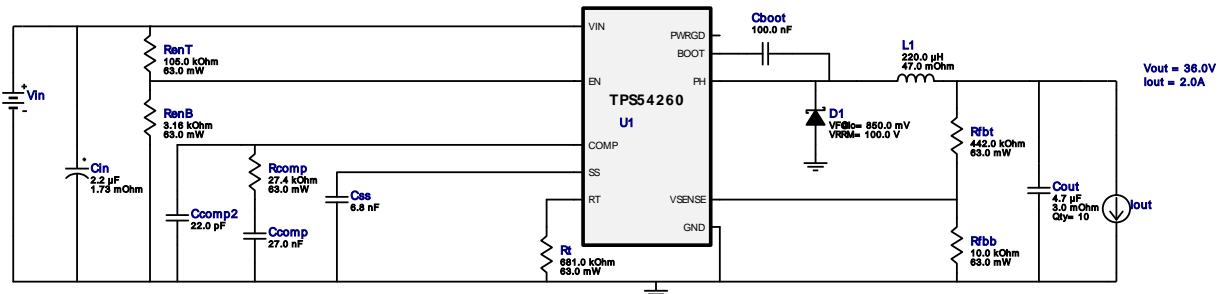


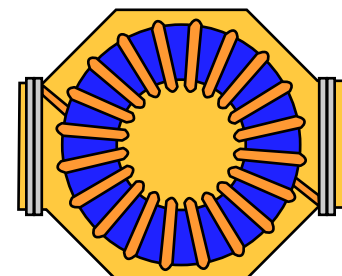
## WEBENCH® Design Report





Design : 4466246/60 TPS54260DGQR  
TPS54260DGQR 48.0V-60.0V to 36.00V @ 2.0A

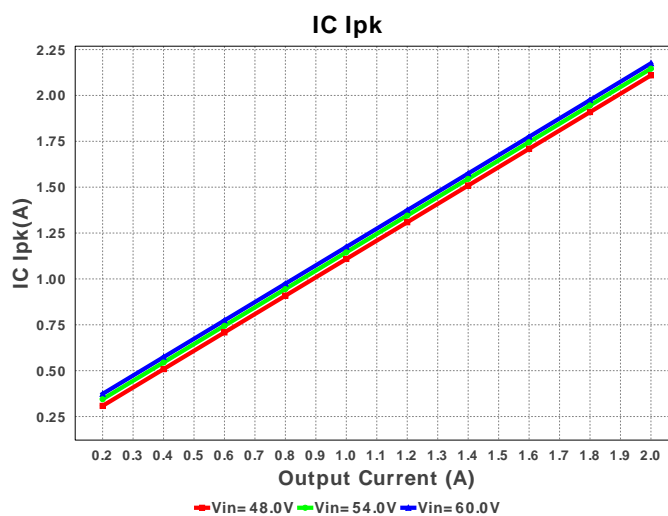
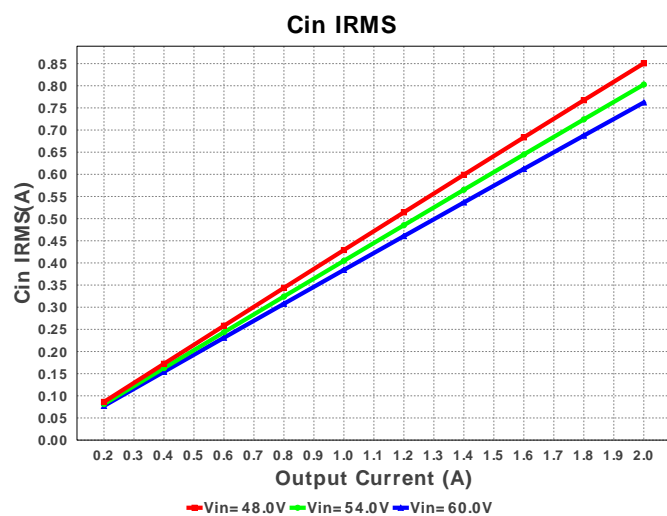
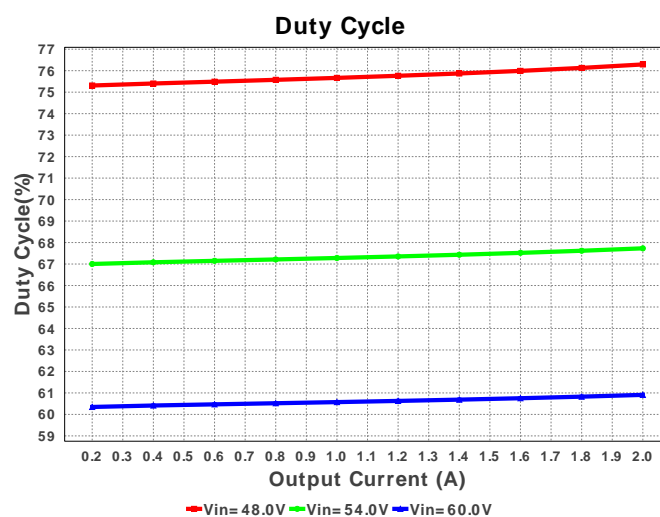
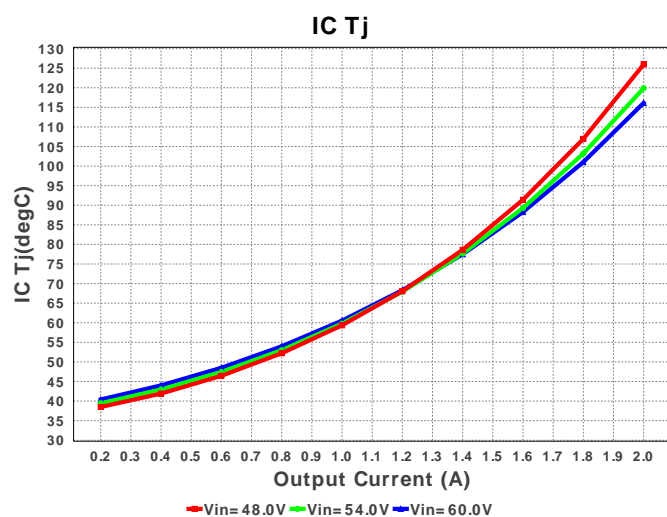


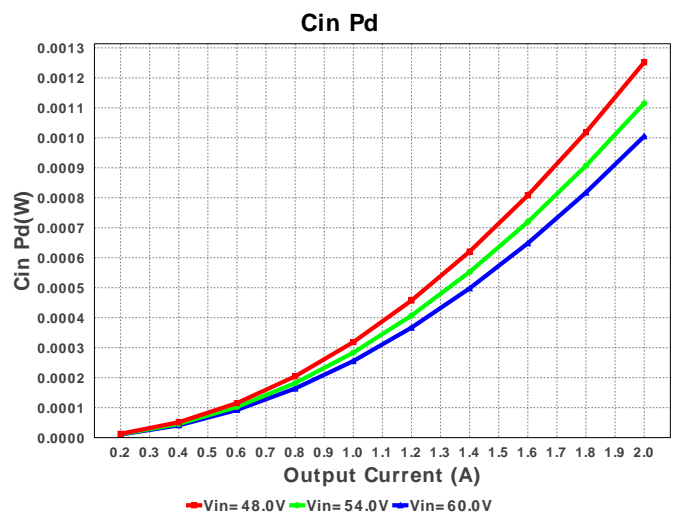
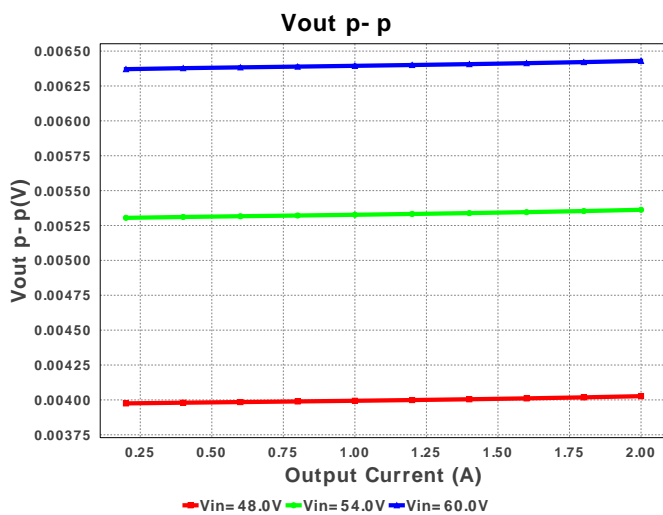
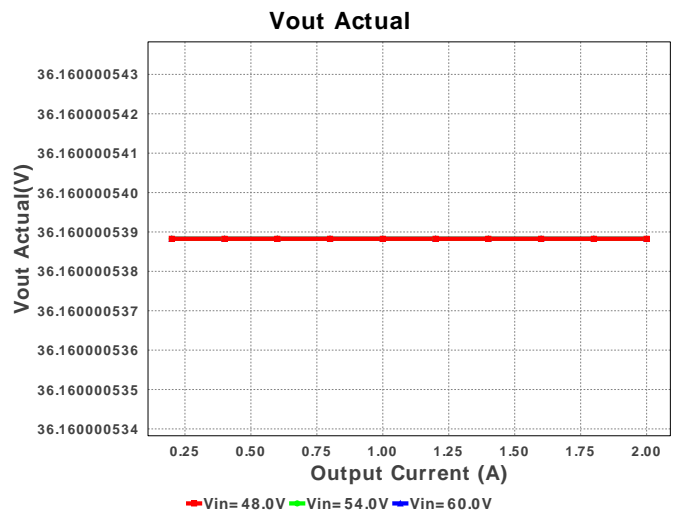
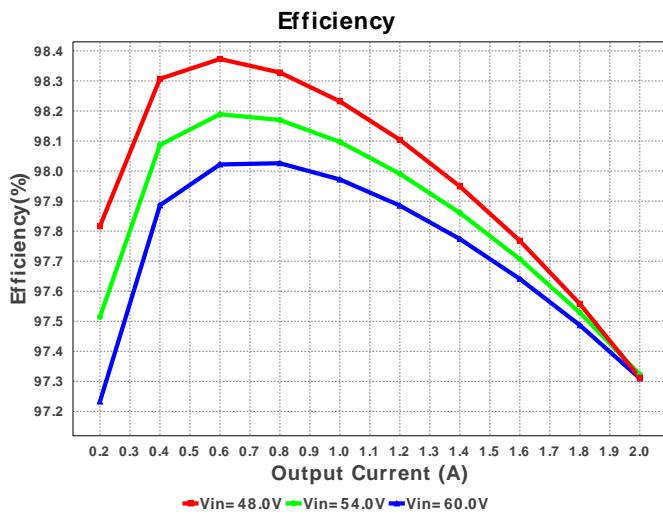
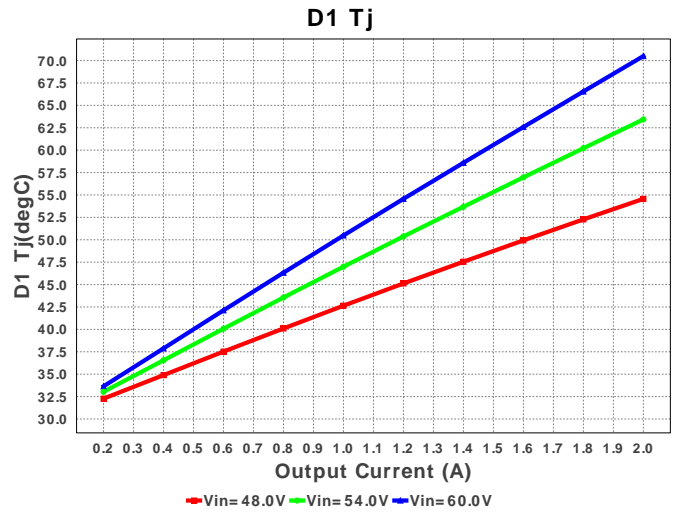
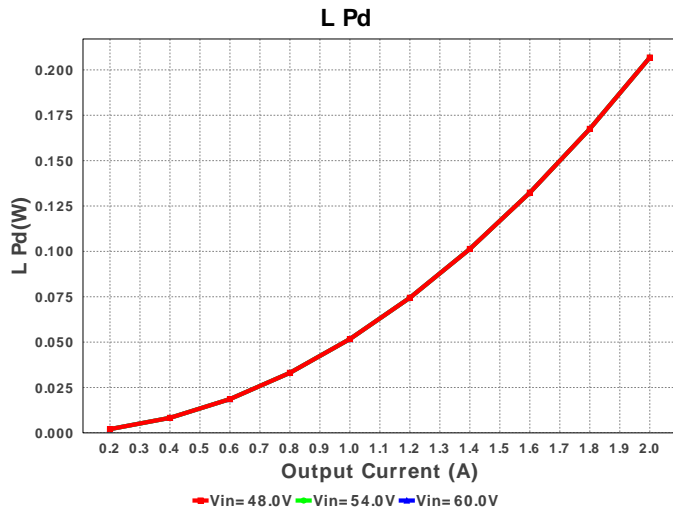
### Electrical BOM

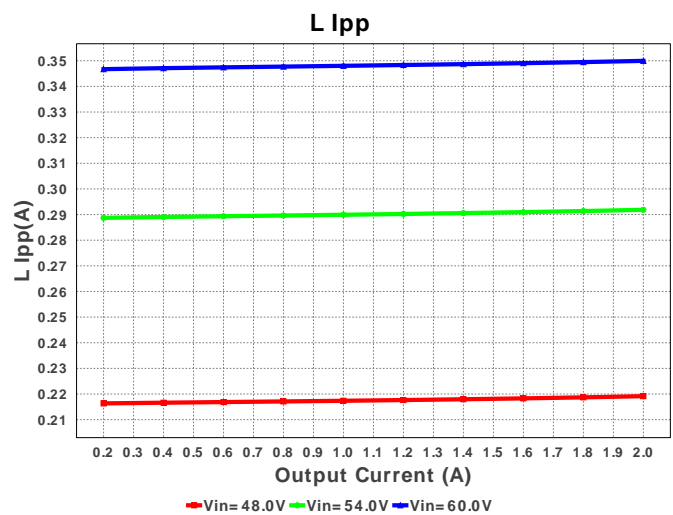
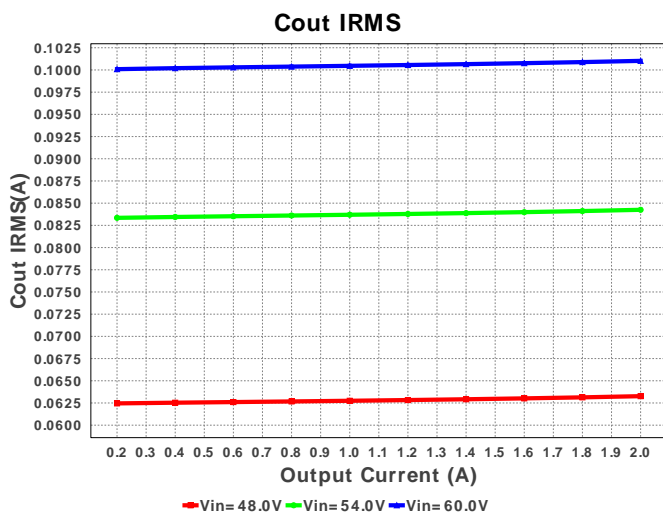
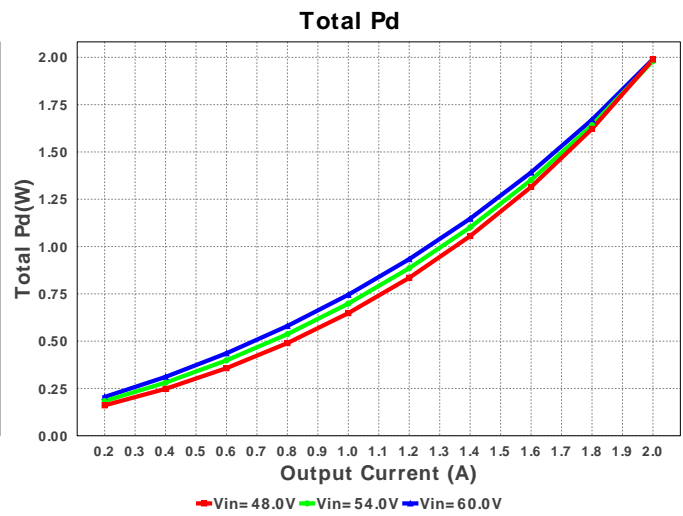
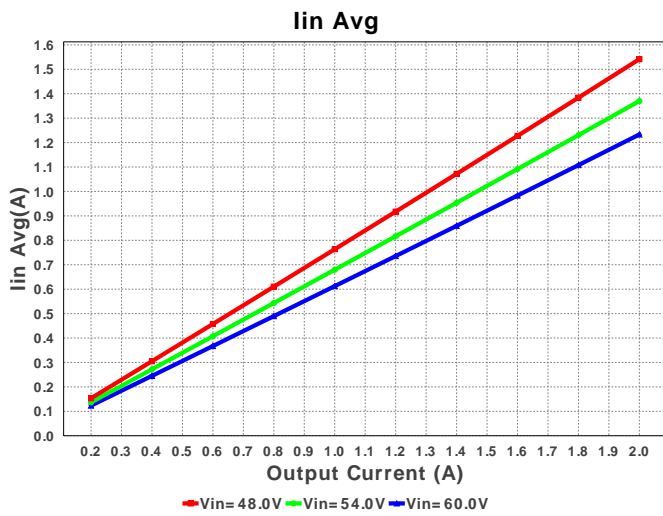
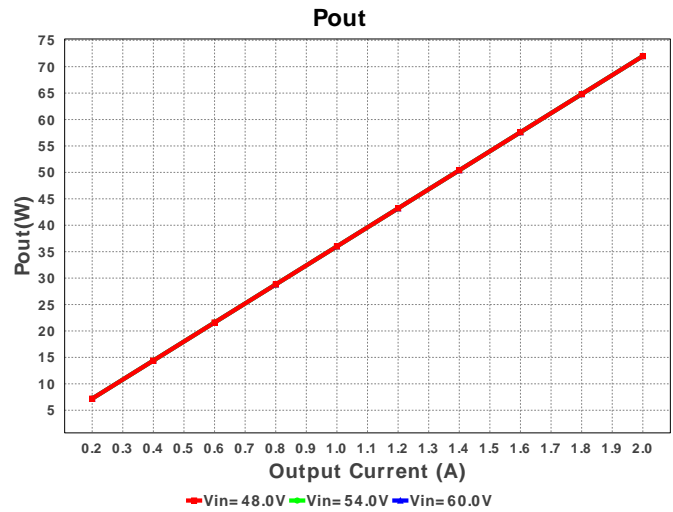
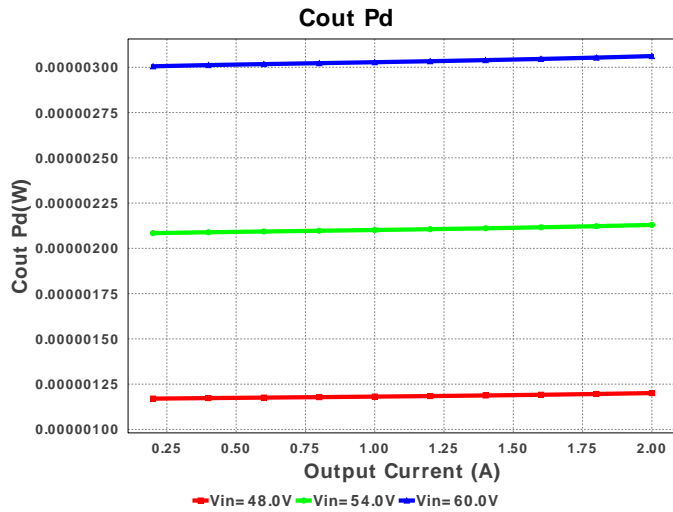
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	MuRata	GRM155R61A104KA01D Series= X5R	Cap= 100.0 nF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm <sup>2</sup>
2.	Ccomp	MuRata	GRM155R61A273KA01D Series= X5R	Cap= 27.0 nF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm <sup>2</sup>
3.	Ccomp2	Kemet	C0805C220K3GACTU Series= C0G/NP0	Cap= 22.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm <sup>2</sup>
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 <sup>2</sup>
5.	Cout	MuRata	GRM31CR71H475KA12L Series= X7R	Cap= 4.7 uF ESR= 3.0 mOhm VDC= 50.0 V IRMS= 4.98 A	10	\$0.07	1206 11 mm <sup>2</sup>
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 <sup>2</sup>
7.	D1	Micro Commercial Components	SK310A-TP	VF@Io= 850.0 mV VRRM= 100.0 V	1	\$0.10	SMA 37 mm <sup>2</sup>
8.	L1	Bourns	PM2110-221K-RC	L= 220.0 uH DCR= 47.0 mOhm	1	\$1.21	PM2110 890 mm <sup>2</sup>
9.	Rcomp	Vishay-Dale	CRCW040227K4FKED Series= CRCW..e3	Res= 27.4 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm <sup>2</sup>
10.	RenB	Vishay-Dale	CRCW04023K16FKED Series= CRCW..e3	Res= 3.16 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm <sup>2</sup>

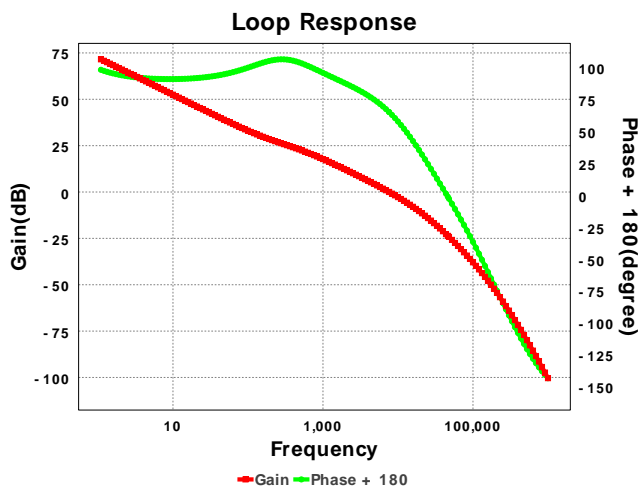
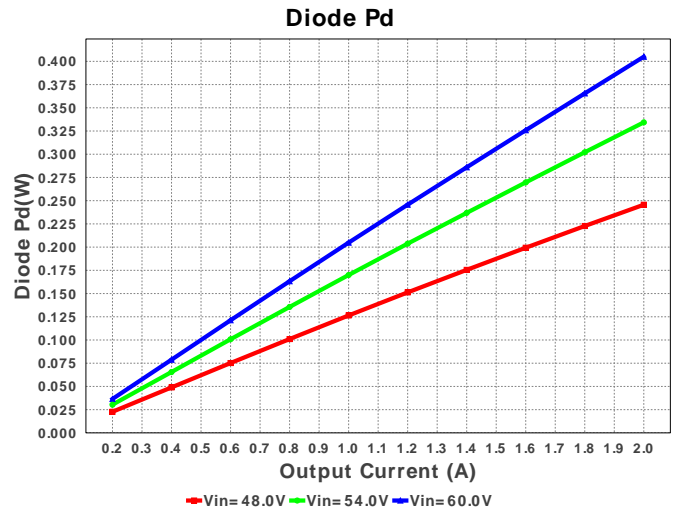
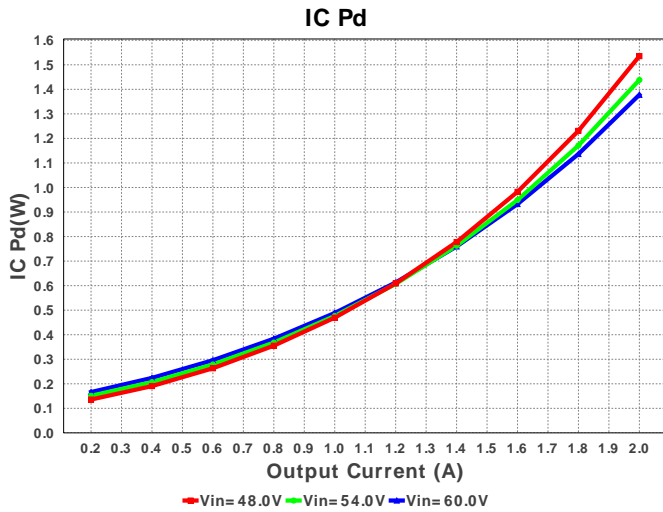


#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
11.	RenT	Vishay-Dale	CRCW0402105KFKED Series= CRCW..e3	Res= 105.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm <sup>2</sup>
12.	Rfbb	Vishay-Dale	CRCW040210K0FKED Series= CRCW..e3	Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm <sup>2</sup>
13.	Rfbt	Vishay-Dale	CRCW0402442KFKED Series= CRCW..e3	Res= 442.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm <sup>2</sup>
14.	Rt	Vishay-Dale	CRCW0402681KFKED Series= CRCW..e3	Res= 681.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm <sup>2</sup>
15.	U1	Texas Instruments	TPS54260DGQR	Switcher	1	\$1.80	 S-PDSO-G10 24 mm <sup>2</sup>









## Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	760.95 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	101.383 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	2.0 A	Current	Peak switch current in IC
4.	Iin Avg	1.238 A	Current	Average input current
5.	L Ipp	351.2 mA	Current	Peak-to-peak inductor ripple current
6.	BOM Count	24	General	Total Design BOM count
7.	FootPrint	1.113 k mm <sup>2</sup>	General	Total Foot Print Area of BOM components
8.	Frequency	189.873 kHz	General	Switching frequency
9.	Pout	72.0 W	General	Total output power
10.	Total BOM	\$4.1	General	Total BOM Cost
11.	D1 Tj	96.085 degC	Op_Point	D1 junction temperature
12.	Low Freq Gain	71.444 dB	Op_Point	Gain at 10Hz
13.	Vout Actual	36.16 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
14.	Vout OP	36.0 V	Op_Point	Operational Output Voltage
15.	Cross Freq	7.594 kHz	Op_point	Bode plot crossover frequency
16.	Duty Cycle	61.126 %	Op_point	Duty cycle
17.	Efficiency	96.969 %	Op_point	Steady state efficiency
18.	Gain Marg	-23.679 dB	Op_point	Bode Plot Gain Margin
19.	IC Tj	116.351 degC	Op_point	IC junction temperature
20.	ICThetaJA	62.5 degC/W	Op_point	IC junction-to-ambient thermal resistance
21.	IOUT_OP	2.0 A	Op_point	Iout operating point
22.	Phase Marg	65.926 deg	Op_point	Bode Plot Phase Margin
23.	VIN_OP	60.0 V	Op_point	Vin operating point
24.	Vout p-p	6.453 mV	Op_point	Peak-to-peak output ripple voltage
25.	Cin Pd	1.002 mW	Power	Input capacitor power dissipation
26.	Cout Pd	3.084 $\mu$ W	Power	Output capacitor power dissipation
27.	Diode Pd	660.853 mW	Power	Diode power dissipation
28.	IC Pd	1.382 W	Power	IC power dissipation
29.	L Pd	206.8 mW	Power	Inductor power dissipation
30.	Total Pd	2.251 W	Power	Total Power Dissipation

#	Name	Value	Category	Description
31.	Vout Tolerance	2.995 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

## Design Inputs

#	Name	Value	Description
1.	Iout	2.0	Maximum Output Current
2.	VinMax	60.0	Maximum input voltage
3.	VinMin	48.0	Minimum input voltage
4.	Vout	36.0	Output Voltage
5.	base_pn	TPS54260	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature

## Design Assistance

1. **TPS54260** Product Folder : <http://www.ti.com/product/TPS54260> : contains the data sheet and other resources.

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