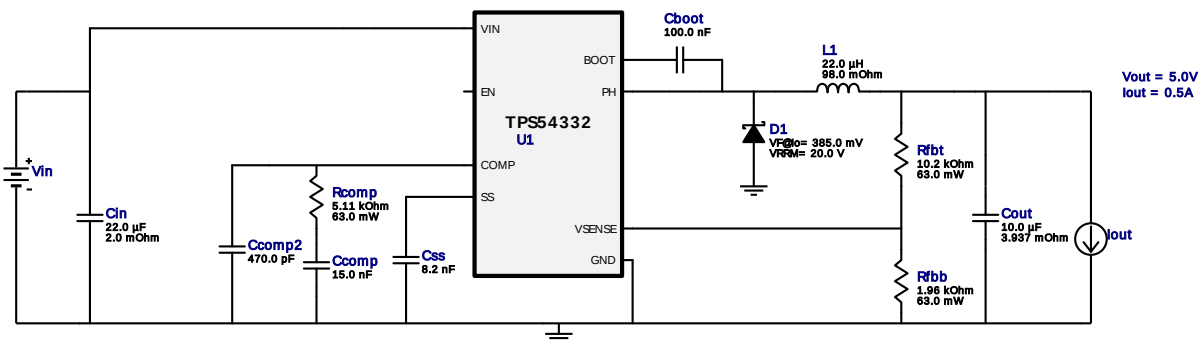


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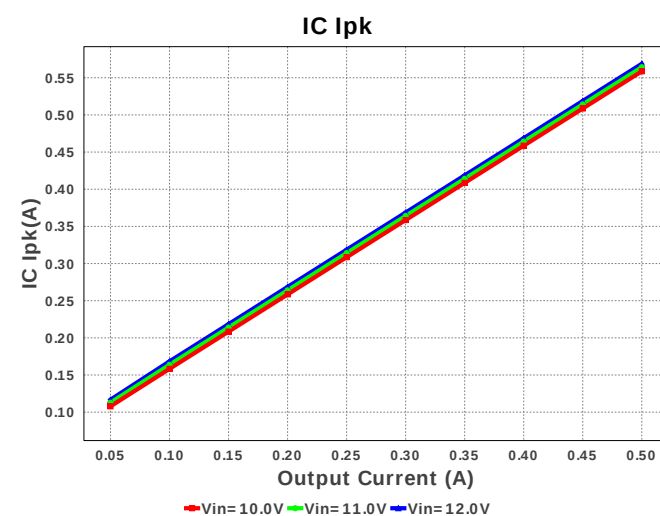
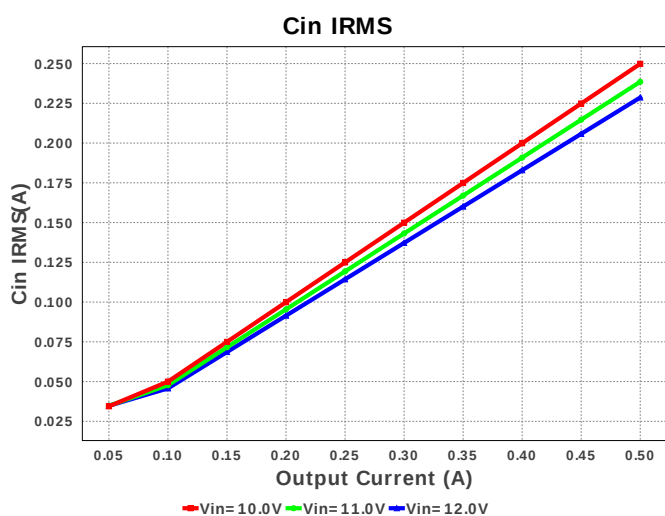
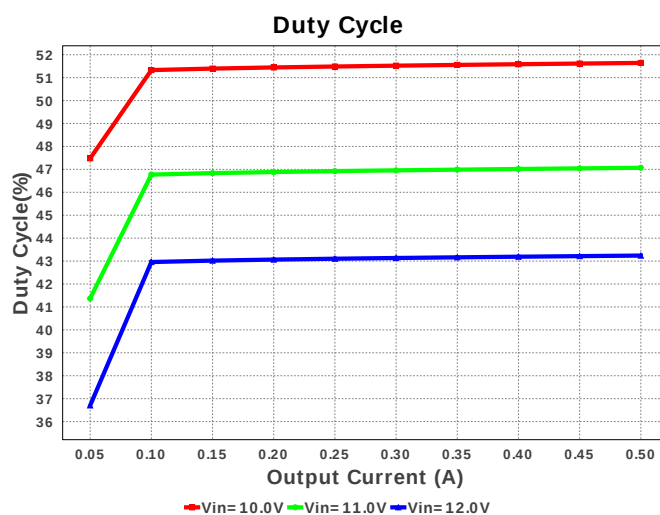
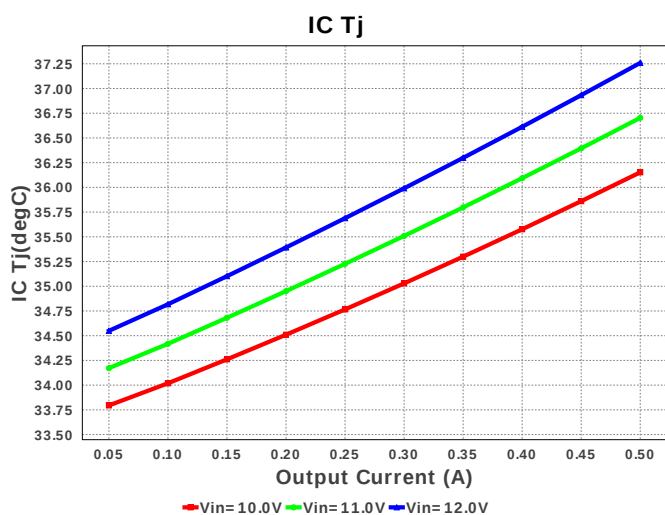
Design : 4742013/223 TPS54332DDAR
TPS54332DDAR 10.0V-12.0V to 5.00V @ 0.5A

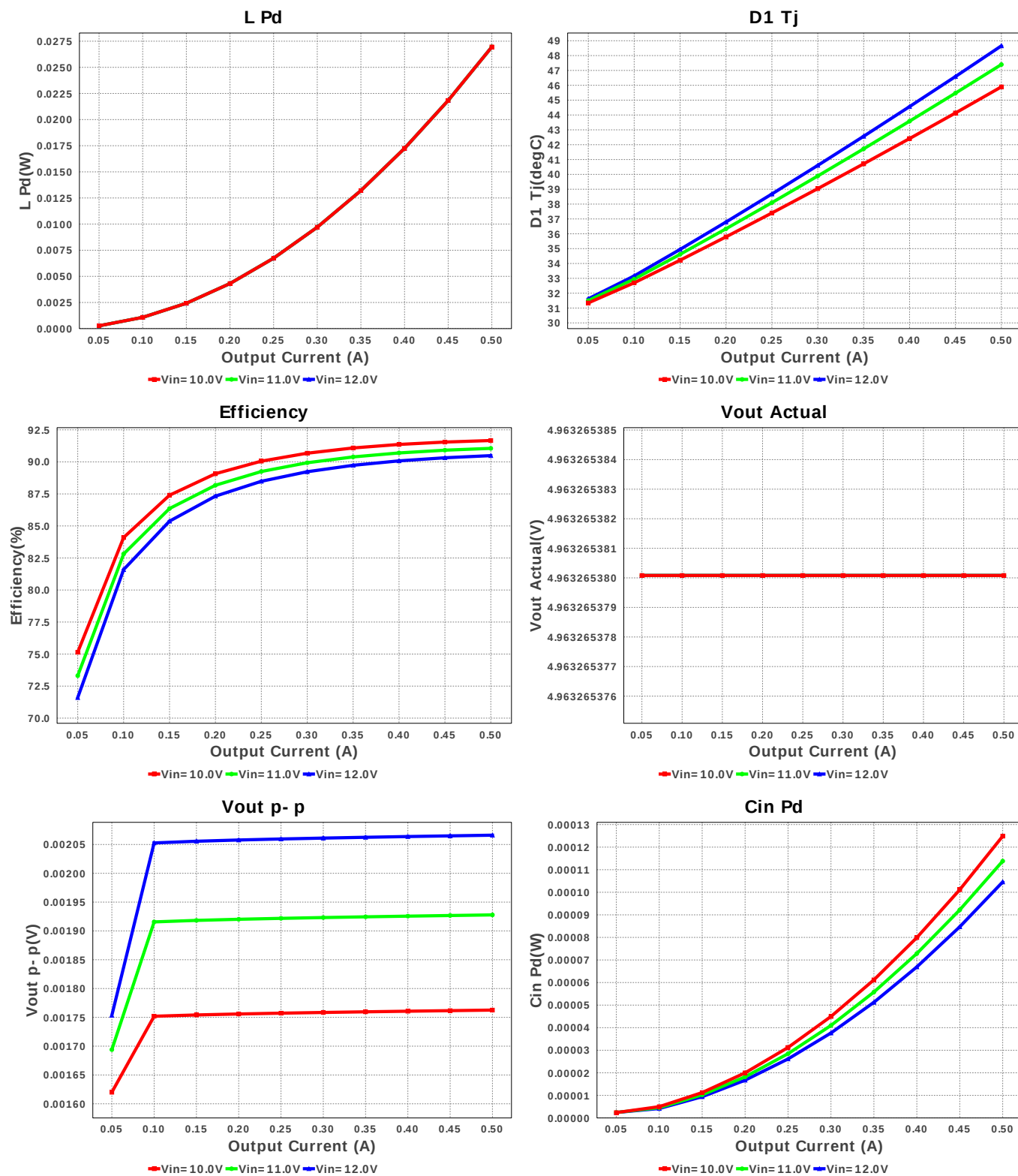


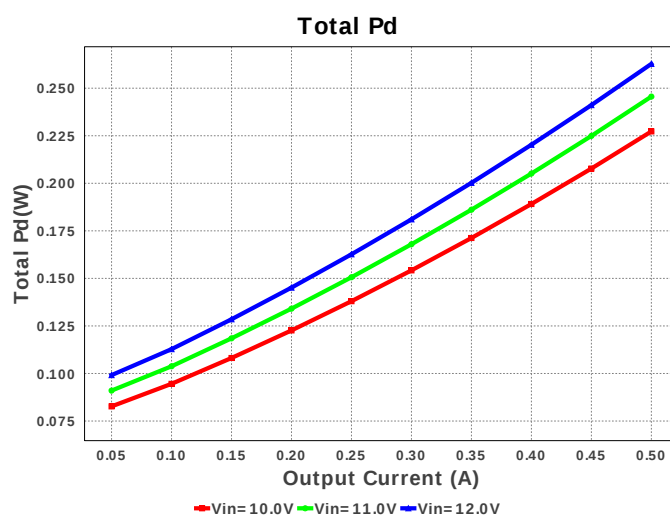
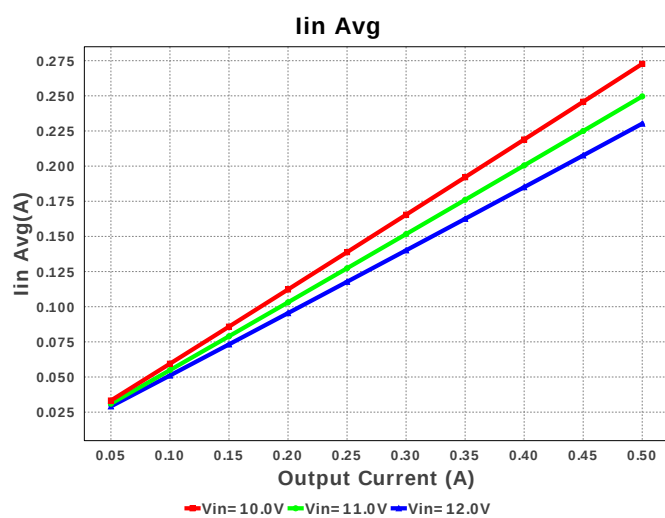
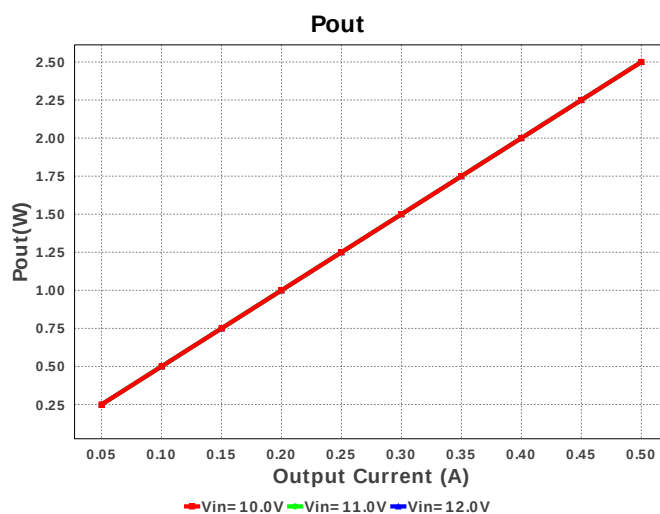
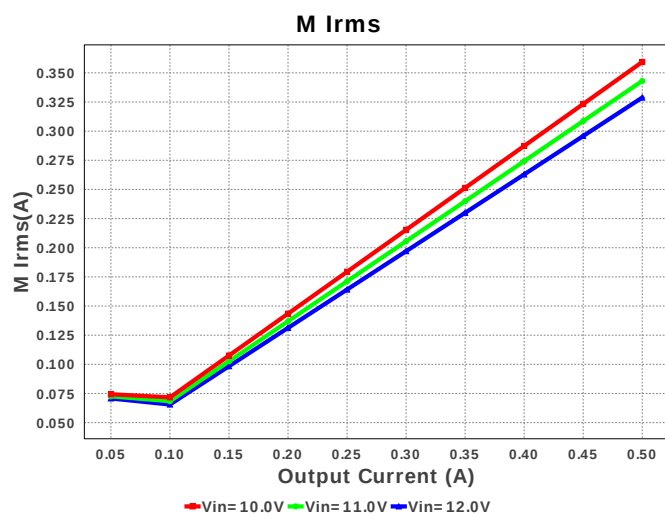
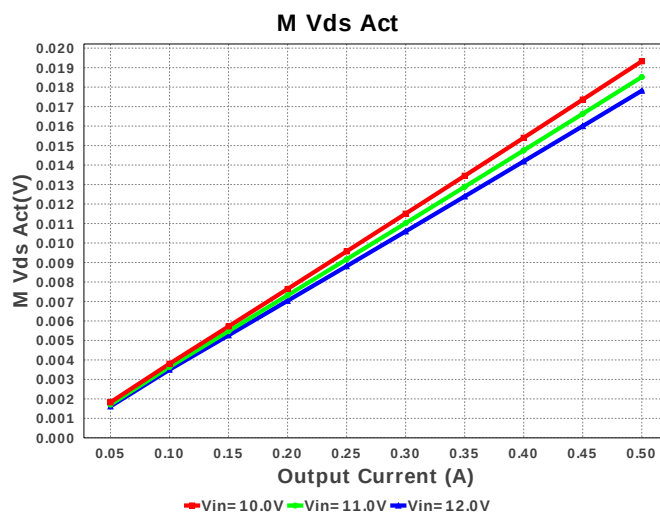
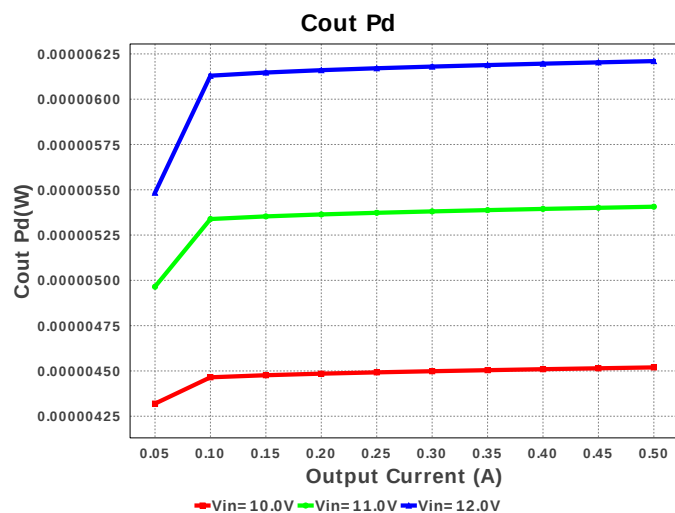
Electrical BOM

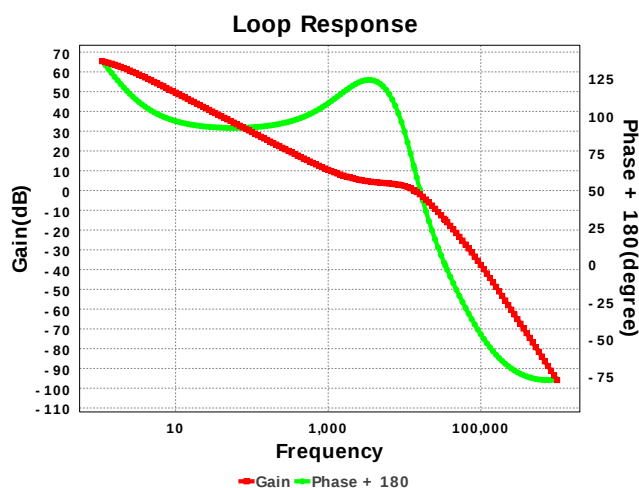
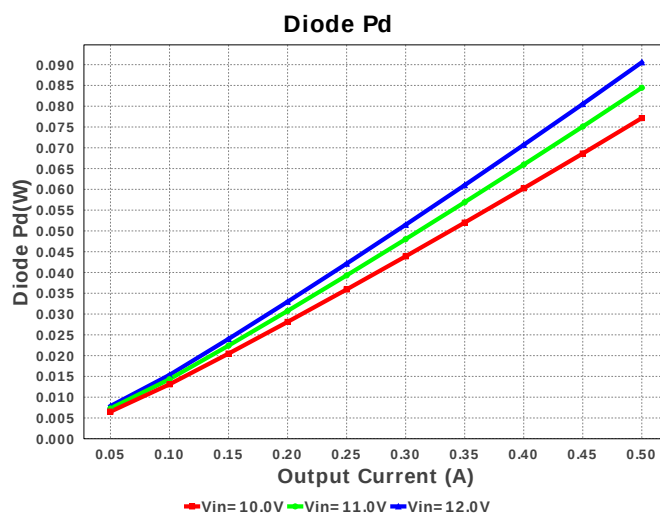
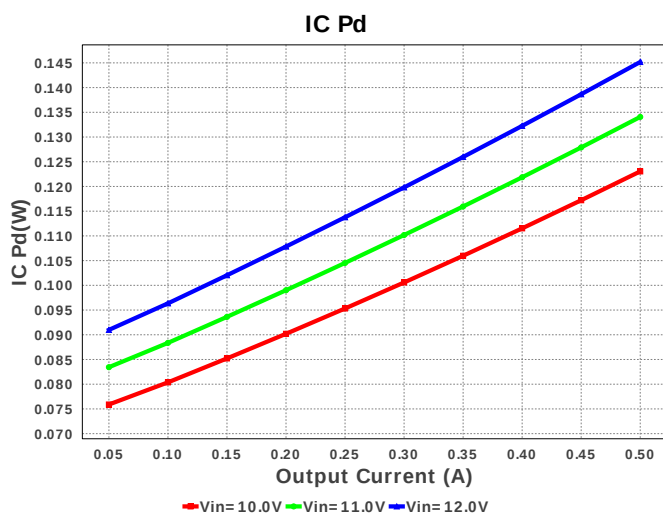
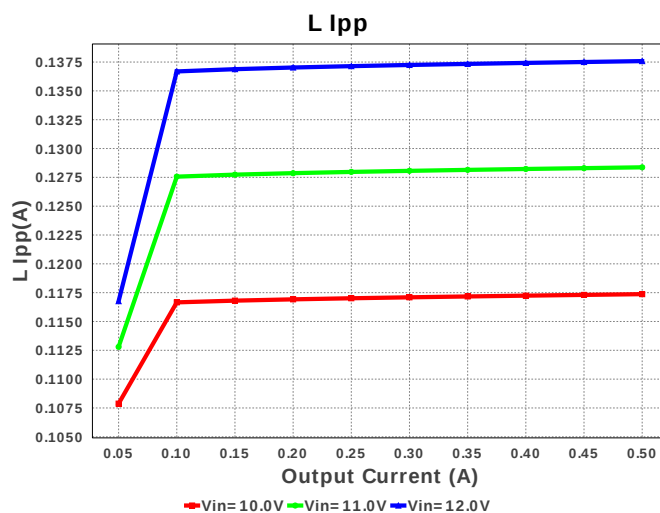
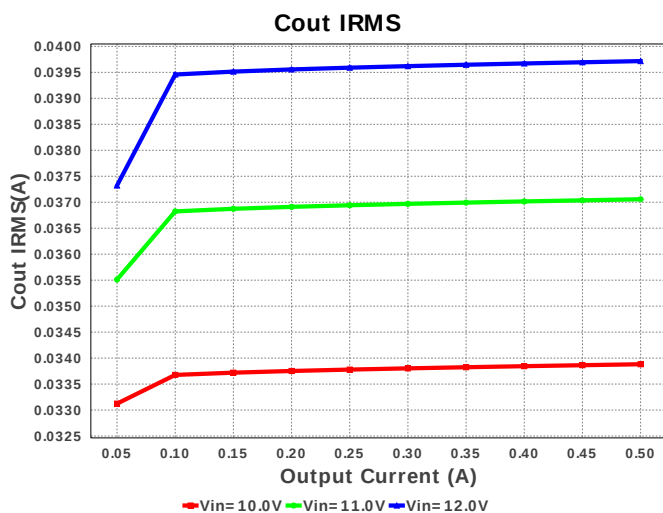
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	MuRata	GRM155R61A104KA01D Series= X5R	Cap= 100.0 nF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
2.	Ccomp	Yageo America	CC0805KRX7R9BB153 Series= X7R	Cap= 15.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
3.	Ccomp2	Yageo America	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	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	GRM219R61A106KE44D Series= X5R	Cap= 10.0 uF ESR= 3.937 mOhm VDC= 10.0 V IRMS= 2.7713 A	1	\$0.03	0805 7 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	ON Semiconductor	MBR0520LT1G	Vf@Io= 385.0 mV VRRM= 20.0 V	1	\$0.06	SOD-123 13 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	CRCW04025K11FKED Series= CRCW..e3	Res= 5.11 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
10.	Rfbb	Vishay-Dale	CRCW04021K96FKED Series= CRCW..e3	Res= 1.96 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	228.654 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	39.717 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	568.791 mA	Current	Peak switch current in IC
4.	Iin Avg	230.23 mA	Current	Average input current
5.	L Ipp	137.58 mA	Current	Peak-to-peak inductor ripple current
6.	M1 Irms	328.786 mA	Current	Q lavg
7.	BOM Count	12	General	Total Design BOM count
8.	FootPrint	187.0 mm ²	General	Total Foot Print Area of BOM components
9.	Frequency	1000.0 kHz	General	Switching frequency
10.	M Vds Act	17.817 mV	General	Voltage drop across the MosFET
11.	Pout	2.5 W	General	Total output power

#	Name	Value	Category	Description
12.	Total BOM	\$1.33	General	Total BOM Cost
13.	D1 Tj	48.655 degC	Op_Point	D1 junction temperature
14.	Low Freq Gain	65.396 dB	Op_Point	Gain at 10Hz
15.	Vout Actual	4.963 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
16.	Vout OP	5.0 V	Op_Point	Operational Output Voltage
17.	Cross Freq	13.518 kHz	Op_point	Bode plot crossover frequency
18.	Duty Cycle	43.24 %	Op_point	Duty cycle
19.	Efficiency	90.488 %	Op_point	Steady state efficiency
20.	Gain Marg	-14.979 dB	Op_point	Bode Plot Gain Margin
21.	IC Tj	37.259 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	64.849 deg	Op_point	Bode Plot Phase Margin
25.	VIN_OP	12.0 V	Op_point	Vin operating point
26.	Vout p-p	2.066 mV	Op_point	Peak-to-peak output ripple voltage
27.	Cin Pd	104.565 µW	Power	Input capacitor power dissipation
28.	Cout Pd	6.21 µW	Power	Output capacitor power dissipation
29.	Diode Pd	90.56 mW	Power	Diode power dissipation
30.	IC Pd	145.178 mW	Power	IC power dissipation
31.	L Pd	26.95 mW	Power	Inductor power dissipation
32.	Total Pd	262.794 mW	Power	Total Power Dissipation
33.	Vout Tolerance	5.254 %		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	12.0	Maximum input voltage
3.	VinMin	10.0	Minimum input voltage
4.	Vout	5.0	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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