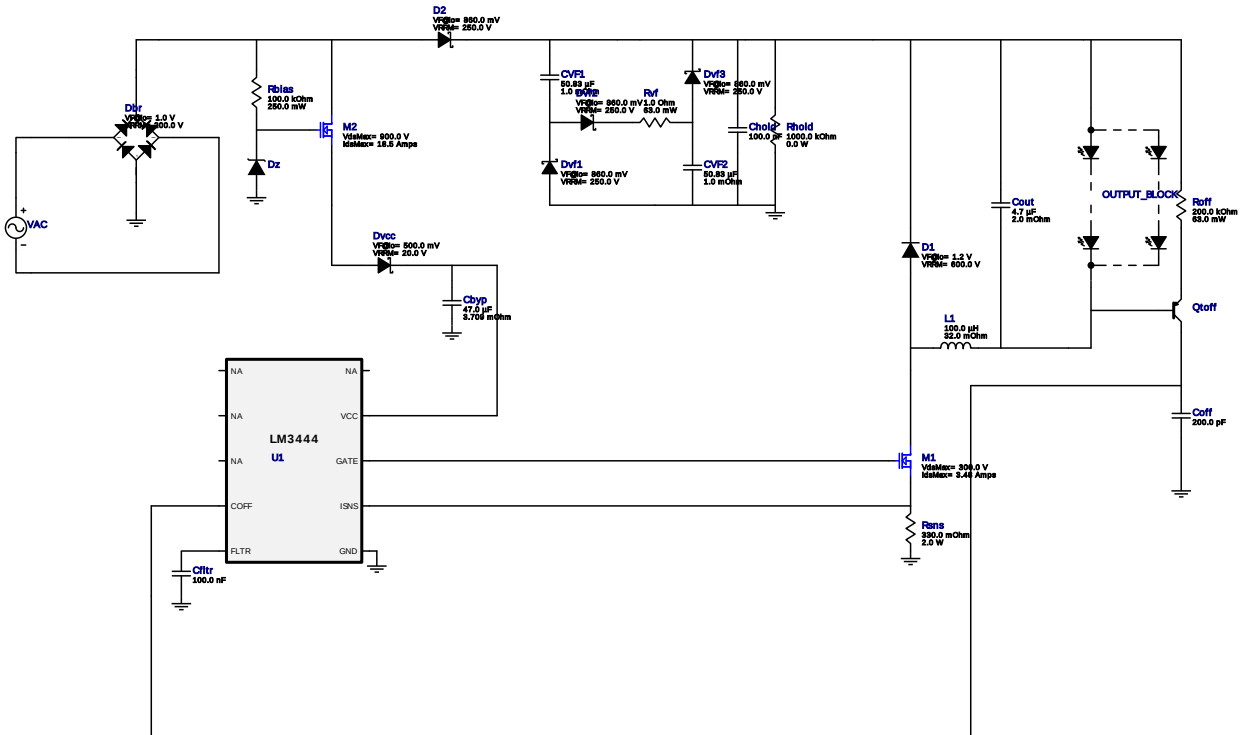


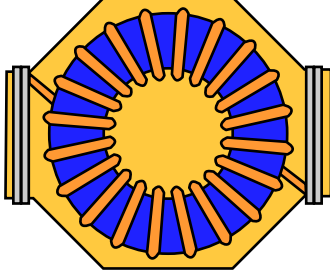
WEBENCH® Design Report

Design : 4765175/4 LM3444MM/NOPB
LM3444MM/NOPB 110.0V-130.0V to 9.80V @ 1.8A

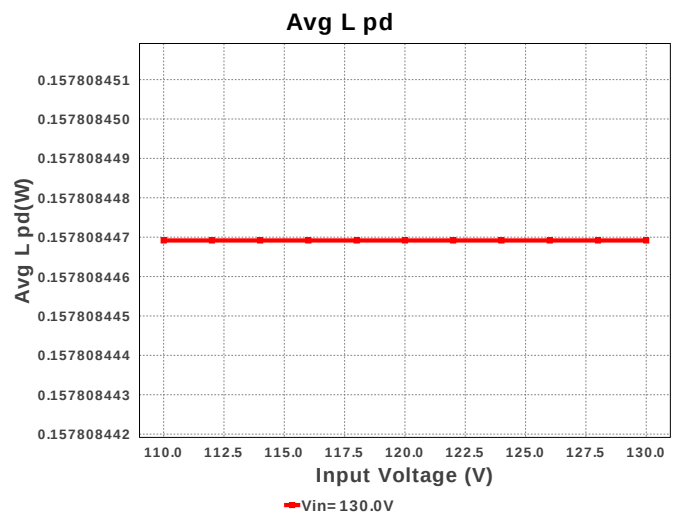
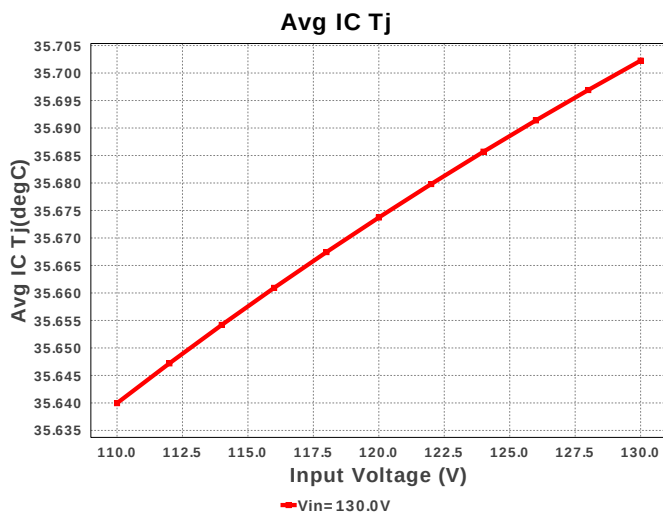
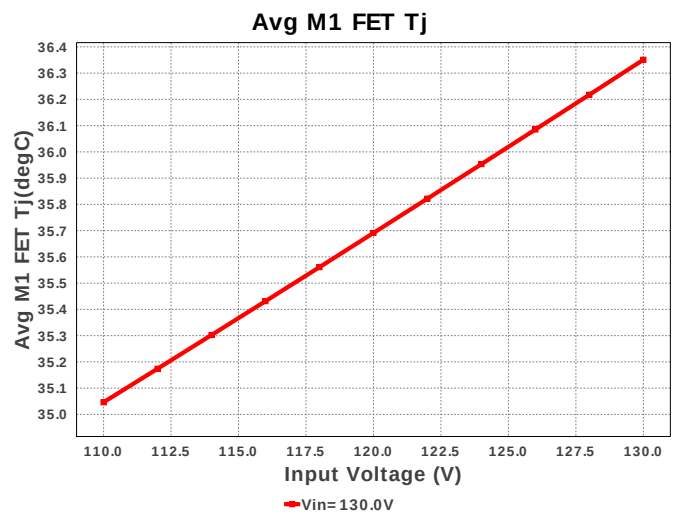
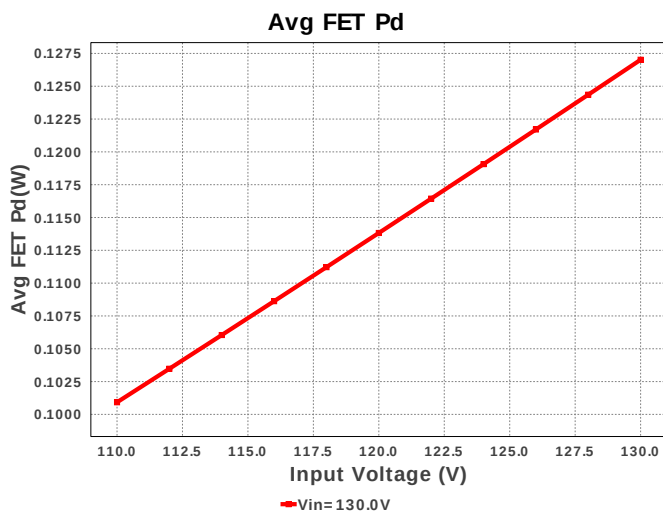


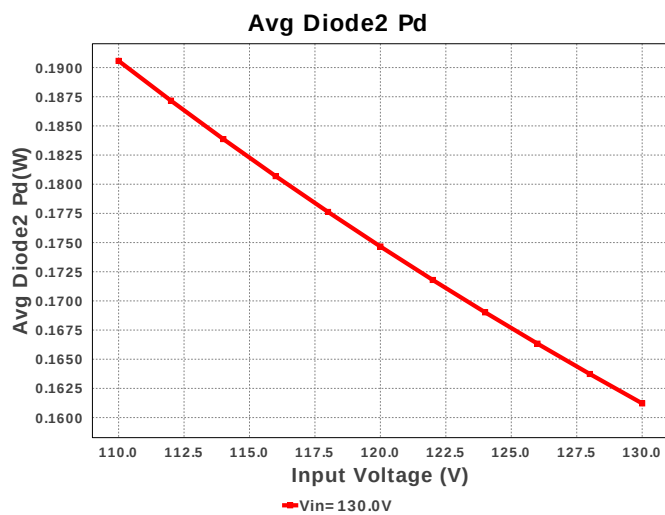
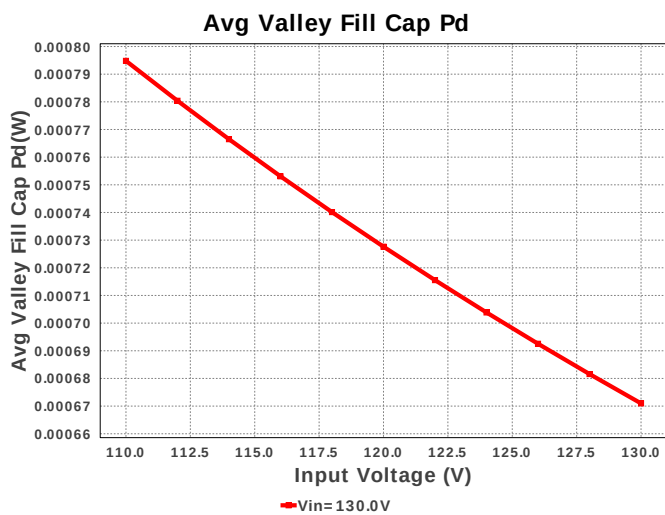
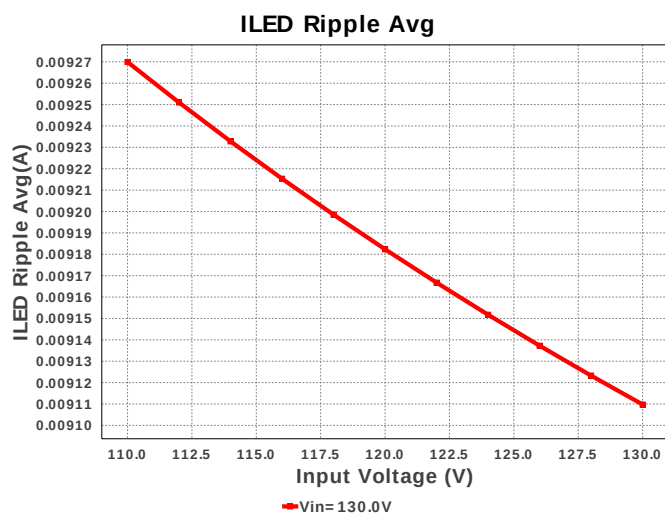
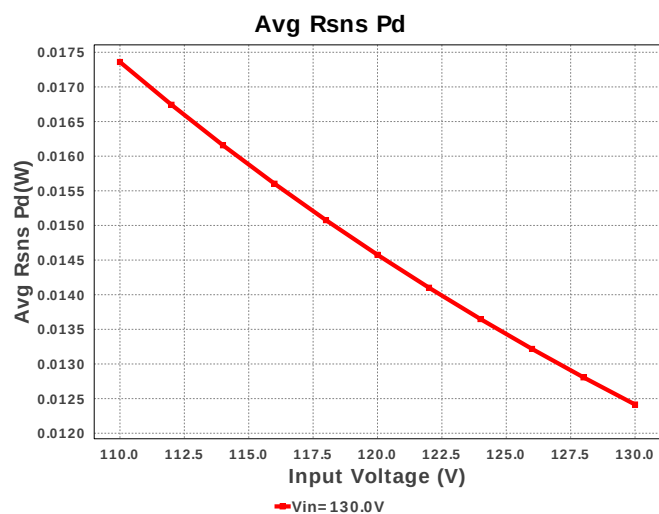
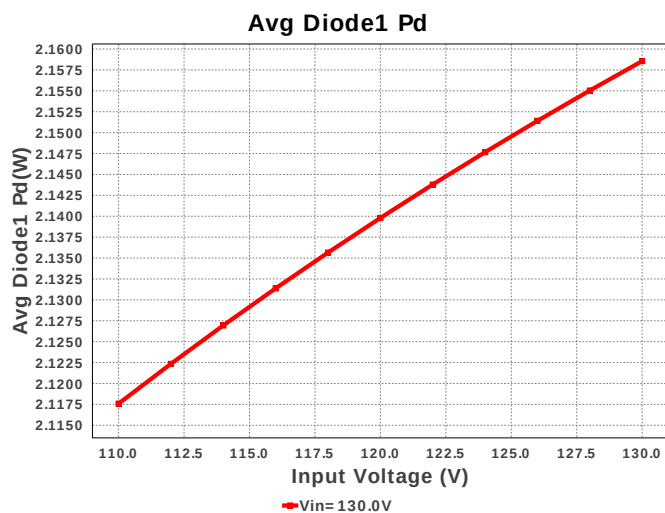
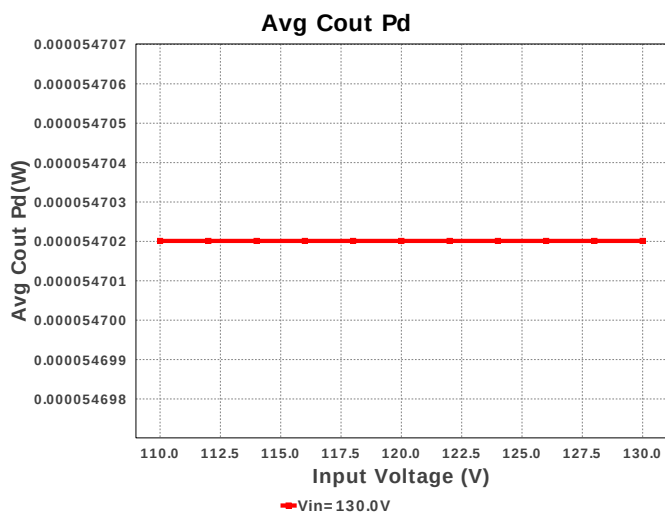
Electrical BOM

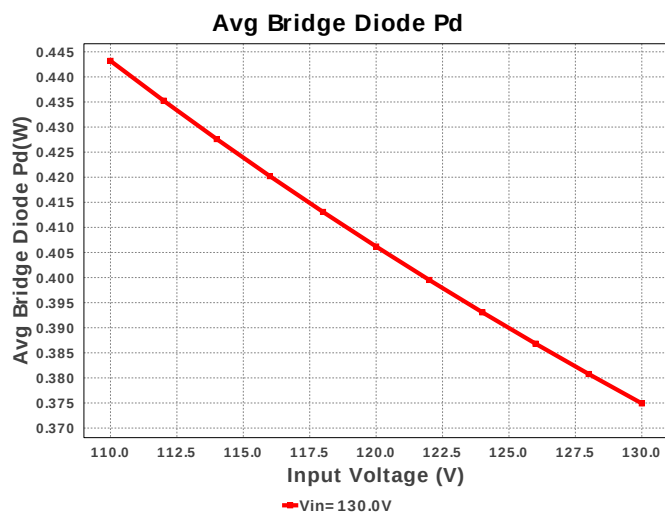
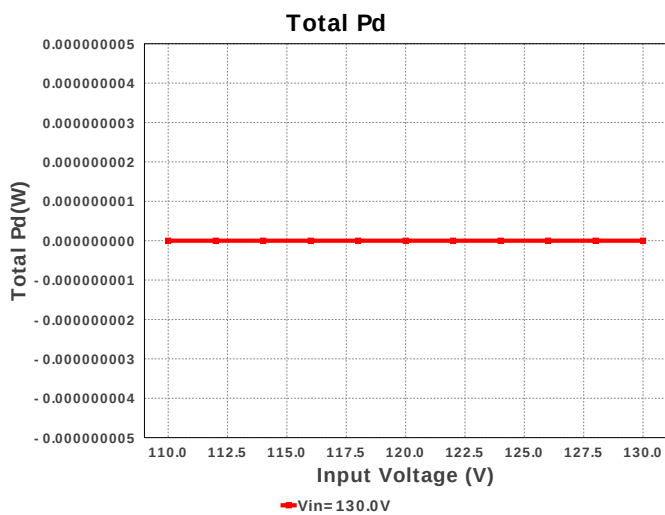
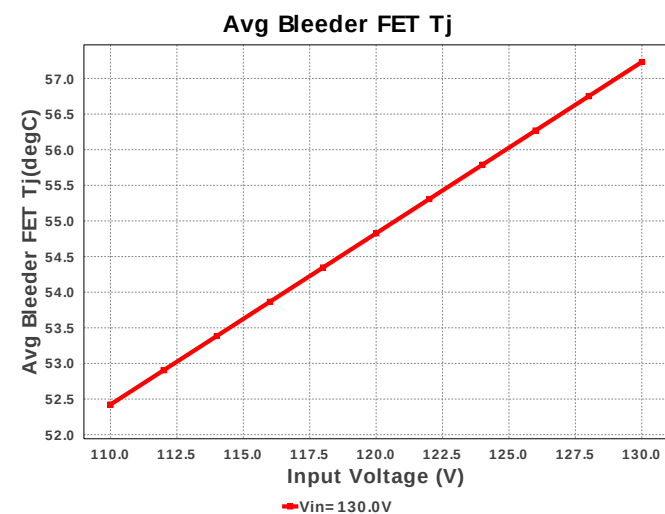
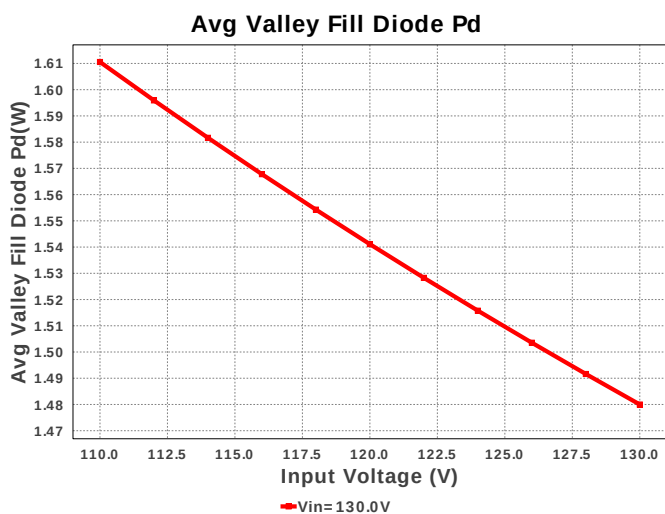
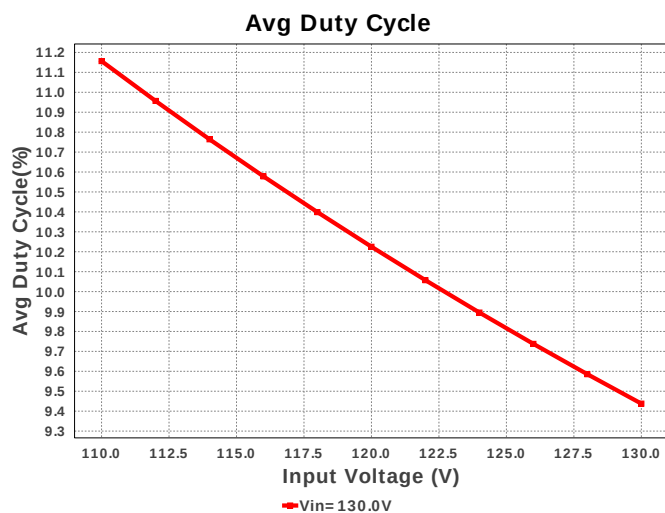
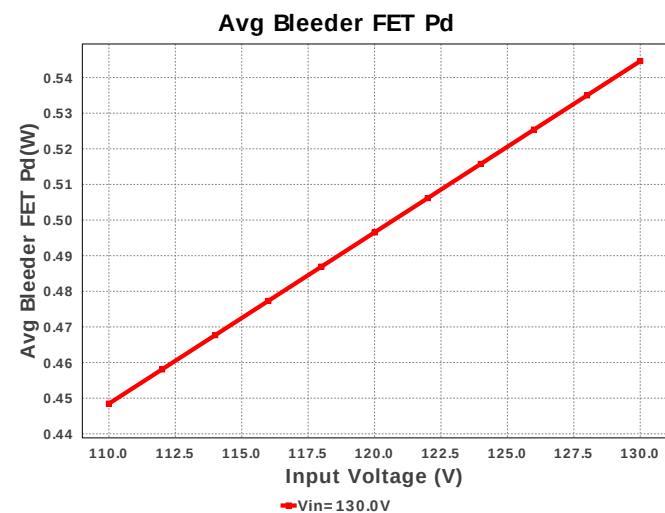
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	CVF1	CUSTOM	CUSTOM Series= ?	Cap= 50.83 uF ESR= 1.0 mOhm VDC= 147.078 V IRMS= 2.3398 A	1	NA	CUSTOM 0 mm ²
2.	CVF2	CUSTOM	CUSTOM Series= ?	Cap= 50.83 uF ESR= 1.0 mOhm VDC= 147.078 V IRMS= 2.3398 A	1	NA	CUSTOM 0 mm ²
3.	Cbyp	MuRata	GRM31CR61A476KE15L 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
4.	Cfltr	MuRata	GRM21BR71E104KA01L Series= X7R	Cap= 100.0 nF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm ²
5.	Chold	MuRata	GRM31CR72E104KW03L Series= X7R	Cap= 100.0 nF VDC= 250.0 V IRMS= 0.0 A	1	\$0.06	 1206 11 mm ²
6.	Coff	Samsung Electro-Mechanics	CL21C201JBANNNC Series= C0G/NP0	Cap= 200.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm ²
7.	Cout	MuRata	GRM21BR61E475MA12L Series= X5R	Cap= 4.7 uF ESR= 2.0 mOhm VDC= 25.0 V IRMS= 7.29 A	1	\$0.02	 0805 7 mm ²

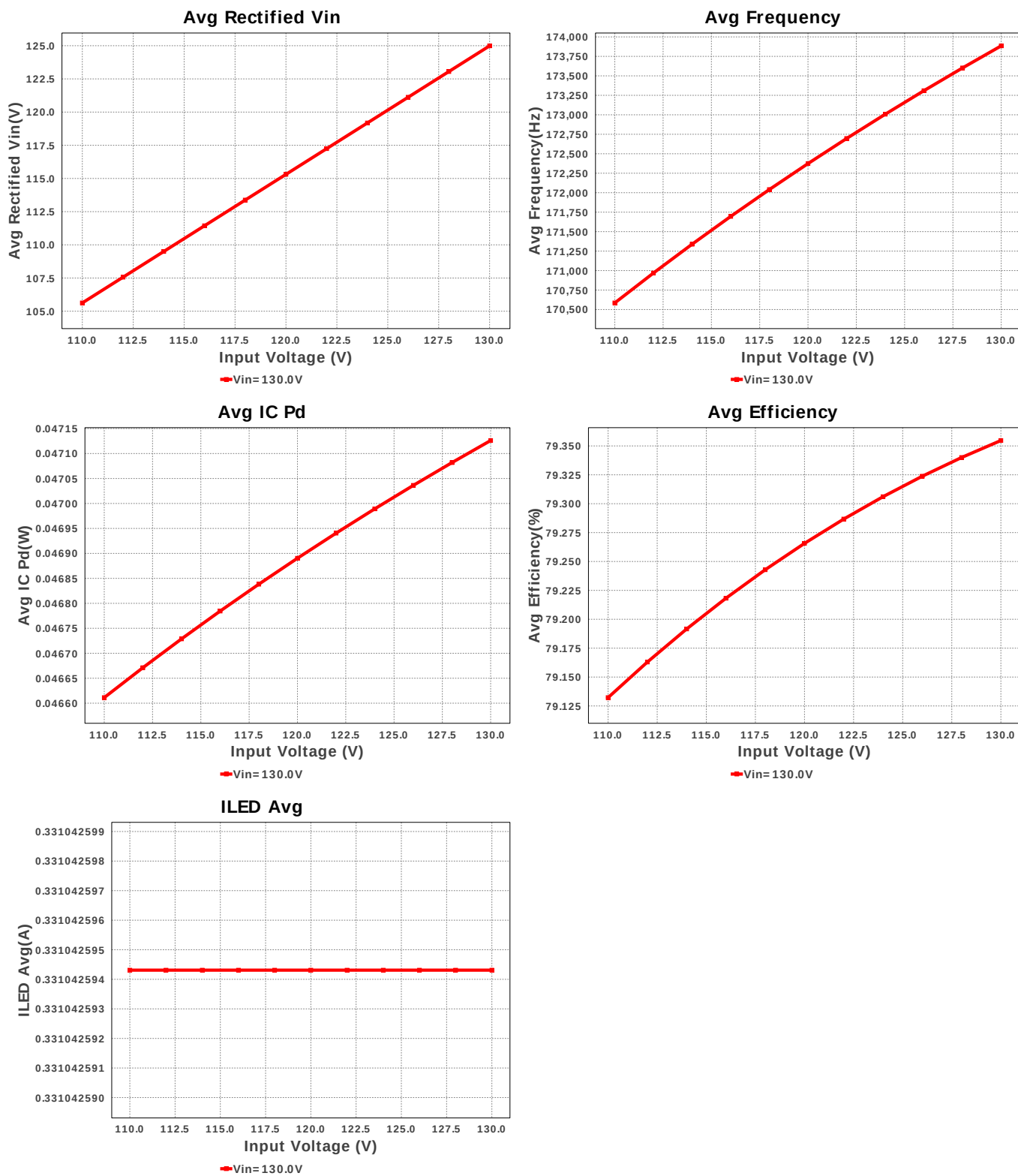
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
8.	D1	Bourns	CD214B-F3600	VF@Io= 1.2 V VRRM= 600.0 V	1	\$0.14	 SMB 44 mm ²
9.	D2	ON Semiconductor	MBRB40250TG	VF@Io= 860.0 mV VRRM= 250.0 V	1	\$0.94	 DDPAK 210 mm ²
10.	D_LED	CUSTOM	CUSTOM	LED	84	NA	CUSTOM 0 mm ²
11.	Dbr	Diodes Inc.	HD02-T	VF@Io= 1.0 V VRRM= 200.0 V	1	\$0.12	 MiniDIP 62 mm ²
12.	Dvcc	Vishay-Semiconductor	SS12-E3/61T	VF@Io= 500.0 mV VRRM= 20.0 V	1	\$0.08	 SMA 37 mm ²
13.	Dvf1	ON Semiconductor	MBRB40250TG	VF@Io= 860.0 mV VRRM= 250.0 V	1	\$0.94	 DDPAK 210 mm ²
14.	Dvf2	ON Semiconductor	MBRB40250TG	VF@Io= 860.0 mV VRRM= 250.0 V	1	\$0.94	 DDPAK 210 mm ²
15.	Dvf3	ON Semiconductor	MBRB40250TG	VF@Io= 860.0 mV VRRM= 250.0 V	1	\$0.94	 DDPAK 210 mm ²
16.	Dz	ON Semiconductor	BZX84C15LT1G	Zener	1	\$0.02	 SOT-23 14 mm ²
17.	L1	Bourns	PM2110-101K-RC	L= 100.0 µH DCR= 32.0 mOhm	1	\$1.21	 PM2110 890 mm ²
18.	M1	Fairchild Semiconductor	FQD7N30TM	VdsMax= 300.0 V IdsMax= 3.48 Amps	1	\$0.40	 DPAK 102 mm ²
19.	M2	STMicroelectronics	STW21N90K5	VdsMax= 900.0 V IdsMax= 18.5 Amps	1	\$3.94	 TO-247 123 mm ²
20.	Qtoff	Fairchild Semiconductor	MMBTA92	Bipolar Transistor	1	\$0.05	 SOT-23 14 mm ²
21.	Rbias	Panasonic	ERJ-8ENF1003V Series= ERJ-8E	Res= 100.0 kOhm Power= 250.0 mW Tolerance= 1.0%	1	\$0.01	 1206 11 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
22.	Rhold	CUSTOM	CUSTOM Series= ?	Res= 1000.0 kOhm Power= 0.0 W Tolerance= 0.0%	1	NA	CUSTOM 0 mm ²
23.	Roff	Vishay-Dale	CRCW0402200KFKED Series= CRCW..e3	Res= 200.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
24.	Rsns	Stackpole Electronics Inc	CSRN2512FKR330 Series= ?	Res= 330.0 mOhm Power= 2.0 W Tolerance= 1.0%	1	\$0.13	 2512 43 mm ²
25.	Rvf	Vishay-Dale	CRCW04021R00FKED Series= CRCW..e3	Res= 1.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
26.	U1	Texas Instruments	LM3444MM/NOPB	Switcher	1	\$0.35	0 mm ²









Operating Values

#	Name	Value	Category	Description
1.	ILED Avg	331.043 mA	Current	Average Current per LED for the AC line period
2.	ILED Ripple Avg	9.11 mA	Current	Average LED Ripple Current for the AC line period
3.	Avg Rectified Vin	124.989 V	General	Average Rectified Voltage for the AC Line Period
4.	BOM Count	109	General	Total Design BOM count
5.	FootPrint	2.268 k mm ²	General	Total Foot Print Area of BOM components
6.	Total BOM	\$0.0	General	Total BOM Cost
7.	Avg Bleeder FET Tj	57.231 degC	Op_Point	Bleeder MOSFET average junction temperature over the AC Line Period
8.	Avg M1 FET Tj	36.351 degC	Op_Point	M1 MOSFET average junction temperature over the AC Line Period
9.	Avg Duty Cycle	9.438 %	Op_point	Average Duty Cycle over the AC Line Period
10.	Avg Efficiency	81.824 %	Op_point	Average Efficiency over the AC Line Period

#	Name	Value	Category	Description
11.	Avg Frequency	173.885 kHz	Op_point	Average Switching Frequency over the AC Line Period
12.	Avg IC Tj	35.702 degC	Op_point	Average IC junction temperature for the AC line period
13.	VIN_OP	130.0 V	Op_point	AC Input RMS Voltage
14.	Avg Bleeder FET Pd	544.622 mW	Power	Average power dissipation in the bleeder FET over the AC line period
15.	Avg Bridge Diode Pd	280.673 mW	Power	Average Power Dissipation in the Bridge Diode over the AC Line Period
16.	Avg Cout Pd	54.702 µW	Power	Average Power Dissipation in the Output Capacitor over the AC Line Period
17.	Avg Diode1 Pd	2.159 W	Power	Average Power Dissipation in D1 over the AC Line Period
18.	Avg Diode2 Pd	97.383 mW	Power	Average Power Dissipation in D1 over the AC Line Period
19.	Avg FET Pd	127.019 mW	Power	Average power dissipation in the switching FET over the AC line period
20.	Avg IC Pd	47.126 mW	Power	Average Power Dissipation in the IC over the AC line period
21.	Avg L pd	157.808 mW	Power	Average Inductor power dissipation over the AC line period
22.	Avg Rsns Pd	12.415 mW	Power	Average power dissipation in the Current limit resistor over the AC line period
23.	Avg Valley Fill Cap Pd	670.989 µW	Power	Average Power Dissipation in the Valley Fill Capacitors over the AC Line Period
24.	Avg Valley Fill Diode Pd	897.652 mW	Power	Average Power Dissipation in the Valley Fill Diodes over the AC Line Period
25.	Total Pd	0.0 W	Power	Total Power Dissipation
26.	Vout Tolerance	306.12 m%		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	1.8	Maximum Output Current
2.	VinMax	130.0	Maximum input voltage
3.	VinMin	110.0	Minimum input voltage
4.	Vout	9.8	Output Voltage
5.	acFrequency	50.0	Light Output in Lumen
6.	application	LED_DRIVER	LED Application
7.	base_pn	LM3444	Texas Instruments Base Part Number
8.	isLEDArchitect	N	LED Architect Project
9.	ledparallel	6.0	Number of LED in parallel
10.	ledpartnumber	??	LED Part number
11.	ledseries	14.0	Number of LED in series
12.	line_fsw	50.0	AC Line Frequency
13.	source	AC	Input Source Type
14.	ta	30.0	Ambient temperature

Design Assistance

1. LM3444 Product Folder : <http://www.ti.com/product/LM3444> : contains the data sheet and other resources.

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