
PI6C2408-3WE	W	Pb-free & Green, 16-pin 150-mil SOIC	Commercial
PI6C2408-4W	W	16-pin 150-mil SOIC	Commercial
PI6C2408-4WE	W	Pb-free & Green, 16-pin 150-mil SOIC	Commercial
PI6C2408-1WE	W	Pb-free & Green 16-pin 150-mil SOIC	Commercial
PI6C2408-1HWE	W	Pb-free & Green 16-pin 150-mil SOIC	Commercial
PI6C2408-1LE	L	Pb-free & Green, 16-pin 173-mil TSSOP	Commercial
PI6C2408-1HLE	L	Pb-free & Green, 16-pin 173-mil TSSOP	Commercial
PI6C2408-4LE	L	Pb-free & Green, 16-pin 173-mil TSSOP	Commercial
PI6C2408-1LE	L	Pb-free & Green 16-pin 173-mil TSSOP	Commercial
PI6C2408-1HLE	L	Pb-free & Green 16-pin 173-mil TSSOP	Commercial
PI6C2408-1HLEX	L	Pb-free & Green, 16-pin 173-mil TSSOP	Commercial

Ordering Information (Industrial Temperature Device)

Ordering Code	Package	Description	Operating Range
PI6C2408-1WIE	W	Pb-free & Green, 16-pin 150-mil SOIC	Industrial
PI6C2408-1HWIE	W	Pb-free & Green, 16-pin 150-mil SOIC	Industrial
PI6C2408-2WE	W	Pb-free & Green, 16-pin 150-mil SOIC	Commercial
PI6C2408-2WIE	W	Pb-free & Green, 16-pin 150-mil SOIC	Industrial
PI6C2408-3WIE	W	Pb-free & Green, 16-pin 150-mil SOIC	Industrial
PI6C2408-4WIE	W	Pb-free & Green, 16-pin 150-mil SOIC	Industrial
PI6C2408-1LI	L	16-pin 173-mil TSSOP	Industrial
PI6C2408-1LIE	L	Pb-free & Green, 16-pin 173-mil TSSOP	Industrial

Notes:

1. Thermal characteristics can be found on the company web site at www.pericom.com/packaging/
2. E = Pb-free and Green
3. Adding an X suffix = Tape/Reel