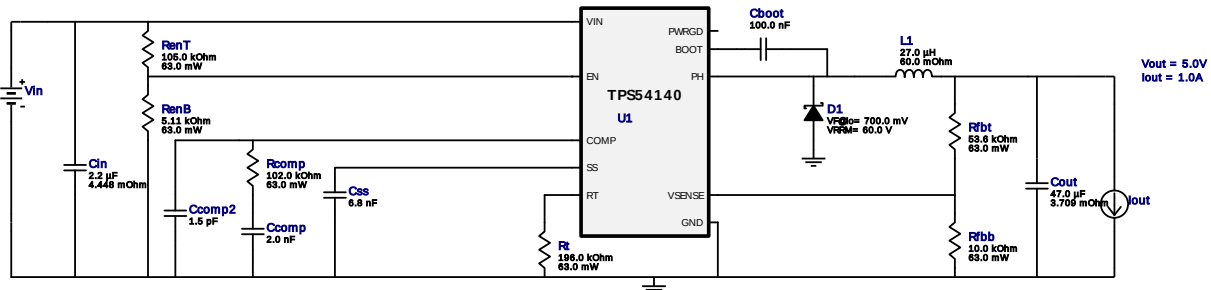
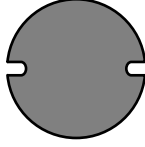


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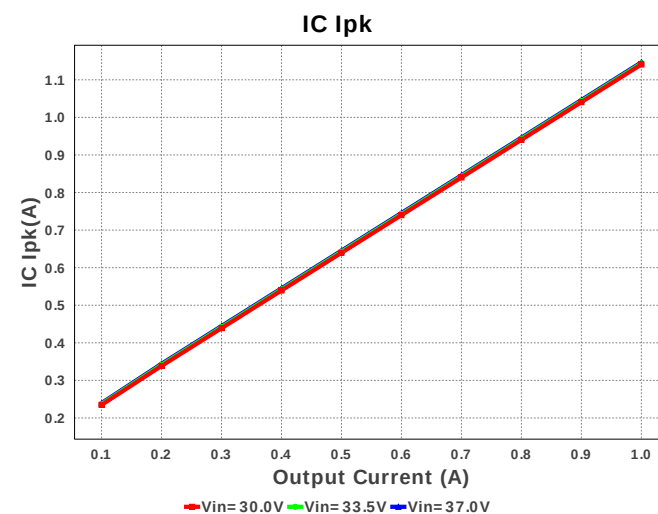
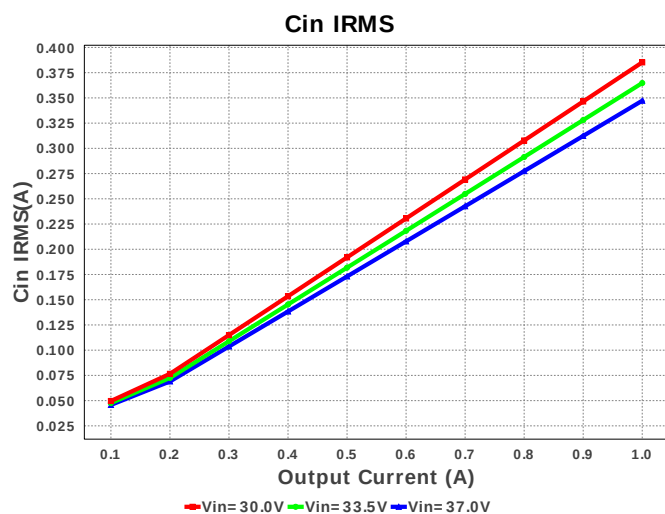
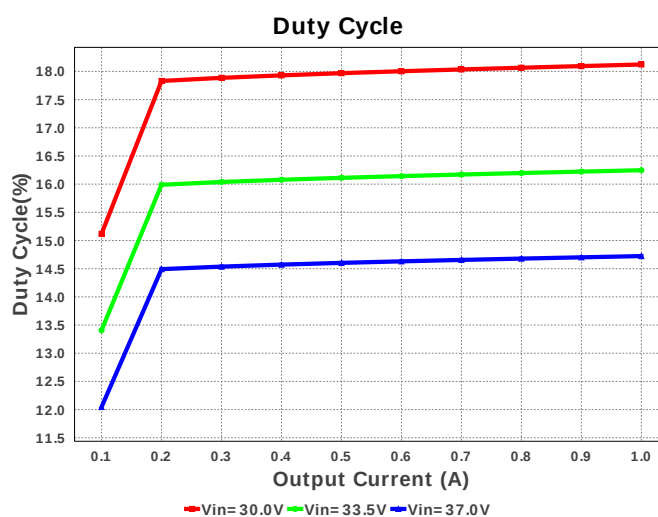
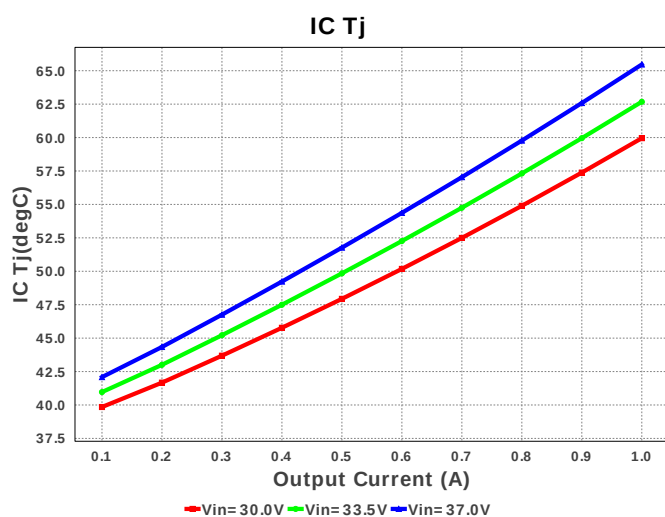
Design : 4742013/98 TPS54140DGQR
TPS54140DGQR 30.0V-37.0V to 5.00V @ 1.0A

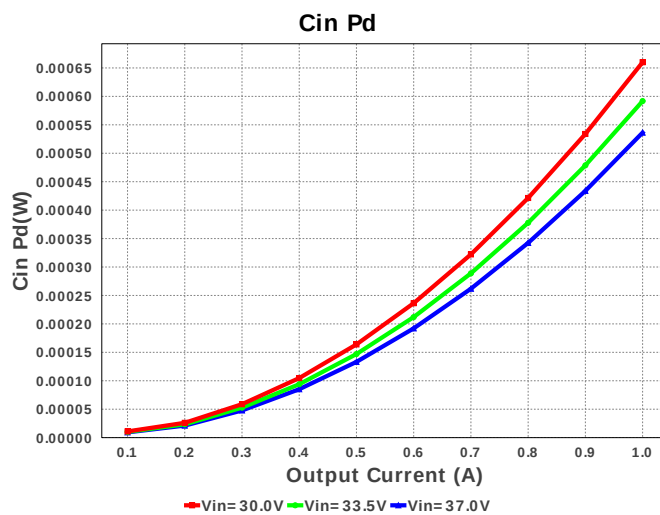
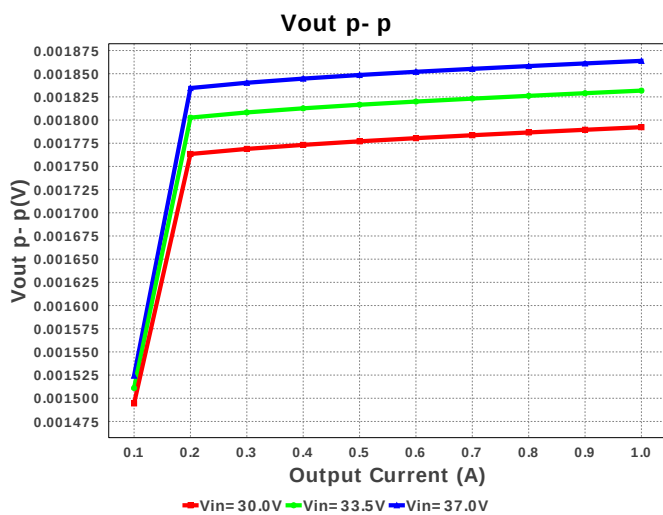
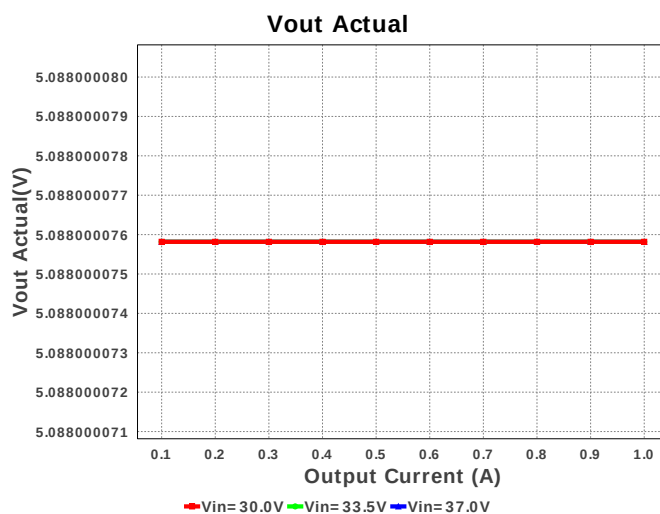
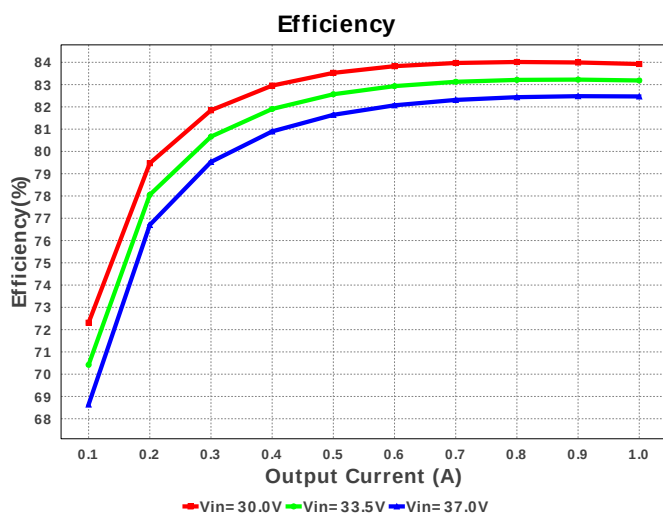
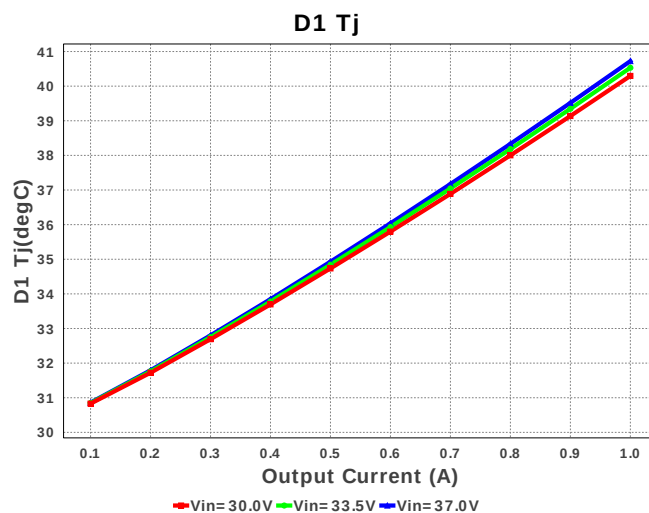
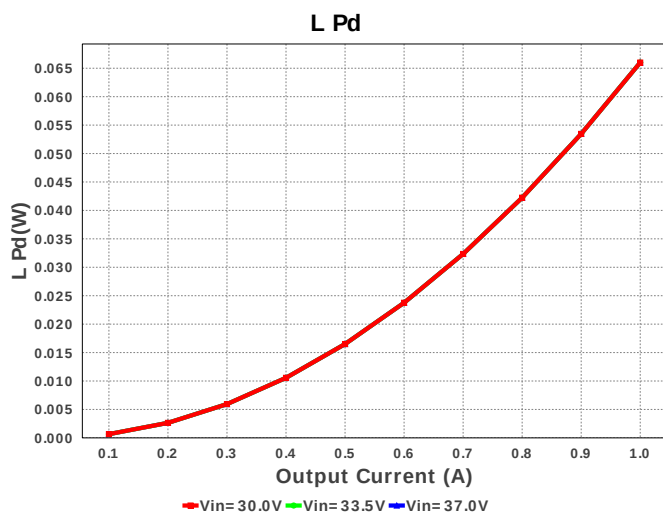


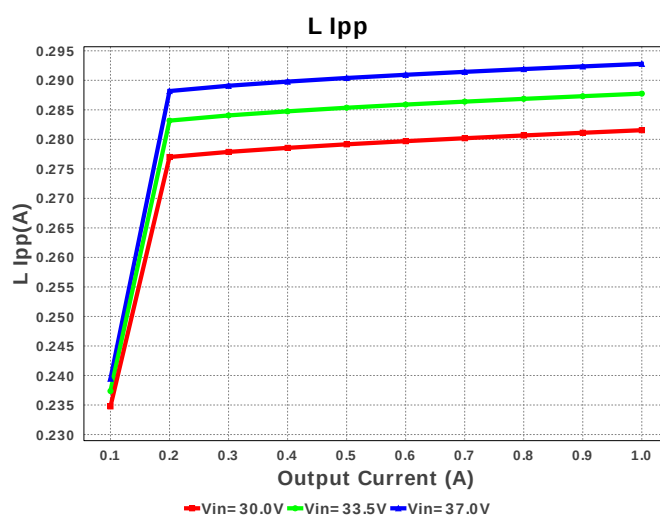
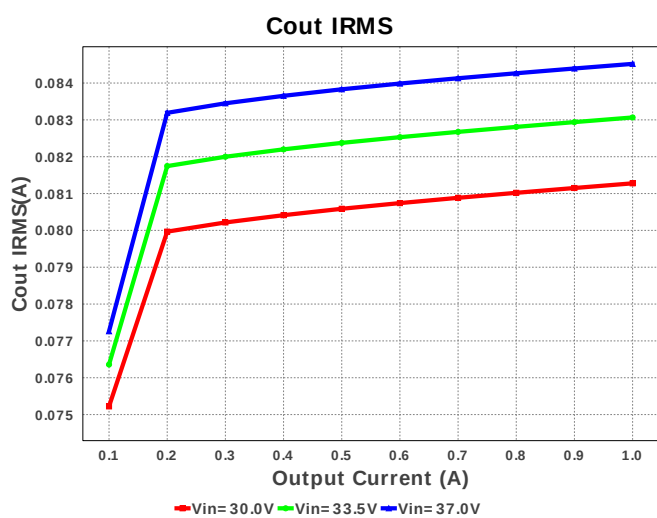
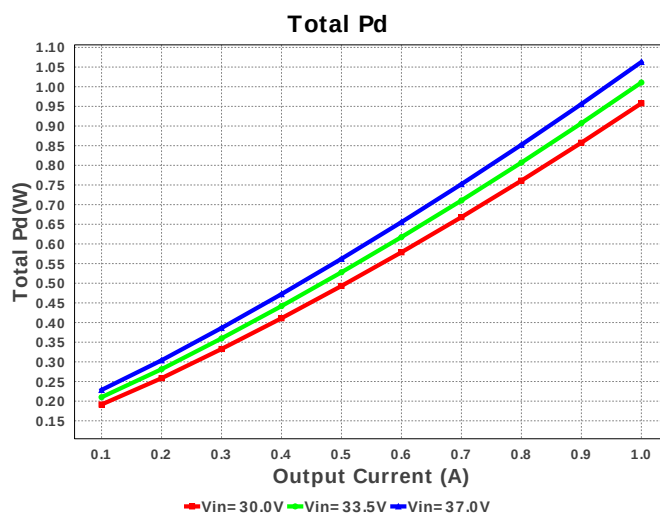
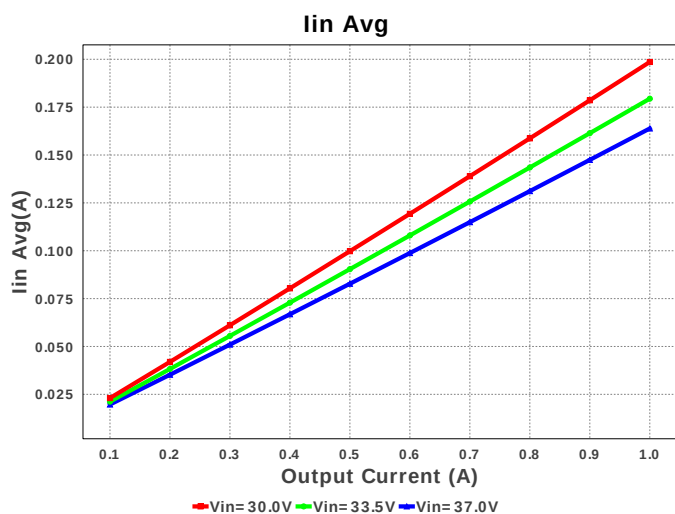
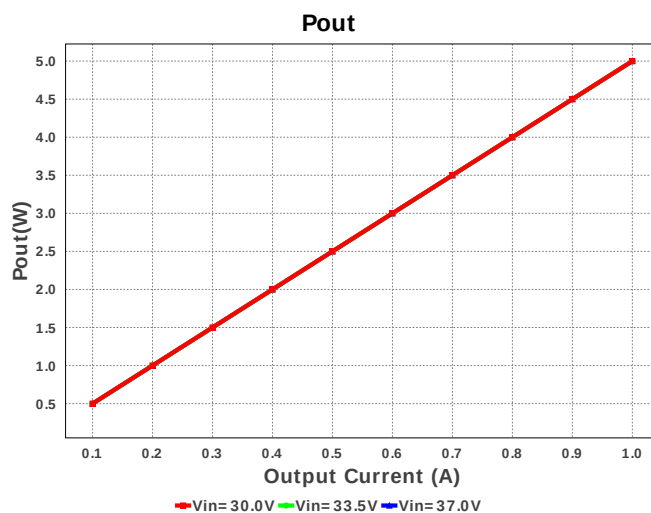
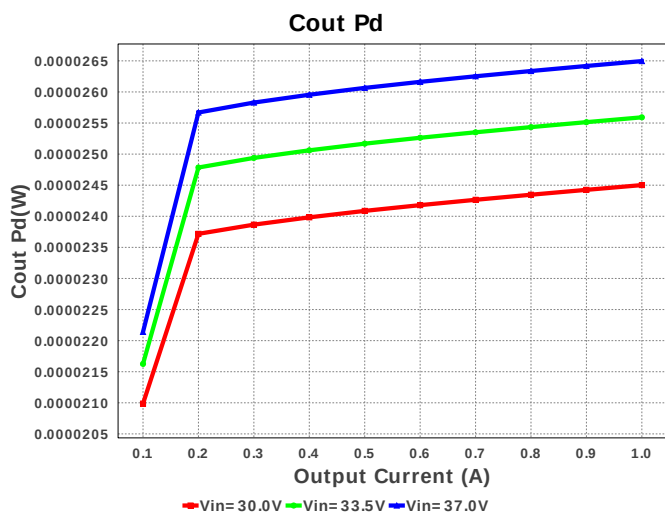
Electrical BOM

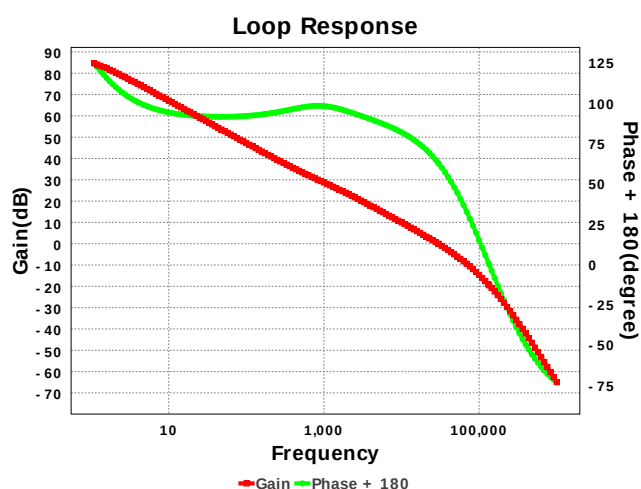
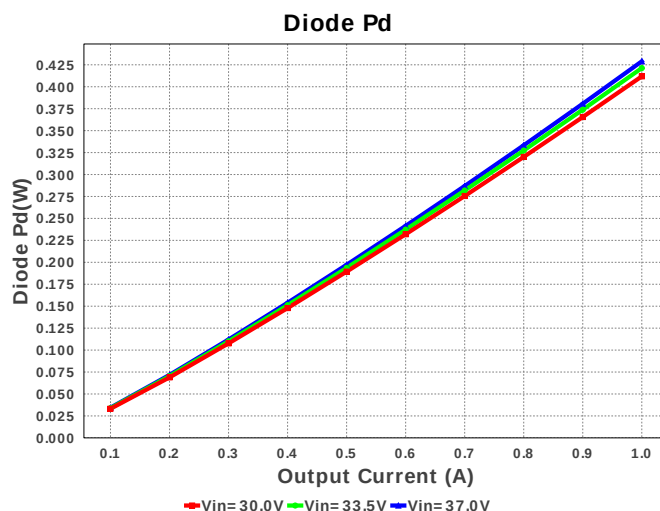
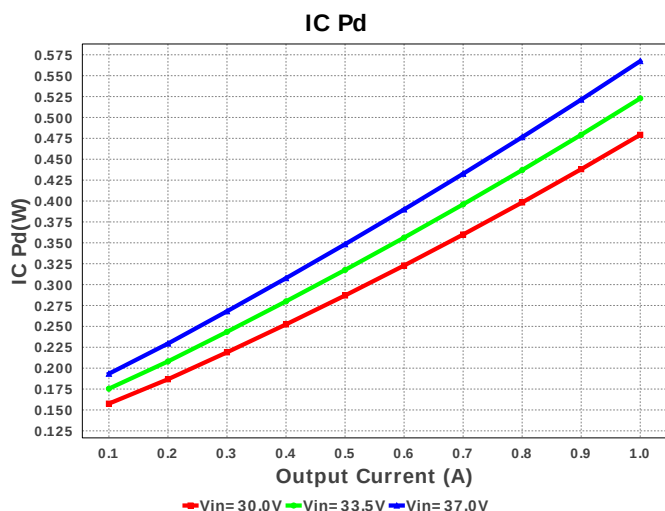
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	MuRata	GRM155R61A104KA01D Series= X5R	Cap= 100.0 nF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	 0402 3 mm ²
2.	Ccomp	MuRata	GRM1885C1H202JA01D Series= C0G/NP0	Cap= 2.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0603 5 mm ²
3.	Ccomp2	MuRata	GRM1555C1H1R5CA01D Series= C0G/NP0	Cap= 1.5 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0402 3 mm ²
4.	Cin	MuRata	GRM31CR71H225KA88L Series= X7R	Cap= 2.2 uF ESR= 4.448 mOhm VDC= 50.0 V IRMS= 2.2252 A	1	\$0.05	 1206_190 11 mm ²
5.	Cout	MuRata	GRM31CR61A476KE15L Series= X5R	Cap= 47.0 uF ESR= 3.709 mOhm VDC= 10.0 V IRMS= 4.2862 A	1	\$0.15	 1206_190 11 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	Diodes Inc.	B260A-13-F	VF@Io= 700.0 mV VRRM= 60.0 V	1	\$0.09	 SMA 37 mm ²
8.	L1	Bourns	SDR1307-270ML	L= 27.0 uH DCR= 60.0 mOhm	1	\$0.35	 SDR1307 227 mm ²
9.	Rcomp	Vishay-Dale	CRCW0402102KFKED Series= CRCW..e3	Res= 102.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
10.	RenB	Vishay-Dale	CRCW04025K11FKED Series= CRCW..e3	Res= 5.11 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	CRCW040253K6FKED Series= CRCW..e3	Res= 53.6 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm²
14.	Rt	Vishay-Dale	CRCW0402196KFKED Series= CRCW..e3	Res= 196.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm²
15.	U1	Texas Instruments	TPS54140DGQR	Switcher	1	\$1.26	 S-PDSO-G10 24 mm²









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	347.642 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	84.783 mA	Current	Output capacitor RMS ripple current
3.	IC IpK	1.0 A	Current	Peak switch current in IC
4.	Iin Avg	164.32 mA	Current	Average input current
5.	L Ipp	293.7 mA	Current	Peak-to-peak inductor ripple current
6.	BOM Count	15	General	Total Design BOM count
7.	FootPrint	345.0 mm ²	General	Total Foot Print Area of BOM components
8.	Frequency	595.991 kHz	General	Switching frequency
9.	Pout	5.0 W	General	Total output power
10.	Total BOM	\$2.0	General	Total BOM Cost
11.	D1 Tj	41.144 degC	Op_Point	D1 junction temperature
12.	Low Freq Gain	84.599 dB	Op_Point	Gain at 10Hz
13.	Vout Actual	5.088 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
14.	Vout OP	5.0 V	Op_Point	Operational Output Voltage
15.	Cross Freq	29.655 kHz	Op_point	Bode plot crossover frequency
16.	Duty Cycle	14.769 %	Op_point	Duty cycle
17.	Efficiency	82.238 %	Op_point	Steady state efficiency
18.	Gain Marg	-19.57 dB	Op_point	Bode Plot Gain Margin
19.	IC Tj	65.475 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	62.897 deg	Op_point	Bode Plot Phase Margin
23.	VIN_OP	37.0 V	Op_point	Vin operating point
24.	Vout p-p	1.87 mV	Op_point	Peak-to-peak output ripple voltage
25.	Cin Pd	537.562 μ W	Power	Input capacitor power dissipation
26.	Cout Pd	26.661 μ W	Power	Output capacitor power dissipation
27.	Diode Pd	445.767 mW	Power	Diode power dissipation
28.	IC Pd	567.593 mW	Power	IC power dissipation
29.	L Pd	66.0 mW	Power	Inductor power dissipation
30.	Total Pd	1.08 W	Power	Total Power Dissipation

#	Name	Value	Category	Description
31.	Vout Tolerance	2.72 %		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	37.0	Maximum input voltage
3.	VinMin	30.0	Minimum input voltage
4.	Vout	5.0	Output Voltage
5.	base_pn	TPS54140	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature

Design Assistance

1. **TPS54140** Product Folder : <http://www.ti.com/product/TPS54140> : contains the data sheet and other resources.

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