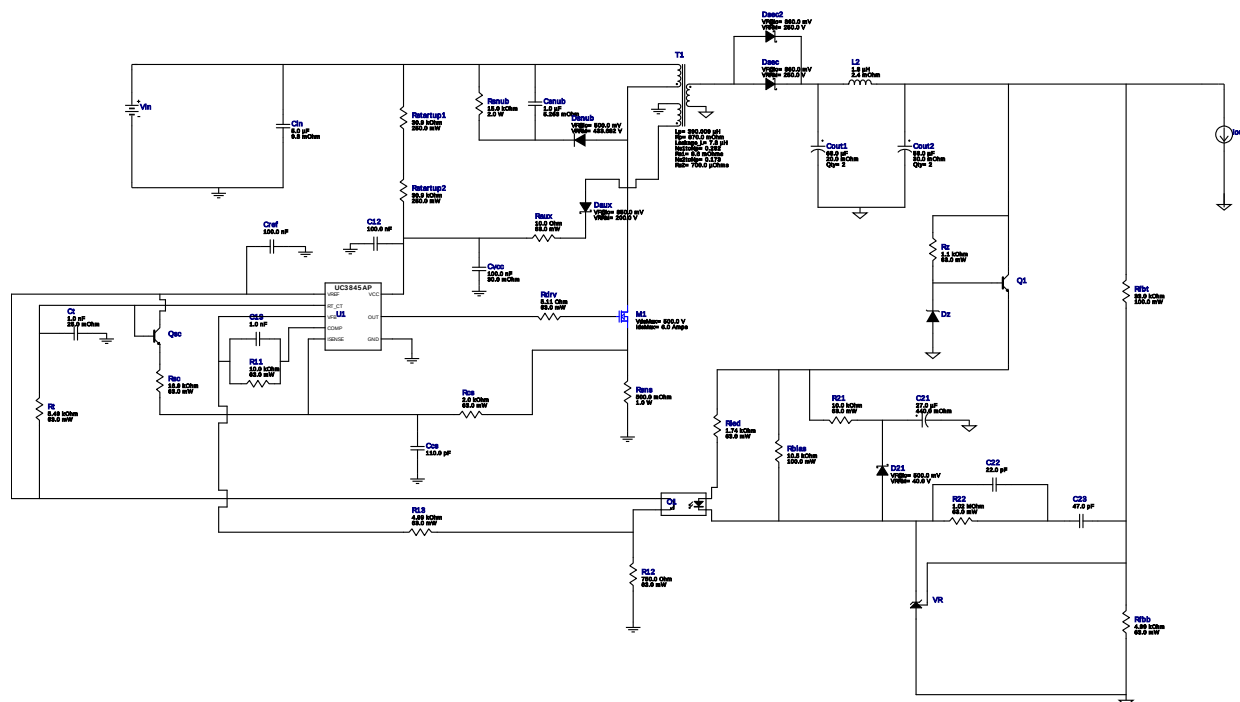


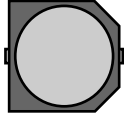
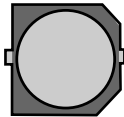
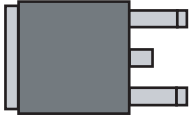


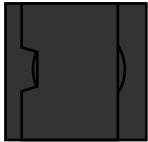
My Comments

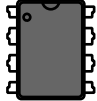
19v

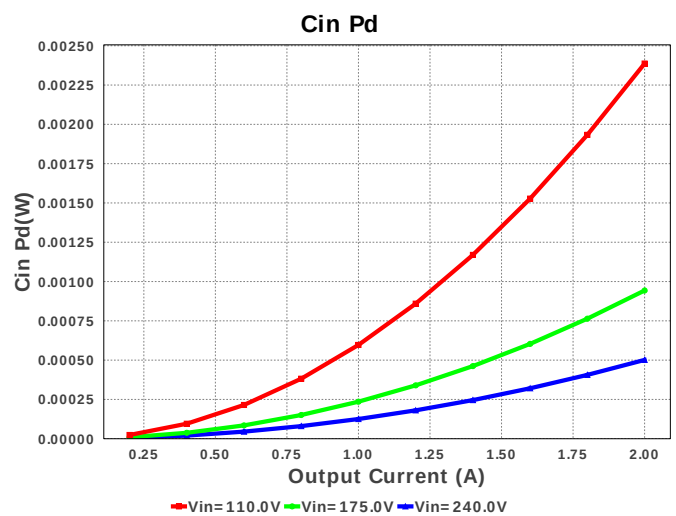
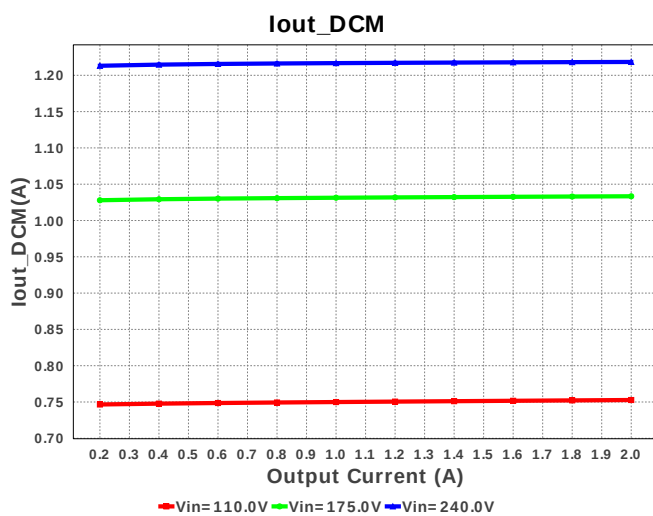
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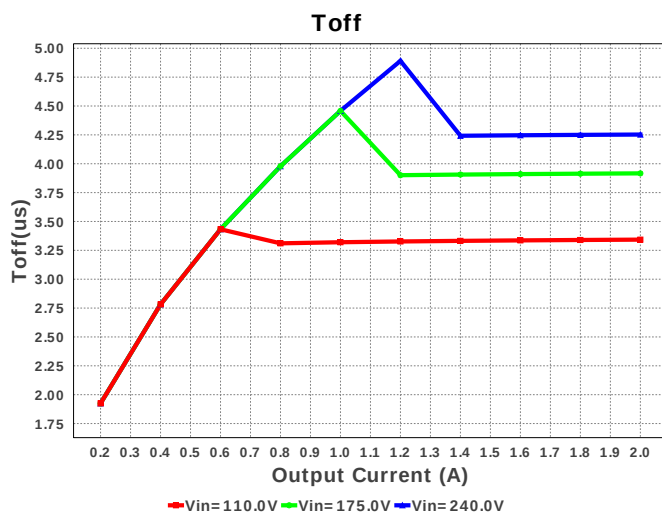
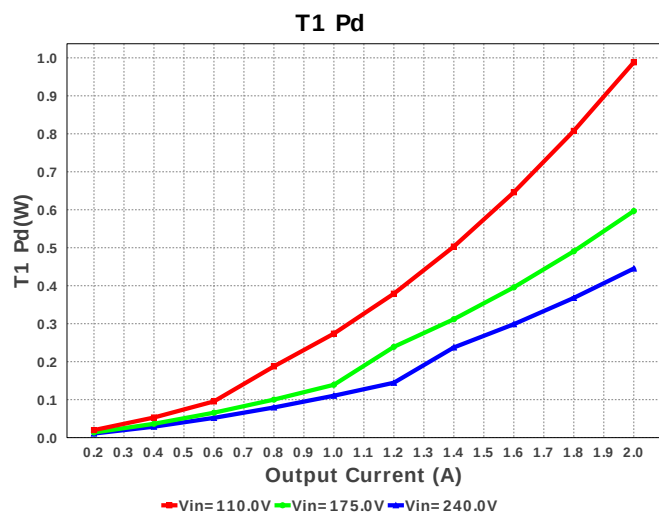
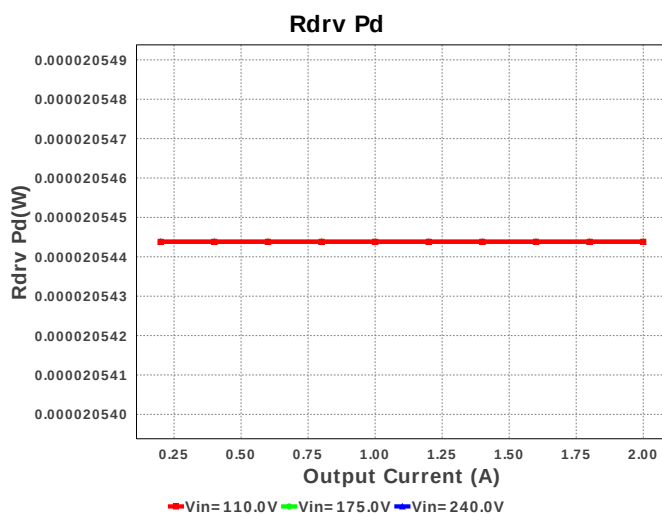
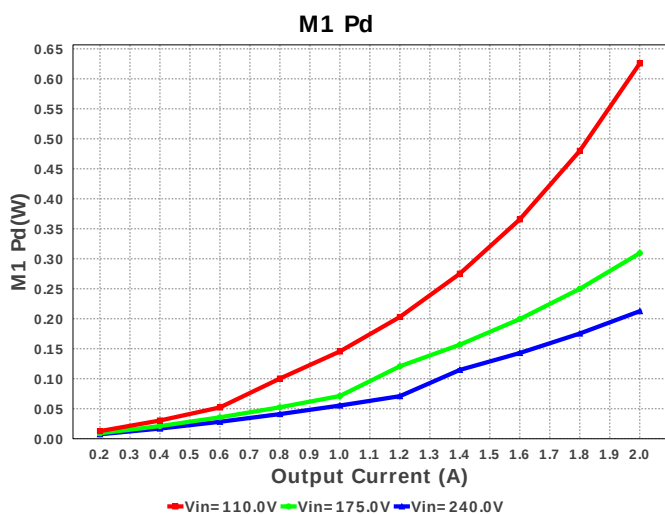
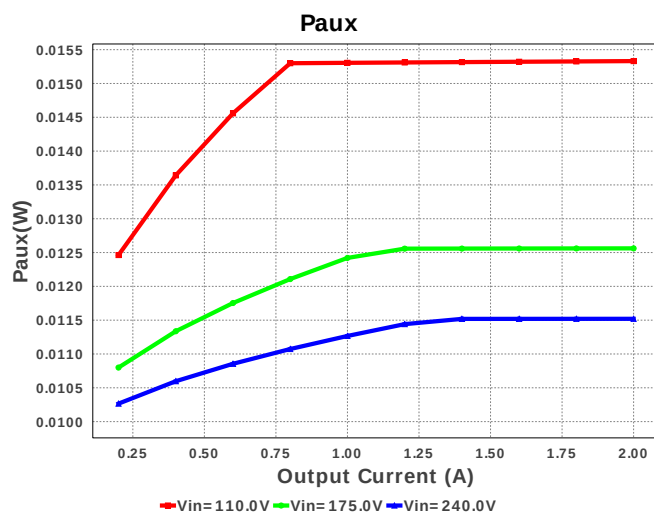
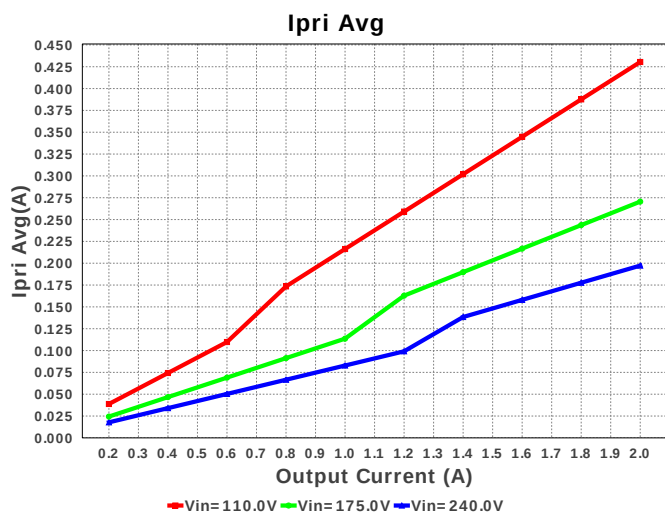
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	C12	MuRata	GRM155R61C104KA88D Series= X5R	Cap= 100.0 nF VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
2.	C13	MuRata	GRM033R71C102KA01D Series= X7R	Cap= 1.0 nF VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	0201 2 mm ²
3.	C21	Nichicon	UUD1V270MCL1GS Series= uD	Cap= 27.0 uF ESR= 440.0 mOhm VDC= 35.0 V IRMS= 230.0 mA	1	\$0.11	 SM_RADIAL_6.3AMM 80 mm ²
4.	C22	MuRata	GRM0225C1C220JD05L Series= C0G/NP0	Cap= 22.0 pF VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	01005 2 mm ²
5.	C23	Samsung Electro-Mechanics	CL02C470JO2ANNC Series= C0G/NP0	Cap= 47.0 pF VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	01005 2 mm ²
6.	Ccs	MuRata	GRM0335C1H1111JA01D Series= C0G/NP0	Cap= 110.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0201 2 mm ²

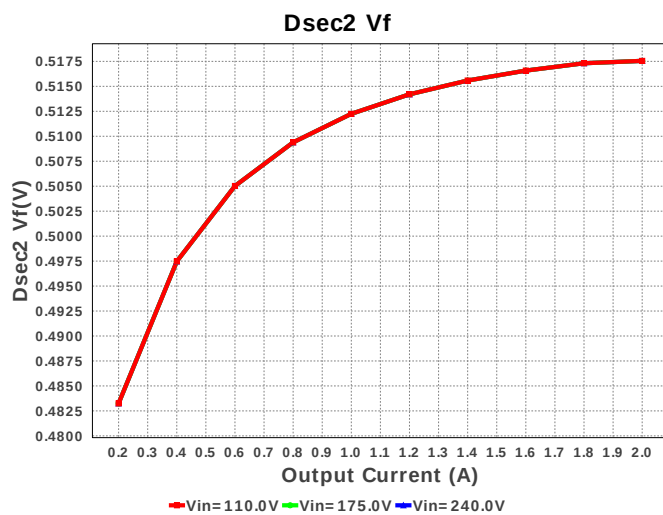
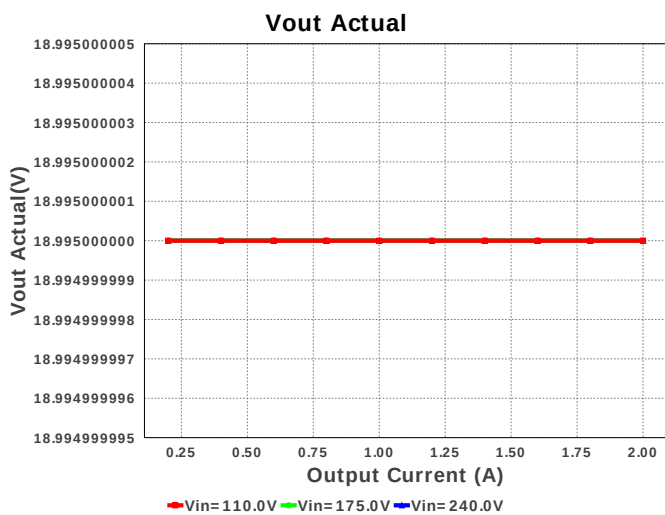
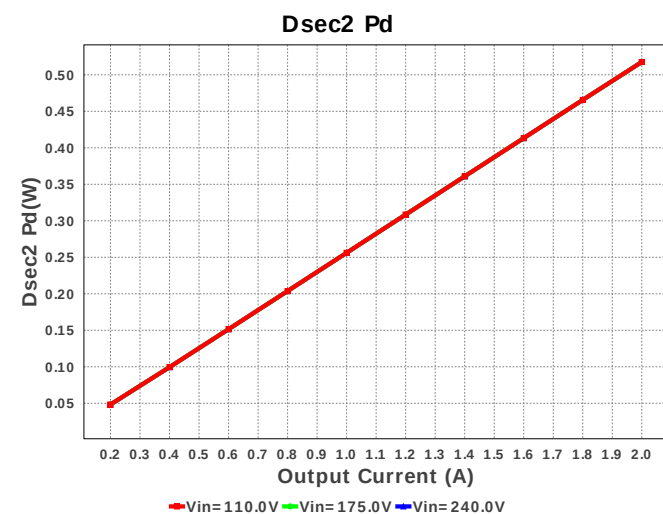
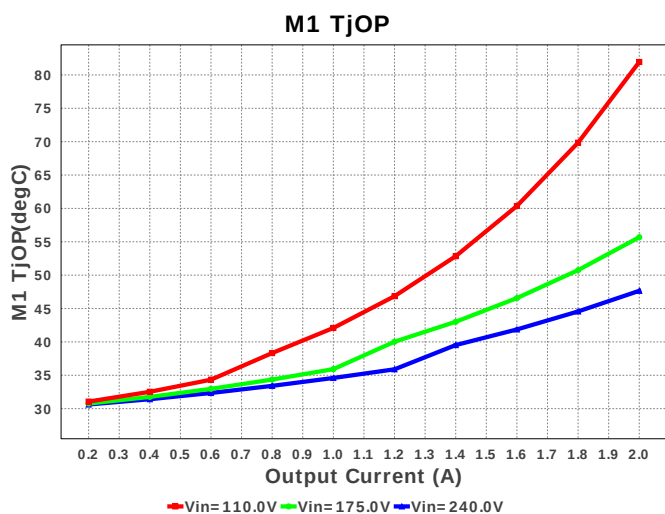
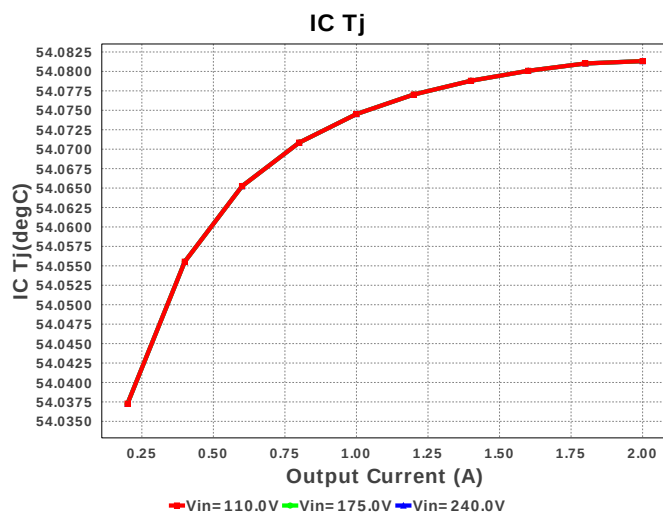
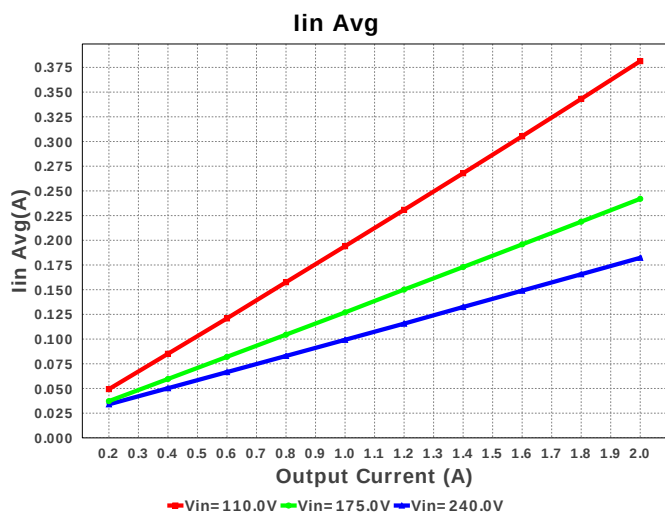
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7.	Cin	TDK	B32774D1505K Series= B32774	Cap= 5.0 uF ESR= 9.8 mOhm VDC= 1.3 kV IRMS= 10.5 A	1	\$3.08	 B32774_3150x2200x3650 804 mm ²
8.	Cout1	Panasonic	50SVPF68M Series= ?	Cap= 68.0 uF ESR= 20.0 mOhm VDC= 50.0 V IRMS= 4.3 A	2	\$0.92	 CAPSMT_62_F12 151 mm ²
9.	Cout2	Panasonic	EEHZA1J560P Series= ?	Cap= 56.0 uF ESR= 30.0 mOhm VDC= 63.0 V IRMS= 1.8 A	2	\$1.05	 SM_RADIAL_10BMM 160 mm ²
10.	Cref	MuRata	GRM155R61C104KA88D Series= X5R	Cap= 100.0 nF VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	 0402 3 mm ²
11.	Csnub	TDK	C5750X6S2W105K Series= X6S	Cap= 1.0 uF ESR= 5.263 mOhm VDC= 400.0 V IRMS= 0.0 A	1	\$1.19	 2220 54 mm ²
12.	Ct	Kemet	C0805C102J5GACTU Series= C0G/NP0	Cap= 1.0 nF ESR= 25.0 mOhm VDC= 50.0 V IRMS= 1.71 A	1	\$0.01	 0805 7 mm ²
13.	Cvcc	MuRata	GRM188R71E104KA01D Series= X7R	Cap= 100.0 nF ESR= 30.0 mOhm VDC= 25.0 V IRMS= 1.51 A	1	\$0.01	 0603 5 mm ²
14.	D21	Vishay-Semiconductor	SS14-E3/61T	VF@Io= 500.0 mV VRRM= 40.0 V	1	\$0.08	 SMA 37 mm ²
15.	Daux	Diodes Inc.	DFLS1200-7	VF@Io= 850.0 mV VRRM= 200.0 V	1	\$0.21	 PowerDI123 13 mm ²
16.	Dsec	ON Semiconductor	MBRB40250TG	VF@Io= 860.0 mV VRRM= 250.0 V	1	\$0.94	 DDPAK 210 mm ²
17.	Dsec2	ON Semiconductor	MBRB40250TG	VF@Io= 860.0 mV VRRM= 250.0 V	1	\$0.94	 DDPAK 210 mm ²
18.	Dsnub	CUSTOM	CUSTOM	VF@Io= 500.0 mV VRRM= 433.682 V	1	NA	CUSTOM 0 mm ²
19.	Dz	Diodes Inc.	MMSZ5246B-7-F	Zener	1	\$0.03	 SOD-123 13 mm ²

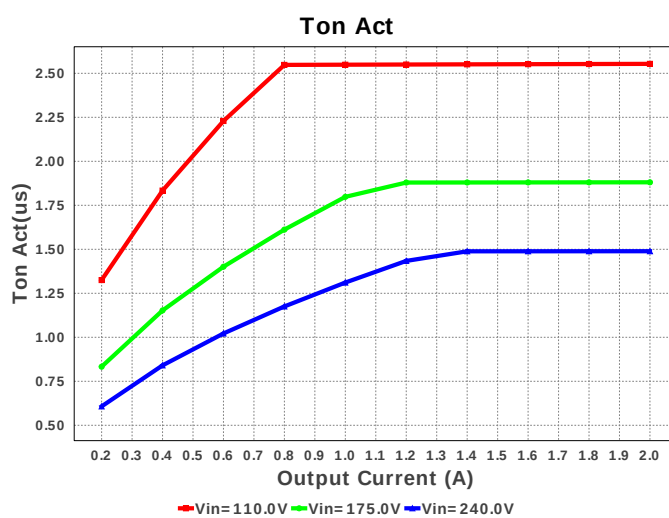
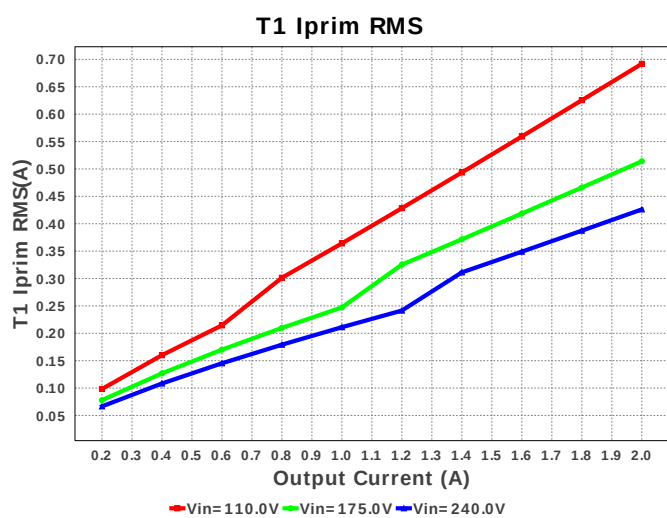
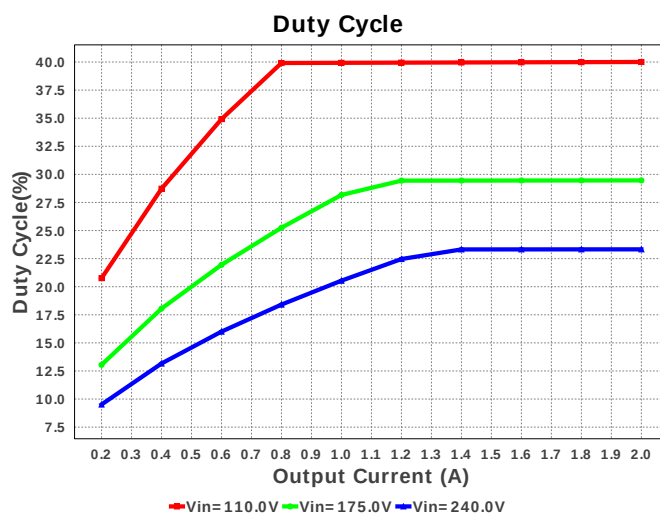
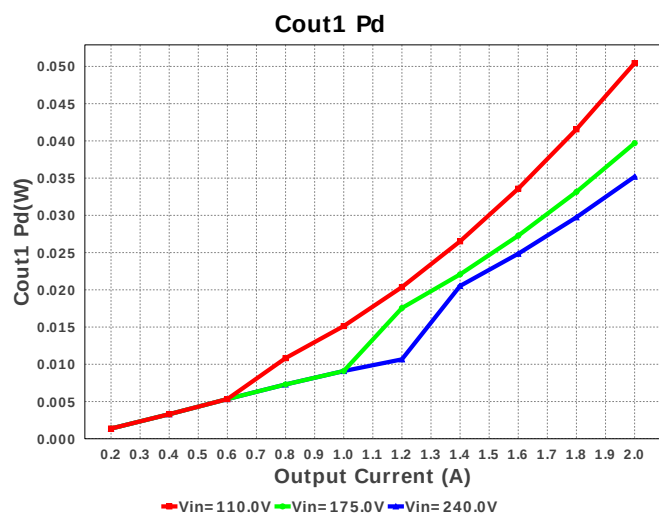
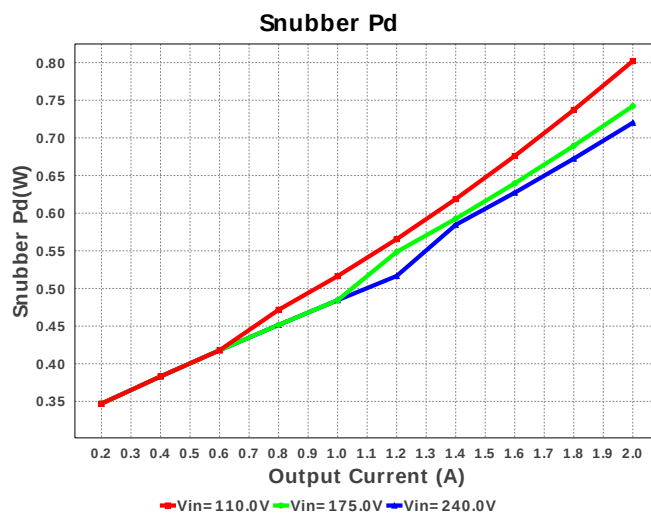
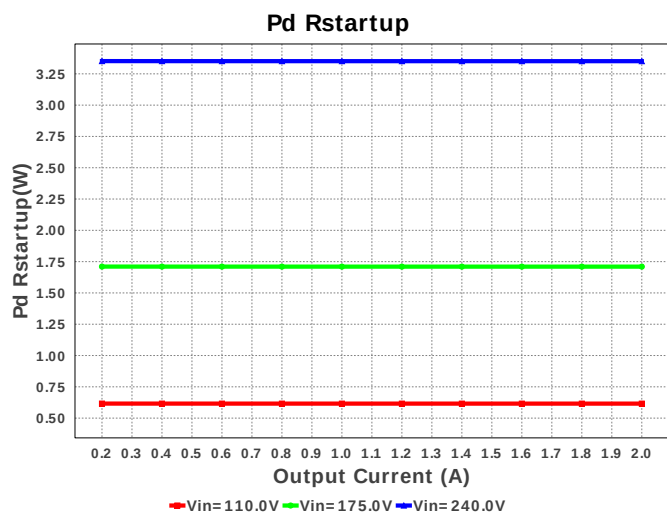
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
20.	L2	Coilcraft	SER1360-182KLB	L= 1.8 μ H DCR= 2.4 mOhm	1	\$0.72	 SER1360 225 mm ²
21.	M1	Fairchild Semiconductor	FDD6N50TM	VdsMax= 500.0 V IdsMax= 6.0 Amps	1	\$0.47	 DPAK 102 mm ²
22.	O1	Vishay-Semiconductor	TCMT1107	Optocoupler	1	\$0.21	 SOP-4 44 mm ²
23.	Q1	ON Semiconductor	BC846BLT1G	Bipolar Transistor	1	\$0.02	 SOT-23 14 mm ²
24.	Qsc	STMicroelectronics	2N2222A	Bipolar Transistor	1	NA	 TO-18 57 mm ²
25.	R11	Vishay-Dale	CRCW040210K0FKED Series= CRCW..e3	Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
26.	R12	Vishay-Dale	CRCW0402750RFKED Series= CRCW..e3	Res= 750.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
27.	R13	Vishay-Dale	CRCW04024K99FKED Series= CRCW..e3	Res= 4.99 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
28.	R21	Vishay-Dale	CRCW040210K0FKED Series= CRCW..e3	Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
29.	R22	Vishay-Dale	CRCW04021M02FKED Series= CRCW..e3	Res= 1.02 MOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
30.	Raux	Vishay-Dale	CRCW040210R0FKED Series= CRCW..e3	Res= 10.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
31.	Rbias	Vishay-Dale	CRCW060310K5FKEA Series= CRCW..e3	Res= 10.5 kOhm Power= 100.0 mW Tolerance= 1.0%	1	\$0.01	 0603 5 mm ²
32.	Rcs	Vishay-Dale	CRCW04022K00FKED Series= CRCW..e3	Res= 2.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
33.	Rdrv	Vishay-Dale	CRCW04025R11FKED Series= CRCW..e3	Res= 5.11 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
34.	Rfbb	Vishay-Dale	CRCW04024K99FKED Series= CRCW..e3	Res= 4.99 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
35.	Rfbt	Yageo America	RC0603FR-0733KL Series= ?	Res= 33.0 kOhm Power= 100.0 mW Tolerance= 1.0%	1	\$0.01	 0603 5 mm ²
36.	Rled	Vishay-Dale	CRCW04021K74FKED Series= CRCW..e3	Res= 1.74 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
37.	Rsc	Vishay-Dale	CRCW040216K9FKED Series= CRCW..e3	Res= 16.9 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
38.	Rsns	Stackpole Electronics Inc	CSRN2010FKR500 Series= ?	Res= 500.0 mOhm Power= 1.0 W Tolerance= 1.0%	1	\$0.10	 2010 32 mm ²

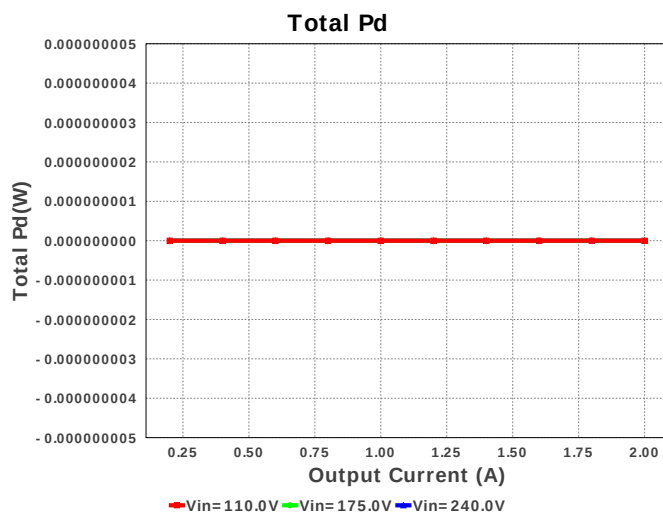
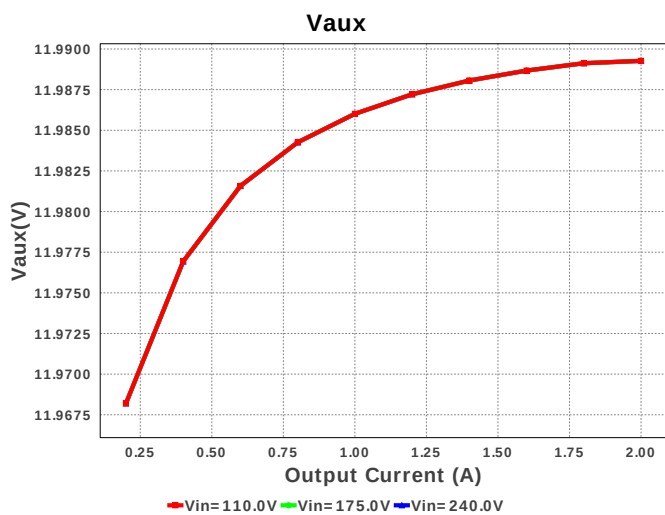
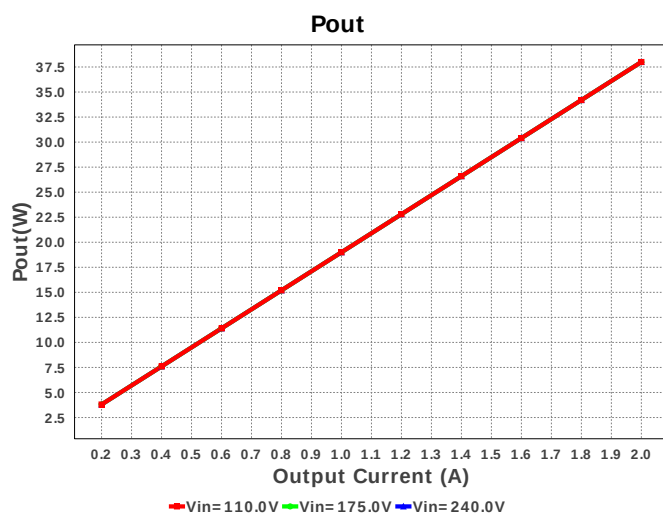
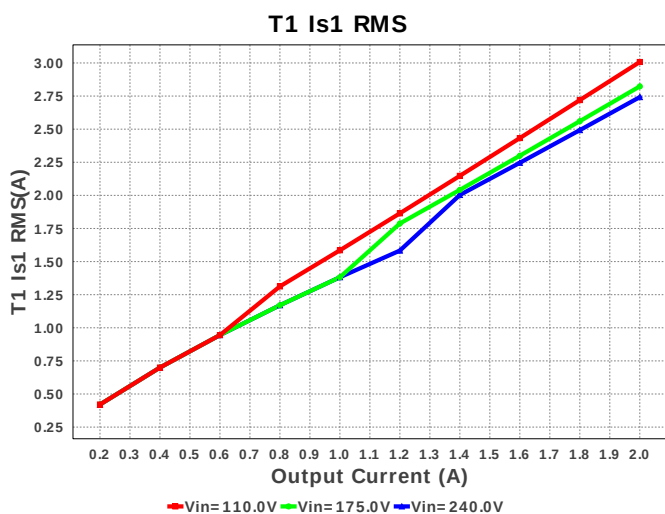
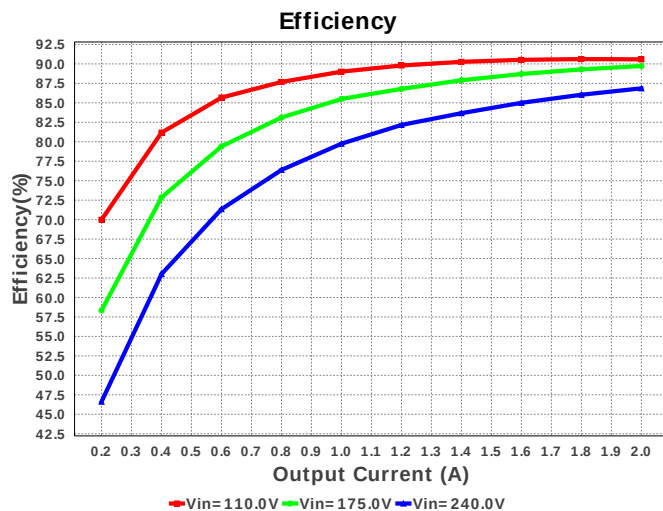
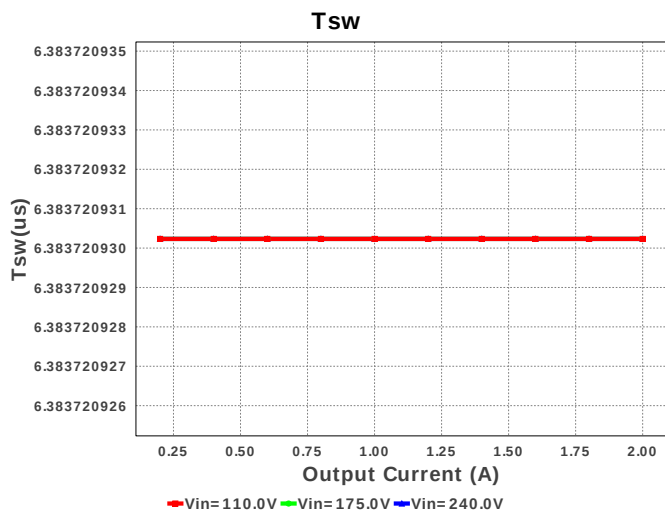
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
39.	Rsub	Vishay-Bccomponents	PR02000201502JR500 Series= ?	Res= 15.0 kOhm Power= 2.0 W Tolerance= 5.0%	1	\$0.05	 PR02 113 mm²
40.	Rstartup1	Panasonic	ERJ-8ENF3092V Series= ERJ-8E	Res= 30.9 kOhm Power= 250.0 mW Tolerance= 1.0%	1	\$0.01	 1206 11 mm²
41.	Rstartup2	Panasonic	ERJ-8ENF3092V Series= ERJ-8E	Res= 30.9 kOhm Power= 250.0 mW Tolerance= 1.0%	1	\$0.01	 1206 11 mm²
42.	Rt	Vishay-Dale	CRCW04025K49FKED Series= CRCW..e3	Res= 5.49 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm²
43.	Rz	Vishay-Dale	CRCW04021K10FKED Series= CRCW..e3	Res= 1.1 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm²
44.	T1	CUSTOM	CUSTOM	Lp= 390.009 µH Rp= 870.0 mOhm Leakage_L= 7.8 µH Ns1toNp= 0.282 Rs1= 8.6 mOhms Ns2toNp= 0.173 Rs2= 700.0 µOhms	1	NA	CUSTOM 0 mm²
45.	U1	Texas Instruments	UC3845AN	Switcher	1	\$0.56	 P0008A 116 mm²
46.	VR	Texas Instruments	TL431AIDBZR	Voltage References	1	\$0.08	 DBZ0003A 14 mm²



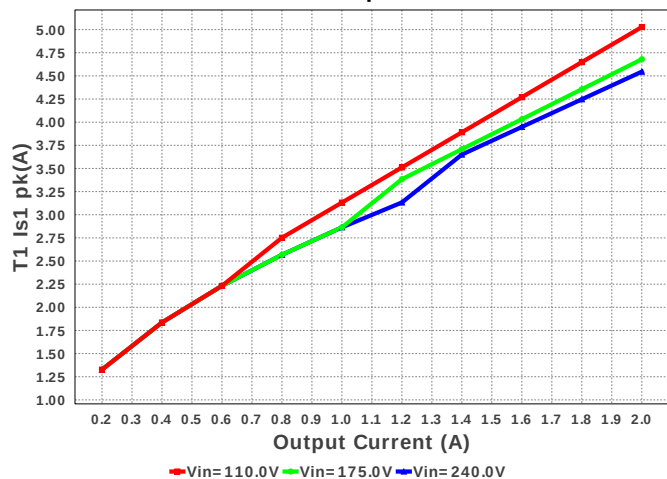




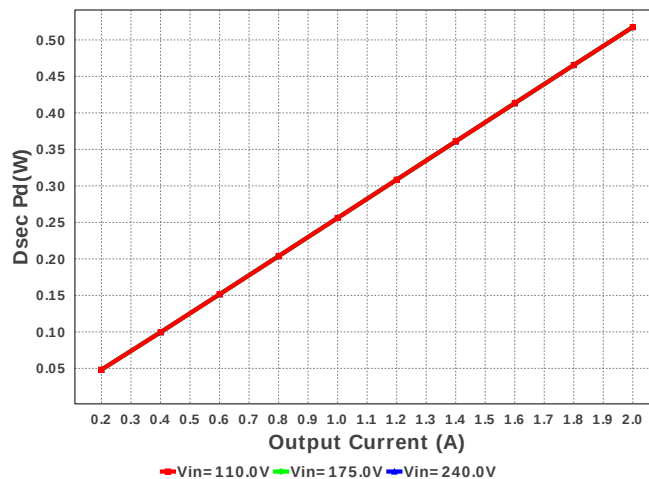




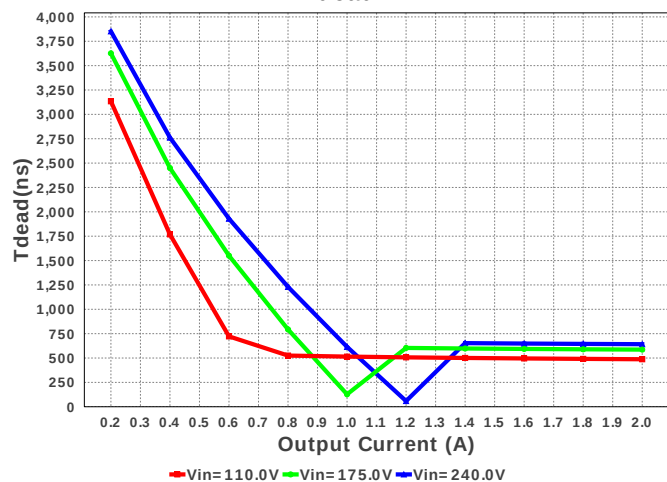
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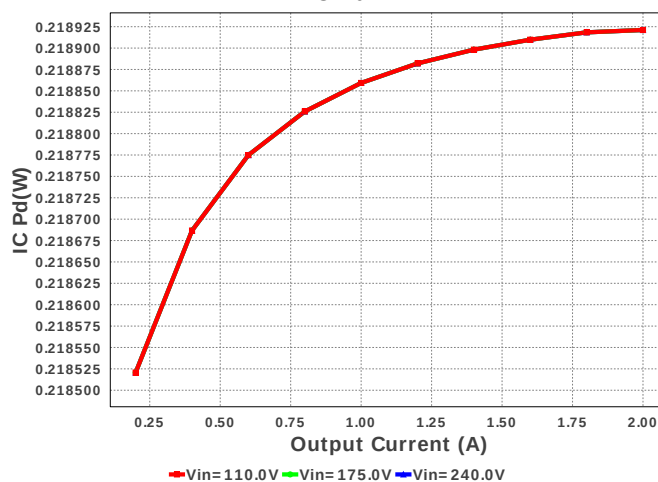
Dsec Pd



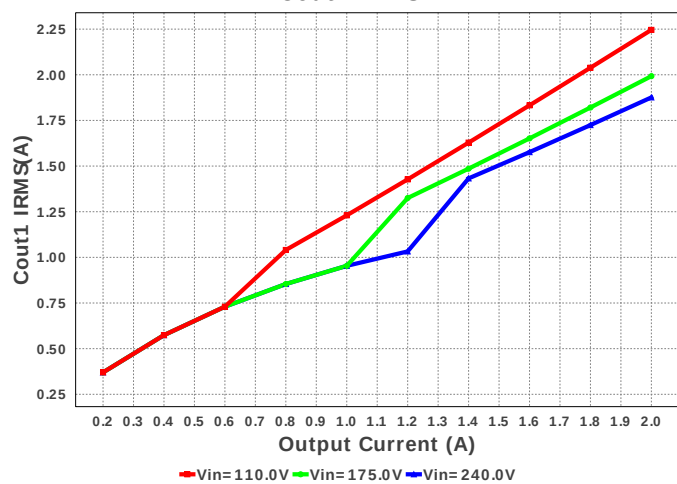
Tdead



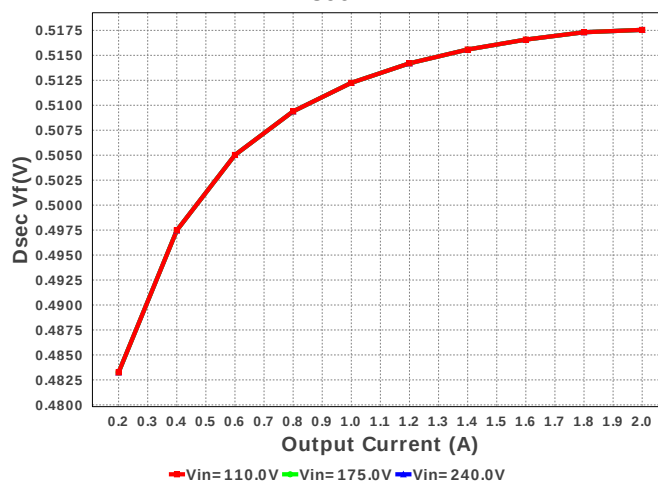
IC Pd

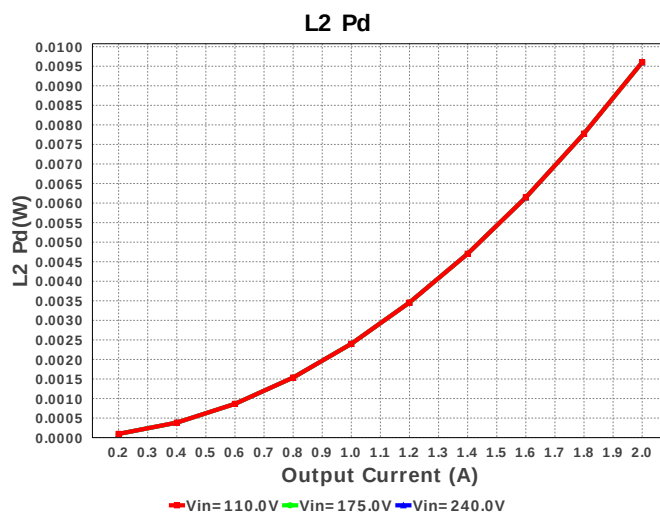
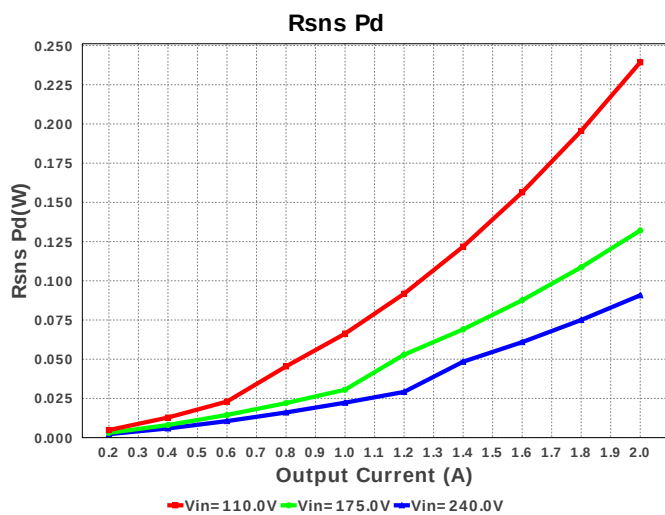
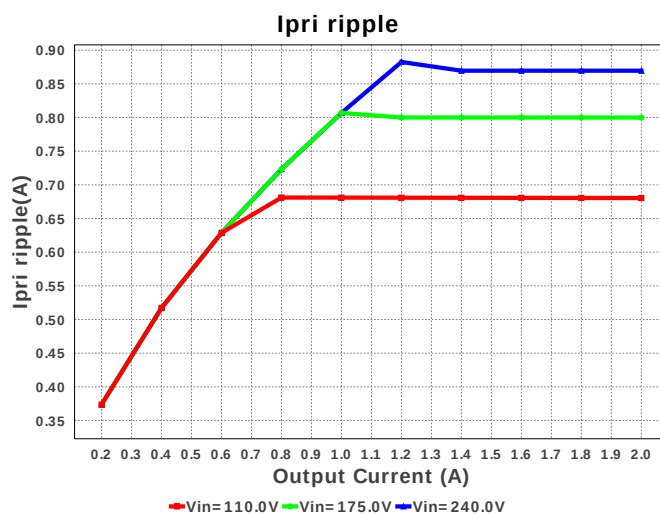
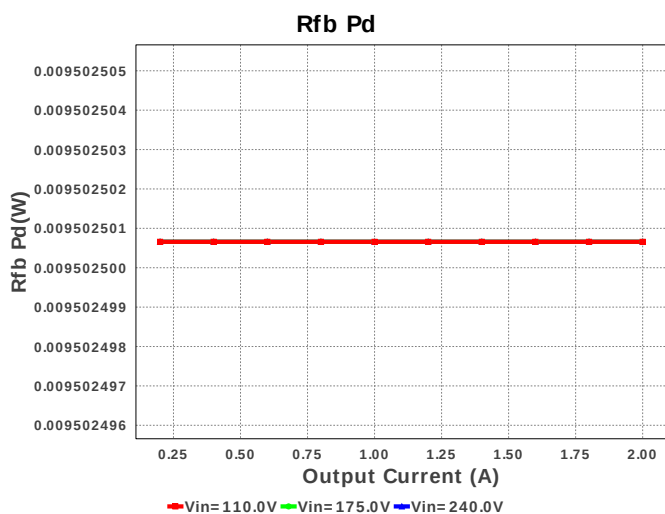
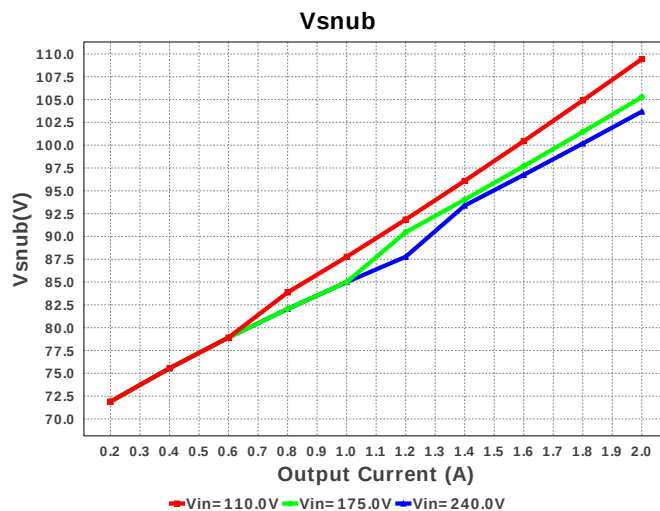
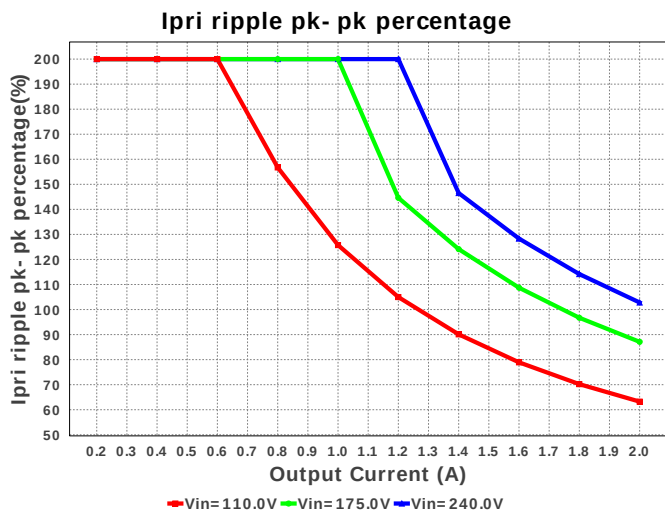


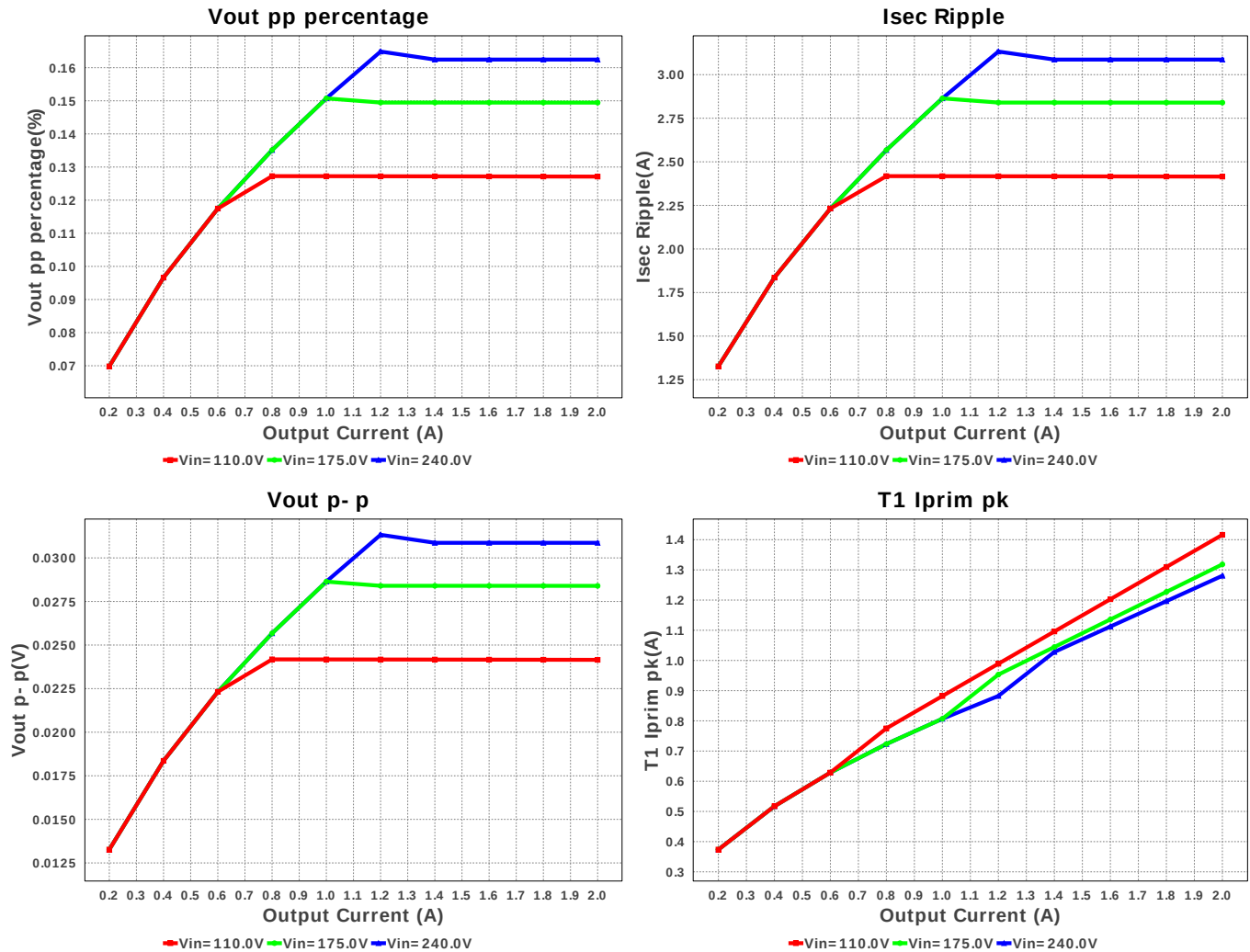
Cout1 IRMS



Dsec Vf







Operating Values

#	Name	Value	Category	Description
1.	Cout1 IRMS	2.246 A	Current	Output capacitor1 RMS ripple current
2.	Iin Avg	381.355 mA	Current	Average input current
3.	Iout_DCM	752.726 mA	Current	Approximate Current below which DCM mode of operation will begin
4.	Ipri Avg	430.428 mA	Current	Average Current in Primary Winding over the complete Switching Period
5.	Ipri ripple	680.381 mA	Current	Ripple Current in the Primary Winding
6.	Ipri ripple pk-pk percentage	63.233 %	Current	Primary Current pk-pk ripple percentage(of Ipri avg during ton only)
7.	Isec Ripple	2.415 A	Current	Ripple Current in the Secondary Winding
8.	T1 Iprim RMS	691.785 mA	Current	Transformer Primary RMS Current
9.	T1 Iprim pk	1.416 A	Current	Transformer Primary Peak Current
10.	T1 Is1 RMS	3.007 A	Current	Transformer Secondary1 RMS Current
11.	T1 Is1 pk	5.027 A	Current	Transformer Secondary1 Peak Current
12.	BOM Count	48	General	Total Design BOM count
13.	Daux trr	0.0 ns	General	Auxiliary Diode Reverse Recovery Time
14.	Dsec Vf	517.55 mV	General	Effective Forward Voltage Drop at the Operating Current
15.	Dsec trr	0.0 ns	General	Output Diode Reverse Recovery Time
16.	Dsec2 Vf	517.55 mV	General	Effective Forward Voltage Drop at the Operating Current
17.	Dsnub trr	0.0 ns	General	Snubber Diode Reverse Recovery Time
18.	FootPrint	2.864 k mm ²	General	Total Foot Print Area of BOM components
19.	Frequency	156.648 kHz	General	Switching frequency
20.	Mode	CCM	General	Conduction Mode
21.	Pout	38.0 W	General	Total output power
22.	Tdead	487.325 ns	General	Approximate Dead Time of the Regulator
23.	Toff	3.343 us	General	Approximate Converter Off Time
24.	Ton Act	2.554 us	General	Approximate Converter On Time
25.	Total BOM	\$0.0	General	Total BOM Cost
26.	Tsw	6.384 us	General	Switching Time Period
27.	Vaux	11.989 V	General	Auxiliary Voltage
28.	Vsnub	109.433 V	General	Voltage Across the Snubber
29.	Vout Actual	18.995 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors

#	Name	Value	Category	Description
30.	Vout OP	19.0 V	Op_Point	Operational Output Voltage
31.	Duty Cycle	40.003 %	Op_point	Duty cycle
32.	Efficiency	90.586 %	Op_point	Steady state efficiency
33.	IC Tj	54.081 degC	Op_point	IC junction temperature
34.	ICThetaJA	110.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
35.	IOUT_OP	2.0 A	Op_point	Iout operating point
36.	M1 TjOP	81.938 degC	Op_point	M1 MOSFET junction temperature
37.	Vout p-p	24.152 mV	Op_point	Peak-to-peak output ripple voltage
38.	Cin Pd	2.387 mW	Power	Input capacitor power dissipation
39.	Cout1 Pd	50.443 mW	Power	Output capacitor1 power dissipation
40.	Dsec Pd	517.55 mW	Power	Secondary Diode Power Dissipation
41.	Dsec2 Pd	517.55 mW	Power	Secondary Diode Power Dissipation
42.	IC Pd	218.921 mW	Power	IC power dissipation
43.	L2 Pd	9.6 mW	Power	Average Power Dissipation in the Inductor Over the AC Line Period
44.	M1 Pd	625.757 mW	Power	M1 MOSFET total power dissipation
45.	Paux	15.331 mW	Power	Power Dissipation in Raux and Daux
46.	Pd Rstartup	615.803 mW	Power	Power Dissipation in Rstartup1 and Rstartup2
47.	Rdrv Pd	20.544 μ W	Power	Power Dissipation in Gate Drive Resistor
48.	Rfb Pd	9.503 mW	Power	Rfb Power Dissipation
49.	Rsns Pd	239.283 mW	Power	Current Limit Sense Resistor Power Dissipation
50.	Snubber Pd	802.018 mW	Power	Snubber Power Dissipation
51.	T1 Pd	988.268 mW	Power	Estimated Losses in Transformer
52.	Total Pd	0.0 W	Power	Total Power Dissipation
53.	Vout Tolerance	2.081 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable
54.	Vout pp percentage	127.115 m%		Output Voltage ripple percentage

Design Inputs

#	Name	Value	Description
1.	Iout	2.0	Maximum Output Current
2.	VinMax	240.0	Maximum input voltage
3.	VinMin	110.0	Minimum input voltage
4.	Vout	19.0	Output Voltage
5.	base_pn	UC3845A	Texas Instruments Base Part Number
6.	source	DC	Input Source Type
7.	ta	30.0	Ambient temperature

Design Assistance

1. UC3845A Product Folder : <http://www.ti.com/product/UC3845A> : contains the data sheet and other resources.

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