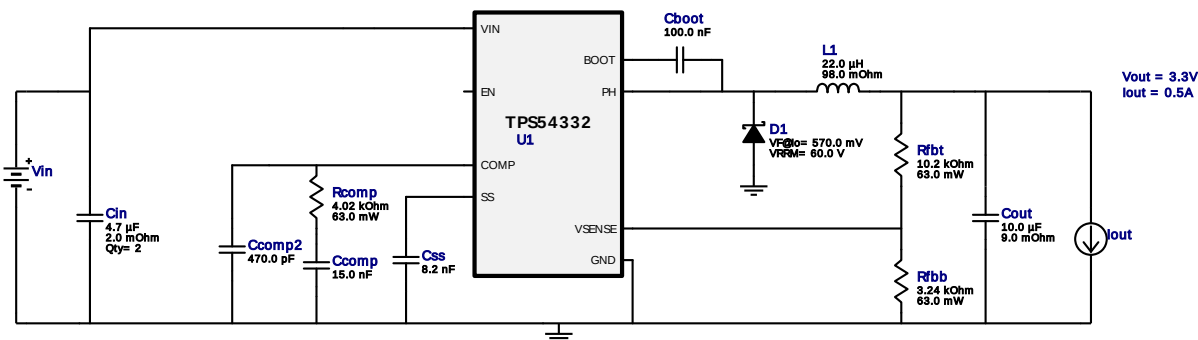


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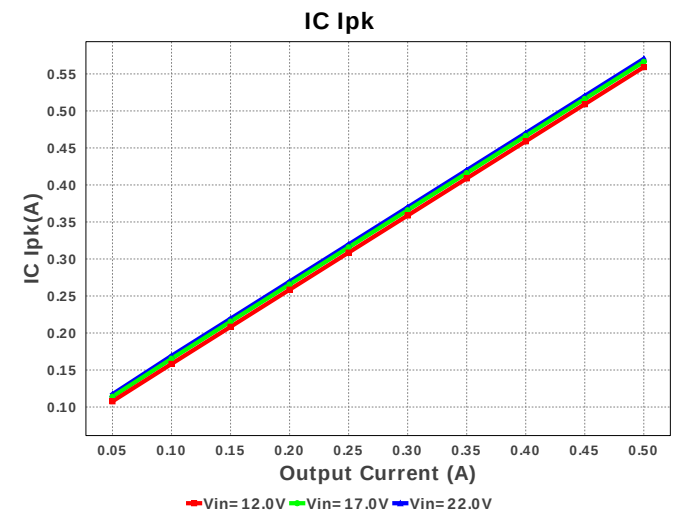
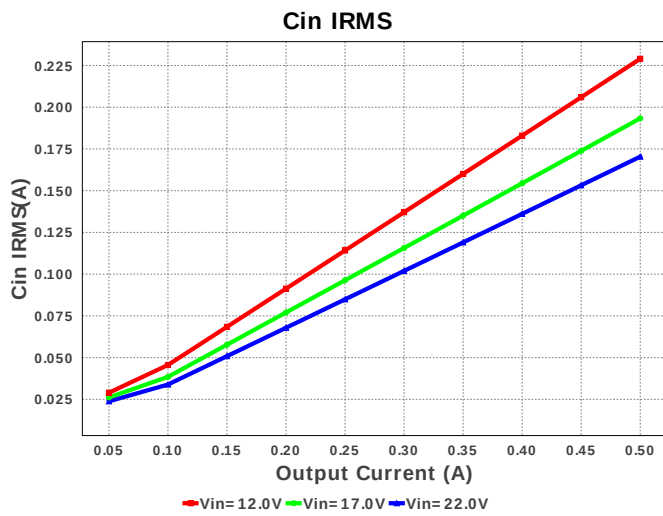
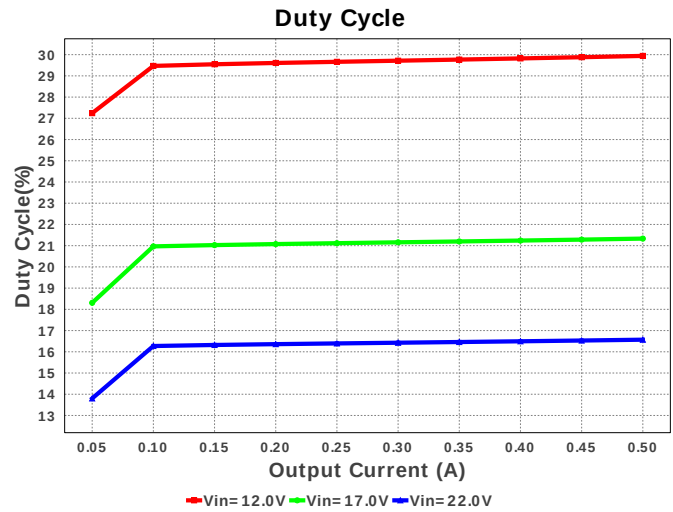
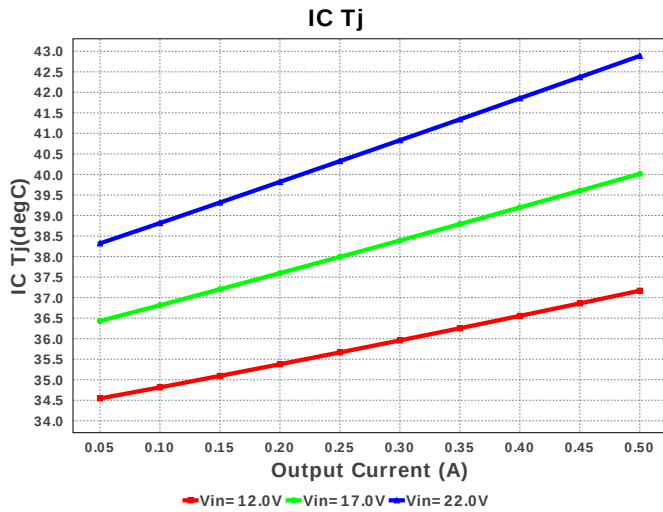
Design : 4744944/2 TPS54332DDAR
TPS54332DDAR 12.0V-22.0V to 3.30V @ 0.5A

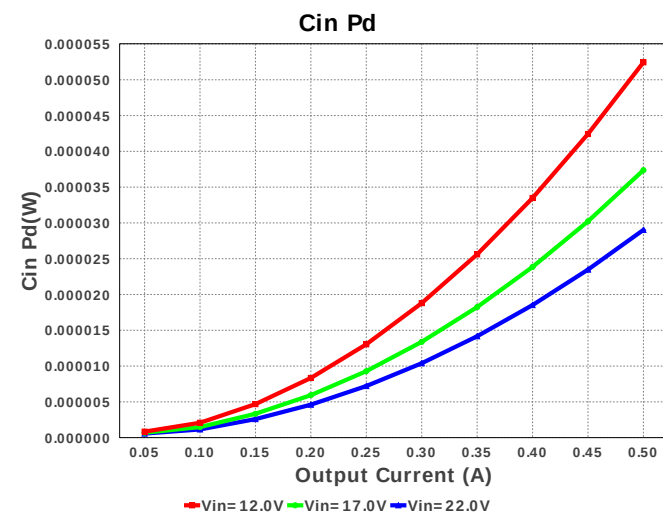
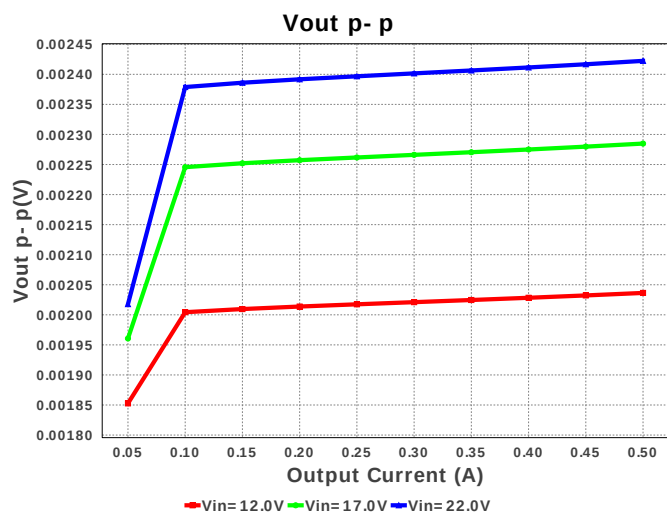
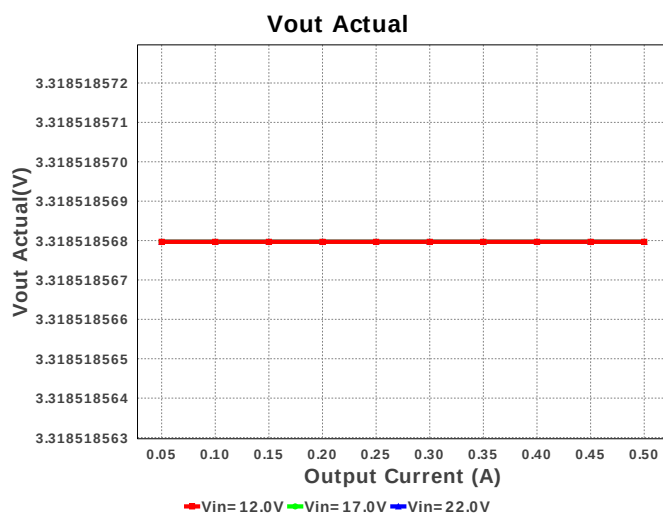
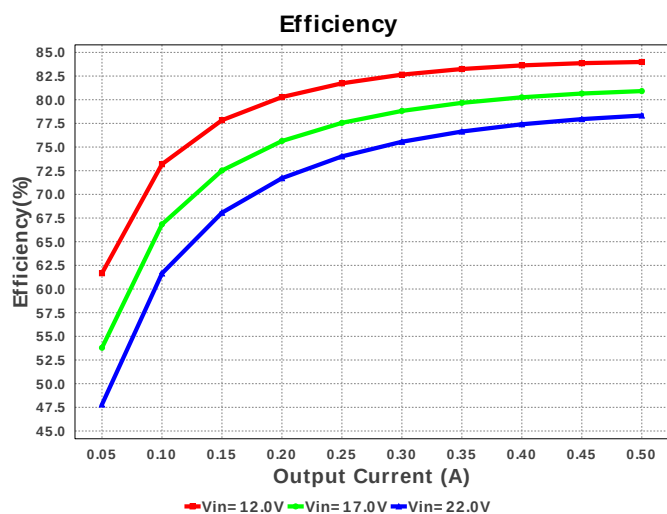
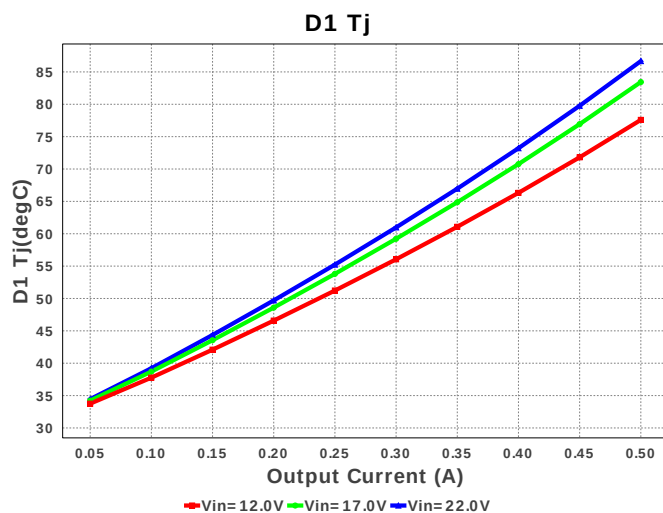
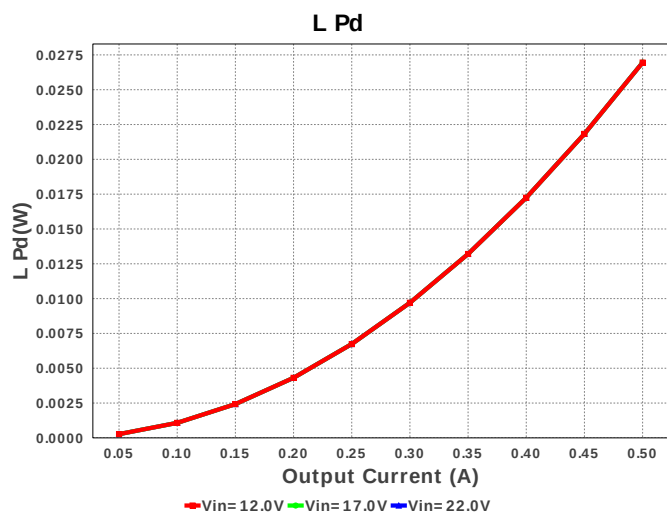


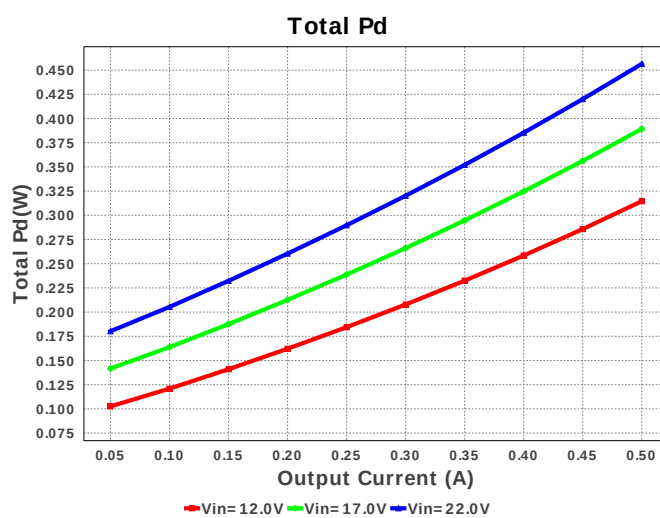
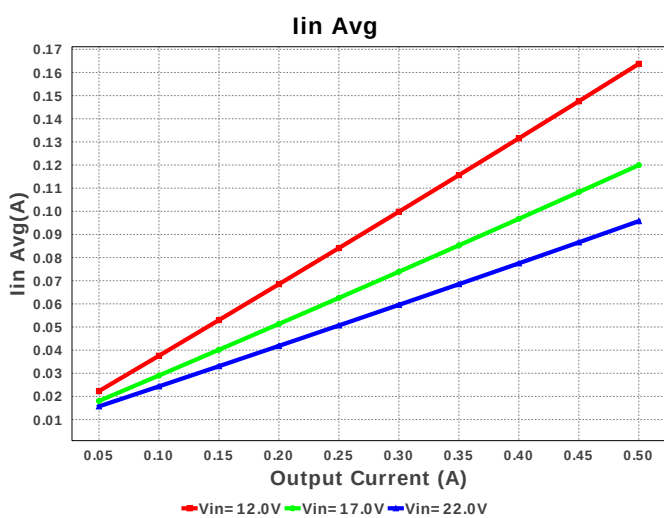
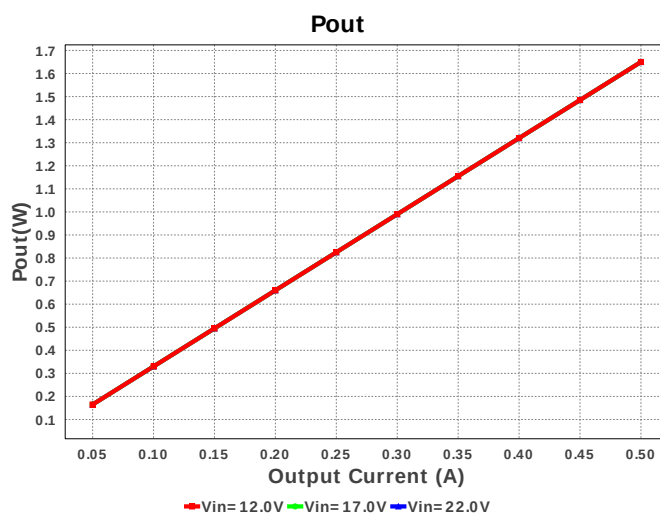
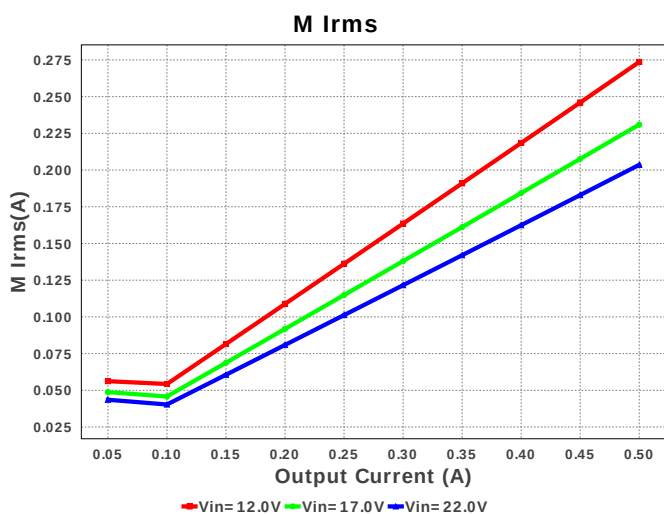
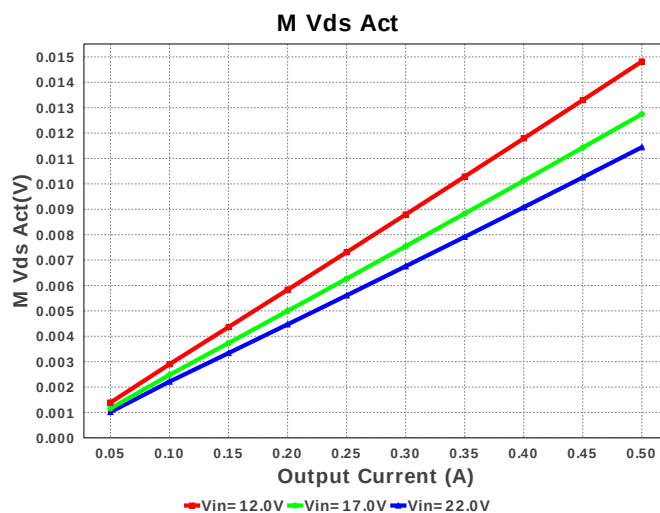
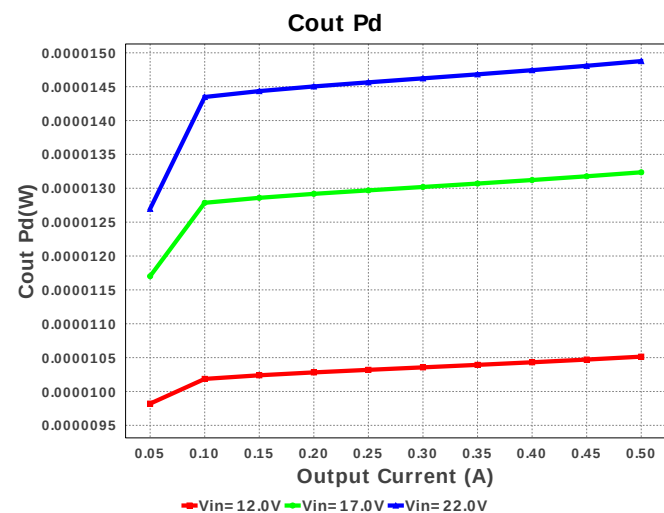
Electrical BOM

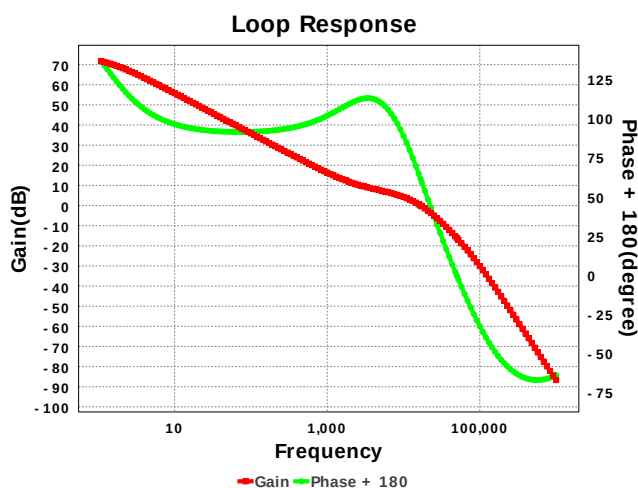
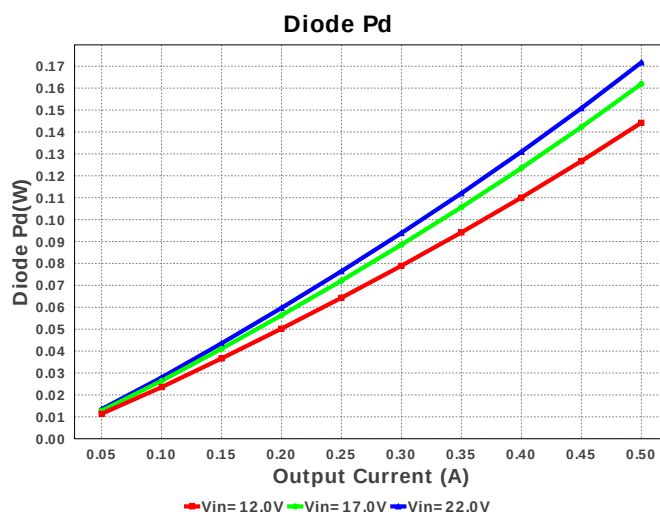
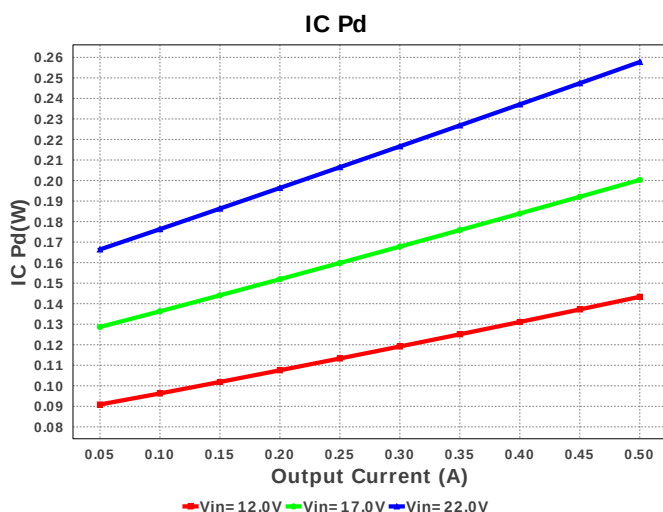
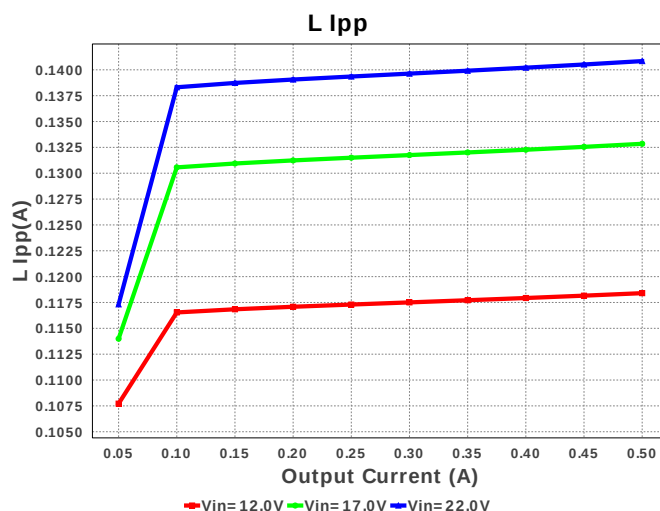
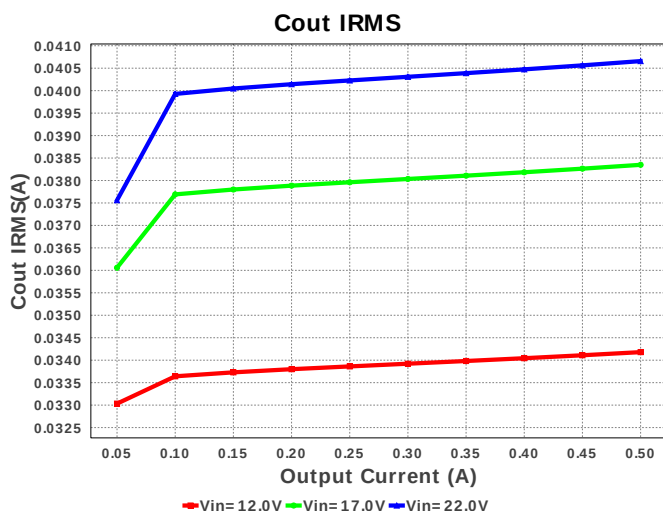
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	MuRata	GRM155R61A104KA01D Series= X5R	Cap= 100.0 nF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
2.	Ccomp	Yageo America	CC0805KRX7R9BB153 Series= X7R	Cap= 15.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
3.	Ccomp2	Yageo America	CC0805KRX7R9BB471 Series= X7R	Cap= 470.0 pF VDC= 50.0 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	GRM188R60J106ME47D Series= X5R	Cap= 10.0 uF ESR= 9.0 mOhm VDC= 6.3 V IRMS= 2.74 A	1	\$0.02	0603 5 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	NXP Semiconductor	PMEG6010CEH,115	Vf@Io= 570.0 mV VRRM= 60.0 V	1	\$0.04	SOD-123F 12 mm ²
8.	L1	Panasonic	ELL-6UH220M	L= 22.0 uH DCR= 98.0 mOhm	1	\$0.28	ELL6UH 67 mm ²
9.	Rcomp	Vishay-Dale	CRCW04024K02FKED Series= CRCW..e3	Res= 4.02 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
10.	Rfbb	Vishay-Dale	CRCW04023K24FKED Series= CRCW..e3	Res= 3.24 kOhm 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	170.368 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	40.658 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	570.422 mA	Current	Peak switch current in IC
4.	Iin Avg	95.749 mA	Current	Average input current
5.	L Ipp	140.84 mA	Current	Peak-to-peak inductor ripple current
6.	M1 Irms	203.53 mA	Current	Q lavg
7.	BOM Count	13	General	Total Design BOM count
8.	FootPrint	198.0 mm ²	General	Total Foot Print Area of BOM components
9.	Frequency	1000.0 kHz	General	Switching frequency
10.	M Vds Act	11.442 mV	General	Voltage drop across the MosFET
11.	Pout	1.65 W	General	Total output power

#	Name	Value	Category	Description
12.	Total BOM	\$1.52	General	Total BOM Cost
13.	D1 Tj	86.67 degC	Op_Point	D1 junction temperature
14.	Low Freq Gain	71.701 dB	Op_Point	Gain at 10Hz
15.	Vout Actual	3.319 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
16.	Vout OP	3.3 V	Op_Point	Operational Output Voltage
17.	Cross Freq	16.722 kHz	Op_point	Bode plot crossover frequency
18.	Duty Cycle	16.57 %	Op_point	Duty cycle
19.	Efficiency	78.33 %	Op_point	Steady state efficiency
20.	Gain Marg	-16.133 dB	Op_point	Bode Plot Gain Margin
21.	IC Tj	42.887 degC	Op_point	IC junction temperature
22.	ICThetaJA	50.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
23.	IOUT_OP	500.0 mA	Op_point	Iout operating point
24.	Phase Marg	61.976 deg	Op_point	Bode Plot Phase Margin
25.	VIN_OP	22.0 V	Op_point	Vin operating point
26.	Vout p-p	2.422 mV	Op_point	Peak-to-peak output ripple voltage
27.	Cin Pd	29.025 μW	Power	Input capacitor power dissipation
28.	Cout Pd	14.878 μW	Power	Output capacitor power dissipation
29.	Diode Pd	171.728 mW	Power	Diode power dissipation
30.	IC Pd	257.749 mW	Power	IC power dissipation
31.	L Pd	26.95 mW	Power	Inductor power dissipation
32.	Total Pd	456.474 mW	Power	Total Power Dissipation
33.	Vout Tolerance	5.087 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	500.0 m	Maximum Output Current
2.	VinMax	22.0	Maximum input voltage
3.	VinMin	12.0	Minimum input voltage
4.	Vout	3.3	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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