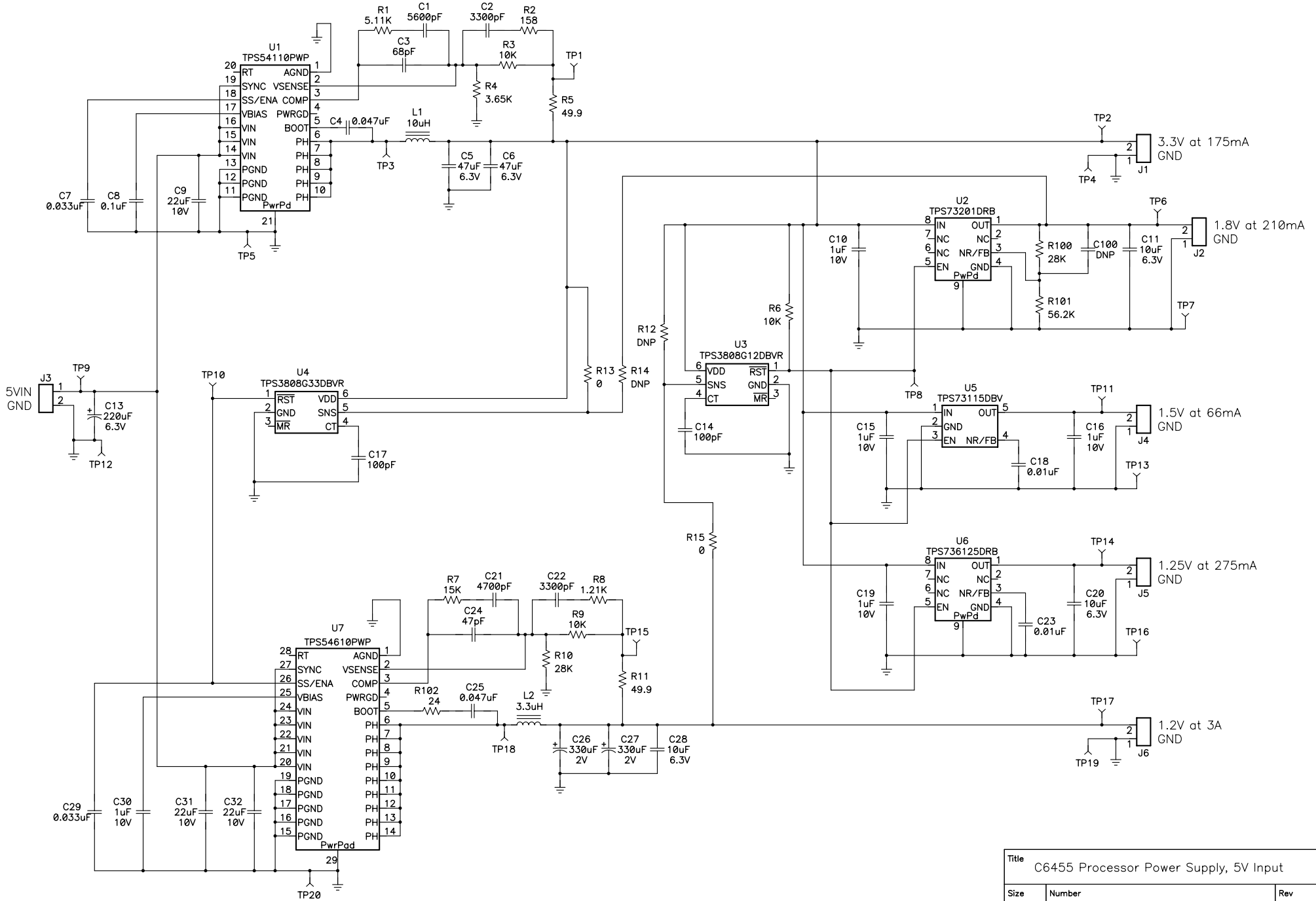
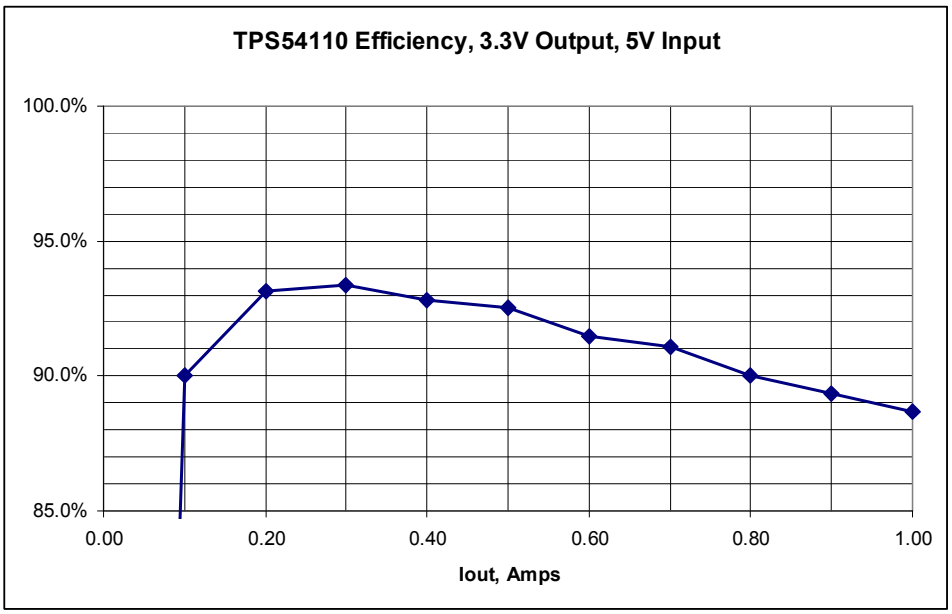


Title	C6455 Processor Power Supply, 5V Input	
Size: C	Number: PMP3164.1 Texas Instruments	Rev: B
Date: 03-24-08		Drawn by: D Strasser
Filename: PMP3164.1_RevB.sch	Sheet: 1 of 1	

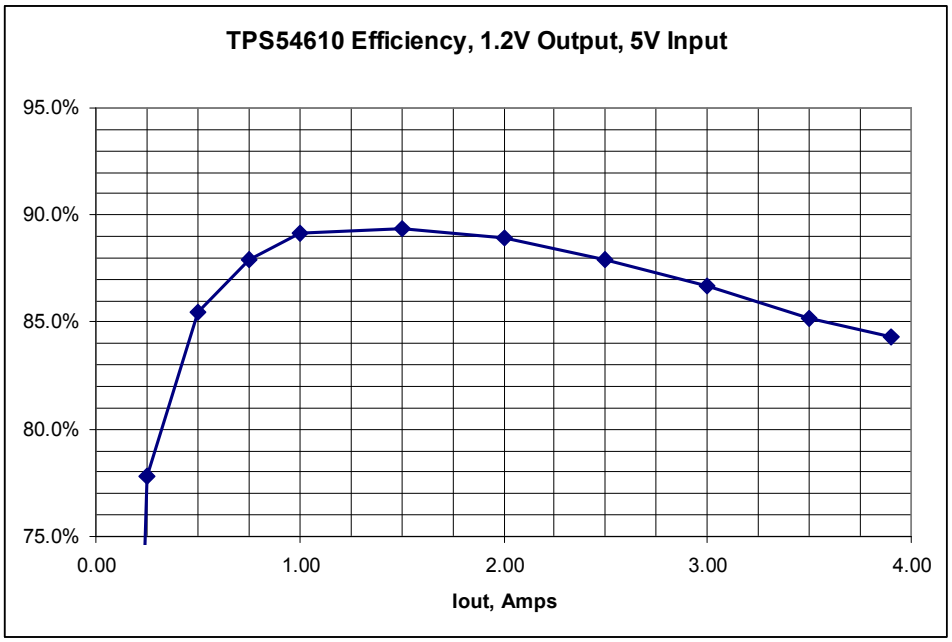
Filename: PMP3164.1_RevB_bom.xls						
Date: 03/24/2008						
		PMP3164.1 REV B BOM				
COUNT	**RefDes**	**Value**	**Description**	**Size**	**Part Number**	**MFR**
1	C24	47pF	Capacitor, Ceramic, 50V, C0G, 5%	603	Std	Std
1	C3	68pF	Capacitor, Ceramic, 50V, C0G, 5%	603	Std	Std
2	C14, C17	100pF	Capacitor, Ceramic, 50V, C0G, 5%	603	Std	Std
2	C2, C22	3300pF	Capacitor, Ceramic, 50V, X7R, 10%	603	Std	Std
1	C21	4700pF	Capacitor, Ceramic, 50V, X7R, 10%	603	Std	Std
1	C1	5600pF	Capacitor, Ceramic, 50V, X7R, 10%	603	Std	Std
2	C18, C23	0.01uF	Capacitor, Ceramic, 50V, X7R, 10%	603	Std	Std
2	C7, C29	0.033uF	Capacitor, Ceramic, 50V, X7R, 10%	603	Std	Std
2	C4, C25	0.047uF	Capacitor, Ceramic, 50V, X7R, 10%	603	Std	Std
1	C8	0.1uF	Capacitor, Ceramic, 50V, X7R, 10%	603	Std	Std
5	C10, C15, C16, C19, C30	1uF	Capacitor, Ceramic, 10V, X5R, 20%	603	Std	Std
3	C11, C20, C28	10uF	Capacitor, Ceramic, 6.3V, X5R, 20%	603	Std	Std
0	C12	DNP				
3	C9, C31, C32	22uF	Capacitor, Ceramic, 10V, X5R, 20%	1206	C3216X5R1A226M	TDK
2	C5, C6	47uF	Capacitor, Ceramic, 6.3V, X5R, 20%	1206	C3216X5R0J476M	TDK
2	C26, C27	330uF	Capacitor, POSCAP, 2V, 6milliohm, 20%	7343(D)	2TPF330M	Sanyo
1	C13	220uF	Capacitor, POSCAP, vvV, 40milliohm, 20%	7343(D)	6TPB220ML	Sanyo
6	J1, J2, J3, J4, J5, J6		Terminal Block, 2-pin, 6-A, 3.5mm	0.27 x 0.25	ED555/2DS	OST
1	L1	10uH	Inductor, SMT, 1.3A, 53milliohm	7x7mm	SLF7030T-100M1R3-PF	TDK
1	L2	3.3uH	Inductor, SMT, 6.2A, 10.5milliohm	10x9.7mm	VLF10040T-3R3N6R2	TDK
2	R13, R15	0	Resistor, Chip, 1/16W, 1%	603	Std	Std
1	R102	24	Resistor, Chip, 1/16W, 5%	603	Std	Std
2	R5, R11	49.9	Resistor, Chip, 1/16W, 1%	603	Std	Std
1	R2	158	Resistor, Chip, 1/16W, 1%	603	Std	Std
1	R8	1.21K	Resistor, Chip, 1/16W, 1%	603	Std	Std
1	R4	3.65K	Resistor, Chip, 1/16W, 1%	603	Std	Std
1	R1	5.11K	Resistor, Chip, 1/16W, 1%	603	Std	Std
3	R3, R6, R9	10K	Resistor, Chip, 1/16W, 1%	603	Std	Std
1	R7	15K	Resistor, Chip, 1/16W, 1%	603	Std	Std
2	R10, R100	28K	Resistor, Chip, 1/16W, 1%	603	Std	Std
1	R101	56.2K	Resistor, Chip, 1/16W, 1%	603	Std	Std
0	R12, R14	DNP	Resistor, Chip, 1/16W, 1%	603	Std	Std
12	TP1, TP2, TP3, TP6, TP8, TP9, TP10, TP11, TP14, TP15, TP17, TP18		Test Point, Red, Thru Hole Color Keyed	0.100 x 0.100	5000	Keystone
8	TP4, TP5, TP7, TP12, TP13, TP16, TP19, TP20		Test Point, Black, Thru Hole Color Keyed	0.100 x 0.100	5001	Keystone
1	U1		IC, IFET Power Controller, adjV, 1.5A	PWP20	TPS54110PWP	TI
1	U2		IC, 250mA, Cap Free LDO, Adj	SON-8	TPS73201DRB	TI
1	U3		IC, Programmable 1.2V, Delay Time: 1.25ms to10s	SOT23-6	TPS3808G12DBVR	TI
1	U4		IC, Programmable 3.3V, Delay Time: 1.25ms to10s	SOT23-6	TPS3808G33DBVR	TI
1	U5		IC, 150mA LDO Regulator With Reverse Current Protection	SOT23-5	TPS73115DBV	TI
1	U6		IC, 400mA LDO Regulator With Reverse Current Protection	QFN-8	TPS736125DRB	TI
1	U7		IC, 6A Output Synchronous Buck PWM (SWIFT)	PWP28	TPS54610PWP	TI

Efficiency

The efficiency of theTPS54110 converter with a 3.3V output and 5V input:



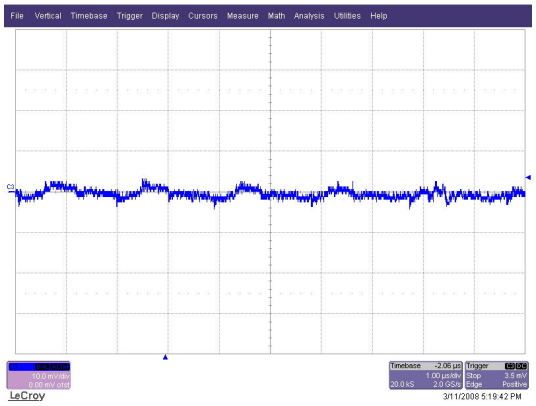
The efficiency of theTPS54610 converter with a 1.2V output and a 5V input:



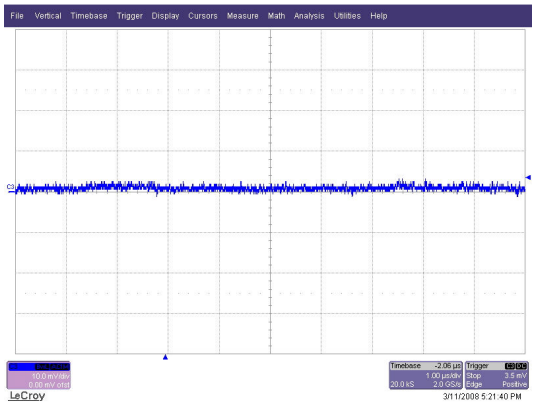
Ripple and Noise

All ripple measurements taken with a 20MHz bandwidth and maximum loading

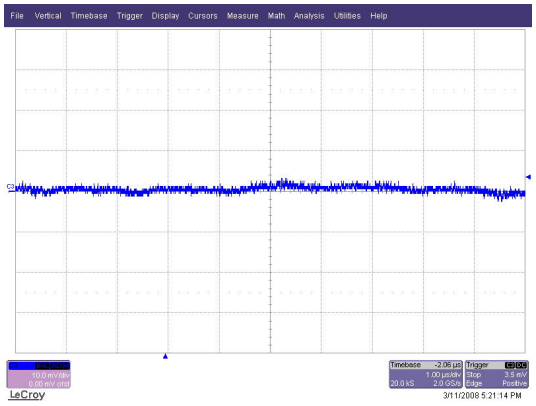
Output ripple/noise 3.3V output:



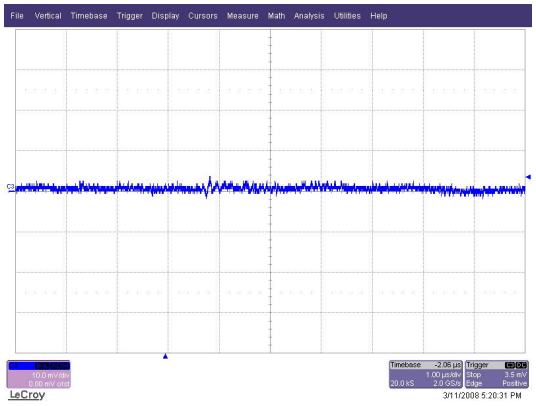
Output ripple/noise 1.8V output:



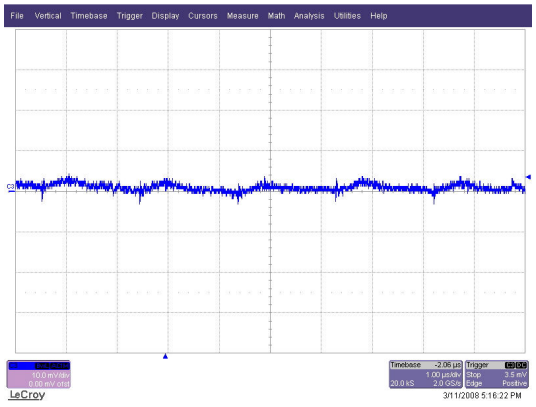
Output ripple/noise 1.5V output:



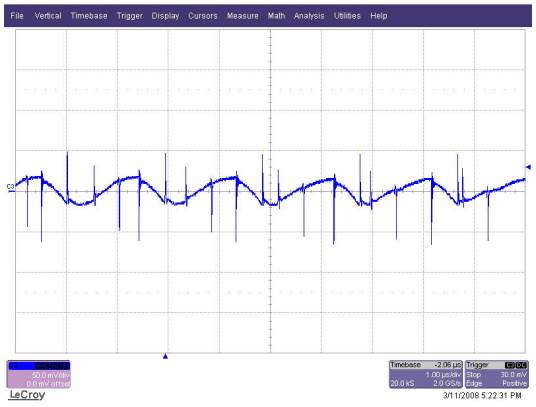
Output ripple/noise 1.25V output:



Output ripple/noise 1.2V output:

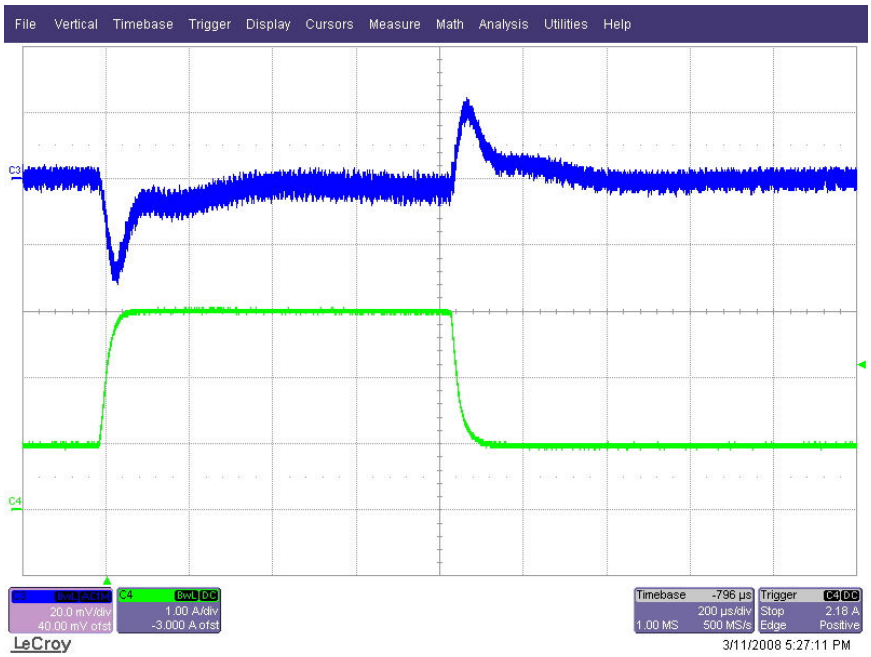


Input ripple/noise 5V input:



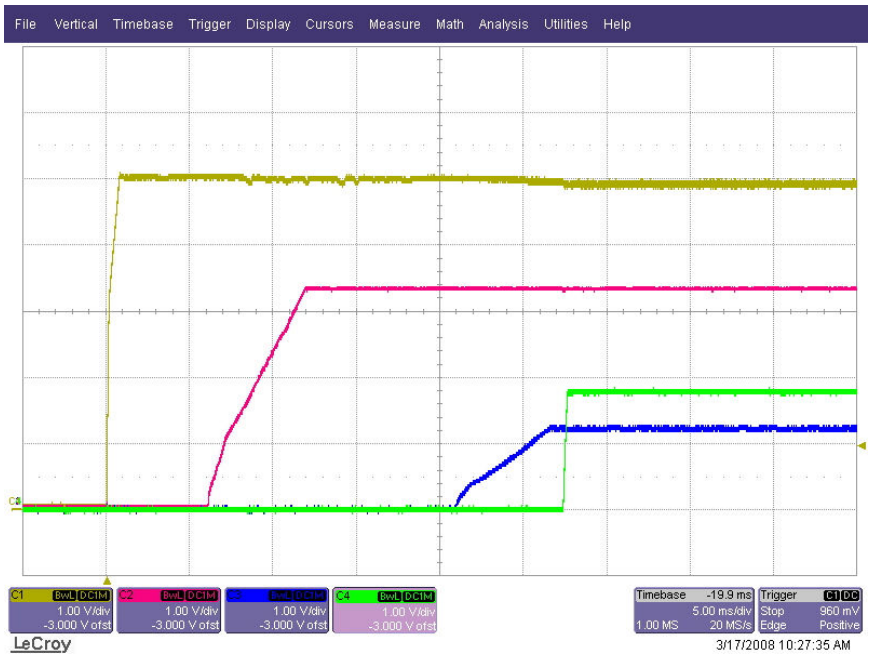
Dynamic Loading

Dynamic load response 1.2V output:

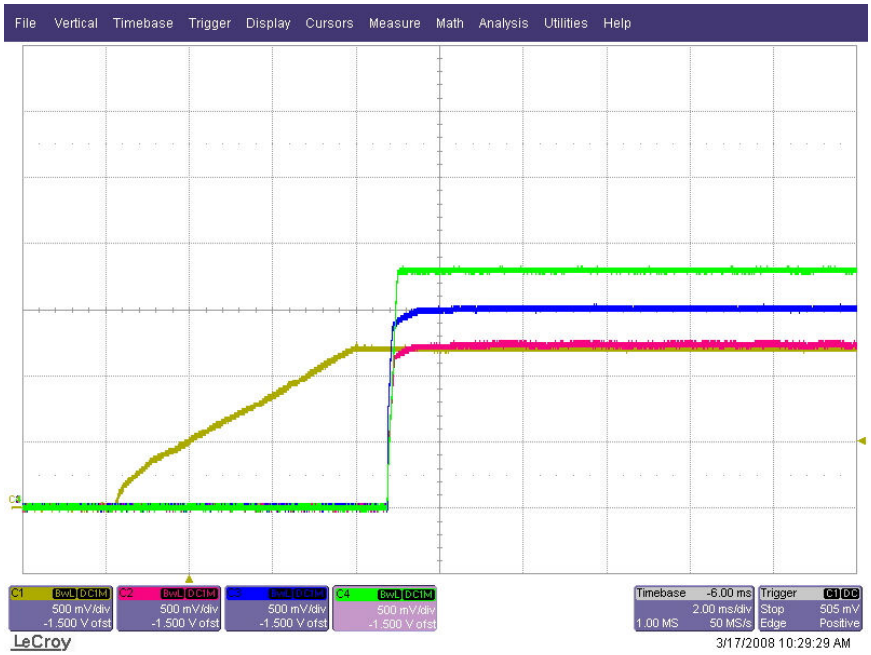


Turn On Response

Output voltage turn-on response (traces, top to bottom, are: 5VIN, 3.3V, 1.8V, 1.2V):

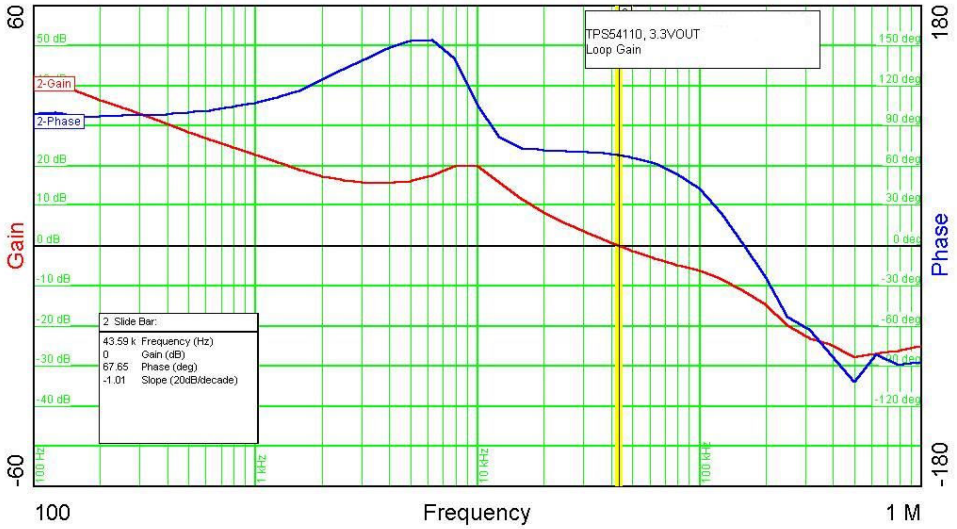


Output voltage turn-on response (traces, top to bottom, are: 1.8V, 1.5V, 1.25V, 1.2V):

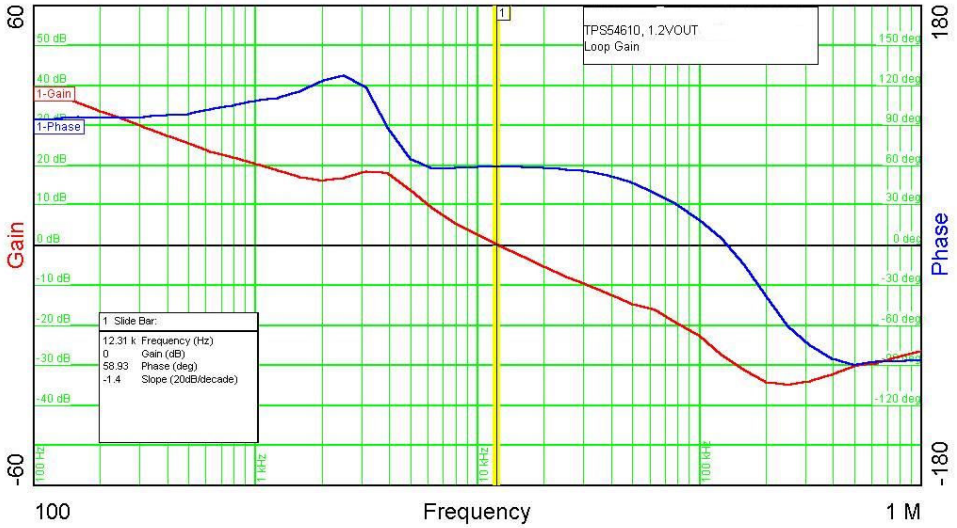


Stability Analysis (Loop Gain)

The figure below is the loop gain of the TPS54110 converter with max load. The bandwidth is 43 KHz, the phase margin is 68 degrees, and the gain margin is 12dB.



The figure below is the loop gain of the TPS54610 converter with max load. The bandwidth is 12 KHz, the phase margin is 59 degrees, and the gain margin is 28dB.



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