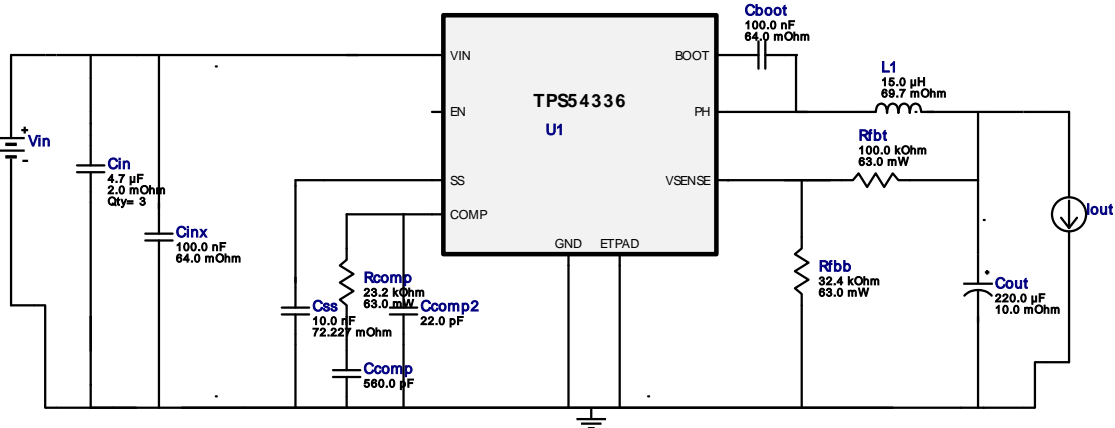


**WEBENCH® Design Report**

 Design : 3838131/15 TPS54336DDAR  
 TPS54336DDAR 14.0V-22.0V to 3.3V @ 2.0A

 VinMin = 14.0V  
 VinMax = 22.0V

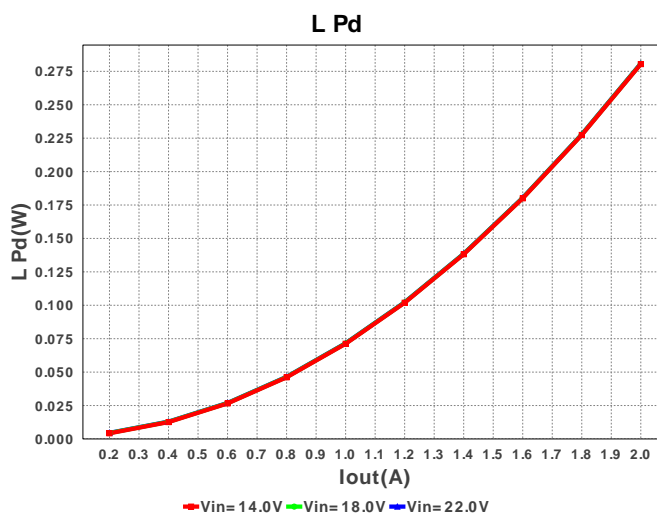
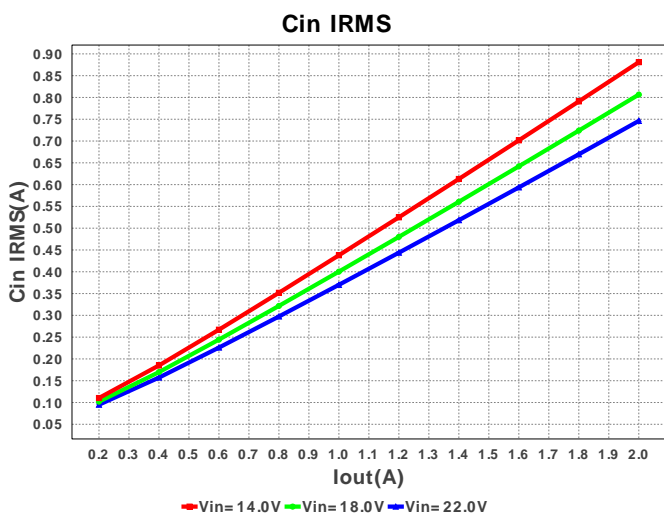
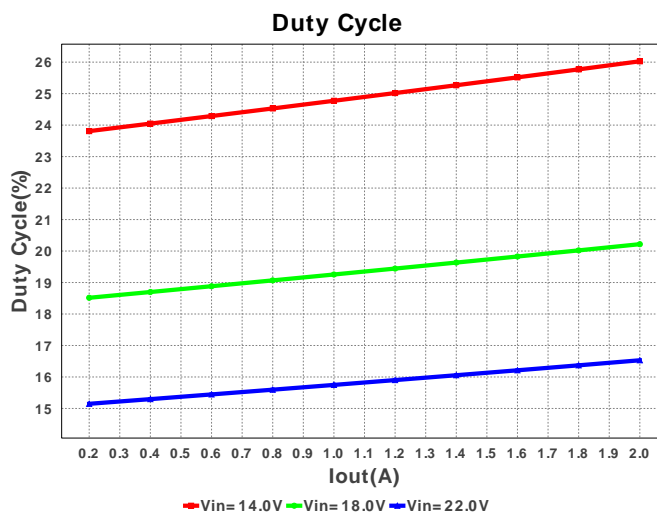
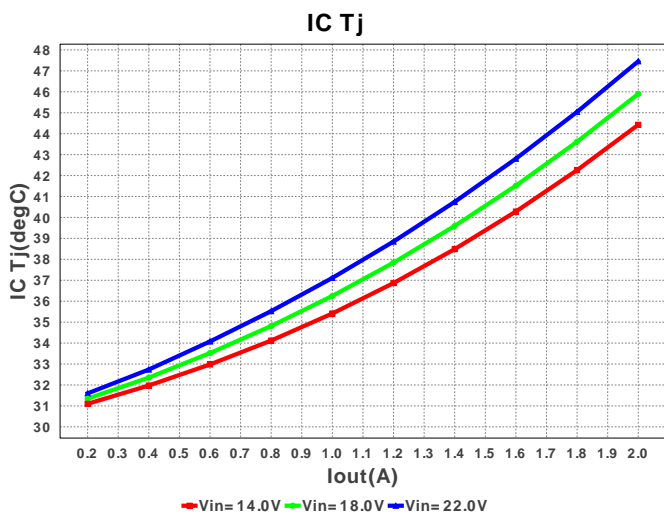
 Vout = 3.3V  
 Iout = 2.0A

**Electrical BOM**

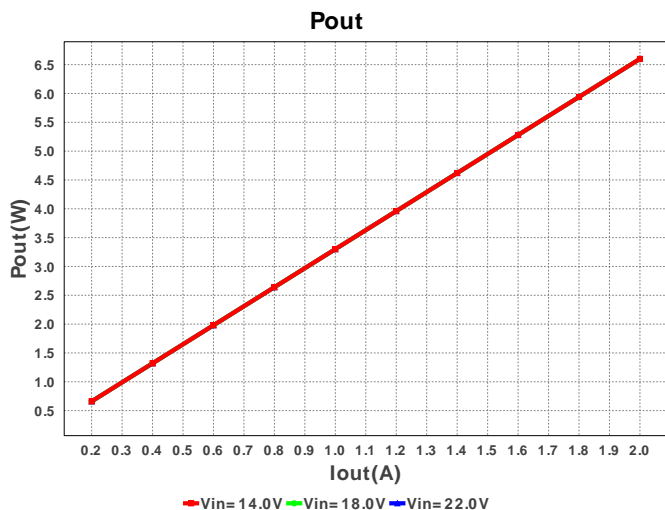
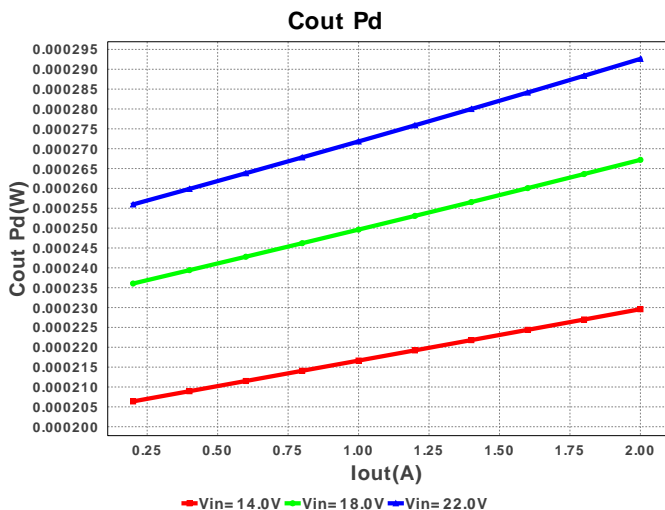
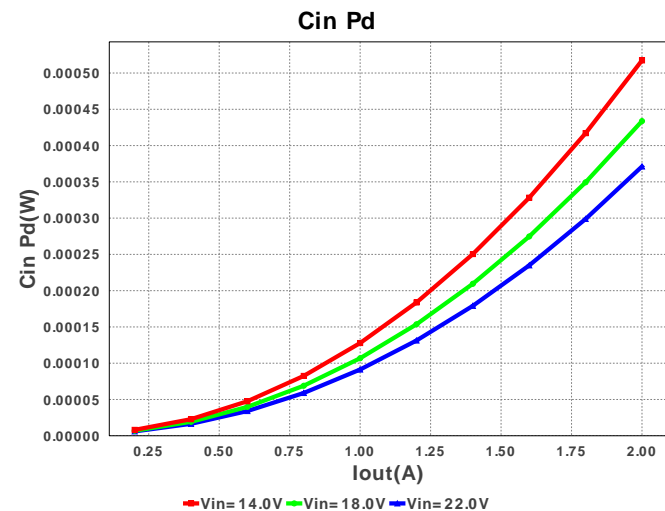
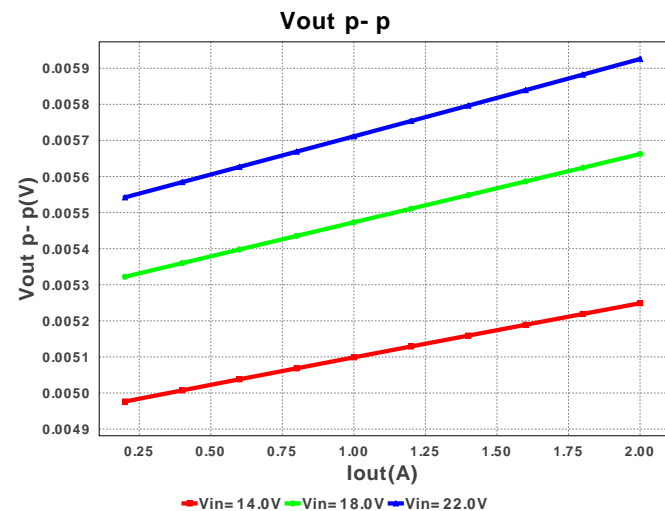
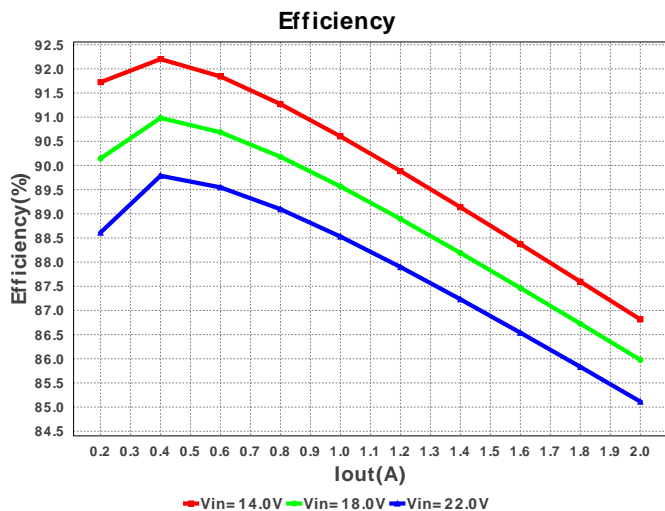
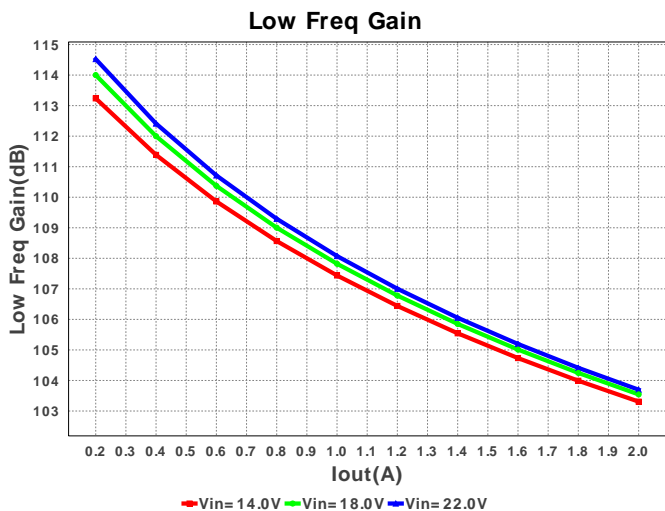
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	Kemet	C0805C104K5RACTU Series= X7R	Cap= 100.0 nF ESR= 64.0 mOhm VDC= 50.0 V IRMS= 1.64 A	1	\$0.01	 0805 7mm2
2.	Ccomp	Yageo America	CC0805KRX7R9BB561 Series= X7R	Cap= 560.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7mm2
3.	Ccomp2	Yageo America	CC0805JRNP09BN220 Series= C0G/NP0	Cap= 22.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7mm2
4.	Cin	MuRata	GRM21BR61E475MA12L Series= X5R	Cap= 4.7 µF ESR= 2.0 mOhm VDC= 25.0 V IRMS= 7.29 A	3	\$0.06	 0805 7mm2
5.	Cinx	Kemet	C0805C104K5RACTU Series= X7R	Cap= 100.0 nF ESR= 64.0 mOhm VDC= 50.0 V IRMS= 1.64 A	1	\$0.01	 0805 7mm2
6.	Cout	Panasonic	6SVPE220M Series= 259	Cap= 220.0 µF ESR= 10.0 mOhm VDC= 6.3 V IRMS= 3.9 A	1	\$0.41	 CAPSMT_62_F61 74mm2
7.	Css	TDK	C1005X7R1C103K Series= 285	Cap= 10.0 nF ESR= 72.227 mOhm VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	 1005 3mm2
8.	L1	Coilcraft	XAL5050-153MEB	L= 15.0 µH DCR= 69.7 mOhm	1	\$0.60	 XAL5050 54mm2
9.	Rcomp	Vishay-Dale	CRCW040223K2FKED Series= CRCW..e3	Res= 23.2 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3mm2
10.	Rfbb	Vishay-Dale	CRCW040232K4FKED Series= CRCW..e3	Res= 32.4 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3mm2

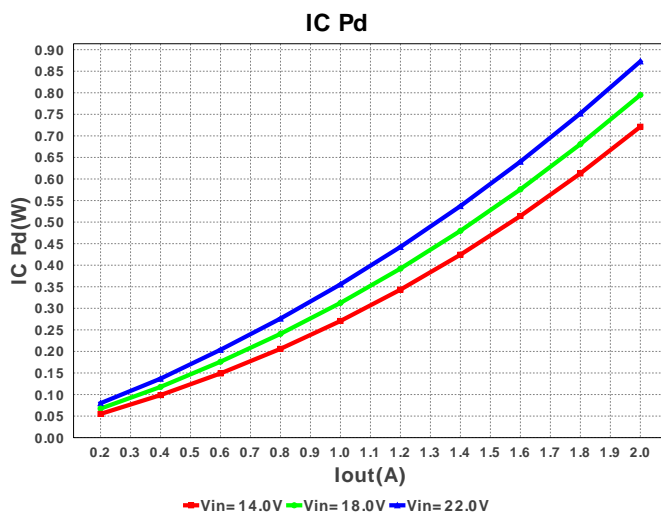
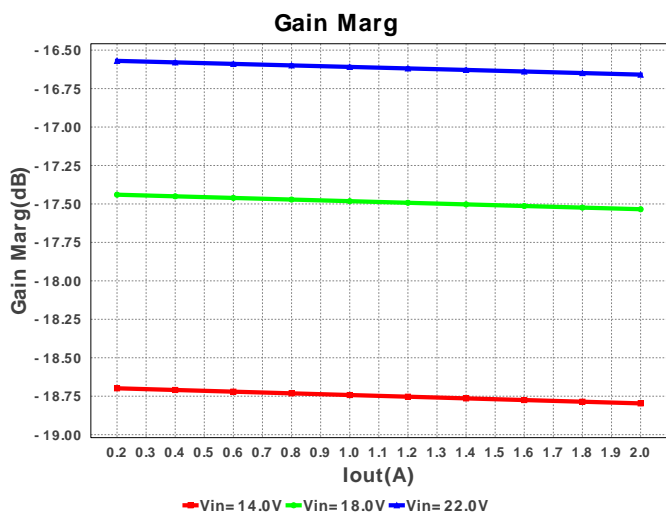
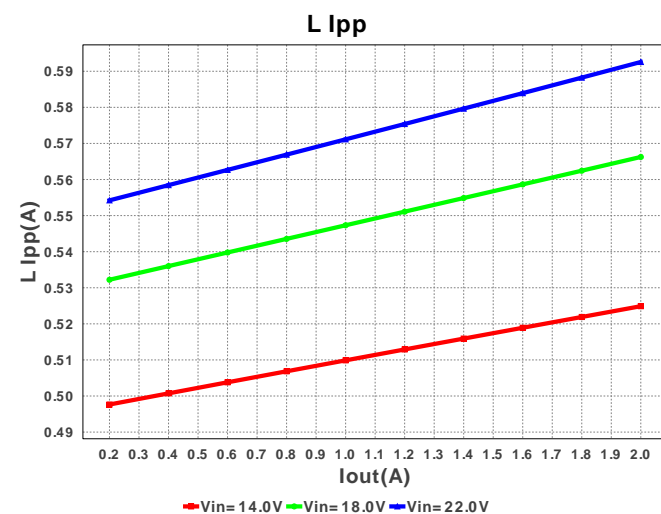
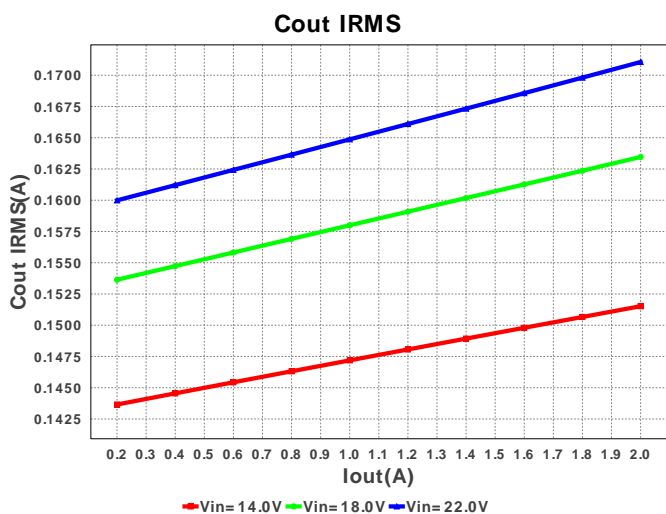
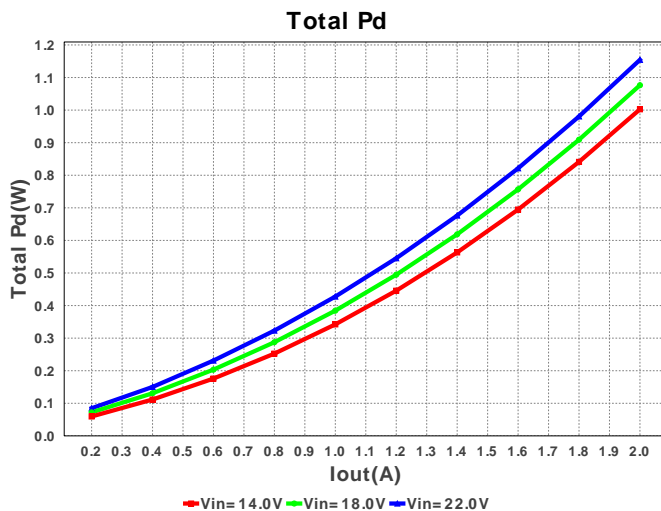
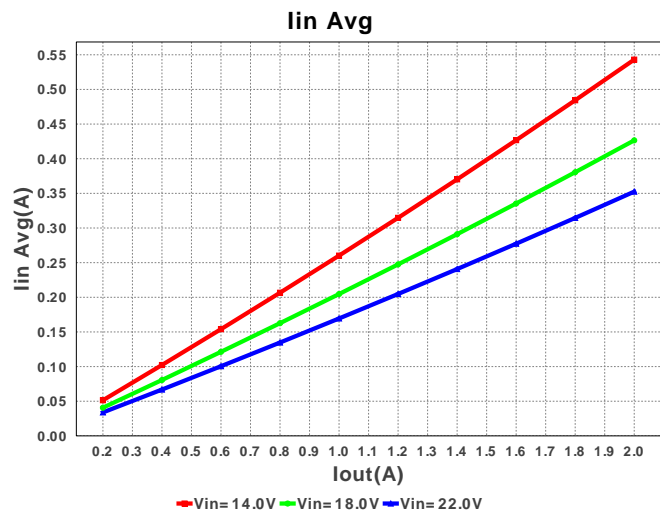
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
11.	Rfbt	Vishay-Dale	CRCW0402100KFKED Series= CRCW..e3	Res= 100.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3mm2
12.	U1	Texas Instruments	TPS54336DDAR	Switcher	1	\$0.90	

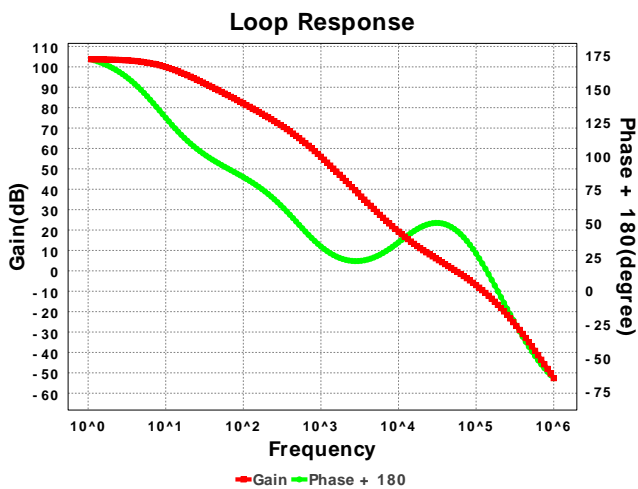
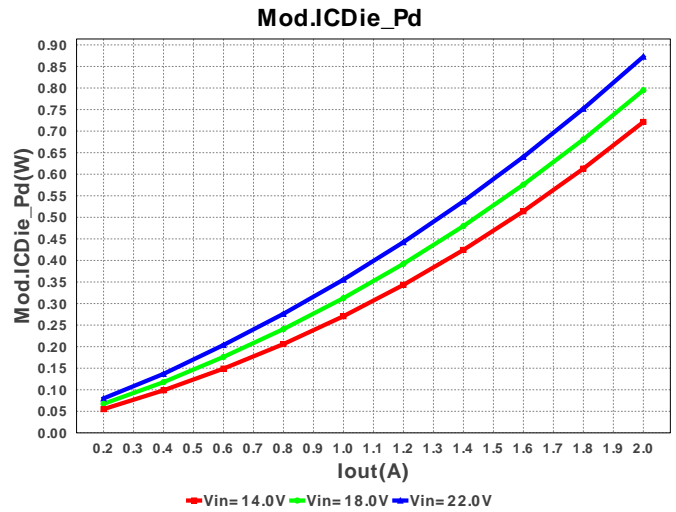
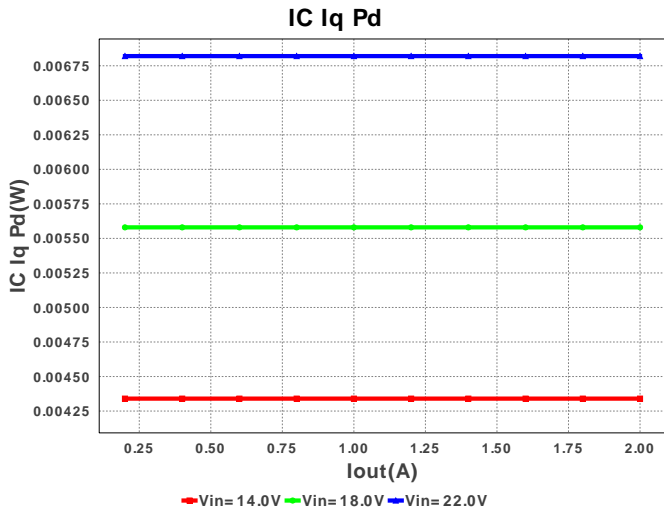


R-PDSO-G8 57mm2









### Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	746.156 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	171.061 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	352.47 mA	Current	Average input current
4.	L Ipp	592.571 mA	Current	Peak-to-peak inductor ripple current
5.	BOM Count	14	General	Total Design BOM count
6.	FootPrint	245.0 mm2	General	Total Foot Print Area of BOM components
7.	Frequency	340.0 kHz	General	Switching frequency
8.	IC Tolerance	10.0 mV	General	IC Feedback Tolerance
9.	Pout	6.6 W	General	Total output power
10.	Total BOM	\$2.17	General	Total BOM Cost
11.	Vout OP	3.3 V	Op_Point	Operational Output Voltage
12.	Cross Freq	54.741 kHz	Op_point	Bode plot crossover frequency
13.	Duty Cycle	16.53 %	Op_point	Duty cycle
14.	Efficiency	85.113 %	Op_point	Steady state efficiency
15.	Gain Marg	-16.659 dB	Op_point	Bode Plot Gain Margin
16.	IC Tj	47.457 degC	Op_point	IC junction temperature
17.	ICThetaJA	20.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
18.	IOUT_OP	2.0 A	Op_point	Iout operating point
19.	Phase Marg	45.558 deg	Op_point	Bode Plot Phase Margin
20.	VIN_OP	22.0 V	Op_point	Vin operating point
21.	Vout p-p	5.926 mV	Op_point	Peak-to-peak output ripple voltage
22.	Cin Pd	371.166 μW	Power	Input capacitor power dissipation
23.	Cout Pd	292.617 μW	Power	Output capacitor power dissipation
24.	IC Iq Pd	6.82 mW	Power	IC Iq Pd
25.	IC Pd	872.857 mW	Power	IC power dissipation
26.	L Pd	280.84 mW	Power	Inductor power dissipation
27.	Total Pd	1.154 W	Power	Total Power Dissipation
28.	Low Freq Gain	103.697 dB	Unknown	Gain at 10Hz

### Design Inputs

#	Name	Value	Description
1.	lout	2.0 A	Maximum Output Current
2.	lout1	2.0 Amps	Output Current #1
3.	VinMax	22.0 V	Maximum input voltage
4.	VinMin	14.0 V	Minimum input voltage
5.	Vout	3.3 V	Output Voltage
6.	Vout1	3.3 Volt	Output Voltage #1
7.	base_pn	TPS54336	Texas Instruments Base Part Number
8.	source	DC	Input Source Type
9.	ta	30.0 degC	Ambient temperature

## Design Assistance

1. TPS54336 Product Folder : <http://www.ti.com/product/tps54336> : contains the data sheet and other resources.

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