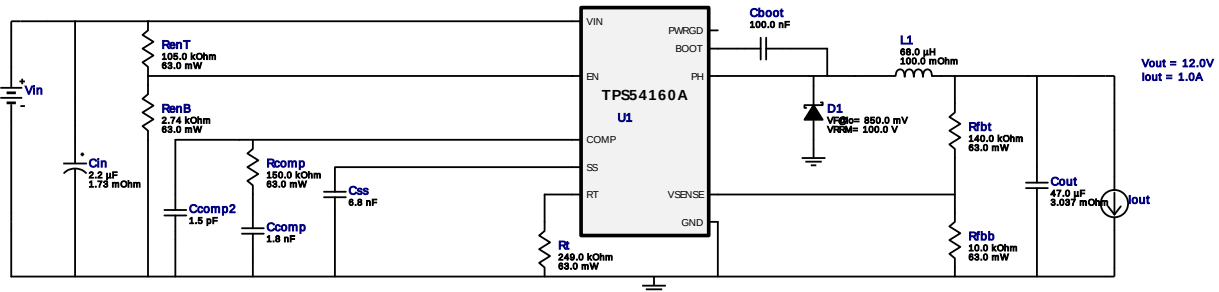
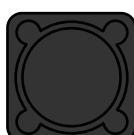


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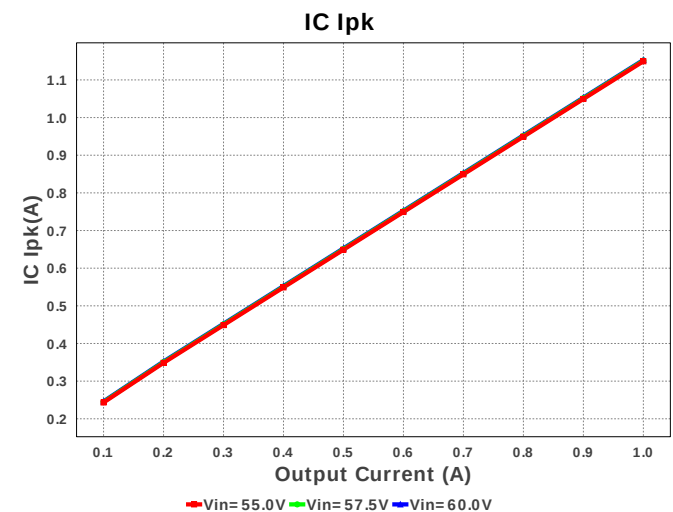
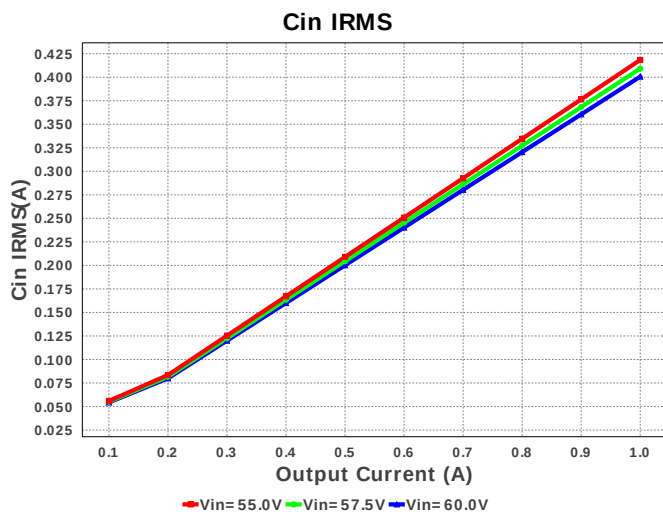
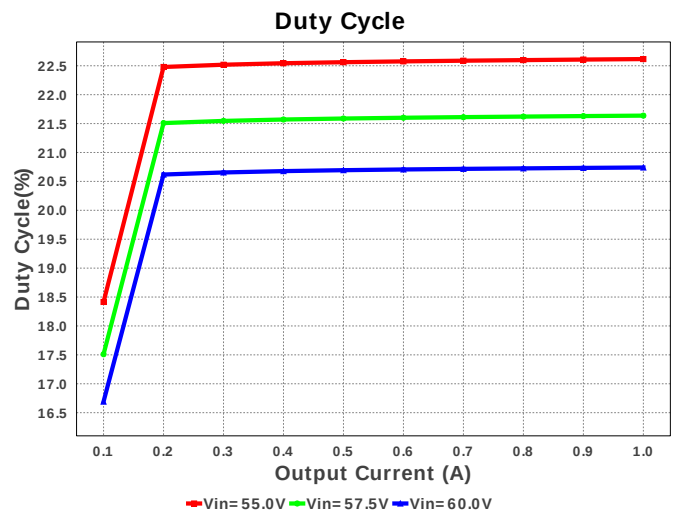
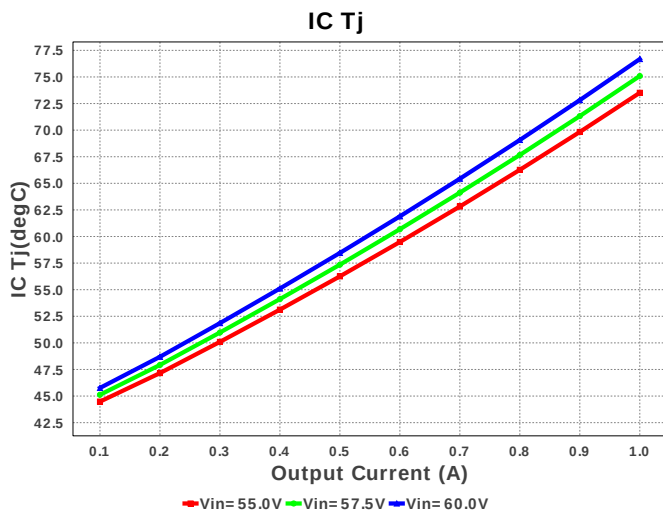
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TPS54160ADGQR 55.0V-60.0V to 12.00V @ 1.0A

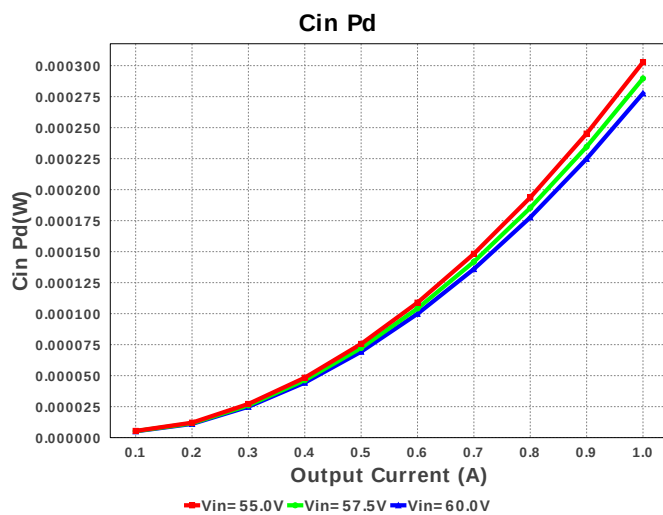
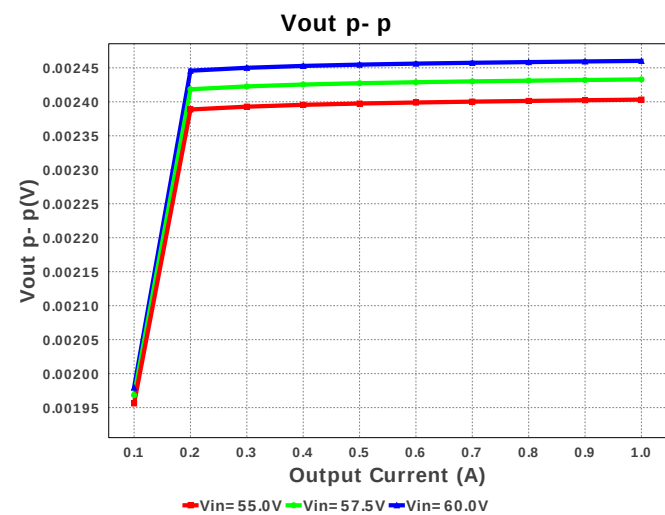
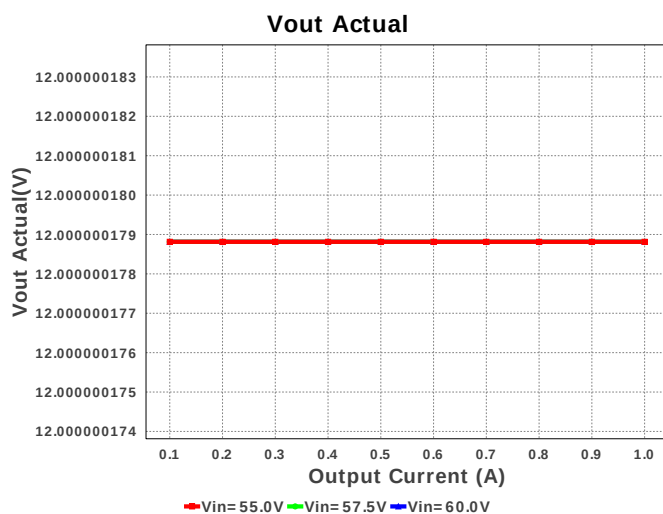
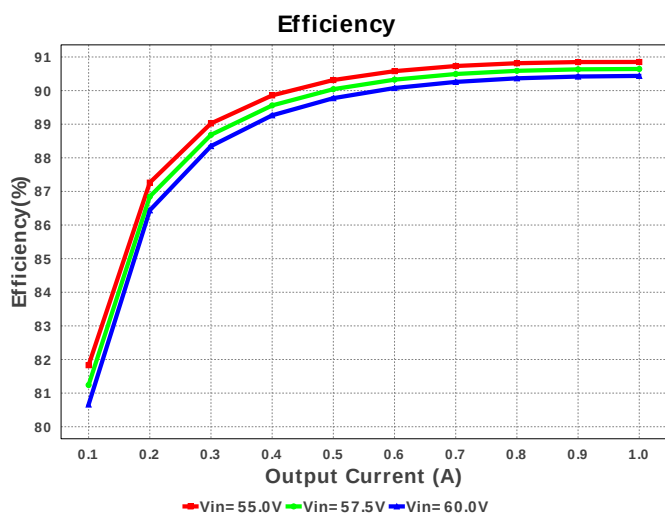
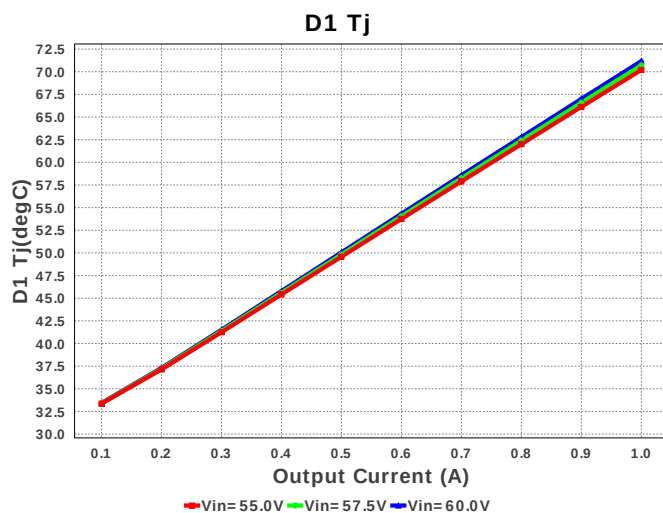
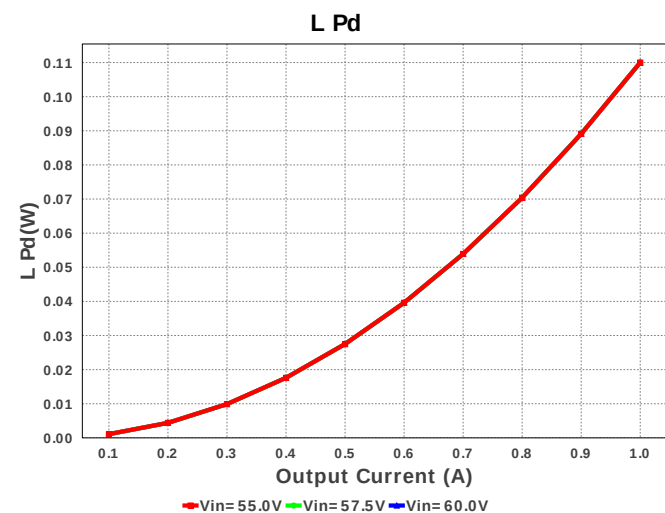


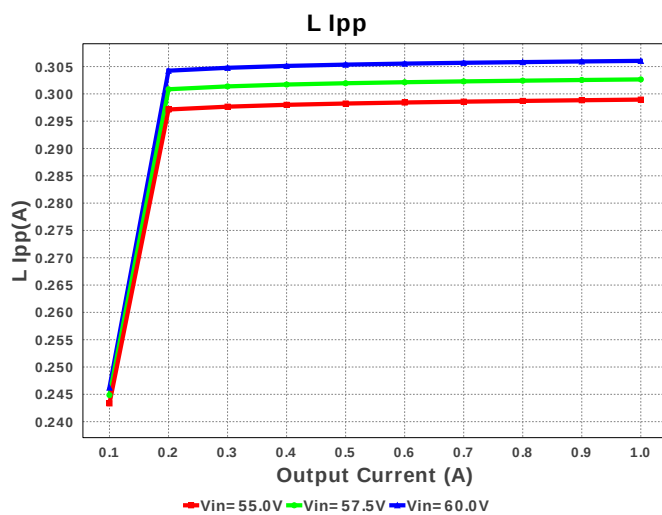
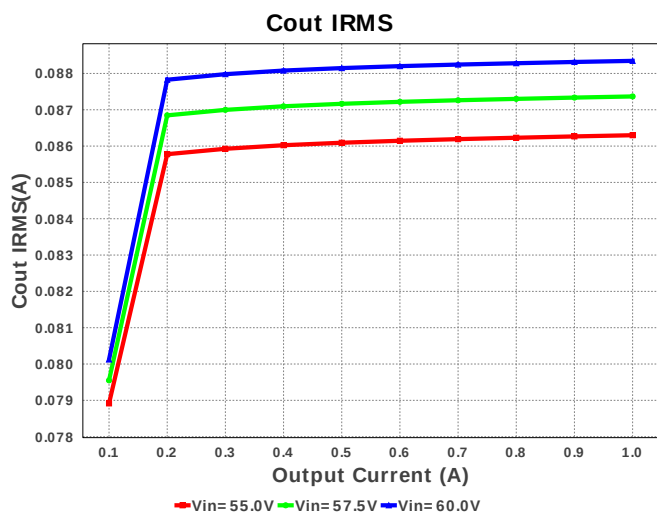
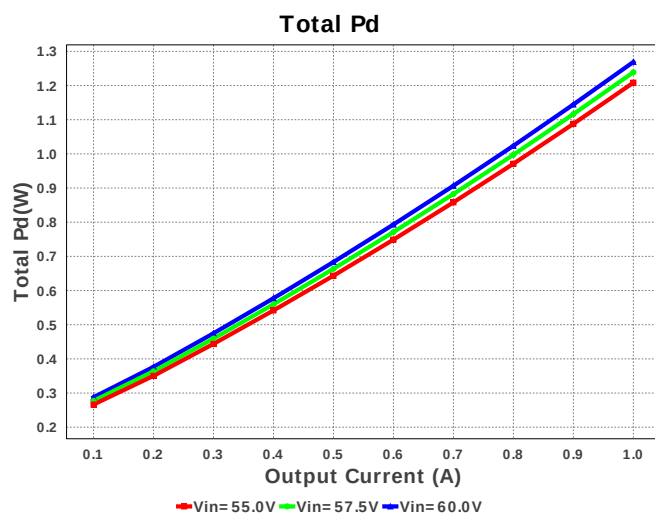
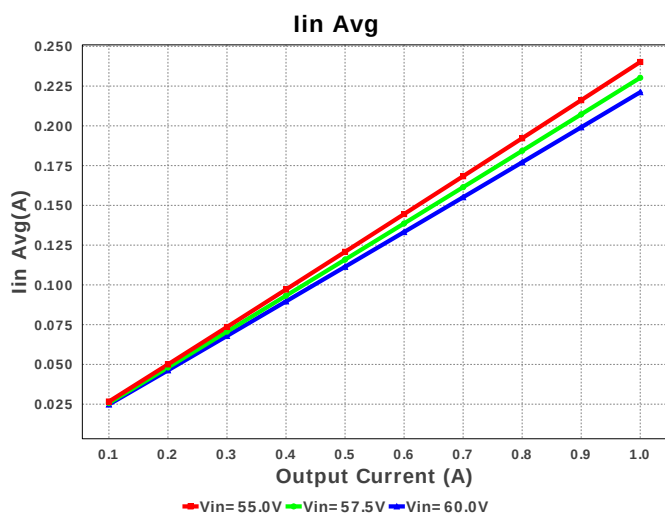
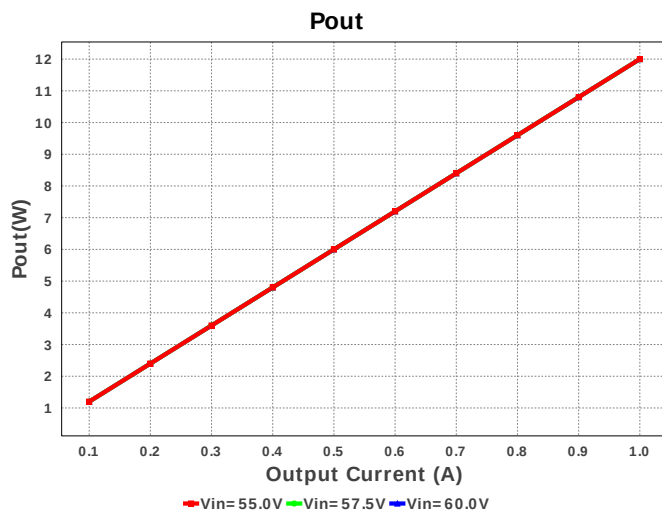
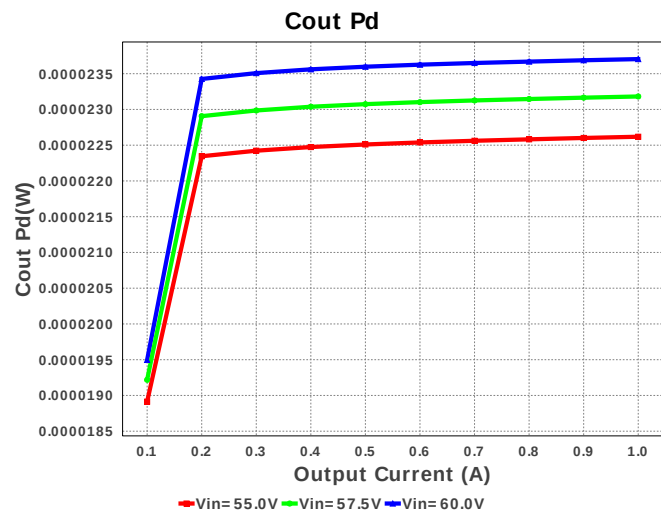
Electrical BOM

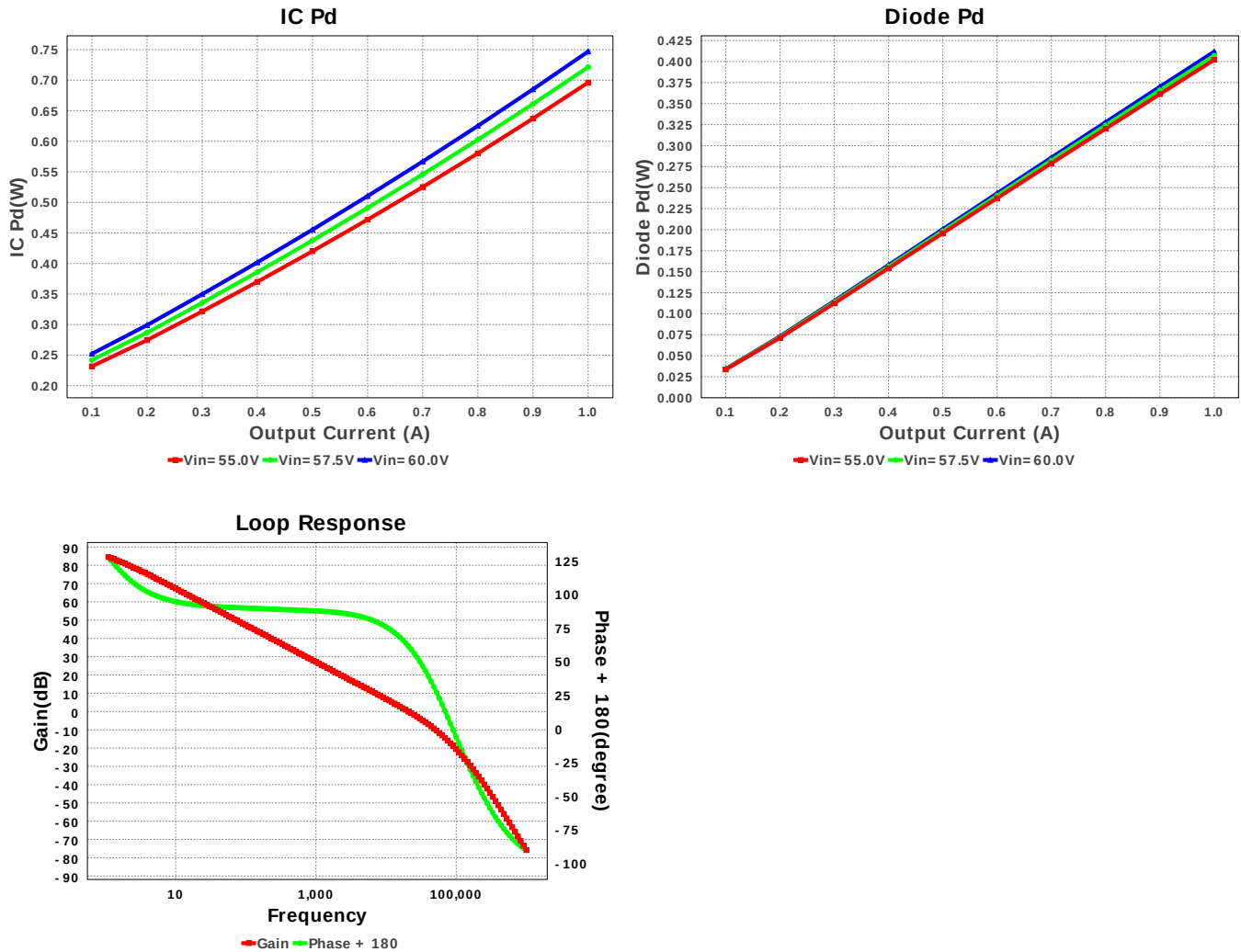
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	MuRata	GRM155R61A104KA01D Series= X5R	Cap= 100.0 nF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	 0402 3 mm ²
2.	Ccomp	MuRata	GRM033R71A182KA01D Series= X7R	Cap= 1.8 nF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	 0201 2 mm ²
3.	Ccomp2	MuRata	GRM1555C1H1R5CA01D Series= C0G/NP0	Cap= 1.5 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0402 3 mm ²
4.	Cin	TDK	C3225X7R2A225K230AB Series= X7R	Cap= 2.2 uF ESR= 1.73 mOhm VDC= 100.0 V IRMS= 5.5932 A	1	\$0.19	 1210_250 15 mm ²
5.	Cout	MuRata	GRM32ER61C476ME15L Series= X5R	Cap= 47.0 uF ESR= 3.037 mOhm VDC= 16.0 V IRMS= 4.59346 A	1	\$0.24	 1210_280 15 mm ²
6.	Css	Yageo America	CC0805KRX7R9BB682 Series= X7R	Cap= 6.8 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm ²
7.	D1	Micro Commercial Components	SK310A-TP	VF@Io= 850.0 mV VRRM= 100.0 V	1	\$0.10	 SMA 37 mm ²
8.	L1	Bourns	SRR1210-680M	L= 68.0 uH DCR= 100.0 mOhm	1	\$0.44	 SRR1210 196 mm ²
9.	Rcomp	Vishay-Dale	CRCW0402150KFKED Series= CRCW..e3	Res= 150.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
10.	RenB	Vishay-Dale	CRCW04022K74FKED Series= CRCW..e3	Res= 2.74 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
11.	RenT	Vishay-Dale	CRCW0402105KFKED Series= CRCW..e3	Res= 105.0 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	CRCW040210K0FKED Series= CRCW..e3	Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm²
13.	Rfbt	Vishay-Dale	CRCW0402140KFKED Series= CRCW..e3	Res= 140.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm²
14.	Rt	Vishay-Dale	CRCW0402249KFKED Series= CRCW..e3	Res= 249.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm²
15.	U1	Texas Instruments	TPS54160ADGQR	Switcher	1	\$1.55	 S-PDSO-G10 24 mm²









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	400.633 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	88.349 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	1.0 A	Current	Peak switch current in IC
4.	Iin Avg	221.16 mA	Current	Average input current
5.	L Ipp	306.05 mA	Current	Peak-to-peak inductor ripple current
6.	BOM Count	15	General	Total Design BOM count
7.	FootPrint	319.0 mm ²	General	Total Foot Print Area of BOM components
8.	Frequency	478.381 kHz	General	Switching frequency
9.	Pout	12.0 W	General	Total output power
10.	Total BOM	\$2.62	General	Total BOM Cost
11.	D1 Tj	71.212 degC	Op_Point	D1 junction temperature
12.	Low Freq Gain	84.416 dB	Op_Point	Gain at 10Hz
13.	Vout Actual	12.0 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	20.944 kHz	Op_point	Bode plot crossover frequency
16.	Duty Cycle	20.741 %	Op_point	Duty cycle
17.	Efficiency	90.434 %	Op_point	Steady state efficiency
18.	Gain Marg	-18.654 dB	Op_point	Bode Plot Gain Margin
19.	IC Tj	76.682 degC	Op_point	IC junction temperature
20.	ICThetaJA	62.5 degC/W	Op_point	IC junction-to-ambient thermal resistance
21.	IOUT_OP	1.0 A	Op_point	Iout operating point
22.	Phase Marg	61.433 deg	Op_point	Bode Plot Phase Margin
23.	VIN_OP	60.0 V	Op_point	Vin operating point
24.	Vout p-p	2.46 mV	Op_point	Peak-to-peak output ripple voltage
25.	Cin Pd	277.677 μW	Power	Input capacitor power dissipation
26.	Cout Pd	23.705 μW	Power	Output capacitor power dissipation
27.	Diode Pd	412.115 mW	Power	Diode power dissipation
28.	IC Pd	746.908 mW	Power	IC power dissipation
29.	L Pd	110.0 mW	Power	Inductor power dissipation
30.	Total Pd	1.269 W	Power	Total Power Dissipation

#	Name	Value	Category	Description
31.	Vout Tolerance	2.904 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	1.0	Maximum Output Current
2.	VinMax	60.0	Maximum input voltage
3.	VinMin	55.0	Minimum input voltage
4.	Vout	12.0	Output Voltage
5.	base_pn	TPS54160A	Texas Instruments Base Part Number
6.	source	DC	Input Source Type
7.	ta	30.0	Ambient temperature

Design Assistance

1. TPS54160A Product Folder : <http://www.ti.com/product/TPS54160A> : contains the data sheet and other resources.

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