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Notes:

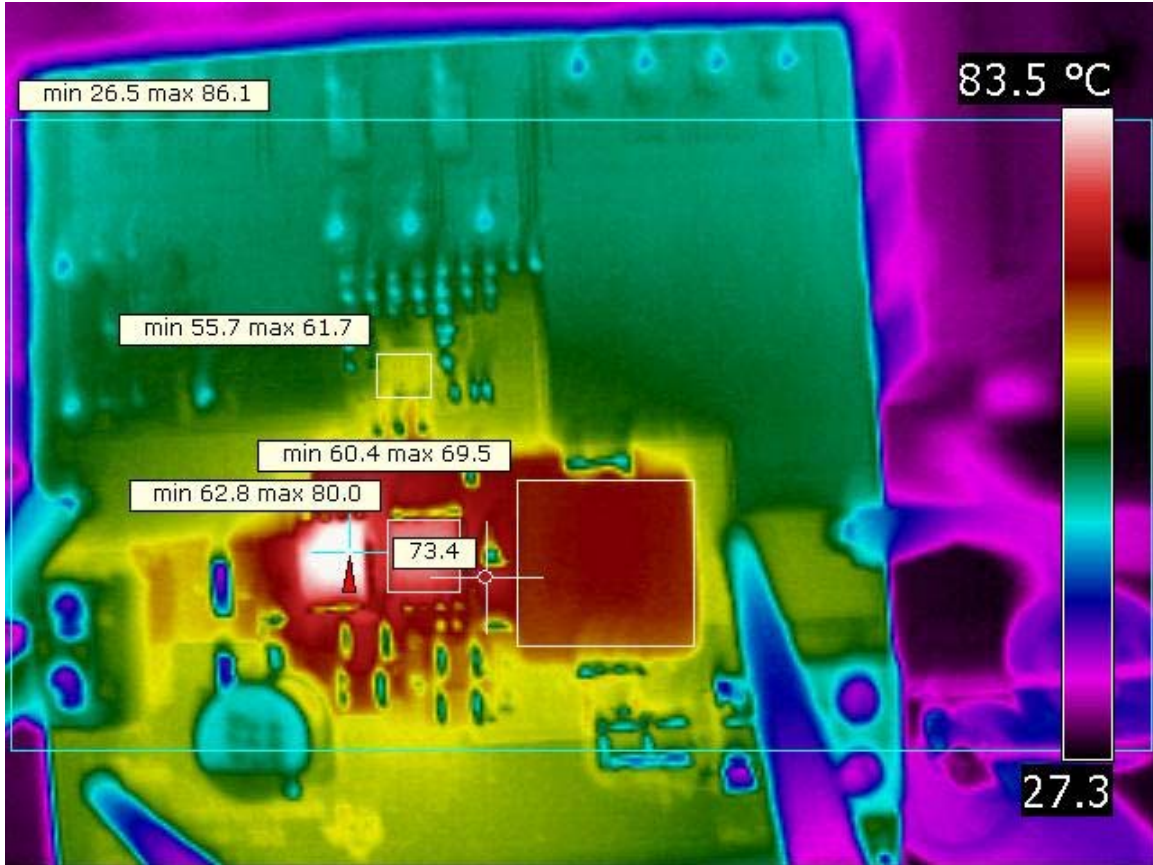
Thermal summary:

PMP5032: 13.02Vin 3.076Iin 1.803Vout 20.0Aout
 3.99W dissipation on board; Hot spot Q2 at 79.1 deg. C;
 Q1 at 75.7, choke at 71, controller at 61.3; snubber at 76.4
 ambient 23-25 deg. C



Qq

PMP5032: 3.030Vin 13.16In 1.803Vout 20.0Aout
3.815W dissipation on board; Hot spot Q1 at 86.1 deg. C;
Q2 at 80, choke at 69.5, controller at 61.7;
snubber at 73.4
ambient 23-25 deg. C



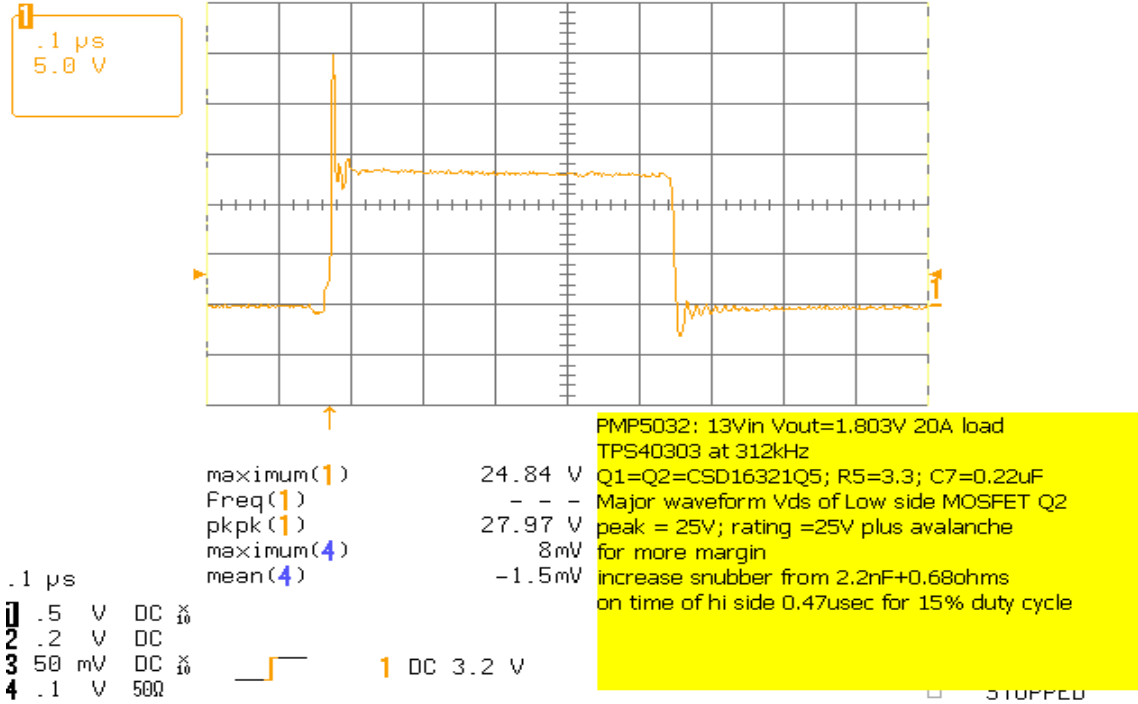
Regulation, losses and efficiency:

| Vin Volts | Iin A | Vout1 Volts | Iout1 A | Losses in W | Efficiency % |
|------------------|--------------|--------------------|----------------|--------------------|---------------------|
| 13.02 | 3.076 | 1.803 | 20.0 | 3.990 | 90.0 |
| 12.99 | 2.275 | 1.803 | 15.0 | 2.507 | 91.5 |
| 13.01 | 1.504 | 1.804 | 10.0 | 1.527 | 92.2 |
| 12.99 | 0.766 | 1.804 | 5.0 | 0.930 | 90.7 |
| 13.03 | 0.403 | 1.804 | 2.5 | 0.741 | 85.9 |
| 13.04 | 0.220 | 1.804 | 1.25 | 0.614 | 78.6 |
| 13.04 | 0.0415 | 1.804 | 0 | 0.541 | 0.0 |
| | | | | | |
| 12.00 | 3.319 | 1.802 | 20.0 | 3.788 | 90.5 |
| 12.04 | 2.4465 | 1.803 | 15.0 | 2.411 | 91.8 |
| 12.01 | 1.6225 | 1.804 | 10.0 | 1.446 | 92.6 |
| 12.00 | 0.824 | 1.804 | 5.0 | 0.868 | 91.2 |
| 12.01 | 0.4325 | 1.804 | 2.5 | 0.684 | 86.8 |
| 12.03 | 0.235 | 1.804 | 1.25 | 0.572 | 79.8 |
| 12.01 | 0.0415 | 1.804 | 0 | 0.498 | 0.0 |
| | | | | | |
| 3.334 | 11.90 | 1.803 | 20.0 | 3.615 | 90.9 |
| 3.315 | 8.805 | 1.804 | 15.0 | 2.129 | 92.7 |
| 3.304 | 5.786 | 1.804 | 10.0 | 1.077 | 94.4 |
| 3.329 | 2.831 | 1.804 | 5.0 | 0.404 | 95.7 |
| 3.325 | 1.4215 | 1.804 | 2.5 | 0.216 | 95.4 |
| 3.313 | 0.724 | 1.804 | 1.25 | 0.144 | 94.0 |
| 3.314 | 0.027 | 1.804 | 0 | 0.089 | 0.0 |
| | | | | | |
| 3.030 | 13.16 | 1.803 | 20.0 | 3.815 | 90.4 |
| 3.001 | 9.765 | 1.804 | 15.0 | 2.245 | 92.3 |
| 3.006 | 6.38 | 1.804 | 10.0 | 1.138 | 94.1 |
| 3.002 | 3.144 | 1.805 | 5.0 | 0.413 | 95.6 |
| 3.007 | 1.569 | 1.805 | 2.5 | 0.205 | 95.6 |
| 3.005 | 0.795 | 1.805 | 1.25 | 0.133 | 94.4 |
| 3.006 | 0.0245 | 1.805 | 0 | 0.074 | 0.0 |
| | | | | | |
| | | | | | |

99

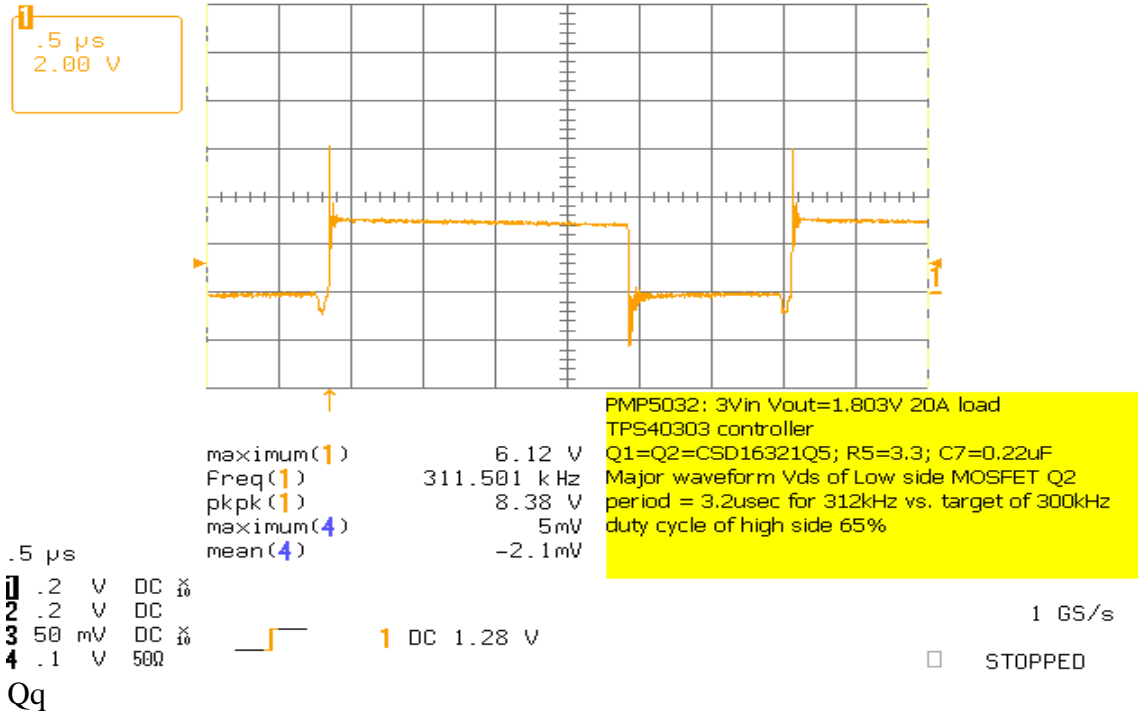
Major switching waveform Vds of low side Q2 at Max 13Vin and full 1.8V 20A load:

13-Aug-09
14:44:30



Same, but at minimum Vin of 3V:

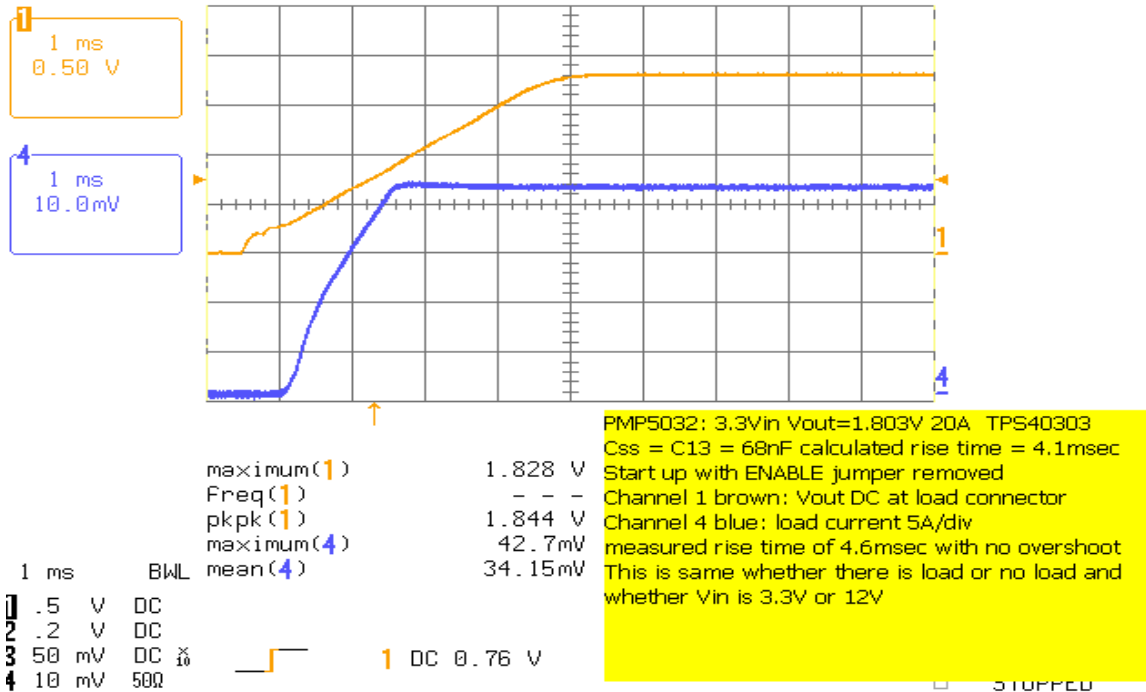
13-Aug-09
14:55:16



Qq

Start up:

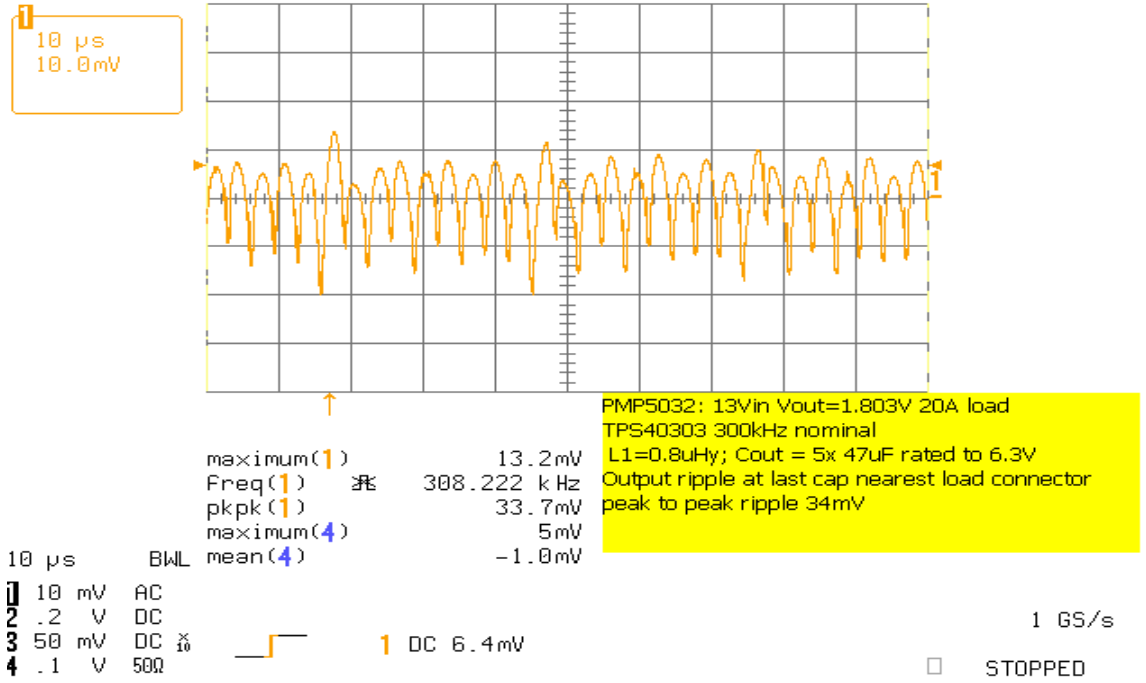
13-Aug-09
17:37:03



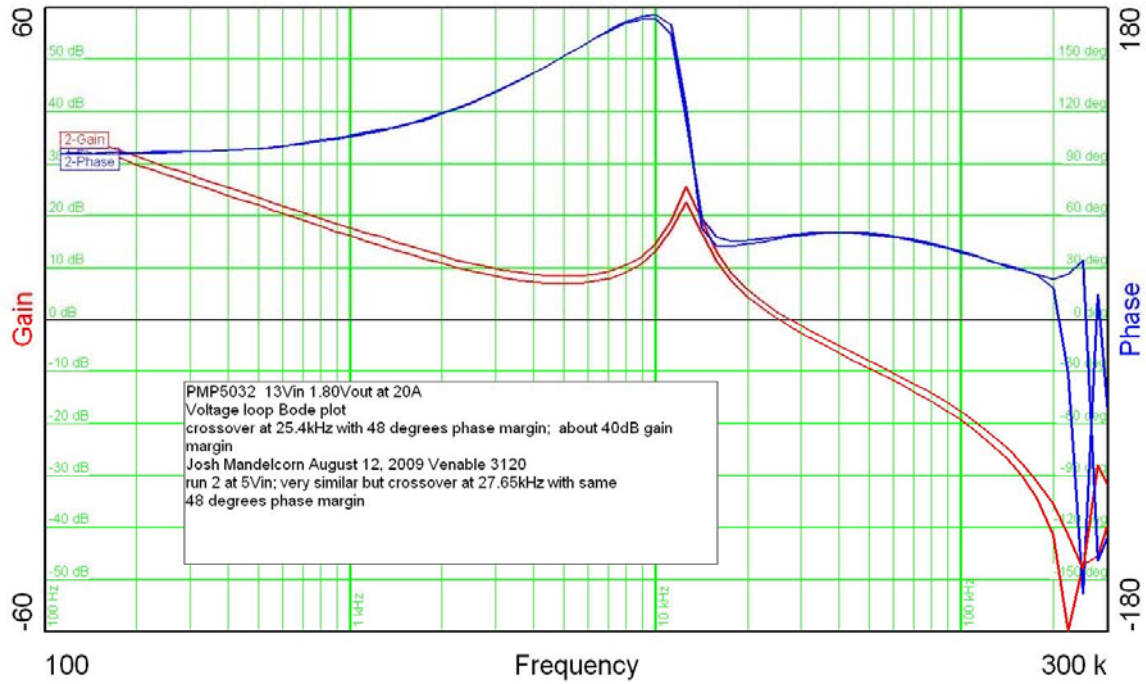
Q

Output ripple:

13-Aug-09
15:23:02

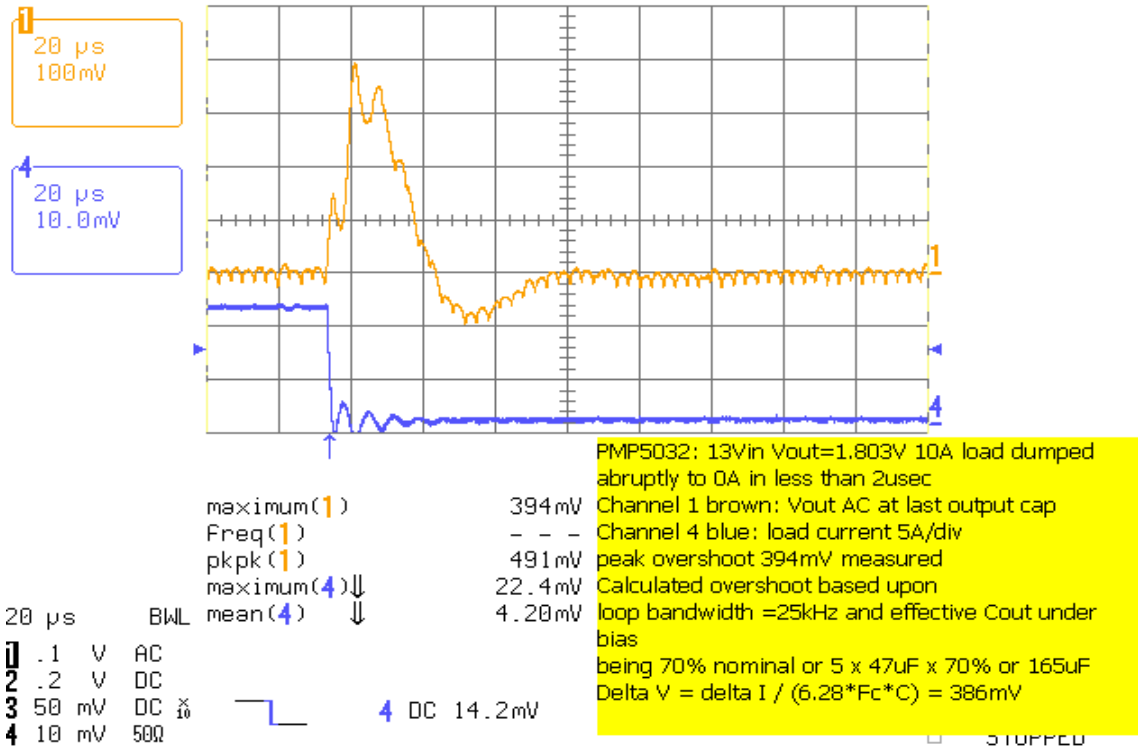


Bode Plot:



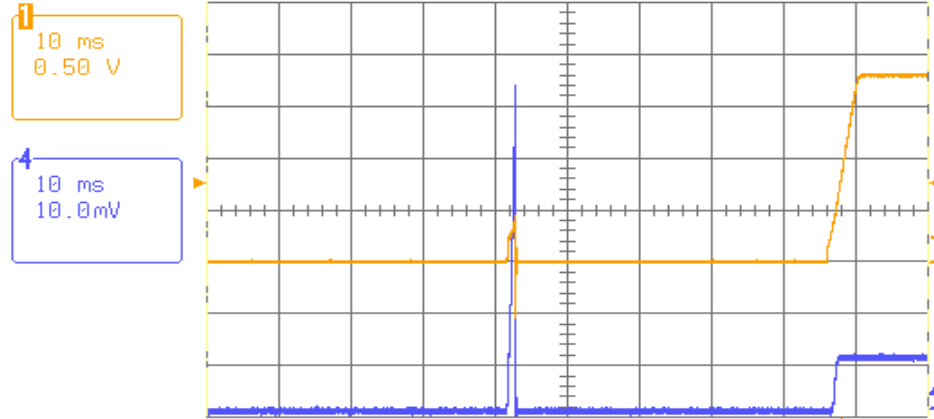
Load dump response:

13-Aug-09
 15:27:45



Short circuit & recovery: 12Vin:

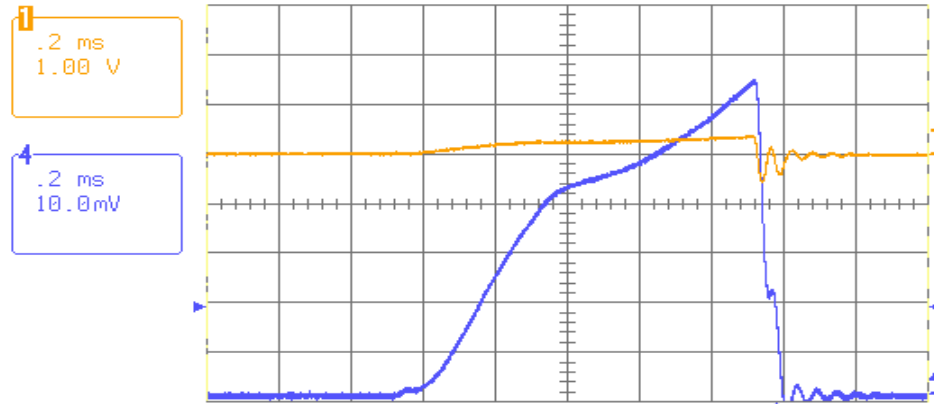
13-Aug-09
18:01:00



| | | | |
|--|-----------|--|--|
| maximum(1) 1.813 V Freq(1) - - - R8 setting threshold = 6.34k pkpk(1) 2.359 V maximum(4) 62.1mV mean(4) 0.98mV | | PMP5032: 12Vin: TPS40303 Vout =1.80V Top side FET: CSD16312Q5 Short circuit and recovery to 10A load R8 setting threshold = 6.34k Channel 1 brown: Vout DC at load connector Channel 4 blue: load current 10A/div peak load current about 62A, however MOSFETs stay cool, re-start attempt interval about 45msec (each re-start attempt about 1msec duration) Normal recovery into 10A load after fault removed | |
| 10 ms | BWL | 1 DC 0.77 V | |
| 1 | .5 V DC | | |
| 2 | .2 V DC | | |
| 3 | 50 mV DC | | |
| 4 | 10 mV 500 | | |

Detail of retry pulse: 13Vin:

13-Aug-09
18:07:30

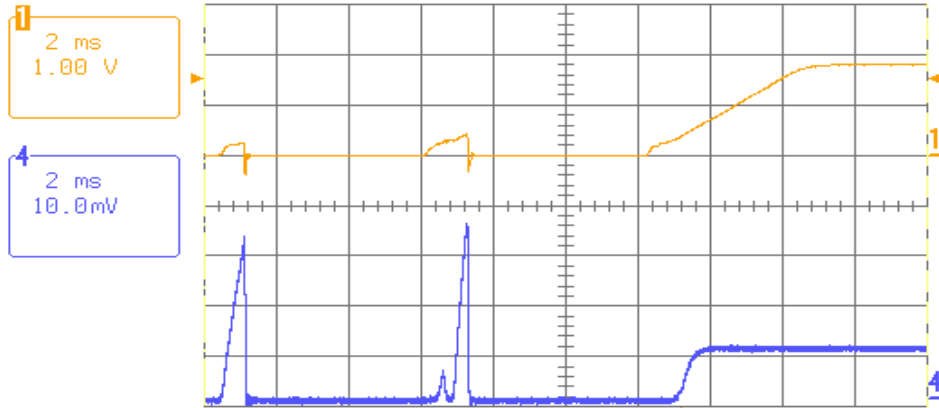


| | | | |
|--|-----------|---|--|
| maximum(1) 0.38 V Freq(1) 21.2134 kHz pkpk(1) 0.97 V maximum(4) 63.0mV mean(4) 18.13mV | | PMP5032: 13Vin: TPS40303 Vout =1.80V Top side FET: CSD16312Q5 Re-start attempt with Short circuit at load R8 setting threshold = 6.34k Channel 1 brown: Vout DC at load connector Channel 4 blue: load current 10A/div peak load current about 63A, however MOSFETs stay cool, (re-start attempt interval about 45msec) attempt duration about 1.0msec or about 35 milli-Coulombs per attempt | |
| .2 ms | BWL | 4 DC 17.6mV | |
| 1 | 1 V DC | | |
| 2 | .2 V DC | | |
| 3 | 50 mV DC | | |
| 4 | 10 mV 500 | | |

Qq

Short circuit & recovery: 3.3Vin:

13-Aug-09
18:04:48



| | | | |
|------|-----------|-------------|---------|
| 2 ms | BWL | maximum(1) | 1.813 V |
| 2 ms | | Freq(1) | - - - |
| | | pkpk(1) | 2.219 V |
| | | maximum(4)↓ | 34.6mV |
| | | mean(4) ↓ | 3.75mV |
| 1 | 1 V DC | | |
| 2 | .2 V DC | | |
| 3 | 50 mV DC | | |
| 4 | 10 mV 50Ω | | |

PMP5032: 3.3Vin: TPS40303 Vout =1.80V
 Top side FET: CSD16312Q5
 Short circuit and recovery to 10A load
 R8 setting threshold = 6.34k
 Channel 1 brown: Vout DC at load connector
 Channel 4 blue: load current 10A/div
 peak load current about 35A, however MOSFETs
 stay cool, re-start attempt interval about 6msec
 (each re-start attempt about 0.5msec duration)
 Normal recovery into 10A load after fault removed

STOPPED

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