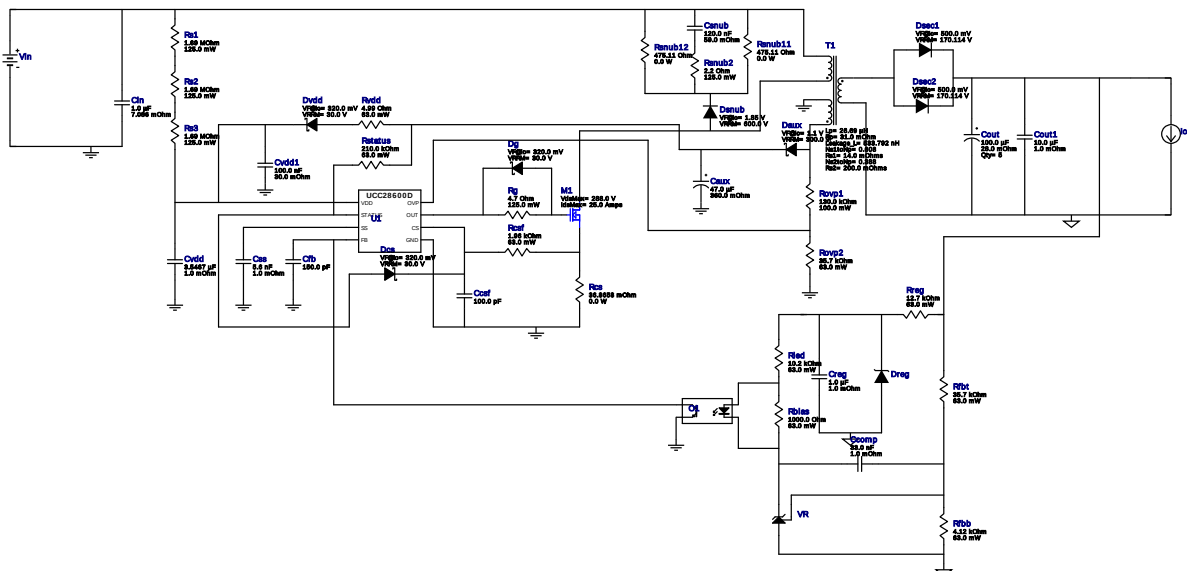
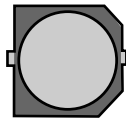


WEBENCH® Design Report

UCC28600DR 80V-140V to 24.00V @ 10A



Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Caux	Panasonic	EEE-FK1V470P Series= FK	Cap= 47.0 uF ESR= 360.0 mOhm VDC= 35.0 V IRMS= 240.0 mA	1	\$0.11	 SM_RADIAL_D 84 mm²
2.	Ccomp	MuRata	GRM155R71A333KA01D Series= X7R	Cap= 33.0 nF ESR= 1.0 mOhm VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	 0402 3 mm²
3.	Ccsf	Kemet	C0402C101K4GACTU Series= C0G/NP0	Cap= 100.0 pF VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	 0402 3 mm²
4.	Cfb	Johanson Technology	250R07N151JV4T Series= C0G/NP0	Cap= 150.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.02	 0402 3 mm²
5.	Cin	MuRata	GRM55DR72E105KW01L Series= X7R	Cap= 1.0 uF ESR= 7.086 mOhm VDC= 250.0 V IRMS= 2.0605 A	1	\$0.54	 2220_200 54 mm²
6.	Cout	Panasonic	EEHZA1H101P Series= ZA	Cap= 100.0 uF ESR= 28.0 mOhm VDC= 50.0 V IRMS= 2.0 A	5	\$1.00	 SM_RADIAL_10BMM 160 mm²
7.	Cout1	TDK	C3216X5R1H106K160AB Series= X5R	Cap= 10.0 uF ESR= 1.0 mOhm VDC= 50.0 V IRMS= 4.9 A	1	\$0.30	 1206_180 11 mm²
8.	Creg	Kemet	C0603C105K8PACTU Series= X5R	Cap= 1.0 uF ESR= 1.0 mOhm VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	 0603 5 mm²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
9.	Creg	Kemet	C0603C105K8PACTU Series= X5R	Cap= 1.0 uF ESR= 1.0 mOhm VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	 0603 5 mm ²
10.	Csnu	Kemet	C0805C124K1RACTU Series= X7R	Cap= 120.0 nF ESR= 59.0 mOhm VDC= 100.0 V IRMS= 1.84 A	1	\$0.09	 0805 7 mm ²
11.	Css	MuRata	GRM155R71E562KA01D Series= X7R	Cap= 5.6 nF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	 0402 3 mm ²
12.	Cvdd	CUSTOM	CUSTOM Series= ?	Cap= 3.5467 uF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 10.0 mA	1	NA	CUSTOM 0 mm ²
13.	Cvdd1	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.	Daux	SMC Diode Solutions	ST1300ATR	VF@Io= 1.1 V VRRM= 300.0 V	1	\$0.07	 SMA 37 mm ²
15.	Dcs	Toshiba	CMS06	VF@Io= 320.0 mV VRRM= 30.0 V	1	\$0.19	 M-FLAT 19 mm ²
16.	Dg	Toshiba	CMS06	VF@Io= 320.0 mV VRRM= 30.0 V	1	\$0.19	 M-FLAT 19 mm ²
17.	Dreg	Diodes Inc.	SMBJ5.0A-13-F	Zener	1	\$0.09	 SMB 44 mm ²
18.	Dreg	Diodes Inc.	SMBJ5.0A-13-F	Zener	1	\$0.09	 SMB 44 mm ²
19.	Dsec1	CUSTOM	CUSTOM	VF@Io= 500.0 mV VRRM= 170.114 V	1	NA	CUSTOM 0 mm ²
20.	Dsec2	CUSTOM	CUSTOM	VF@Io= 500.0 mV VRRM= 170.114 V	1	NA	CUSTOM 0 mm ²
21.	Dsnub	STMicroelectronics	STTH506B-TR	VF@Io= 1.85 V VRRM= 600.0 V	1	\$0.63	 DPAK 102 mm ²
22.	Dvdd	Toshiba	CMS06	VF@Io= 320.0 mV VRRM= 30.0 V	1	\$0.19	 M-FLAT 19 mm ²
23.	M1	NA	IdealFET	VdsMax= 288.0 V IdsMax= 25.0 Amps	1	NA	NA 0 mm ²
24.	O1	Fairchild Semiconductor	FOD817A	Optocoupler	1	\$0.13	 DIP-4 71 mm ²
25.	Rbias	Vishay-Dale	CRCW04021K00FKED Series= CRCW..e3	Res= 1000.0Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
26.	Rcs	CUSTOM	CUSTOM Series= ?	Res= 0.036865767677300924Ohm Power= 0.0 W Tolerance= 0.0%	1	NA	CUSTOM 0 mm ²
27.	Rcsf	Vishay-Dale	CRCW04021K96FKED Series= CRCW..e3	Res= 1960.0Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²

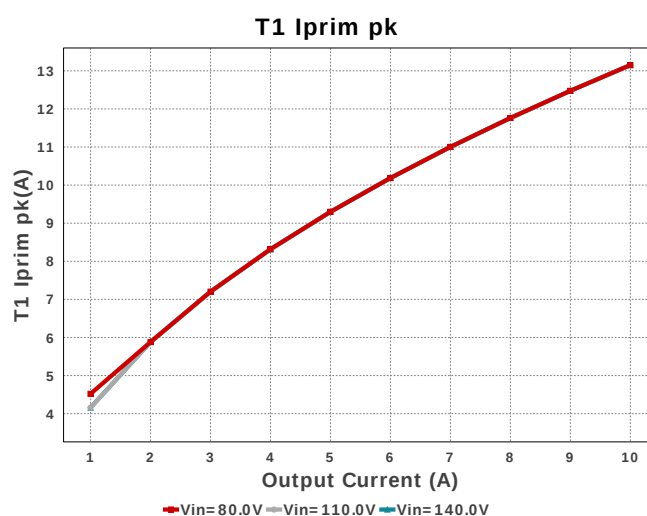
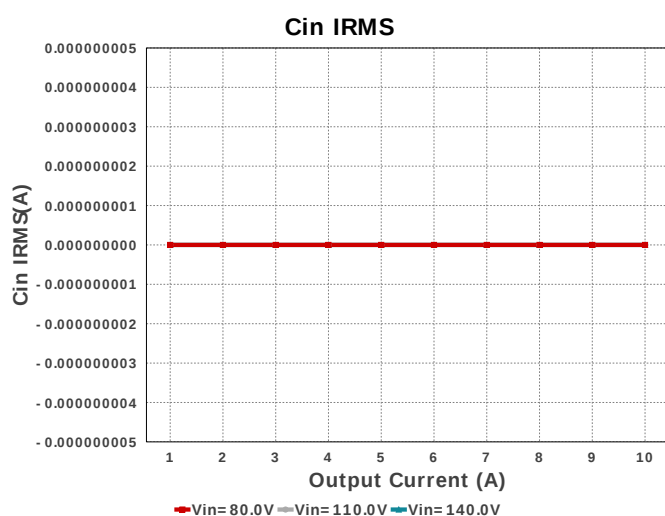
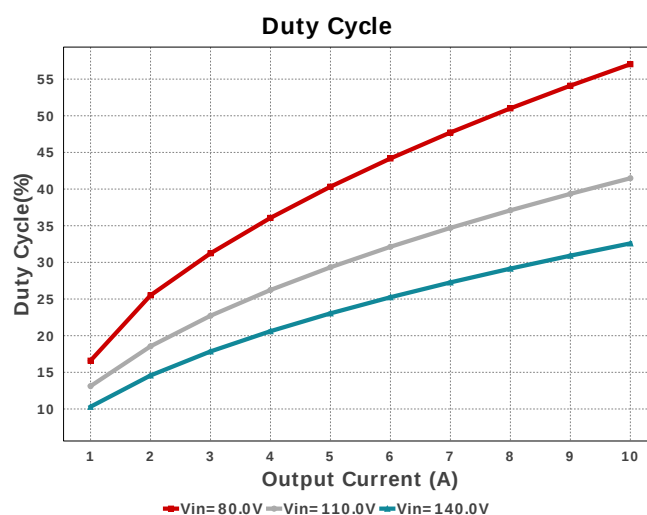
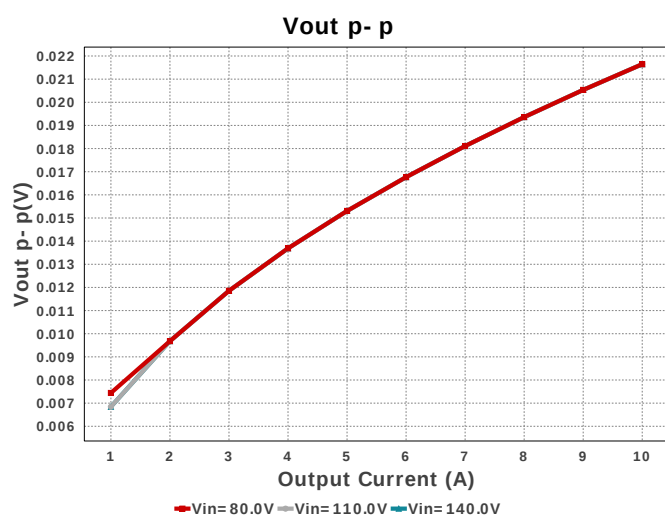
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
28.	Rfbb	Vishay-Dale	CRCW04024K12FKED Series= CRCW..e3	Res= 4120.0Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm²
29.	Rfbt	Vishay-Dale	CRCW040235K7FKED Series= CRCW..e3	Res= 35700.0Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm²
30.	Rg	Yageo	RC0805FR-074R7L Series= ?	Res= 4.7Ohm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm²
31.	Rled	Vishay-Dale	CRCW040210K2FKED Series= CRCW..e3	Res= 10200.0Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm²
32.	Rovp1	Vishay-Dale	CRCW0603130KFKEA Series= CRCW..e3	Res= 130000.0Ohm Power= 100.0 mW Tolerance= 1.0%	1	\$0.01	 0603 5 mm²
33.	Rovp2	Vishay-Dale	CRCW040235K7FKED Series= CRCW..e3	Res= 35700.0Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm²
34.	Rreg	Vishay-Dale	CRCW040212K7FKED Series= CRCW..e3	Res= 12700.0Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm²
35.	Rreg	Vishay-Dale	CRCW040212K7FKED Series= CRCW..e3	Res= 12700.0Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm²
36.	Rs1	Vishay-Dale	CRCW08051M69FKEA Series= CRCW..e3	Res= 1690000.0Ohm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm²
37.	Rs2	Vishay-Dale	CRCW08051M69FKEA Series= CRCW..e3	Res= 1690000.0Ohm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm²
38.	Rs3	Vishay-Dale	CRCW08051M69FKEA Series= CRCW..e3	Res= 1690000.0Ohm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm²
39.	Rs1ub11	CUSTOM	CUSTOM Series= ?	Res= 475.1104838133842Ohm Power= 0.0 W Tolerance= 0.0%	1	NA	CUSTOM 0 mm²
40.	Rs1ub12	CUSTOM	CUSTOM Series= ?	Res= 475.1104838133842Ohm Power= 0.0 W Tolerance= 0.0%	1	NA	CUSTOM 0 mm²
41.	Rs1ub2	Yageo	RC0805FR-072R2L Series= ?	Res= 2.2Ohm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm²
42.	Rstatus	Vishay-Dale	CRCW0402210KFKEA Series= CRCW..e3	Res= 210000.0Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm²
43.	Rvdd	Vishay-Dale	CRCW04024R99FKED Series= CRCW..e3	Res= 4.99Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm²
44.	T1	CUSTOM	CUSTOM	Lp= 26.69 µH Rp= 31.0 mOhm Leakage_L= 533.792 nH Ns1toNp= 607.549 m Rs1= 14.0 mOhms Ns2toNp= 0.388 Rs2= 200.0 mOhms	1	NA	CUSTOM 0 mm²

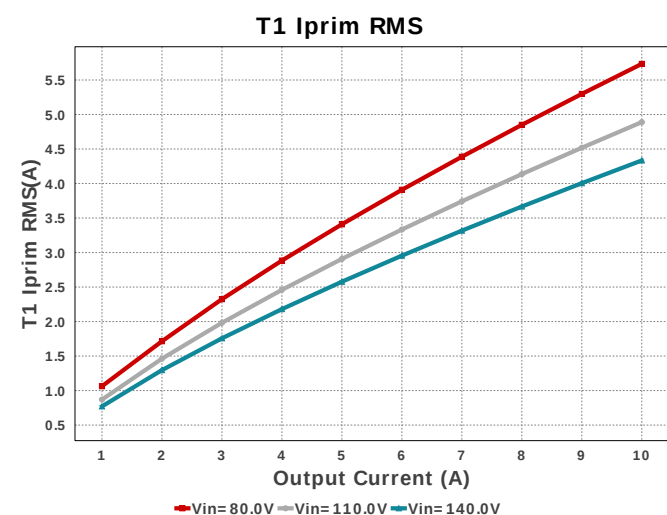
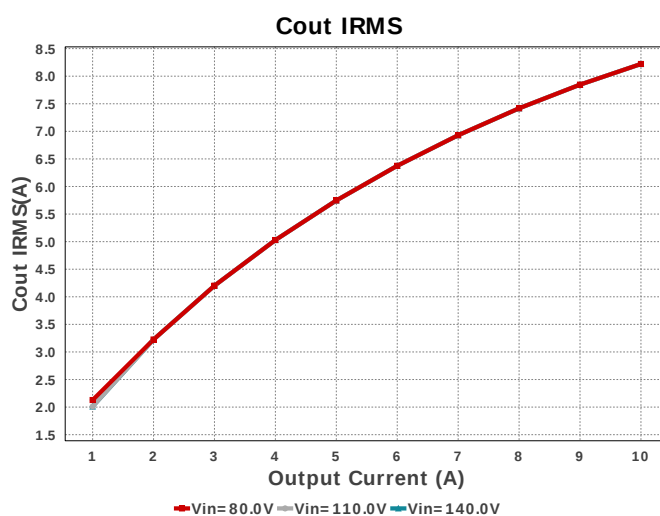
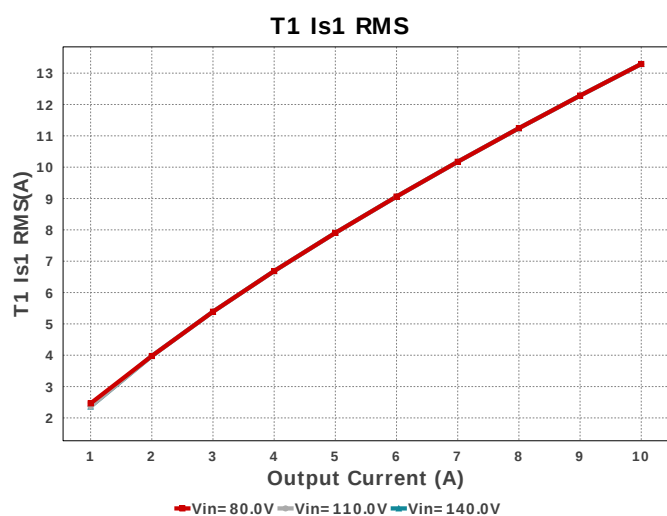
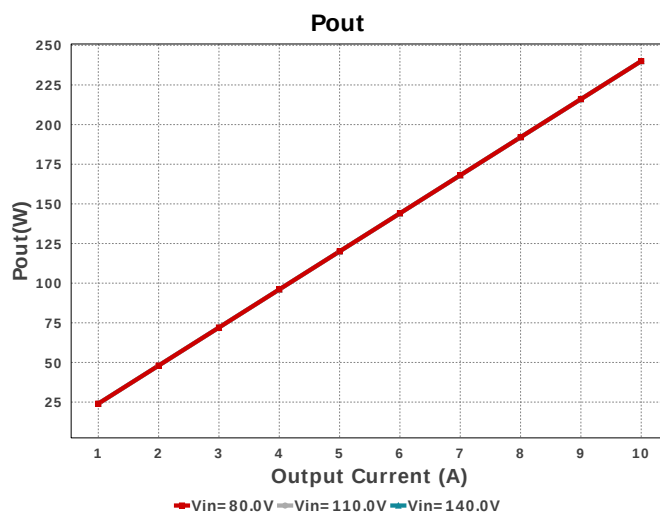
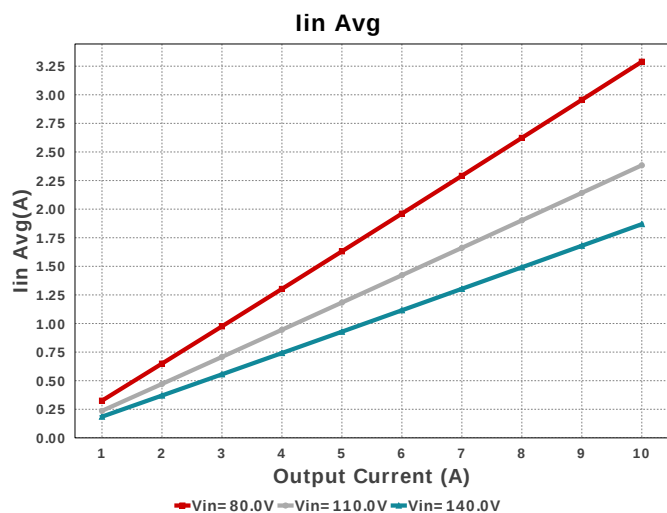
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
45.	U1	Texas Instruments	UCC28600DR	Switcher	1	\$0.46	

D0008A 57 mm²

46.	VR	Texas Instruments	TL431AIDBZR
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Voltage References	1	\$0.08
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DBZ0003A 14 mm²



Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	0.0 A	Capacitor	Input capacitor RMS ripple current
2.	Cout IRMS	12.908 A	Capacitor	Output capacitor RMS ripple current
3.	ICThetaJA	108.9 degC/W	IC	IC junction-to-ambient thermal resistance
4.	Iin Avg	3.358 A	IC	Average input current
5.	BOM Count	50	System Information	Total Design BOM count
6.	Duty Cycle	36.044 %	System Information	Duty cycle
7.	FootPrint	1.612 k mm ²	System Information	Total Foot Print Area of BOM components

#	Name	Value	Category	Description
8.	Frequency	51.923 kHz	System Information	Switching frequency
9.	Iout	10.0 A	System Information	Iout operating point
10.	Mode	DCM	System Information	Conduction Mode
11.	Pout	240.08 W	System Information	Total output power
12.	Total BOM	NA	System Information	Total BOM Cost
13.	Vin	80.0 V	System Information	Vin operating point
14.	Vout	24.0 V	System Information	Operational Output Voltage
15.	Vout p-p	34.249 mV	System Information	Peak-to-peak output ripple voltage
16.	T1 Iprim RMS	7.212 A	Transformer	Transformer Primary RMS Current
17.	T1 Iprim pk	20.808 A	Transformer	Transformer Primary Peak Current
18.	T1 Is1 RMS	16.721 A	Transformer	Transformer Secondary1 RMS Current

Design Inputs

#	Name	Value	Description
1.	Iout	10.0	Maximum Output Current
2.	VinMax	140.0	Maximum input voltage
3.	VinMin	80.0	Minimum input voltage
4.	VinTyp	110.0	Typical input voltage
5.	Vout	24.0	Output Voltage
6.	acFrequency	60.0	AC Frequency
7.	base_pn	UCC28600	Base Product Number
8.	source	DC	Input Source Type
9.	Ta	70.0	Ambient temperature

Design Assistance

1. Quasi-Resonant Flyback Green-Mode Controller
2. **UCC28600** Product Folder : <http://www.ti.com/product/UCC28600> : contains the data sheet and other resources.

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