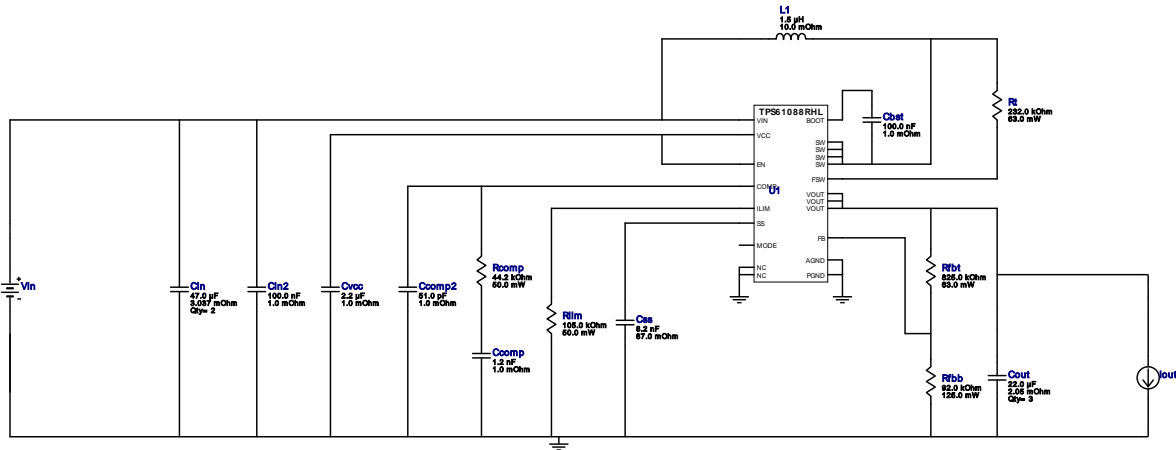


WEBENCH® Design Report

Design : TPS61088RHLL
TPS61088RHLL 3.0V-4.2V to 12.00V @ 2.0A










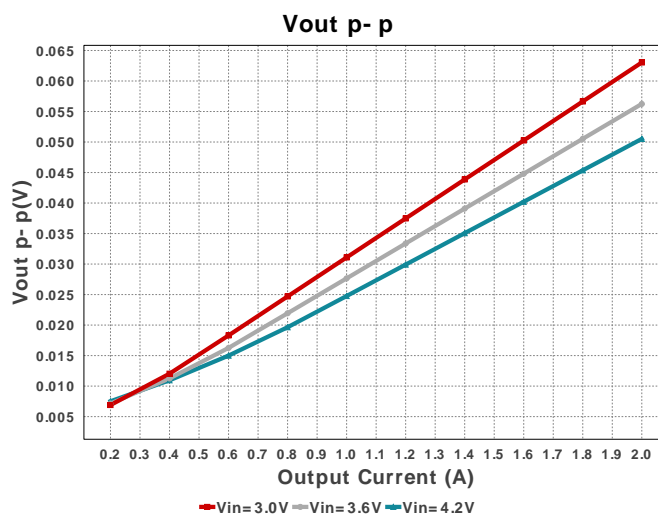
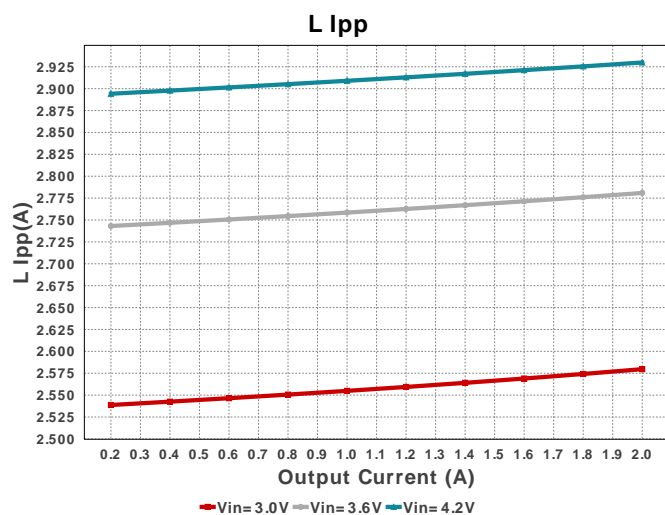
My Comments

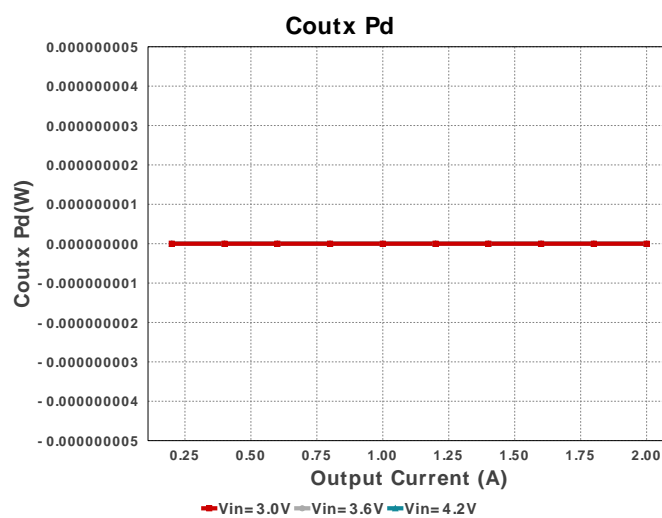
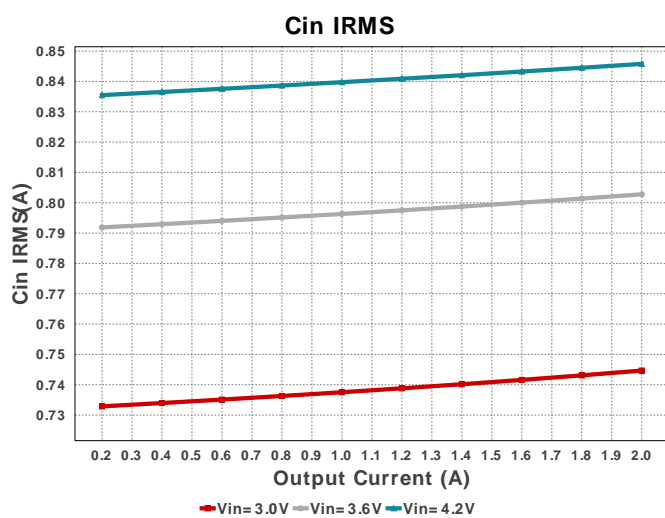
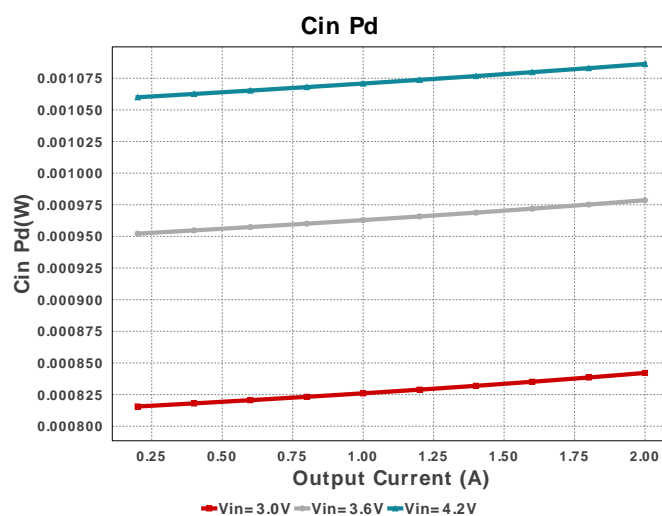
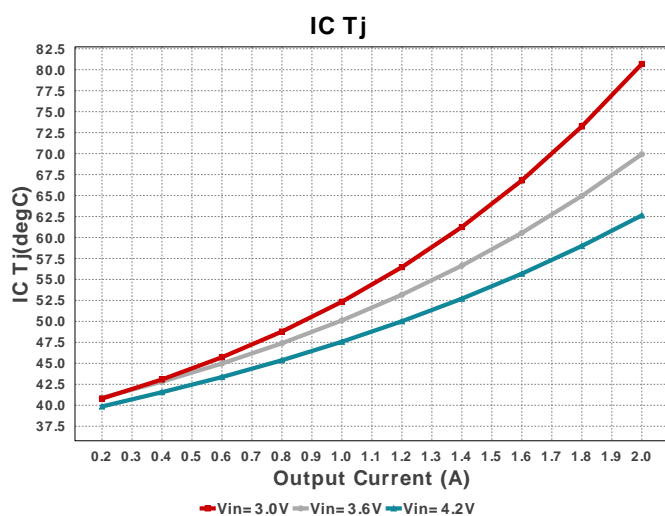
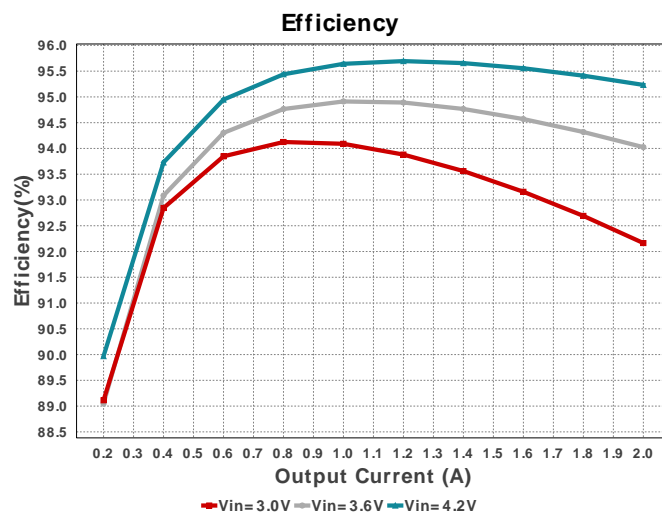
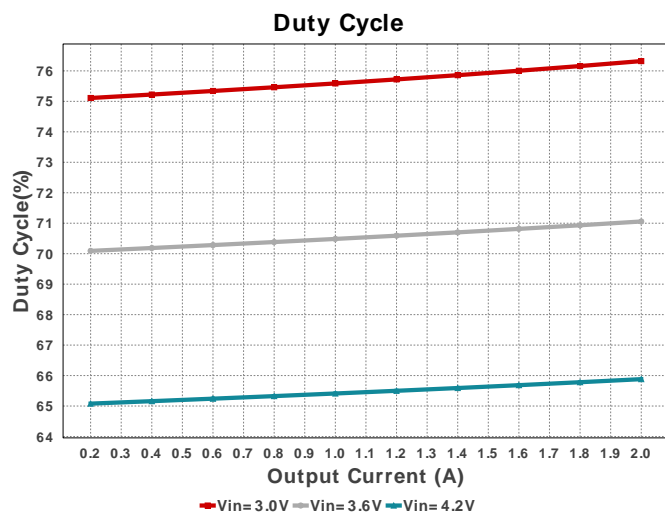
No comments

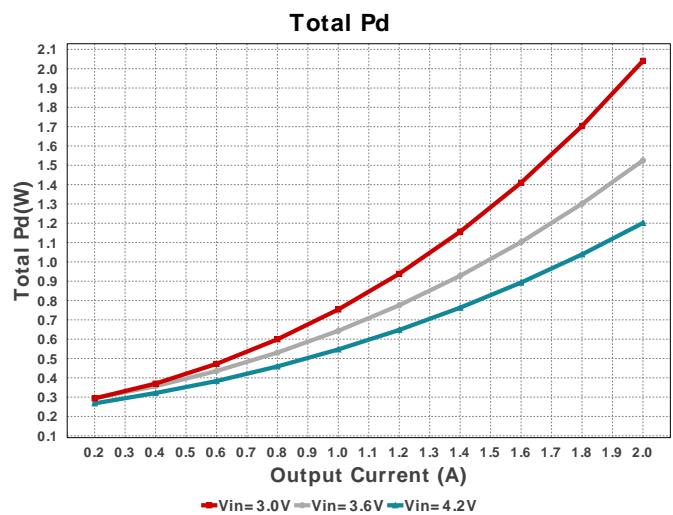
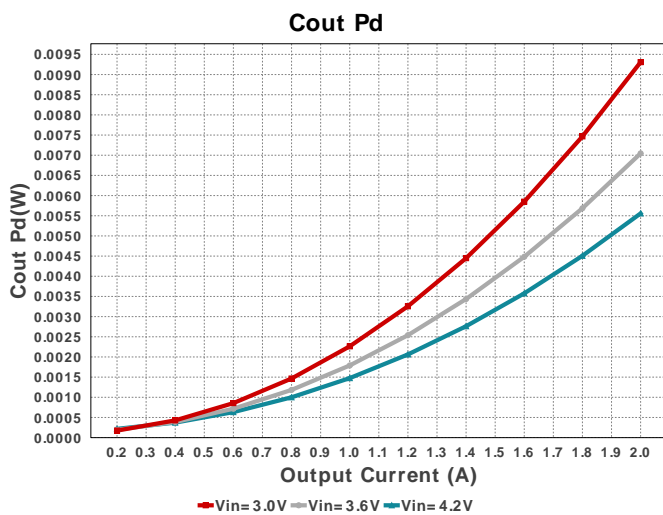
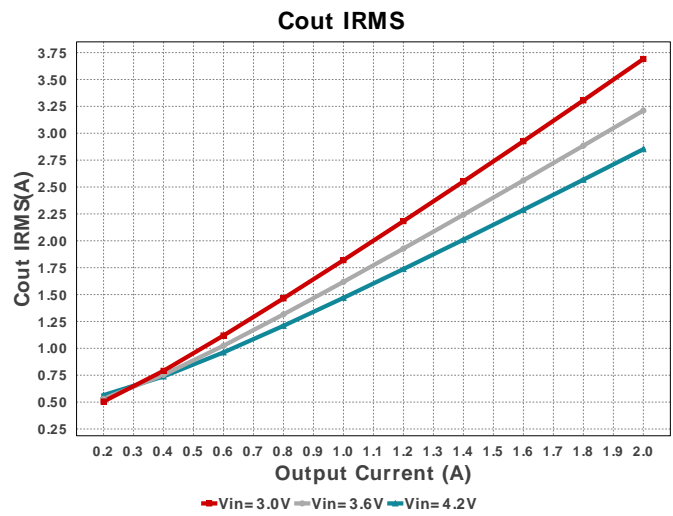
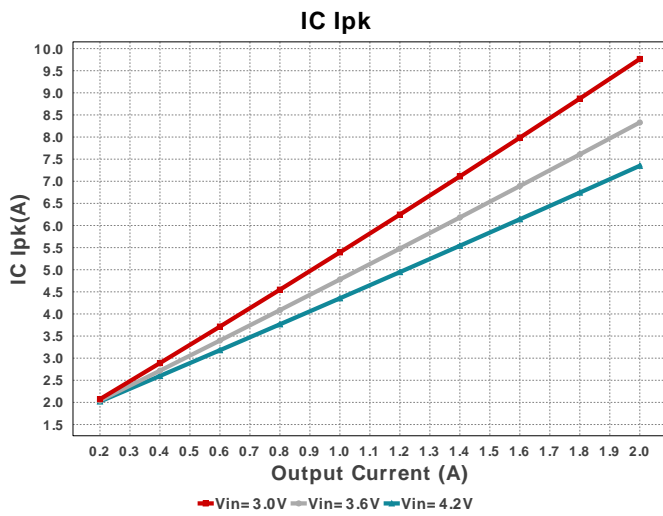
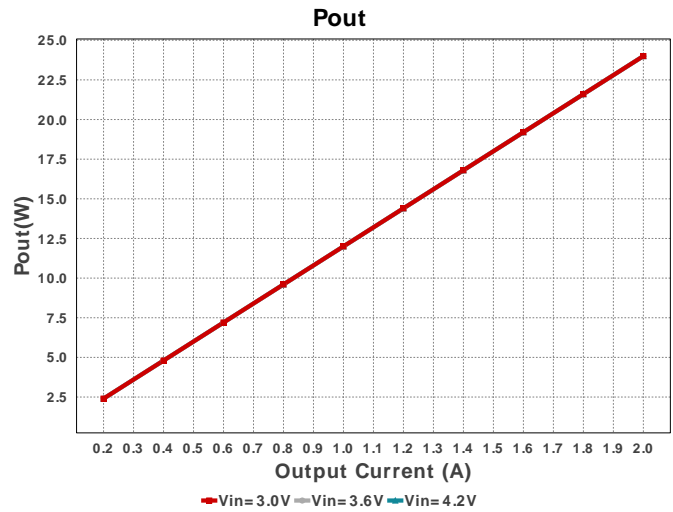
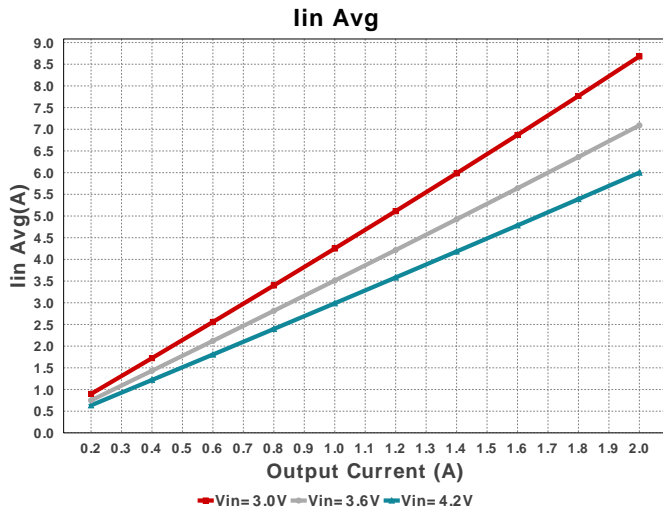
Electrical BOM

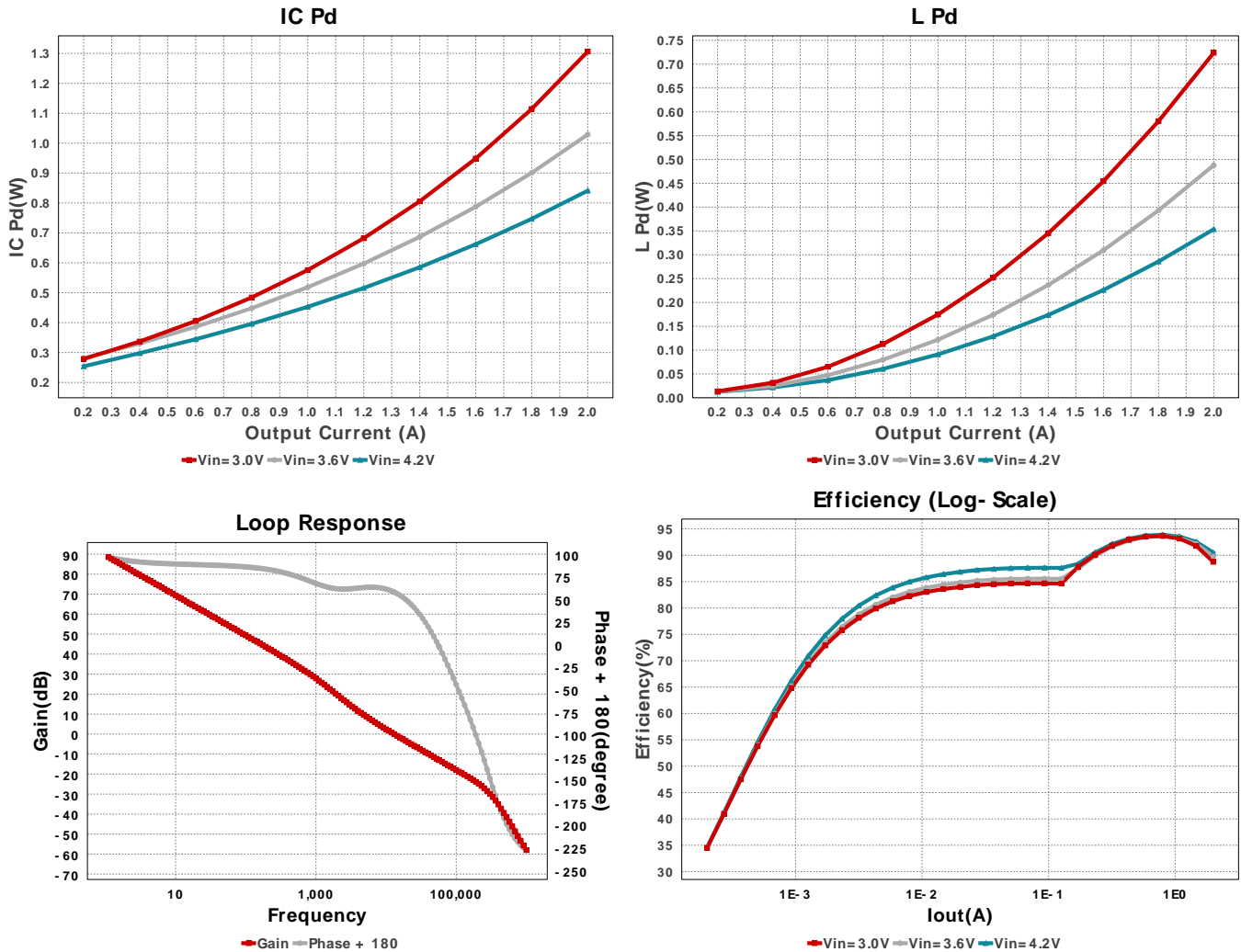
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cbst	MuRata	GRM155R61C104KA88D Series= X5R	Cap= 100.0 nF ESR= 1.0 mOhm VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
2.	Ccomp	MuRata	GRM033R71C122KA01D Series= X7R	Cap= 1.2 nF ESR= 1.0 mOhm VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	0201 2 mm ²
3.	Ccomp2	MuRata	GRM1555C1E510JA01D Series= C0G/NP0	Cap= 51.0 pF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
4.	Cin	MuRata	GRM32ER61C476ME15L Series= X5R	Cap= 47.0 uF ESR= 3.037 mOhm VDC= 16.0 V IRMS= 4.59346 A	2	\$0.39	1210_280 15 mm ²
5.	Cin2	MuRata	GRM155R60J104KA01D Series= X5R	Cap= 100.0 nF ESR= 1.0 mOhm VDC= 6.3 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
6.	Cout	TDK	C2012X5R1V226M125AC Series= X5R	Cap= 22.0 uF ESR= 2.05 mOhm VDC= 35.0 V IRMS= 4.5559 A	3	\$0.38	0805 7 mm ²
7.	Css	AVX	08055C822KAT2A Series= X7R	Cap= 8.2 nF ESR= 87.0 mOhm VDC= 50.0 V IRMS= 0.0 A	1	\$0.03	0805 7 mm ²
8.	Cvcc	Kemet	C0603C225K8PACTU Series= X5R	Cap= 2.2 uF ESR= 1.0 mOhm VDC= 10.0 V IRMS= 0.0 A	1	\$0.04	0603 5 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
9.	L1	Bourns	SRP6540-1R5M	L= 1.5 μ H DCR= 10.0 mOhm	1	\$0.56	 SRP6540 83 mm ²
10.	Rcomp	Yageo	RC0201FR-0744K2L Series= ?	Res= 44.2 kOhm Power= 50.0 mW Tolerance= 1.0%	1	\$0.01	 0201 2 mm ²
11.	Rfbb	Yageo	RT0805BRD0792KL Series= RT0805	Res= 92.0 kOhm Power= 125.0 mW Tolerance= 0.1%	1	\$0.05	 0805 7 mm ²
12.	Rfbt	Vishay-Dale	CRCW0402825KFKED Series= CRCW..e3	Res= 825.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
13.	Rlim	Yageo	RC0201FR-07105KL Series= ?	Res= 105.0 kOhm Power= 50.0 mW Tolerance= 1.0%	1	\$0.01	 0201 2 mm ²
14.	Rt	Vishay-Dale	CRCW0402232KFKED Series= CRCW..e3	Res= 232.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
15.	U1	Texas Instruments	TPS61088RHLR	Switcher	1	\$1.60	 RHL0020A 25 mm ²









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	744.681 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	3.691 A	Current	Output capacitor RMS ripple current
3.	IC Ipk	9.765 A	Current	Peak switch current in IC
4.	Iin Avg	8.68 A	Current	Average input current
5.	L Ipp	2.58 A	Current	Peak-to-peak inductor ripple current
6.	BOM Count	18	General	Total Design BOM count
7.	FootPrint	196.0 mm ²	General	Total Foot Print Area of BOM components
8.	Frequency	591.716 kHz	General	Switching frequency
9.	Mode	BOOST CCM	General	PWM/PFM Mode
10.	Pout	24.0 W	General	Total output power
11.	Total BOM	\$4.28	General	Total BOM Cost
12.	Cross Freq	12.934 kHz	Op Point	Bode plot crossover frequency
13.	Duty Cycle	76.321 %	Op Point	Duty cycle
14.	Efficiency	92.164 %	Op Point	Steady state efficiency
15.	Gain Marg	-12.696 dB	Op Point	Bode Plot Gain Margin
16.	IC Tj	80.682 degC	Op Point	IC junction temperature
17.	ICThetaJA	38.8 degC/W	Op Point	IC junction-to-ambient thermal resistance
18.	IOUT_OP	2.0 A	Op Point	Iout operating point
19.	Low Freq Gain	87.175 dB	Op Point	Gain at 1Hz
20.	Phase Marg	60.021 deg	Op Point	Bode Plot Phase Margin
21.	VIN_OP	3.0 V	Op Point	Vin operating point
22.	Vout Actual	12.001 V	Op Point	Vout Actual calculated based on selected voltage divider resistors
23.	Vout Tolerance	3.633 %	Op Point	Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable
24.	Vout p-p	63.034 mV	Op Point	Peak-to-peak output ripple voltage
25.	Cin Pd	842.084 μW	Power	Input capacitor power dissipation
26.	Cout Pd	9.307 mW	Power	Output capacitor power dissipation
27.	Coutx Pd	0.0 W	Power	Output capacitor_x power loss
28.	IC Pd	1.306 W	Power	IC power dissipation
29.	L Pd	723.858 mW	Power	Inductor power dissipation
30.	Total Pd	2.041 W	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	2.0	Maximum Output Current
2.	VinMax	4.2	Maximum input voltage
3.	VinMin	3.0	Minimum input voltage
4.	Vout	12.0	Output Voltage
5.	base_pn	TPS61088	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature

Design Assistance

1. **TPS61088** Product Folder : <http://www.ti.com/product/TPS61088> : contains the data sheet and other resources.

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