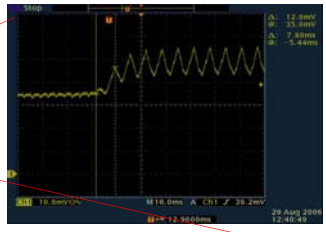
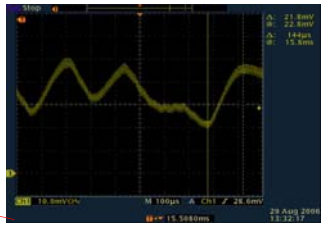
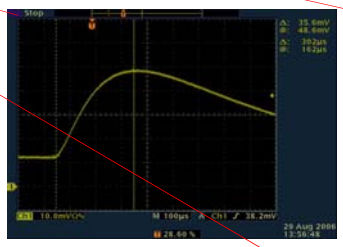
IEEE 802.3at Vport ad hoc
Fred Schindler, 2006-09-06, frs@cisco.com

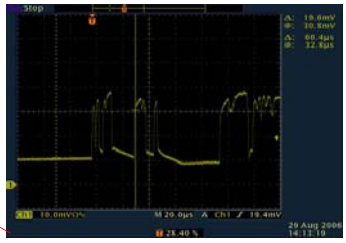
Cisco
7970 IP-phone
Victor Van, 2006-09-06

	Unit
Nominal supply voltage	48 V
Cable length	0.3 m
Bootup	
Idle level current	70 mA
Idle level power	3.36 W
Screen turn-on current change	24 mA
Screen turn-on period	7.8 ms
Screen turn-on rate	3.1E-03 mA/us
Circuit ripple peak	6.9E-03 mA/us
Ring Tone	
Ripple peak	43.6 mA
Duration	144 us
Peak ripple rate	0.30 mA/uS
Average power	3.8 W
Supply change from 44V to 52V	
Current change	56 mA
Duration	160 uS
Peak ripple rate	0.35 mA/us
Supply change from 52V to 44V	
Ripple peak	24 mA
Duration	0.344 us
Peak ripple rate	69.8 mA/us









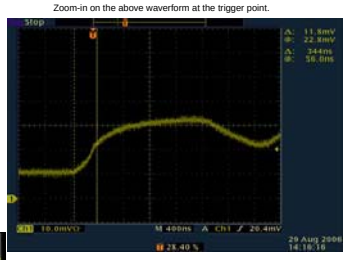
Linear Technology
Clay Standford, 2006-07-12

PD current-mode DC-DC supply		
Maximu di/dt at power-on	15 mA/us	
Typical input capacitance	10	100 uF

-For an input voltage change the PD looks like a capacitor.
-The smaller of the PSE or PD current limits, less the PD load current, determines the capacitor charging current.

PSE Supply (Power-One)	
50% load change max voltage change	2%
50% load change recovery to 1% of nominal voltage	400 us
no-load to full-load voltage change	6%
no-load to full-load voltage change recovery to 1%	400 us

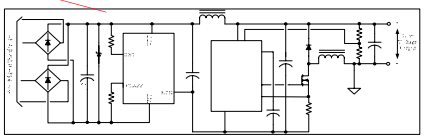
Zoom-in on the above waverform at the trigger point.



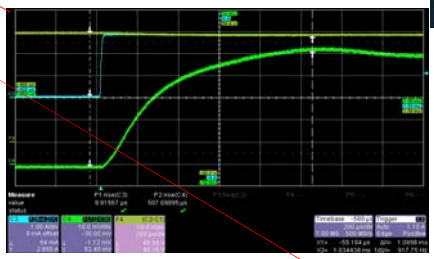
Texas Instruments
Martin Patoka and Jean Picard, 2006-07-12

PD buck DC-DC supply

- A buck topology is expected to have the highest bandwidth compared to a flyback design.
- Has seen PDs with 100mA ripple current. Many PD like this will cause multiple beat frequencies at the PSE supply output current.
- System analysis needs to consider the DC-DC negative input resistance.
- Fast changing PD input voltage could result in a PD detecting a fault (voltage across its pass MOSFET) and disconnecting the PD.

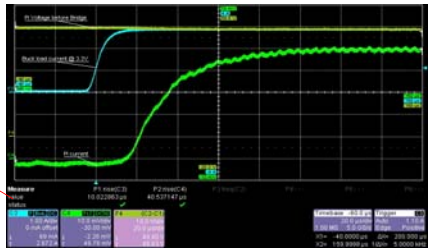


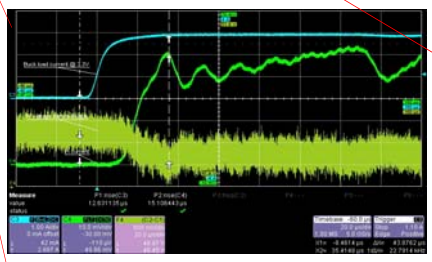
Loop bandwidth	10 KHz
3.3V output voltage	
Load change from 50mA to 2.85mA in 10us.	
Stock converter with pi-filter (47uF, 10uH, 2uF) output filter cap. 130uF.	
Output current in blue	1 A/div
PI current in green	50 mA/div
V of PI light green	10 V/div
Current peak (green)	100 mA
Durration to the current peak (green)	160 us
di/dt	0.63 mA/us



Stock converter with pi-filter (2uF, 10uH, 2uF) output filter cap. 130uF.	
Output current in blue	1 A/div
PI current in green	50 mA/div
V of PI light green	10 V/div
Current peak (green)	150 mA
Durration to the current peak (green)	20 us
di/dt	7.5 mA/us
Stock converter with pi-filter (2uF, 10uH, 2uF) output filter cap. 30uF.	
Output current in blue	1 A/div
PI current in green	50 mA/div
V of PI light green	0.5 V/div
Current peak (green)	160 mA
Durration to the current peak (green)	8 us
di/dt	20 mA/us

-Not very stable.



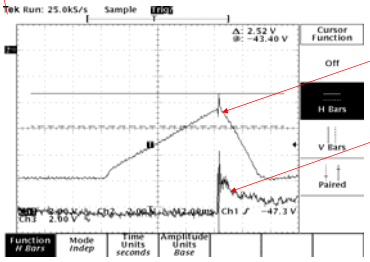


Cisco
Tony Randall, 2006-January

PSE backup supply load change of 48x15.4W

- Remove power from the main supply and have a backup supply take over the load.

Supply output drop rate	0.75 V/ms
Nominal load current	15.4 A
Supply output rise rate	2.3 V/ms
Transient voltage	2 V
Transient duration (estimate)	160 us
dv/dt	0.013 V/us



Port voltage

Backup supply voltage