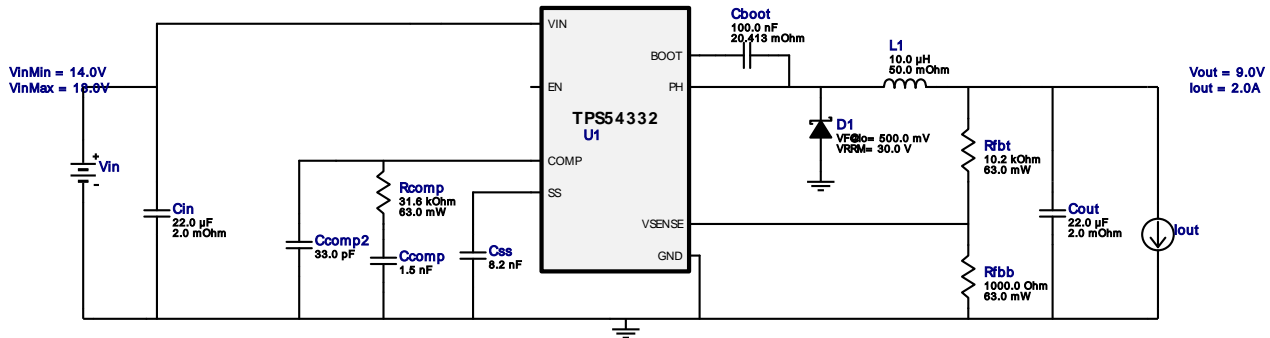

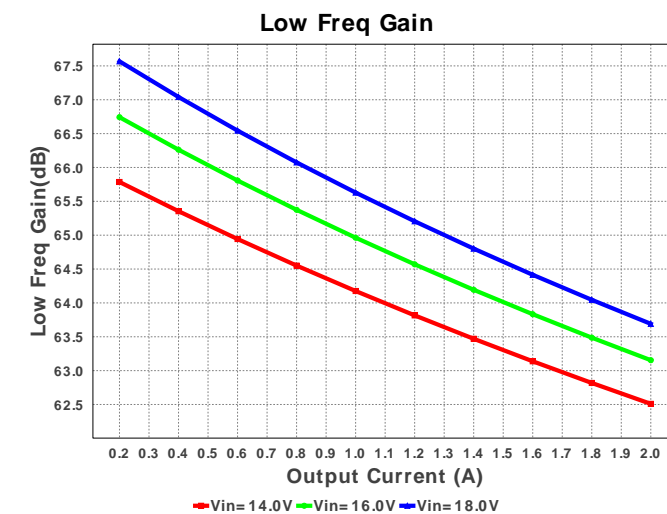
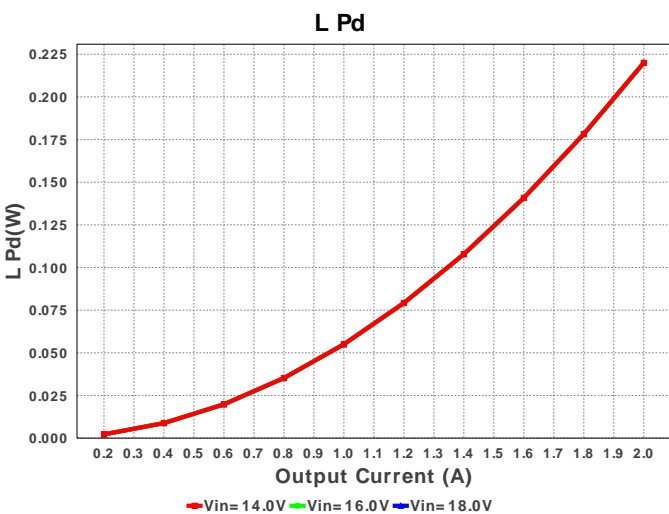
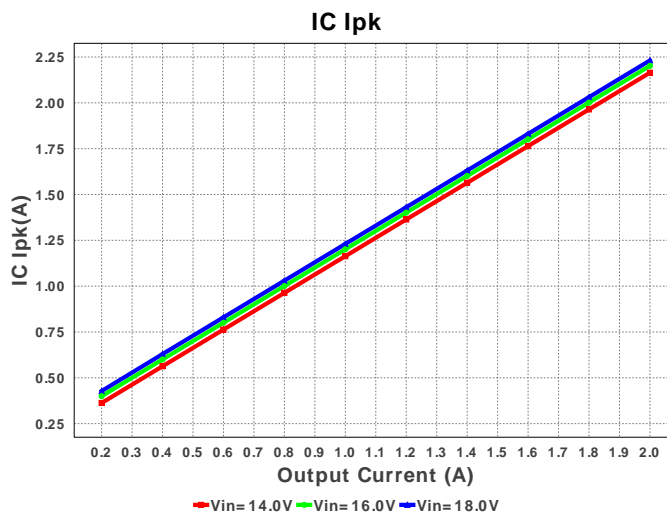
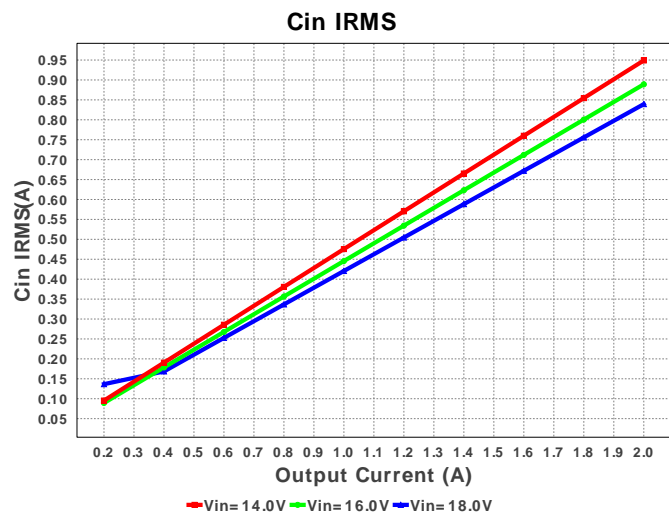
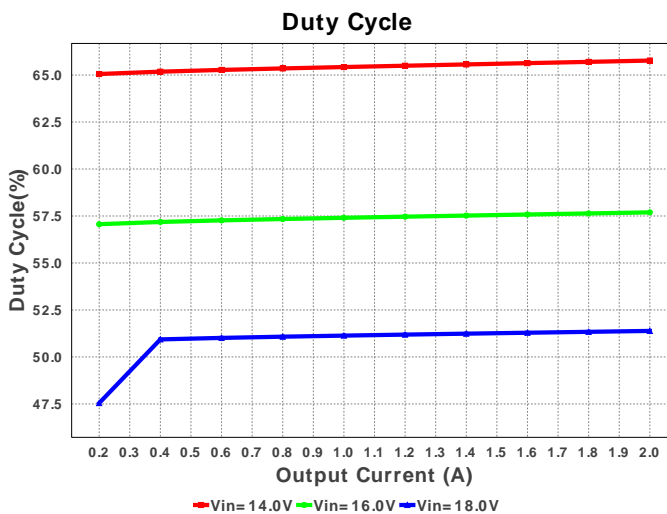
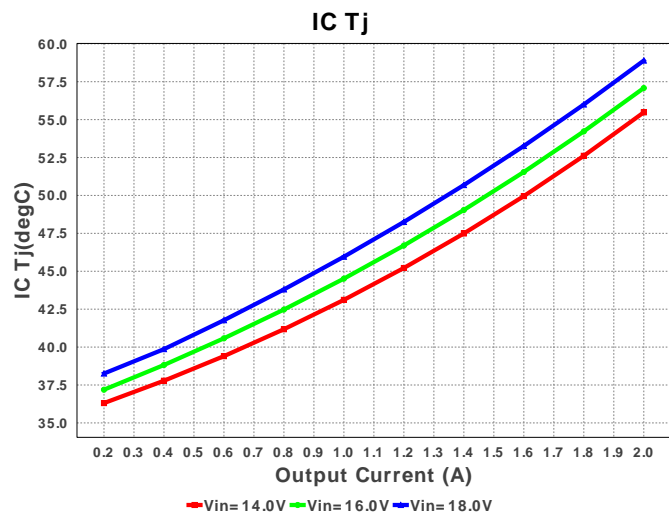


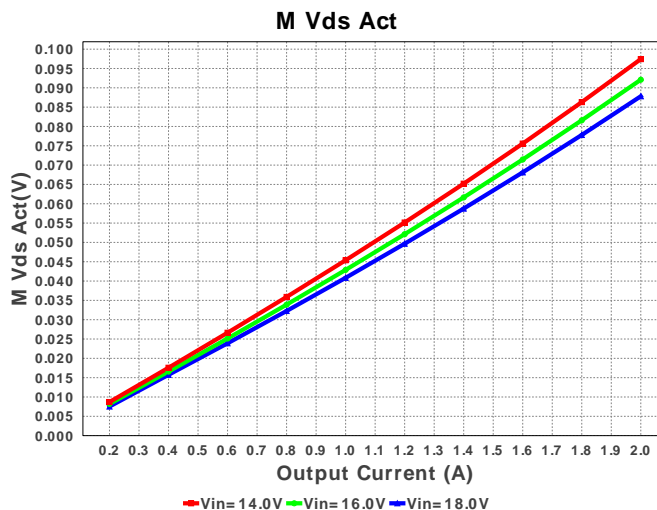
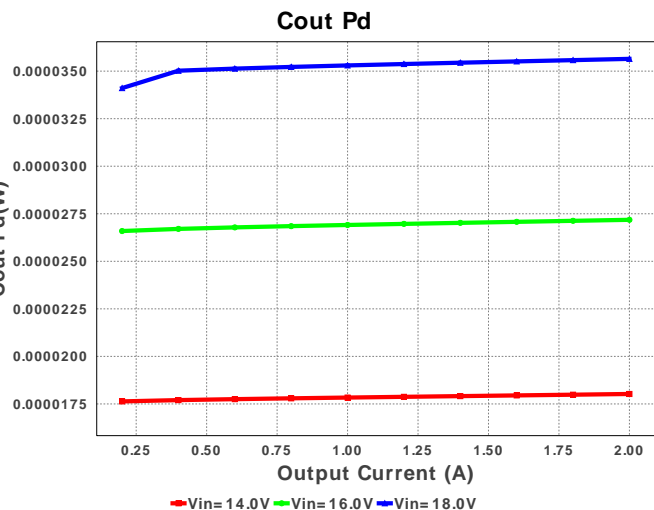
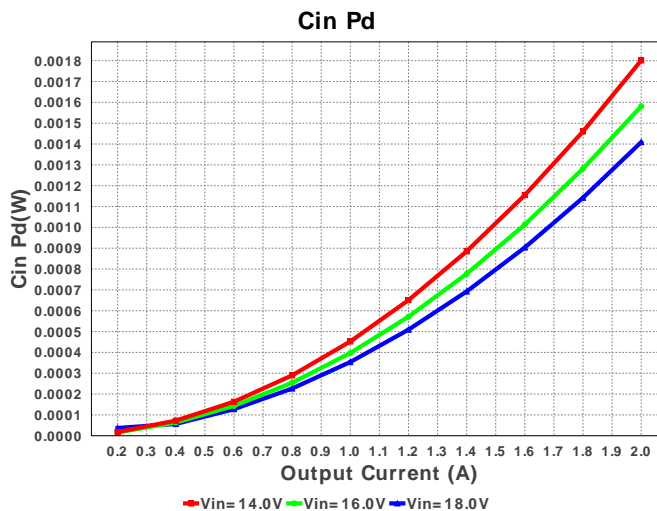
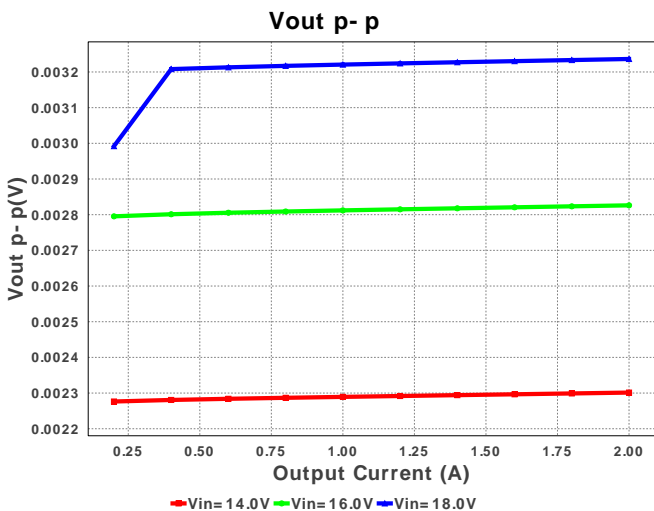
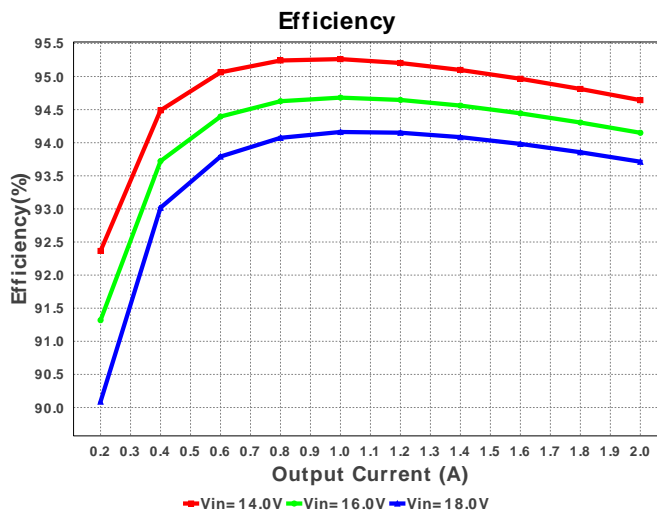
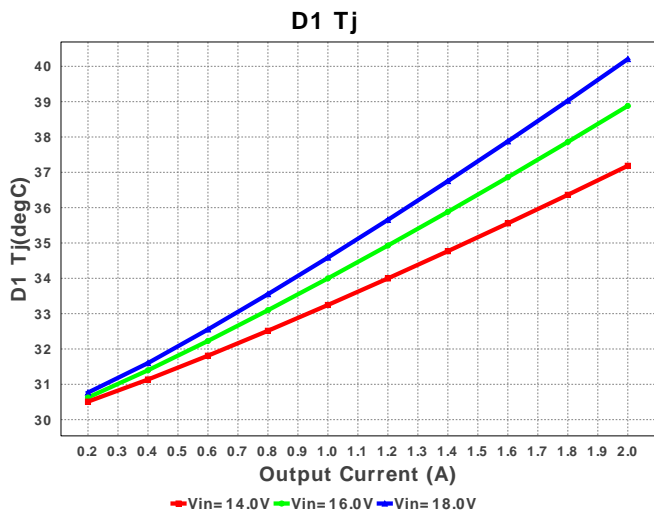
WEBENCH[®] Design Report

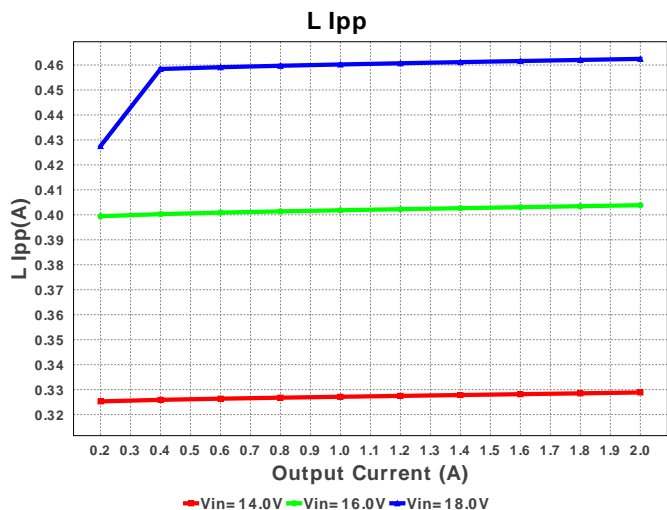
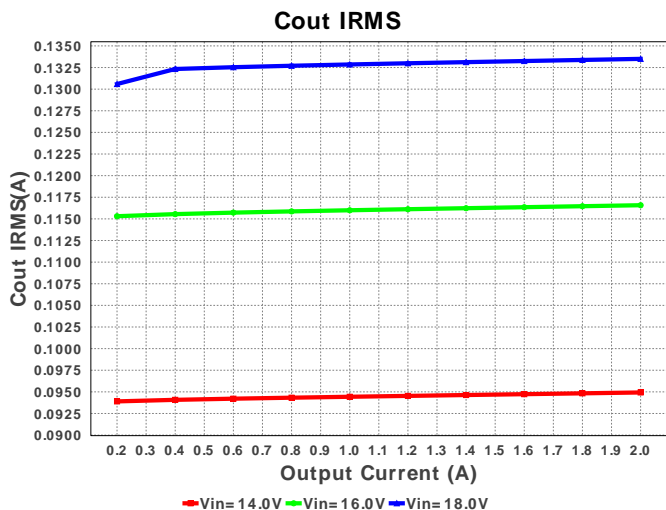
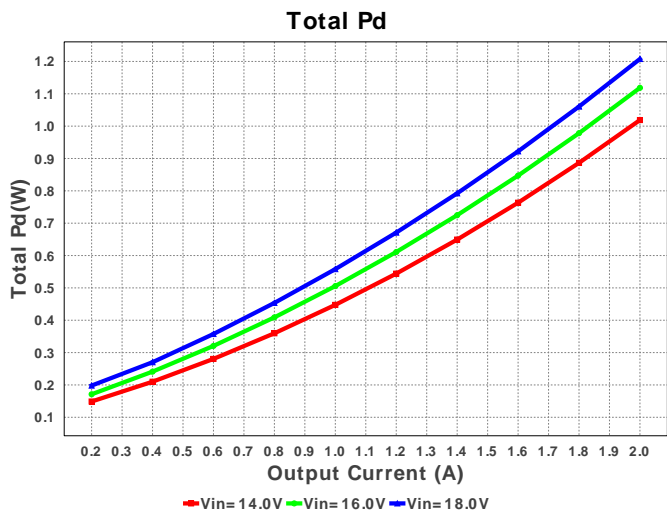
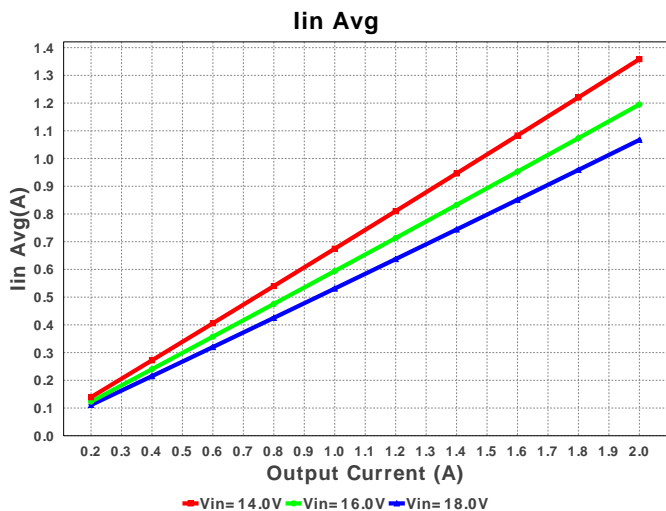
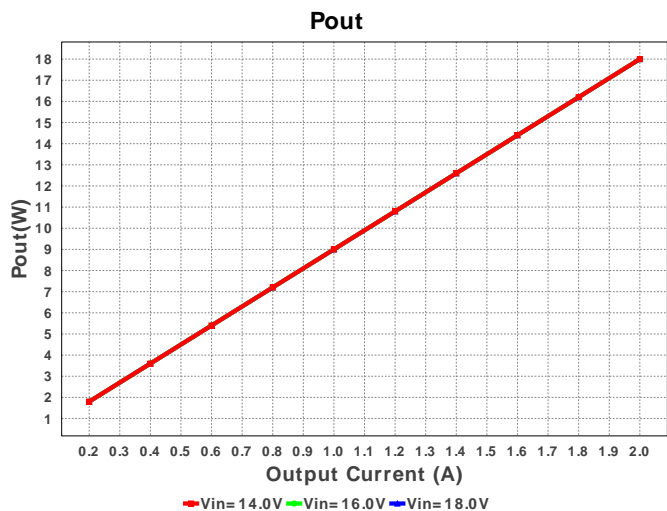
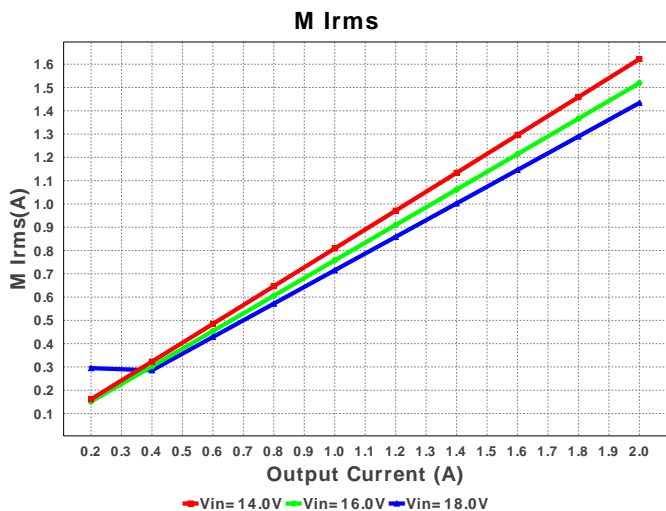
 Design : 4417704/25 TPS54332DDAR
 TPS54332DDAR 14.0V-18.0V to 9.00V @ 2.0A

Electrical BOM

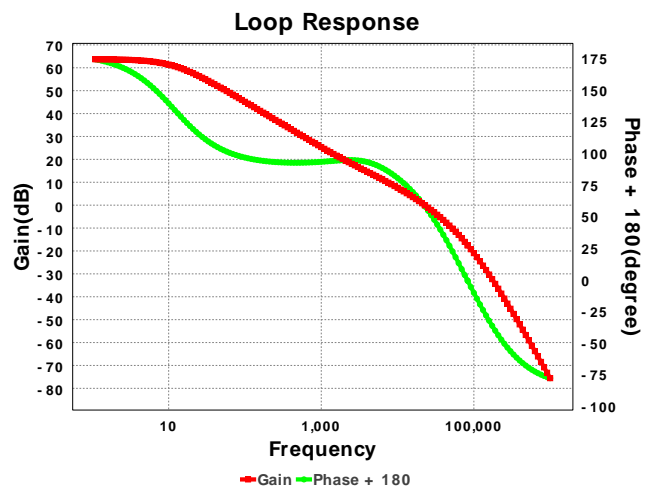
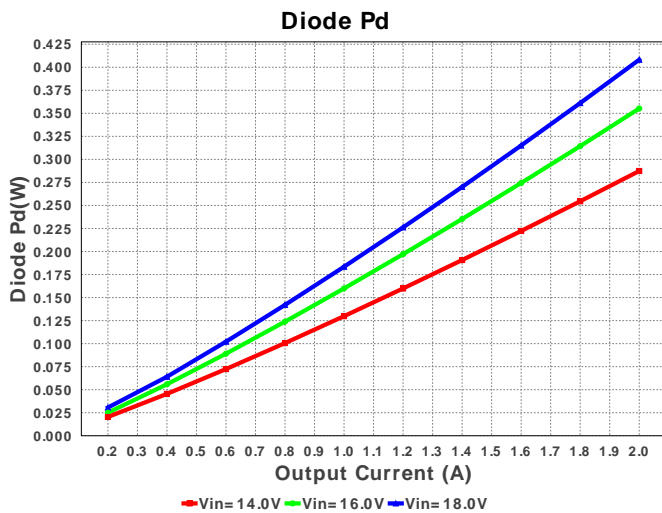
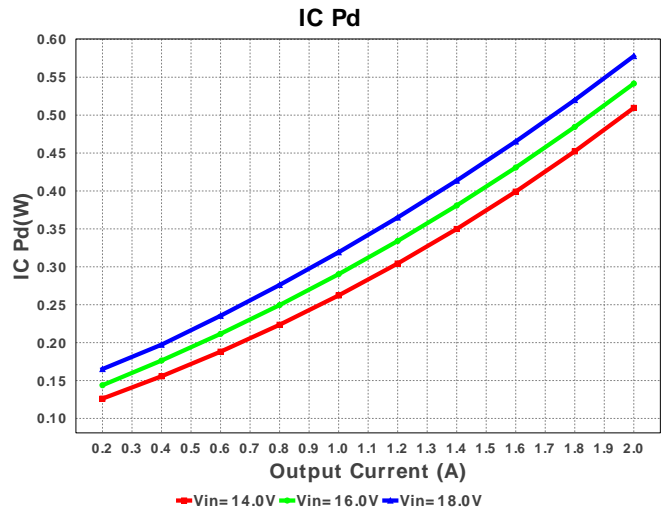
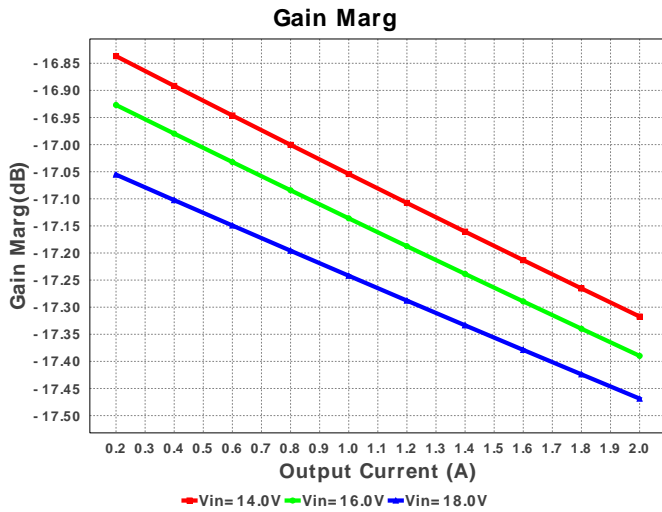
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	TDK	C1005X5R1A104K Series= X5R	Cap= 100.0 nF ESR= 20.413 mOhm VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	 0402 3 mm ²
2.	Ccomp	Yageo America	CC0805KRX7R9BB152 Series= X7R	Cap= 1.5 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm ²
3.	Ccomp2	Kemet	C0805C330K5GACTU Series= C0G/NP0	Cap= 33.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm ²
4.	Cin	MuRata	GRM32ER61E226KE15L Series= X5R	Cap= 22.0 uF ESR= 2.0 mOhm VDC= 25.0 V IRMS= 3.67 A	1	\$0.16	 1210 15 mm ²
5.	Cout	MuRata	GRM32ER61C226KE20L Series= X5R	Cap= 22.0 uF ESR= 2.0 mOhm VDC= 16.0 V IRMS= 3.68 A	1	\$0.16	 1210 15 mm ²
6.	Css	MuRata	GRM033R61A822KA01D Series= X5R	Cap= 8.2 nF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	 0201 2 mm ²
7.	D1	Diodes Inc.	B230A-13-F	VF@Io= 500.0 mV VRRM= 30.0 V	1	\$0.09	 SMA 37 mm ²
8.	L1	Bourns	SRN8040-100M	L= 10.0 uH DCR= 50.0 mOhm	1	\$0.22	 SRN8040 100 mm ²
9.	Rcomp	Vishay-Dale	CRCW040231K6FKED Series= CRCW..e3	Res= 31.6 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
10.	Rfbb	Vishay-Dale	CRCW04021K00FKED Series= CRCW..e3	Res= 1000.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
11.	Rfbt	Vishay-Dale	CRCW040210K2FKED Series= CRCW..e3	Res= 10.2 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
12.	U1	Texas Instruments	TPS54332DDAR	Switcher	1	\$0.73	 DDA0008H 57 mm ²









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	839.534 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	133.313 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	2.231 A	Current	Peak switch current in IC
4.	Iin Avg	1.066 A	Current	Average input current
5.	L Ipp	461.81 mA	Current	Peak-to-peak inductor ripple current
6.	M Irms	1.433 A	Current	MOSFET RMS current
7.	BOM Count	12	General	Total Design BOM count
8.	FootPrint	252.0 mm ²	General	Total Foot Print Area of BOM components
9.	Frequency	1000.0 kHz	General	Switching frequency
10.	M Vds Act	87.744 mV	General	Voltage drop across the MosFET
11.	Pout	18.0 W	General	Total output power
12.	Total BOM	\$1.43	General	Total BOM Cost
13.	D1 Tj	39.557 degC	Op_Point	D1 junction temperature
14.	Low Freq Gain	63.691 dB	Op_Point	Gain at 10Hz
15.	Vout OP	9.0 V	Op_Point	Operational Output Voltage
16.	Cross Freq	22.696 kHz	Op_point	Bode plot crossover frequency
17.	Duty Cycle	51.312 %	Op_point	Duty cycle
18.	Efficiency	93.841 %	Op_point	Steady state efficiency
19.	Gain Marg	-17.469 dB	Op_point	Bode Plot Gain Margin
20.	IC Tj	58.884 degC	Op_point	IC junction temperature
21.	ICThetaJA	50.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
22.	IOUT_OP	2.0 A	Op_point	Iout operating point
23.	Phase Marg	58.693 deg	Op_point	Bode Plot Phase Margin
24.	VIN_OP	18.0 V	Op_point	Vin operating point
25.	Vout p-p	3.232 mV	Op_point	Peak-to-peak output ripple voltage
26.	Cin Pd	1.41 mW	Power	Input capacitor power dissipation
27.	Cout Pd	35.544 μW	Power	Output capacitor power dissipation
28.	Diode Pd	382.287 mW	Power	Diode power dissipation
29.	IC Pd	577.687 mW	Power	IC power dissipation
30.	L Pd	220.0 mW	Power	Inductor power dissipation
31.	Total Pd	1.181 W	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	2.0	Maximum Output Current
2.	Iout1	2.0	Output Current #1
3.	VinMax	18.0	Maximum input voltage
4.	VinMin	14.0	Minimum input voltage
5.	Vout	9.0	Output Voltage
6.	Vout1	9.0	Output Voltage #1
7.	base_pn	TPS54332	Texas Instruments Base Part Number
8.	source	DC	Input Source Type
9.	ta	30.0	Ambient temperature

Design Assistance

1. TPS54332 Product Folder : <http://www.ti.com/product/TPS54332> : contains the data sheet and other resources.

Texas Instruments' WEBENCH simulation tools attempt to recreate the performance of a substantially equivalent physical implementation of the design. Simulations are created using Texas Instruments' published specifications as well as the published specifications of other device manufacturers. While Texas Instruments does update this information periodically, this information may not be current at the time the simulation is built. Texas Instruments does not warrant the accuracy or completeness of the specifications or any information contained therein. Texas Instruments does not warrant that any designs or recommended parts will meet the specifications you entered, will be suitable for your application or fit for any particular purpose, or will operate as shown in the simulation in a physical implementation. Texas Instruments does not warrant that the designs are production worthy.

You should completely validate and test your design implementation to confirm the system functionality for your application prior to production.

Use of Texas Instruments' WEBENCH simulation tools is subject to [Texas Instruments' Site Terms and Conditions of Use](#). Prototype boards based on WEBENCH created designs are provided AS IS without warranty of any kind for evaluation and testing purposes and are subject to the terms of the [Evaluation License Agreement](#).