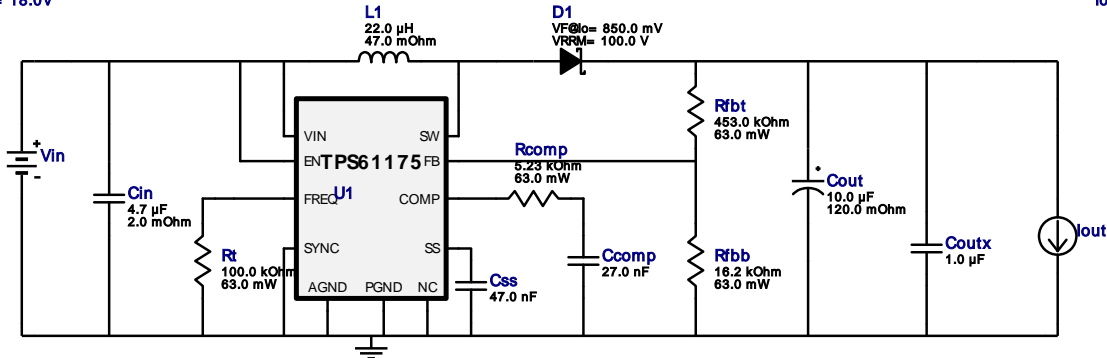



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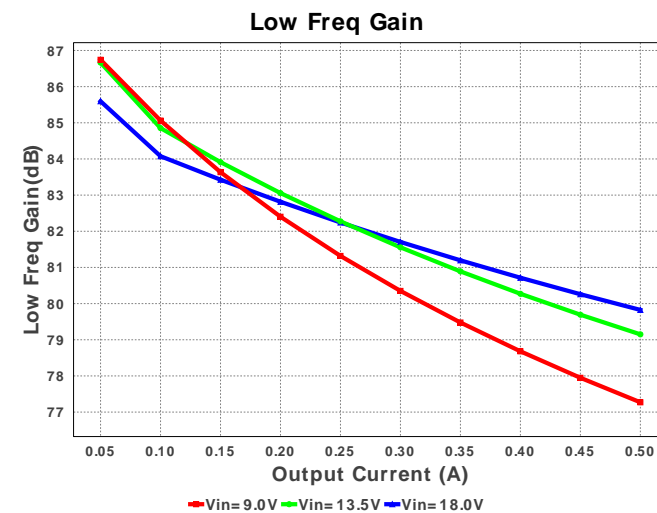
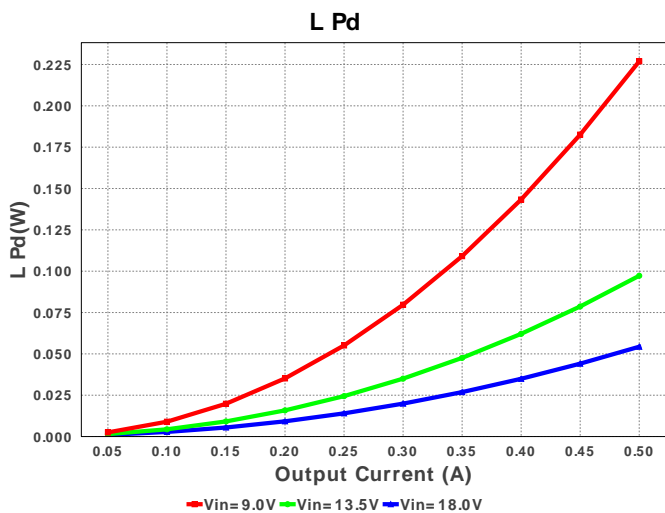
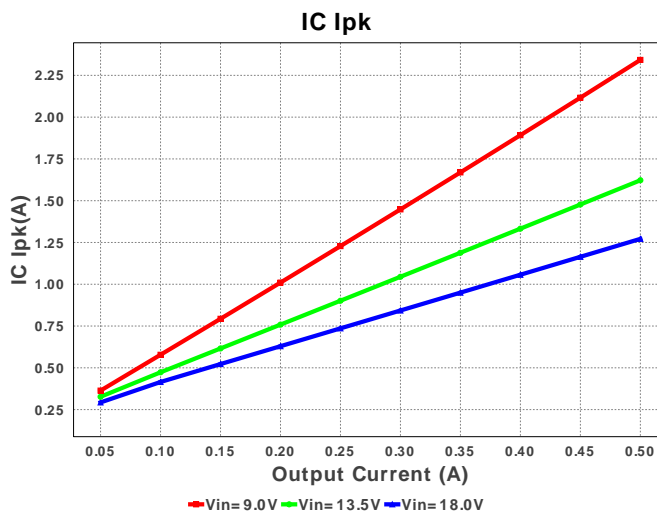
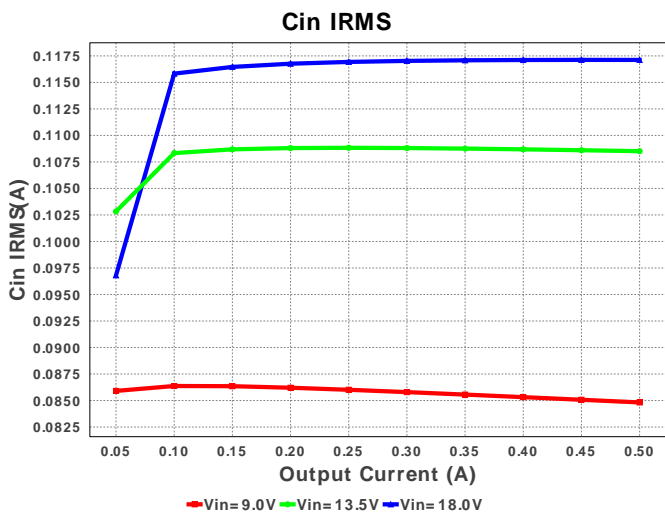
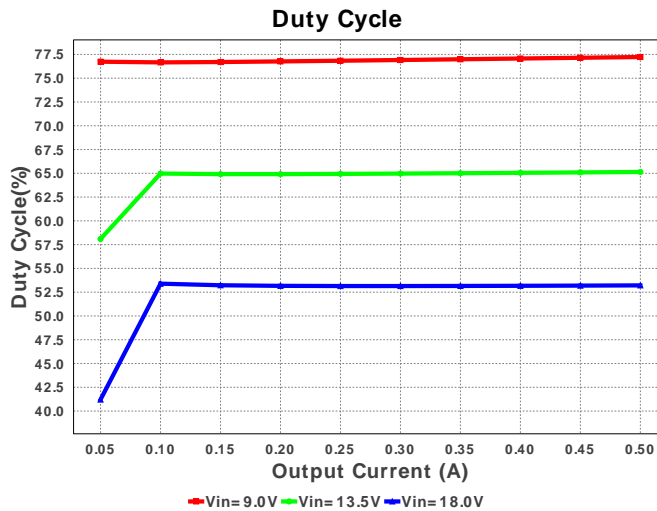
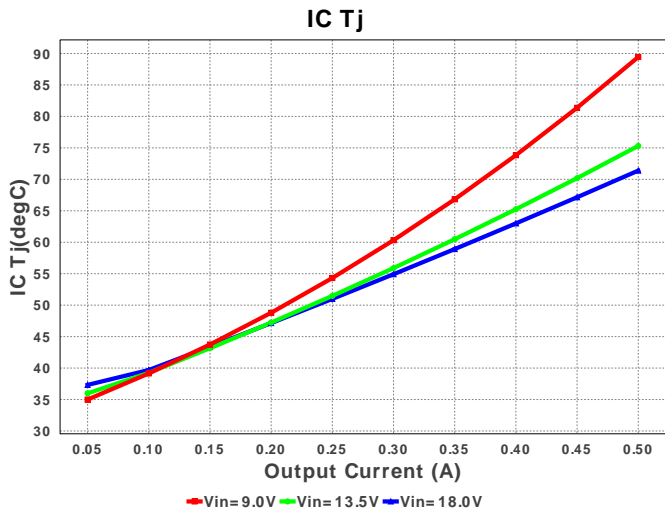
 Design : 3756492/4 TPS61175PWPR
 TPS61175PWPR 9.0V-18.0V to 36.00V @ 0.5A

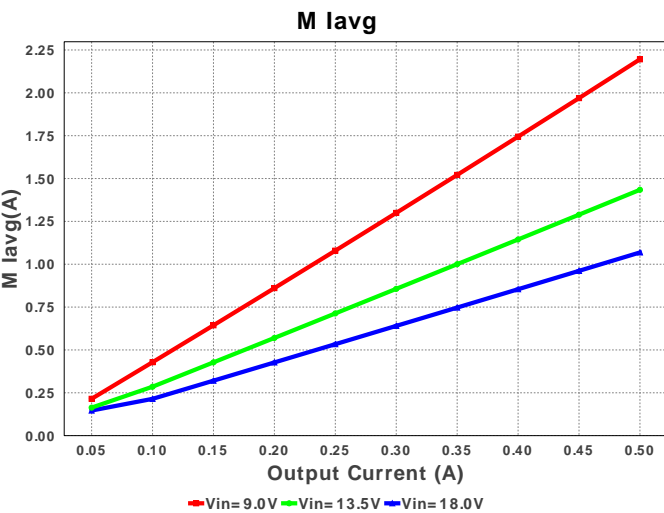
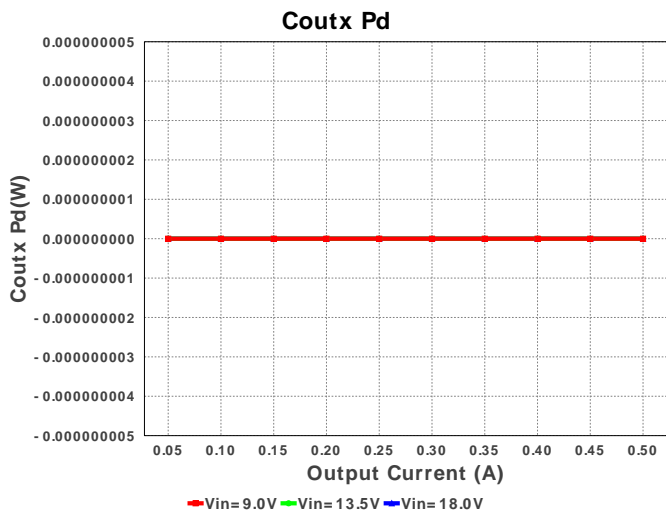
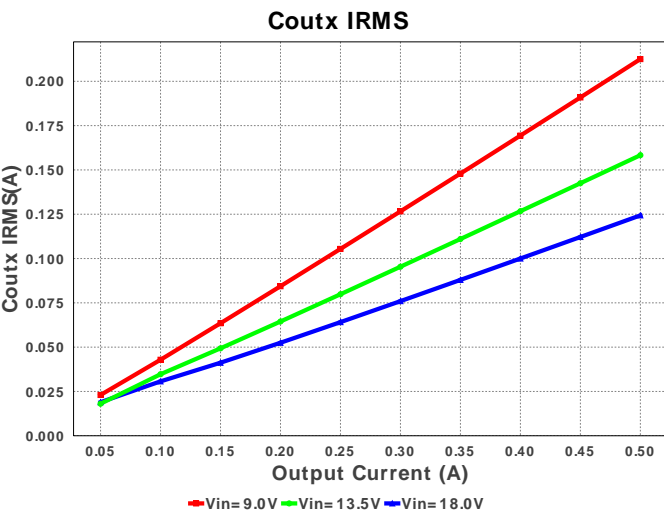
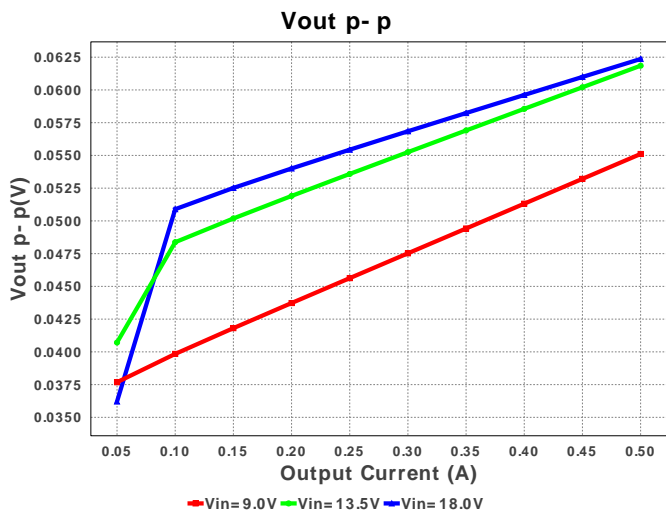
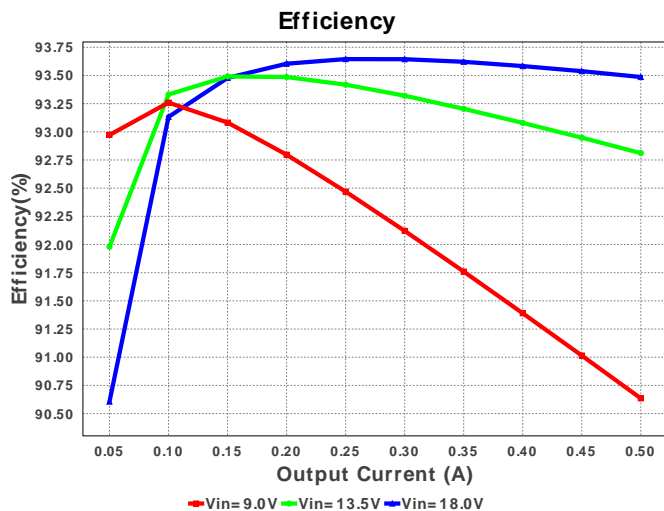
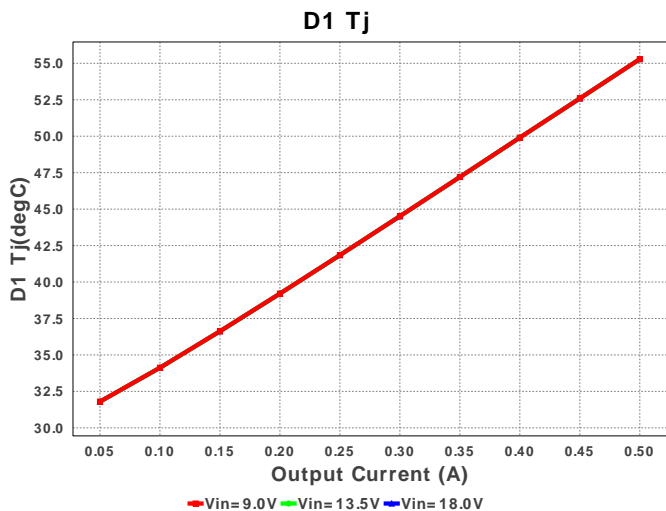
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 VinMax = 18.0V

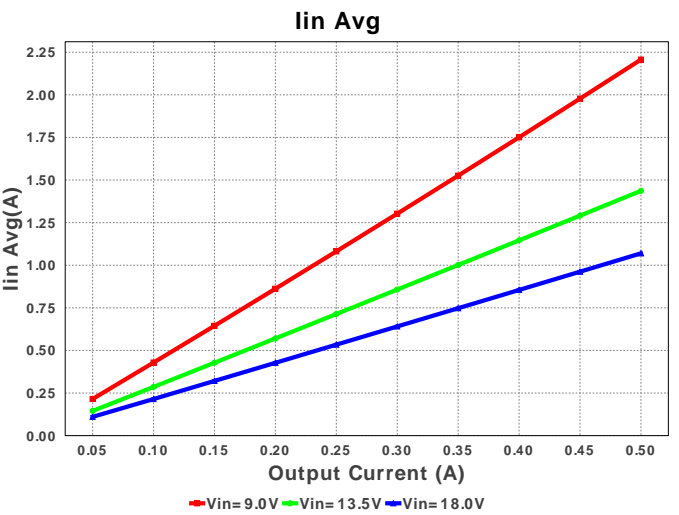
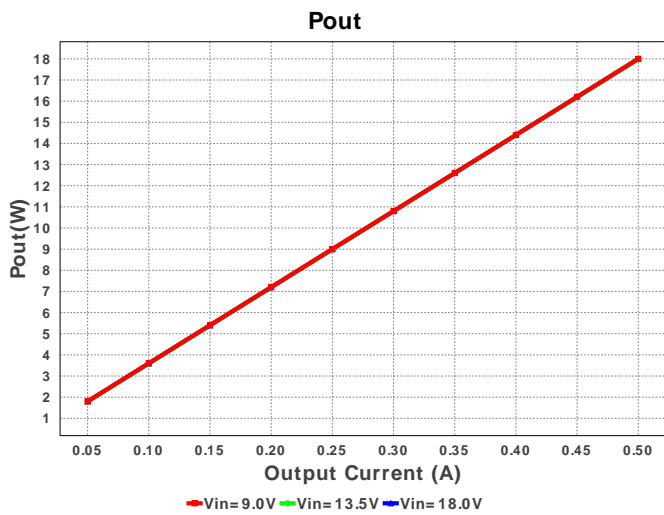
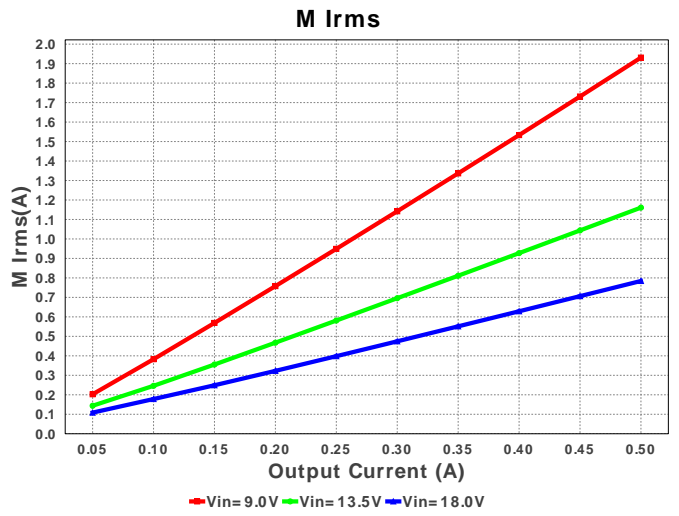
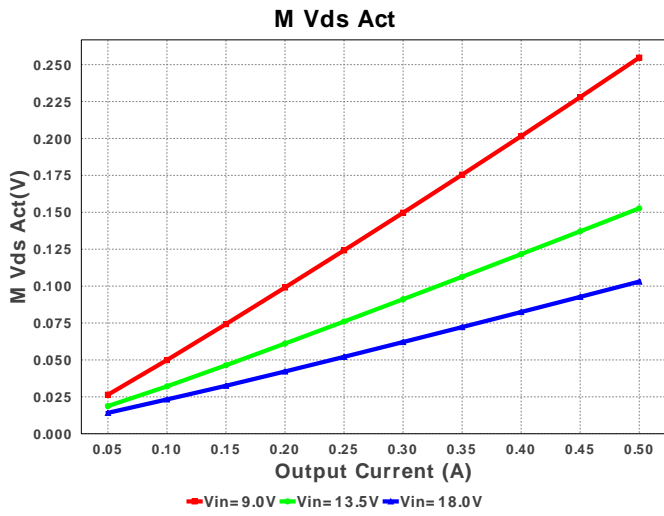
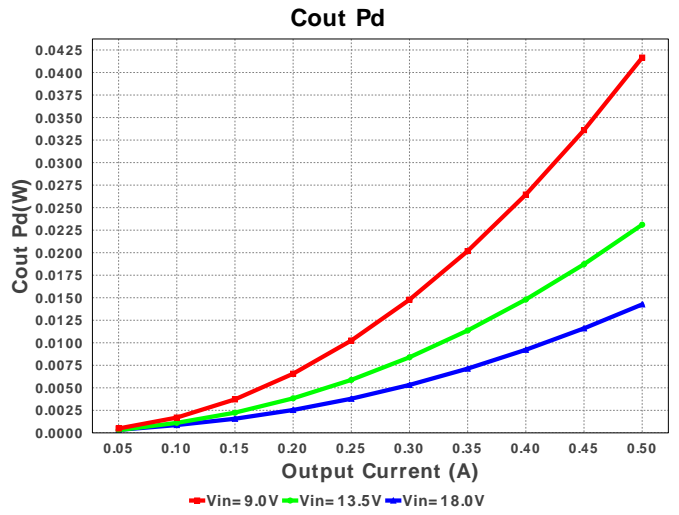
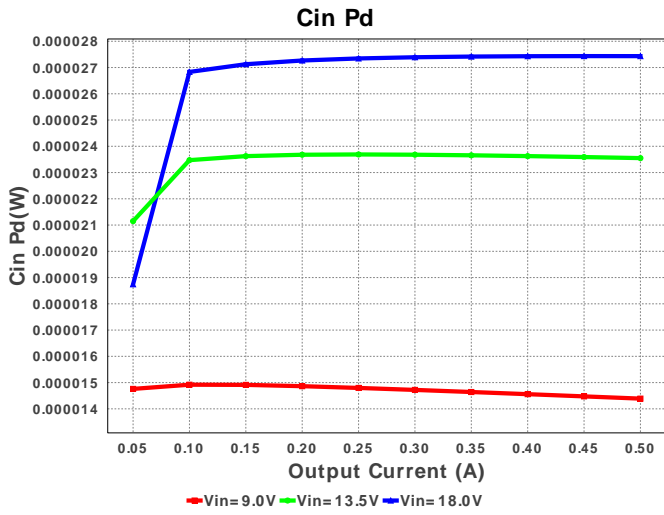
 Vout = 36.0V
 Iout = 0.5A

Electrical BOM

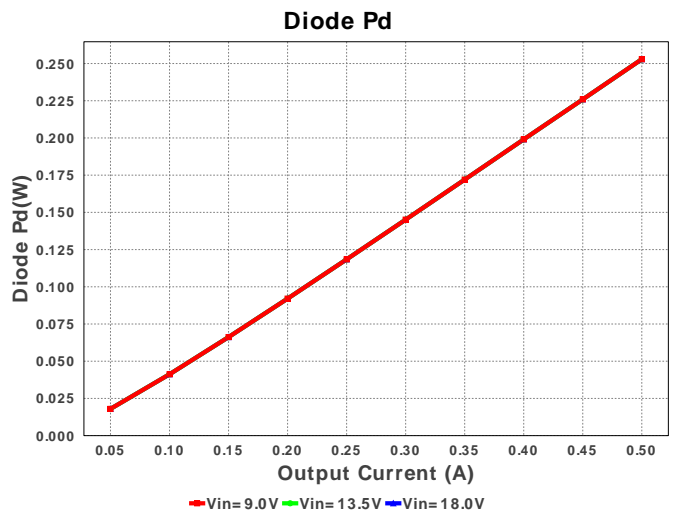
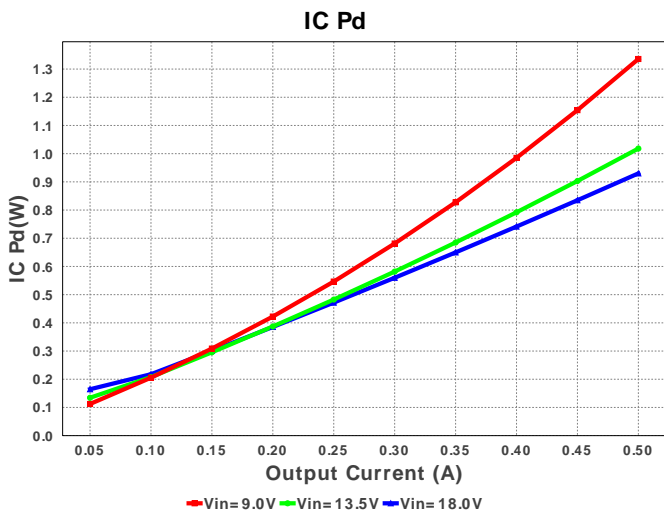
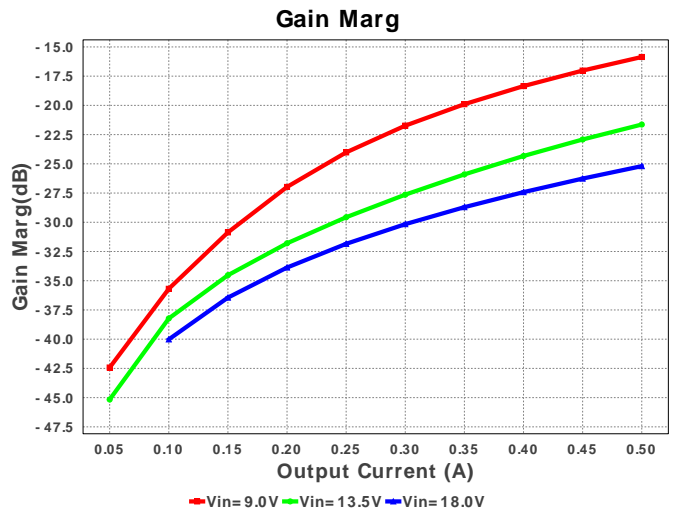
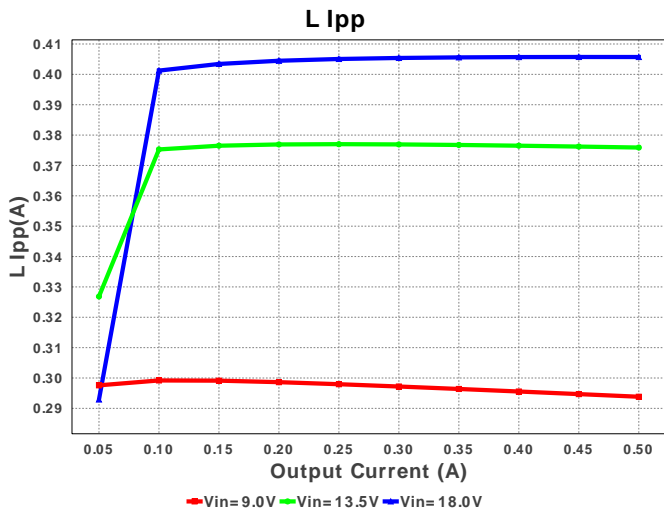
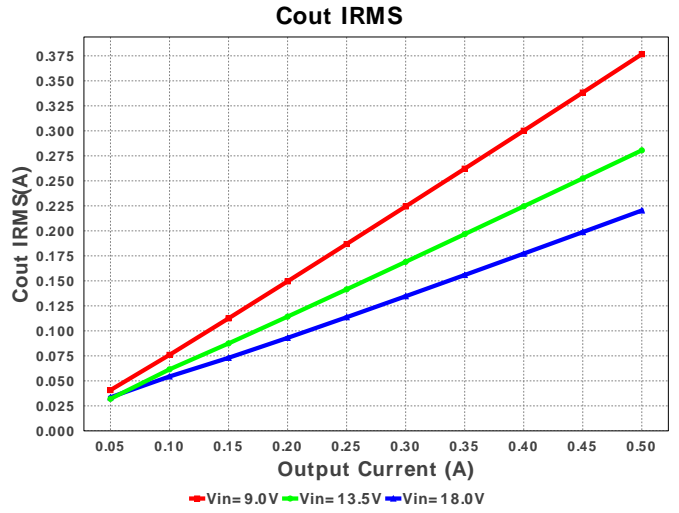
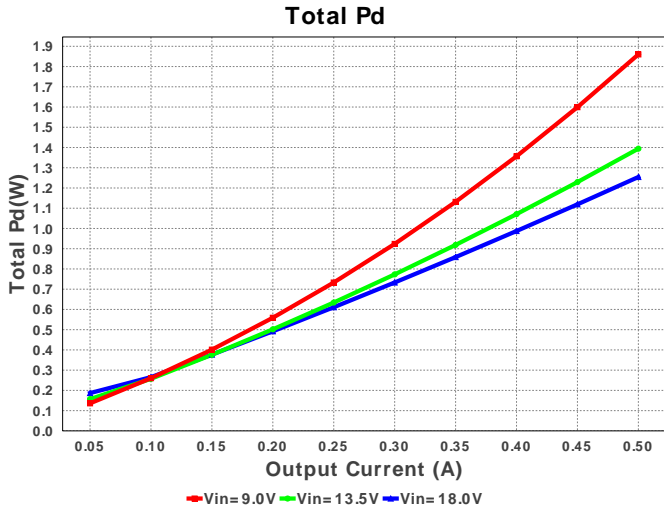
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Ccomp	Yageo America	CC0805KRX7R9BB273 Series= X7R	Cap= 27.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm ²
2.	Cin	MuRata	GRM21BR61E475MA12L Series= X5R	Cap= 4.7 uF ESR= 2.0 mOhm VDC= 25.0 V IRMS= 7.29 A	1	\$0.06	 0805 7 mm ²
3.	Cout	Panasonic	EEHZA1J100P Series= 1267	Cap= 10.0 uF ESR= 120.0 mOhm VDC= 63.0 V IRMS= 1.0 A	1	\$0.56	 SM_RADIAL_6.3AMM 80 mm ²
4.	Coutx	MuRata	GRM31MR71H105KA88L Series= X7R	Cap= 1.0 uF VDC= 50.0 V IRMS= 0.0 A	1	\$0.04	 1206 11 mm ²
5.	Css	Taiyo Yuden	TMK212B7473KD-T Series= X7R	Cap= 47.0 nF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm ²
6.	D1	Micro Commercial Components	SK310A-TP	VF@Io= 850.0 mV VRRM= 100.0 V	1	\$0.10	 SMA 37 mm ²
7.	L1	Bourns	SDR1307-220ML	L= 22.0 uH DCR= 47.0 mOhm	1	\$0.35	 SDR1307 227 mm ²
8.	Rcomp	Vishay-Dale	CRCW04025K23FKED Series= CRCW..e3	Res= 5.23 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
9.	Rfbb	Vishay-Dale	CRCW040216K2FKED Series= CRCW..e3	Res= 16.2 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
10.	Rfbt	Vishay-Dale	CRCW0402453KFKED Series= CRCW..e3	Res= 453.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²

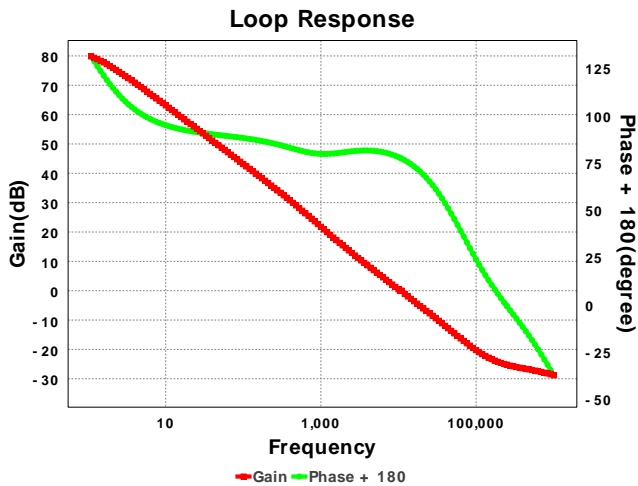
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
11.	Rt	Vishay-Dale	CRCW0402100KFKED Series= CRCW..e3	Res= 100.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
12.	U1	Texas Instruments	TPS61175PWPR	Switcher	1	\$1.60	 R-PDSO-G14 61 mm ²











Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	85.14 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	378.742 mA	Current	Output capacitor RMS ripple current
3.	Coutx IRMS	213.732 mA	Current	Output capacitor_x RMS ripple current
4.	IC Ipk	2.362 A	Current	Peak switch current in IC
5.	Iin Avg	2.228 A	Current	Average input current
6.	L Ipp	294.93 mA	Current	Peak-to-peak inductor ripple current
7.	M Iavg	2.215 A	Current	MOSFET Average current
8.	M1 Irms	1.95 A	Current	Q Iavg
9.	BOM Count	12	General	Total Design BOM count
10.	FootPrint	448.0 mm ²	General	Total Foot Print Area of BOM components
11.	Frequency	972.637 kHz	General	Switching frequency
12.	IC Tolerance	20.0 mV	General	IC Feedback Tolerance
13.	M Vds Act	257.339 mV	General	Voltage drop across the MosFET
14.	Pout	18.0 W	General	Total output power
15.	Total BOM	\$2.77	General	Total BOM Cost
16.	D1 Tj	72.5 degC	Op_Point	D1 junction temperature
17.	Low Freq Gain	77.229 dB	Op_Point	Gain at 10Hz
18.	Vout OP	36.0 V	Op_Point	Operational Output Voltage
19.	Cross Freq	5.307 kHz	Op_point	Bode plot crossover frequency
20.	Duty Cycle	77.424 %	Op_point	Duty cycle
21.	Efficiency	89.76 %	Op_point	Steady state efficiency
22.	Gain Marg	-15.751 dB	Op_point	Bode Plot Gain Margin
23.	IC Tj	90.2 degC	Op_point	IC junction temperature
24.	ICThetaJA	44.5 degC/W	Op_point	IC junction-to-ambient thermal resistance
25.	IOUT_OP	500.0 mA	Op_point	Iout operating point
26.	Phase Marg	68.177 deg	Op_point	Bode Plot Phase Margin
27.	VIN_OP	9.0 V	Op_point	Vin operating point
28.	Vout p-p	55.292 mV	Op_point	Peak-to-peak output ripple voltage
29.	Cin Pd	14.498 μW	Power	Input capacitor power dissipation
30.	Cout Pd	42.123 mW	Power	Output capacitor power dissipation
31.	Coutx Pd	0.0 W	Power	Output capacitor_x power loss
32.	Diode Pd	425.0 mW	Power	Diode power dissipation
33.	IC Pd	1.353 W	Power	IC power dissipation
34.	L Pd	230.875 mW	Power	Inductor power dissipation
35.	Total Pd	2.054 W	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	500.0 m	Maximum Output Current
2.	Iout1	500.0 m	Output Current #1
3.	VinMax	18.0	Maximum input voltage
4.	VinMin	9.0	Minimum input voltage
5.	Vout	36.0	Output Voltage
6.	Vout1	36.0	Output Voltage #1
7.	base_pn	TPS61175	Base Product Number
8.	source	DC	Input Source Type
9.	Ta	30.0	Ambient temperature

Design Assistance

1. **TPS61175** Product Folder : <http://www.ti.com/product/TPS61175> : contains the data sheet and other resources.

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