

TEA1993 efficiency comparison

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Background

1. TEA1993 is new generation SR controller for USB PD.
2. We would like to see the efficiency-wise which is compared with TEA1792TS and TEA1892ATS.
3. We only focus on efficiency by TEA1836 65W/19.5V demoboard

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Condition

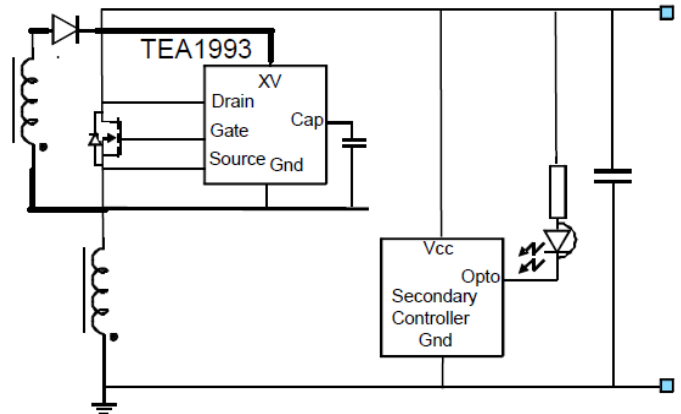
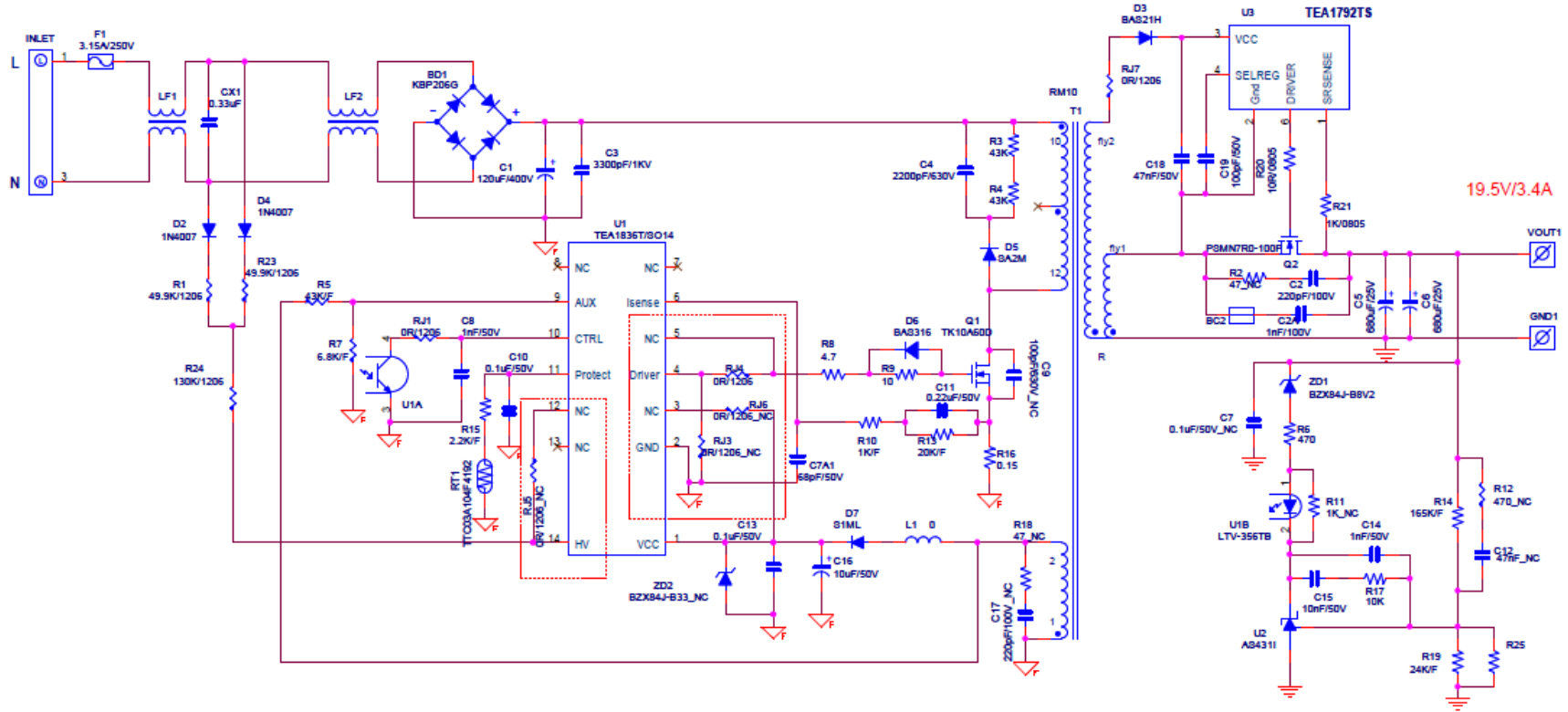
Demoboard: TEA1836 65W/19.5V/3.34A demoboard

SR MOSFET: PSMN7R0

SR controller: TEA1792/ TEA1892 and TEA1993 demoboard

XV pin connects to extra winding

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TEA1993TS test result for 7R0 by extra winding at XV

TEA1836		18AWG/1.8m	Lp=340uH		Rsense=0.15		
			TEA1993TS		PSMN7R0		
115V_{AC}/60Hz		二次側無 snubber			XV接extra winding		
Load (%)	V_{OUT} (V)	V_{out,cable} (V)	I_{OUT} (A)	P_{OUT} (W)	P_{IN} (W)	Efficiency (%)	efficiency @ cable end
100	19.573	19.223	3.34	65.37	72.53	90.13	88.52
75	19.561	19.3	2.505	49.00	53.97	90.79	89.58
50	19.578	19.404	1.67	32.70	35.88	91.12	90.31
25	19.623	19.534	0.835	16.39	18.11	90.48	90.07
Average						90.63	89.62
10	19.635	19.6	0.334	6.56	7.321	89.58	89.42
230V_{AC}/50Hz							
Load (%)	V_{OUT} (V)	V_{out,cable} (V)	I_{OUT} (A)	P_{OUT} (W)	P_{IN} (W)	Efficiency (%)	efficiency @ cable end
100	19.362	19.007	3.34	64.67	70.64	91.55	89.87
75	19.374	19.113	2.505	48.53	53.25	91.14	89.91
50	19.473	19.299	1.67	32.52	35.77	90.91	90.10
25	19.576	19.486	0.835	16.35	18.23	89.67	89.25
Average						90.82	89.78
10	19.623	19.589	0.334	6.55	7.408	88.47	88.32

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Curve of test result

