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Some testing done on model t1 with TPS40057 and other testing done on model t2 with TPS40054. Initial shipment is model t2 with TPS40054:

Pages 1-2: Switching waveforms with TPS40057

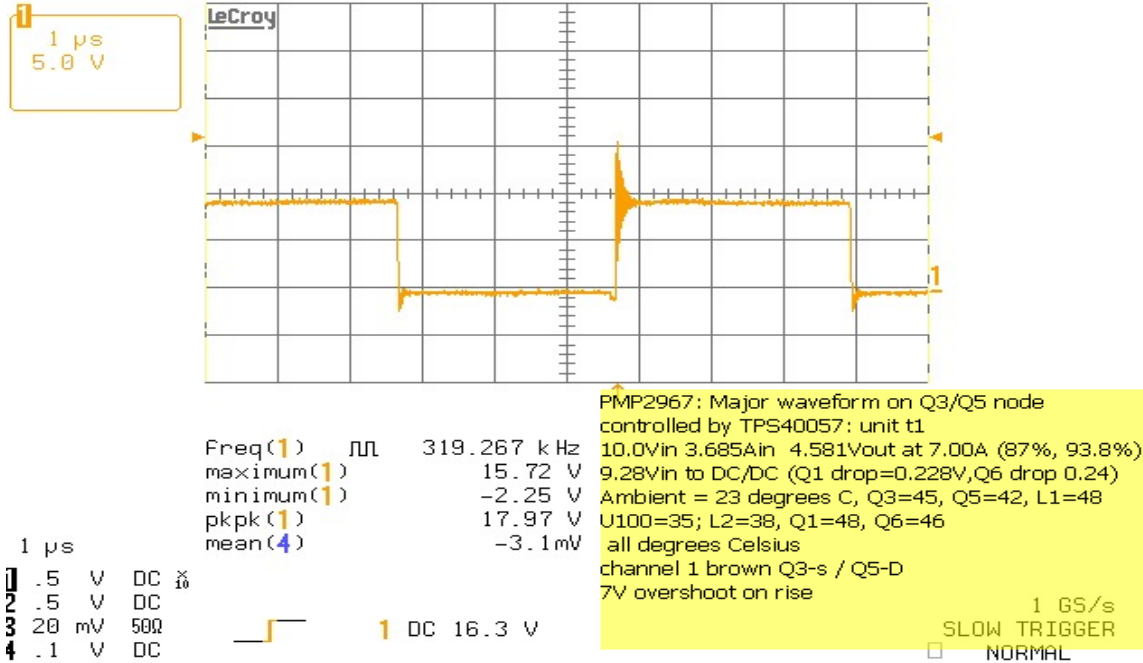
Page 2: Initial Vds on switches at full load: Si4888DY

Page 3: Gate and drain waveforms with IRF7460 only at 1.3A load

Page 4: Now with Si4386DY (Si4888DY is NRND per Vishay)

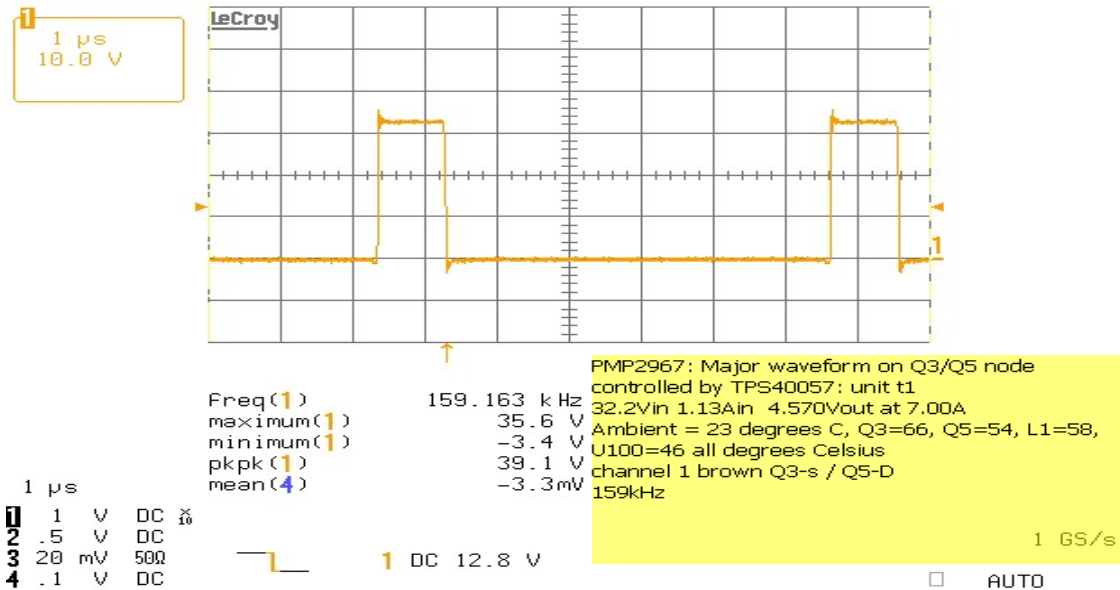
Page 5: Si4386DY with gate slowed down for turn on

31-Oct-07  
11:02:33



31-Oct-07  
10:41:47

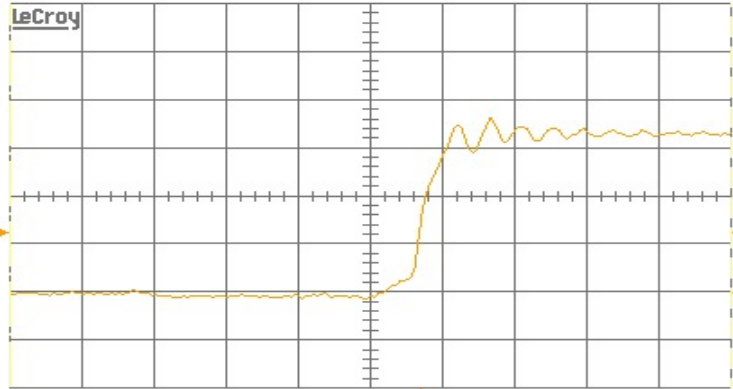
Reading Floppy Disk Drive



Qq

31-Oct-07  
10:43:22

20 ns  
10.0 V



Freq(1)	- - -
maximum(1)	36.3 V
minimum(1)	-1.3 V
pkpk(1)	37.5 V
mean(4)	-3.3mV

PMP2967: Major waveform on Q3/Q5 node controlled by TPS40057: unit t1  
32.2V<sub>in</sub> 1.13A<sub>in</sub> 4.570V<sub>out</sub> at 7.00A  
Ambient = 23 degrees C, Q3=66, Q5=54, L1=58, U100=46 all degrees Celsius  
channel 1 brown Q3-S / Q5-D  
time scale expanded to show rise time when high side FET turns on about 20nsec rise time, rise starts 60 nsec after sync rectifier Q5 turns off

20 ns

1 1 V DC  $\times$   
2 .5 V DC  
3 20 mV 50Ω  
4 .1 V DC

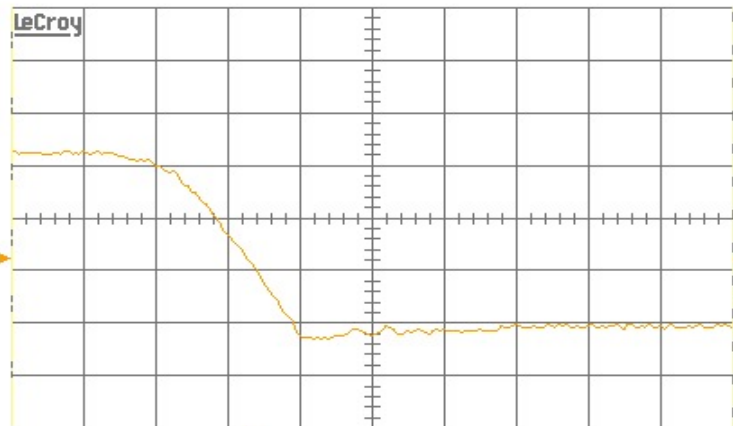
1 DC 12.8 V

AUTO

Qq

31-Oct-07  
10:42:39

20 ns  
10.0 V



Freq(1)	- - -
maximum(1)	32.8 V
minimum(1)	-2.8 V
pkpk(1)	35.6 V
mean(4)	-3.8mV

PMP2967: Major waveform on Q3/Q5 node controlled by TPS40057: unit t1  
32.2V<sub>in</sub> 1.13A<sub>in</sub> 4.570V<sub>out</sub> at 7.00A  
Ambient = 23 degrees C, Q3=66, Q5=54, L1=58, U100=46 all degrees Celsius  
channel 1 brown Q3-s / Q5-D  
time scale expanded to show fall time when high side FET turns off about 40nsec fall time, 60 nsec after fall sync rectifier Q5 turns on

20 ns

1 1 V DC  $\times$   
2 .5 V DC  
3 20 mV 50Ω  
4 .1 V DC

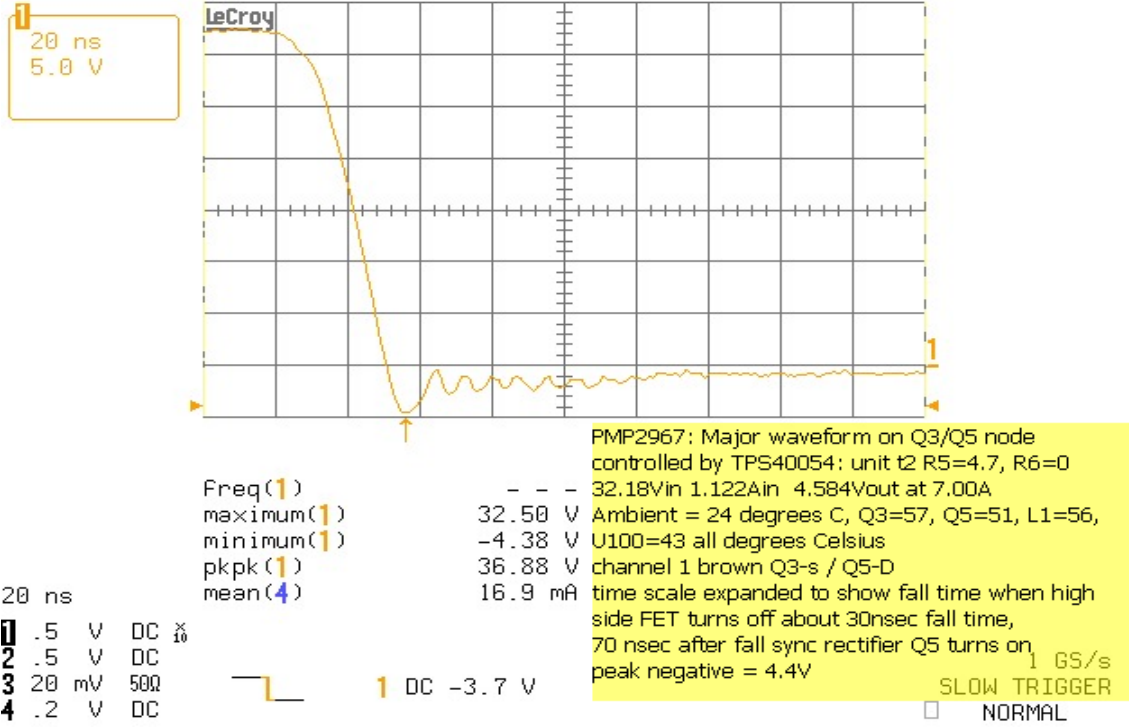
1 DC 12.8 V

AUTO

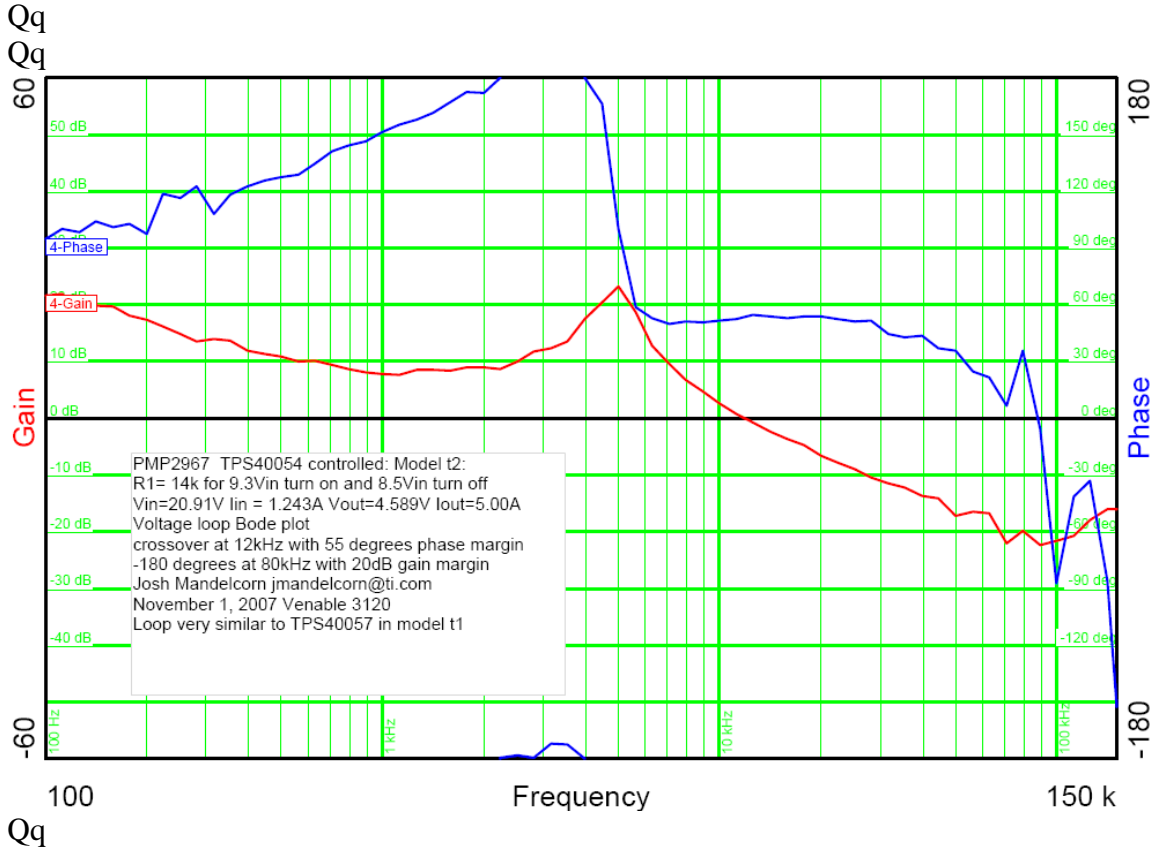
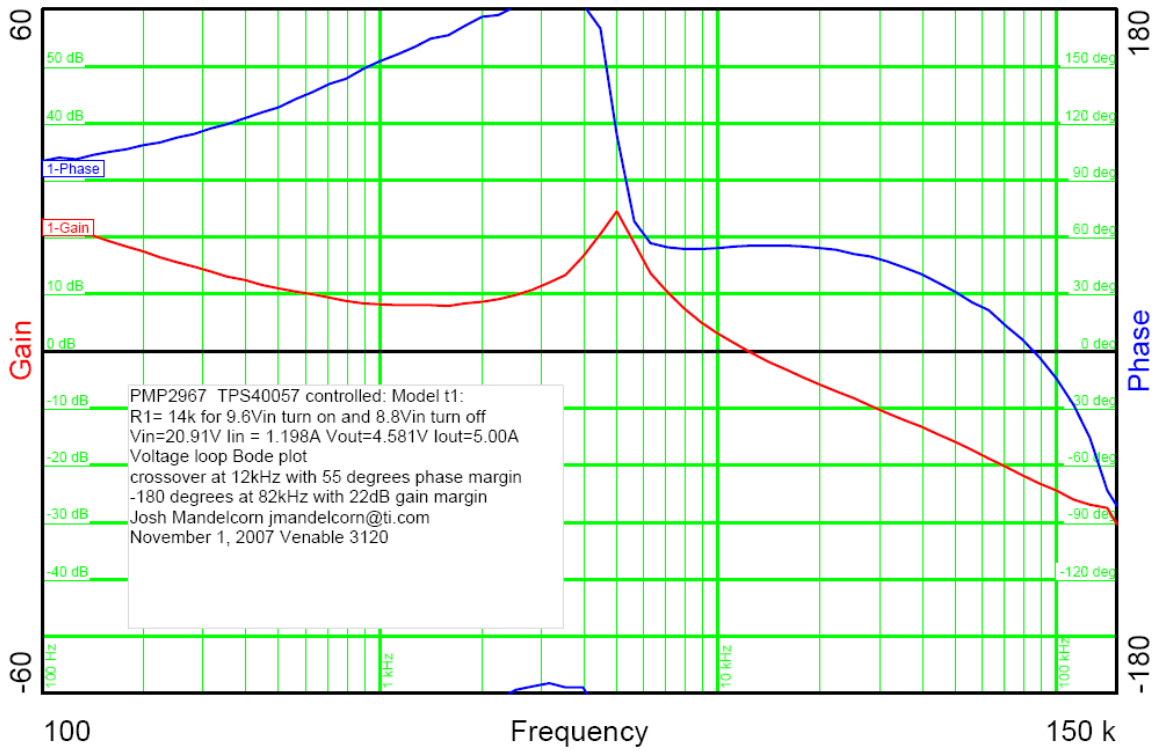
Qq

TPS40054 fall waveform with updated R5 & R6: Other waveforms similar to TPS40057

1-Nov-07 Reading Floppy Disk Drive  
14:44:56

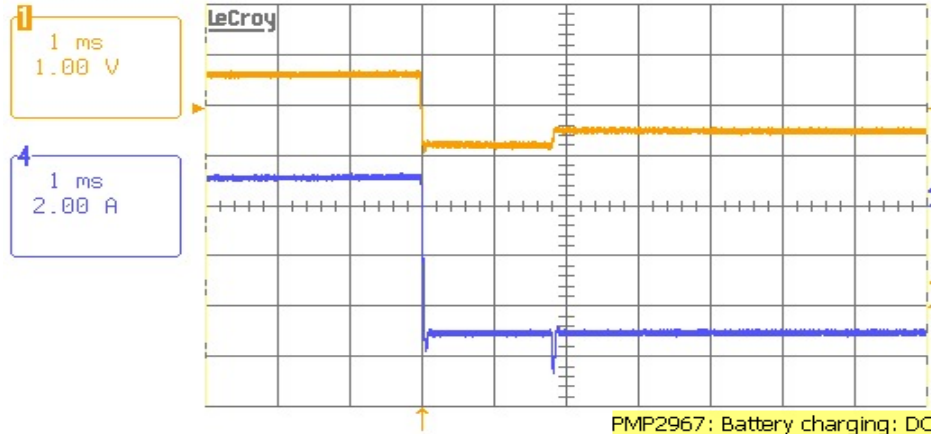


Bode plots: First with TPS40057 and then with TPS40054:



Battery charging:

31-Oct-07  
14:46:56



1 ms	1.00 V
1 ms	2.00 A
Freq(1)	- - -
maximum(1)	4.69 V
minimum(1)	3.03 V
pkpk(1)	1.66 V
mean(4)	-3.201 A

- 1 .1 V DC  $\times$
- 2 .5 V DC  $\times$
- 3 20 mV 50 $\Omega$
- 4 .2 V DC  $\times$

1 DC 3.96 V

PMP2967: Battery charging: DC source removed controlled by TPS40057: unit t1  
12Vin powering 4.6V: Load constant current 5.0A  
channel 1 brown Load voltage at 4.6V output drops from 4.6V to 3.2V and then rises to 3.5V when Q9 turns on (2msec delay for Q9)  
channel 4: blue is current into battery goes from 1A charging to 5A discharge with additional 1.5A spike when output bumped up from 3.2V to 3.5V

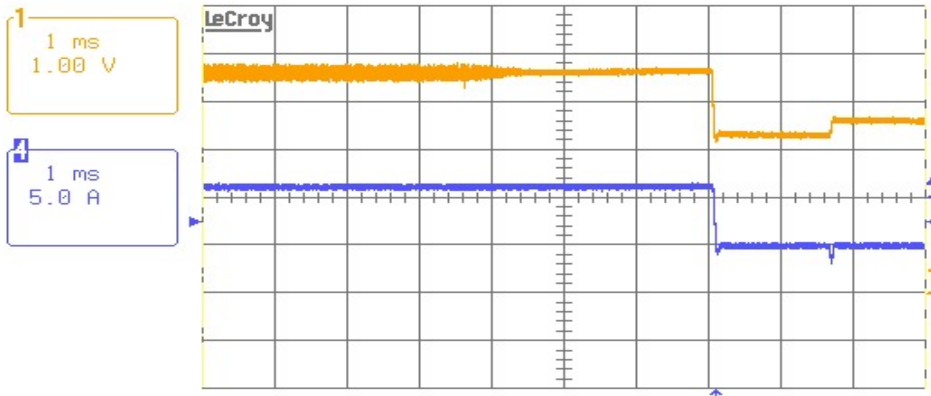
25 MS/s

STOPPED

Qq

Q

31-Oct-07  
17:36:39



1 ms	1.00 V
1 ms	5.0 A
Freq(1)	- - -
maximum(1)	4.81 V
minimum(1)	3.12 V
pkpk(1)	1.69 V
mean(4)	-745 mA

- 1 .1 V DC  $\times$
- 2 .5 V DC  $\times$
- 3 20 mV 50 $\Omega$
- 4 .5 V DC  $\times$

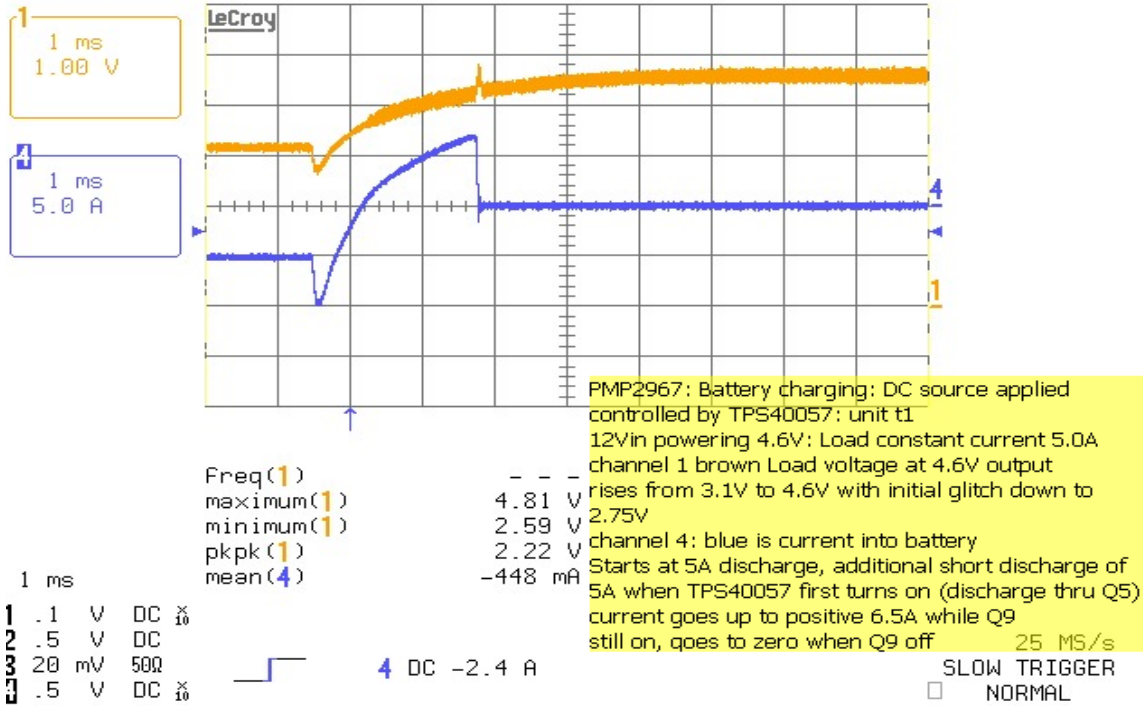
4 DC -2.5 A

PMP2967: Battery charging: DC source removed controlled by TPS40054: unit t2  
12Vin powering 4.6V: Load constant current 5.0A  
channel 1 brown Load voltage at 4.6V  
channel 4: blue is current into battery  
Very similar to TPS40057 on model t1

25 MS/s  
 SLOW TRIGGER  
 NORMAL

Battery charging when DC/DC turned on: TPS40057

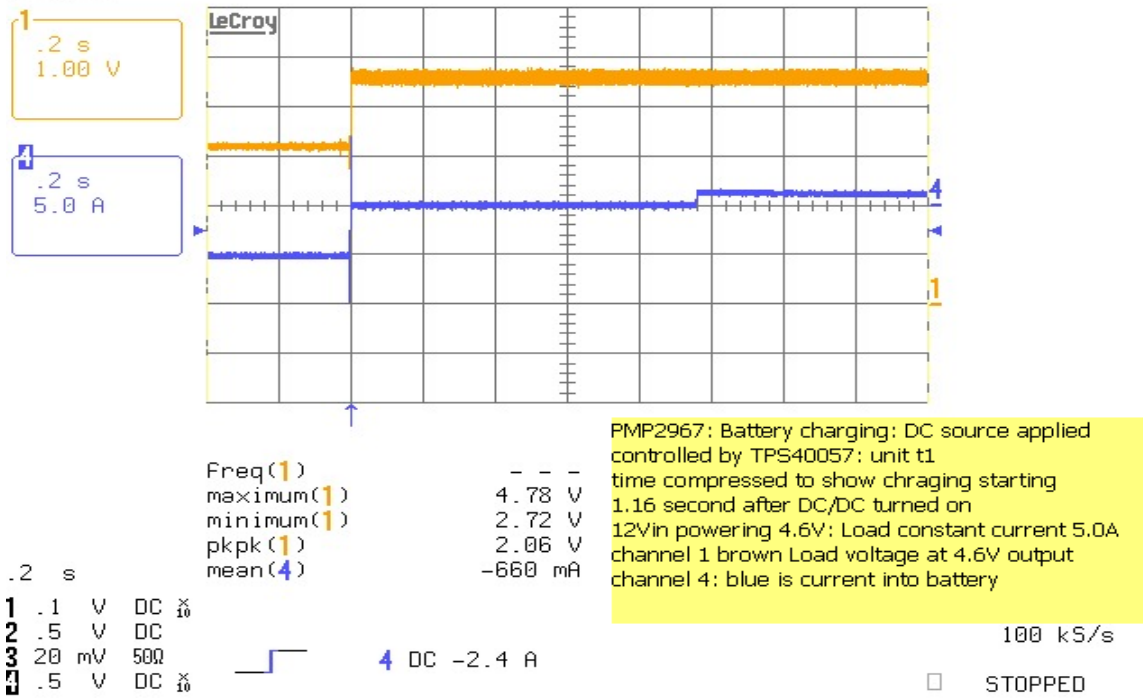
31-Oct-07  
14:50:17



Qq

Q

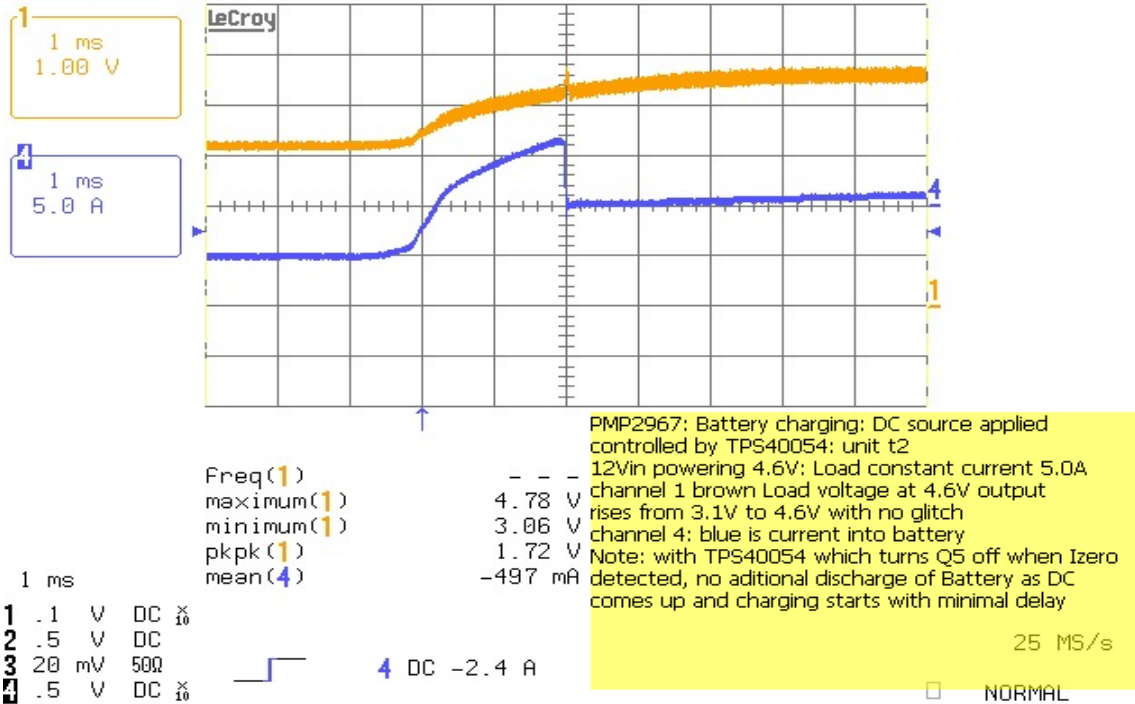
31-Oct-07  
14:52:47



qq

Battery charging when DC/DC turned on: TPS40054

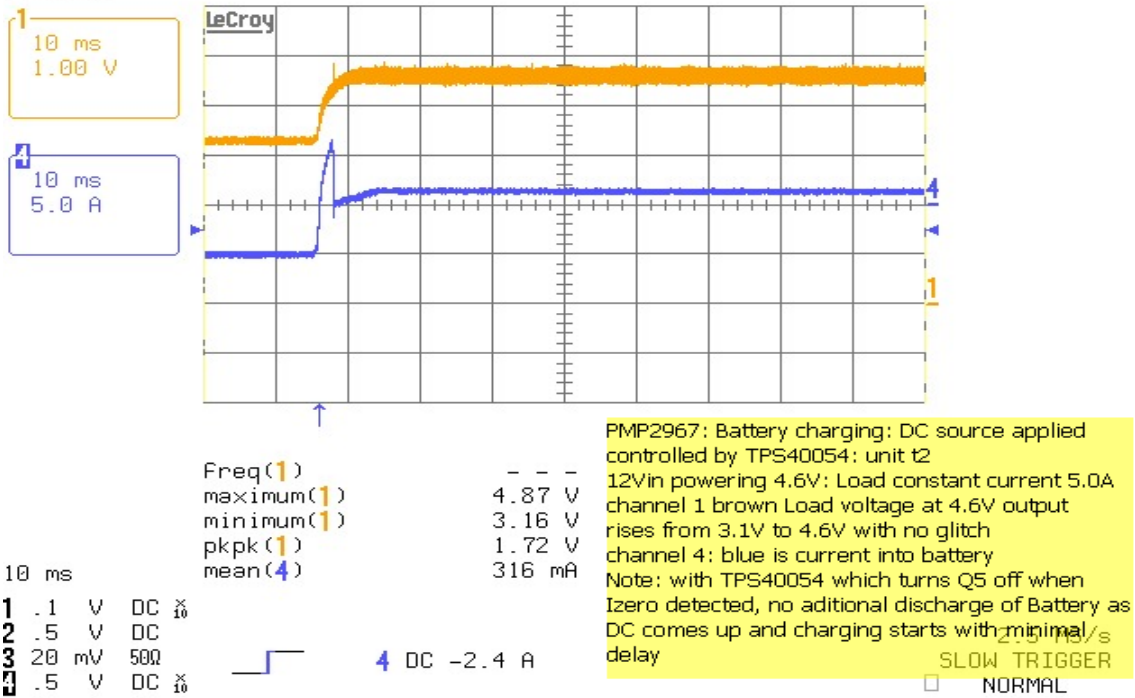
31-Oct-07  
17:31:17



Qq

Q

31-Oct-07  
17:33:21



Qq



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