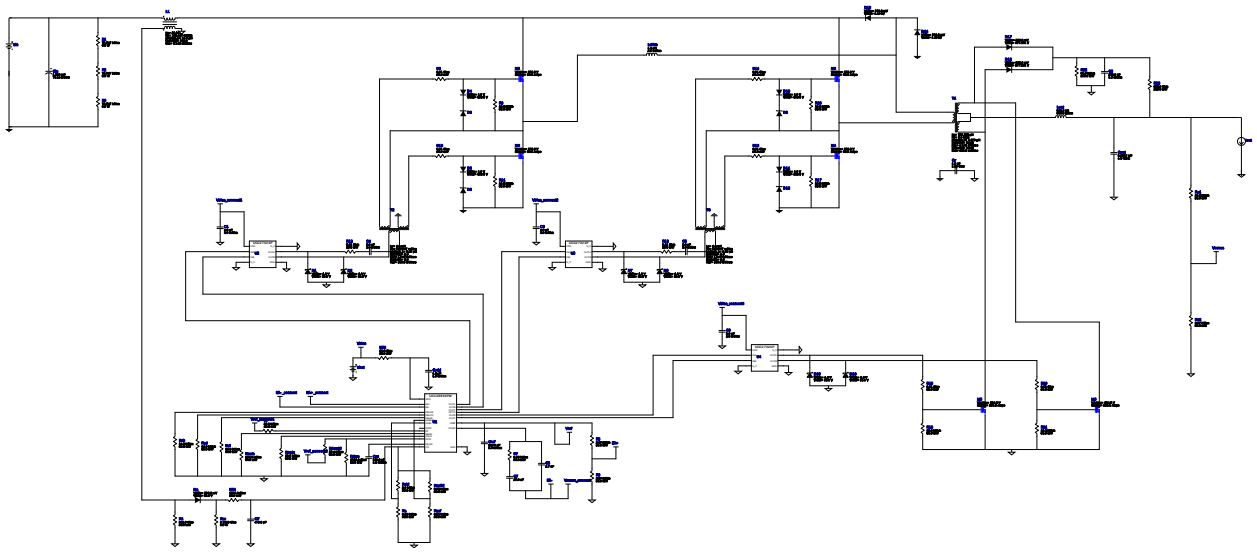
WEBENCH® Design Report

VinMin = 800.0V
VinMax = 800.0V
Vout = 24.0V
Iout = 420.0A

Device = UCC28950PWR
Topology = Phase Shifted Full Bridge
Created = 2019-06-21 05:11:28.958
BOM Cost = NA
BOM Count = 90
Total Pd =

Design : 16612 UCC28950PWR
UCC28950PWR 800V-800V to 24.00V @ 180A



Design Alerts

UCC28950 Design
With the current design condition, suitable FETs M5 and M6 could not be found in the current database. Hence, this design is created using ideal FETs. Please note that the resulting FET parameters are ideal, so the efficiency/loss values have been disabled.

Electrical BOM

Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
C1	Taiyo Yuden	TMK212BJ105KG-T Series= X5R	Cap= 1.0 uF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.03	0805 7 mm^2
C2	Taiyo Yuden	TMK212BJ105KG-T Series= X5R	Cap= 1.0 uF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.03	0805 7 mm^2
C3	Taiyo Yuden	TMK212BJ105KG-T Series= X5R	Cap= 1.0 uF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.03	0805 7 mm^2
C4	Taiyo Yuden	TMK212BJ105KG-T Series= X5R	Cap= 1.0 uF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.03	0805 7 mm^2
C5	Taiyo Yuden	TMK212BJ105KG-T Series= X5R	Cap= 1.0 uF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.03	0805 7 mm^2
C6	TDK	C3216X7T2E224K160AA Series= X7T	Cap= 220.0 nF ESR= 1.0 mOhm VDC= 250.0 V IRMS= 0.0 A	1	$0.18	1206_190 11 mm^2

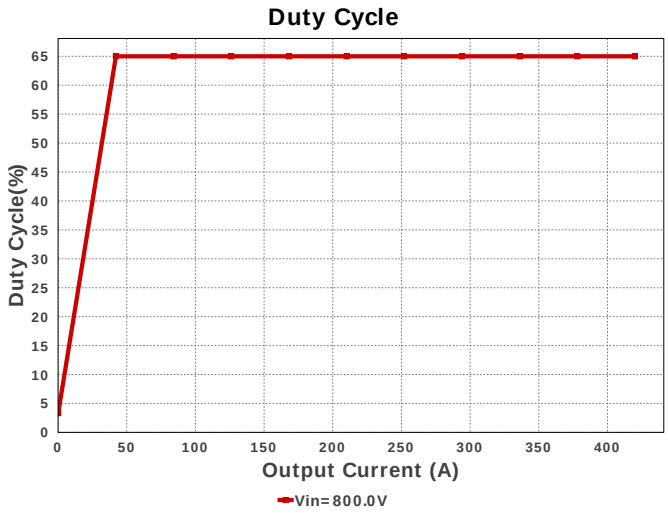
Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
C7	Kemet	C1812C273J5GACTU Series= C0G/NP0	Cap= 27.0 nF VDC= 50.0 V IRMS= 0.0 A	1	$0.73	 1812 23 mm^2
C8	MuRata	GRM1885C1H272JA01J Series= C0G/NP0	Cap= 2.7 nF VDC= 50.0 V IRMS= 0.0 A	1	$0.02	 0603 5 mm^2
Cin	CUSTOM	CUSTOM Series= ?	Cap= 1.303 mF ESR= 75.14 mOhm VDC= 848.0 V IRMS= 12.2849 A	1	NA	CUSTOM 0 mm^2
Clf	AVX	04025A471JAT2A Series= C0G/NP0	Cap= 470.0 pF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	 0402 3 mm^2
Cout	CUSTOM	CUSTOM Series= ?	Cap= 3.2817 mF ESR= 1.0 fOhm VDC= 60.0 V IRMS= 66.133 A	1	NA	CUSTOM 0 mm^2
Cref	Kemet	C0603C104Z3VACTU Series= Y5V	Cap= 100.0 nF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.01	 0603 5 mm^2
Css	Kemet	C0603C104Z3VACTU Series= Y5V	Cap= 100.0 nF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.01	 0603 5 mm^2
Cvdd	Taiyo Yuden	TMK212BJ105KG-T Series= X5R	Cap= 1.0 uF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.03	 0805 7 mm^2
Cy	TDK	B81123C1102M Series= B81123	Cap= 1.0 nF ESR= 1.59 Ohm VDC= 3.0 kV IRMS= 0.0 A	1	$0.24	 B81123_1800x500x1050 140 mm^2
D1	SMC Diode Solutions	BAT54WSTR	VF@Io= 1.0 V VRRM= 30.0 V	1	$0.02	 SOD-323 9 mm^2
D10	ON Semiconductor	MMSD4148T1G	VF@Io= 1.0 V VRRM= 100.0 V	1	$0.03	 SOD-123 13 mm^2
D11	ON Semiconductor	MMSD4148T1G	VF@Io= 1.0 V VRRM= 100.0 V	1	$0.03	 SOD-123 13 mm^2
D12	Diodes Inc.	MMSZ5242B-7-F	Zener	1	$0.04	 SOD-123 13 mm^2
D13	CUSTOM	CUSTOM	VF@Io= 500.0 mV VRRM= 1.16 kV	1	NA	CUSTOM 0 mm^2
D14	CUSTOM	CUSTOM	VF@Io= 500.0 mV VRRM= 1.16 kV	1	NA	CUSTOM 0 mm^2
D15	SMC Diode Solutions	BAT54WSTR	VF@Io= 1.0 V VRRM= 30.0 V	1	$0.02	 SOD-323 9 mm^2
D16	SMC Diode Solutions	BAT54WSTR	VF@Io= 1.0 V VRRM= 30.0 V	1	$0.02	 SOD-323 9 mm^2
D17	CUSTOM	CUSTOM	VF@Io= 500.0 mV VRRM= 177.231 V	1	NA	CUSTOM 0 mm^2
D18	CUSTOM	CUSTOM	VF@Io= 500.0 mV VRRM= 177.231 V	1	NA	CUSTOM 0 mm^2

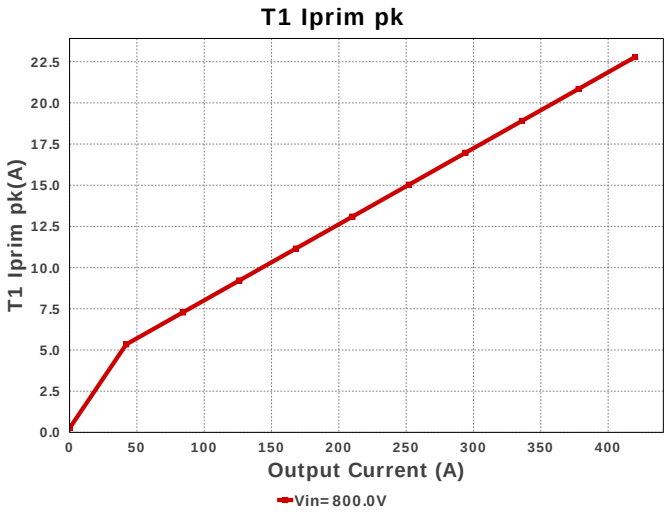
Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
D2	SMC Diode Solutions	BAT54WSTR	VF@Io= 1.0 V VRRM= 30.0 V	1	$0.02	 SOD-323 9 mm²
D3	Diodes Inc.	MMSZ5242B-7-F	Zener	1	$0.04	 SOD-123 13 mm²
D4	ON Semiconductor	MMSD4148T1G	VF@Io= 1.0 V VRRM= 100.0 V	1	$0.03	 SOD-123 13 mm²
D5	ON Semiconductor	MMSD4148T1G	VF@Io= 1.0 V VRRM= 100.0 V	1	$0.03	 SOD-123 13 mm²
D6	Diodes Inc.	MMSZ5242B-7-F	Zener	1	$0.04	 SOD-123 13 mm²
D7	SMC Diode Solutions	BAT54WSTR	VF@Io= 1.0 V VRRM= 30.0 V	1	$0.02	 SOD-323 9 mm²
D8	SMC Diode Solutions	BAT54WSTR	VF@Io= 1.0 V VRRM= 30.0 V	1	$0.02	 SOD-323 9 mm²
D9	Diodes Inc.	MMSZ5242B-7-F	Zener	1	$0.04	 SOD-123 13 mm²
Da	CUSTOM	CUSTOM	VF@Io= 500.0 mV VRRM= 95.0 V	1	NA	CUSTOM 0 mm²
L1	CUSTOM	CUSTOM	Lp= 20.0 mH Rp= 243.047 mOhm Leakage_L= 20.0 µH Ns1toNp= 100.0 Rs1= 1.143 mOhms	1	NA	CUSTOM 0 mm²
Lout	CUSTOM	CUSTOM	L= 541.2 nH 500.0 µOhm	1	NA	CUSTOM 0 mm²
Lshim	Coilcraft	XAL7070-102MEB	L= 1.0 µH 2.6 mOhm	1	$1.19	 XAL7070 87 mm²
M1	NA	IdealFET1	VdsMax= 850.0 V IdsMax= 33.0 Amps	1	NA	NA 0 mm²
M2	NA	IdealFET2	VdsMax= 850.0 V IdsMax= 33.0 Amps	1	NA	NA 0 mm²
M3	NA	IdealFET3	VdsMax= 850.0 V IdsMax= 33.0 Amps	1	NA	NA 0 mm²
M4	NA	IdealFET4	VdsMax= 850.0 V IdsMax= 33.0 Amps	1	NA	NA 0 mm²
M5	NA	IdealFET5	VdsMax= 124.0 V IdsMax= 654.0 Amps	1	NA	NA 0 mm²
M6	NA	IdealFET6	VdsMax= 124.0 V IdsMax= 654.0 Amps	1	NA	NA 0 mm²
R1	CUSTOM	CUSTOM Series= ?	Res= 76.747 kOhm Power= 0.0 W Tolerance= 0.0%	1	NA	CUSTOM 0 mm²
R10	Vishay-Dale	CRCW04023R01FKED Series= CRCW..e3	Res= 3.01 Ohm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	 0402 3 mm²
R11	Yageo	RC0201FR-0710KL Series= ?	Res= 10.0 kOhm Power= 50.0 mW Tolerance= 1.0%	1	$0.01	 0201 2 mm²
R12	Vishay-Dale	CRCW04023R01FKED Series= CRCW..e3	Res= 3.01 Ohm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	 0402 3 mm²
R13	Vishay-Dale	CRCW04023R01FKED Series= CRCW..e3	Res= 3.01 Ohm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	 0402 3 mm²

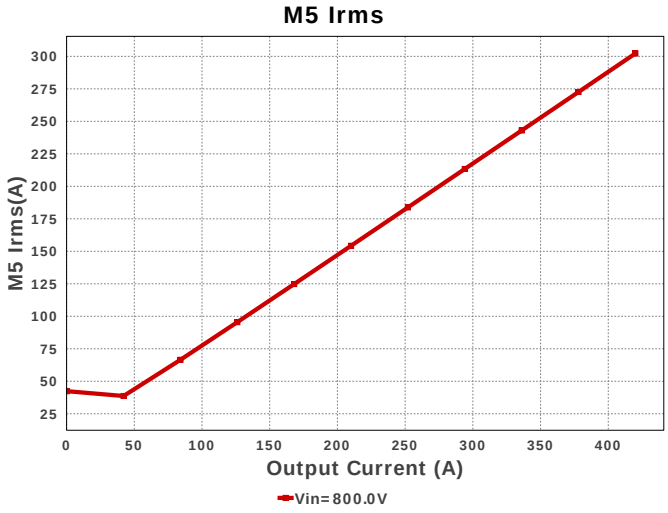
Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
R14	Vishay-Dale	CRCW04023R01FKED Series= CRCW..e3	Res= 3.01 Ohm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
R15	Yageo	RC0201FR-0710KL Series= ?	Res= 10.0 kOhm Power= 50.0 mW Tolerance= 1.0%	1	$0.01	0201 2 mm²
R16	Vishay-Dale	CRCW04023R01FKED Series= CRCW..e3	Res= 3.01 Ohm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
R17	Yageo	RC0201FR-0710KL Series= ?	Res= 10.0 kOhm Power= 50.0 mW Tolerance= 1.0%	1	$0.01	0201 2 mm²
R18	Vishay-Dale	CRCW04023R01FKED Series= CRCW..e3	Res= 3.01 Ohm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
R19	Yageo	RC0201FR-0710KL Series= ?	Res= 10.0 kOhm Power= 50.0 mW Tolerance= 1.0%	1	$0.01	0201 2 mm²
R2	CUSTOM	CUSTOM Series= ?	Res= 76.747 kOhm Power= 0.0 W Tolerance= 0.0%	1	NA	CUSTOM 0 mm²
R20	Vishay-Dale	CRCW04023R01FKED Series= CRCW..e3	Res= 3.01 Ohm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
R21	Yageo	RC0201FR-0710KL Series= ?	Res= 10.0 kOhm Power= 50.0 mW Tolerance= 1.0%	1	$0.01	0201 2 mm²
R22	Panasonic	ERJ-8ENF9092V Series= ERJ-8E	Res= 90.9 kOhm Power= 250.0 mW Tolerance= 1.0%	1	$0.01	1206 11 mm²
R23	Panasonic	ERJ-8ENF8060V Series= ERJ-8E	Res= 806.0 Ohm Power= 250.0 mW Tolerance= 1.0%	1	$0.01	1206 11 mm²
R3	CUSTOM	CUSTOM Series= ?	Res= 76.747 kOhm Power= 0.0 W Tolerance= 0.0%	1	NA	CUSTOM 0 mm²
R4	Vishay-Dale	CRCW0402681RFKED Series= CRCW..e3	Res= 681.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
R5	Vishay-Dale	CRCW04022K37FKED Series= CRCW..e3	Res= 2.37 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
R6	Vishay-Dale	CRCW04022K37FKED Series= CRCW..e3	Res= 2.37 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
R7	Vishay-Dale	CRCW04026K65FKED Series= CRCW..e3	Res= 6.65 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
R8	Vishay-Dale	CRCW04023R01FKED Series= CRCW..e3	Res= 3.01 Ohm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
R9	Yageo	RC0201FR-0710KL Series= ?	Res= 10.0 kOhm Power= 50.0 mW Tolerance= 1.0%	1	$0.01	0201 2 mm²
Ra	Vishay-Dale	CRCW04028K25FKED Series= CRCW..e3	Res= 8.25 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
Rab	Vishay-Dale	CRCW040214K3FKED Series= CRCW..e3	Res= 14.3 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
Raef	Vishay-Dale	CRCW04028K25FKED Series= CRCW..e3	Res= 8.25 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²

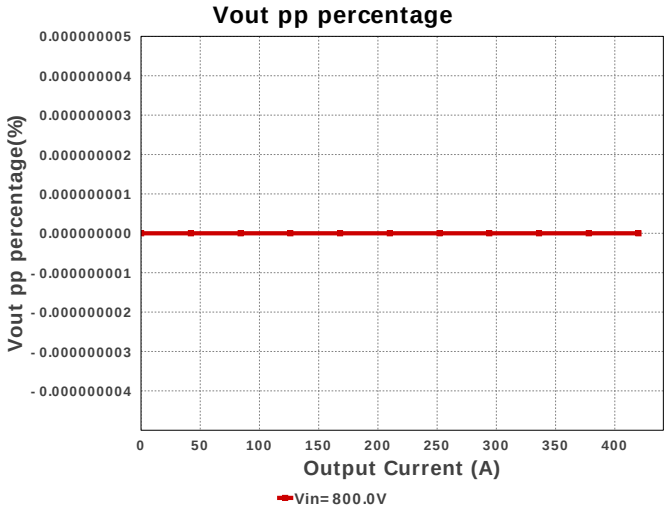
Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
Raefhi	Vishay-Dale	CRCW04028K25FKED Series= CRCW..e3	Res= 8.25 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm^2
Rahi	Vishay-Dale	CRCW04022K00FKED Series= CRCW..e3	Res= 2.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm^2
Rcd	Vishay-Dale	CRCW040214K3FKED Series= CRCW..e3	Res= 14.3 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm^2
Rcs	CUSTOM	CUSTOM Series= ?	Res= 6.7833 Ohm Power= 0.0 W Tolerance= 0.0%	1	NA	CUSTOM 0 mm^2
Rdcm	Vishay-Dale	CRCW04021K00FKED Series= CRCW..e3	Res= 1000.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm^2
Rdcmhi	Yageo	RC0201FR-0715K4L Series= ?	Res= 15.4 kOhm Power= 50.0 mW Tolerance= 1.0%	1	$0.01	0201 2 mm^2
Ref	Vishay-Dale	CRCW040214K3FKED Series= CRCW..e3	Res= 14.3 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm^2
Rlf1	Vishay-Dale	CRCW04021K00FKED Series= CRCW..e3	Res= 1000.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm^2
Rlf2	Vishay-Dale	CRCW040222R6FKED Series= CRCW..e3	Res= 22.6 Ohm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm^2
Ro1	Vishay-Dale	CRCW040220K5FKED Series= CRCW..e3	Res= 20.5 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm^2
Ro2	Vishay-Dale	CRCW04022K37FKED Series= CRCW..e3	Res= 2.37 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm^2
Rsum	Yageo	RC0201FR-07133KL Series= ?	Res= 133.0 kOhm Power= 50.0 mW Tolerance= 1.0%	1	$0.01	0201 2 mm^2
Rt	Vishay-Dale	CRCW040259K0FKED Series= CRCW..e3	Res= 59.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm^2
Rtmin	Yageo	RC0201FR-0718K7L Series= ?	Res= 18.7 kOhm Power= 50.0 mW Tolerance= 1.0%	1	$0.01	0201 2 mm^2
T1	CUSTOM	CUSTOM	Lp= 781.733 µH Rp= 0.0 Ohm Leakage_L= 1.173 µH Ns1toNp= 46.154 m Rs1= 1.143 mOhms Ns2toNp= 0.046 Rs2= 100.0 mOhms	1	NA	CUSTOM 0 mm^2
T2	CUSTOM	CUSTOM	Lp= 1.3 mH Rp= 243.047 mOhm Leakage_L= 1.95 µH Ns1toNp= 1.0 Rs1= 1.143 mOhms Ns2toNp= 1.0 Rs2= 100.0 mOhms	1	NA	CUSTOM 0 mm^2
T3	CUSTOM	CUSTOM	Lp= 1.3 mH Rp= 243.047 mOhm Leakage_L= 1.95 µH Ns1toNp= 1.0 Rs1= 1.143 mOhms Ns2toNp= 1.0 Rs2= 100.0 mOhms	1	NA	CUSTOM 0 mm^2

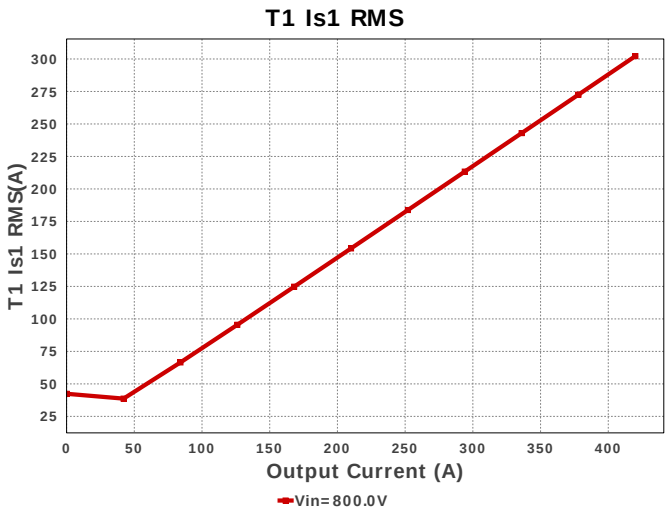
Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
U1	Texas Instruments	UCC28950PWR	Switcher	1	$3.15	0 mm²
U2	Texas Instruments	UCC27324P	Switcher	0	$0.86	D0008A_N 57 mm²
U3	Texas Instruments	UCC27324P	Switcher	0	$0.86	D0008A_N 57 mm²
U4	Texas Instruments	UCC27324P	Switcher	0	$0.86	D0008A_N 57 mm²

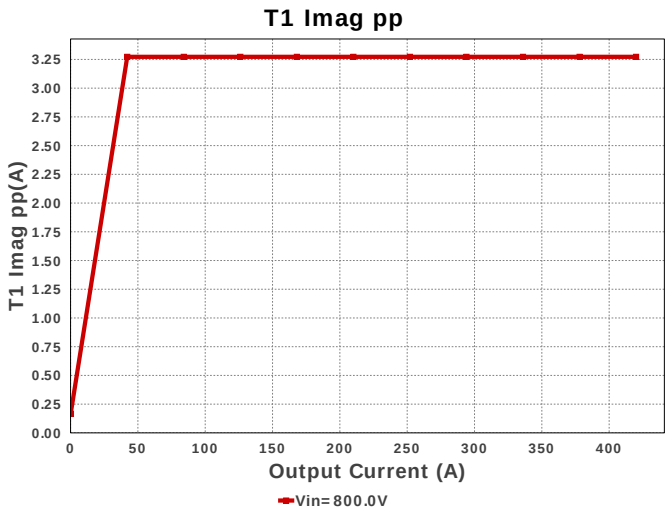


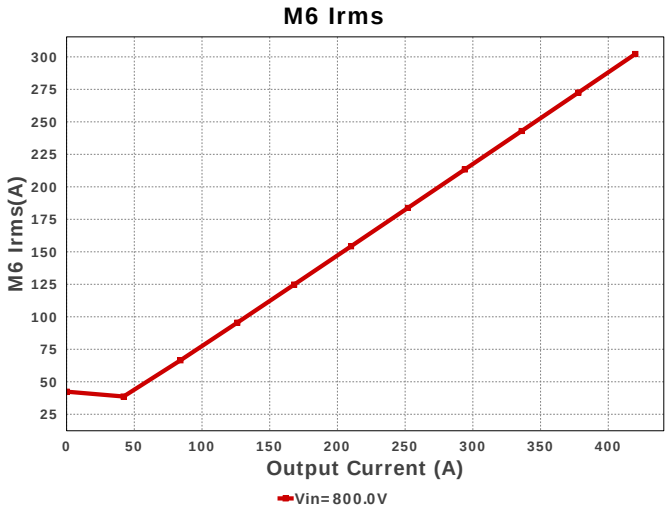


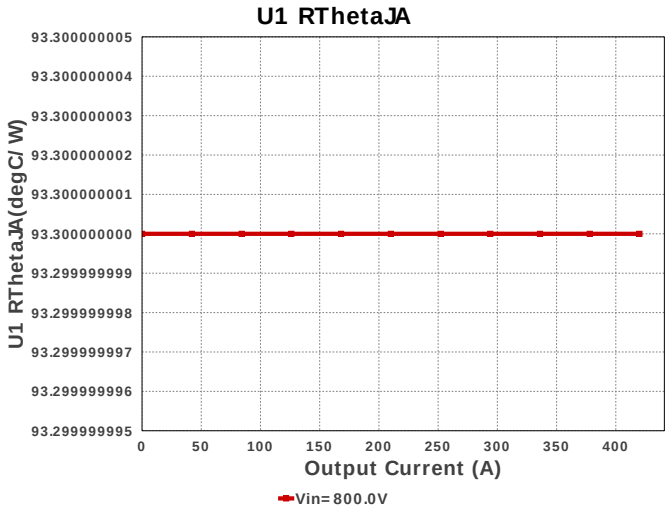


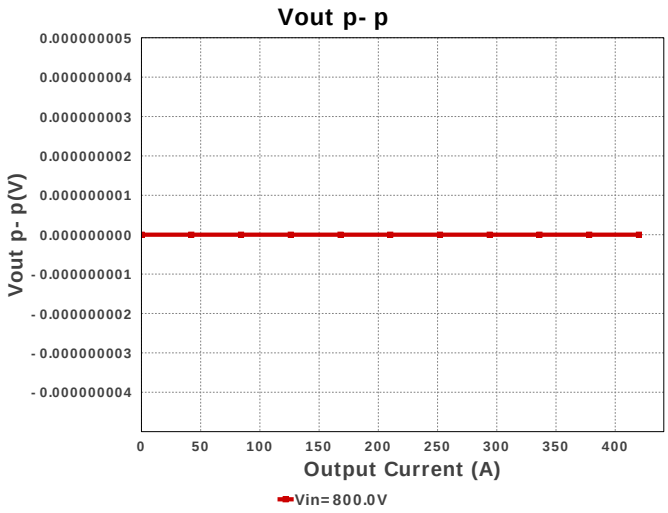


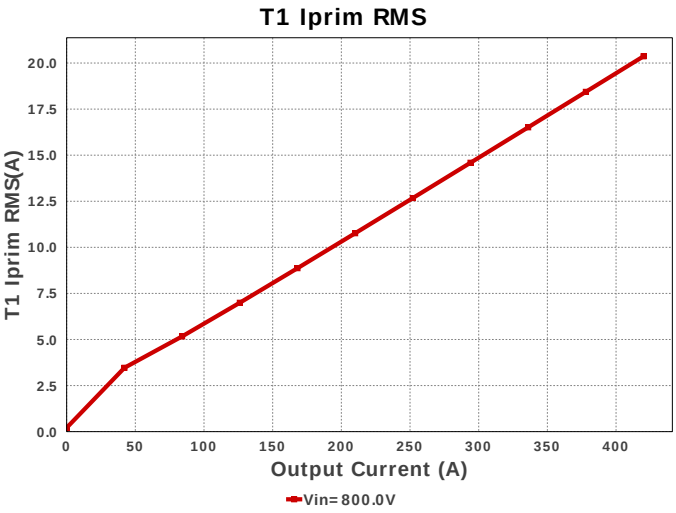


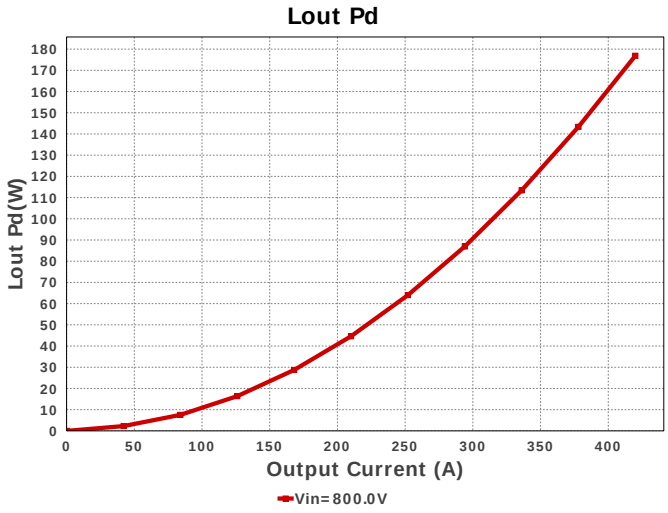


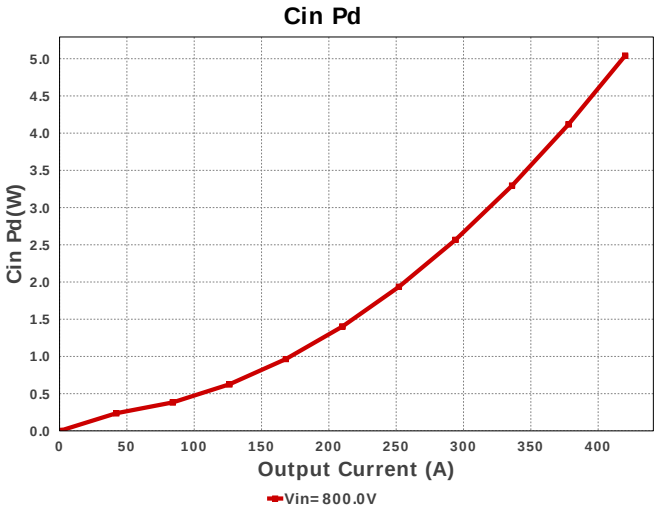


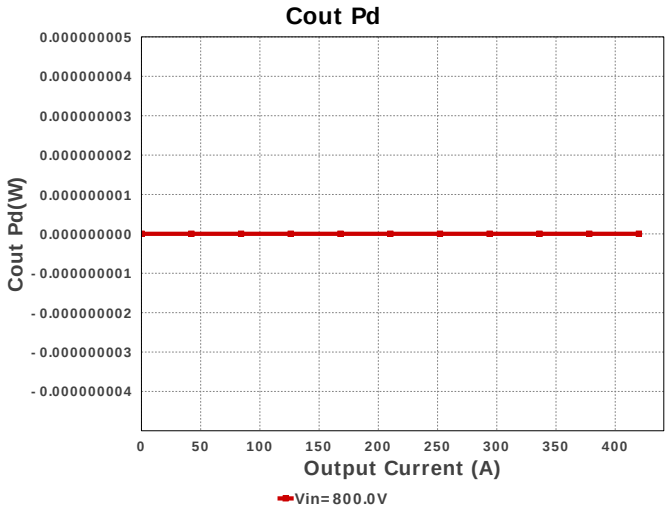


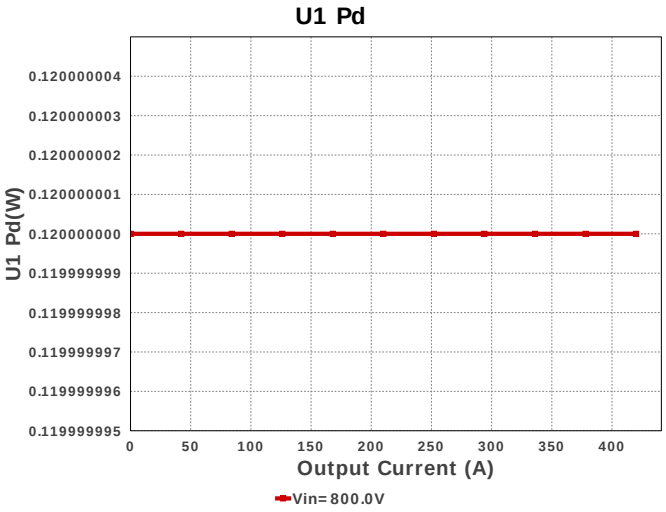


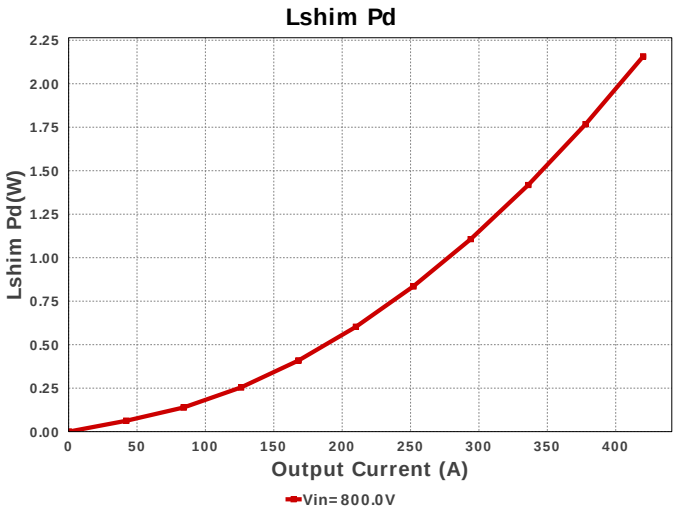


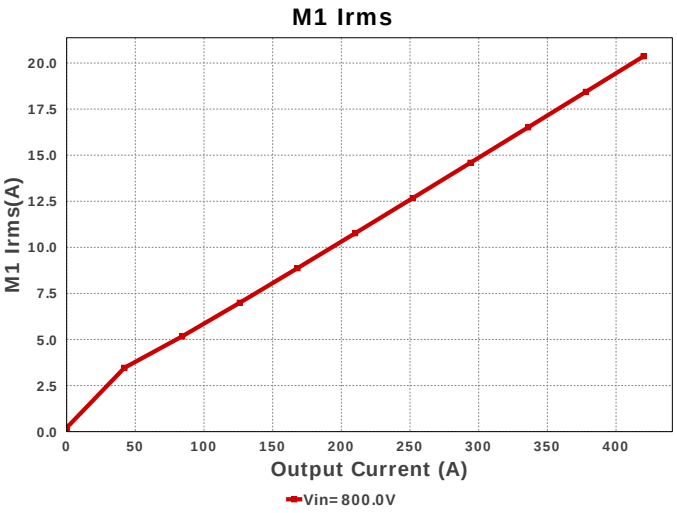


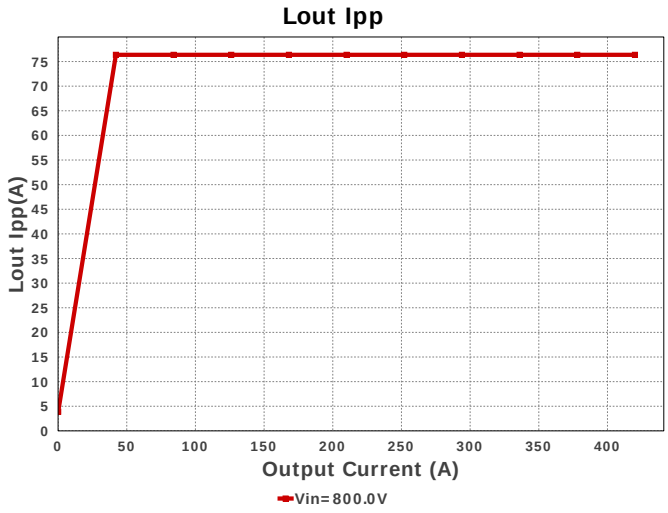


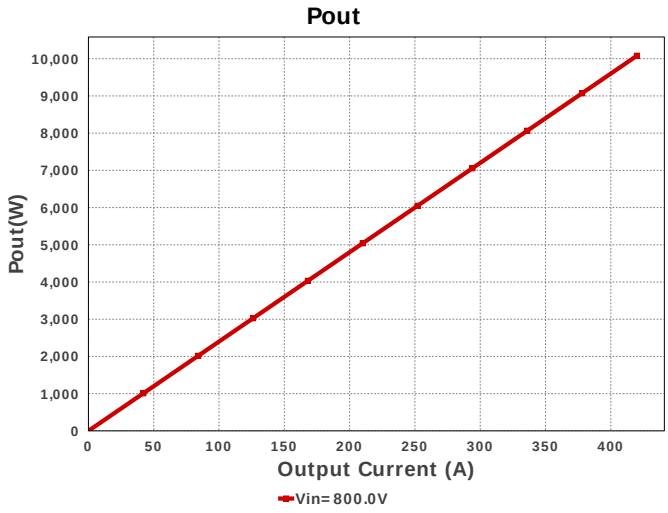


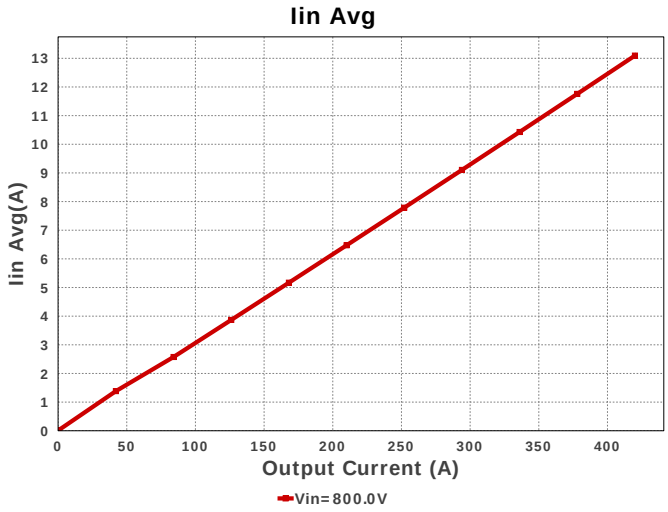


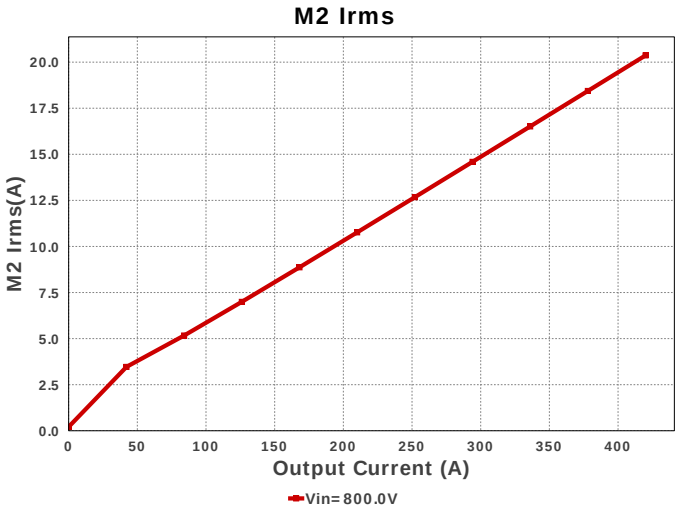


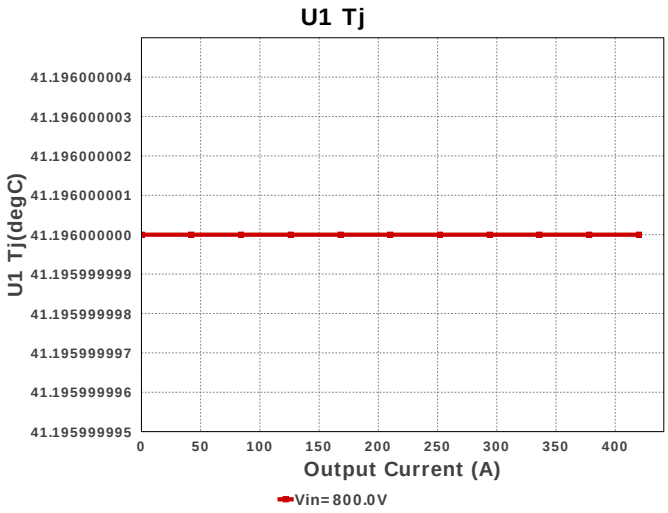


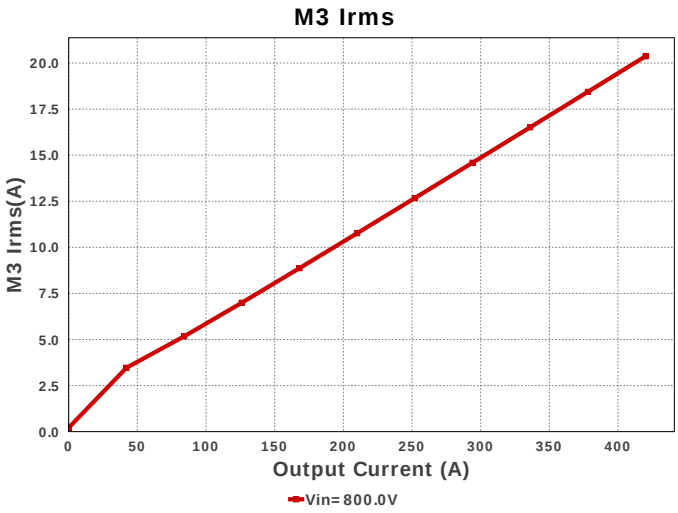


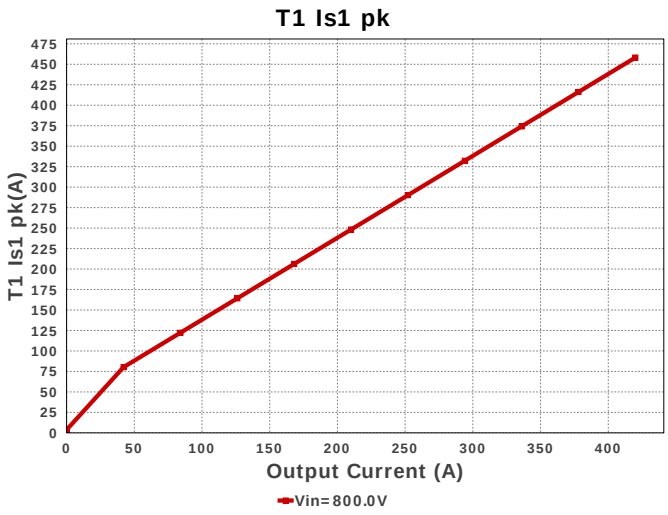


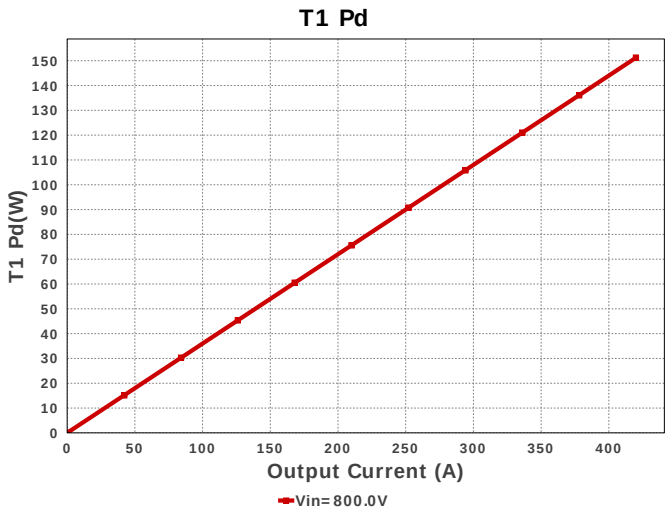


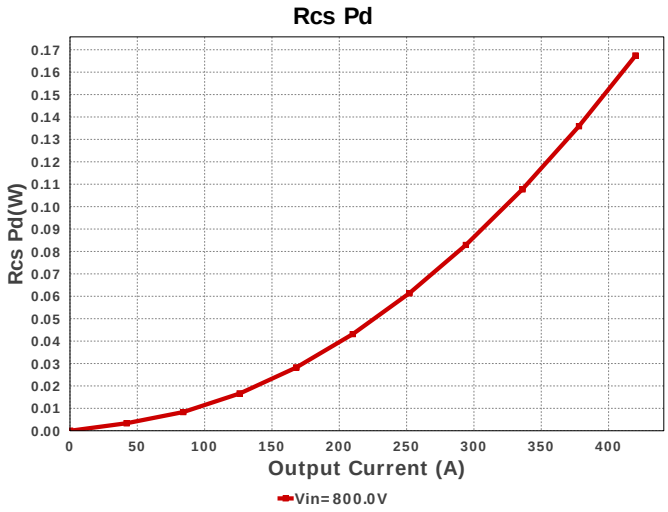


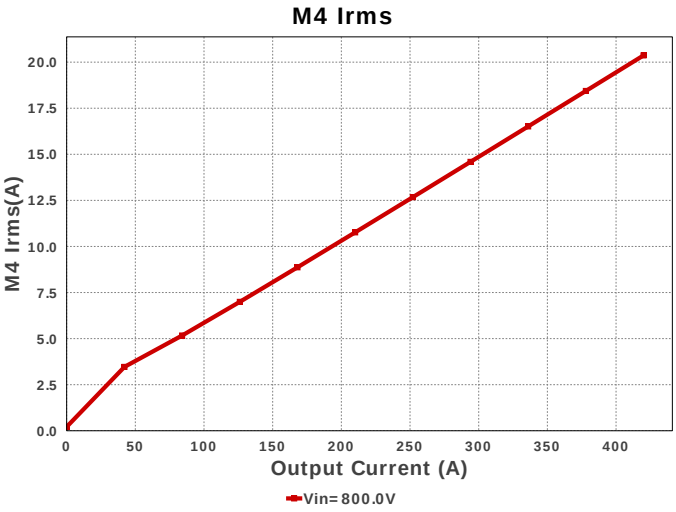


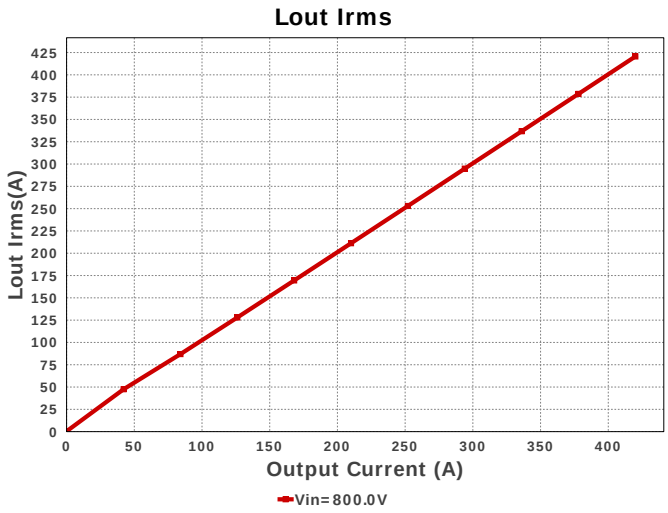


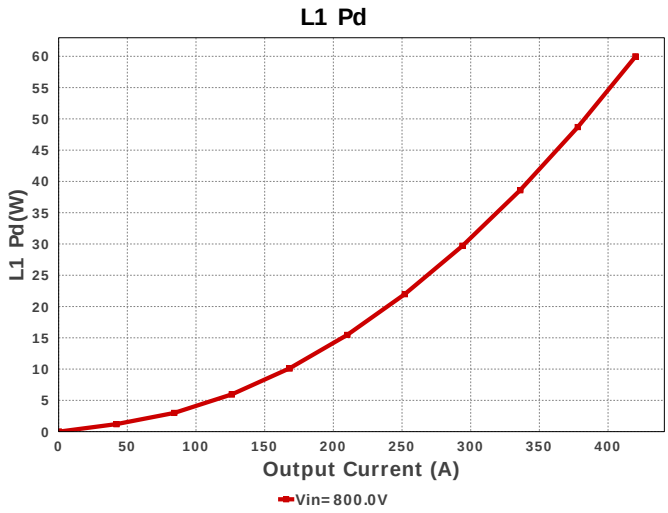












Operating Values

#	Name	Value	Category	Description
1.	Cin Pd	5.04 W	Capacitor	Input capacitor power dissipation
2.	Cout Pd	1.944 pW	Capacitor	Output capacitor power dissipation
3.	Lout Irms	420.578 A	Current	Lout ripple current
4.	Iin Avg	13.095 A	IC	Average input current
5.	U1 RThetaJA	93.3 degC/W	IC	U1 IC junction-to-ambient thermal resistance
6.	L1 Pd	59.971 W	Inductor	Power Dissipation in the Inductor
7.	Lout Ipp	76.364 A	Inductor	Peak-to-peak output inductor ripple current
8.	Lshim Pd	2.157 W	Inductor	Power Dissipation in Shim Inductor
9.	M1 Irms	20.365 A	Mosfet	M1 MOSFET Irms
10.	M2 Irms	20.365 A	Mosfet	M2 MOSFET Irms
11.	M3 Irms	20.365 A	Mosfet	M3 MOSFET Irms

#	Name	Value	Category	Description
12.	M4 Irms	20.365 A	Mosfet	M4 MOSFET Irms
13.	M5 Irms	302.216 A	Mosfet	M5 MOSFET Irms
14.	M6 Irms	302.216 A	Mosfet	M6 MOSFET Irms
15.	Cin Pd	5.04 W	Power	Input capacitor power dissipation
16.	Cout Pd	1.944 pW	Power	Output capacitor power dissipation
17.	L1 Pd	59.971 W	Power	Power Dissipation in the Inductor
18.	Lout Pd	176.886 W	Power	Lout power dissipation
19.	Lshim Pd	2.157 W	Power	Power Dissipation in Shim Inductor
20.	Rcs Pd	167.38 mW	Power	Power Dissipation in Current Sense Resistors
21.	T1 Pd	151.2 W	Power	Estimated Losses in Transformer
22.	U1 Pd	120.0 mW	Power	U1 Power Dissipation
23.	Rcs Pd	167.38 mW	Resistor	Power Dissipation in Current Sense Resistors
24.	BOM Count	90	System Information	Total Design BOM count
25.	Duty Cycle	65.0 %	System Information	Duty cycle
26.	FootPrint	1.935 k mm^2	System Information	Total Foot Print Area of BOM components
27.	Frequency	101.626 kHz	System Information	Switching frequency
28.	Iout	420.0 A	System Information	Iout operating point
29.	Mode	FET Conduction Mode	System Information	Conduction Mode
30.	Pout	10.08 kW	System Information	Total output power
31.	Total BOM	NA	System Information	Total BOM Cost
32.	U1 Tj	41.196 degC	System Information	U1 junction temperature
33.	Vin	800.0 V	System Information	Vin operating point
34.	Vout	24.0 V	System Information	Operational Output Voltage
35.	Vout p-p	76.364 fV	System Information	Peak-to-peak output ripple voltage
36.	Vout pp percentage	318.182 f%	System Information	Output Voltage ripple percentage
37.	T1 Imag pp	3.273 A	Transformer	Transformer peak to peak magnetising current
38.	T1 Iprim RMS	20.365 A	Transformer	Transformer Primary RMS Current
39.	T1 Iprim pk	22.783 A	Transformer	Transformer Primary Peak Current
40.	T1 Is1 RMS	302.216 A	Transformer	Transformer Secondary1 RMS Current
41.	T1 Is1 pk	458.182 A	Transformer	Transformer Secondary1 Peak Current
42.	T1 Pd	151.2 W	Transformer	Estimated Losses in Transformer

Design Inputs

Name	Value	Description
Iout	420.0	Maximum Output Current
VinMax	800.0	Maximum input voltage
VinMin	800.0	Minimum input voltage
Vout	24.0	Output Voltage
base_pn	UCC28950	Base Product Number
source	DC	Input Source Type
Ta	30.0	Ambient temperature

WEBENCH® Assembly

Component Testing

Some published data on components in datasheets such as Capacitor ESR and Inductor DC resistance is based on conservative values that will guarantee that the components always exceed the specification. For design purposes it is usually better to work with typical values. Since this data is not always available it is a good practice to measure the Capacitance and ESR values of Cin and Cout, and the inductance and DC resistance of L1 before assembly of the board. Any large discrepancies in values should be electrically simulated in WEBENCH to check for instabilities and thermally simulated in WebTHERM to make sure critical temperatures are not exceeded.

Soldering Component to Board

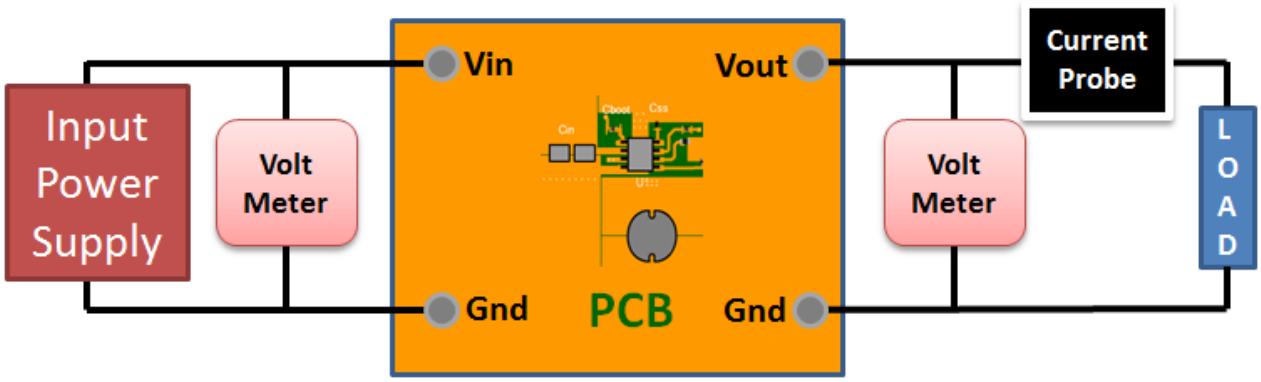
If board assembly is done in house it is best to tack down one terminal of a component on the board then solder the other terminal. For surface mount parts with large tabs, such as the DPAK, the tab on the back of the package should be pre-tinned with solder, then tacked into place by one of the pins. To solder the tab town to the board place the iron down on the board while resting against the tab, heating both surfaces simultaneously. Apply light pressure to the top of the plastic case until the solder flows around the part and the part is flush with the PCB. If the solder is not flowing around the board you may need a higher wattage iron (generally 25W to 30W is enough).

Initial Startup of Circuit

It is best to initially power up the board by setting the input supply voltage to the lowest operating input voltage 800.0V and set the input supply's current limit to zero. With the input supply off connect up the input supply to Vin and GND. Connect a digital volt meter and a load if needed to set the minimum Iout of the design from Vout and GND. Turn on the input supply and slowly turn up the current limit on the input supply. If the voltage starts to rise on the input supply continue increasing the input supply current limit while watching the output voltage. If the current increases on the input supply, but the voltage remains near zero, then there may be a short or a component misplaced on the board. Power down the board and visually inspect for solder bridges and recheck the diode and capacitor polarities. Once the power supply circuit is operational then more extensive testing may include full load testing, transient load and line tests to compare with simulation results.

Load Testing

The setup is the same as the initial startup, except that an additional digital voltmeter is connected between Vin and GND, a load is connected between Vout and GND and a current meter is connected in series between Vout and the load. The load must be able to handle at least rated output power + 50% (7.5 watts for this design). Ideally the load is supplied in the form of a variable load test unit. It can also be done in the form of suitably large power resistors. When using an oscilloscope to measure waveforms on the prototype board, the ground leads of the oscilloscope probes should be as short as possible and the area of the loop formed by the ground lead should be kept to a minimum. This will help reduce ground lead inductance and eliminate EMI noise that is not actually present in the circuit.



Design Assistance

1. Master key : EA1A2FC478260EC3[v1]
2. **UCC28950** Product Folder : http://www.ti.com/product/UCC28950 : contains the data sheet and other resources.