8-Bit LPT Characterization and Qualification Data

Features of Pericom Semiconductor's 0.6 Micron High-Speed CMOS Process

To achieve industry-leading speed grades and high reliability, Pericom Semiconductor's bus interface logic products are fabricated using advanced CMOS technology. Data in this application note is for Octal LPT only. Double-density 16-bit LPT data can be obtained by contacting the factory.

Process Features

- 0.6 micron CMOS process
- NMOS & PMOS LDD devices for reliability and low leakage
- High-speed, high-drive transistors which can work down to 0.55µm effective channel length
- Low capacitance and low resistance interconnect for high performance
- Fully planarized metal technology
- Barrier metal technology

Process Outline

- N well
- Island
- Field Implant
- N channel punchthrough
- Poly gate
- LDD mask suppression
- N+ Source/Drain
- P+ Source/Drain
- Contact
- Metal 1
- Metal via
- Metal 2
- Passivation

PI74LPT245 Characterization Data

Product Features:

- High speed (up to C speed)
- Lower ground bounce compared to FCT and LVT at the same speed

DC Electrical Characteristics

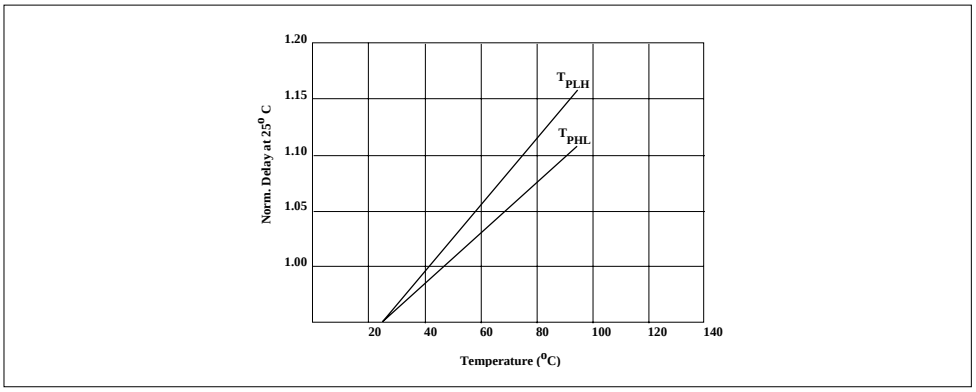
Parameters	Conditions	C Speed Spec	Data	
			25°C	Units
V_{OH}	V_{CC} = 3.0 mA I_{OH} = –24 mA	2.4 2.0	2.64 2.47	V V
V_{OL}	V_{CC} = 3.0 mA I_{OL} = 24 mA	— 0.50	— 0.186	V V
V_{IH}	V_{CC} = 3.3V	2.0	1.52	V
V_{IL}	V_{CC} = 3.3V	0.8	1.48	V
I_{IH}	V_{CC} = 3.6V V_{IN} = 5.5 V	1	0	µA
I_{IL}	V_{CC} = 3.6V V_{IN} = 0.0 V	–1	0	µA
V_{IK}	V_{CC} = 3.0V I_{IN} = 18 mA	–1.2	–0.778	V
I_{OS}	V_{CC} = 3.6V V_{OUT} = GND	–60	–87.8	mA

Power Supply Characteristics

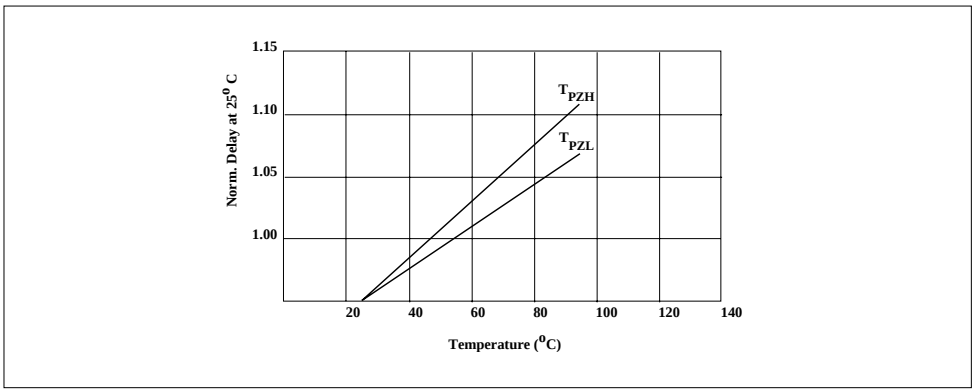
Parameters	Conditions	C Speed Spec	Data	
			25°C	Units
I_{CC}	V_{CC} = 3.6V V_{IN} = GND/V_{CC}	10	0	µA
ΔI_{CC}	V_{CC} = 3.6V V_{IN} = V_{CC} - 0.6V	30	0.6	µA

Switching Characteristics

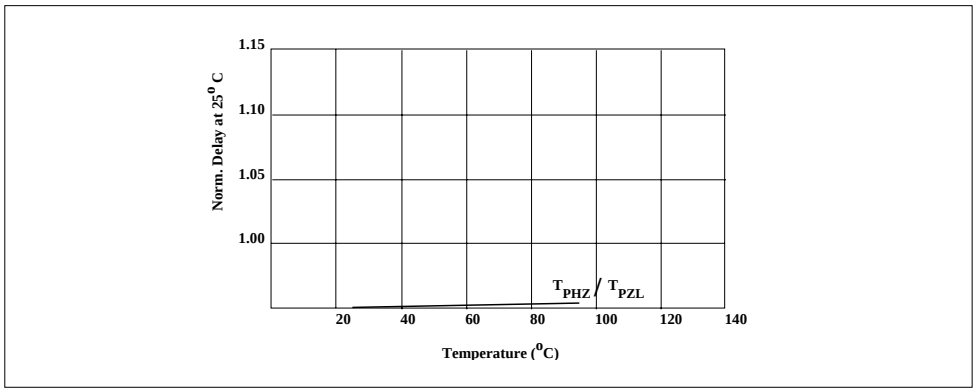
Parameters	Conditions	C Speed Specification	Data		Units
			25°C	90°C	
T_{PLH}	50pF, 500Ω	4.1	3.1	3.6	ns
T_{PHL}	50pF, 500Ω	4.1	3.2	3.6	ns
T_{PZH}	$\overline{OE}$ to A/B	5.8	4.0	4.5	ns
T_{PZL}	$\overline{OE}$ to A/B	5.8	5.4	5.8	ns
T_{PHZ}	$\overline{OE}$ to A/B	4.8	4.8	4.8	ns
T_{PLZ}	$\overline{OE}$ to A/B	4.8	3.6	3.6	ns



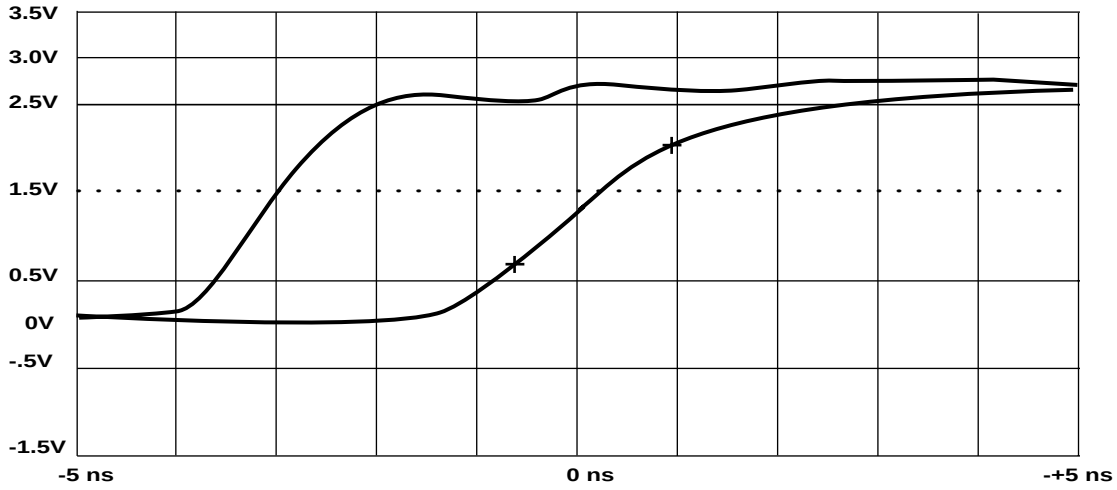
Output Delay vs. Temperature — T_{PLH}/T_{PHL}



Output Delay vs. Temperature — T_{PZH}/T_{PZL}

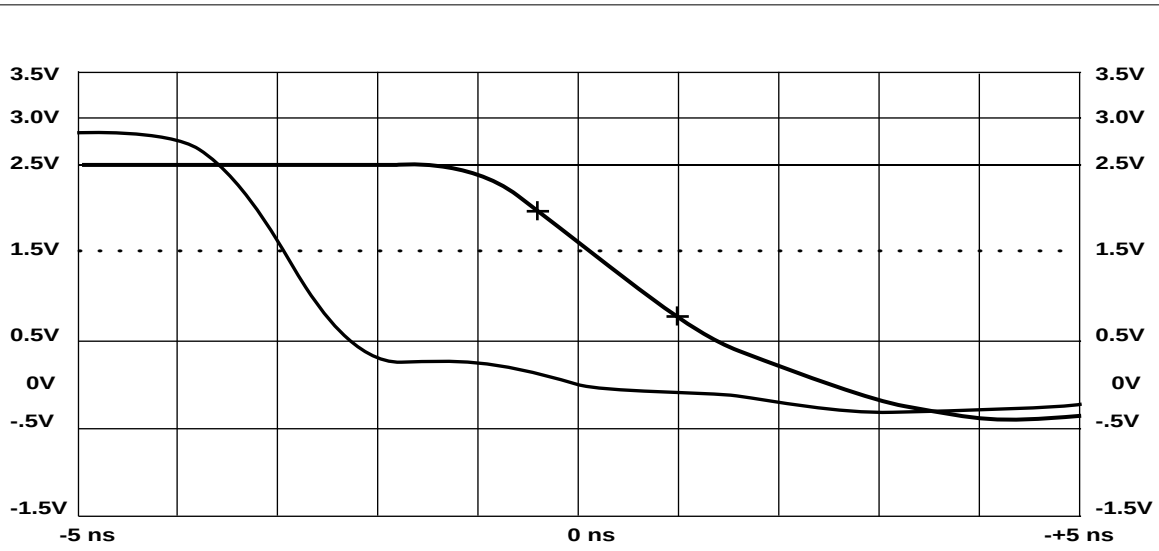


Tri-state Delay vs. Temperature — T_{PHZ}/T_{PLZ}



T_{PLH} = 3.1 ns
T_R = 1.5 ns (0.8V to 2.0V)

Output Rise Time Characteristics (25°C)



T_{PHL} = 3.2 ns
T_F = 1.4 ns (2.0V to 0.8V)

Output Fall Time Characteristics (25°C)