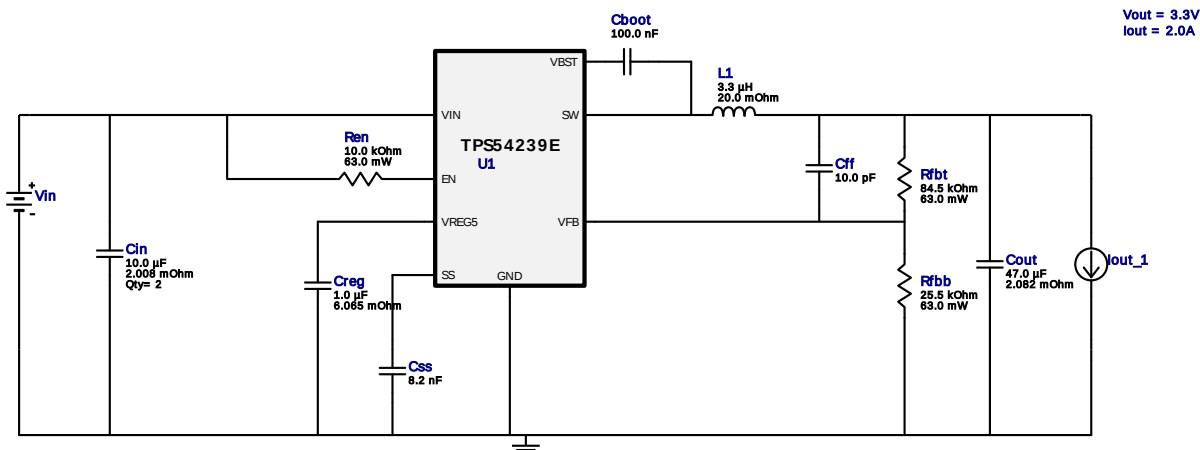


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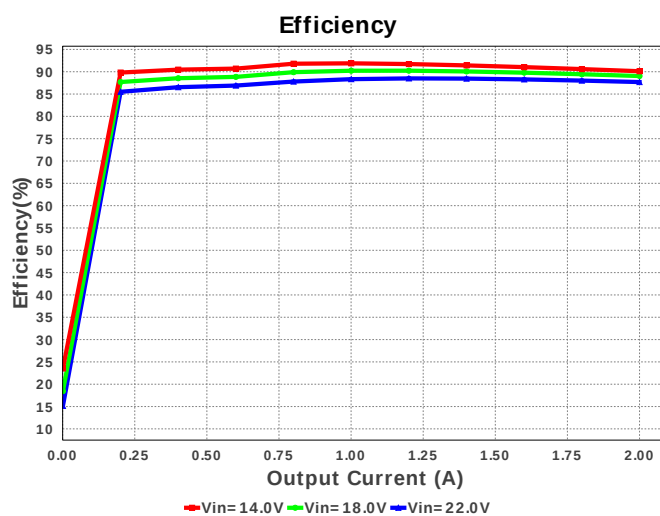
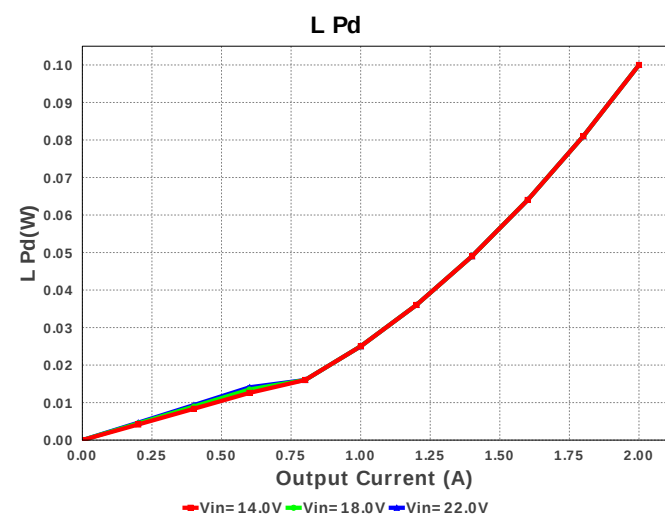
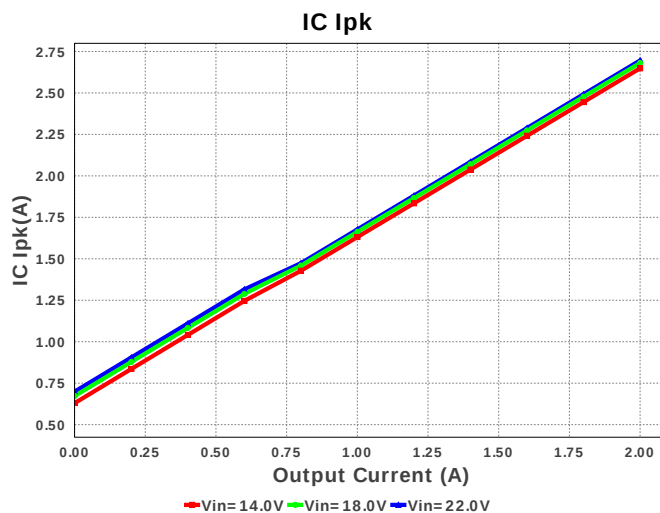
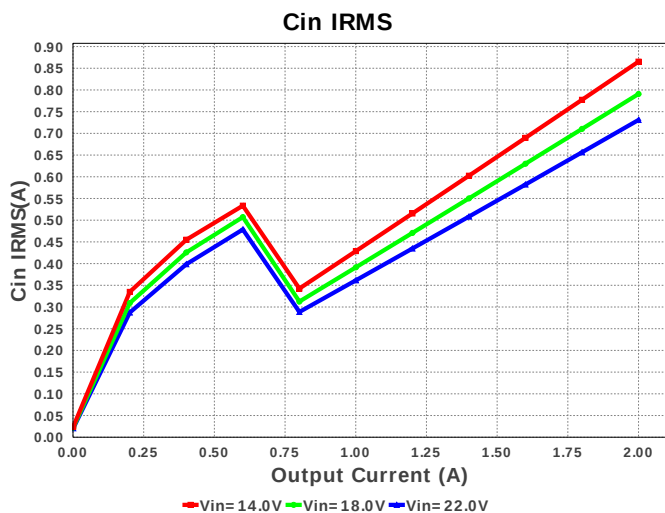
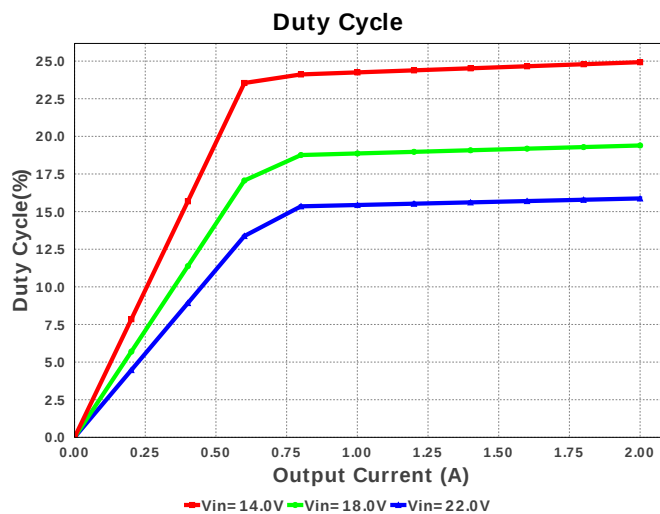
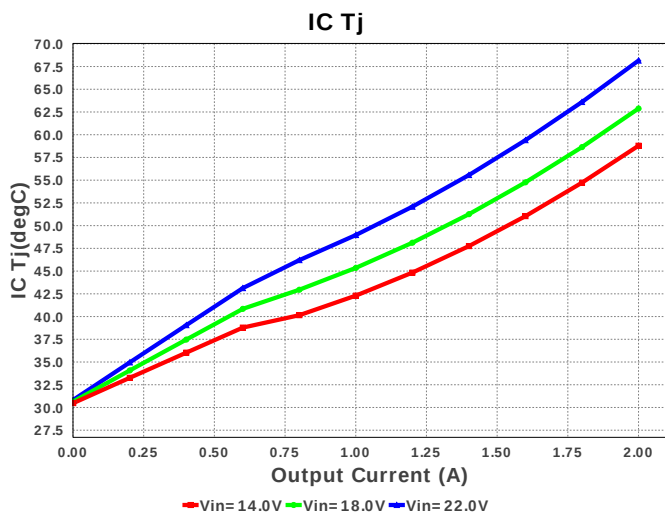
Design : 4354344/21 TPS54239EDDAR
TPS54239EDDAR 14.0V-22.0V to 3.30V @ 2.0A

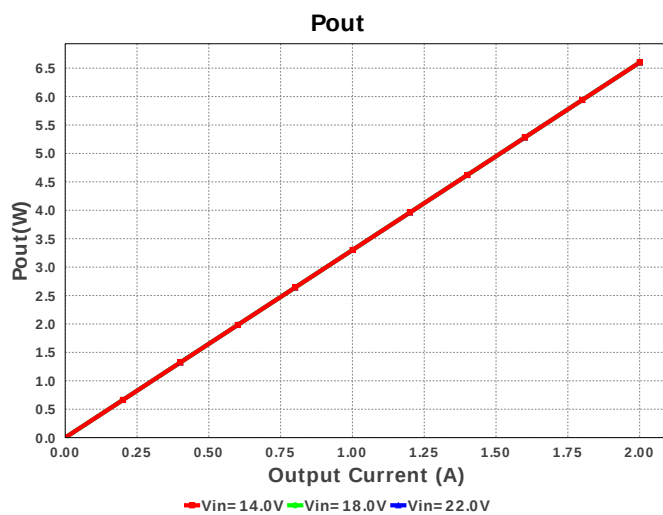
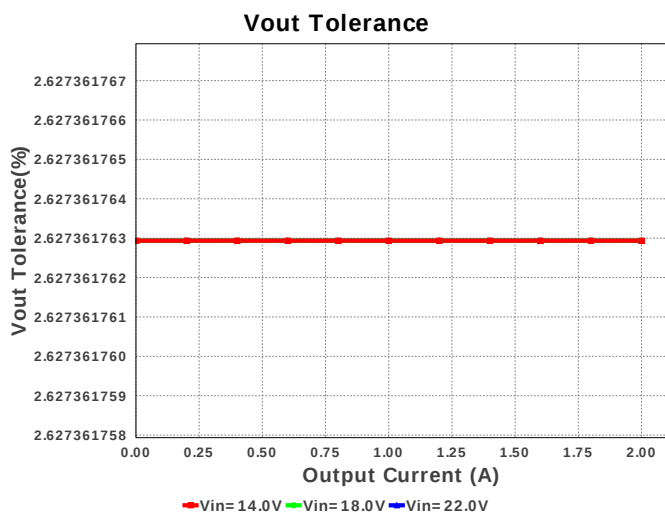
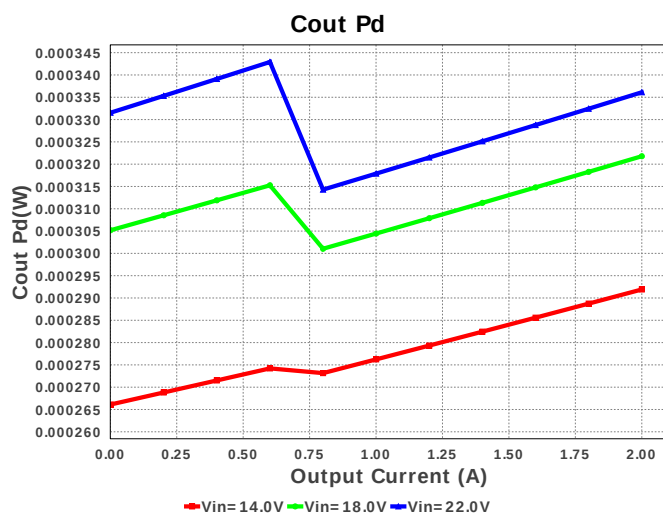
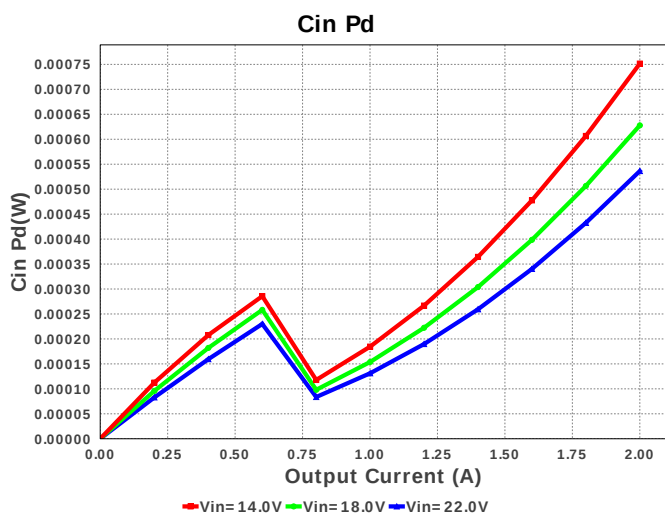
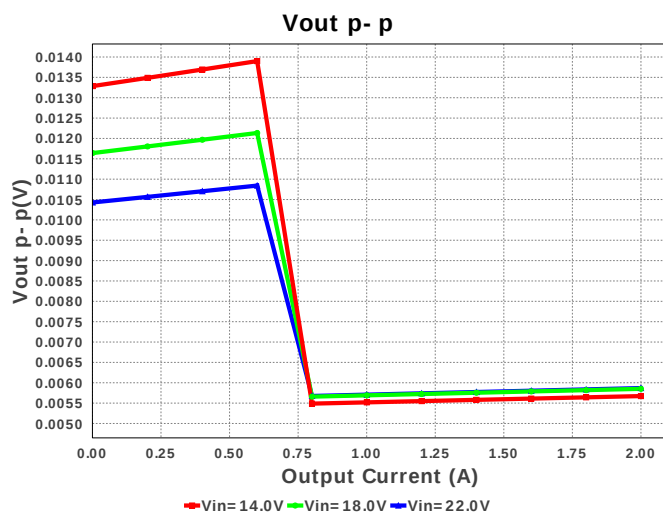
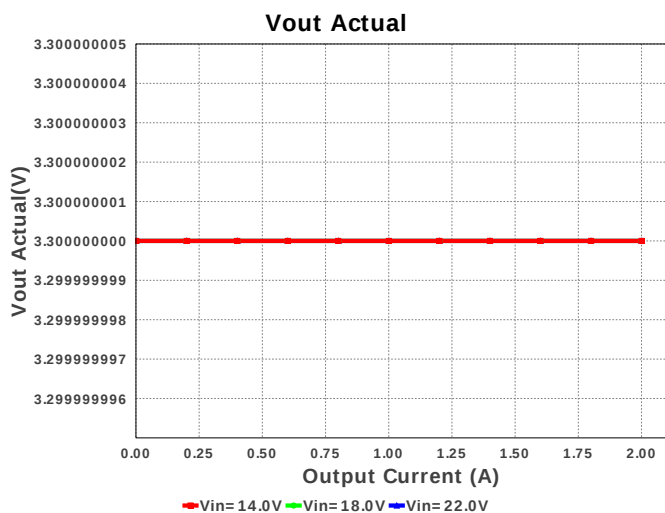


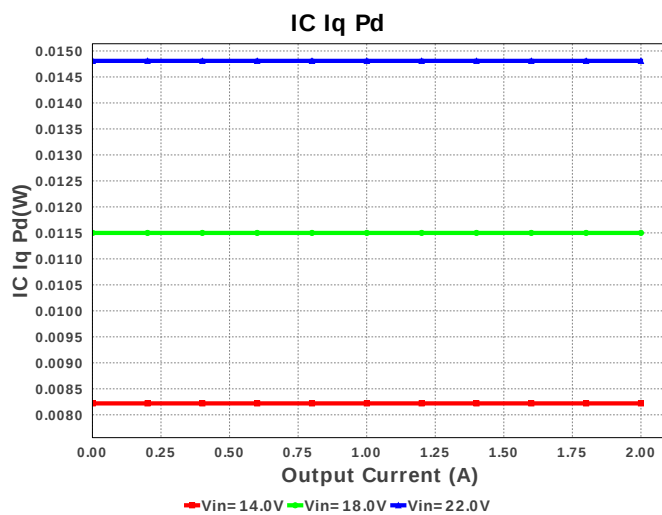
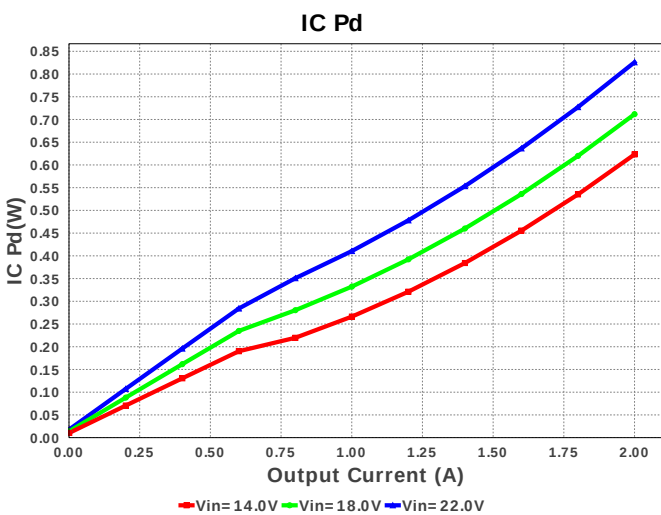
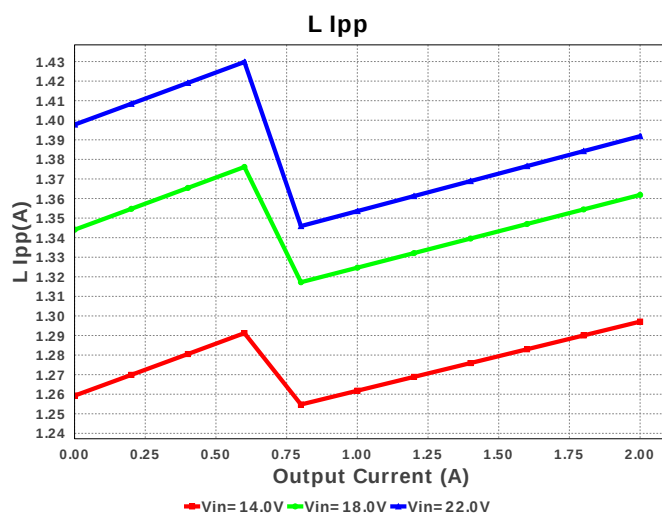
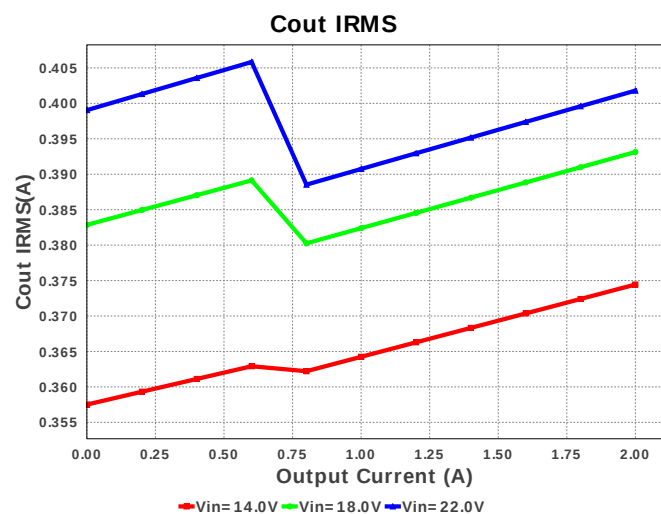
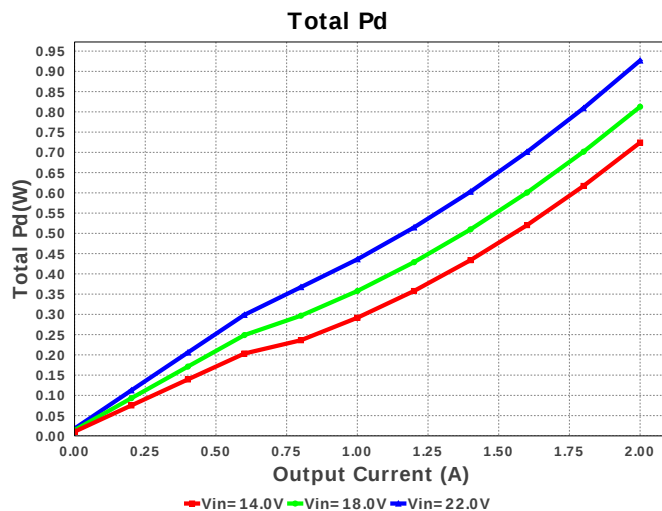
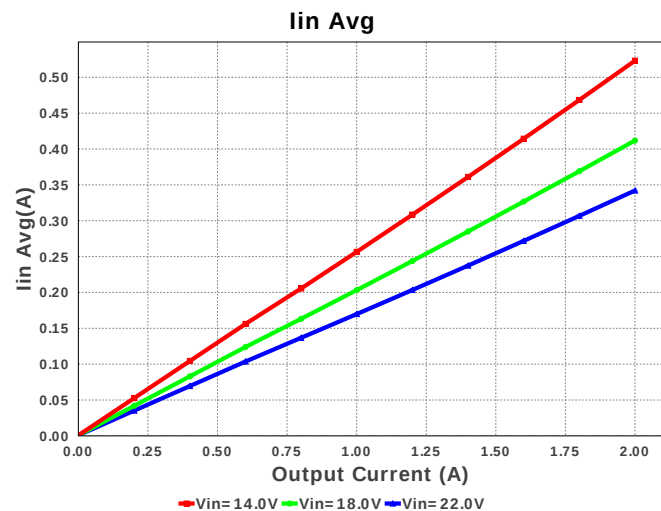
Electrical BOM

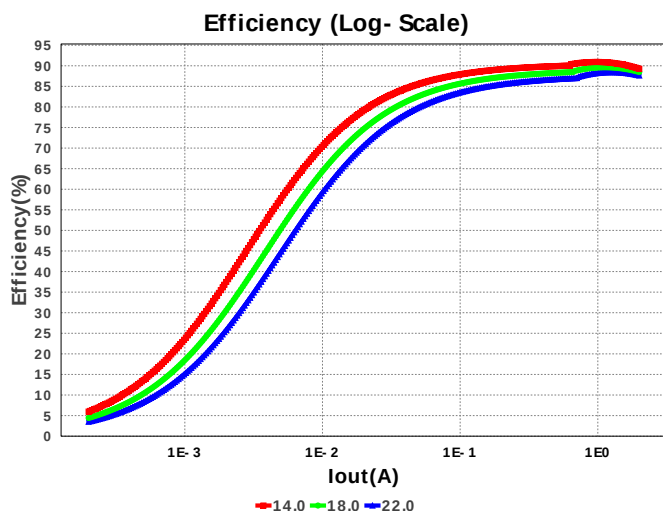
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	MuRata	GRM155R61A104KA01D Series= X5R	Cap= 100.0 nF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
2.	Cff	Kemet	C0805C100M4GACTU Series= C0G/NP0	Cap= 10.0 pF VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
3.	Cin	MuRata	GRM32ER7YA106KA12L Series= X7R	Cap= 10.0 uF ESR= 2.008 mOhm VDC= 35.0 V IRMS= 4.6772 A	2	\$0.25	1210_280 15 mm ²
4.	Cout	TDK	C3216X5R1E476M160AC Series= X5R	Cap= 47.0 uF ESR= 2.082 mOhm VDC= 25.0 V IRMS= 5.0279 A	1	\$0.35	1206 11 mm ²
5.	Creg	MuRata	GRM188R61A105KA61D Series= X5R	Cap= 1.0 uF ESR= 6.065 mOhm VDC= 10.0 V IRMS= 1.30675 A	1	\$0.01	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.	L1	Bourns	SDR0805-3R3ML	L= 3.3 uH DCR= 20.0 mOhm	1	\$0.22	SDR0805 96 mm ²
8.	Ren	Vishay-Dale	CRCW040210K0FKED Series= CRCW..e3	Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
9.	Rfbb	Vishay-Dale	CRCW040225K5FKED Series= CRCW..e3	Res= 25.5 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
10.	Rfbt	Vishay-Dale	CRCW040284K5FKED Series= CRCW..e3	Res= 84.5 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
11. U1		Texas Instruments	TPS54239EDDAR	Switcher	1	\$0.75	 DDA0008E 57 mm ²









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	730.882 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	401.796 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	2.696 A	Current	Peak switch current in IC
4.	Iin Avg	342.12 mA	Current	Average input current
5.	L Ipp	1.392 A	Current	Peak-to-peak inductor ripple current
6.	BOM Count	12	General	Total Design BOM count
7.	FootPrint	219.0 mm ²	General	Total Foot Print Area of BOM components
8.	Frequency	646.308 kHz	General	Switching frequency
9.	Pout	6.6 W	General	Total output power
10.	Total BOM	\$1.89	General	Total BOM Cost
11.	Vout Actual	3.3 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
12.	Vout OP	3.3 V	Op_Point	Operational Output Voltage
13.	Duty Cycle	15.875 %	Op_point	Duty cycle
14.	Efficiency	87.687 %	Op_point	Steady state efficiency
15.	IC Tj	68.155 degC	Op_point	IC junction temperature
16.	ICThetaJA	46.2 degC/W	Op_point	IC junction-to-ambient thermal resistance
17.	IOUT_OP	2.0 A	Op_point	Iout operating point
18.	VIN_OP	22.0 V	Op_point	Vin operating point
19.	Vout p-p	5.869 mV	Op_point	Peak-to-peak output ripple voltage
20.	Cin Pd	536.325 μ W	Power	Input capacitor power dissipation
21.	Cout Pd	336.119 μ W	Power	Output capacitor power dissipation
22.	IC Iq Pd	14.809 mW	Power	IC Iq Pd
23.	IC Pd	825.872 mW	Power	IC power dissipation
24.	L Pd	100.0 mW	Power	Inductor power dissipation
25.	Total Pd	926.755 mW	Power	Total Power Dissipation
26.	Vout Tolerance	2.627 %		Vout Tolerance based on IC Tolerance 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	14.0	Minimum input voltage
4.	Vout	3.3	Output Voltage
5.	base_pn	TPS54239E	Texas Instruments Base Part Number
6.	source	DC	Input Source Type
7.	ta	30.0	Ambient temperature

Design Assistance

1. TPS54239E Product Folder : <http://www.ti.com/product/TPS54239E> : contains the data sheet and other resources.

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