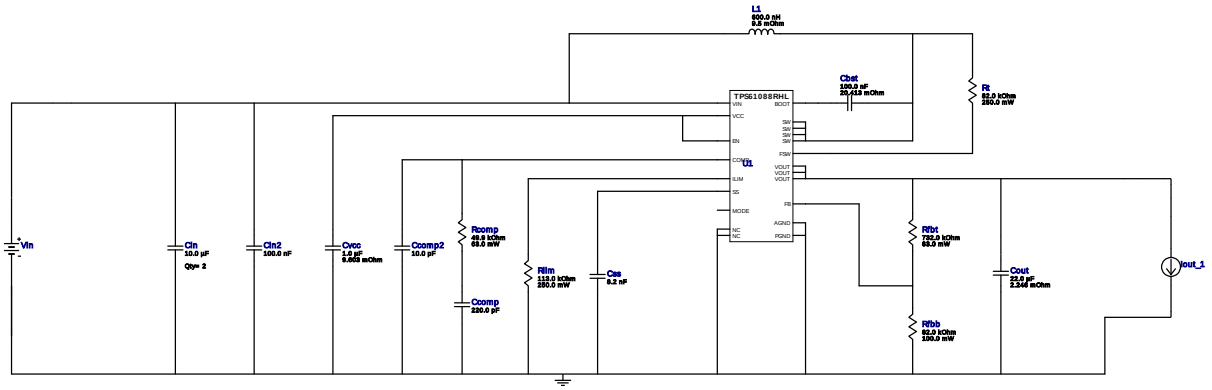
VinMin = 6.0V
VinMax = 8.4V
Vout = 12.0V
Iout = 3.5A

Device = TPS61088RHLR
Topology = Boost
Created = 10/9/15 12:51:00 PM
BOM Cost = $3.45
Footprint = 120.0 mm^2
BOM Count = 16
Total Pd = 2.68W

WEBENCH® Design Report

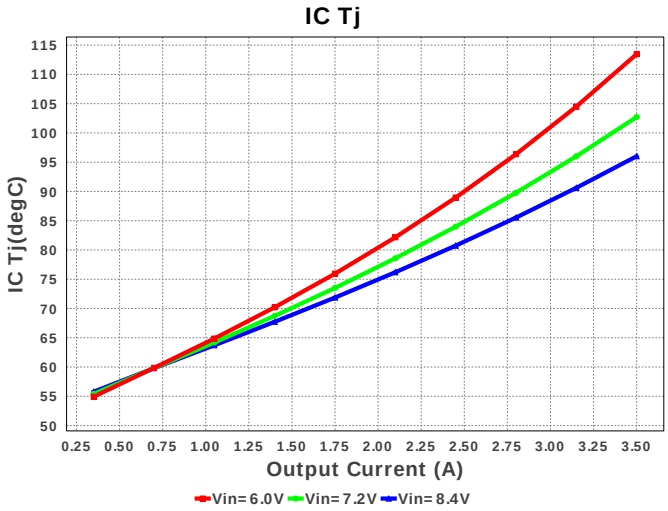
Design : 4267293/20 TPS61088RHLR
TPS61088RHLR 6.0V-8.4V to 12.00V @ 3.5A

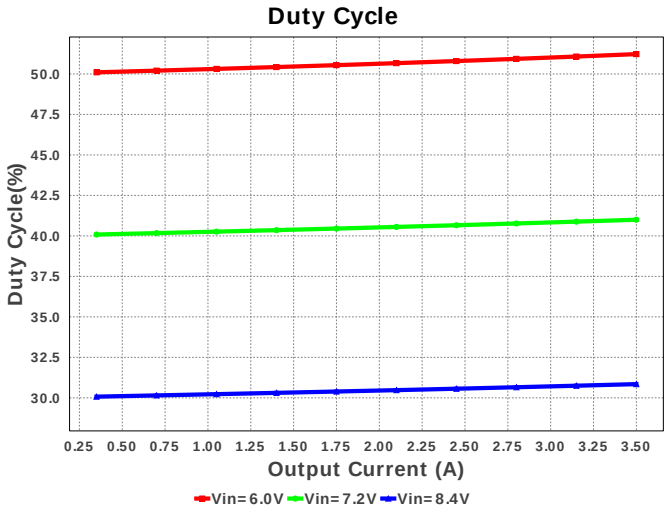


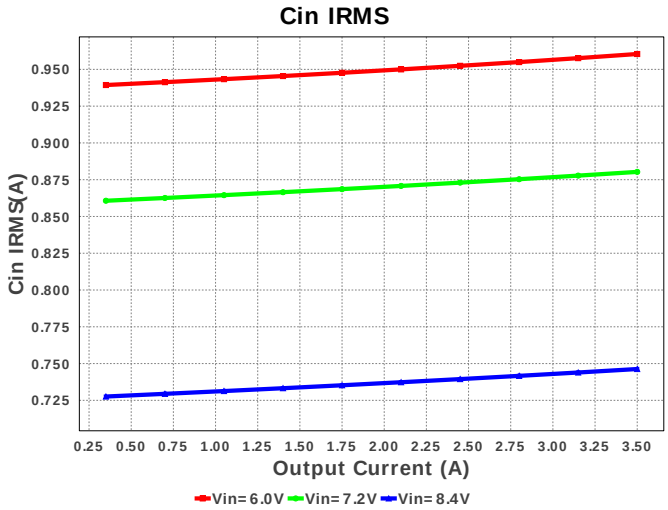
Electrical BOM

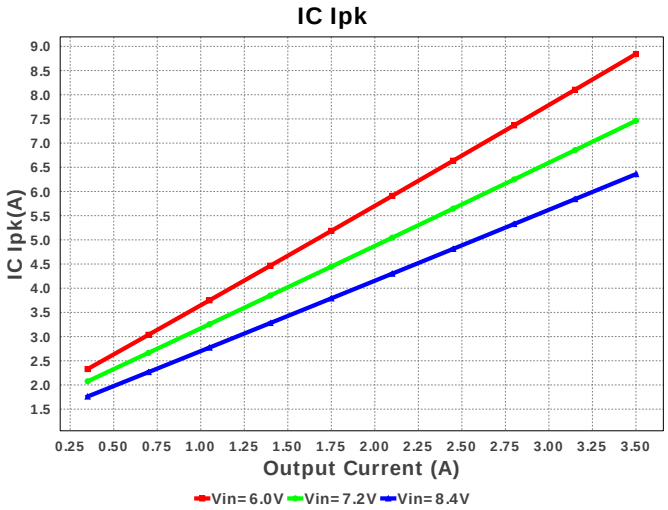
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cbst	TDK	C1005X5R1A104K Series= X5R	Cap= 100.0 nF ESR= 20.413 mOhm VDC= 10.0 V IRMS= 0.0 A	1	$0.01	1005 3 mm^2
2.	Ccomp	AVX	02013A220GAT2A Series= C0G/NP0	Cap= 220.0 pF VDC= 25.0 V IRMS= 0.0 A	1	$0.01	0201 2 mm^2
3.	Ccomp2	Samsung Electro-Mechanics	CL02C100JO2ANNC Series= C0G/NP0	Cap= 10.0 pF VDC= 16.0 V IRMS= 0.0 A	1	$0.01	01005 2 mm^2
4.	Cin	MuRata	GRM188R61C106MA73D Series= X5R	Cap= 10.0 uF VDC= 16.0 V IRMS= 0.0 A	2	$0.06	0603 5 mm^2
5.	Cin2	MuRata	GRM155R61C104KA88D Series= X5R	Cap= 100.0 nF VDC= 16.0 V IRMS= 0.0 A	1	$0.01	0402 3 mm^2
6.	Cout	TDK	C3216X5R1E226M Series= X5R	Cap= 22.0 uF ESR= 2.246 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.32	1206 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	TDK	C1608X5R1A105K Series= X5R	Cap= 1.0 uF ESR= 9.603 mOhm VDC= 10.0 V IRMS= 0.0 A	1	$0.01	1608 5 mm^2
9.	L1	Coilcraft	XAL4020-601MEB	L= 600.0 nH DCR= 9.5 mOhm	1	$0.60	XAL4020 25 mm^2
10.	Rcomp	Vishay-Dale	CRCW040249K9FKED Series= CRCW..e3	Res= 49.9 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm^2
11.	Rfbb	Yageo America	RC0603FR-0782KL Series= ?	Res= 82.0 kOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm^2

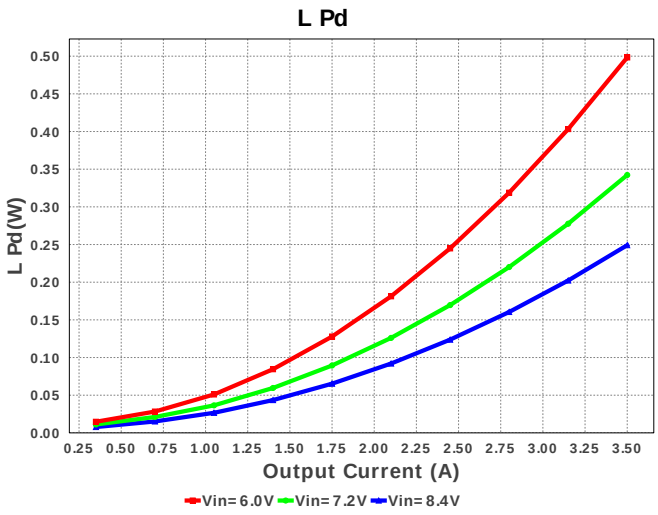
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
12.	Rfbt	Vishay-Dale	CRCW0402732KFKED Series= CRCW..e3	Res= 732.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm^2
13.	Rlim	Panasonic	ERJ-8ENF1133V Series= ERJ-8E	Res= 113.0 kOhm Power= 250.0 mW Tolerance= 1.0%	1	$0.01	1206 11 mm^2
14.	Rt	Yageo America	RC1206FR-0782KL Series= ?	Res= 82.0 kOhm Power= 250.0 mW Tolerance= 1.0%	1	$0.01	1206 11 mm^2
15.	U1	Texas Instruments	TPS61088RHLR	Switcher	1	$2.30	RHL0020A 25 mm^2

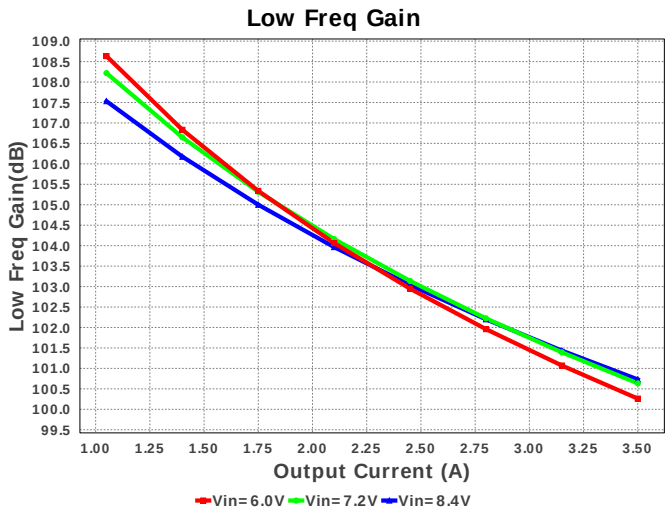


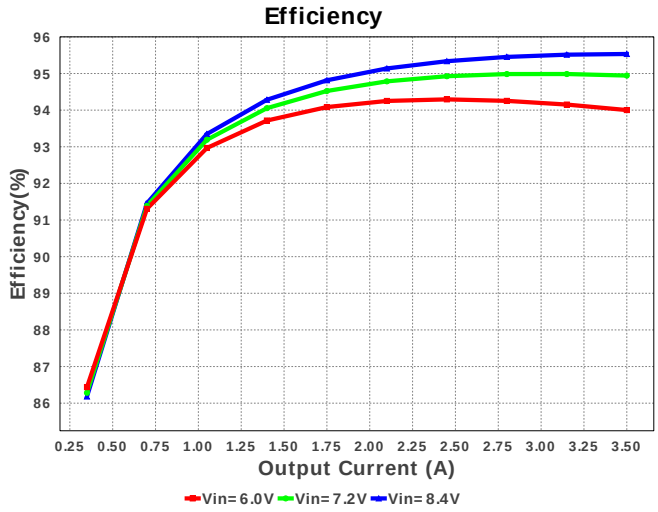


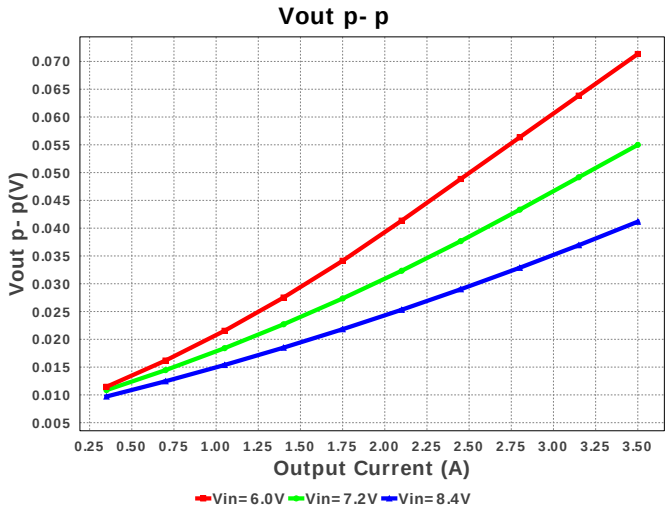


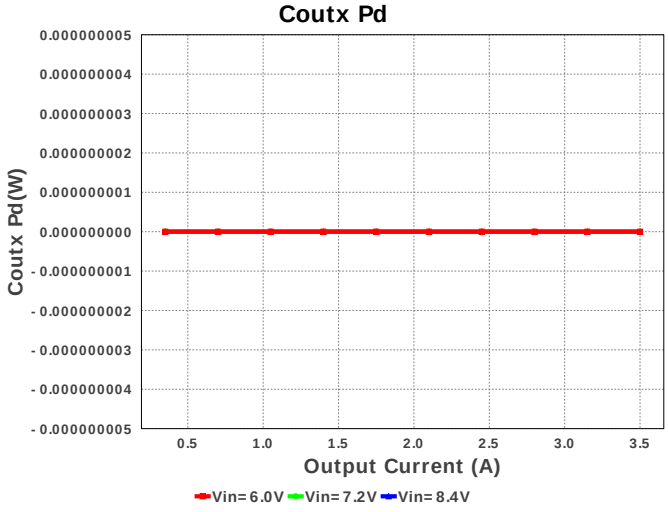


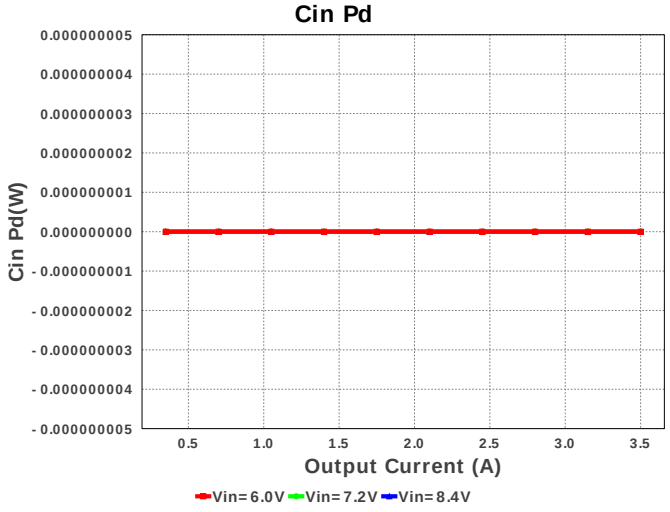


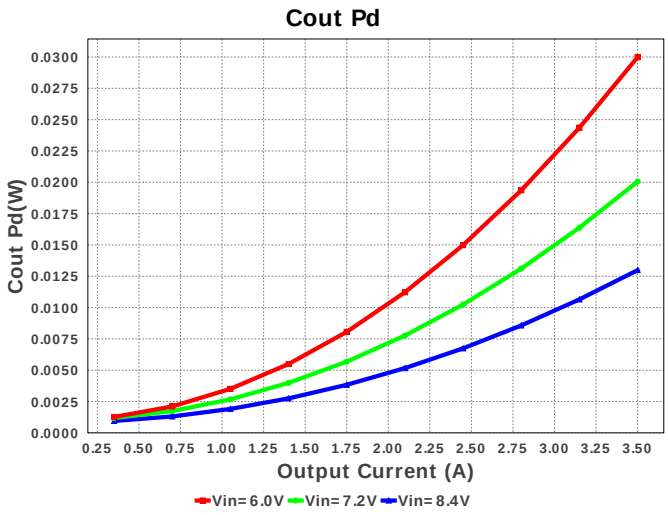


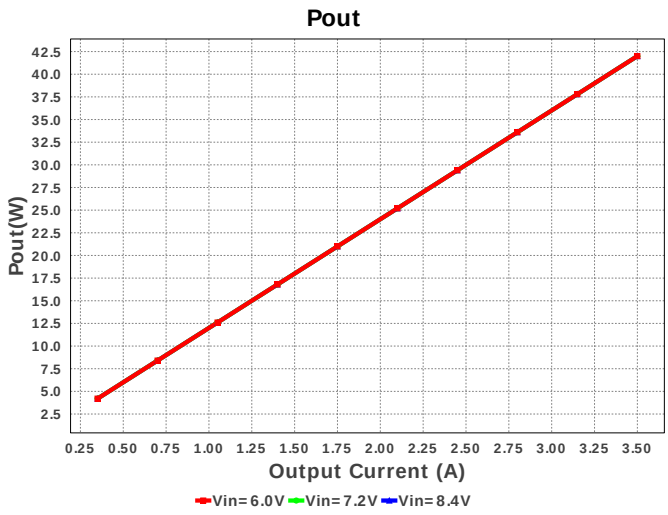


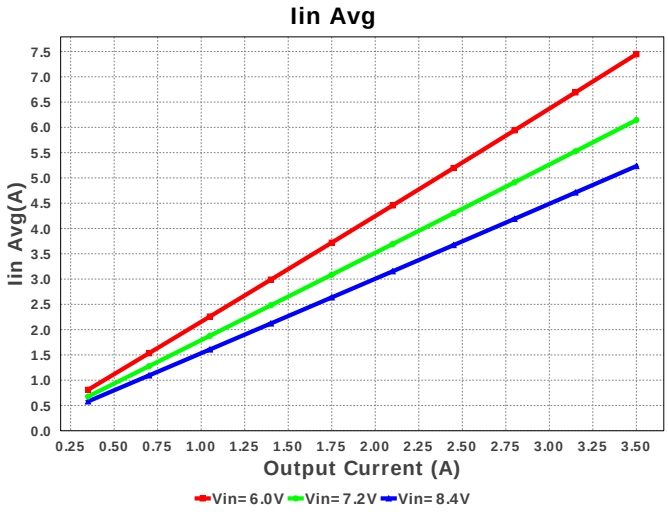


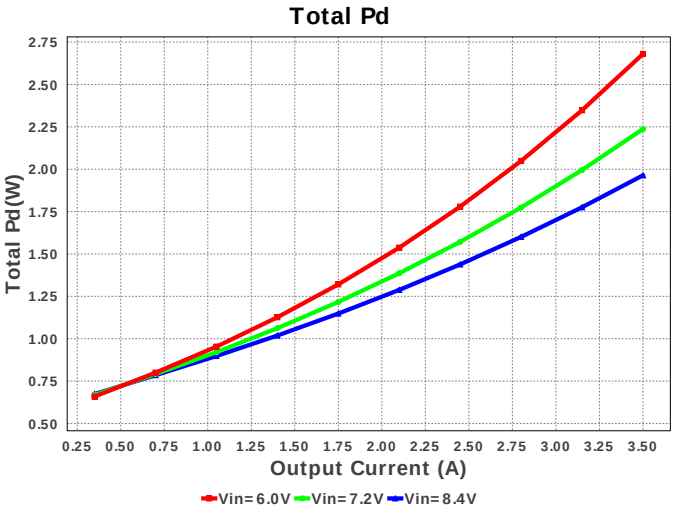


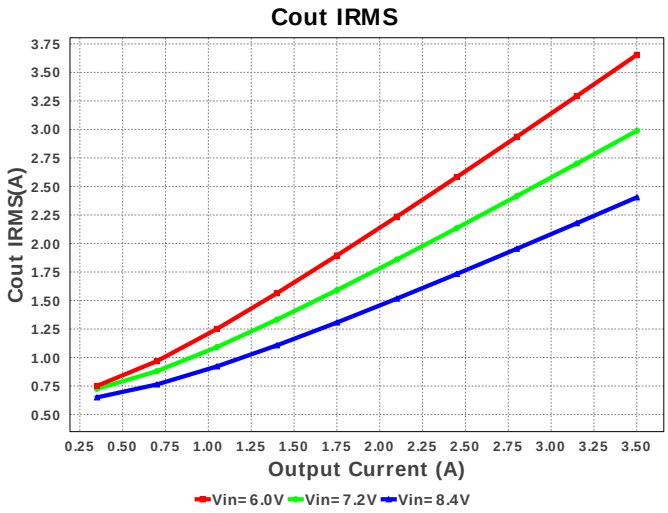


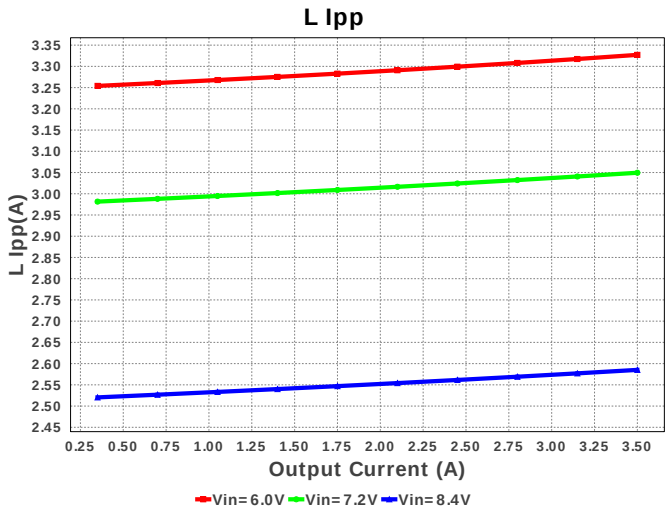


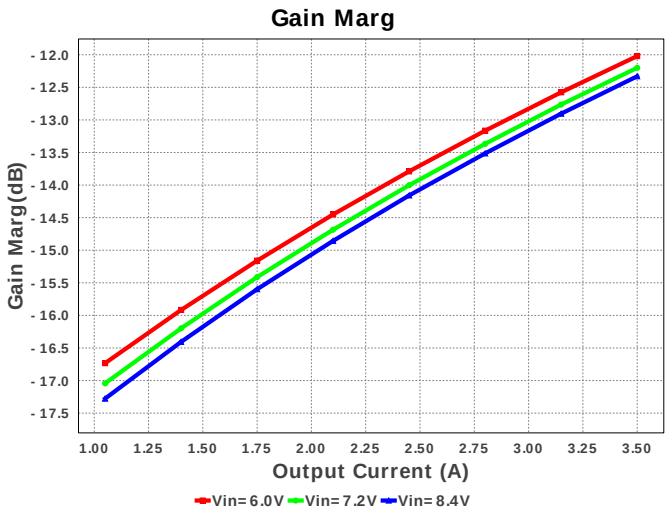


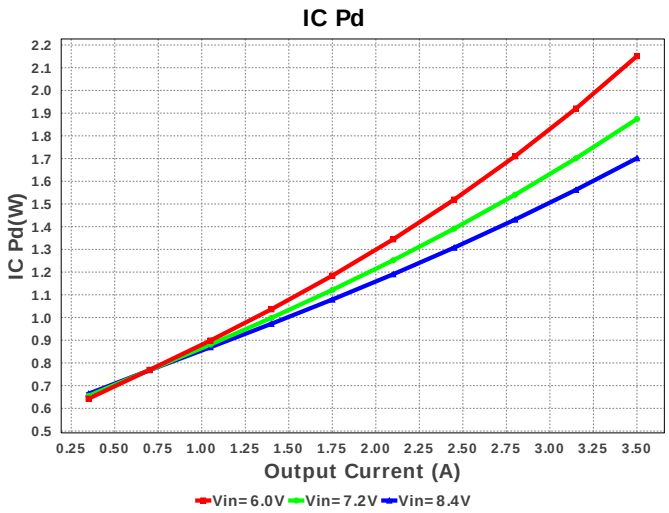


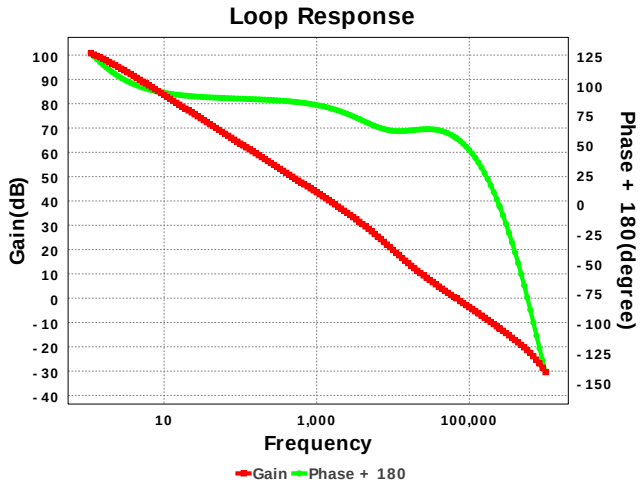


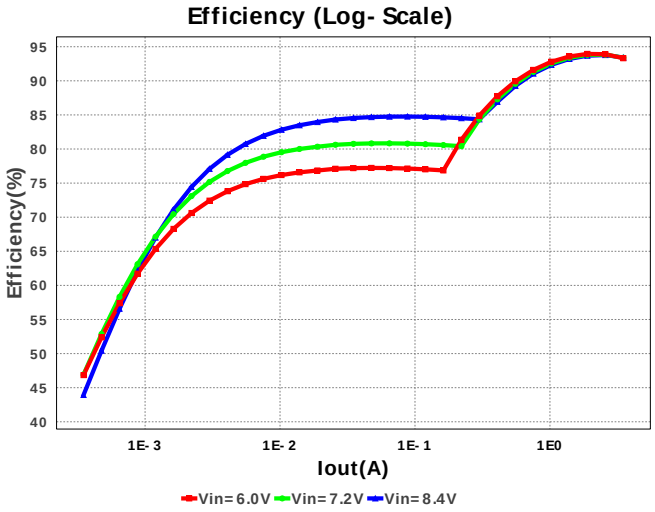












Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	960.446 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	3.654 A	Current	Output capacitor RMS ripple current
3.	IC Ipk	8.842 A	Current	Peak switch current in IC
4.	Iin Avg	7.447 A	Current	Average input current
5.	L Ipp	3.327 A	Current	Peak-to-peak inductor ripple current
6.	BOM Count	16	General	Total Design BOM count
7.	FootPrint	120.0 mm^2	General	Total Foot Print Area of BOM components
8.	Frequency	1.54 MHz	General	Switching frequency
9.	Pout	42.0 W	General	Total output power
10.	Total BOM	$3.45	General	Total BOM Cost
11.	Low Freq Gain	100.261 dB	Op_Point	Gain at 10Hz
12.	Cross Freq	66.337 kHz	Op_point	Bode plot crossover frequency
13.	Duty Cycle	51.225 %	Op_point	Duty cycle
14.	Efficiency	94.002 %	Op_point	Steady state efficiency
15.	Gain Marg	-12.021 dB	Op_point	Bode Plot Gain Margin
16.	IC Tj	113.467 degC	Op_point	IC junction temperature
17.	ICThetaJA	38.8 degC/W	Op_point	IC junction-to-ambient thermal resistance
18.	IOUT_OP	3.5 A	Op_point	Iout operating point
19.	Phase Marg	56.774 deg	Op_point	Bode Plot Phase Margin
20.	VIN_OP	6.0 V	Op_point	Vin operating point
21.	Vout p-p	71.342 mV	Op_point	Peak-to-peak output ripple voltage
22.	Cin Pd	0.0 W	Power	Input capacitor power dissipation
23.	Cout Pd	29.987 mW	Power	Output capacitor power dissipation
24.	Coutx Pd	0.0 W	Power	Output capacitor_x power loss
25.	IC Pd	2.151 W	Power	IC power dissipation
26.	L Pd	498.304 mW	Power	Inductor power dissipation
27.	Total Pd	2.68 W	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	3.5	Maximum Output Current
2.	Iout1	3.5	Output Current #1
3.	VinMax	8.4	Maximum input voltage
4.	VinMin	6.0	Minimum input voltage
5.	Vout	12.0	Output Voltage
6.	Vout1	12.0	Output Voltage #1
7.	base_pn	TPS61088	Base Product Number
8.	source	DC	Input Source Type
9.	Ta	30.0	Ambient temperature

Design Assistance

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