LTC3787 Supply Design Summary Report

Vin : 9V (min.), 12V (nom.), 15V (max.)

Output Rails : Vout1 = 37,28V / 30A (max.)

Project Name : TPA3251 Boost Converter

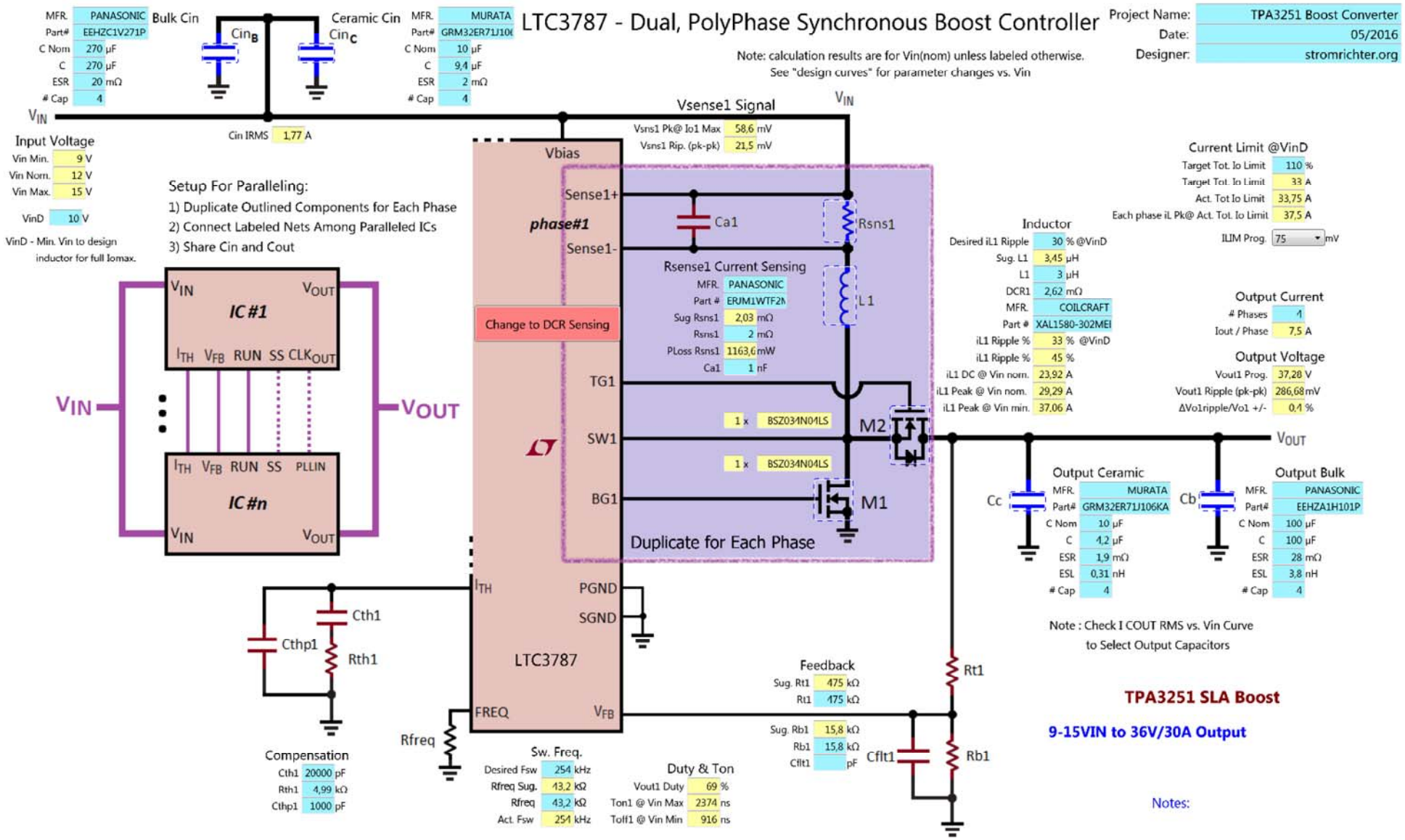
Project Date : 05/2016

Designer : stromrichter.org

LTC3787 Solution - Simplified Schematic

Vin : 9V (min.), 12V (nom.), 15V (max.)

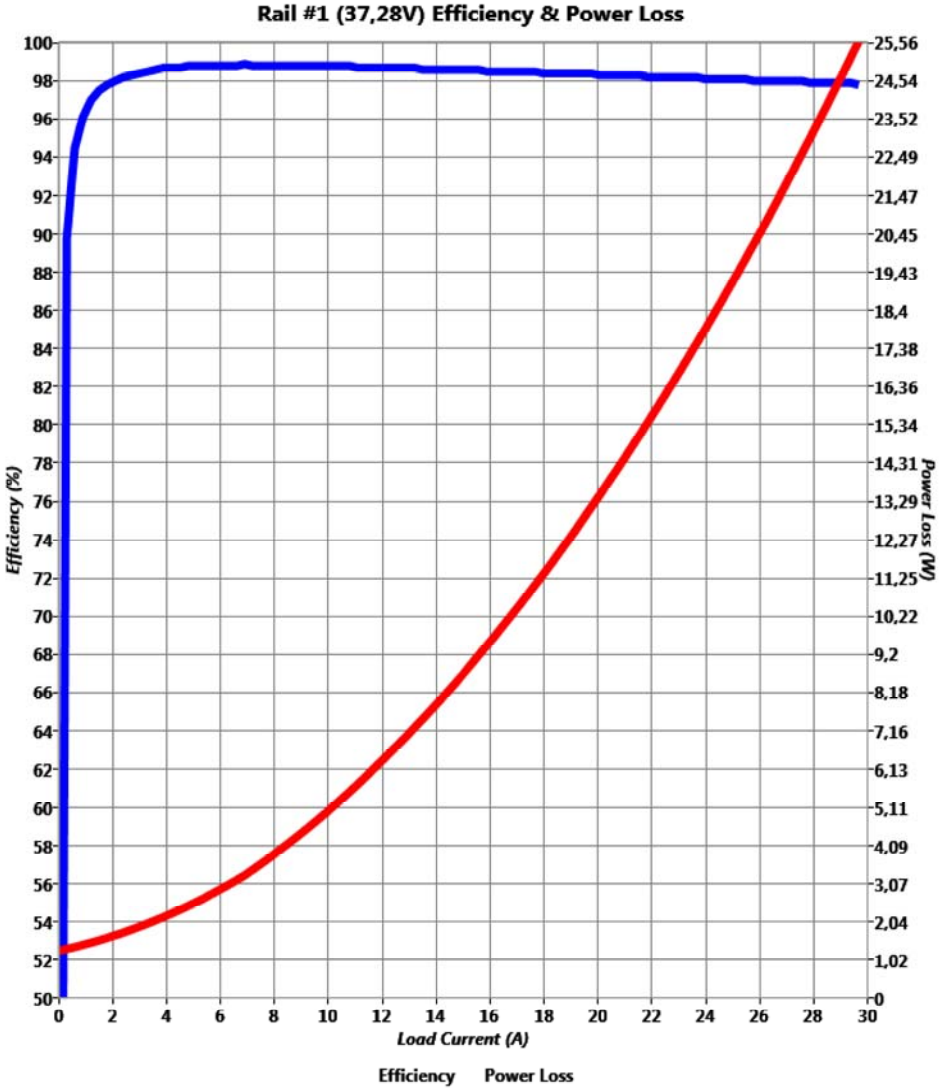
Output Rails : Vout1 = 37,28V / 30A (max.)

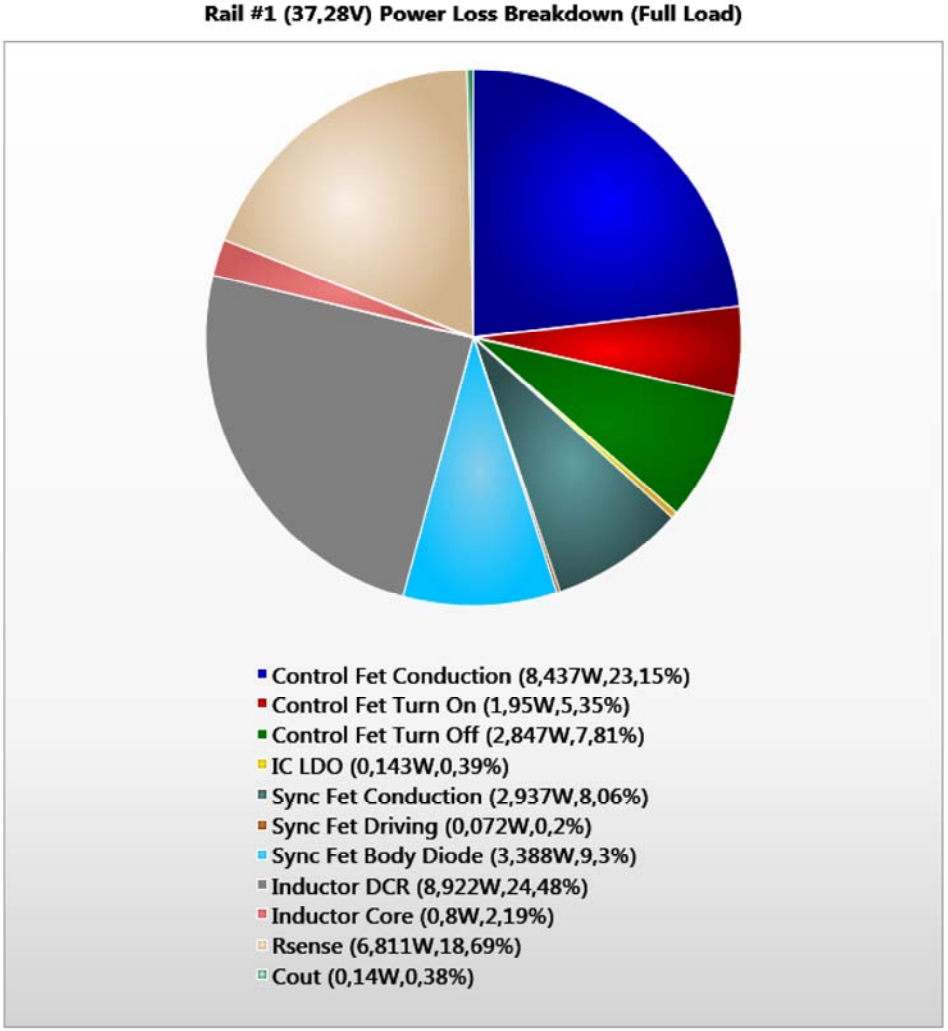


LTC3787 Solution - Efficiency & Loss Estimations

Rail # 1 : Vin = 10V, Vout1 = 37,28V

** Estimations For CCM Mode Only. Inductor AC Losses Entered by User*



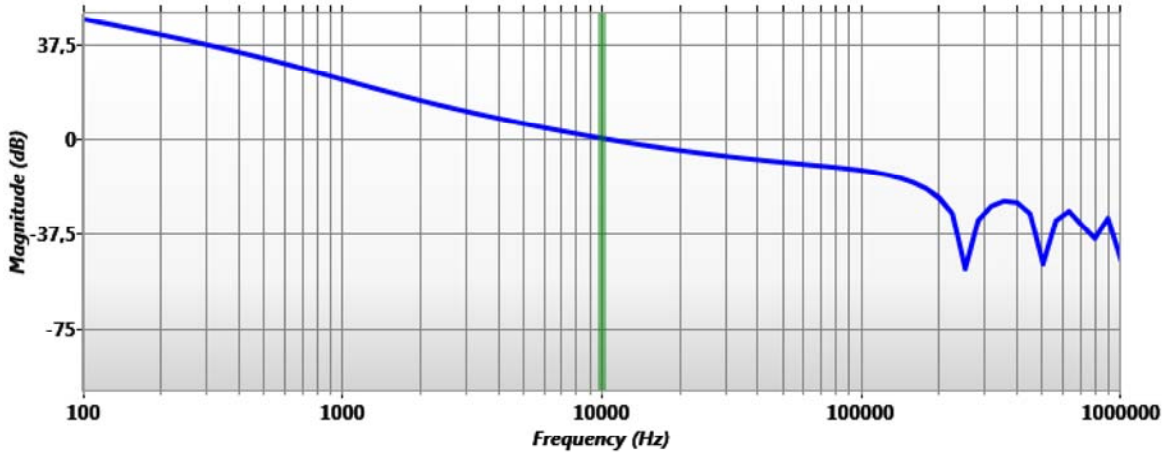


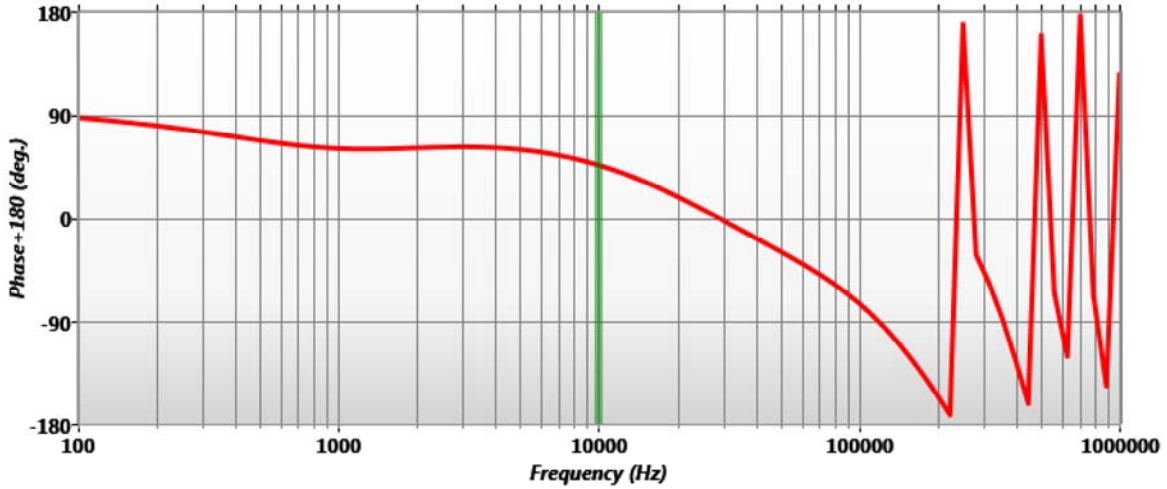
LTC3787 Solution - Loop Gain & Load Transient Estimations

Rail # 1 : Vin = 10V, Vout1 = 37,28V, Iout1 = 25A

** Estimations For CCM Mode Only. Estimations Based On Small Signal Avg. Model*

Rail #1 (37,28V) Loop Gain





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LTC3787 Supply Design Summary

LTpowerCAD

Project Info: *TPA3251 Boost Converter, 05/2016, stromrichter.org*

Design Specifications

Steady State :

Rail #	Vin Min.	Vin Nom.	Vin Max.	Fsw	Vo	ΔVo rip. p-p	ΔVo rip.%	Io Max	ΔiLp-p	ΔiL%	iLpk	Duty Max	Ton min.	Toff min.
1	9 V	12 V	15 V	254 kHz	37,28 V	286,68 mV	0,4 %	30 A	10,74 A	45 %	29,29 A	7697 %	2374 ns	916 ns

Efficiency and Loop :

Rail #	Vo	Iomax	Eff.@Iomax	PLoss@Iomax	Loop BW	Loop PM
1	37,28 V	30 A	96,89 %	35,846 W	10 kHz	45,29 deg

Recommendations and Warnings :

Message

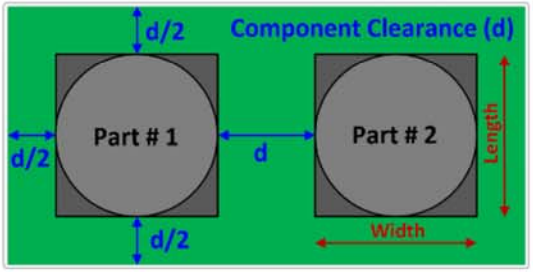
Power Components

Power Components Bill Of Materials : Export BOM

Ref. Des.	Value	Quantity	Description	Mfr. Name	Mfr. Part #	Pkg. (Imperial)	L(mm)	W(mm)	H(mm)	User Note
U1 U2		2	IC	LINEAR TECH	LTC3787		5	4	0.8	
Lo1 Lo2 Lo3 Lo4	3µH	4	IND	COILCRAFT	XAL1580-302MEB		16.4	15.4	7.5	
Cinb1 Cinb2 Cinb3 Cinb4	270µF	4	CAP	PANASONIC	EEHZC1V271P	G	10	10	10.2	
Cinc1 Cinc2 Cinc3 Cinc4	10µF	4	CAP	MURATA	GRM32ER71J106KA12	1210	3.2	2.5	2.7	
Cob1 Cob2 Cob3 Cob4	100µF	4	CAP	PANASONIC	EEHZA1H101P	G	10	10	10.2	
Coc1 Coc2 Coc3 Coc4	10µF	4	CAP	MURATA	GRM32ER71J106KA12	1210	3.2	2.5	2.7	
Rsense1 Rsense2 Rsense3 Rsense4	2mΩ	4	RES	PANASONIC	ERJM1WTF2M0	2512	6.4	3.2	0.8	
Mctrl1 Mctrl2 Mctrl3 Mctrl4	40V	4	FET	Infineon	BSZ034N04LS		3.4	3.4	1.1	
Msync1 Msync2 Msync3 Msync4	40V	4	FET	Infineon	BSZ034N04LS		3.4	3.4	1.1	

Power Components Footprint :

# Components	34	
Max. Height	10,2	mm
Component Clearance (d)	1	mm
* Power Components Area (Excludes ICs)	2506,2	mm^2
	3,885	in^2
* Power Components Area (Includes ICs)	2566,2	mm^2
	3,978	in^2



**** Note :***

The calculated power component area is only the simple sum of component footprint areas with given clearance, assuming all power components are on the same side of PCB. It is NOT the final PCB size with layout design.