Powering Delivery to KPiX Chips

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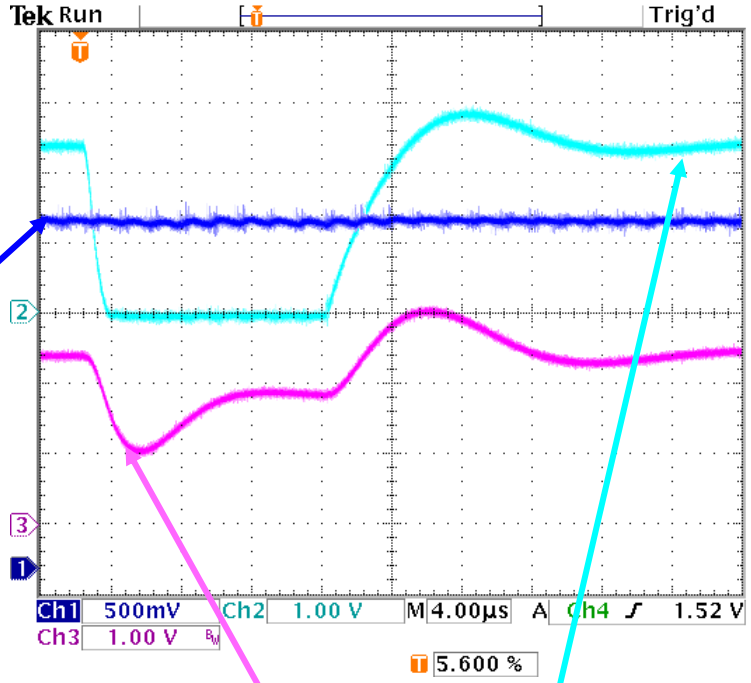


DC-DC Converter
Vout = 2.5V

6 x 22 uF

Twisted Pair
10 m AWG 22

Cout
0.1 uF

Load Resistor
2.5 Ω 10 W

Tested

Twisted Pair
3 m AWG 22

3 m Strip Busbar
9 mils x 90 mils

100 Ω

Gate
+5V

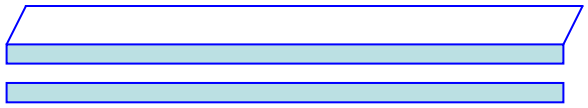
Cin
0.1 uF

50 Ω

Cin

Yale Test Setup

Cu Microstrip Line
t = 9, w = 90 mils
Enamel insulation~ 0.2 mils



Measurements on Cables

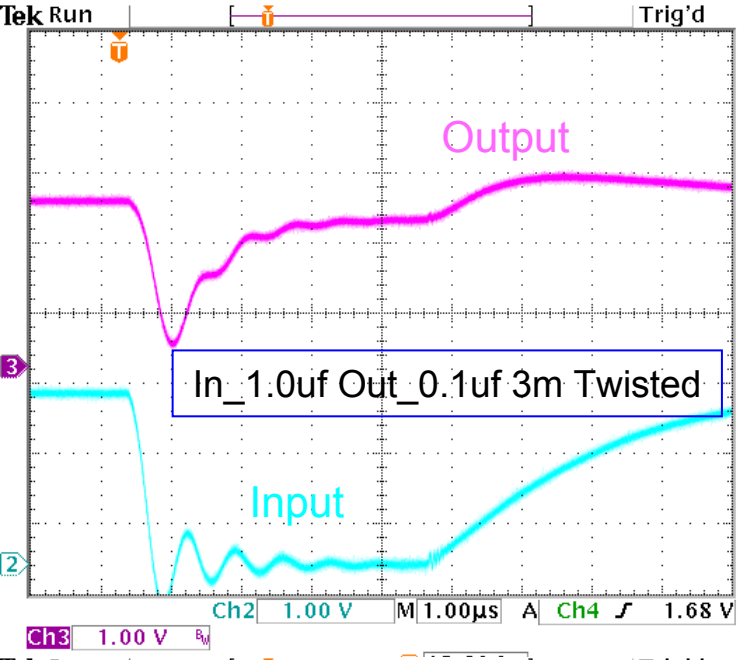
8-Nov-10		Cable Characteristics	
	Measure Z by far end termination		
	Impedance	Delay Time	Cable Details
Twisted Pair	82 Ohms	15 nsec	AWG 22
Ribbon	27 Ohms	18 nsec	9 mils x 90 mils taped together with scotch tape on wide side

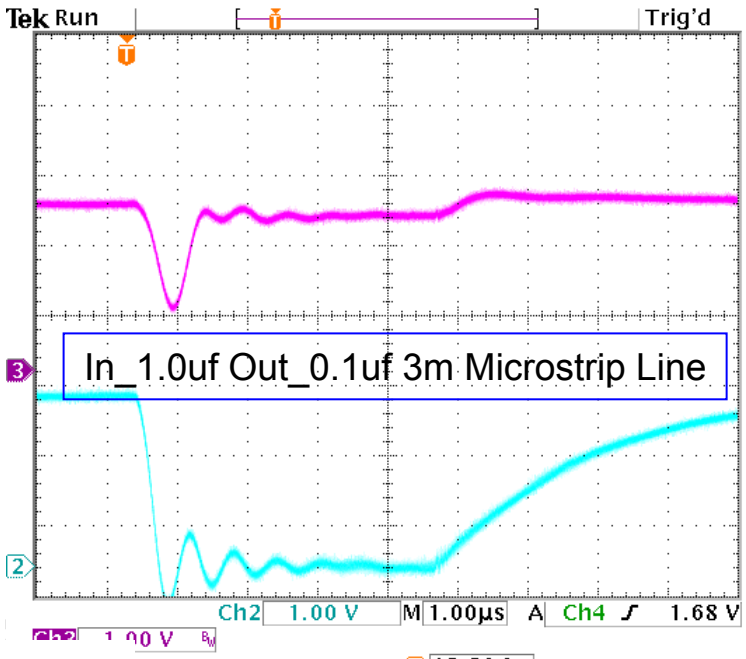
9-Nov-10	HP4284A Precision LCR Meter - 1 MHz				Done @ BNL on Nov 9, 2010		
				Frequency: 250 KHz			
				C	Rp	L	R round trip
		Length					
	Twisted Pair						
		10 meters	Coiled	340 pF		4.8 uH	1.45
			Straight	265 pF		5.14 uH	1.40
		3 meters	Coiled	95.8 pF		1.98 uH	0.48
			Straight	99.6 pF		1.86 uH	0.48
	Microstrip Line	3 meters	Coiled	840 pF	98 Kohms	0.62 uH	0.22
			Straight	572 pF	150 Kohms	0.52 uH	0.22

On Slide: Scope Traces Shown for 3 meters Twisted pair & Ribbon

10-Nov-10		Scope Traces				
	3 meter Twisted			3 meter Microstrip Line		
	Cin	Cout		Cin	Cout	
	0.0 uF	0.0 uF		0.0 uF	0.0 uF	
	0.0 uF	0.1 uF		0.0 uF	0.1 uF	
	0.1 uF	0.1 uF		0.1 uF	0.1 uF	
	0.3 uF	0.1 uF		0.3 uF	0.1 uF	On Slide
	1.0 uF	0.1 uF		1.0 uF	0.1 uF	On Slide

- Need to shut off current slowly to prevent big spike (1 amp x Z of cable) that exceeds IC maximum ratings for the chip.
- Higher capacitance / Lower Inductance lowers spikes





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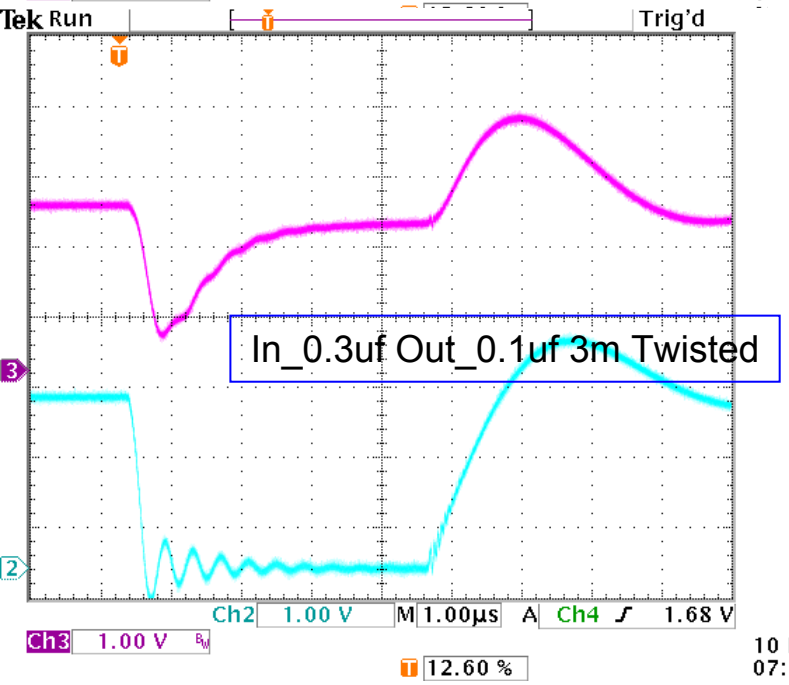

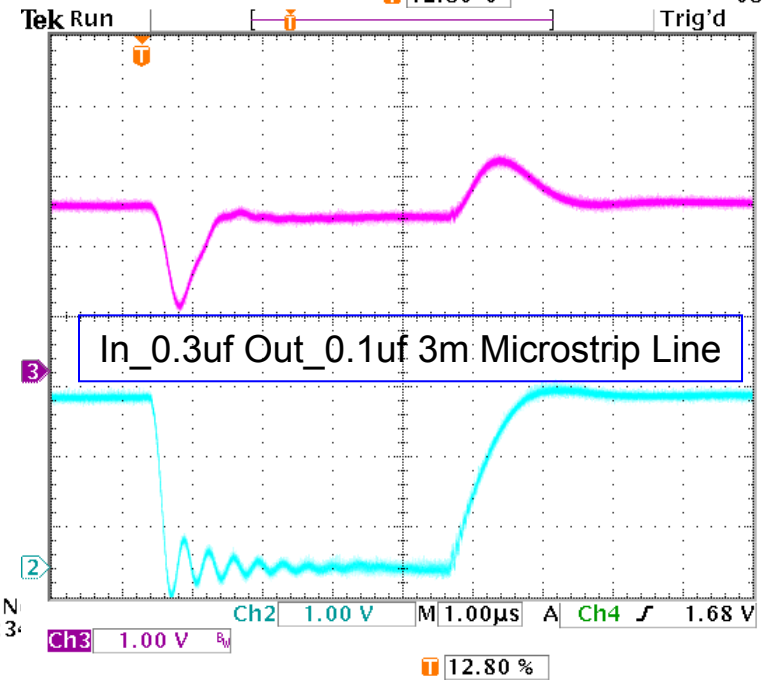

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