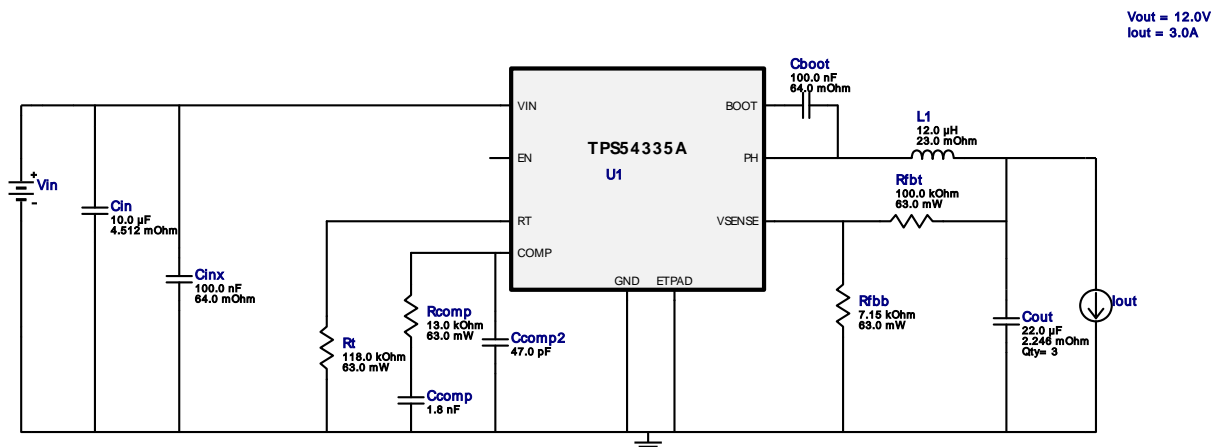


WEBENCH® Design Report

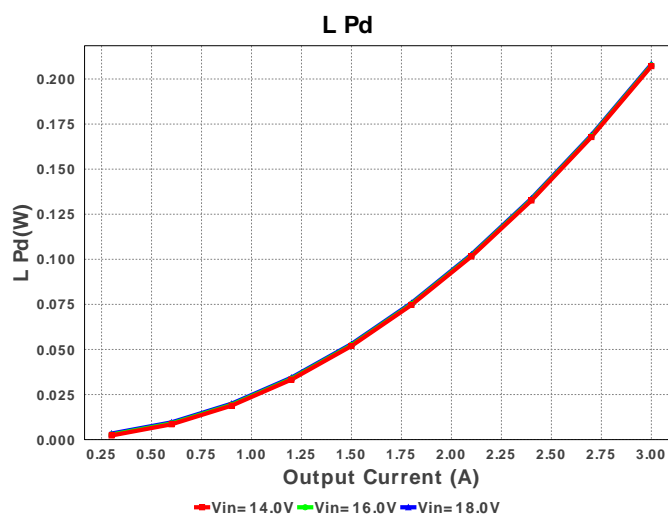
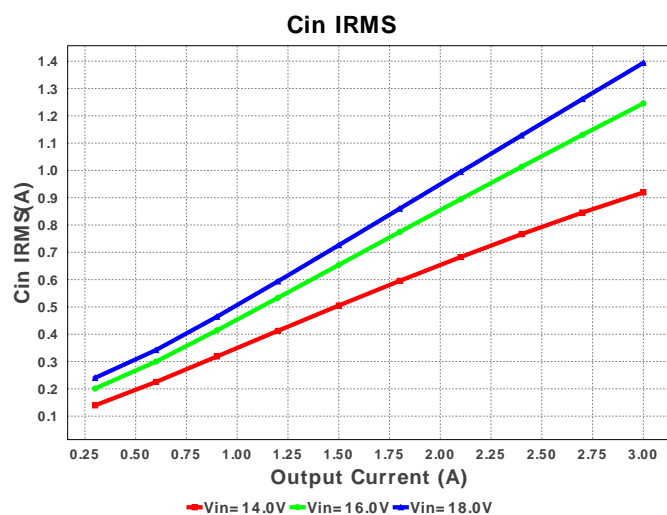
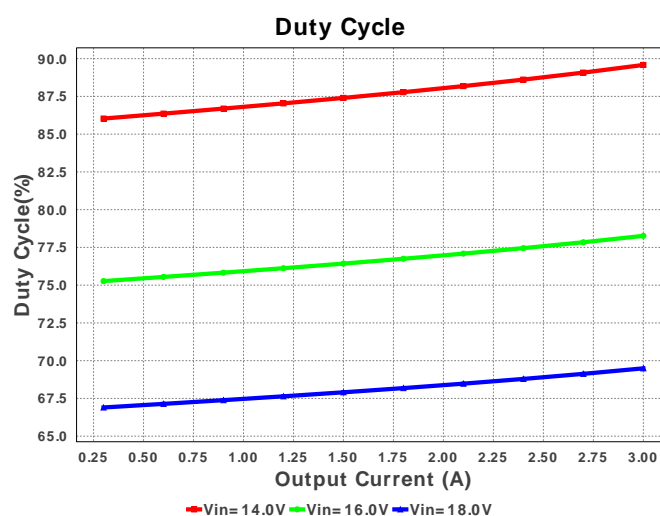
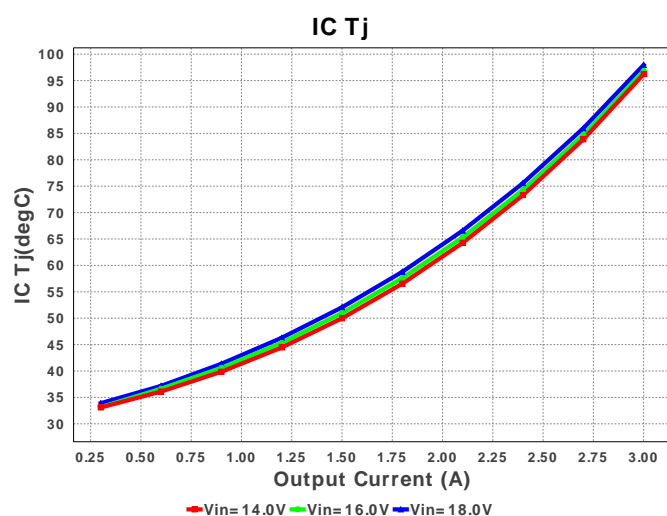
Design : 4079392/1 TPS54335ADDAR
TPS54335ADDAR 14.0V-18.0V to 12.00V @ 3.0A



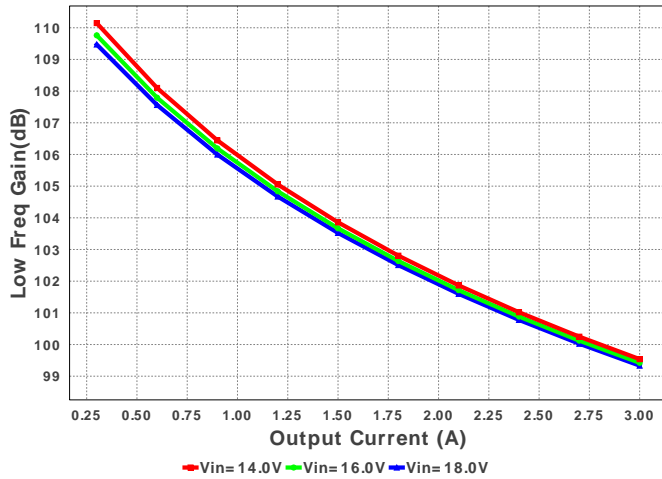
Electrical BOM

#	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 7 mm ²
2.	Ccomp	MuRata	GRM033R71A182KA01D Series= X7R	Cap= 1.8 nF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	0201 2 mm ²
3.	Ccomp2	Kemet	C0805C470K5GACTU Series= C0G/NP0	Cap= 47.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
4.	Cin	MuRata	GRM31CR61E106KA12L Series= X5R	Cap= 10.0 uF ESR= 4.512 mOhm VDC= 25.0 V IRMS= 2.447 A	1	\$0.06	1206_190 11 mm ²
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 7 mm ²
6.	Cout	TDK	C3216JB1E226M Series= JB	Cap= 22.0 uF ESR= 2.246 mOhm VDC= 25.0 V IRMS= 0.0 A	3	\$0.32	1206 11 mm ²
7.	L1	Bourns	SRR1260-120M	L= 12.0 uH DCR= 23.0 mOhm	1	\$0.41	 SRR1260 210 mm ²
8.	Rcomp	Vishay-Dale	CRCW040213K0FKED Series= CRCW..e3	Res= 13.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
9.	Rfbb	Vishay-Dale	CRCW04027K15FKED Series= CRCW..e3	Res= 7.15 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²

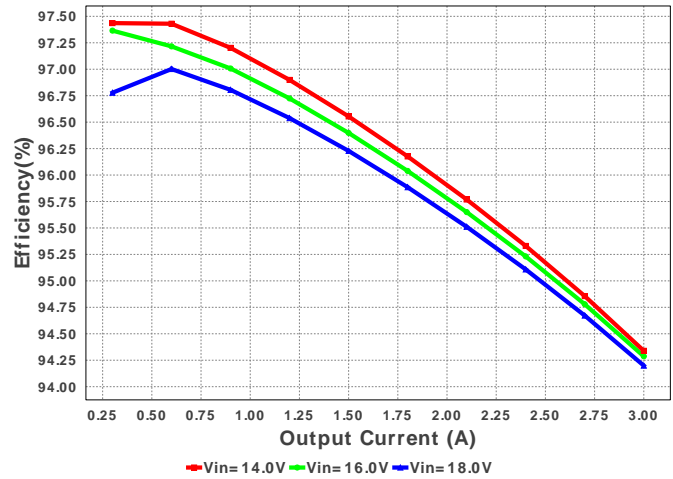
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
10.	Rfbt	Vishay-Dale	CRCW0402100KFKED Series= CRCW..e3	Res= 100.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
11.	Rt	Vishay-Dale	CRCW0402118KFKED Series= CRCW..e3	Res= 118.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
12.	U1	Texas Instruments	TPS54335ADDAR	Switcher	1	\$0.90	

R-PDSO-G8 57 mm²

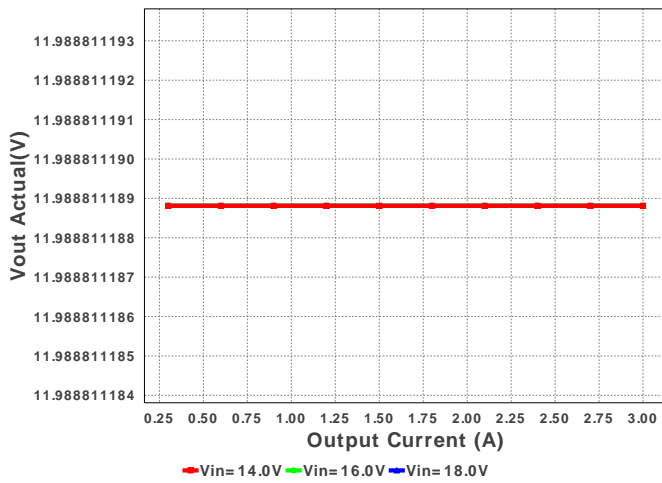
Low Freq Gain



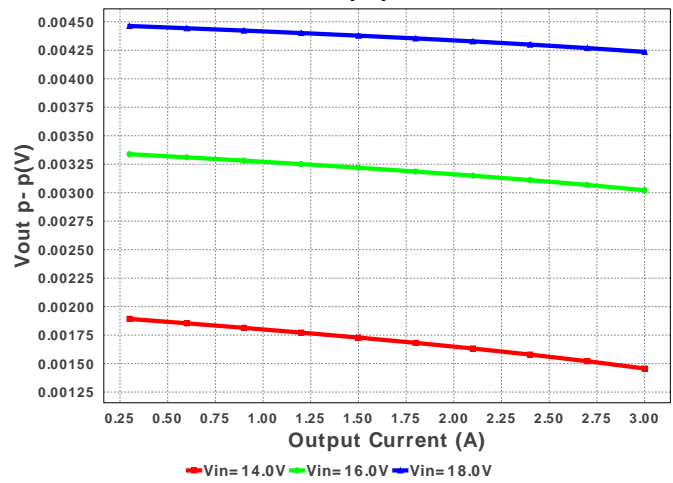
Efficiency



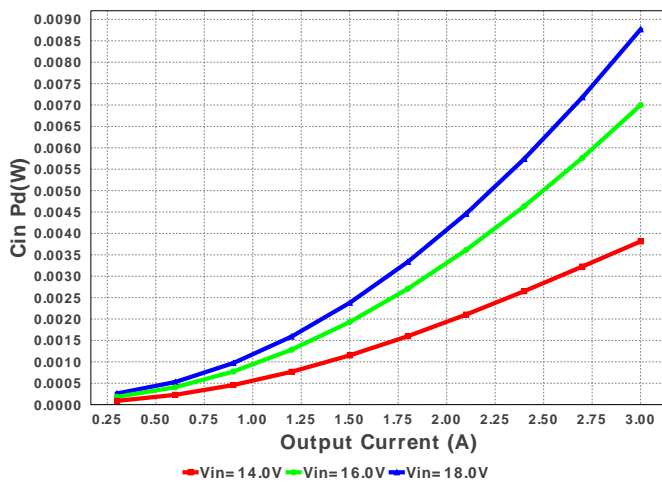
Vout Actual



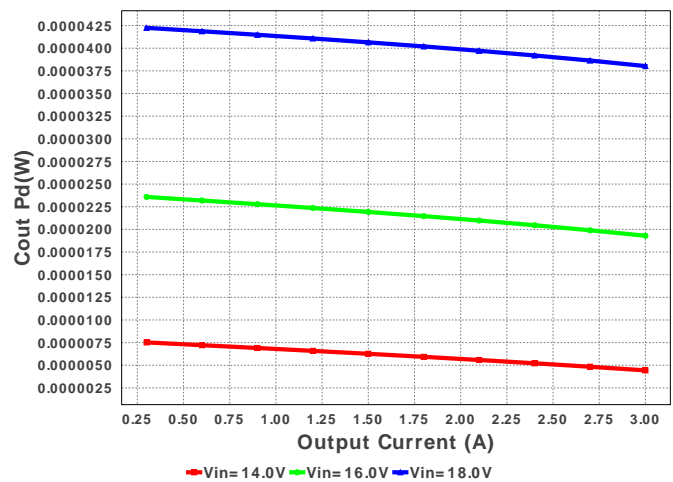
Vout p-p



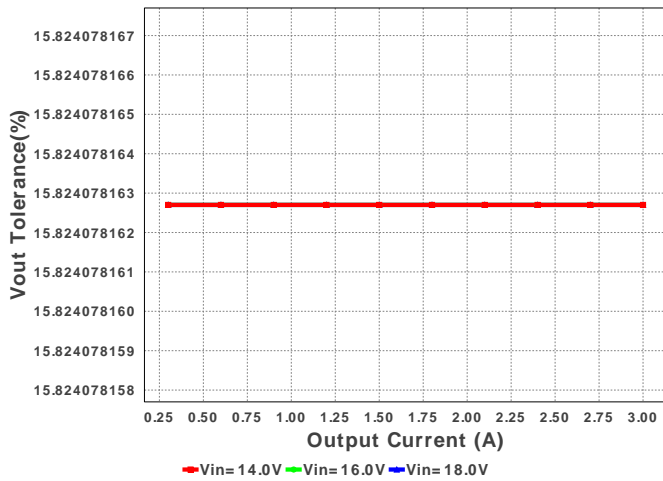
Cin Pd



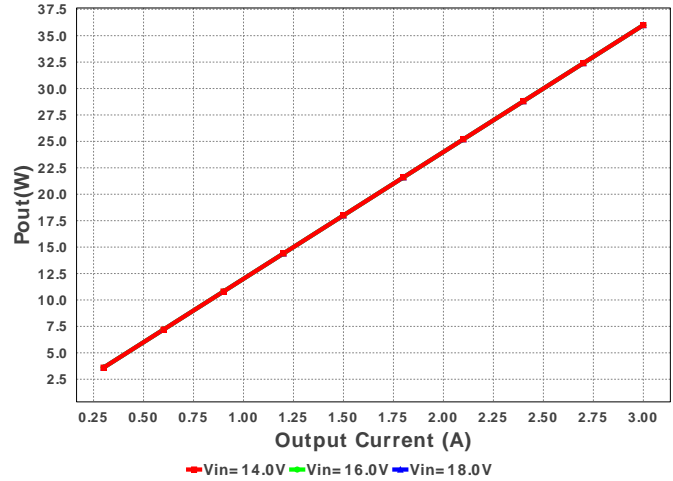
Cout Pd



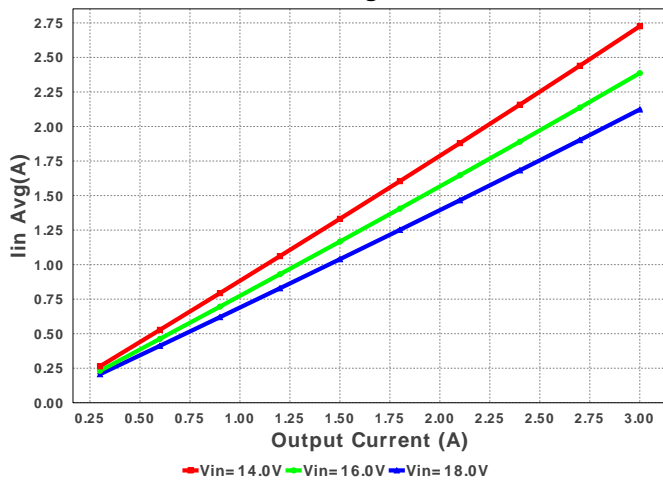
Vout Tolerance



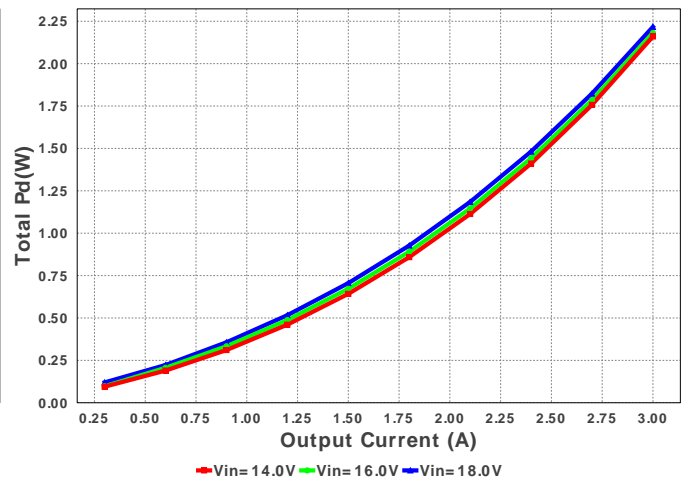
Pout



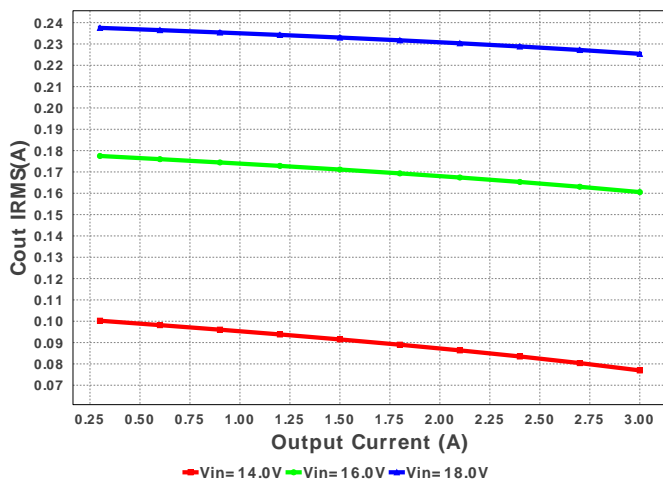
Iin Avg



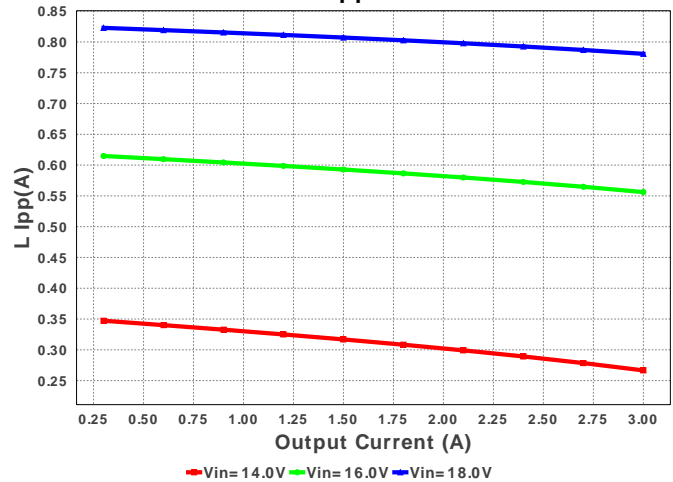
Total Pd

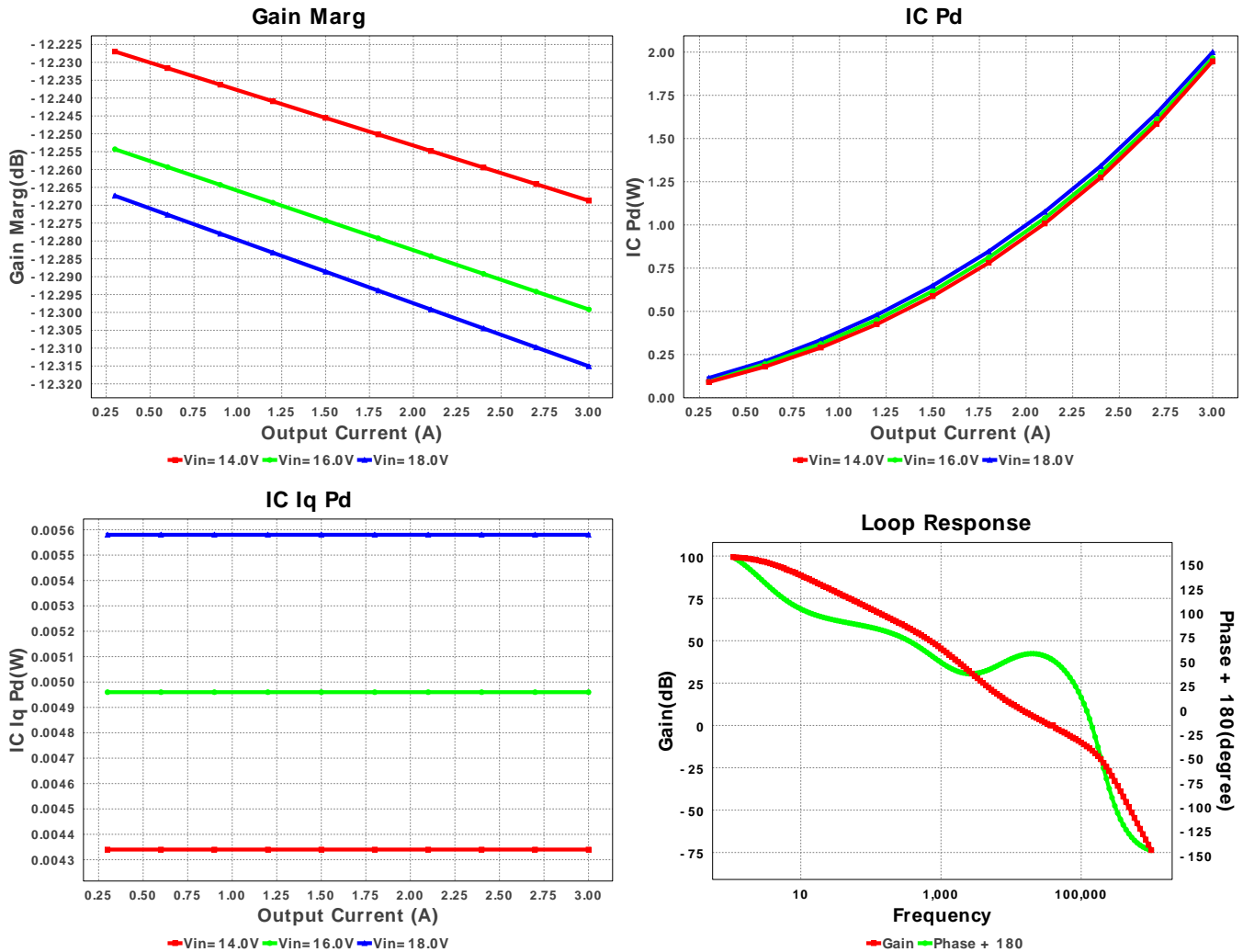


Cout IRMS



L Ipp





Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	1.394 A	Current	Input capacitor RMS ripple current
2.	Cout IRMS	225.379 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	2.123 A	Current	Average input current
4.	L Ipp	780.74 mA	Current	Peak-to-peak inductor ripple current
5.	BOM Count	14	General	Total Design BOM count
6.	FootPrint	346.0 mm ²	General	Total Foot Print Area of BOM components
7.	Frequency	403.338 kHz	General	Switching frequency
8.	IC Tolerance	10.0 mV	General	IC Feedback Tolerance
9.	Pout	36.0 W	General	Total output power
10.	Total BOM	\$2.41	General	Total BOM Cost
11.	ICThetaJA Effective	34.0 degC/W	Op_Point	Effective IC Junction-to-Ambient Thermal Resistance
12.	Low Freq Gain	99.334 dB	Op_Point	Gain at 10Hz
13.	Vout Actual	11.989 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
14.	Vout OP	12.0 V	Op_Point	Operational Output Voltage
15.	Cross Freq	36.654 kHz	Op_point	Bode plot crossover frequency
16.	Duty Cycle	69.492 %	Op_point	Duty cycle
17.	Efficiency	94.199 %	Op_point	Steady state efficiency
18.	Gain Marg	-12.315 dB	Op_point	Bode Plot Gain Margin
19.	IC Tj	97.959 degC	Op_point	IC junction temperature
20.	IOUT_OP	3.0 A	Op_point	Iout operating point
21.	Phase Marg	53.713 deg	Op_point	Bode Plot Phase Margin
22.	VIN_OP	18.0 V	Op_point	Vin operating point
23.	Vout p-p	4.236 mV	Op_point	Peak-to-peak output ripple voltage
24.	Cin Pd	8.768 mW	Power	Input capacitor power dissipation
25.	Cout Pd	38.029 μ W	Power	Output capacitor power dissipation
26.	IC Iq Pd	5.58 mW	Power	IC Iq Pd
27.	IC Pd	1.999 W	Power	IC power dissipation
28.	L Pd	208.168 mW	Power	Inductor power dissipation
29.	Total Pd	2.217 W	Power	Total Power Dissipation
30.	Vout Tolerance	15.824 %	Unknown	Vout Tolerance based on IC Tolerance and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	3.0	Maximum Output Current
2.	VinMax	18.0	Maximum input voltage
3.	VinMin	14.0	Minimum input voltage
4.	Vout	12.0	Output Voltage
5.	base_pn	TPS54335A	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature

Design Assistance

1. **TPS54335A** Product Folder : <http://www.ti.com/product/TPS54335A> : contains the data sheet and other resources.

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