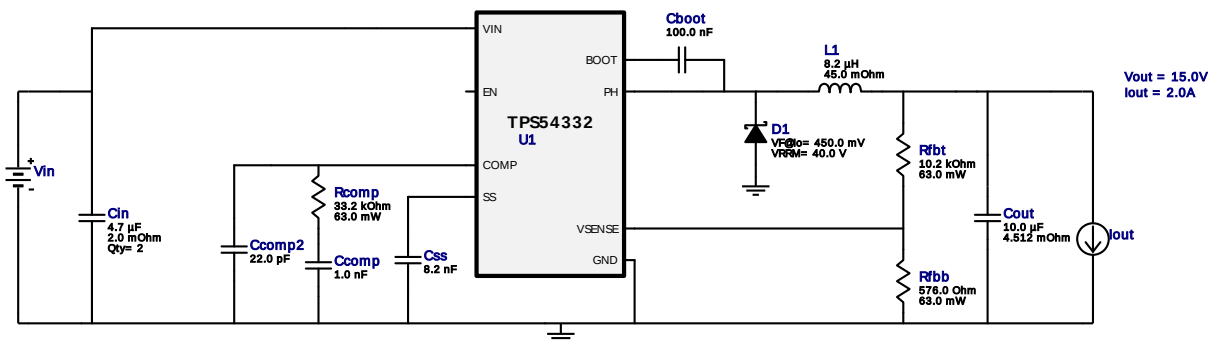


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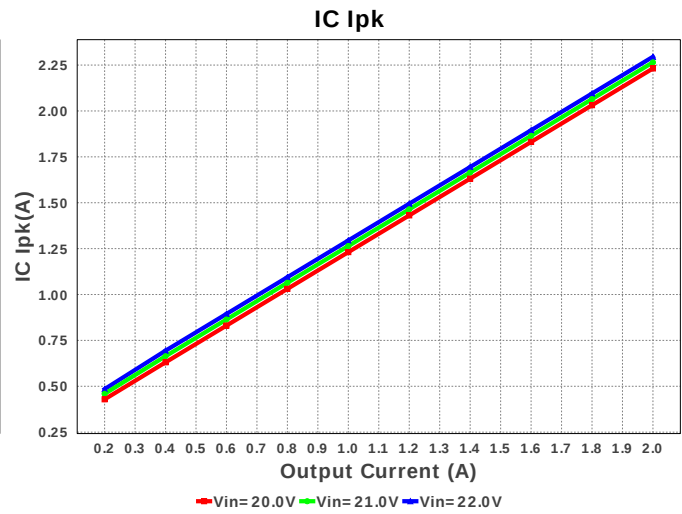
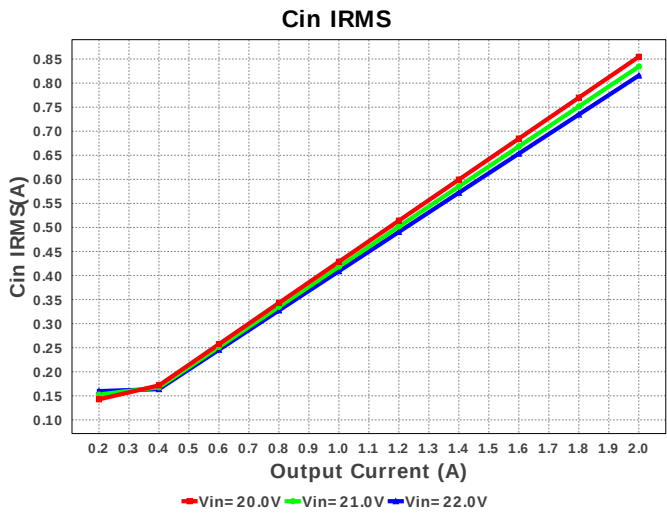
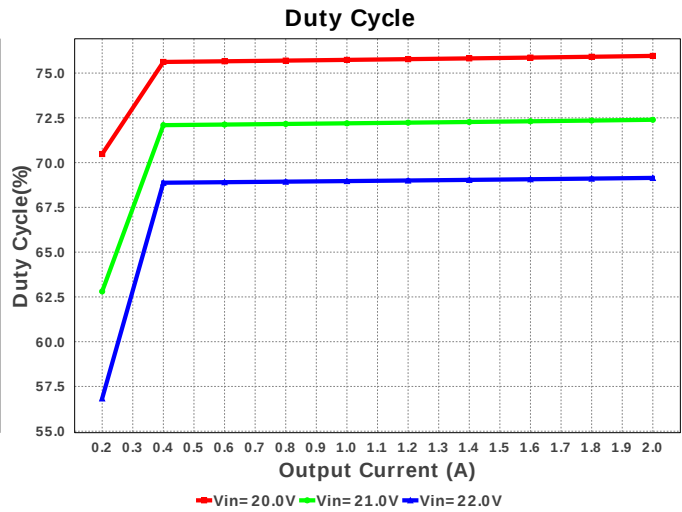
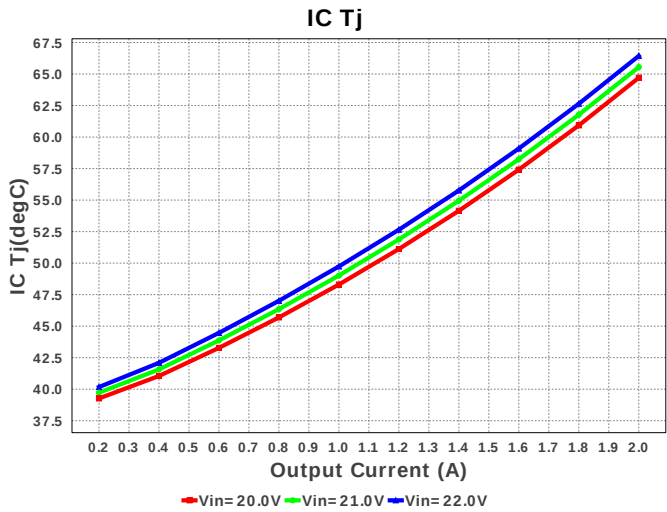
Design : 4763437/5 TPS54332DDAR
TPS54332DDAR 20.0V-22.0V to 15.00V @ 2.0A

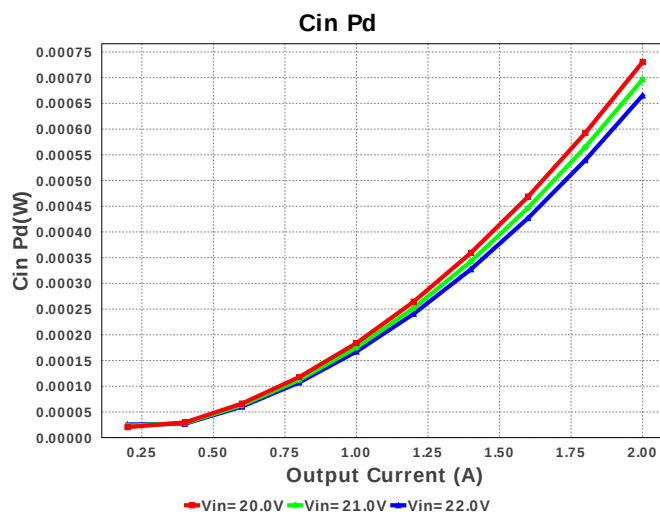
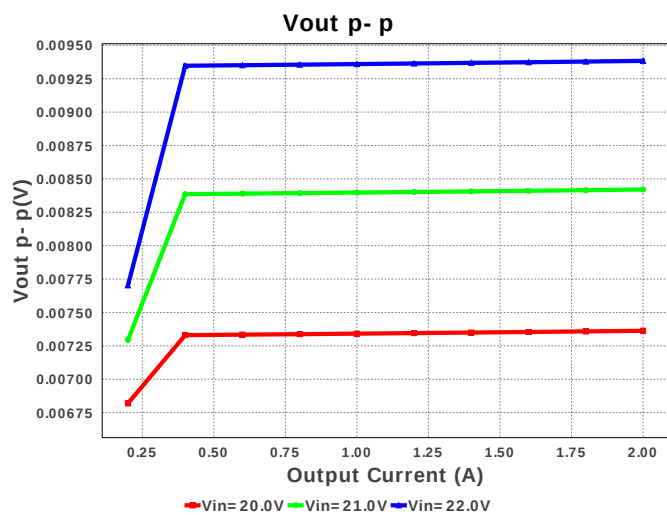
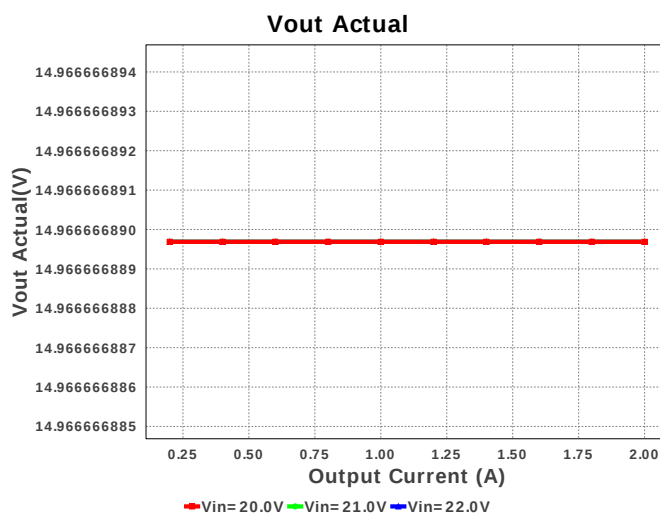
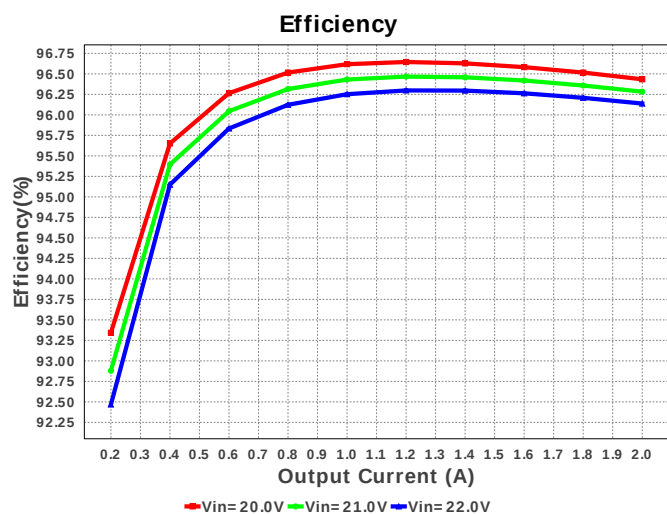
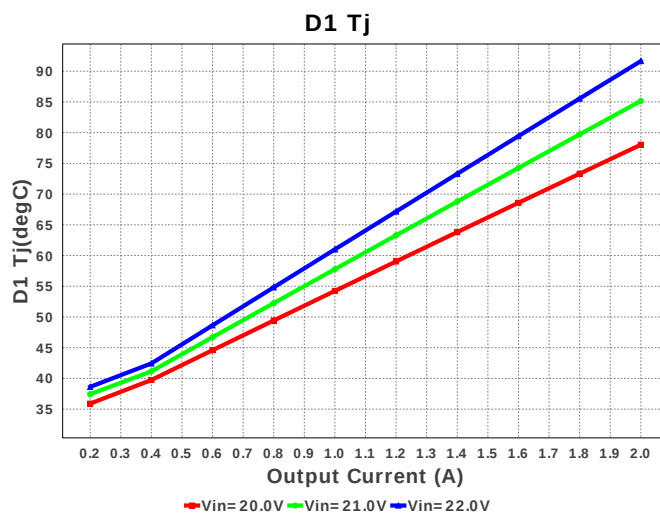
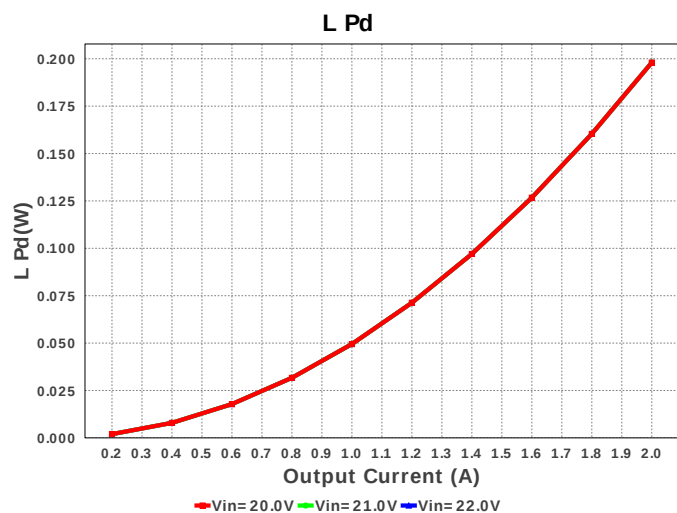


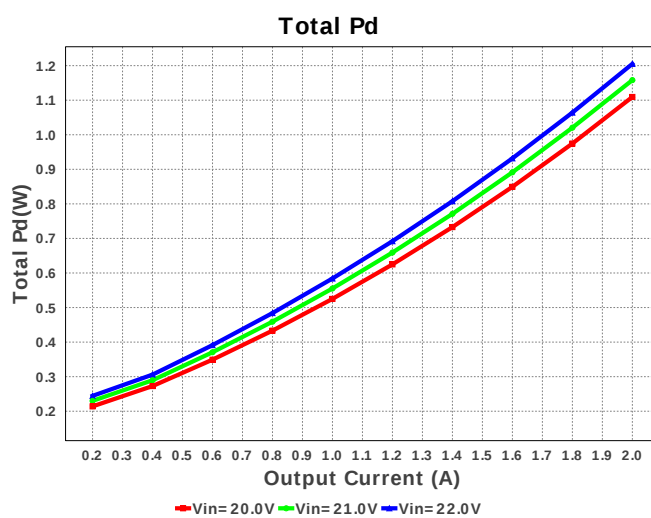
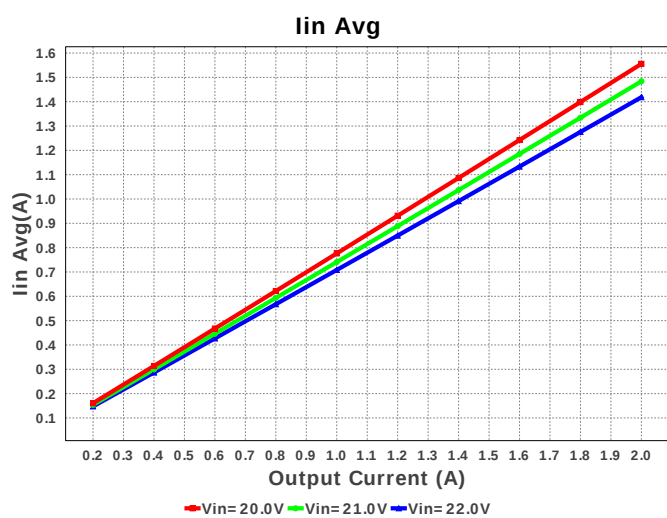
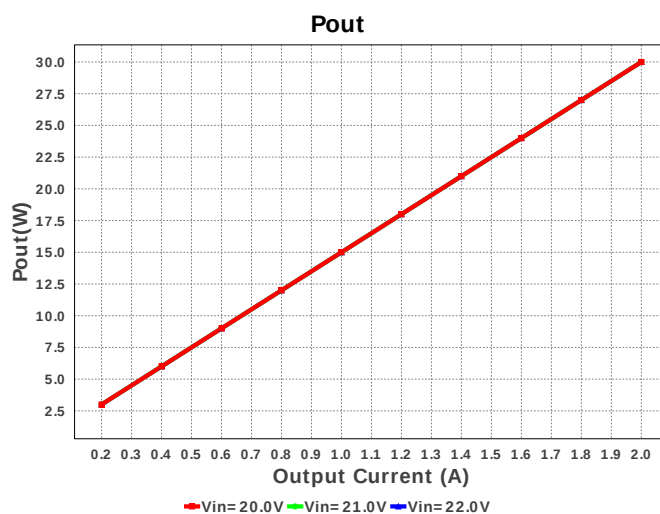
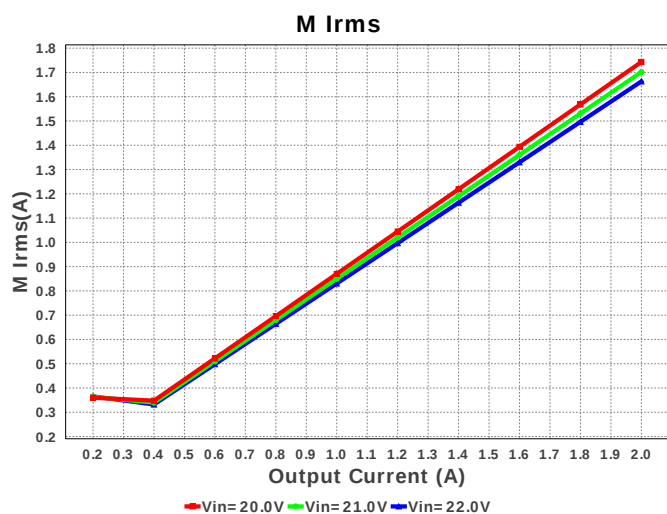
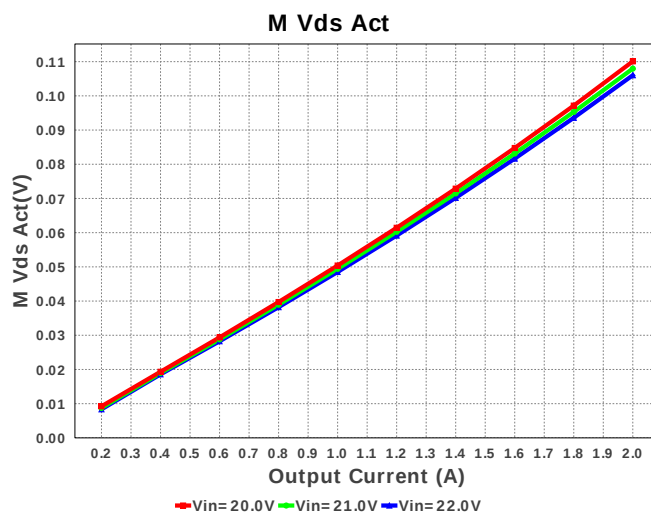
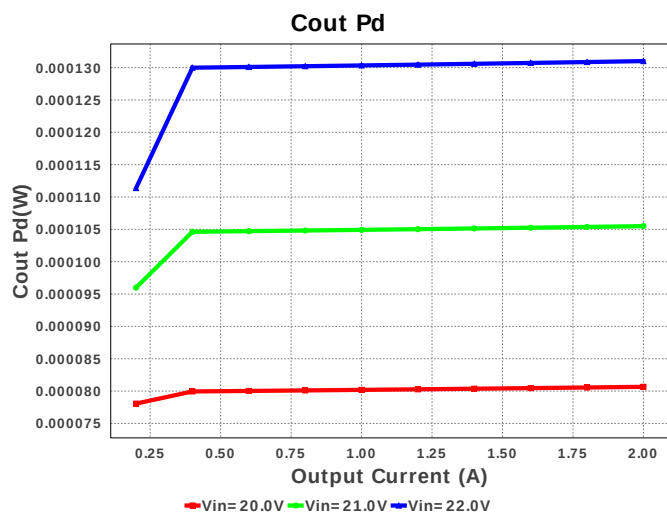
Electrical BOM

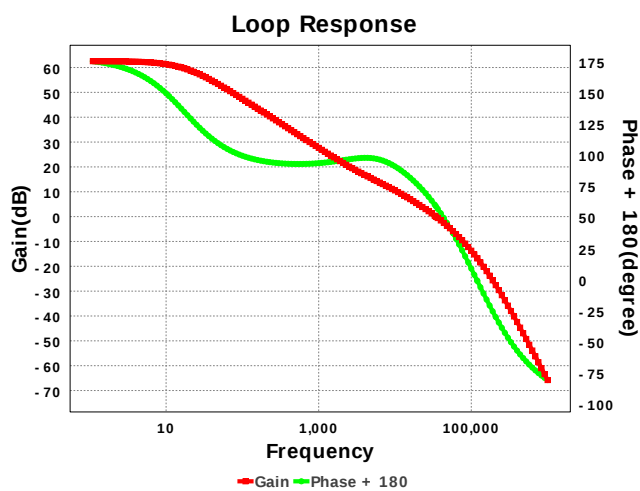
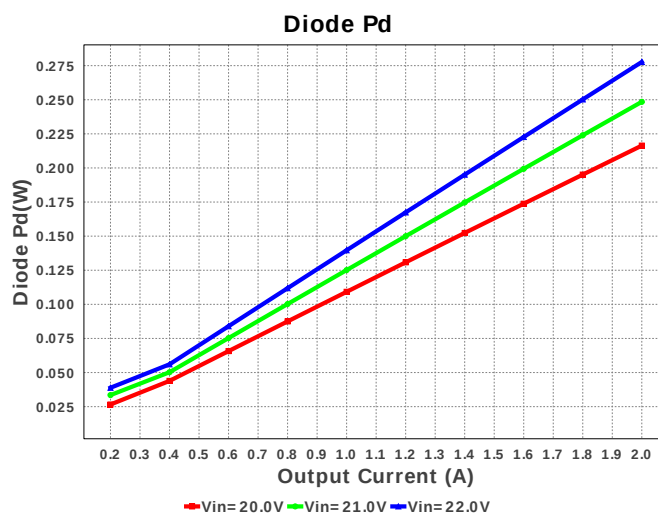
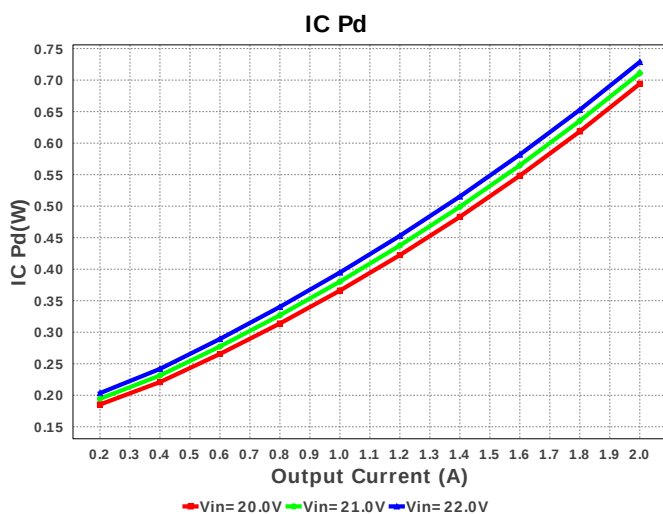
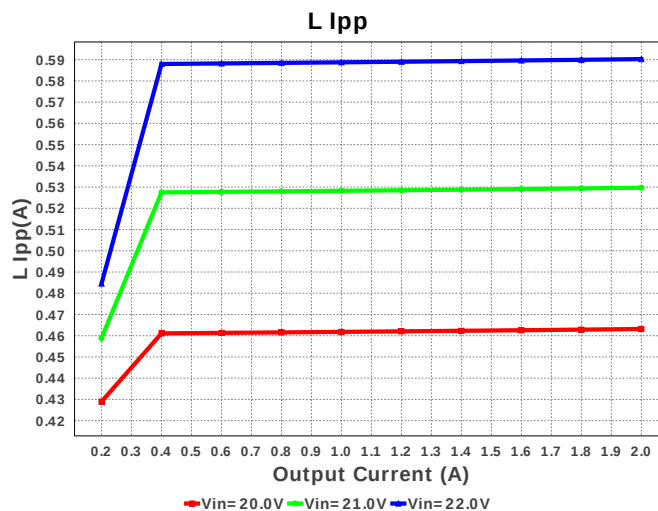
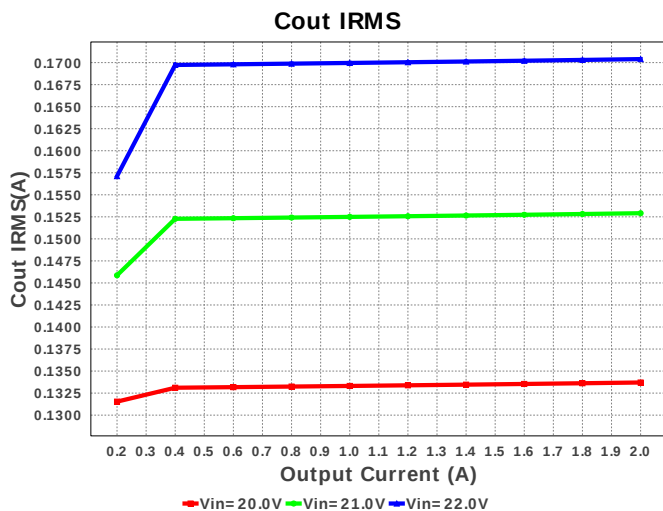
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	MuRata	GRM155R61A104KA01D Series= X5R	Cap= 100.0 nF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
2.	Ccomp	Samsung Electro-Mechanics	CL21C102JBCNFNC Series= C0G/NP0	Cap= 1.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
3.	Ccomp2	Kemet	C0805C220K3GACTU Series= C0G/NP0	Cap= 22.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
4.	Cin	MuRata	GRM32ER71H475KA88L Series= X7R	Cap= 4.7 uF ESR= 2.0 mOhm VDC= 50.0 V IRMS= 5.35 A	2	\$0.19	1210 15 mm ²
5.	Cout	MuRata	GRM31CR61E106KA12L Series= X5R	Cap= 10.0 uF ESR= 4.512 mOhm VDC= 25.0 V IRMS= 2.447 A	1	\$0.05	1206_190 11 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.	1N5819HW-7-F	Vf@Io= 450.0 mV VRRM= 40.0 V	1	\$0.08	SOD-123 13 mm ²
8.	L1	Bourns	SRN8040-8R2Y	L= 8.2 uH DCR= 45.0 mOhm	1	\$0.22	SRN8040 100 mm ²
9.	Rcomp	Vishay-Dale	CRCW040233K2FKED Series= CRCW..e3	Res= 33.2 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
10.	Rfbb	Vishay-Dale	CRCW0402576RFKED Series= CRCW..e3	Res= 576.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
11.	Rfht	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	815.693 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	170.397 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	2.295 A	Current	Peak switch current in IC
4.	Iin Avg	1.418 A	Current	Average input current
5.	L Ipp	590.27 mA	Current	Peak-to-peak inductor ripple current
6.	M1 Irms	1.663 A	Current	Q lavg
7.	BOM Count	13	General	Total Design BOM count
8.	FootPrint	238.0 mm ²	General	Total Foot Print Area of BOM components
9.	Frequency	1000.0 kHz	General	Switching frequency
10.	M Vds Act	106.026 mV	General	Voltage drop across the MosFET
11.	Mode	CCM	General	Conduction Mode

#	Name	Value	Category	Description
12.	Pout	30.0 W	General	Total output power
13.	Total BOM	\$1.53	General	Total BOM Cost
14.	D1 Tj	91.646 degC	Op_Point	D1 junction temperature
15.	Low Freq Gain	62.542 dB	Op_Point	Gain at 10Hz
16.	Vout Actual	14.967 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
17.	Vout OP	15.0 V	Op_Point	Operational Output Voltage
18.	Cross Freq	34.324 kHz	Op_point	Bode plot crossover frequency
19.	Duty Cycle	69.146 %	Op_point	Duty cycle
20.	Efficiency	96.138 %	Op_point	Steady state efficiency
21.	Gain Marg	-16.696 dB	Op_point	Bode Plot Gain Margin
22.	IC Tj	66.438 degC	Op_point	IC junction temperature
23.	ICThetaJA	50.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
24.	IOUT_OP	2.0 A	Op_point	Iout operating point
25.	Phase Marg	59.787 deg	Op_point	Bode Plot Phase Margin
26.	VIN_OP	22.0 V	Op_point	Vin operating point
27.	Vout p-p	9.384 mV	Op_point	Peak-to-peak output ripple voltage
28.	Cin Pd	665.356 μ W	Power	Input capacitor power dissipation
29.	Cout Pd	131.006 μ W	Power	Output capacitor power dissipation
30.	Diode Pd	277.685 mW	Power	Diode power dissipation
31.	IC Pd	728.75 mW	Power	IC power dissipation
32.	L Pd	198.0 mW	Power	Inductor power dissipation
33.	Total Pd	1.205 W	Power	Total Power Dissipation
34.	Vout Tolerance	5.479 %		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	22.0	Maximum input voltage
3.	VinMin	20.0	Minimum input voltage
4.	Vout	15.0	Output Voltage
5.	base_pn	TPS54332	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature

Design Assistance

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

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