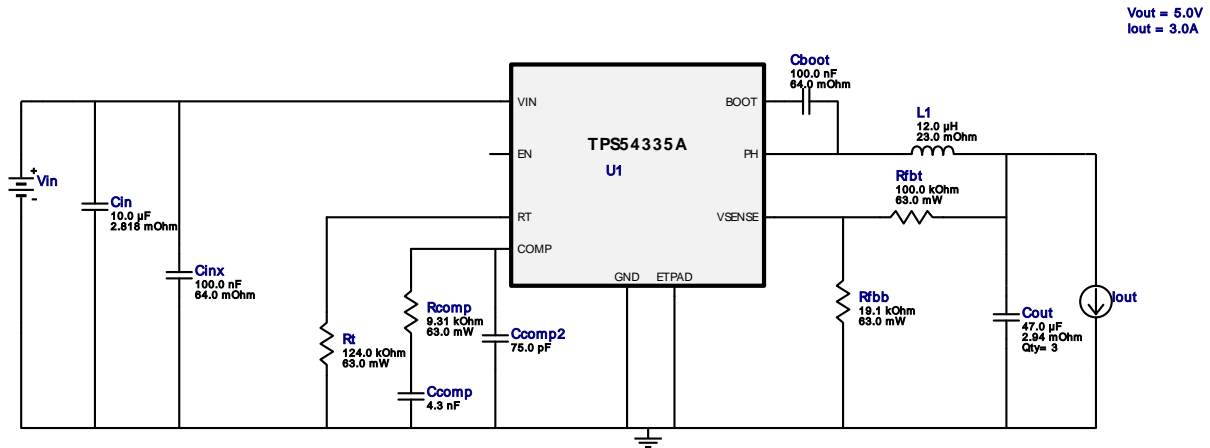



**WEBENCH® Design Report**

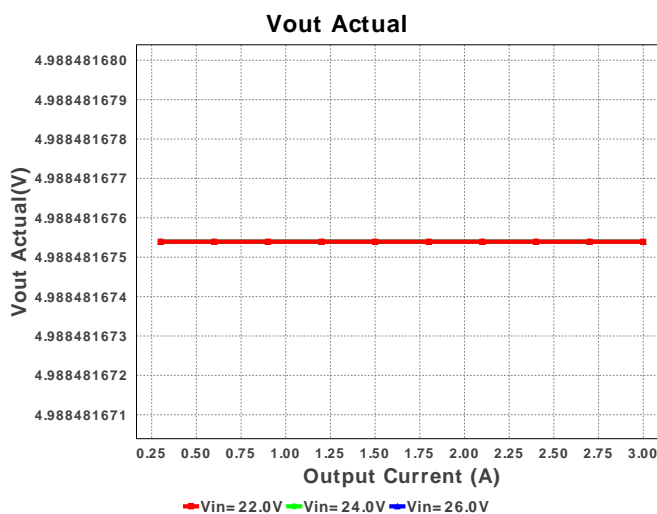
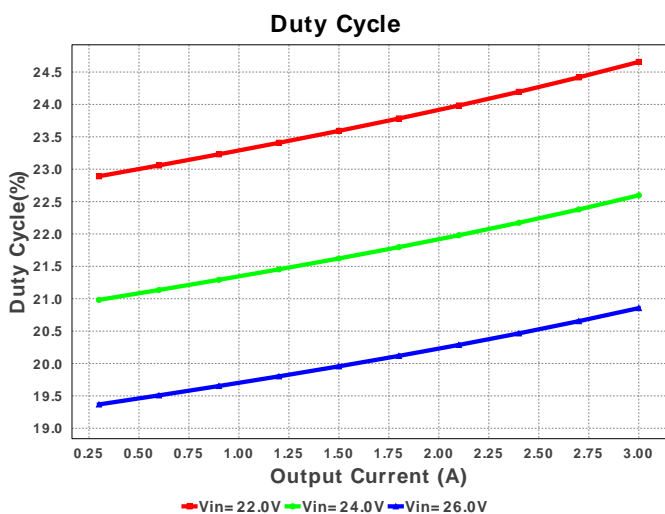
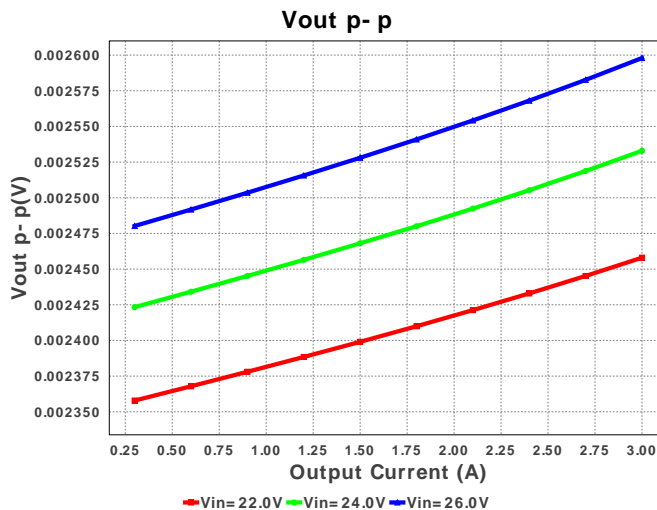
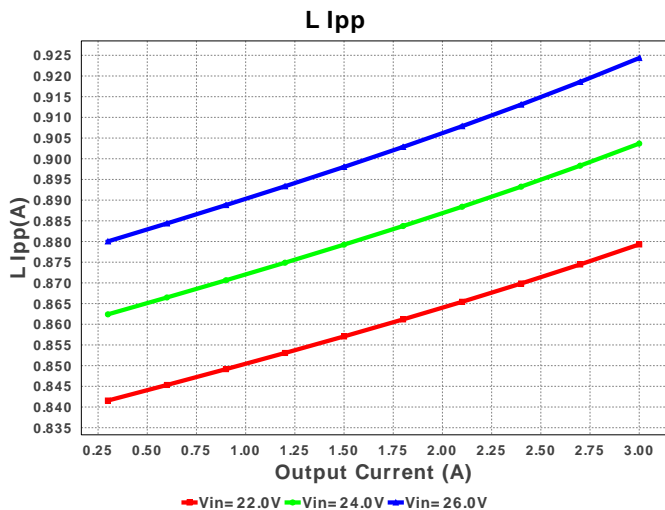
 Design : 4812076/38 TPS54335ADDAR  
 TPS54335ADDAR 22.0V-26.0V to 5.00V @ 3.0A

**My Comments**

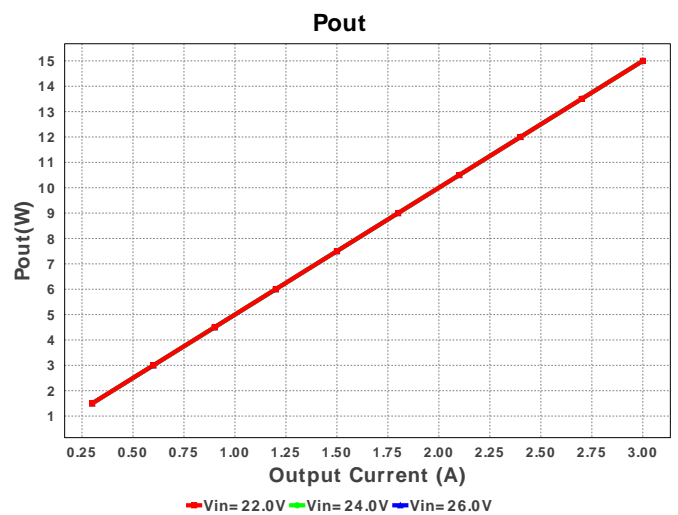
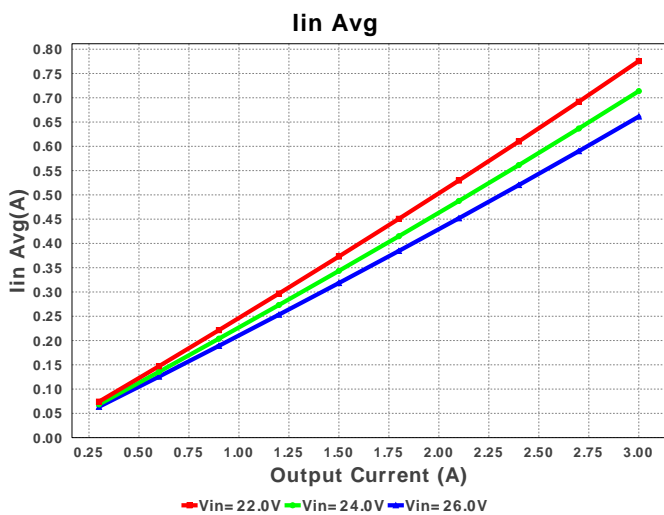
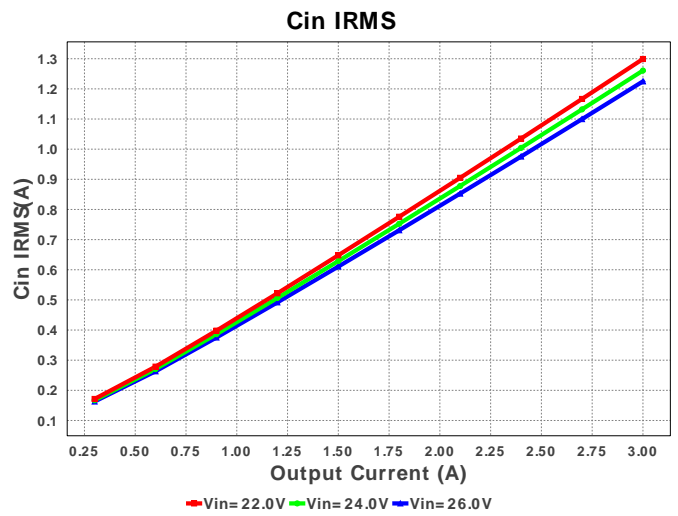
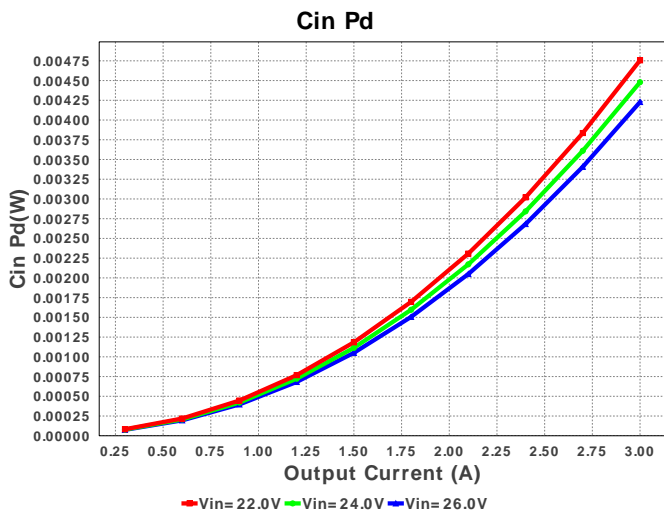
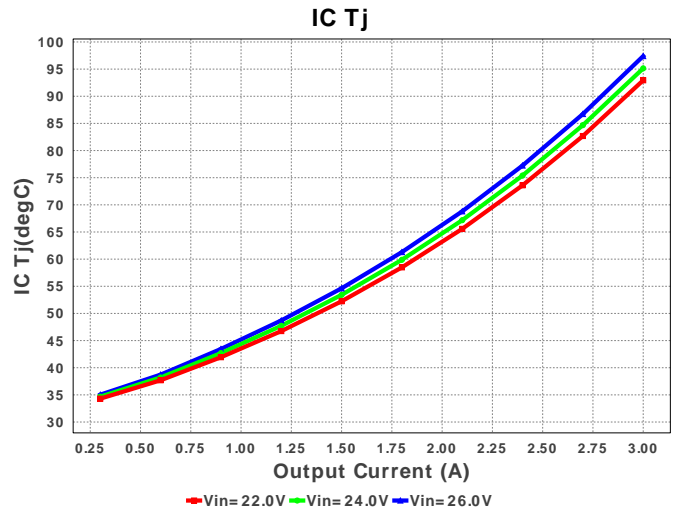
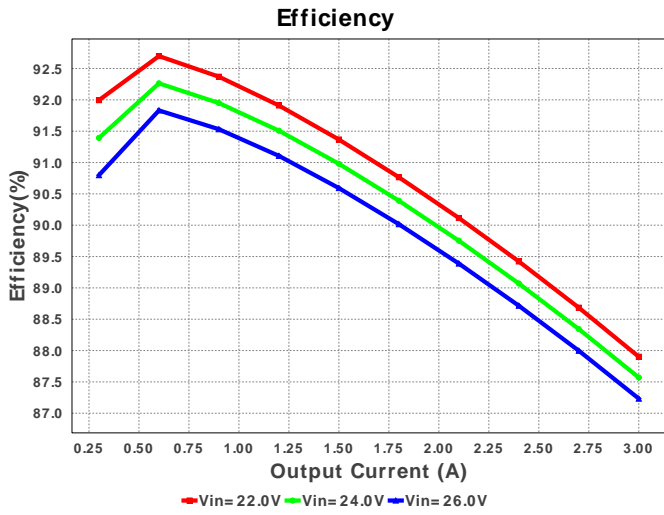
No comments

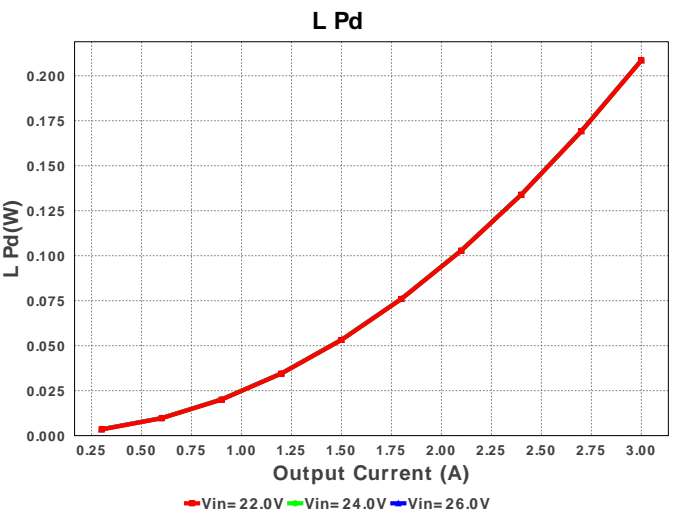
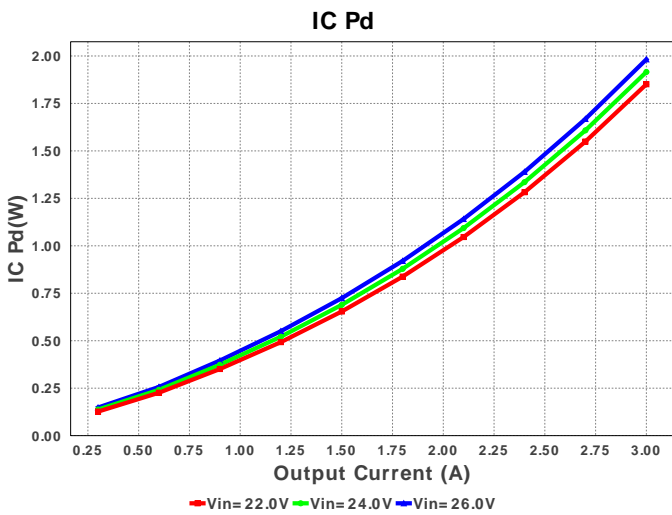
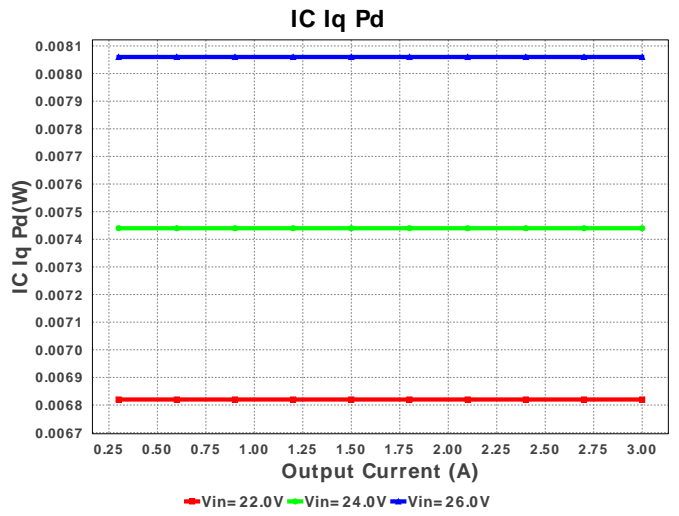
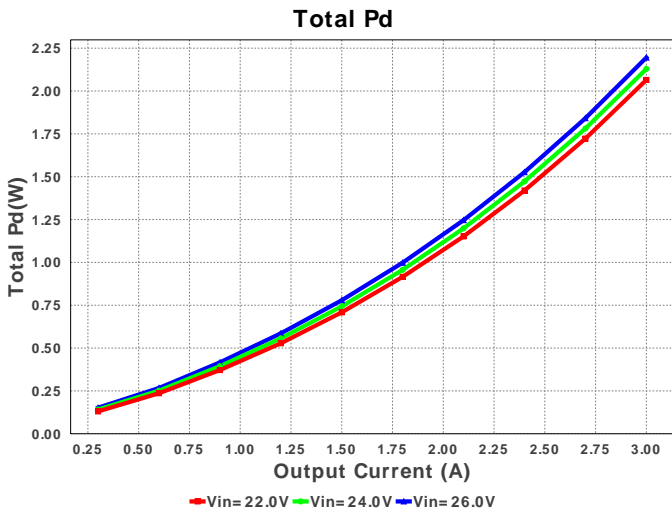
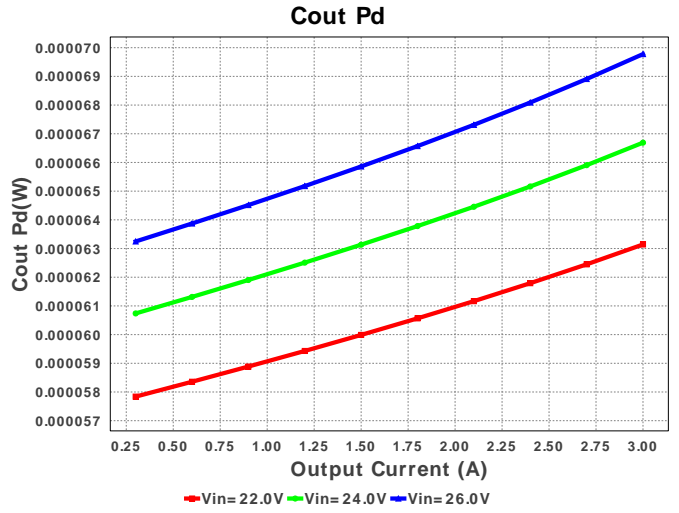
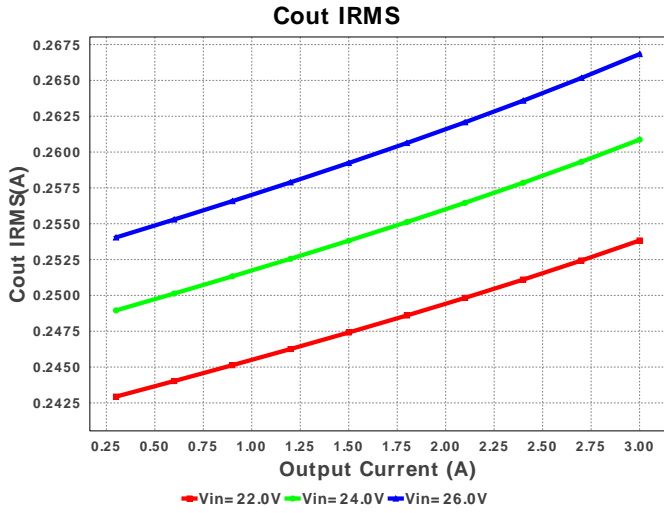
**Electrical BOM**

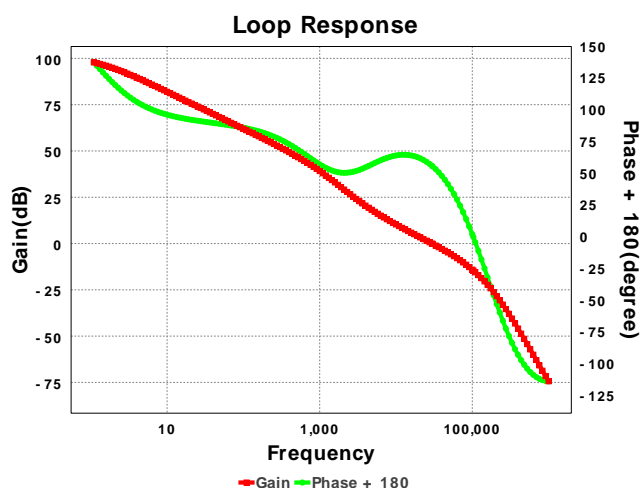
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	Kemet	C0805C104K5RACTU Series= X7R	Cap= 100.0 nF ESR= 64.0 mOhm VDC= 50.0 V IRMS= 1.64 A	1	\$0.01	0805 7 mm <sup>2</sup>
2.	Ccomp	MuRata	GRM2165C1H432JA01D Series= C0G/NP0	Cap= 4.3 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.05	0805 7 mm <sup>2</sup>
3.	Ccomp2	Samsung Electro-Mechanics	CL21C750JBANNNC Series= C0G/NP0	Cap= 75.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm <sup>2</sup>
4.	Cin	TDK	C2012X5R1V106K085AC Series= X5R	Cap= 10.0 uF ESR= 2.818 mOhm VDC= 35.0 V IRMS= 3.8868 A	1	\$0.16	0805 7 mm <sup>2</sup>
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 <sup>2</sup>
6.	Cout	TDK	C2012X5R1A476M125AC Series= X5R	Cap= 47.0 uF ESR= 2.94 mOhm VDC= 10.0 V IRMS= 3.80451 A	3	\$0.27	0805 7 mm <sup>2</sup>
7.	L1	Bourns	SRR1260-120M	L= 12.0 uH DCR= 23.0 mOhm	1	\$0.41	 SRR1260 210 mm <sup>2</sup>
8.	Rcomp	Vishay-Dale	CRCW04029K31FKED Series= CRCW..e3	Res= 9.31 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm <sup>2</sup>

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
9.	Rfbb	Vishay-Dale	CRCW040219K1FKED Series= CRCW..e3	Res= 19.1 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm <sup>2</sup>
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 <sup>2</sup>
11.	Rt	Vishay-Dale	CRCW0402124KFKED Series= CRCW..e3	Res= 124.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm <sup>2</sup>
12.	U1	Texas Instruments	TPS54335ADDAR	Switcher	1	\$0.85	 R-PDSO-G8 55 mm <sup>2</sup>









## Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	1.225 A	Current	Input capacitor RMS ripple current
2.	Cout IRMS	266.834 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	661.36 mA	Current	Average input current
4.	L Ipp	924.34 mA	Current	Peak-to-peak inductor ripple current
5.	BOM Count	14	General	Total Design BOM count
6.	FootPrint	331.0 mm <sup>2</sup>	General	Total Foot Print Area of BOM components
7.	Frequency	384.29 kHz	General	Switching frequency
8.	IC Tolerance	12.0 mV	General	IC Feedback Tolerance
9.	Mode	CCM	General	Conduction Mode
10.	Pout	15.0 W	General	Total output power
11.	Total BOM	\$2.35	General	Total BOM Cost
12.	ICThetaJA Effective	34.0 degC/W	Op_Point	Effective IC Junction-to-Ambient Thermal Resistance
13.	Low Freq Gain	97.811 dB	Op_Point	Gain at 10Hz
14.	Vout Actual	4.988 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
15.	Vout OP	5.0 V	Op_Point	Operational Output Voltage
16.	Cross Freq	29.629 kHz	Op_point	Bode plot crossover frequency
17.	Duty Cycle	20.855 %	Op_point	Duty cycle
18.	Efficiency	87.233 %	Op_point	Steady state efficiency
19.	Gain Marg	-14.584 dB	Op_point	Bode Plot Gain Margin
20.	IC Tj	97.396 degC	Op_point	IC junction temperature
21.	IOUT_OP	3.0 A	Op_point	Iout operating point
22.	Phase Marg	56.085 deg	Op_point	Bode Plot Phase Margin
23.	VIN_OP	26.0 V	Op_point	Vin operating point
24.	Vout p-p	2.598 mV	Op_point	Peak-to-peak output ripple voltage
25.	Cin Pd	4.228 mW	Power	Input capacitor power dissipation
26.	Cout Pd	69.776 μW	Power	Output capacitor power dissipation
27.	IC Iq Pd	8.06 mW	Power	IC Iq Pd
28.	IC Pd	1.982 W	Power	IC power dissipation
29.	L Pd	208.638 mW	Power	Inductor power dissipation
30.	Total Pd	2.195 W	Power	Total Power Dissipation
31.	Vout Tolerance	3.222 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

## Design Inputs

#	Name	Value	Description
1.	Iout	3.0	Maximum Output Current
2.	VinMax	26.0	Maximum input voltage
3.	VinMin	22.0	Minimum input voltage
4.	Vout	5.0	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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