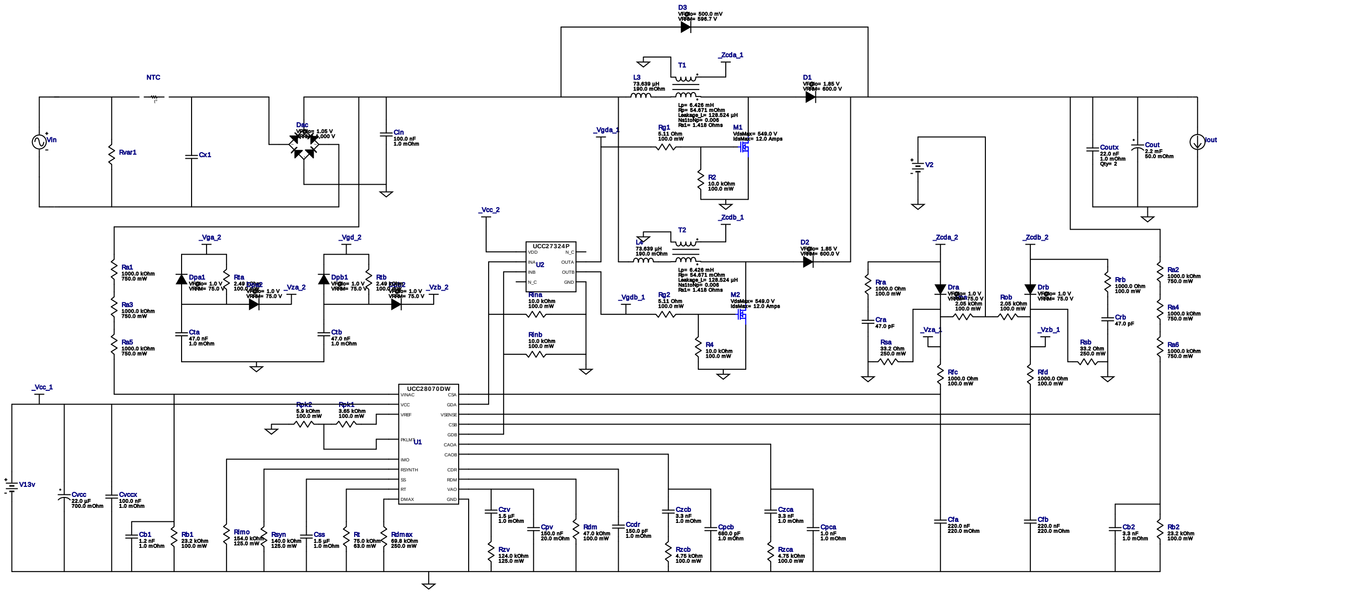
VinMin = 180.0V
VinMax = 265.0V
Vout = 390.0V
Iout = 5.5A

Device = UCC28070PWR
Topology = PFC-BOOST
Created = 2019-05-30 21:04:18.752
BOM Cost = NA
BOM Count = 75
Total Pd =

WEBENCH ® Design Report

Design : 24 UCC28070PWR
UCC28070PWR 180V-265V to 390.00V @ 5.5A



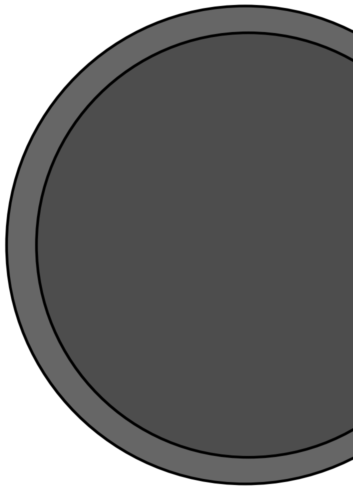
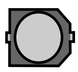
Design Alerts

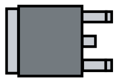
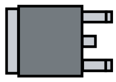
UCC28070 Design

With the current design condition, suitable FET could not be found in the current database. Hence, this design is created using an ideal FET. Please note that the resulting FET parameters are ideal, so the efficiency/loss values have been disabled. Also, the schematic/PCB export and Thermal simulations will not work with the ideal FET.

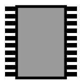
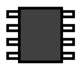
Electrical BOM

Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
Cb1	MuRata	GRM216R71E122KA01D Series= X7R	Cap= 1.2 nF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.01	0805 7 mm^2
Cb2	MuRata	GRM216R71E332KA01D Series= X7R	Cap= 3.3 nF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.01	0805 7 mm^2
Ccdr	MuRata	GRM033R71E151KA01D Series= X7R	Cap= 150.0 pF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.01	0201 2 mm^2
Cfa	MuRata	GRM188R71E224KA88D Series= X7R	Cap= 220.0 nF ESR= 220.0 mOhm VDC= 25.0 V IRMS= 2.24 A	1	$0.03	0603 5 mm^2
Cfb	MuRata	GRM188R71E224KA88D Series= X7R	Cap= 220.0 nF ESR= 220.0 mOhm VDC= 25.0 V IRMS= 2.24 A	1	$0.03	0603 5 mm^2
Cin	TDK	C3216X7T2W104K160AA Series= X7T	Cap= 100.0 nF ESR= 1.0 mOhm VDC= 450.0 V IRMS= 0.0 A	1	$0.19	1206_190 11 mm^2

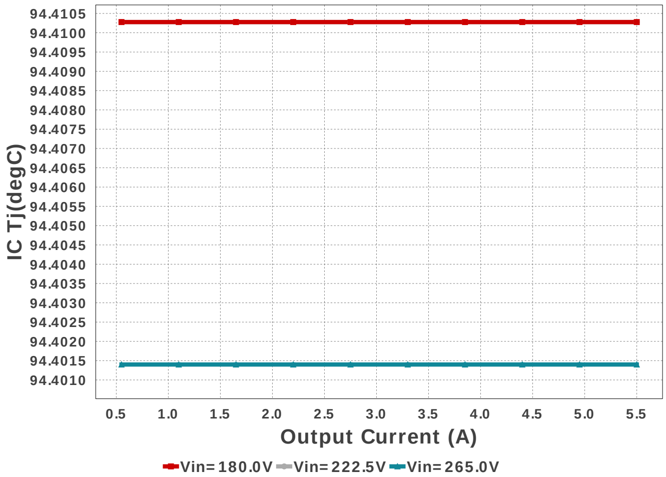
Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
Cout	TDK	B43510A5228M000 Series= 2384	Cap= 2.2 mF ESR= 50.0 mOhm VDC= 450.0 V IRMS= 16.9 A	1	$41.51	 B43510_4500x10000_00 2209 mm²
Coutx	MuRata	GRM32QR72J223KW01L Series= X7R	Cap= 22.0 nF ESR= 1.0 mOhm VDC= 630.0 V IRMS= 0.0 A	2	$0.28	1210 15 mm²
Cpca	MuRata	GRM216R71E102KA01D Series= X7R	Cap= 1.0 nF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.01	0805 7 mm²
Cpcb	MuRata	GRM033R71E681KA01D Series= X7R	Cap= 680.0 pF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.01	0201 2 mm²
Cpv	MuRata	GRM188R71E154KA01D Series= X7R	Cap= 150.0 nF ESR= 20.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.02	0603 5 mm²
Cra	MuRata	GRM0335C1E470JA01D Series= C0G/NP0	Cap= 47.0 pF VDC= 25.0 V IRMS= 0.0 A	1	$0.01	0201 2 mm²
Crb	MuRata	GRM0335C1E470JA01D Series= C0G/NP0	Cap= 47.0 pF VDC= 25.0 V IRMS= 0.0 A	1	$0.01	0201 2 mm²
Cref	Yageo	CC0805KRX7R8BB104 Series= X7R	Cap= 100.0 nF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.02	0805 7 mm²
Css	MuRata	GRM21BR71E155KA88L Series= X7R	Cap= 1.5 uF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.11	0805 7 mm²
Cta	MuRata	GRM155R71E473KA88D Series= X7R	Cap= 47.0 nF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.01	0402 3 mm²
Ctb	MuRata	GRM155R71E473KA88D Series= X7R	Cap= 47.0 nF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.01	0402 3 mm²
Cvcc	Panasonic	EEE-FK1V220R Series= FK	Cap= 22.0 uF ESR= 700.0 mOhm VDC= 35.0 V IRMS= 160.0 mA	1	$0.09	 SM_RADIAL_C 62 mm²
Cvccx	Yageo	CC0805KRX7R8BB104 Series= X7R	Cap= 100.0 nF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.02	0805 7 mm²

Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
Czca	MuRata	GRM216R71E332KA01D Series= X7R	Cap= 3.3 nF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.01	0805 7 mm^2
Czcb	MuRata	GRM216R71E332KA01D Series= X7R	Cap= 3.3 nF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.01	0805 7 mm^2
Czv	MuRata	GRM21BR71E155KA88L Series= X7R	Cap= 1.5 uF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.11	0805 7 mm^2
D1	STMicroelectronics	STTH506B-TR	VF@Io= 1.85 V VRRM= 600.0 V	1	$0.63	 DPAK 102 mm^2
D2	STMicroelectronics	STTH506B-TR	VF@Io= 1.85 V VRRM= 600.0 V	1	$0.63	 DPAK 102 mm^2
D3	CUSTOM	CUSTOM	VF@Io= 500.0 mV VRRM= 596.7 V	1	NA	CUSTOM 0 mm^2
Dac	Diodes Inc.	GBJ2510-F	VF@Io= 1.05 V VRRM= 1,000.0 V	1	$1.09	GBJ 211 mm^2
Dpa1	CUSTOM	CUSTOM	VF@Io= 1.0 V VRRM= 75.0 V	1	NA	CUSTOM 0 mm^2
Dpa2	CUSTOM	CUSTOM	VF@Io= 1.0 V VRRM= 75.0 V	1	NA	CUSTOM 0 mm^2
Dpb1	CUSTOM	CUSTOM	VF@Io= 1.0 V VRRM= 75.0 V	1	NA	CUSTOM 0 mm^2
Dpb2	CUSTOM	CUSTOM	VF@Io= 1.0 V VRRM= 75.0 V	1	NA	CUSTOM 0 mm^2
Dra	CUSTOM	CUSTOM	VF@Io= 1.0 V VRRM= 75.0 V	1	NA	CUSTOM 0 mm^2
Drb	CUSTOM	CUSTOM	VF@Io= 1.0 V VRRM= 75.0 V	1	NA	CUSTOM 0 mm^2
L3	CUSTOM	CUSTOM	L= 73.639 µH 190.0 mOhm	1	NA	CUSTOM 0 mm^2
L4	CUSTOM	CUSTOM	L= 73.639 µH 190.0 mOhm	1	NA	CUSTOM 0 mm^2
M1	NA	IdealFET	VdsMax= 549.0 V IdsMax= 12.0 Amps	1	NA	NA 0 mm^2
M2	NA	IdealFET	VdsMax= 549.0 V IdsMax= 12.0 Amps	1	NA	NA 0 mm^2
R2	Yageo	RC0603FR-0710KL Series= ?	Res= 10.0 kOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm^2
R4	Yageo	RC0603FR-0710KL Series= ?	Res= 10.0 kOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm^2
Ra1	Vishay-Dale	CRCW20101M00FKEF Series= CRCW..e3	Res= 1000.0 kOhm Power= 750.0 mW Tolerance= 1.0%	1	$0.03	2010 32 mm^2
Ra2	Vishay-Dale	CRCW20101M00FKEF Series= CRCW..e3	Res= 1000.0 kOhm Power= 750.0 mW Tolerance= 1.0%	1	$0.03	2010 32 mm^2
Ra3	Vishay-Dale	CRCW20101M00FKEF Series= CRCW..e3	Res= 1000.0 kOhm Power= 750.0 mW Tolerance= 1.0%	1	$0.03	2010 32 mm^2

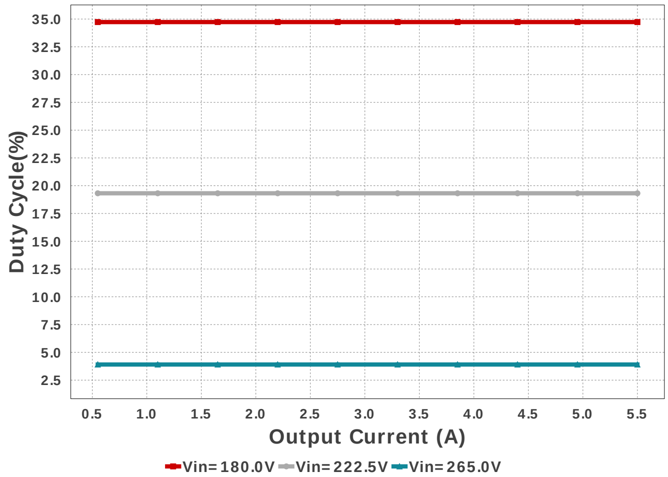
Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
Ra4	Vishay-Dale	CRCW20101M00FKEF Series= CRCW..e3	Res= 1000.0 kOhm Power= 750.0 mW Tolerance= 1.0%	1	$0.03	2010 32 mm²
Ra5	Vishay-Dale	CRCW20101M00FKEF Series= CRCW..e3	Res= 1000.0 kOhm Power= 750.0 mW Tolerance= 1.0%	1	$0.03	2010 32 mm²
Ra6	Vishay-Dale	CRCW20101M00FKEF Series= CRCW..e3	Res= 1000.0 kOhm Power= 750.0 mW Tolerance= 1.0%	1	$0.03	2010 32 mm²
Rb1	Yageo	RC0603FR-0723K2L Series= ?	Res= 23.2 kOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm²
Rb2	Yageo	RC0603FR-0723K2L Series= ?	Res= 23.2 kOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm²
Rdm	Yageo	RC0603FR-0747KL Series= ?	Res= 47.0 kOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm²
Rdmax	Vishay-Dale	CMF5069K800FHEB Series= CMF50	Res= 69.8 kOhm Power= 250.0 mW Tolerance= 1.0%	1	$0.20	CMF50 46 mm²
Rfc	Yageo	RC0603FR-071KL Series= ?	Res= 1000.0 Ohm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm²
Rfd	Yageo	RC0603FR-071KL Series= ?	Res= 1000.0 Ohm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm²
Rg1	Vishay-Dale	CRCW06035R11FKEA Series= CRCW..e3	Res= 5.11 Ohm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm²
Rg2	Vishay-Dale	CRCW06035R11FKEA Series= CRCW..e3	Res= 5.11 Ohm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm²
Rimo	Panasonic	ERJ-6ENF1543V Series= ERJ-6E	Res= 154.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	$0.01	0805 7 mm²
Rina	Yageo	RC0603FR-0710KL Series= ?	Res= 10.0 kOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm²
Rinb	Yageo	RC0603FR-0710KL Series= ?	Res= 10.0 kOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm²
Roa	Vishay-Dale	CRCW06032K05FKEA Series= CRCW..e3	Res= 2.05 kOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm²
Rob	Vishay-Dale	CRCW06032K05FKEA Series= CRCW..e3	Res= 2.05 kOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm²
Rpk1	Vishay-Dale	CRCW06033K65FKEA Series= CRCW..e3	Res= 3.65 kOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm²
Rpk2	Yageo	RC0603FR-075K9L Series= ?	Res= 5.9 kOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm²
Rra	Yageo	RC0603FR-071KL Series= ?	Res= 1000.0 Ohm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm²
Rrb	Yageo	RC0603FR-071KL Series= ?	Res= 1000.0 Ohm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm²
Rsa	Panasonic	ERJ-8ENF33R2V Series= ERJ-8E	Res= 33.2 Ohm Power= 250.0 mW Tolerance= 1.0%	1	$0.01	1206 11 mm²

Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
Rsb	Panasonic	ERJ-8ENF33R2V Series= ERJ-8E	Res= 33.2 Ohm Power= 250.0 mW Tolerance= 1.0%	1	$0.01	1206 11 mm^2
Rsyn	Panasonic	ERJ-6ENF1403V Series= ERJ-6E	Res= 140.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	$0.01	0805 7 mm^2
Rt	Vishay-Dale	CRCW040275K0FKED Series= CRCW..e3	Res= 75.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm^2
Rta	Vishay-Dale	CRCW06032K49FKEA Series= CRCW..e3	Res= 2.49 kOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm^2
Rtb	Vishay-Dale	CRCW06032K49FKEA Series= CRCW..e3	Res= 2.49 kOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm^2
Rzca	Yageo	RC0603FR-074K75L Series= ?	Res= 4.75 kOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm^2
Rzcb	Yageo	RC0603FR-074K75L Series= ?	Res= 4.75 kOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm^2
Rzv	Vishay-Dale	CRCW0805124KFKEA Series= CRCW..e3	Res= 124.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	$0.01	0805 7 mm^2
T1	CUSTOM	CUSTOM	Lp= 6.426 mH Rp= 54.671 mOhm Leakage_L= 128.524 µH Ns1toNp= 5.814 m Rs1= 1.418 Ohms	1	NA	CUSTOM 0 mm^2
T2	CUSTOM	CUSTOM	Lp= 6.426 mH Rp= 54.671 mOhm Leakage_L= 128.524 µH Ns1toNp= 5.814 m Rs1= 1.418 Ohms	1	NA	CUSTOM 0 mm^2
U1	Texas Instruments	UCC28070PWR	Switcher	1	$1.80	 PW0020A 74 mm^2
U2	Texas Instruments	UCC27324P	Switcher	0	$0.86	 D0008A_N 57 mm^2

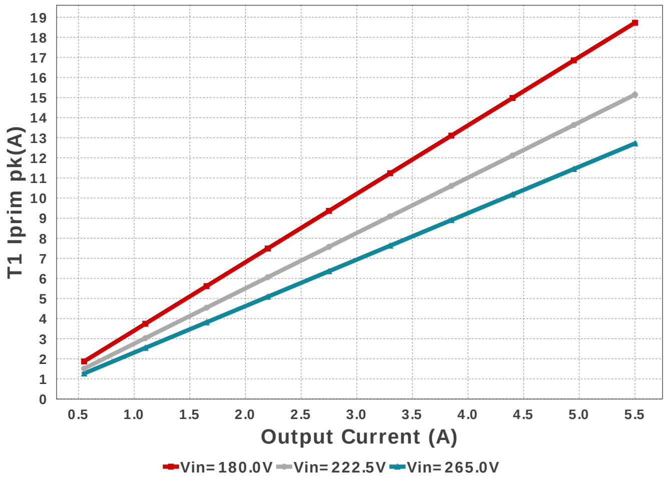
IC Tj



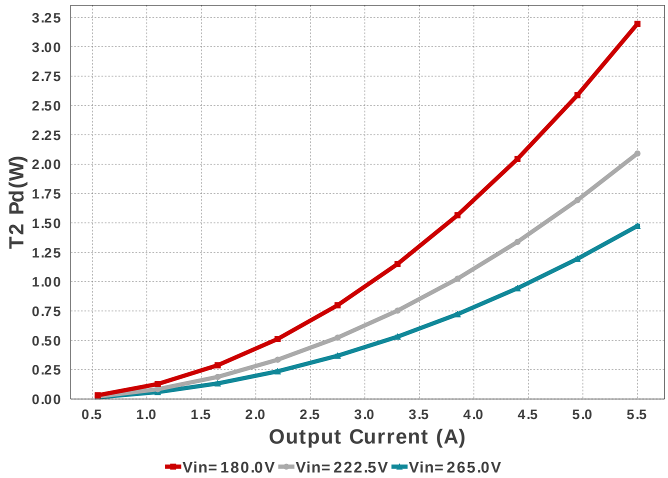
Duty Cycle



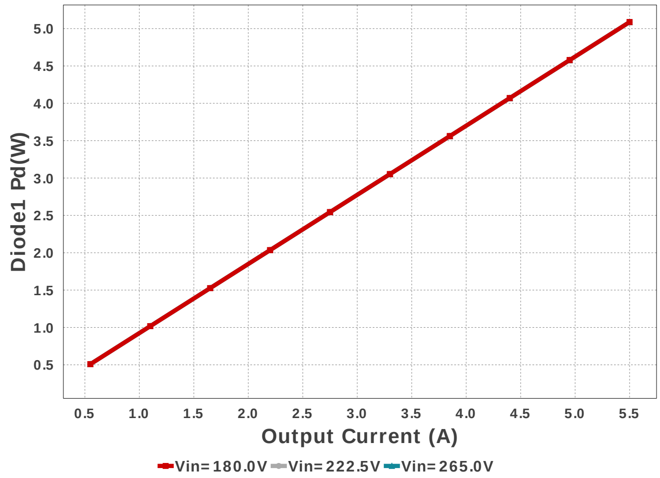
T1 Iprim pk



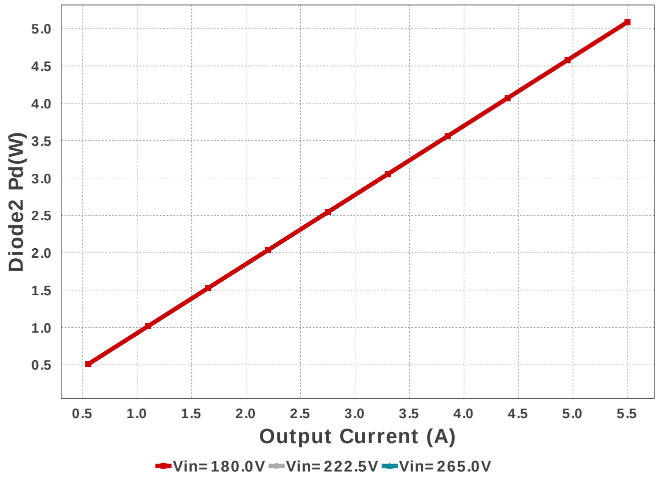
T2 Pd

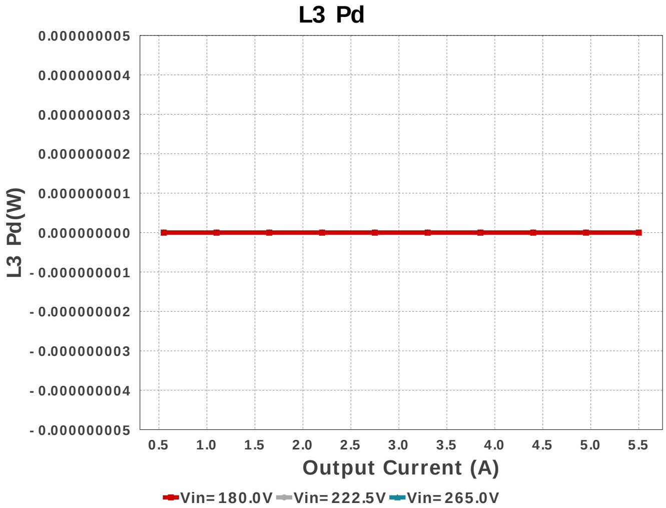


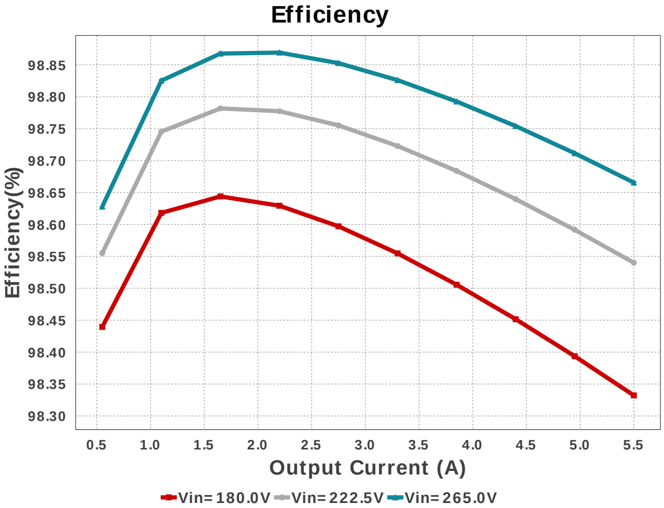
Diode1 Pd

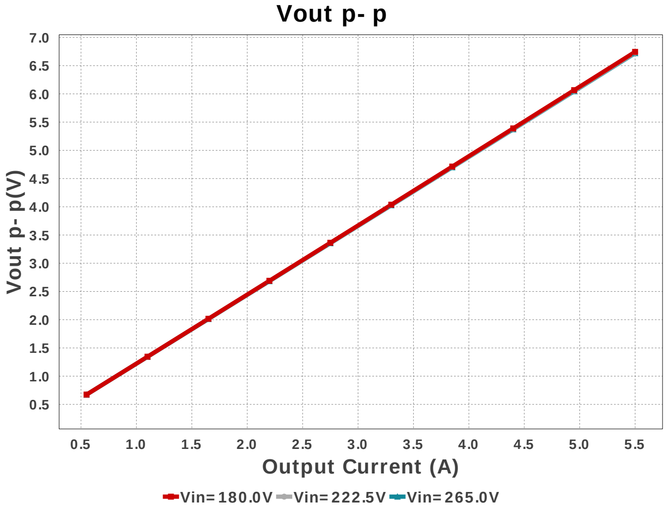


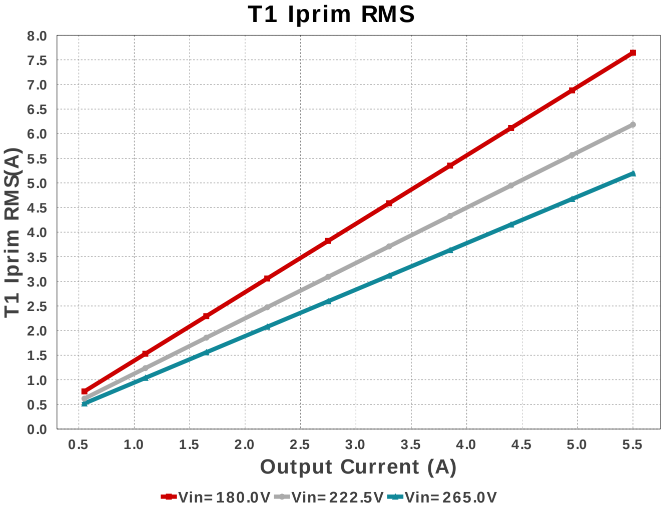
Diode2 Pd

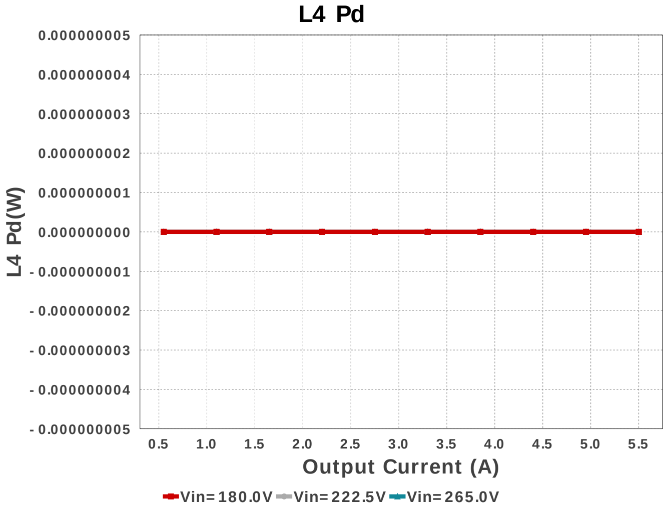


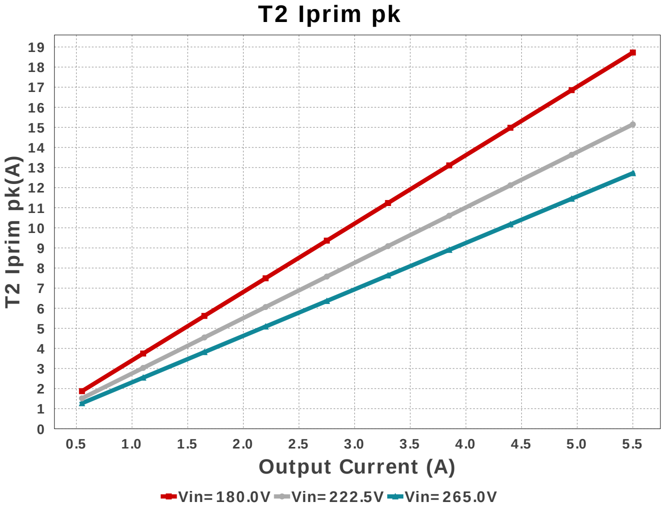

L3 Pd
L3 Pd(W)
0.000000005
0.000000004
0.000000003
0.000000002
0.000000001
0.000000000
- 0.000000001
- 0.000000002
- 0.000000003
- 0.000000004
- 0.000000005
0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5
Output Current (A)
Vin= 180.0V Vin= 222.5V Vin= 265.0V

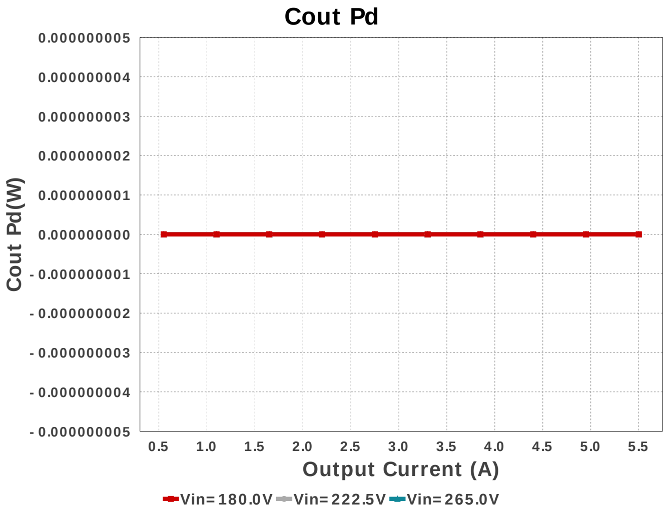

Efficiency
Efficiency(%)
98.85
98.80
98.75
98.70
98.65
98.60
98.55
98.50
98.45
98.40
98.35
98.30
0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5
Output Current (A)
Vin= 180.0V Vin= 222.5V Vin= 265.0V

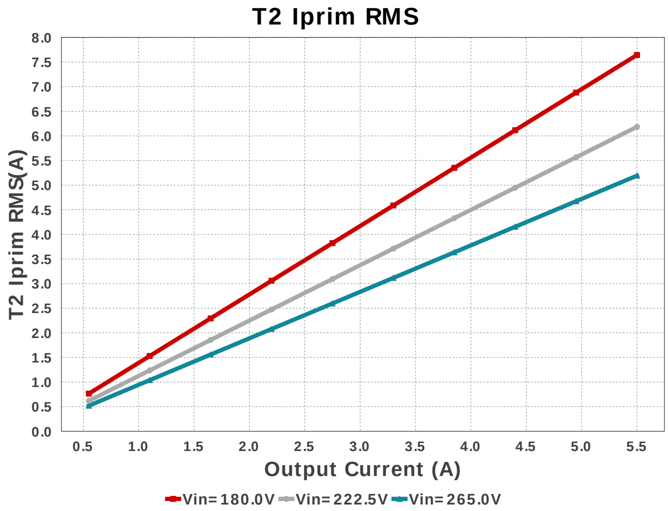

Vout p- p
Vout p- p(V)
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5
Output Current (A)
Vin= 180.0V Vin= 222.5V Vin= 265.0V

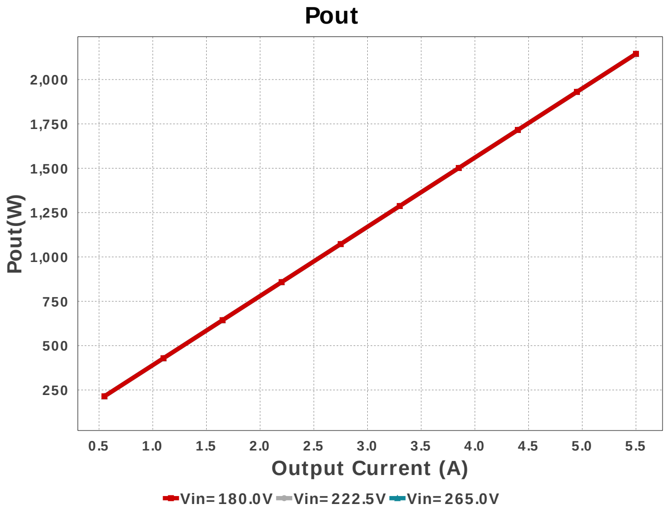

T1 Iprim RMS
T1 Iprim RMS(A)
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5
Output Current (A)
Vin= 180.0V Vin= 222.5V Vin= 265.0V

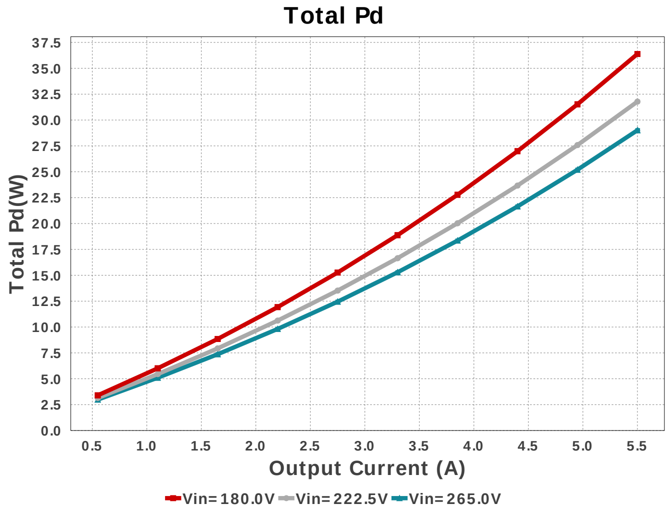

L4 Pd
L4 Pd(W)
0.000000005
0.000000004
0.000000003
0.000000002
0.000000001
0.000000000
- 0.000000001
- 0.000000002
- 0.000000003
- 0.000000004
- 0.000000005
0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5
Output Current (A)
Vin= 180.0V Vin= 222.5V Vin= 265.0V

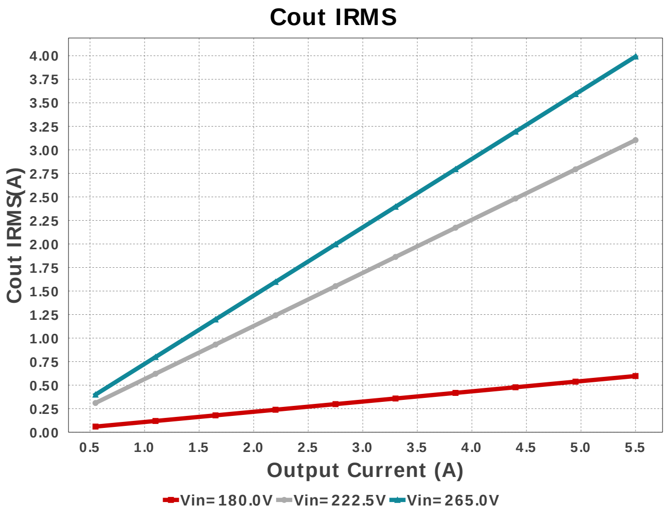

T2 Iprim pk
T2 Iprim pk(A)
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5
Output Current (A)
Vin= 180.0V Vin= 222.5V Vin= 265.0V

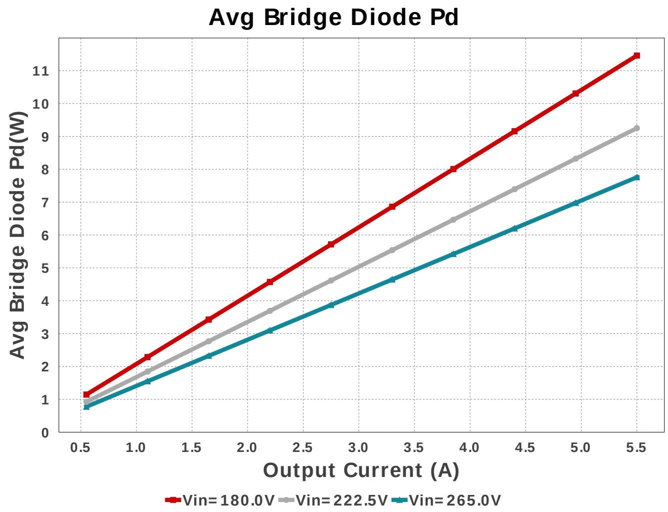

Cout Pd
Cout Pd(W)
Output Current (A)
Vin=180.0V Vin=222.5V Vin=265.0V

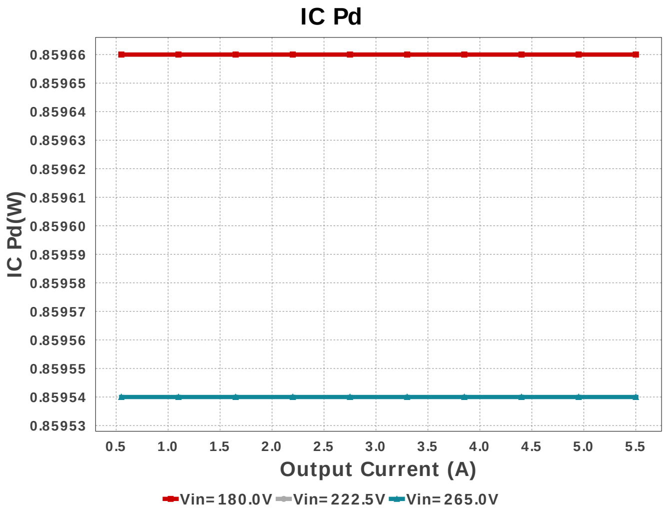

T2 Iprim RMS
T2 Iprim RMS(A)
Output Current (A)
Vin=180.0V Vin=222.5V Vin=265.0V

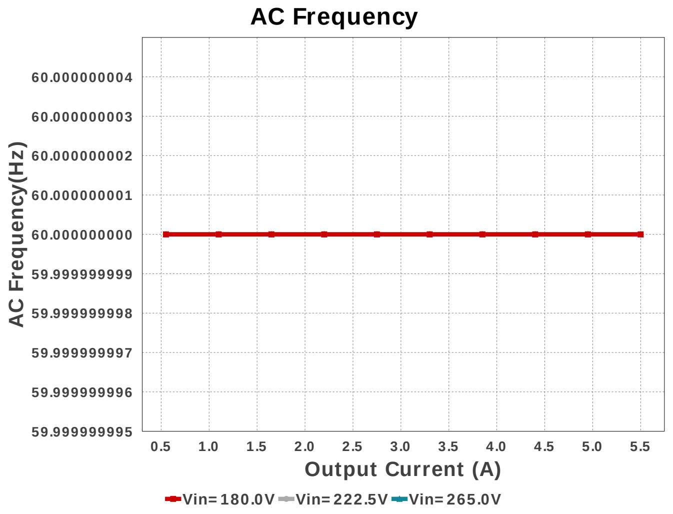

Pout
Pout(W)
Output Current (A)
Vin=180.0V Vin=222.5V Vin=265.0V

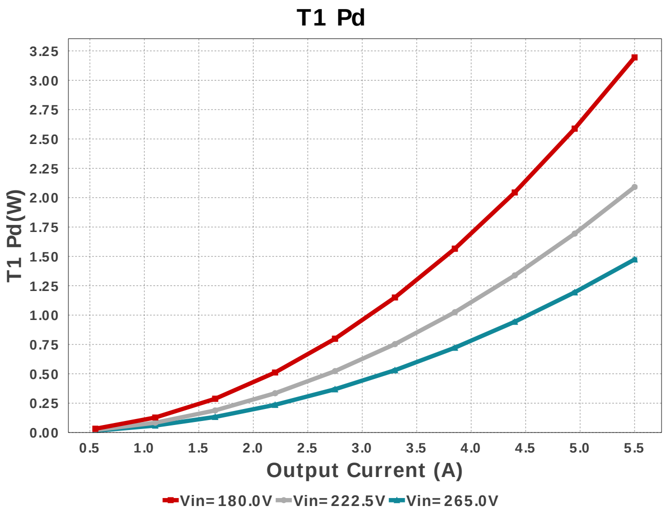

Total Pd
Total Pd(W)
Output Current (A)
Vin=180.0V Vin=222.5V Vin=265.0V


Cout IRMS
Cout IRMS(A)
Output Current (A)
Vin=180.0V Vin=222.5V Vin=265.0V


Avg Bridge Diode Pd
Avg Bridge Diode Pd(W)
Output Current (A)
Vin=180.0V Vin=222.5V Vin=265.0V







Operating Values

#	Name	Value	Category	Description
1.	Avg Bridge Diode Pd	11.858 W	Bridge and Boost Diodes	Average Power Dissipation in the Bridge Diode over the AC Line Period
2.	Diode1 Pd	5.088 W	Bridge and Boost Diodes	Diode1 power dissipation
3.	Diode2 Pd	5.088 W	Bridge and Boost Diodes	Diode2 power dissipation
4.	ICThetaJA Effective	74.925 degC/W	IC	Effective IC Junction-to-Ambient Thermal Resistance
5.	L4 Pd	16.091 W	Inductor	Inductor power dissipation
6.	M1 Irms	4.131 A	MOSFETs	Q Iavg
7.	M1 Vdss	499.2 V	MOSFETs	M Vds
8.	M2 Irms	4.131 A	MOSFETs	Q Iavg
9.	M2 Vdss	499.2 V	MOSFETs	M Vds
10.	Cout IRMS	596.668 mA	Output Cap	Output capacitor RMS ripple current
11.	Cout Pd	17.801 mW	Output Cap	Output capacitor power dissipation
12.	Avg Bridge Diode Pd	11.858 W	Power	Average Power Dissipation in the Bridge Diode over the AC Line Period
13.	Cout Pd	17.801 mW	Power	Output capacitor power dissipation
14.	Diode1 Pd	5.088 W	Power	Diode1 power dissipation
15.	Diode2 Pd	5.088 W	Power	Diode2 power dissipation
16.	L3 Pd	16.091 W	Power	L3 power loss
17.	L4 Pd	16.091 W	Power	Inductor power dissipation
18.	T1 Pd	3.195 W	Power	Power Dissipation in PFC-Coil L1.
19.	T2 Pd	3.195 W	Power	Power Dissipation in PFC-Coil L2.
20.	BOM Count	75	System Information	Total Design BOM count
21.	FootPrint	3.617 k mm^2	System Information	Total Foot Print Area of BOM components
22.	Frequency	100.0 kHz	System Information	Switching frequency
23.	Iout	5.5 A	System Information	Iout operating point
24.	Total BOM	NA	System Information	Total BOM Cost

#	Name	Value	Category	Description
25.	Vin_RMS	180.0 V	System Information	Vin operating point
26.	AC Frequency	60.0 Hz	System Parameters	Input AC frequency
27.	Duty Cycle	34.729 %	System Parameters	Duty cycle
28.	Mode	CCM	System Parameters	Conduction Mode
29.	Pout	2.145 kW	System Parameters	Total output power
30.	Vout	390.0 V	System Parameters	Operational Output Voltage
31.	Vout p-p	0.0 V	System Parameters	Peak-to-peak output ripple voltage
32.	T1 Iprim RMS	7.644 A	Transformer	Transformer Primary RMS Current
33.	T1 Iprim pk	18.725 A	Transformer	Transformer Primary Peak Current
34.	T1 Pd	3.195 W	Transformer	Power Dissipation in PFC-Coil L1.
35.	T2 Iprim RMS	7.644 A	Transformer	Transformer(T2) Primary RMS Current
36.	T2 Iprim pk	18.725 A	Transformer	Transformer(T2) Primary Peak Current
37.	T2 Pd	3.195 W	Transformer	Power Dissipation in PFC-Coil L2.

Design Inputs

Name	Value	Description
Iout	5.5	Maximum Output Current
SoftStart	500.0 ms	Soft Start Time (ms)
VinMax	265.0	Maximum input voltage
VinMin	180.0	Minimum input voltage
Vout	390.0	Output Voltage
base_pn	UCC28070	Base Product Number
source	AC	Input Source Type
Ta	30.0	Ambient temperature
UserFsw	10.0 k	Customer Selected Frequency

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

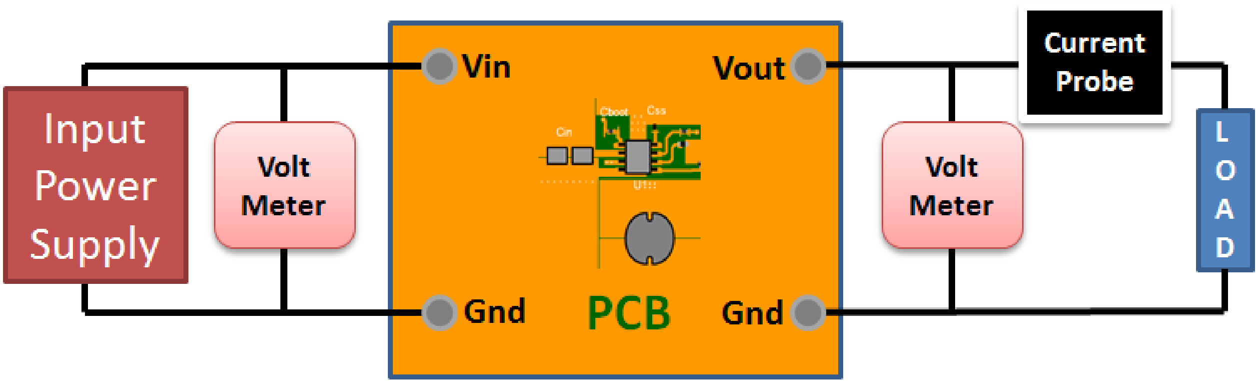
If board assembly is done in house it is best to tack down one terminal of a component on the board then solder the other terminal. For surface mount parts with large tabs, such as the DPAK, the tab on the back of the package should be pre-tinned with solder, then tacked into place by one of the pins. 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 180.0V 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. UCC28070Natural Interleaving? Transition-Mode PFC Controller With Improved Audible Noise Immunity. Leakage inductance is considered as 2% of Primary inductance.

2. Master key : 46F80E6B233B2C0A[v1]

3. **UCC28070** Product Folder : http://www.ti.com/product/UCC28070 : contains the data sheet and other resources.

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