

Pericom ALVCH16244 Comparison

This note shows that Pericom’s ALVCH16244 is well balanced, well controlled, and much quieter than competing ALVCH16244s (see Table 1. With 20pF loading and no series resistor, the ALVCH16244 (Figure 1), with one bit switching, has a negligible undershoot compared to the competing part (Figure 2) which is 1.99V. Also with one bit switching, Pericom’s part has 373mV of overshoot which is 1/3 less than the competing part which has 996mV of overshoot. With 20pF loading and no series resistor, Pericom’s ALVCH16244 (Figure 3) has a ground bounce of less than 320mV compared to the competing part (Figure 4) which is 1.0V with ringback of 540mV.

Propagation delay for Pericom’s ALVCH16244 is the same as the competing part with all 16 bits switching, 20pF loading, and no series resistor. With one bit switching, Pericom’s ALVCH16244 has almost the same propagation delay as the competition with 20pF loading and no series resistor.

Pericom’s ALVCH16244 has 1.64ns of rise time and 1.20ns of fall time when all bits are switching and 1.20ns of rise time and 1.04ns of fall time when one bit is switching. The competitive ALVCH16244 has faster edge rates that contribute to the higher ground bounce.

Table 1. Direct Comparison of Pericom to Competitive Parts

CL=20pF, RL=0	All 16 Bits Switching		One Bit Switching	
	PERICOM	Competition	PERICOM	Competition
Propagation Delay	2.60ns	2.60ns	2.16ns	2.12ns
Rise Time	1.64ns	1.36ns	1.20ns	920ps
Fall Time	1.20ns	800ps	1.04ns	680ps
Overshoot			373mV	996mV
Undershoot			653mV	1.99V
Ground Bounce	+ 320mV - 308mV	+755mV - 1.00V		

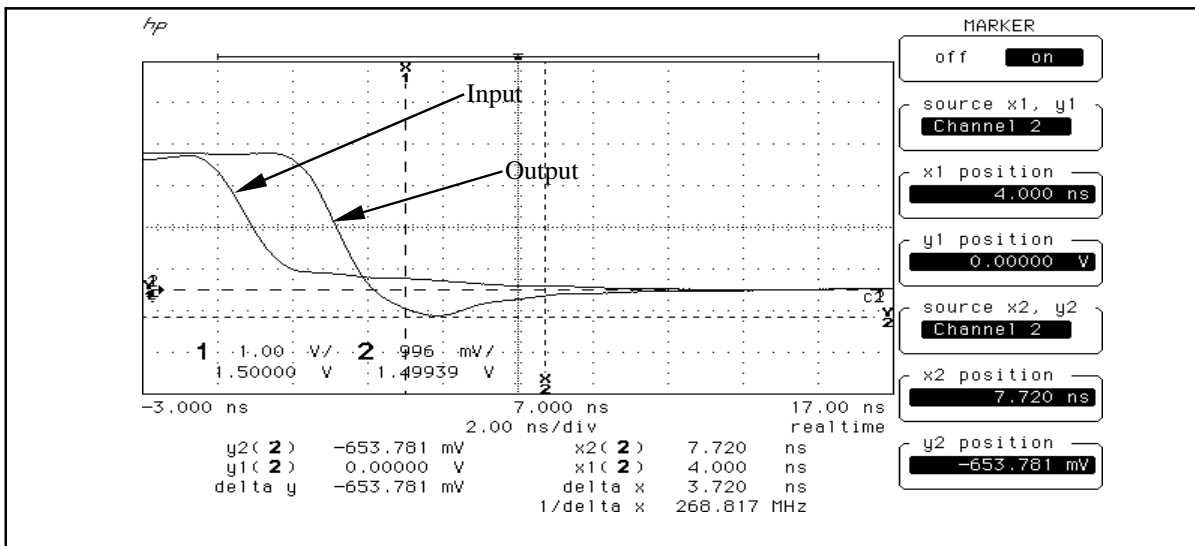


Figure 1. Pericom’s ALVCH16244 Undershoot
(Output follows input smoothly with undershoot of 650mV and no ringback.)

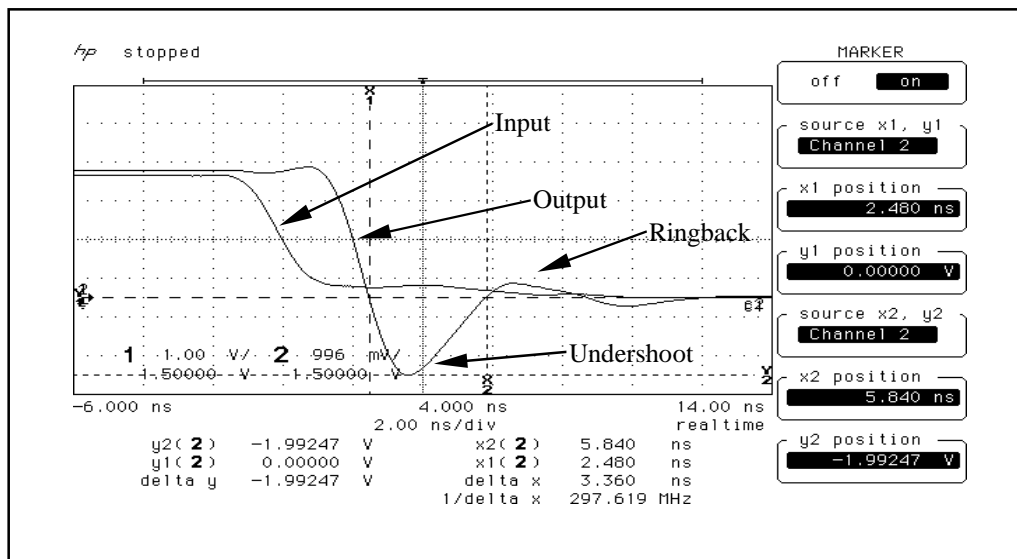


Figure 2. Competition's ALVCH16244 Undershoot

(Competing part undershoot is 1.99V, three times that of Pericom's part and with 540mV ringback.)

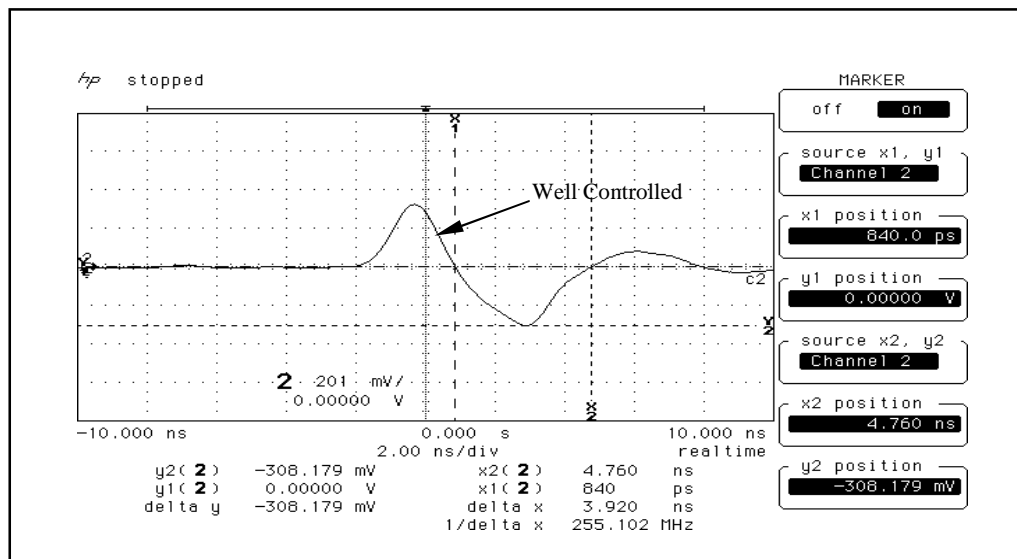


Figure 3. Pericom's ALVCH16244 Ground Bounce

(Pericom's ALVCH16244 Ground Bounce is ± 320 mV max., three times less than the competing part.)

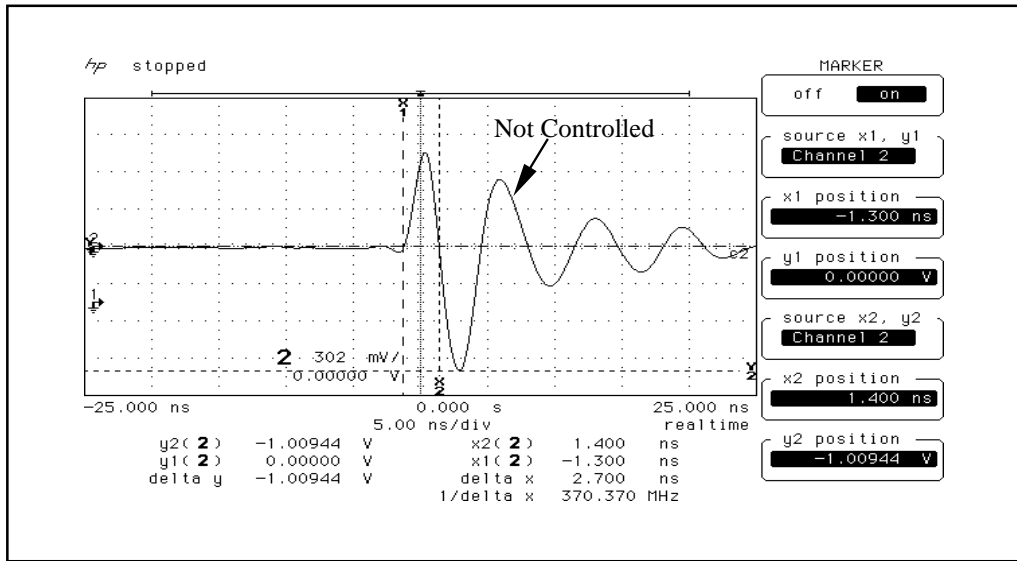
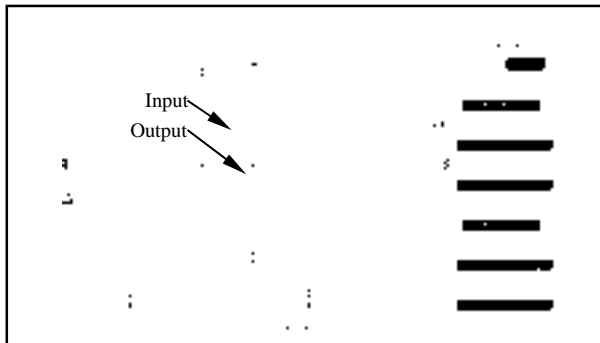


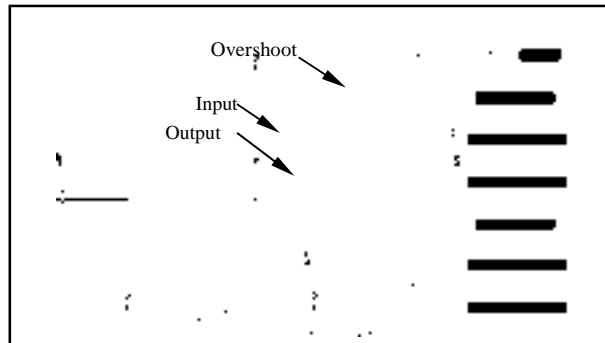
Figure 4. Competition' ALVCH16244 Ground Bounce
 (Ground bounce has a swing of 1.75V, three time bigger than Pericom's part.)

Pericom's ALVCH16244



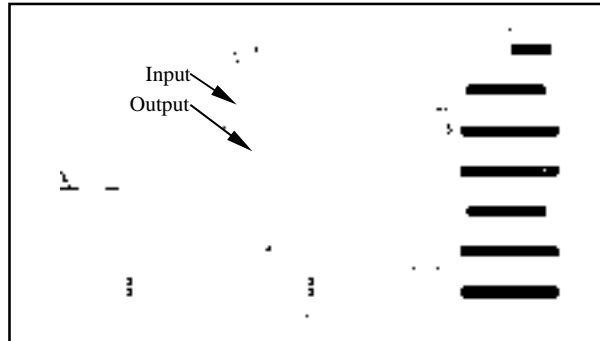
Above figures shows that propagation delay is the same (2.60ns) for Pericom's part and the Competing part when

Competition's ALVCH16244



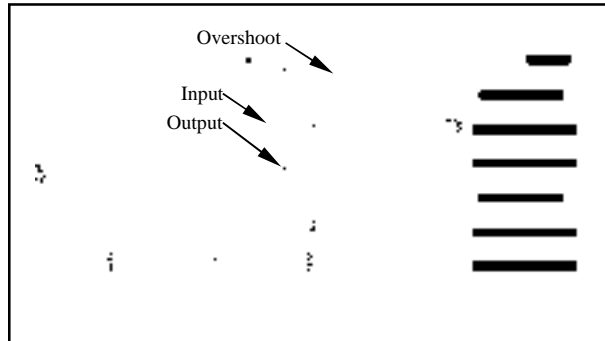
all 16 bits are switching with less overshoot and 20pF of loading and no series resistor.

Pericom's ALVCH16244



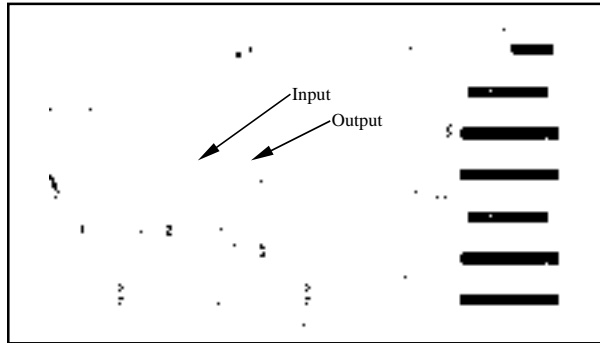
Above figures show that Pericom's part has 1.64ns of Rise Time whereas the competing part has 1.36ns of Rise Time when all 16 bits are switching. The Pericom part demonstrates less overshoot. The figures on the next page

Competition's ALVCH16244

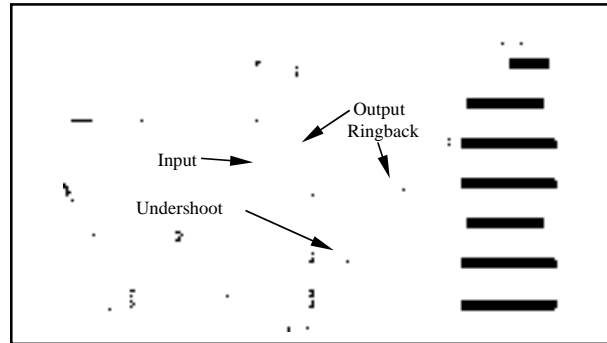


show the fall time of 1.20ns for Pericom's part and 800ps for a competitive part with all bits switching. The Pericom part demonstrates less undershoot.

Pericom's ALVCH16244



Competition's ALVCH16244



The following tables, 2, 3, and 4, demonstrate the same devices under different capacitive loads.

Table 2.

CL = 50pF, RL = 0	All 16 Bits Switching		One Bit Switching	
	Pericom	Competition	Pericom	Competition
Propagation Delay	3.10ns	3.30ns	2.40ns	2.20ns
Rise Time	2.30ns	2.40ns	2.10ns	1.60ns
Fall Time	1.60ns	1.15ns	1.70ns	960ps
Undershoot	620mV	1.50mV	4.35mV	1.00V
Ground Bounce	+260mV -220mV	+900mV -1.10mV		

Table 3.

CL = 100pF, RL = 0	All 16 Bits Switching		One Bit Switching	
	Pericom	Competition	Pericom	Competition
Propagation Delay	4.10ns	4.50ns	3.50ns	3.10ns
Rise Time	4.20ns	4.10ns	4.30ns	3.20ns
Fall Time	3.40ns	1.80ns	4.00ns	1.8ns
Undershoot	0mV	720mV	0mV	720V
Ground Bounce	+170mV -120mV	+740mV -800mV		

Table 4.

CL = 150pF, RL = 0	All 16 Bits Switching		One Bit Switching	
	Pericom	Competition	Pericom	Competition
Propagation Delay	5.40ns	5.30ns	4.40ns	3.80ns
Rise Time	6.30ns	5.20ns	6.60ns	4.50ns
Fall Time	5.90ns	2.50ns	5.80ns	2.20ns
Undershoot	0mV	680mV	0mV	560V
Ground Bounce	+160mV -75mV	+710mV -615mV		

Conclusion: Pericom's ALVCH16244 has a one third the overshoot, undershoot and ground bounce with the same propagation delay as the competing ALVCH16244. Pericom's part is well balanced, well controlled and much quieter without compromising rise/fall time and propagation delay.