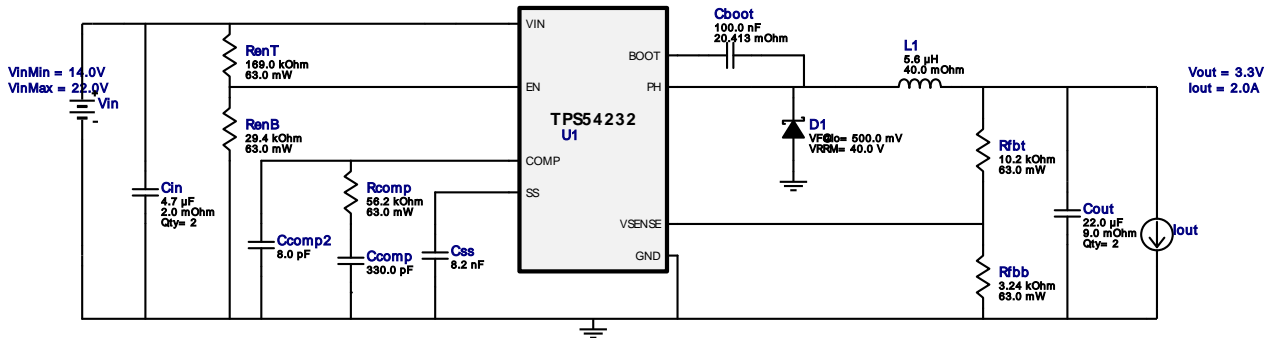


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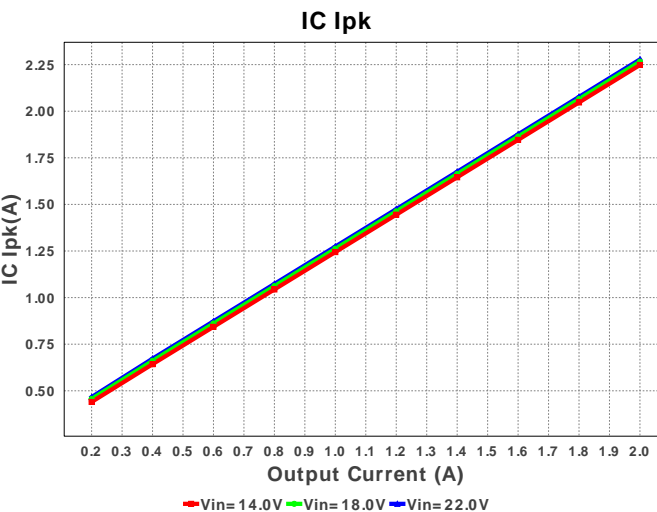
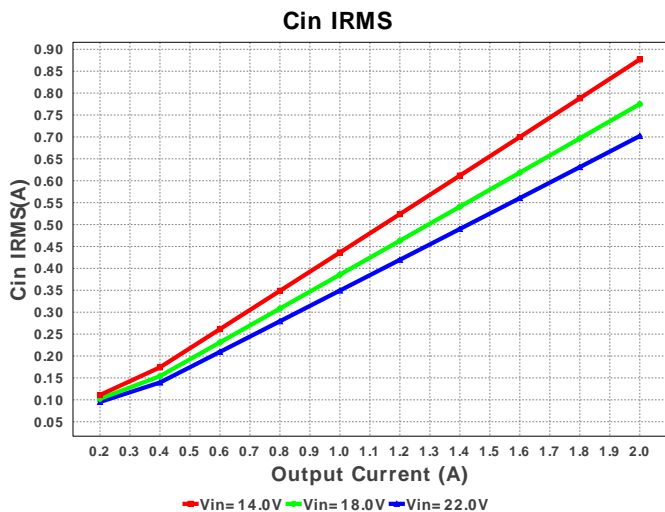
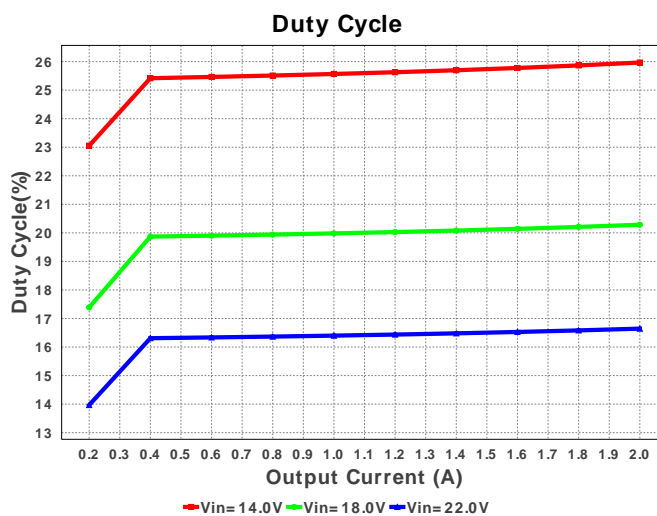
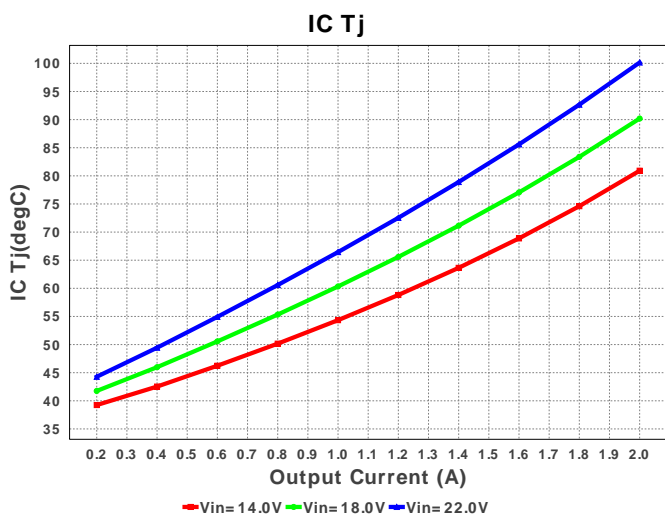
 Design : 3927117/1 TPS54232DR
 TPS54232DR 14.0V-22.0V to 3.30V @ 2.0A

Electrical BOM

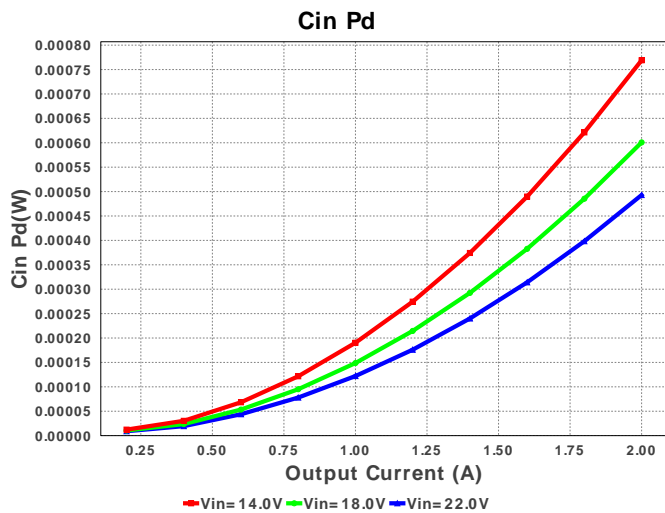
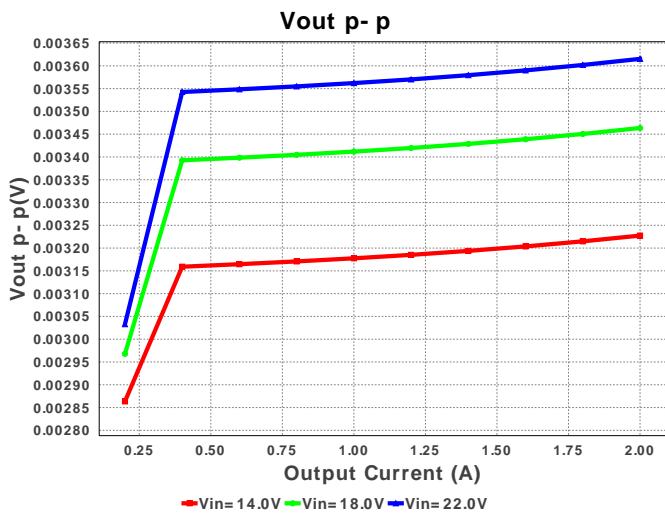
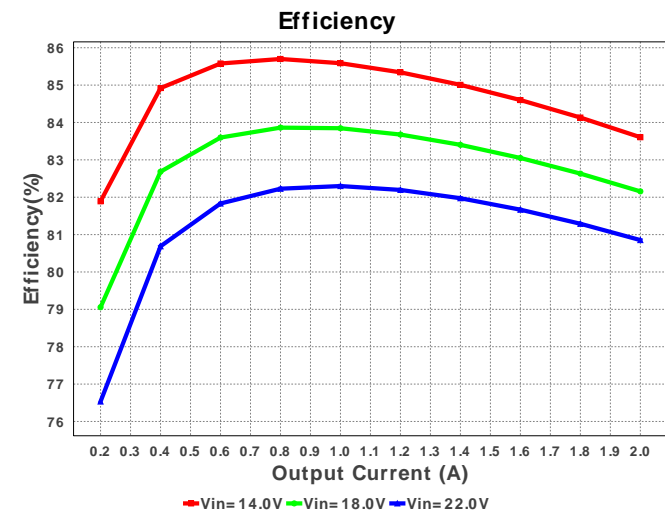
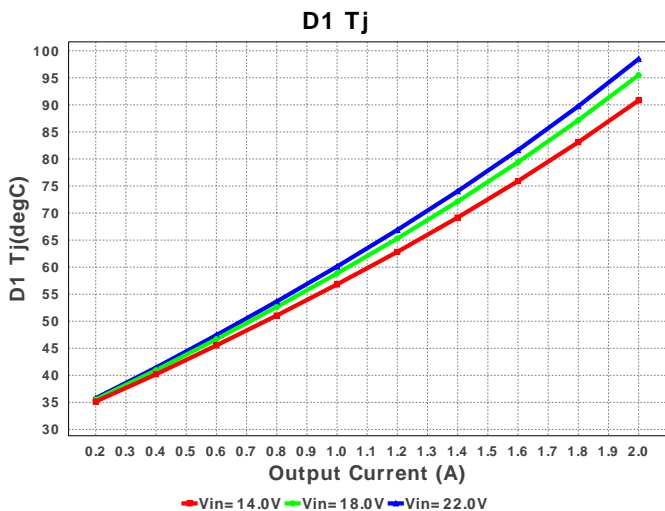
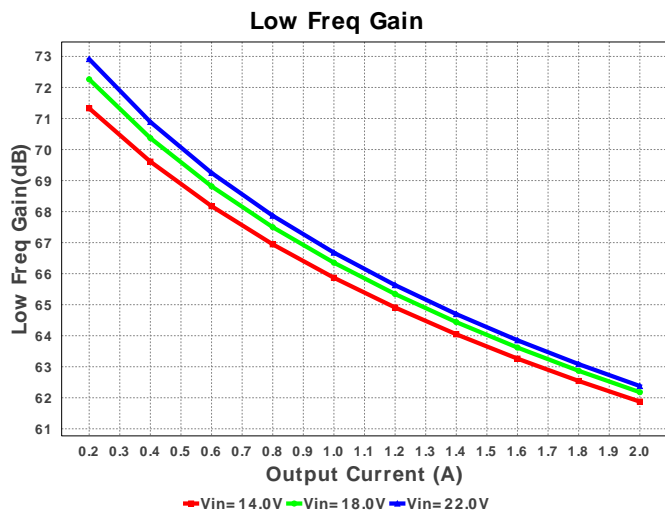
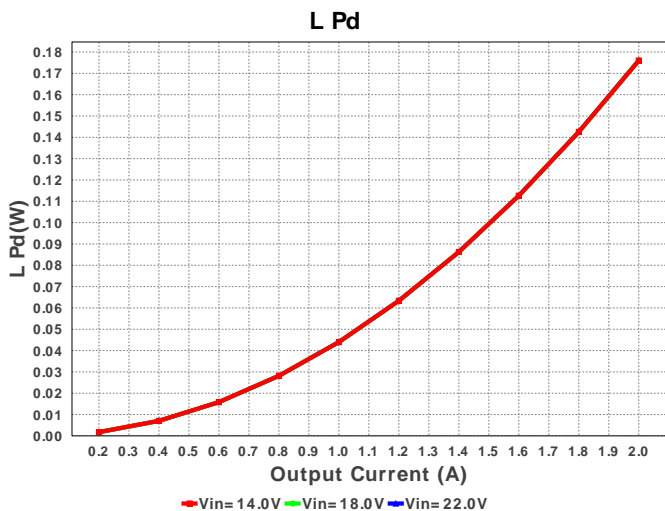
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1.	Cboot	TDK	C1005X5R1A104K Series= X5R	Cap= 100.0 nF ESR= 20.413 mOhm VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
2.	Ccomp	Samsung Electro-Mechanics	CL21C331JBANFNC Series= C0G/NP0	Cap= 330.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
3.	Ccomp2	Yageo America	CC0805DRNP09BN8R0 Series= C0G/NP0	Cap= 8.0 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	\$0.29	1210 15 mm ²
5.	Cout	MuRata	GRM21BR60J226ME39L Series= X5R	Cap= 22.0 uF ESR= 9.0 mOhm VDC= 6.3 V IRMS= 3.5 A	2	\$0.05	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	Diodes Inc.	B340A-13-F	VF@Io= 500.0 mV VRRM= 40.0 V	1	\$0.11	SMA 37 mm ²
8.	L1	Bourns	SDR0805-5R6ML	L= 5.6 µH DCR= 40.0 mOhm	1	\$0.22	SDR0805 96 mm ²
9.	Rcomp	Vishay-Dale	CRCW040256K2FKED Series= CRCW..e3	Res= 56.2 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
10.	RenB	Vishay-Dale	CRCW040229K4FKED Series= CRCW..e3	Res= 29.4 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
11.	RenT	Vishay-Dale	CRCW0402169KFKED Series= CRCW..e3	Res= 169.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²

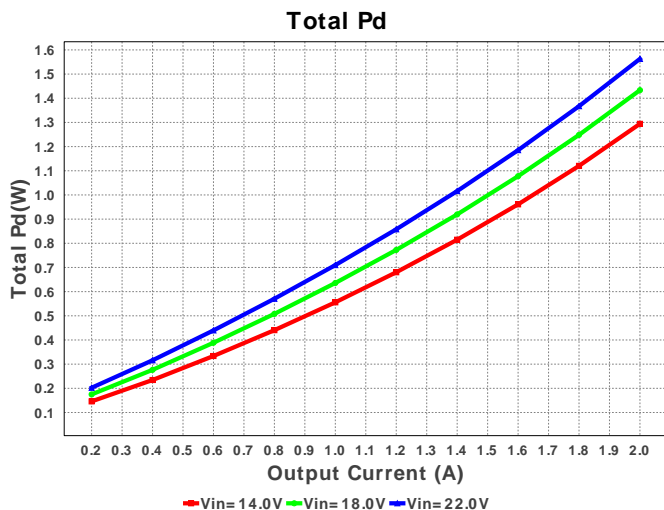
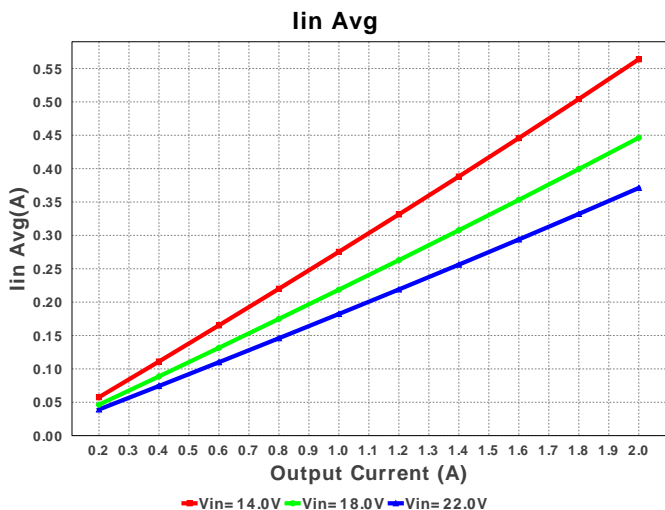
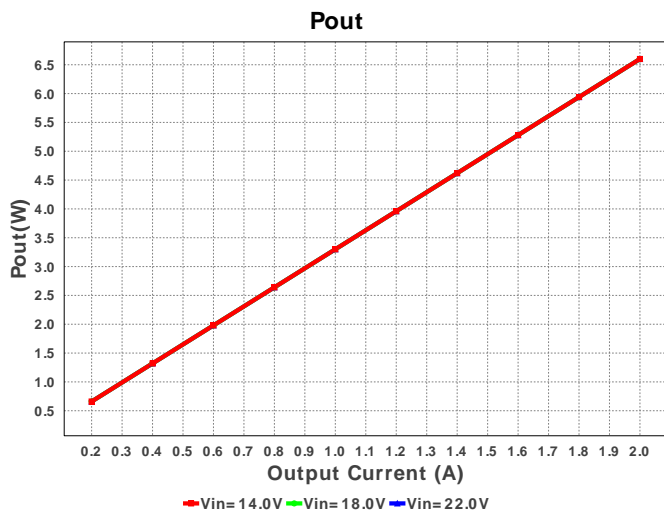
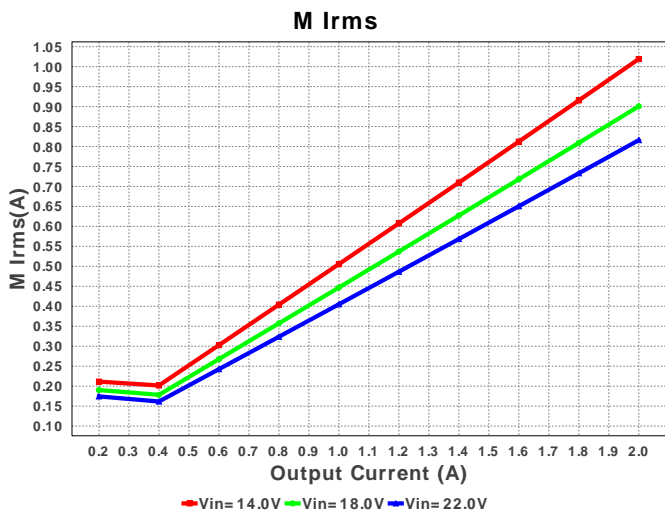
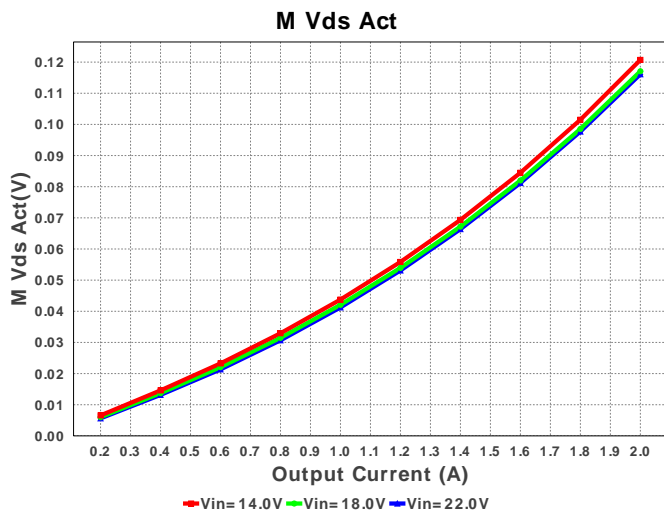
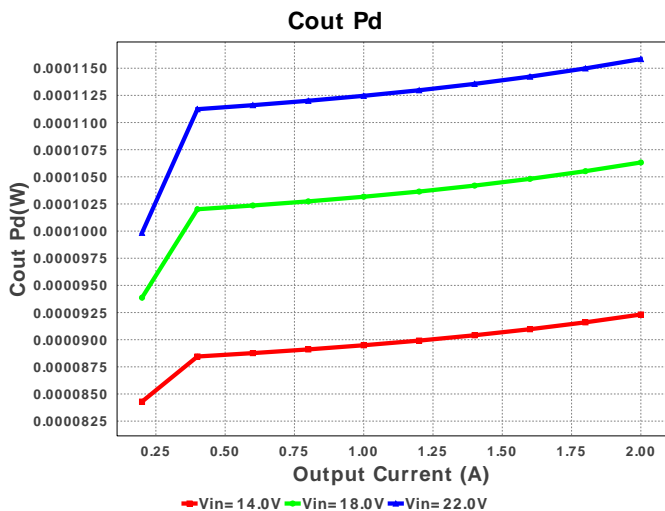
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
12.	Rfbb	Vishay-Dale	CRCW04023K24FKED Series= CRCW..e3	Res= 3.24 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
13.	Rfbt	Vishay-Dale	CRCW040210K2FKED Series= CRCW..e3	Res= 10.2 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
14.	U1	Texas Instruments	TPS54232DR	Switcher	1	\$0.55	

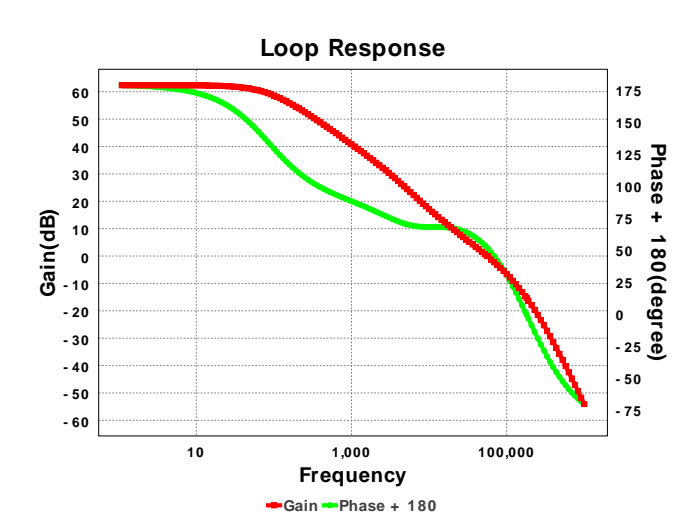
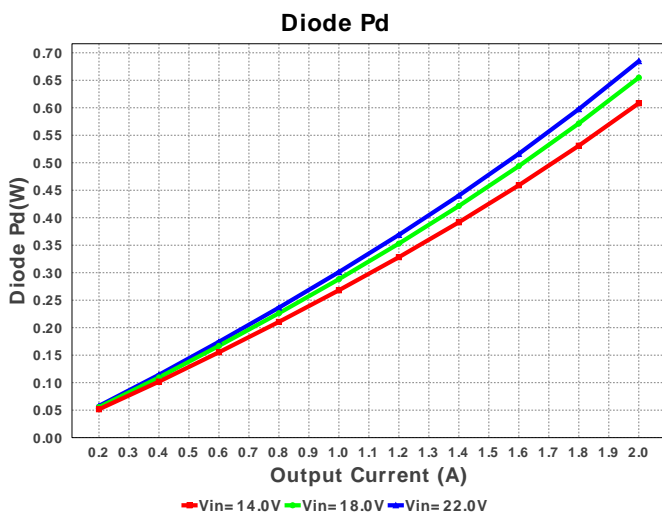
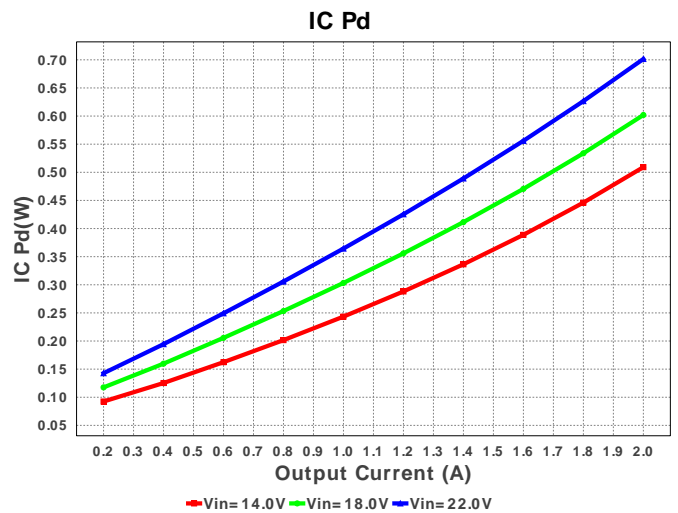
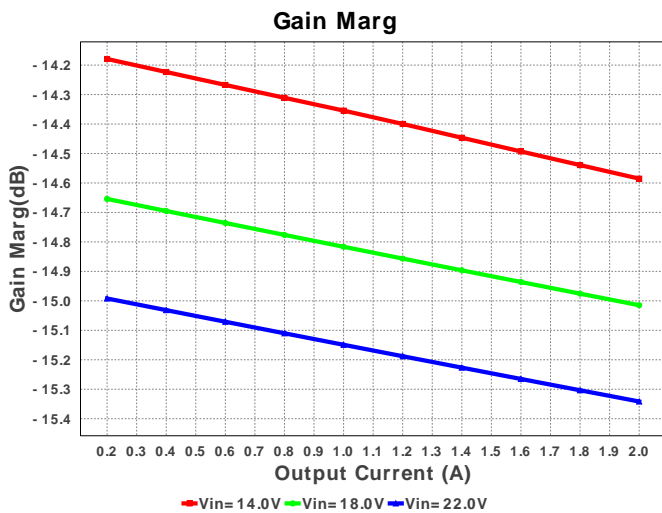
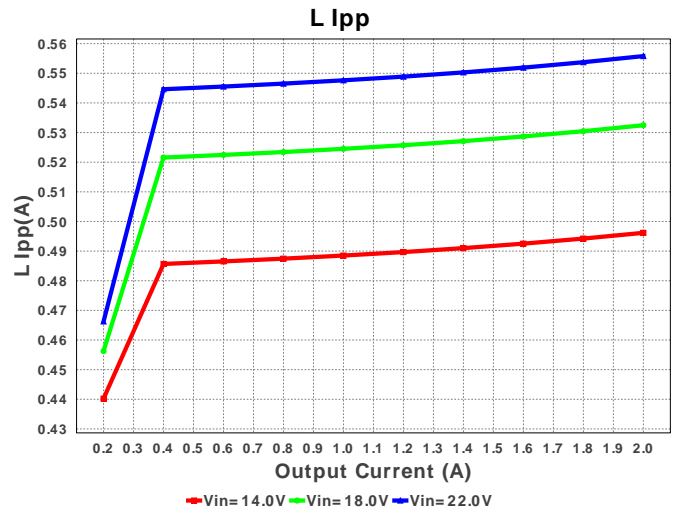
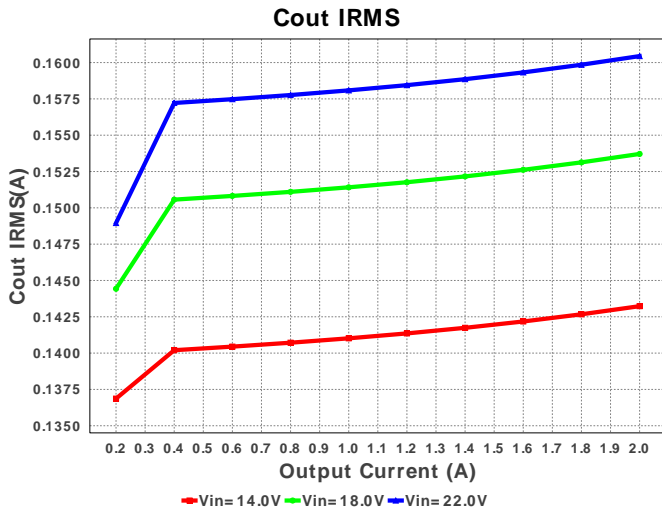


D0008A 57 mm²









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	703.178 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	161.165 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	2.279 A	Current	Peak switch current in IC
4.	Iin Avg	372.54 mA	Current	Average input current
5.	L Ipp	558.29 mA	Current	Peak-to-peak inductor ripple current
6.	M Irms	817.775 mA	Current	MOSFET RMS current
7.	BOM Count	16	General	Total Design BOM count
8.	FootPrint	266.0 mm ²	General	Total Foot Print Area of BOM components
9.	Frequency	1000.0 kHz	General	Switching frequency
10.	M Vds Act	116.404 mV	General	Voltage drop across the MosFET
11.	Pout	6.6 W	General	Total output power

#	Name	Value	Category	Description
12.	Total BOM	\$1.65	General	Total BOM Cost
13.	D1 Tj	101.74 degC	Op_Point	D1 junction temperature
14.	Low Freq Gain	62.378 dB	Op_Point	Gain at 10Hz
15.	Vout OP	3.3 V	Op_Point	Operational Output Voltage
16.	Cross Freq	55.851 kHz	Op_point	Bode plot crossover frequency
17.	Duty Cycle	16.719 %	Op_point	Duty cycle
18.	Efficiency	80.527 %	Op_point	Steady state efficiency
19.	Gain Marg	-15.342 dB	Op_point	Bode Plot Gain Margin
20.	IC Tj	100.195 degC	Op_point	IC junction temperature
21.	ICThetaJA	100.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
22.	IOUT_OP	2.0 A	Op_point	Iout operating point
23.	Phase Marg	52.405 deg	Op_point	Bode Plot Phase Margin
24.	VIN_OP	22.0 V	Op_point	Vin operating point
25.	Vout p-p	3.632 mV	Op_point	Peak-to-peak output ripple voltage
26.	Cin Pd	494.46 µW	Power	Input capacitor power dissipation
27.	Cout Pd	116.884 µW	Power	Output capacitor power dissipation
28.	Diode Pd	717.396 mW	Power	Diode power dissipation
29.	IC Pd	701.955 mW	Power	IC power dissipation
30.	L Pd	176.0 mW	Power	Inductor power dissipation
31.	Total Pd	1.596 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	22.0	Maximum input voltage
4.	VinMin	14.0	Minimum input voltage
5.	Vout	3.3	Output Voltage
6.	Vout1	3.3	Output Voltage #1
7.	base_pn	TPS54232	Texas Instruments Base Part Number
8.	source	DC	Input Source Type
9.	ta	30.0	Ambient temperature

Design Assistance

1. TPS54232 Product Folder : <http://www.ti.com/product/TPS54232> : contains the data sheet and other resources.

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