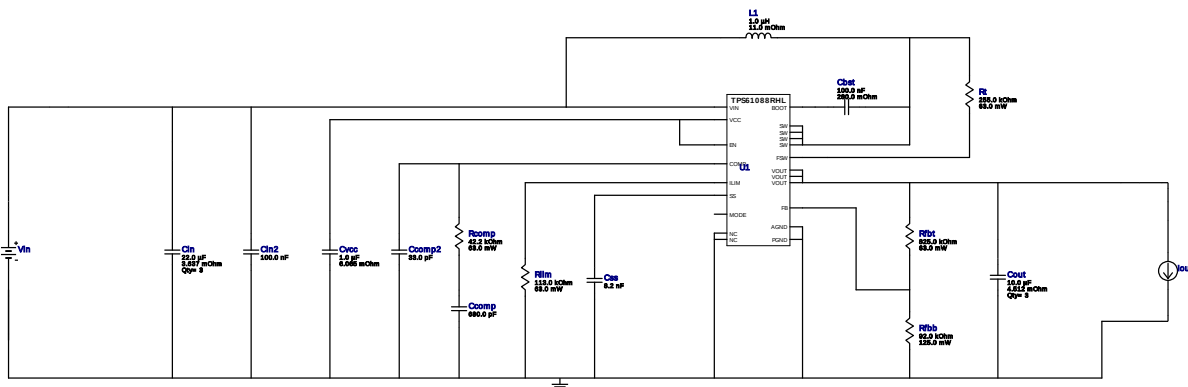


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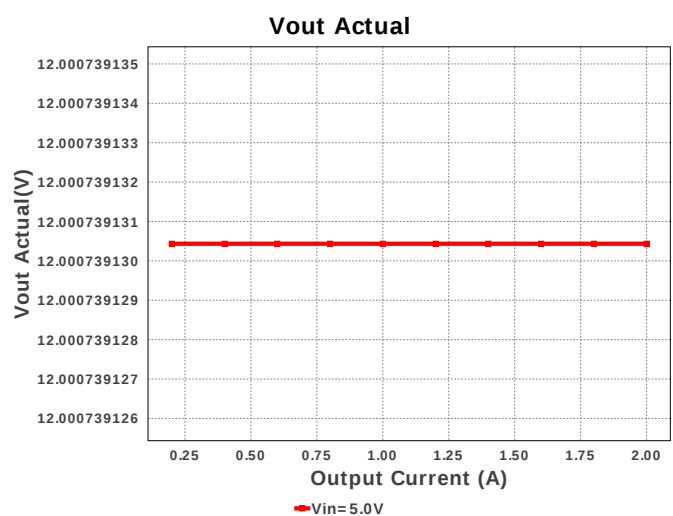
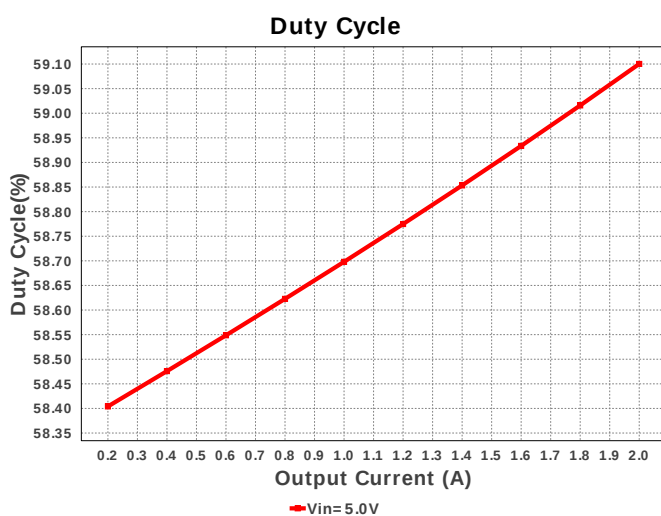
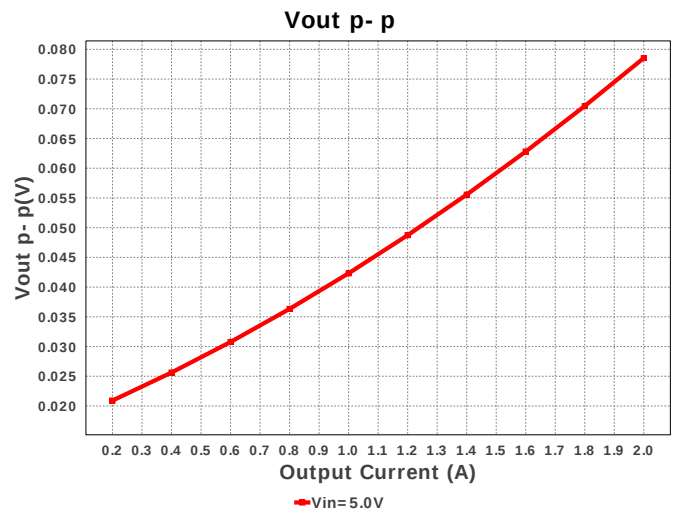
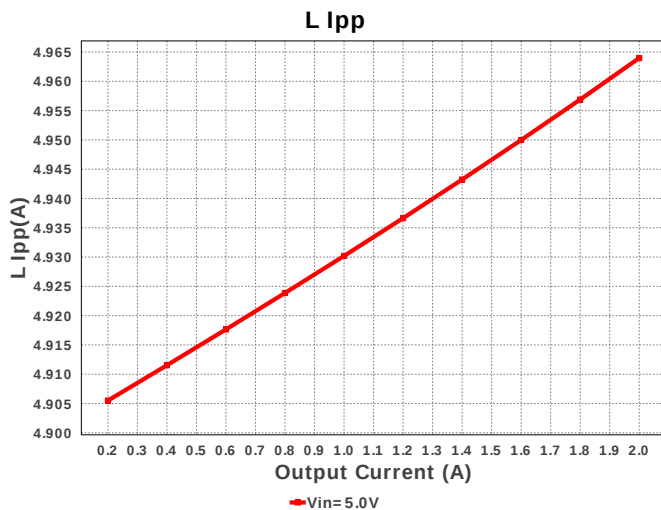
Design : 4085315/16 TPS61088RHLR
TPS61088RHLR 5.0V-5.0V to 12.00V @ 2.0A

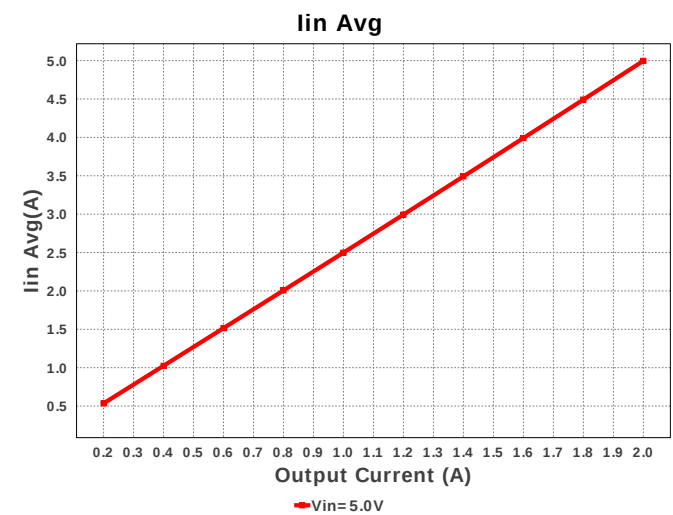
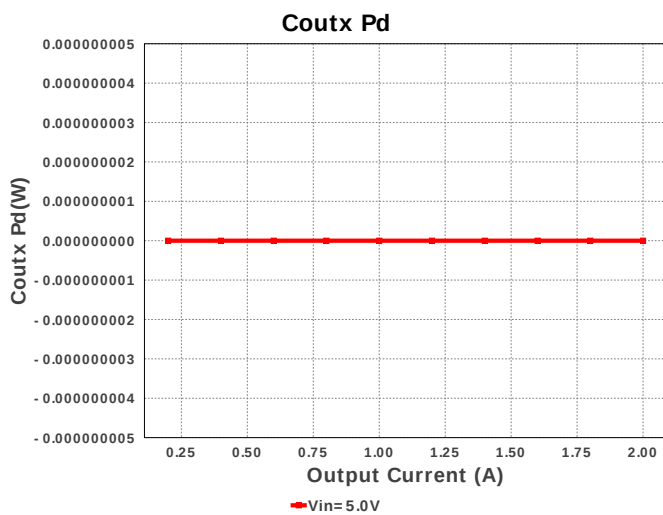
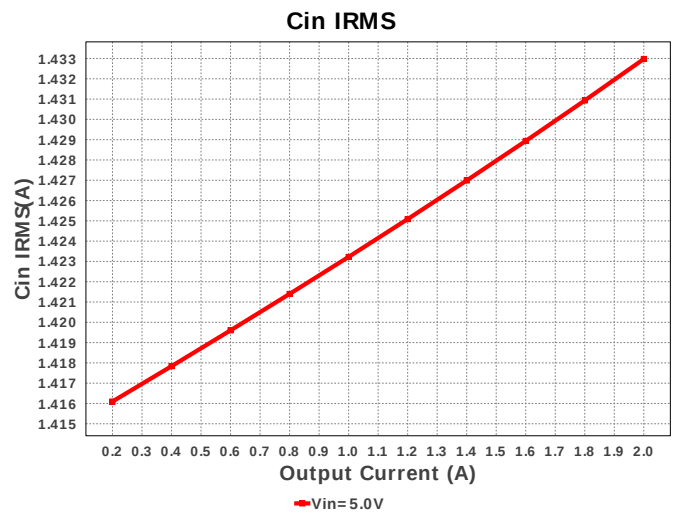
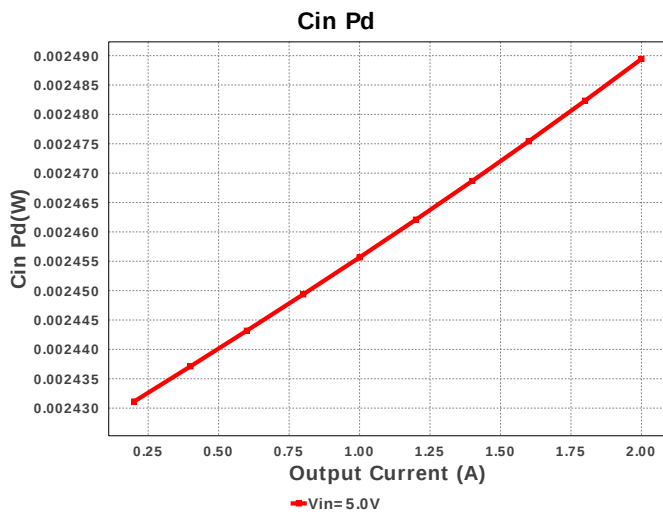
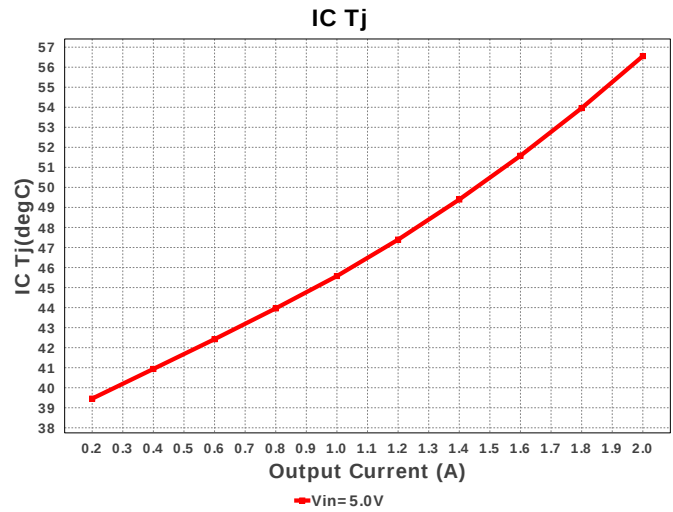
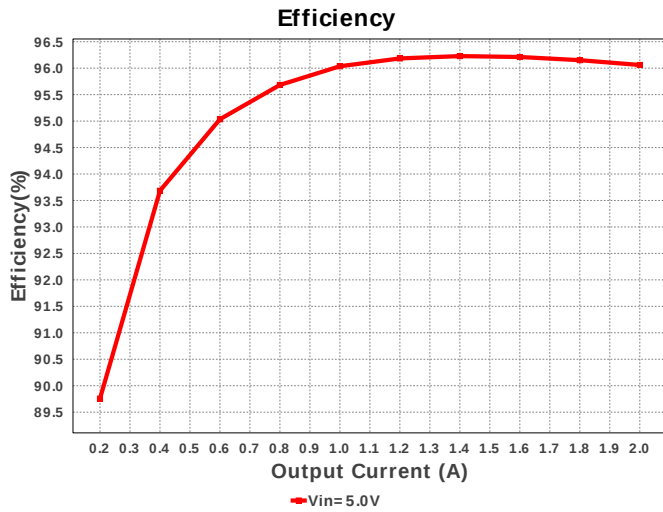


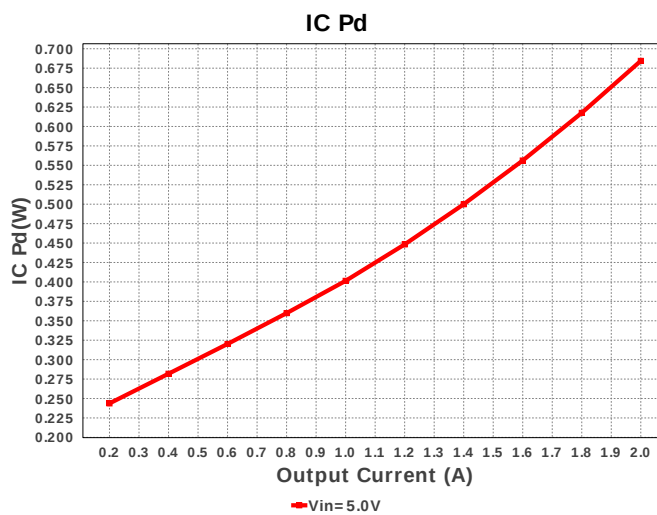
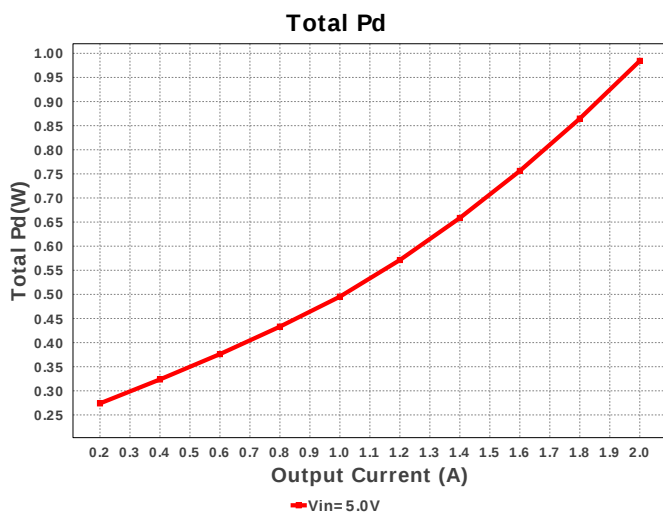
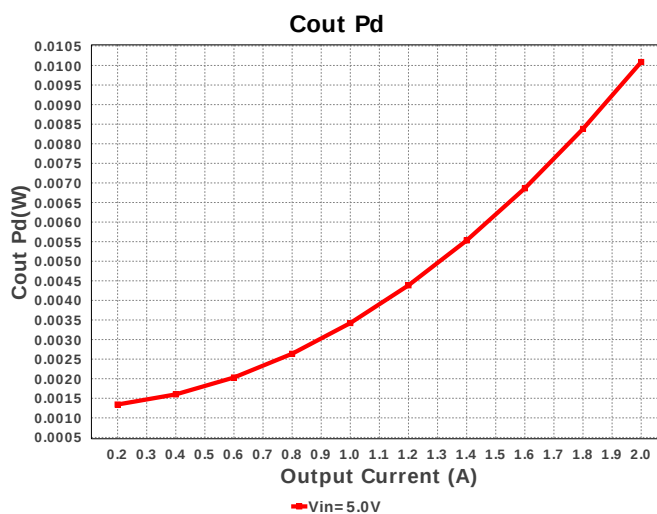
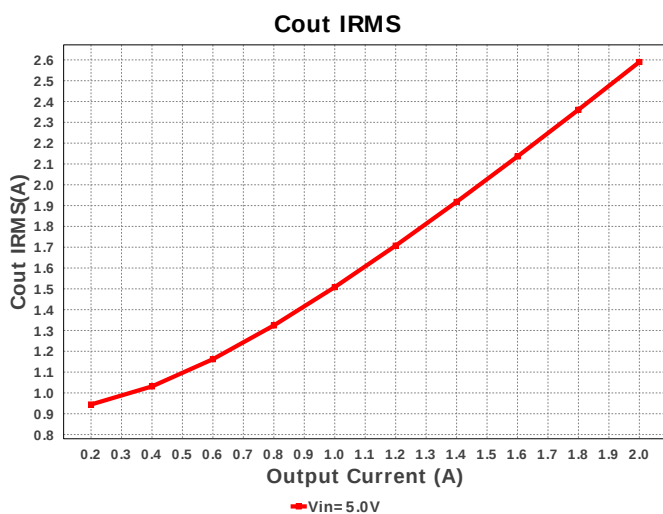
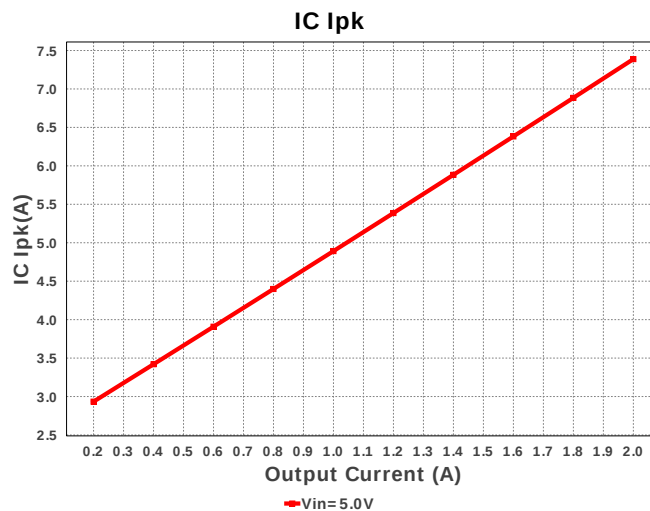
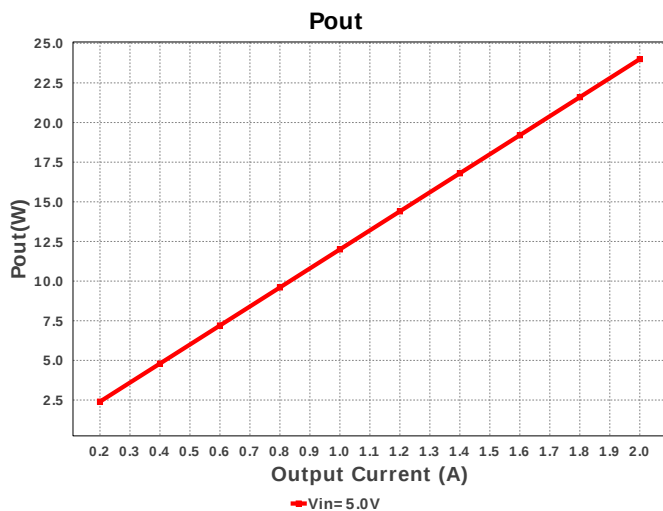
Electrical BOM

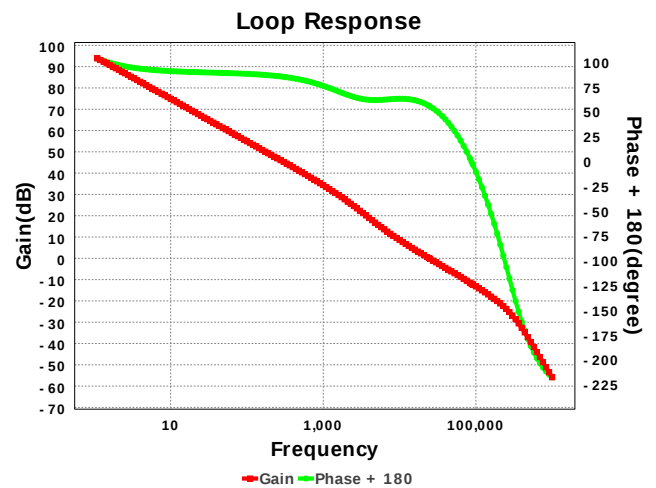
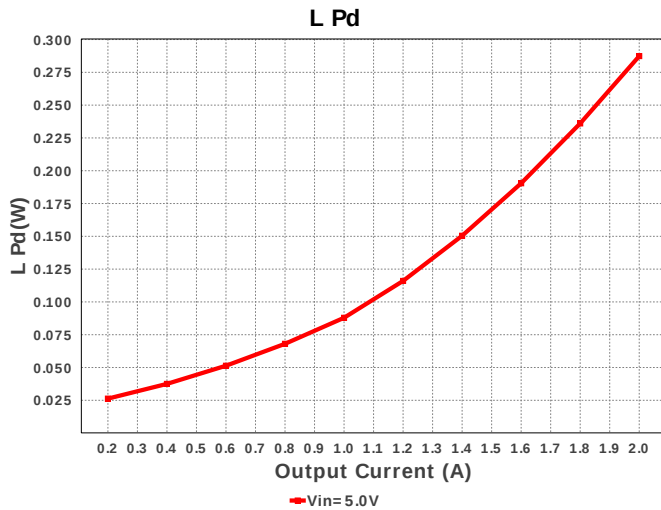
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cbst	AVX	08053C104KAT2A Series= X7R	Cap= 100.0 nF ESR= 280.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
2.	Ccomp	MuRata	GRM033R71C681KA01D Series= X7R	Cap= 680.0 pF VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	0201 2 mm ²
3.	Ccomp2	Kemet	C0201C330J3GACTU Series= C0G/NP0	Cap= 33.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0201 2 mm ²
4.	Cin	MuRata	GRM31CR61A226KE19L Series= X5R	Cap= 22.0 uF ESR= 3.637 mOhm VDC= 10.0 V IRMS= 3.56456 A	3	\$0.07	1206_190 11 mm ²
5.	Cin2	MuRata	GRM155R61A104KA01D Series= X5R	Cap= 100.0 nF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
6.	Cout	MuRata	GRM31CR61E106KA12L Series= X5R	Cap= 10.0 uF ESR= 4.512 mOhm VDC= 25.0 V IRMS= 2.447 A	3	\$0.05	1206_190 11 mm ²
7.	Css	MuRata	GRM155R71C822KA01D Series= X7R	Cap= 8.2 nF VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
8.	Cvcc	MuRata	GRM188R61A105KA61D Series= X5R	Cap= 1.0 uF ESR= 6.065 mOhm VDC= 10.0 V IRMS= 1.30675 A	1	\$0.01	0603 5 mm ²
9.	L1	TDK	VLP8040T-1R0N	L= 1.0 µH DCR= 11.0 mOhm	1	\$0.22	VLP8040 113 mm ²
10.	Rcomp	Vishay-Dale	CRCW040242K2FKED Series= CRCW..e3	Res= 42.2 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
11.	Rfbb	Yageo America	RT0805BRD0792KL Series= RT0805	Res= 92.0 kOhm Power= 125.0 mW Tolerance= 0.1%	1	\$0.05	0805 7 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
12.	Rfbt	Vishay-Dale	CRCW0402825KFKED Series= CRCW..e3	Res= 825.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm²
13.	Rlim	Vishay-Dale	CRCW0402113KFKED Series= CRCW..e3	Res= 113.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm²
14.	Rt	Vishay-Dale	CRCW0402255KFKED Series= CRCW..e3	Res= 255.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm²
15.	U1	Texas Instruments	TPS61088RHLR	Switcher	1	\$2.30	 RHL0020A 25 mm²









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	1.433 A	Current	Input capacitor RMS ripple current
2.	Cout IRMS	2.59 A	Current	Output capacitor RMS ripple current
3.	IC IpK	7.388 A	Current	Peak switch current in IC
4.	Iin Avg	4.997 A	Current	Average input current
5.	L Ipp	4.964 A	Current	Peak-to-peak inductor ripple current
6.	BOM Count	19	General	Total Design BOM count
7.	FootPrint	244.0 mm ²	General	Total Foot Print Area of BOM components
8.	Frequency	595.291 kHz	General	Switching frequency
9.	Mode	BOOST CCM	General	PWM/PFM Mode
10.	Pout	24.0 W	General	Total output power
11.	Total BOM	\$3.03	General	Total BOM Cost
12.	Low Freq Gain	93.849 dB	Op_point	Gain at 10Hz
13.	Vout Actual	12.001 V	Op_point	Vout Actual calculated based on selected voltage divider resistors
14.	Cross Freq	24.508 kHz	Op_point	Bode plot crossover frequency
15.	Duty Cycle	59.1 %	Op_point	Duty cycle
16.	Efficiency	96.06 %	Op_point	Steady state efficiency
17.	Gain Marg	-11.915 dB	Op_point	Bode Plot Gain Margin
18.	IC Tj	56.555 degC	Op_point	IC junction temperature
19.	ICThetaJA	38.8 degC/W	Op_point	IC junction-to-ambient thermal resistance
20.	IOUT_OP	2.0 A	Op_point	Iout operating point
21.	Phase Marg	56.266 deg	Op_point	Bode Plot Phase Margin
22.	VIN_OP	5.0 V	Op_point	Vin operating point
23.	Vout p-p	78.539 mV	Op_point	Peak-to-peak output ripple voltage
24.	Cin Pd	2.489 mW	Power	Input capacitor power dissipation
25.	Cout Pd	10.089 mW	Power	Output capacitor power dissipation
26.	Coutx Pd	0.0 W	Power	Output capacitor_x power loss
27.	IC Pd	684.405 mW	Power	IC power dissipation
28.	L Pd	287.375 mW	Power	Inductor power dissipation
29.	Total Pd	984.389 mW	Power	Total Power Dissipation
30.	Vout Tolerance	3.633 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	2.0	Maximum Output Current
2.	VinMax	5.0	Maximum input voltage
3.	VinMin	5.0	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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