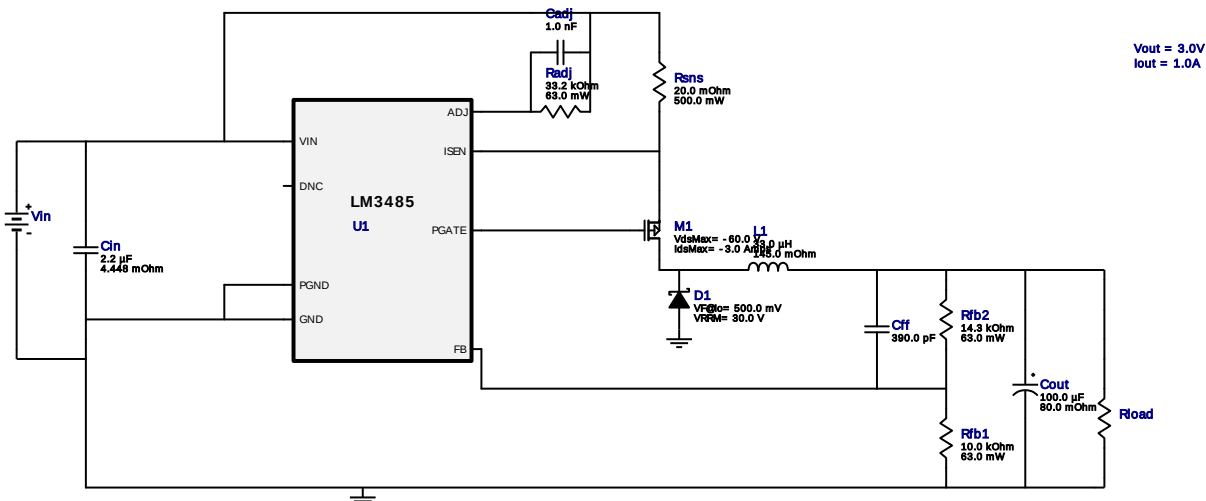


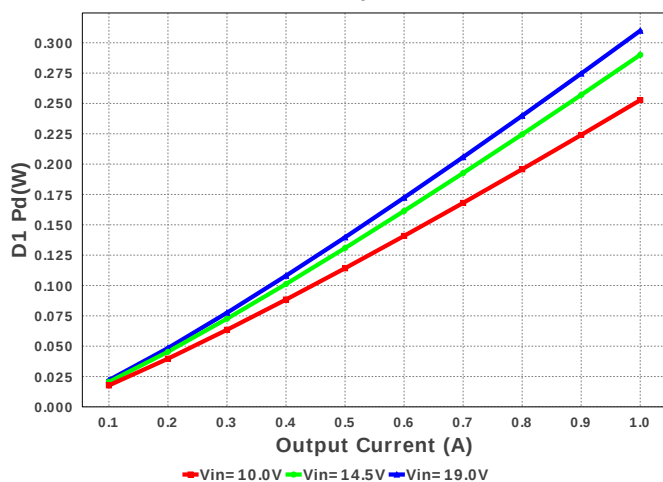


Electrical BOM

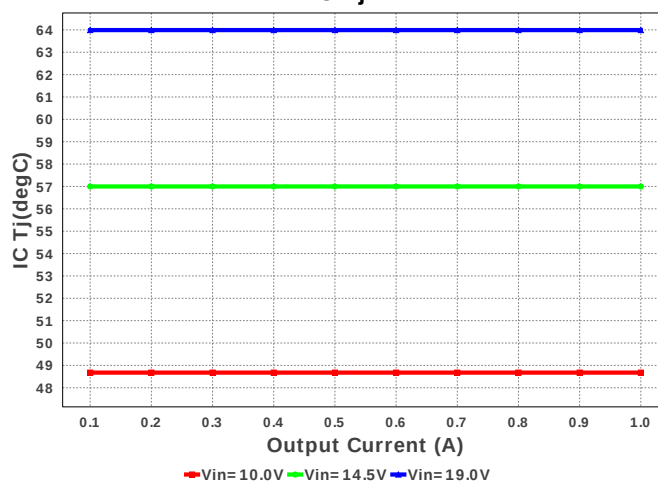
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cadj	Samsung Electro-Mechanics	CL21C102JBCNFNC Series= C0G/NP0	Cap= 1.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm ²
2.	Cff	Yageo America	CC0805KRX7R9BB391 Series= X7R	Cap= 390.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm ²
3.	Cin	MuRata	GRM31CR71H225KA88L Series= X7R	Cap= 2.2 uF ESR= 4.448 mOhm VDC= 50.0 V IRMS= 2.2252 A	1	\$0.05	 1206_190 11 mm ²
4.	Cout	AVX	TPSD107M010R0080 Series= TPS	Cap= 100.0 uF ESR= 80.0 mOhm VDC= 10.0 V IRMS= 1.232 A	1	\$0.95	 7343-31 59 mm ²
5.	D1	Diodes Inc.	B230A-13-F	VF@Io= 500.0 mV VRRM= 30.0 V	1	\$0.09	 SMA 37 mm ²
6.	L1	Bourns	SRN8040-330M	L= 33.0 uH DCR= 145.0 mOhm	1	\$0.22	 SRN8040 100 mm ²
7.	M1	Fairchild Semiconductor	FDC5614P	VdsMax= -60.0 V IdsMax= -3.0 Amps	1	\$0.23	 SOT-23-6 15 mm ²
8.	Radj	Vishay-Dale	CRCW040233K2FKED Series= CRCW..e3	Res= 33.2 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
9.	Rfb1	Vishay-Dale	CRCW040210K0FKED Series= CRCW..e3	Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
10.	Rfb2	Vishay-Dale	CRCW040214K3FKED Series= CRCW..e3	Res= 14.3 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
11.	Rsns	Stackpole Electronics Inc	CSR1206FK20L0 Series= ?	Res= 20.0 mOhm Power= 500.0 mW Tolerance= 1.0%	1	\$0.10	 1206 11 mm ²
12.	U1	Texas Instruments	LM3485MM/NOPB	Switcher	1	\$0.52	 MUA08A 24 mm ²

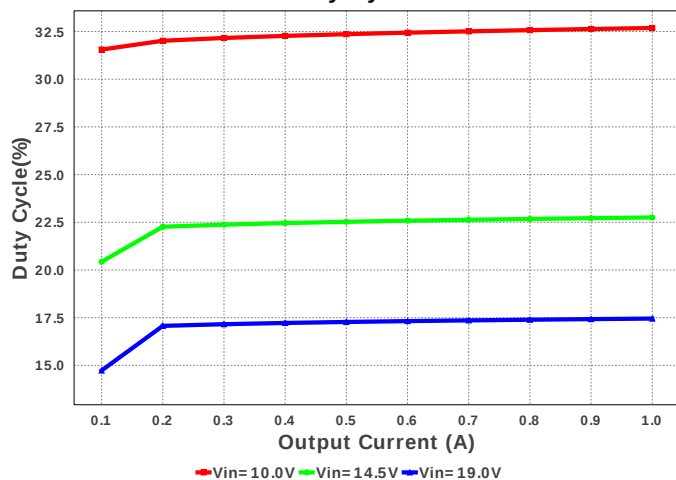
D1 Pd



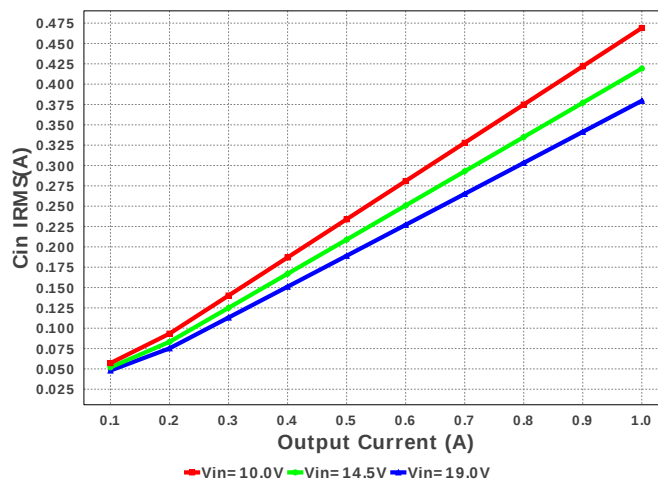
IC Tj

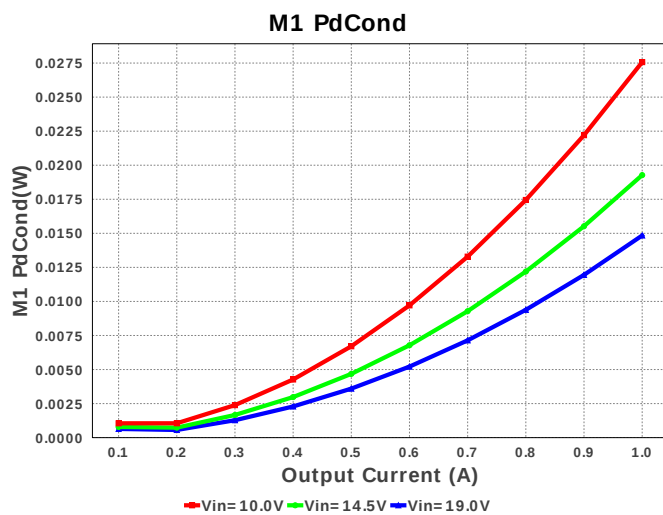
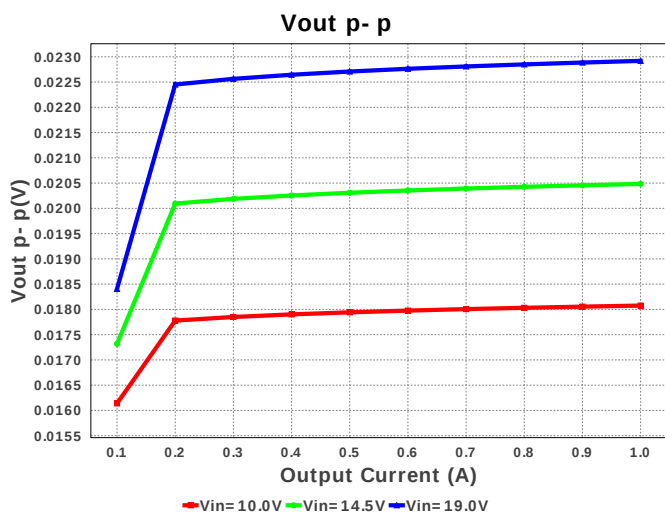
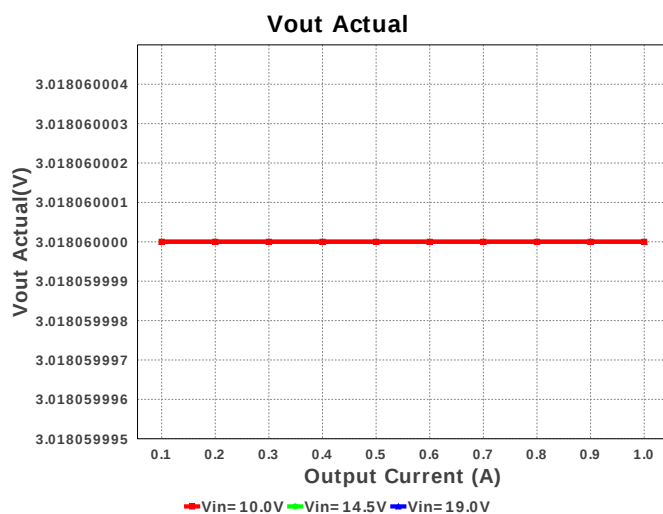
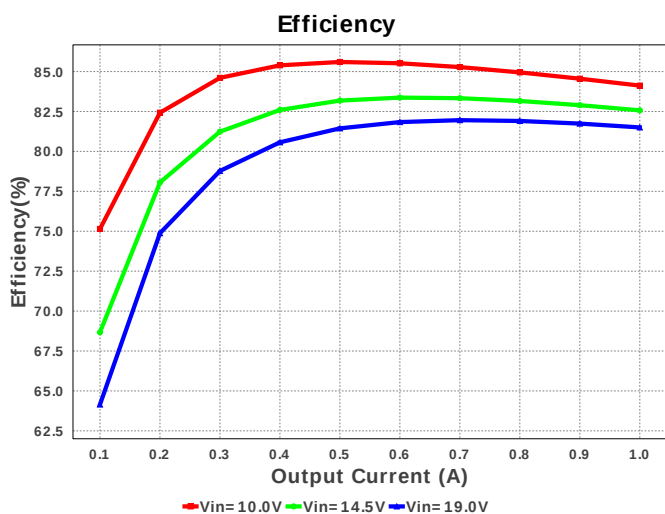
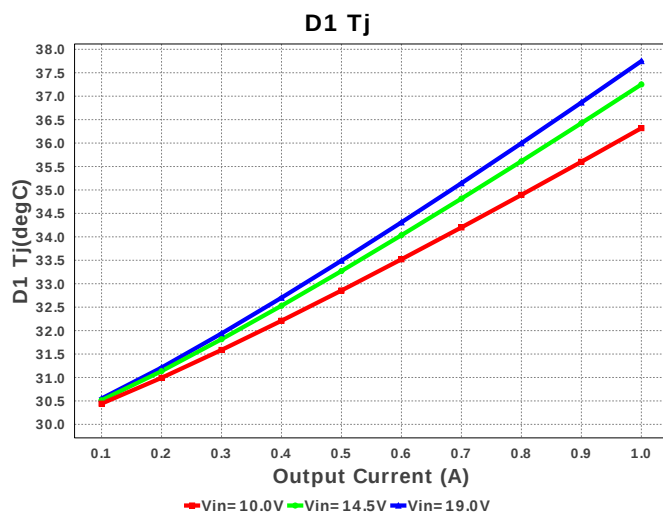
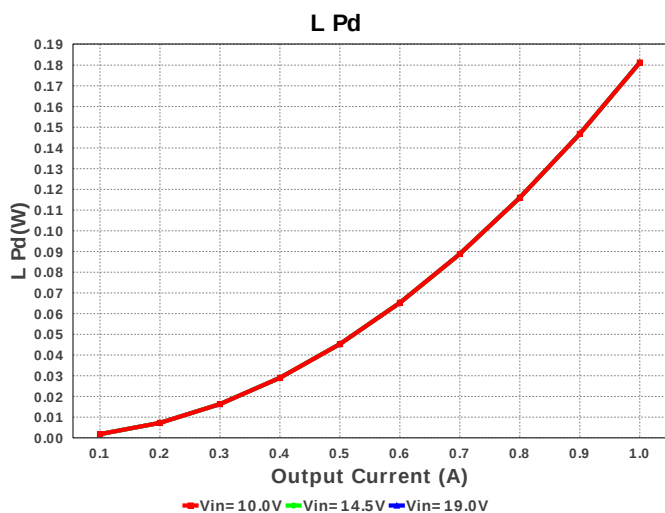


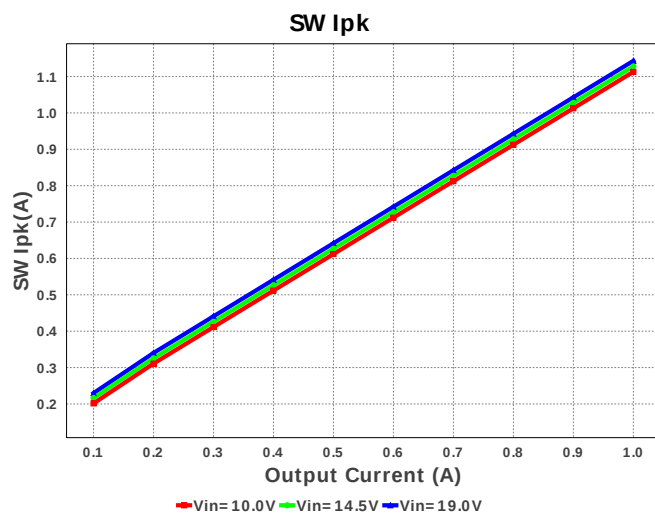
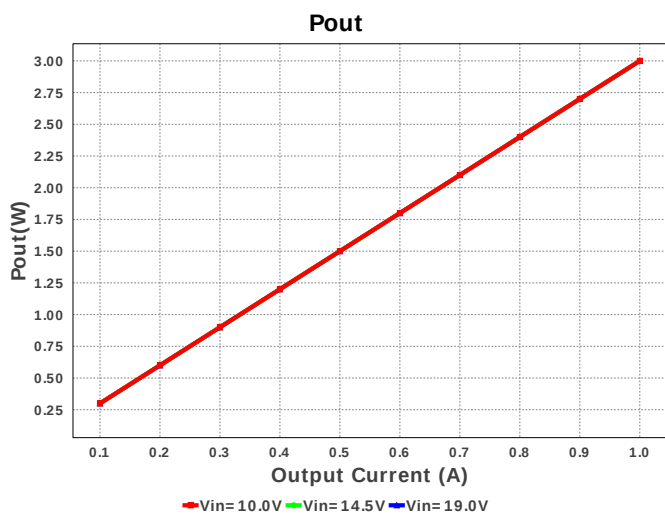
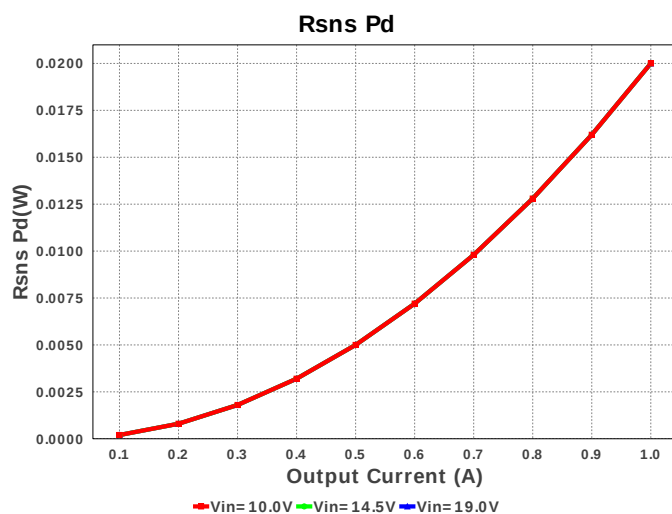
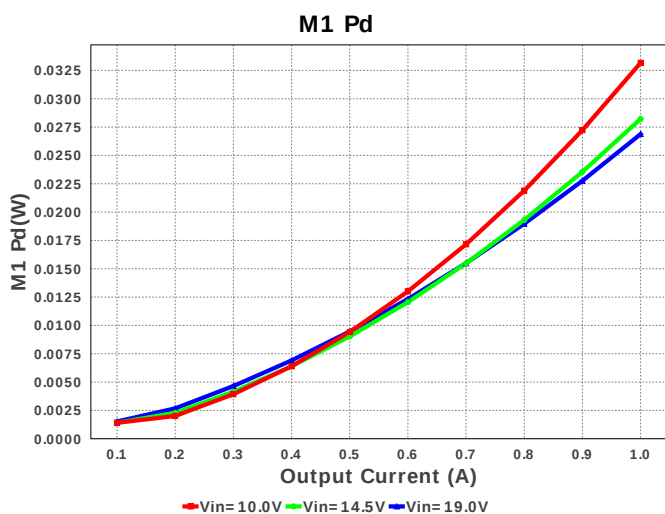
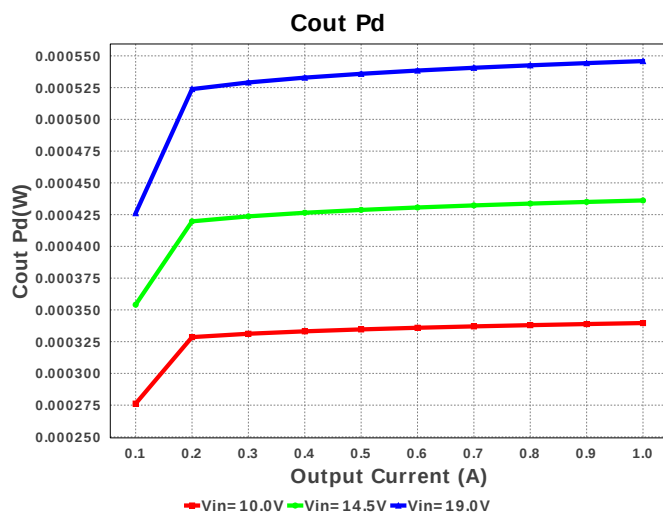
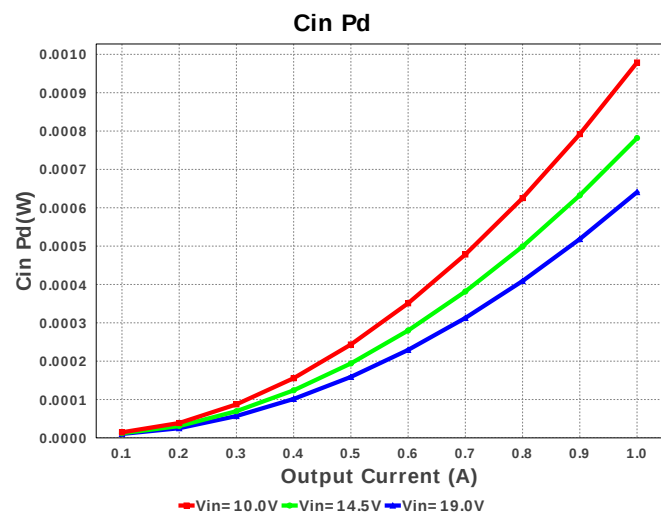
Duty Cycle

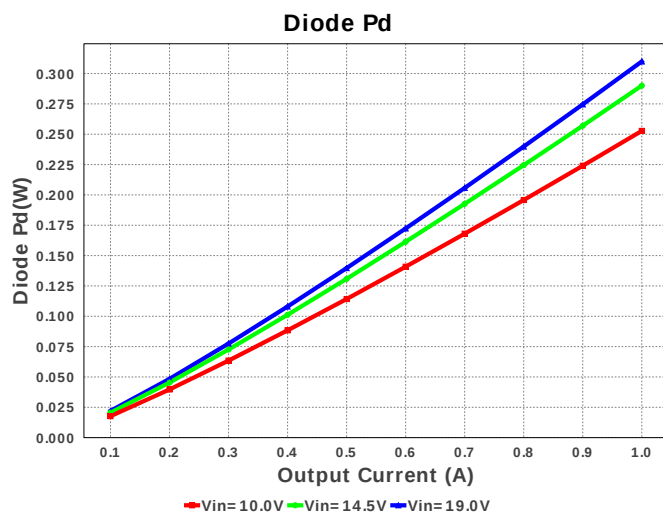
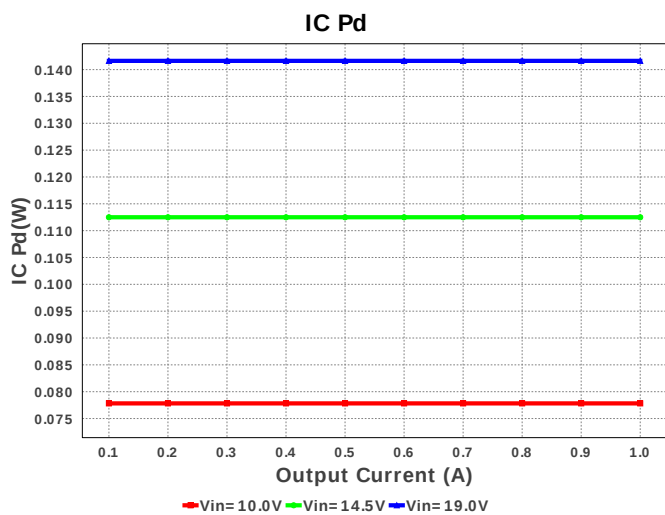
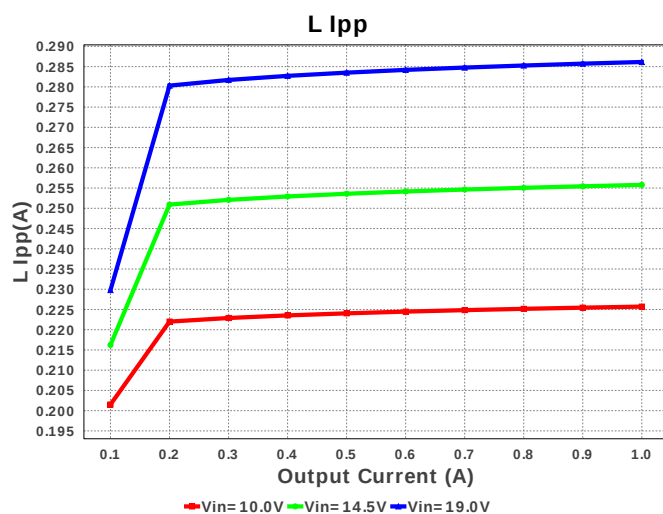
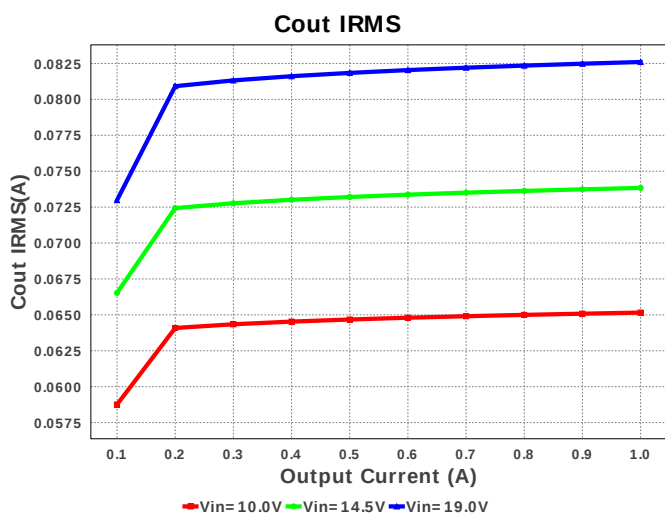
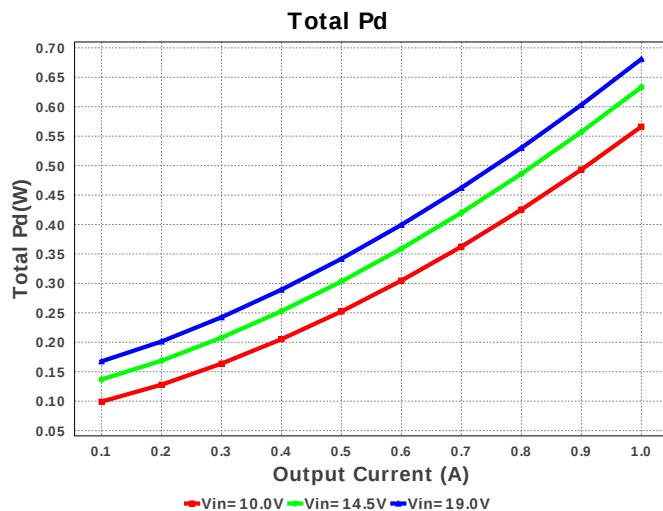
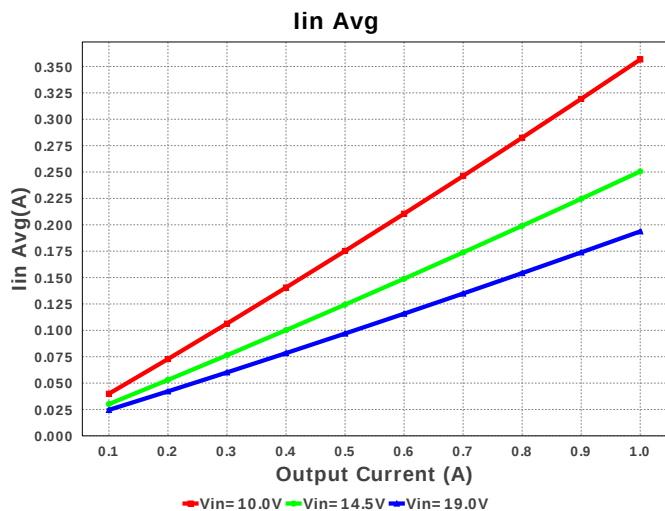


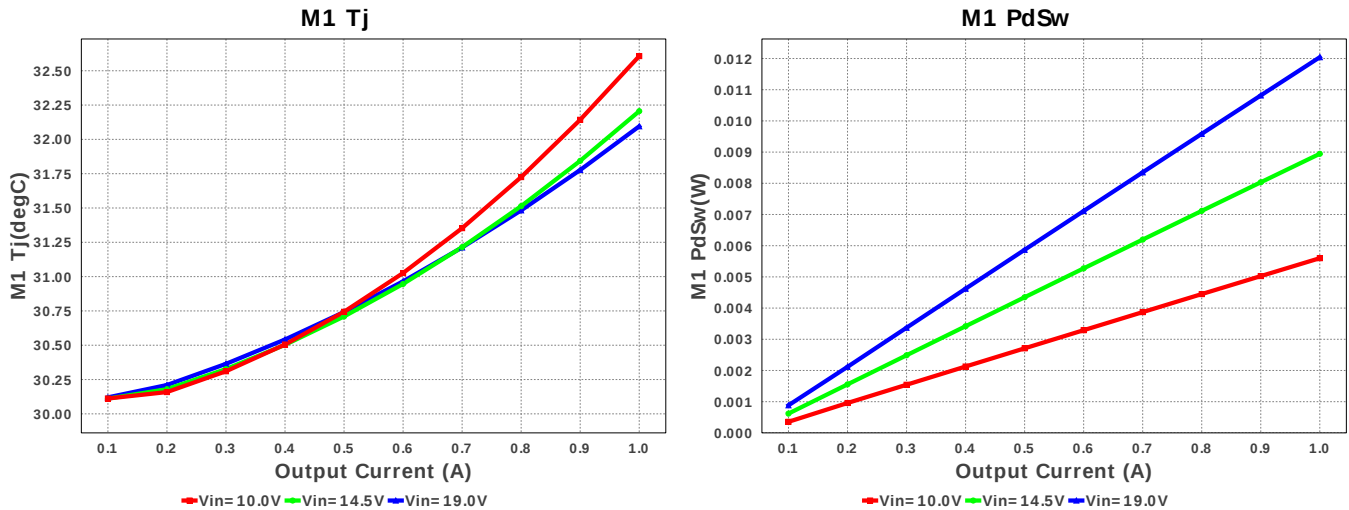
Cin IRMS











Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	379.569 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	80.472 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	193.73 mA	Current	Average input current
4.	L Ipp	278.76 mA	Current	Peak-to-peak inductor ripple current
5.	SW Ipk	1.139 A	Current	Peak switch current
6.	BOM Count	12	General	Total Design BOM count
7.	FootPrint	279.0 mm ²	General	Total Foot Print Area of BOM components
8.	Frequency	318.778 kHz	General	Switching frequency
9.	IC Tolerance	0.0 V	General	IC Feedback Tolerance
10.	Pout	3.0 W	General	Total output power
11.	Total BOM	\$2.21	General	Total BOM Cost
12.	D1 Tj	37.748 degC	Op_Point	D1 junction temperature
13.	Vout Actual	3.018 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
14.	Vout OP	3.0 V	Op_Point	Operational Output Voltage
15.	Duty Cycle	17.454 %	Op_point	Duty cycle
16.	Efficiency	81.501 %	Op_point	Steady state efficiency
17.	IC Tj	58.326 degC	Op_point	IC junction temperature
18.	ICThetaJA	200.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
19.	IOUT_OP	1.0 A	Op_point	Iout operating point
20.	M1 Tj	32.095 degC	Op_point	M1 MOSFET junction temperature
21.	VIN_OP	19.0 V	Op_point	Vin operating point
22.	Vout p-p	22.328 mV	Op_point	Peak-to-peak output ripple voltage
23.	Cin Pd	640.836 μ W	Power	Input capacitor power dissipation
24.	Cout Pd	518.061 μ W	Power	Output capacitor power dissipation
25.	D1 Pd	309.937 mW	Power	Output Diode Power Dissipation
26.	Diode Pd	309.937 mW	Power	Diode power dissipation
27.	IC Pd	141.628 mW	Power	IC power dissipation
28.	L Pd	181.25 mW	Power	Inductor power dissipation
29.	M1 Pd	26.964 mW	Power	M1 MOSFET total power dissipation
30.	M1 PdCond	14.923 mW	Power	M1 MOSFET conduction losses
31.	M1 PdSw	12.042 mW	Power	M1 MOSFET switching losses
32.	Rsns Pd	20.0 mW	Power	Rsense Power Dissipation
33.	Total Pd	680.924 mW	Power	Total Power Dissipation
34.	Vout Tolerance	1.189 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	1.0	Maximum Output Current
2.	VinMax	19.0	Maximum input voltage
3.	VinMin	10.0	Minimum input voltage
4.	Vout	3.0	Output Voltage
5.	base_pn	LM3485	Texas Instruments Base Part Number
6.	source	DC	Input Source Type
7.	ta	30.0	Ambient temperature

Design Assistance

1. Outline The LM3485 is a hysteretic PFET controller. The hysteretic control architecture provides for a stable design without the use of a control loop. The switching frequency depends on the inductance value, output capacitor ESR, and the input voltage. Therefore depending on the chosen BOM, the frequency at different input voltages would vary.

2. LM3485 Product Folder : <http://www.ti.com/product/LM3485> : contains the data sheet and other resources.

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