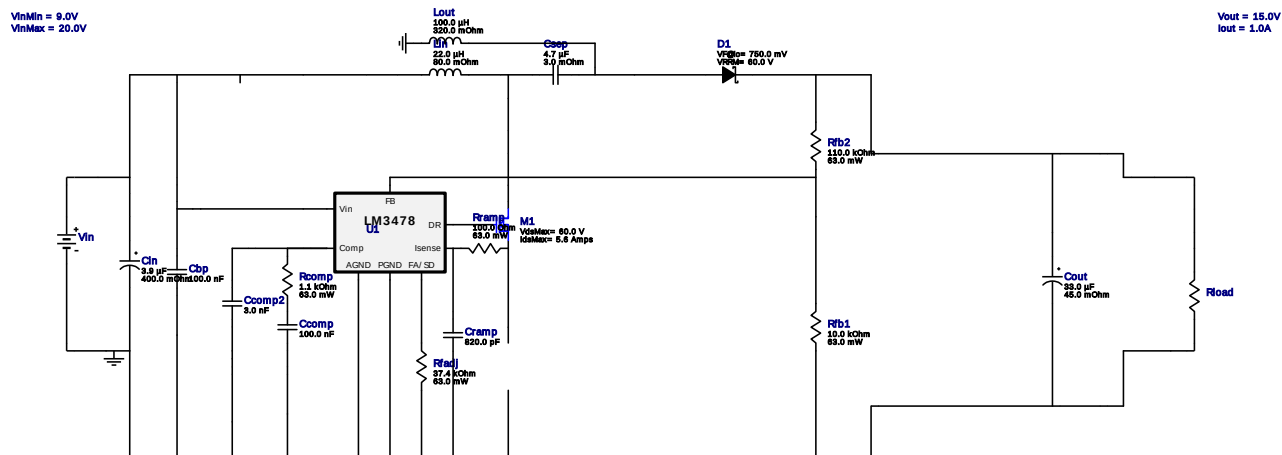
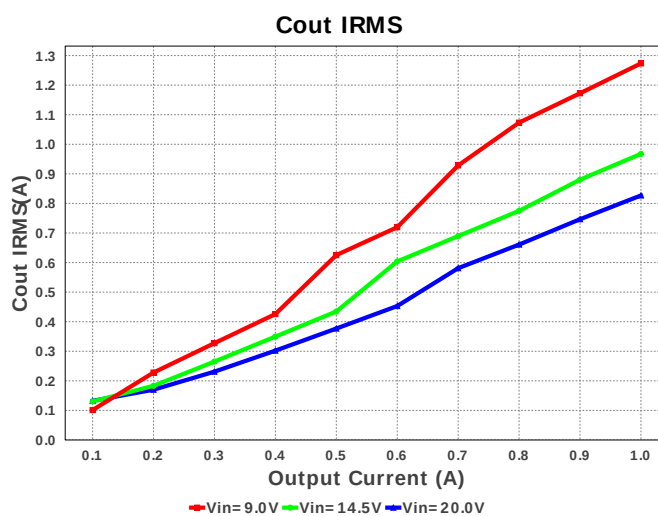
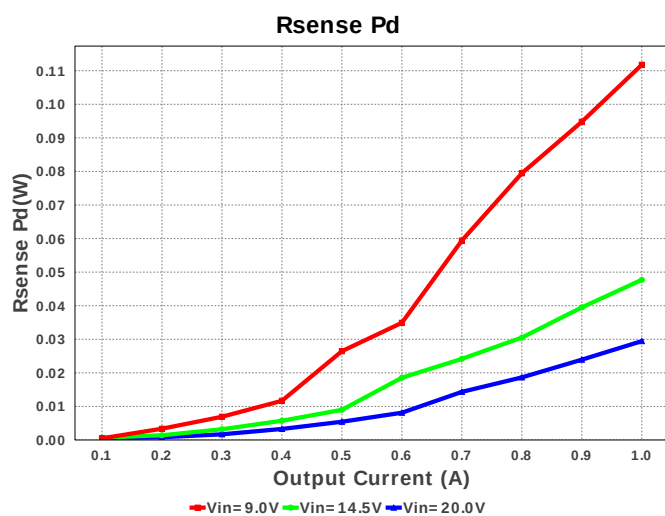
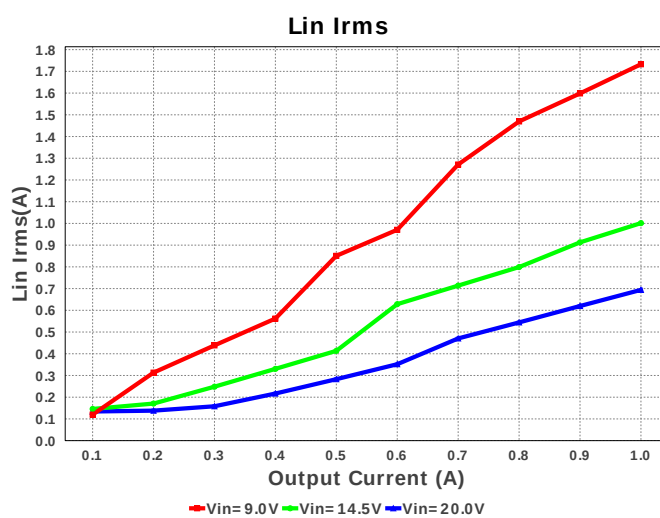
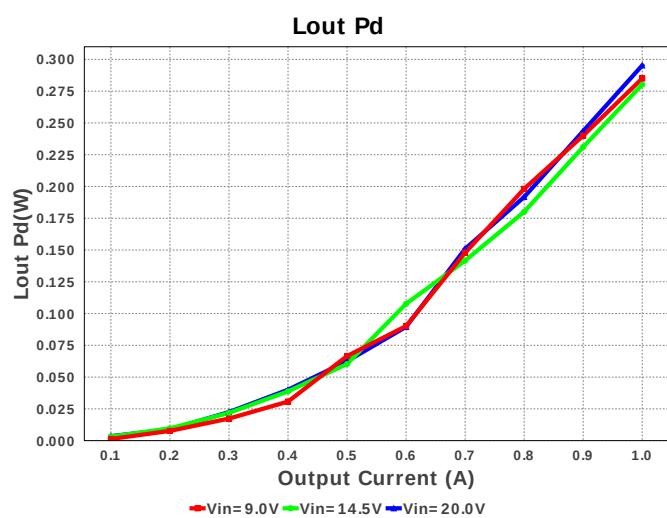
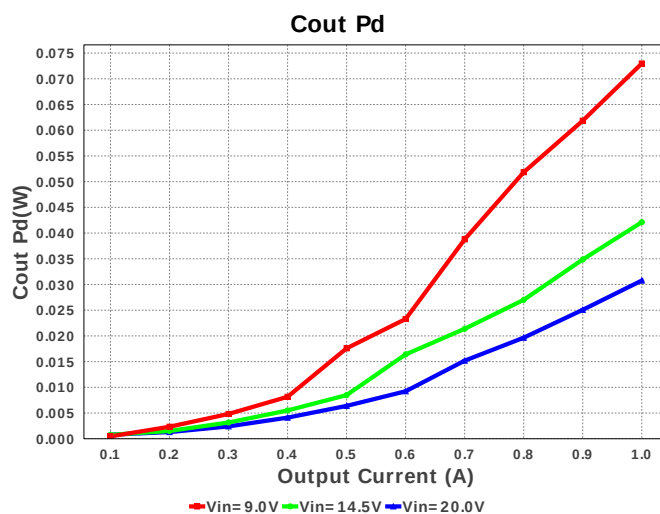
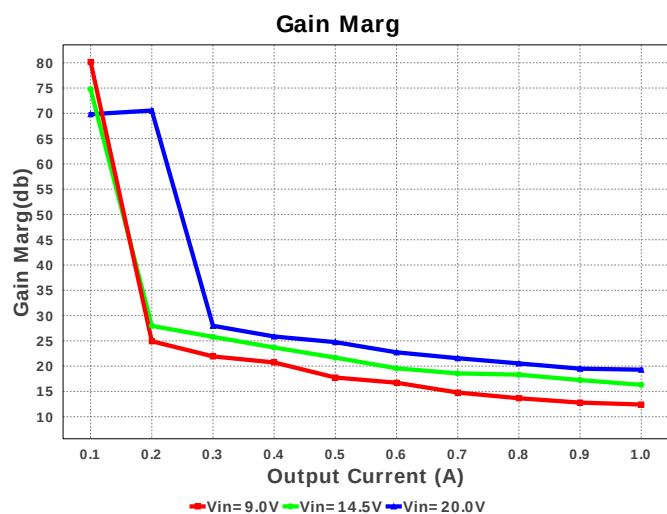
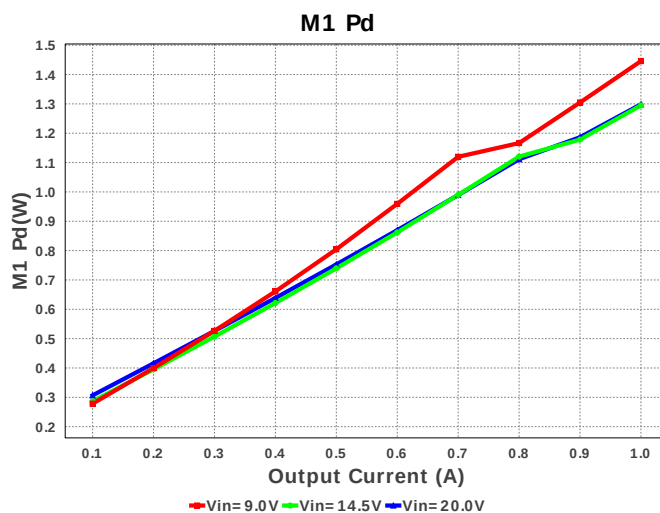
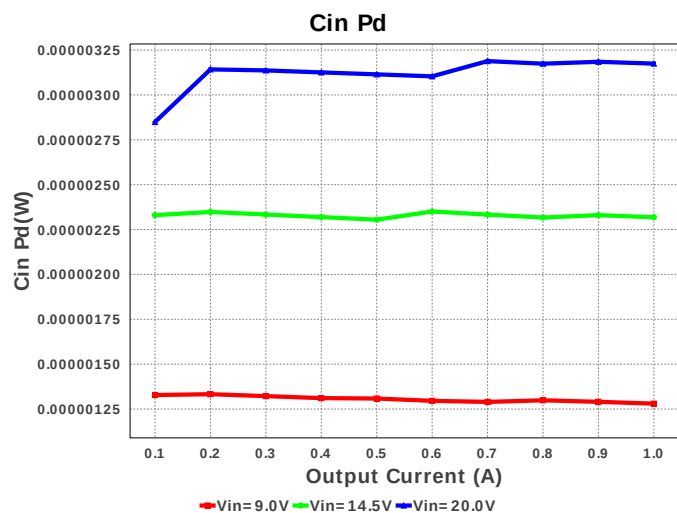
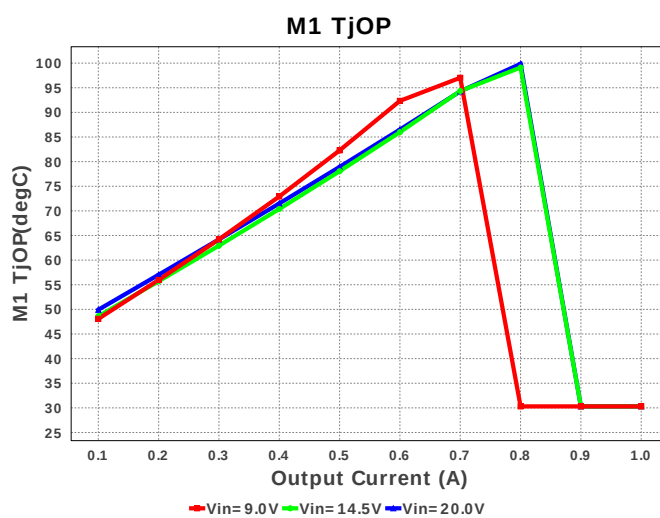
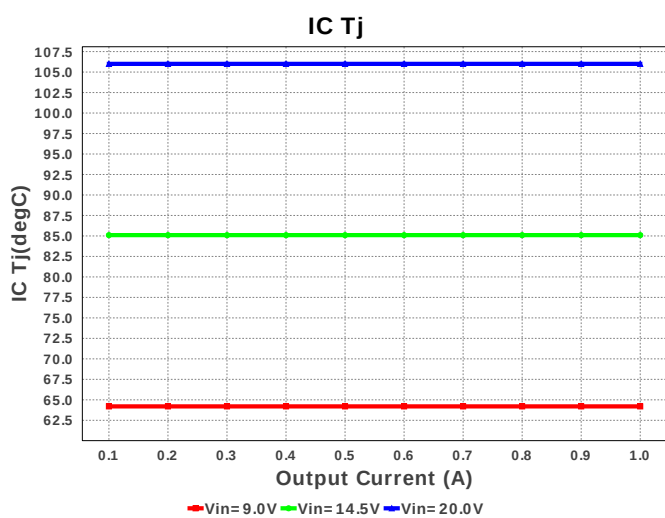
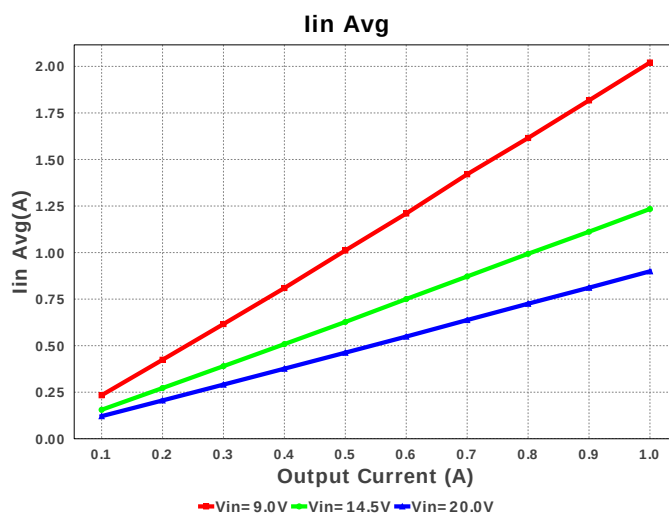
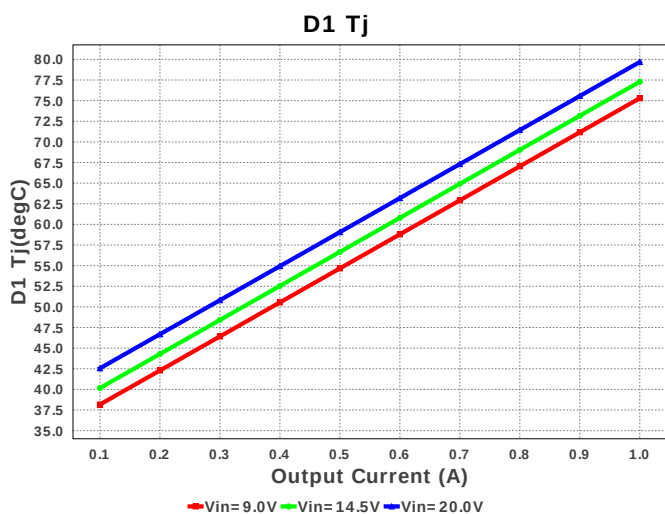
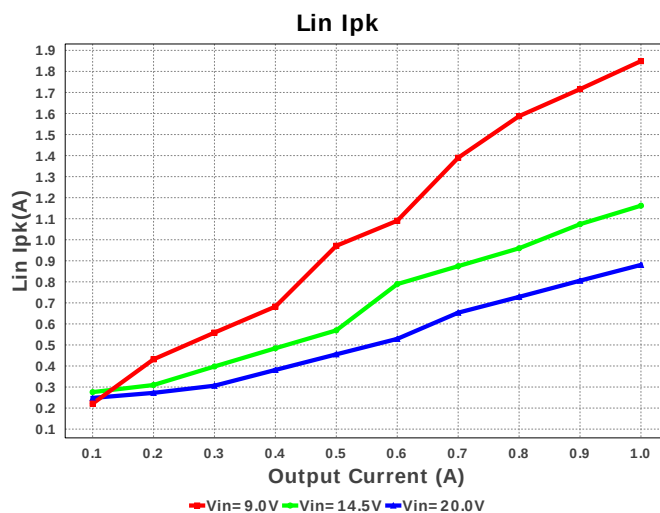
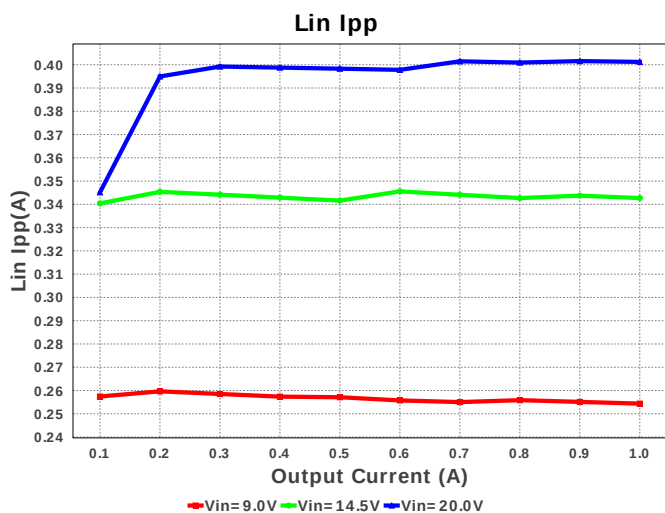




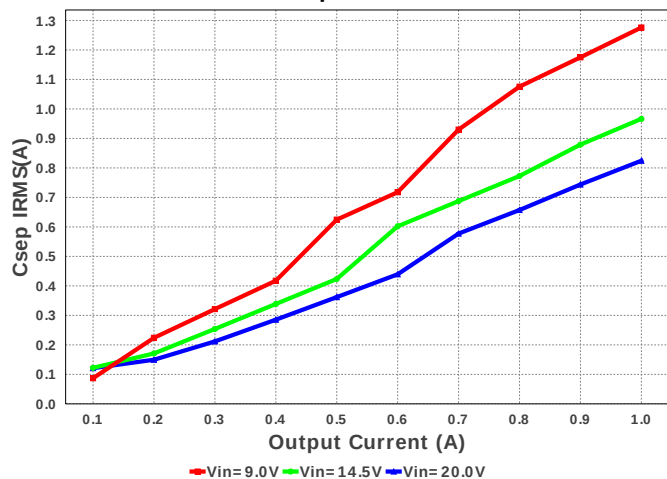
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
10.	Lout	Bourns	SDR1105-101KL	L= 100.0 μ H DCR= 320.0 mOhm	1	\$0.29	 SDR1105 157 mm ²
11.	M1	Vishay-Siliconix	SI7414DN-T1-E3	VdsMax= 60.0 V IdsMax= 5.6 Amps	1	\$0.52	 PowerPAK_1212-8 18 mm ²
12.	Rcomp	Vishay-Dale	CRCW04021K10FKED Series= CRCW..e3	Res= 1.1 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
13.	Rfadj	Vishay-Dale	CRCW040237K4FKED Series= CRCW..e3	Res= 37.4 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
14.	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
15.	Rfb2	Vishay-Dale	CRCW0402110KFKED Series= CRCW..e3	Res= 110.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
16.	Rramp	Vishay-Dale	CRCW0402100RFKED Series= CRCW..e3	Res= 100.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
17.	Rsense	Ohmite	LVK12R024FER Series= LVK12	Res= 24.0 mOhm Power= 500.0 mW Tolerance= 1.0%	1	\$0.22	LVK12 0 mm ²
18.	U1	Texas Instruments	LM3478MM/NOPB	Switcher	1	\$0.80	 MUA08A 24 mm ²



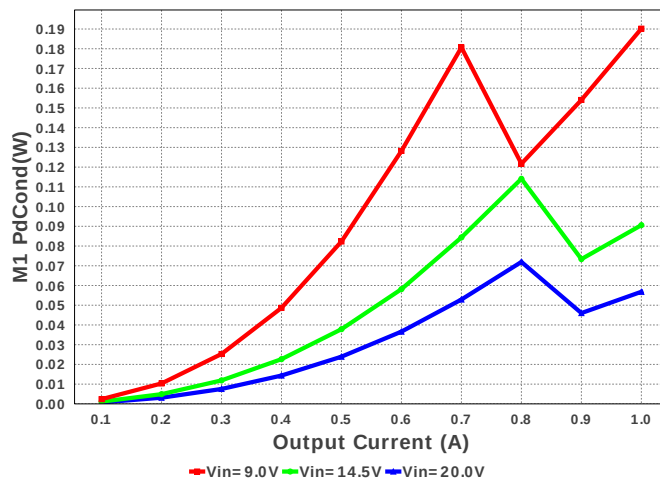




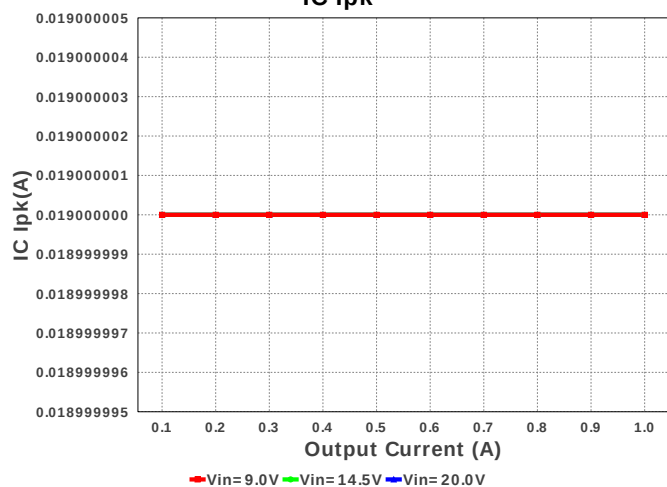
Csep IRMS



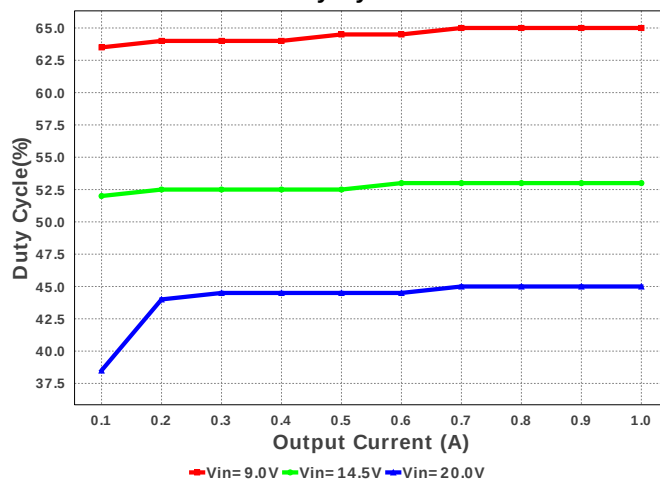
M1 PdCond



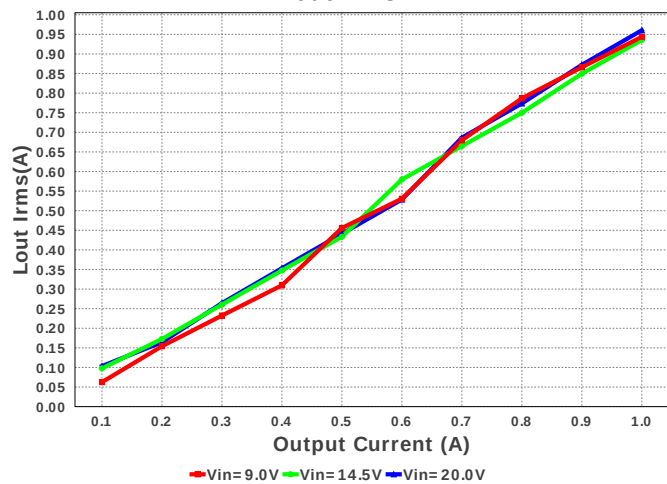
IC IpK



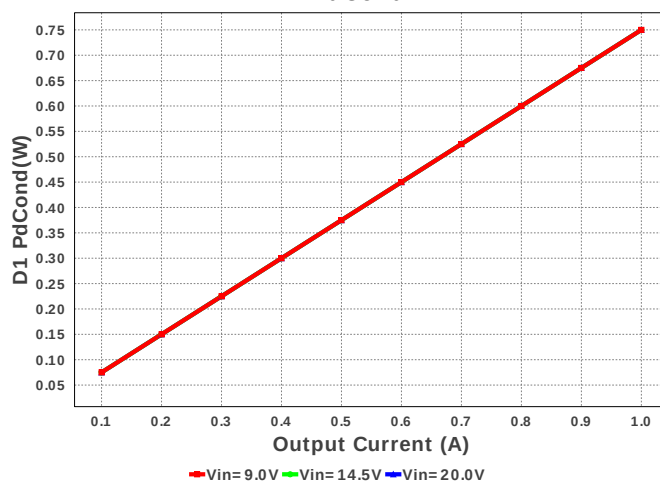
Duty Cycle

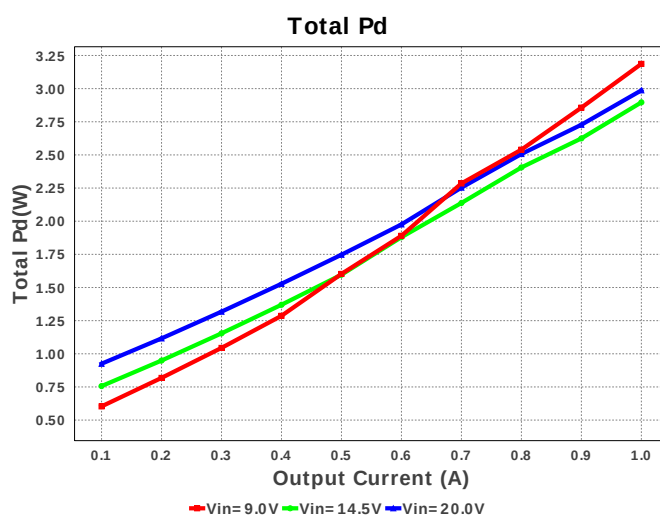
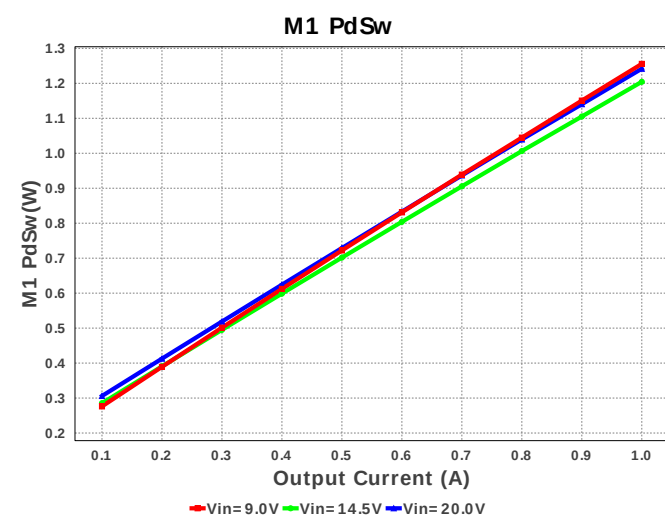
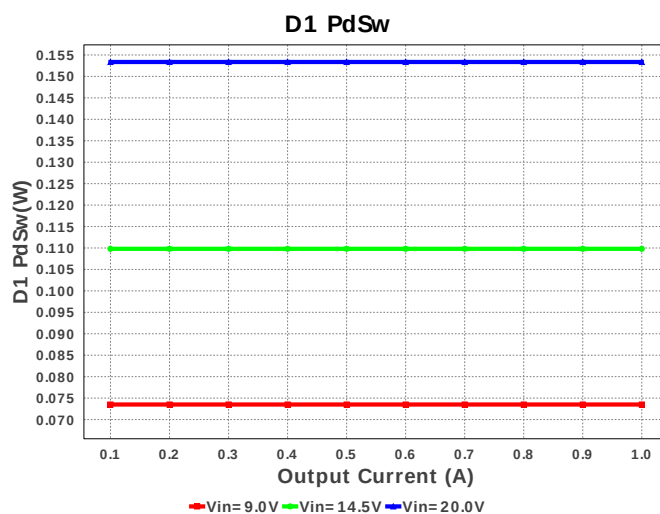
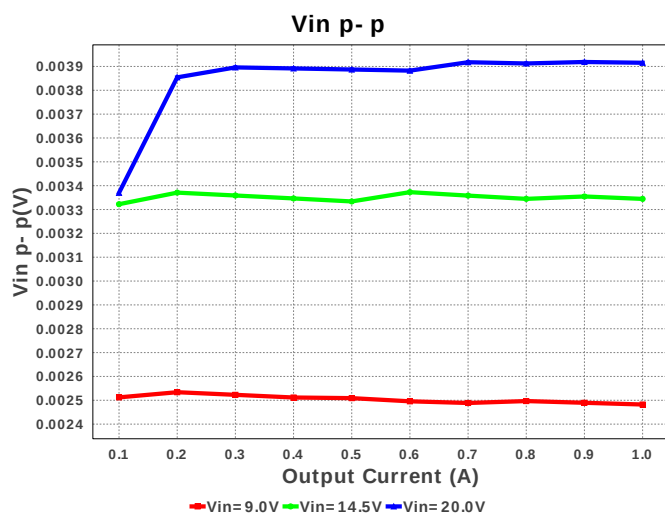
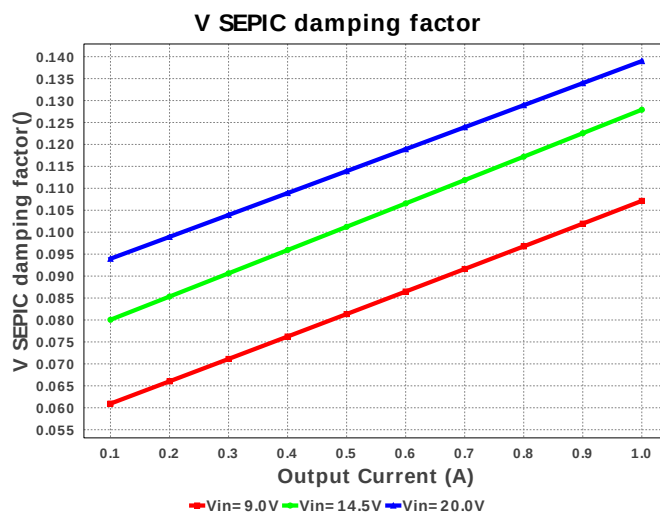
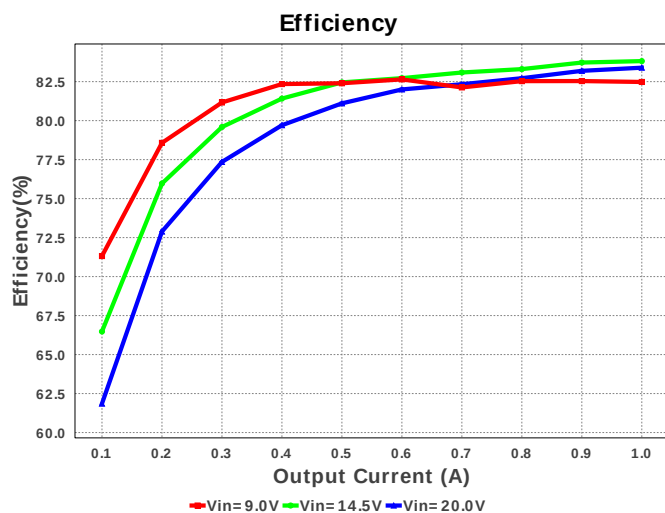


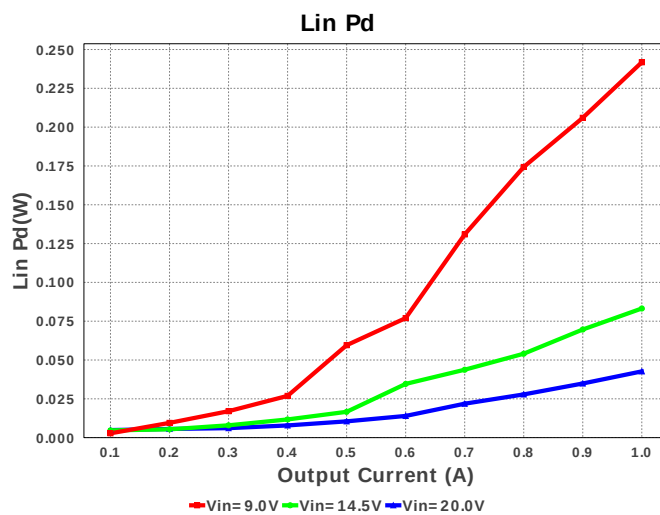
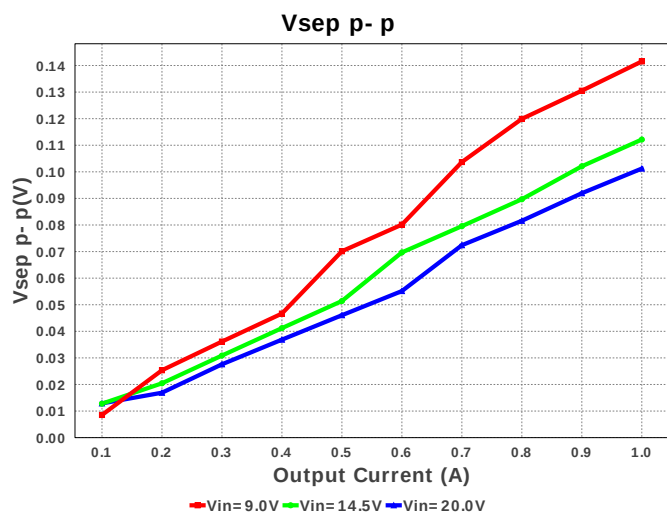
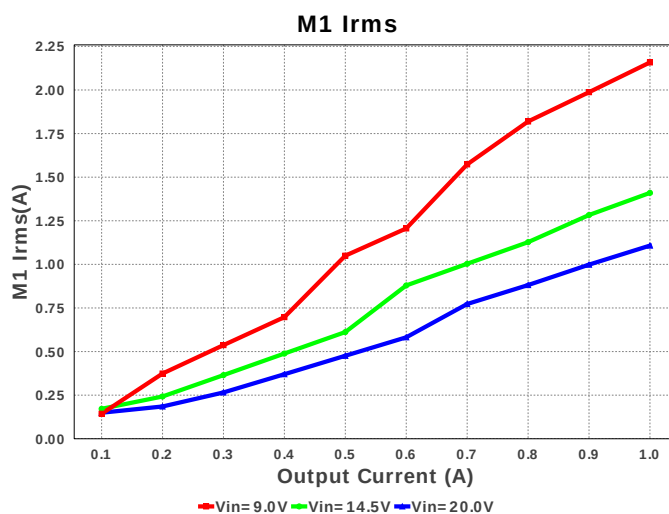
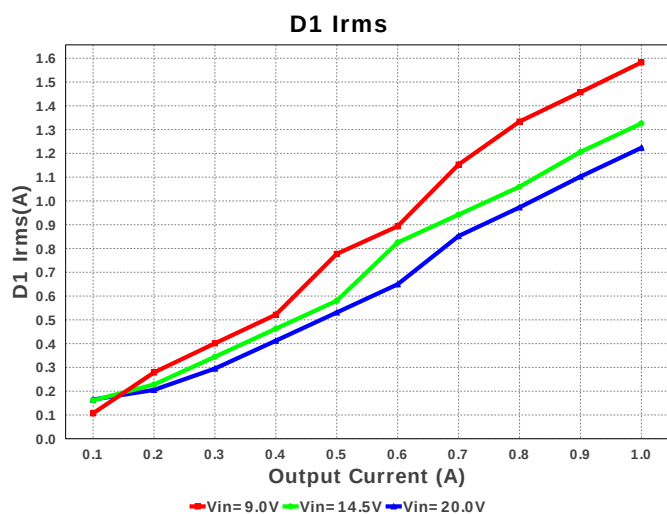
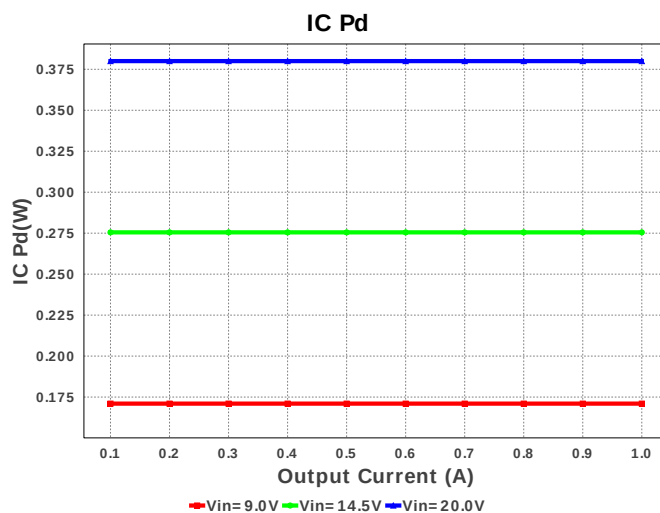
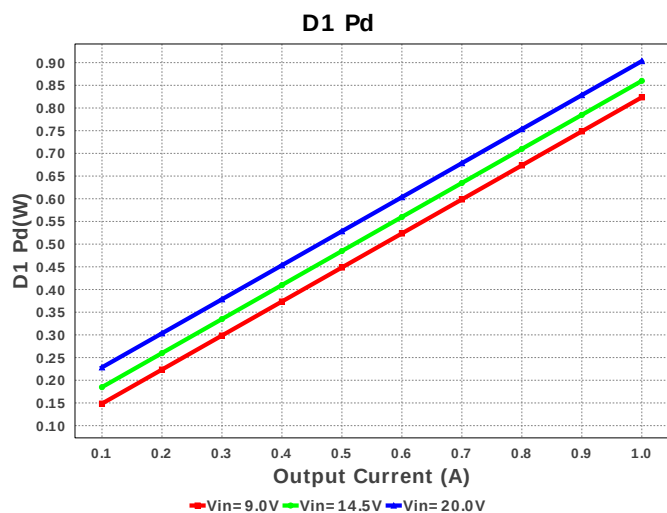
Lout Irms

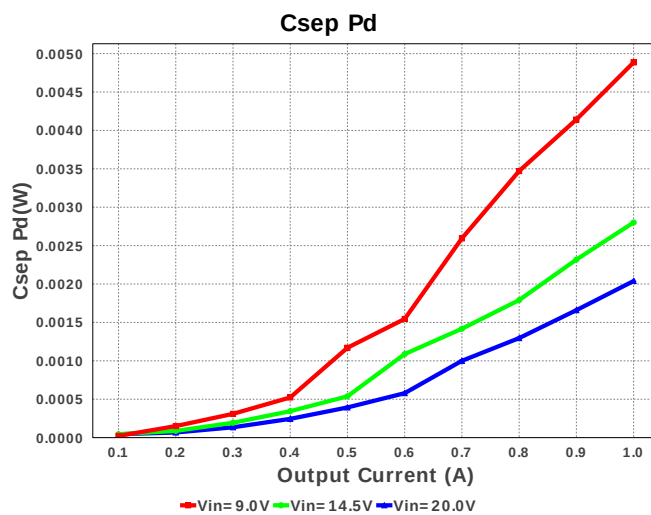
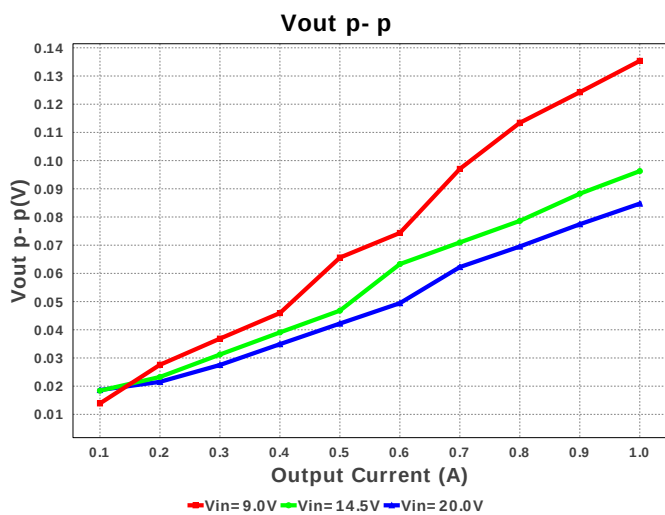
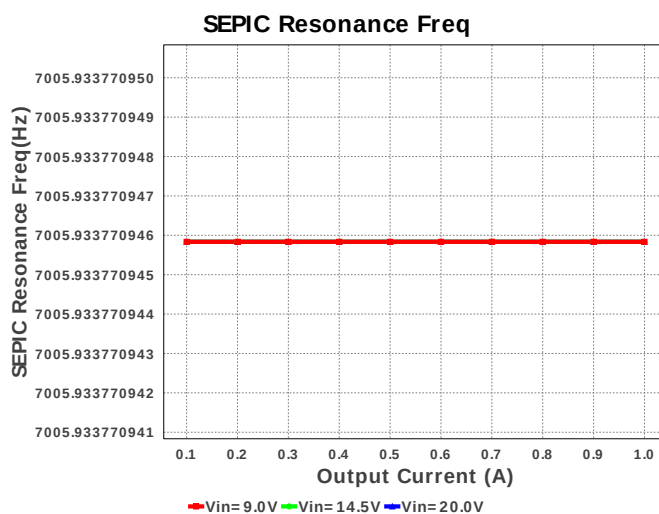
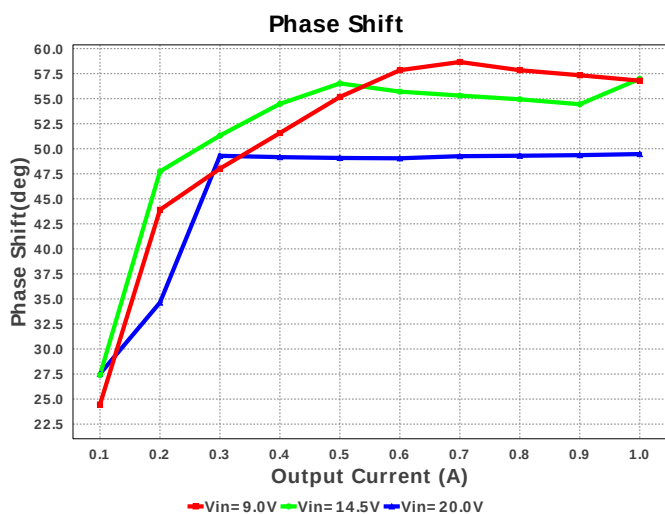
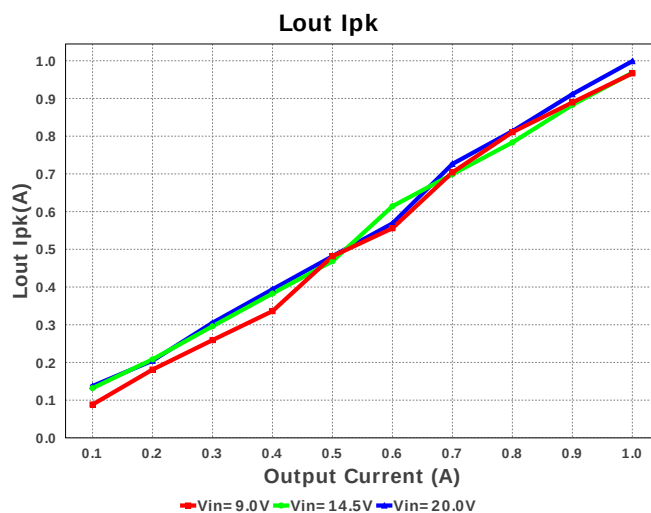
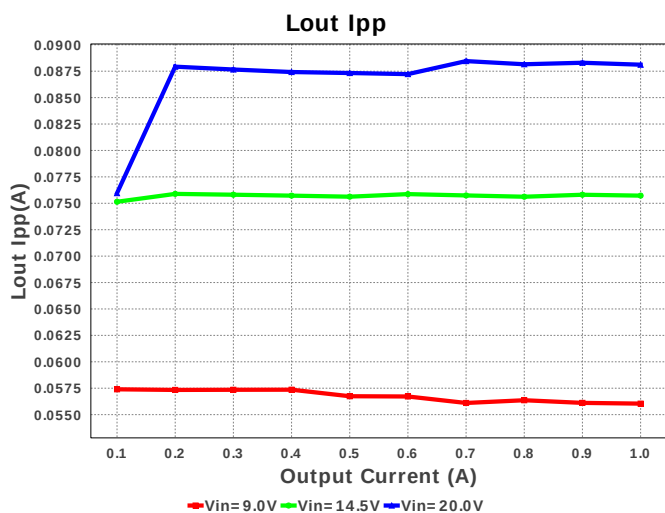


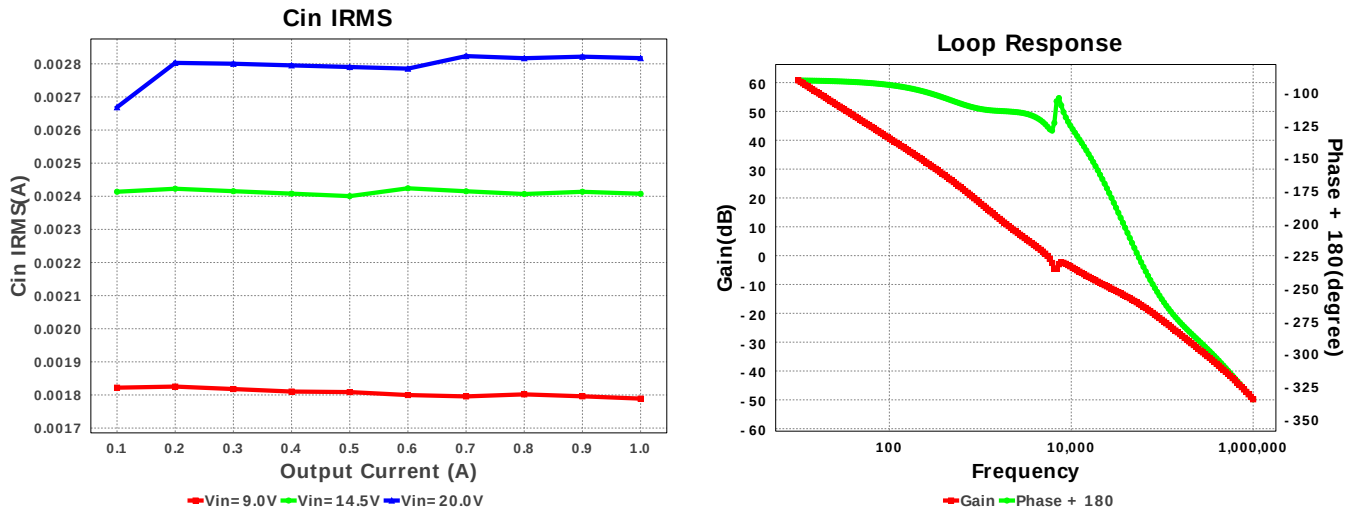
D1 PdCond











Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	4.249 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	1.372 A	Current	Output capacitor RMS ripple current
3.	Csep IRMS	1.376 A	Current	SEPIC capacitor RMS ripple current
4.	D1 Irms	1.698 A	Current	D1 Irms
5.	IC Ipk	9.48 mA	Current	Peak switch current in IC
6.	Iin Avg	1.954 A	Current	Average input current
7.	Iin Ipk	2.171 A	Current	Iin peak current
8.	Iin Ipp	624.779 mA	Current	Peak-to-peak input inductor ripple current
9.	Iin Irms	1.878 A	Current	Iin ripple current
10.	Iout Ipk	1.08 A	Current	Iout peak current
11.	Iout Ipp	137.171 mA	Current	Peak-to-peak output inductor ripple current
12.	Iout Irms	1.018 A	Current	Iout ripple current
13.	M1 Irms	2.344 A	Current	M1 MOSFET Irms
14.	BOM Count	18	General	Total Design BOM count
15.	FootPrint	626.0 mm ²	General	Total Foot Print Area of BOM components
16.	Frequency	405.0 kHz	General	Switching frequency
17.	IC Tolerance	24.3 mV	General	IC Feedback Tolerance
18.	Total BOM	\$4.01	General	Total BOM Cost
19.	D1 Tj	72.887 degC	Op_Point	D1 junction temperature
20.	SEPIC Resonance Freq	7.006 kHz	Op_Point	SEPIC Resonance Frequency
21.	V SEPIC damping factor	110.198 m	Op_Point	V SEPIC damping factor
22.	Vin p-p	6.105 mV	Op_Point	Peak-to-peak input voltage
23.	Vsep p-p	360.368 mV	Op_Point	Peak-to-peak sepic voltage
24.	Cross Freq	5.171 kHz	Op_point	Bode plot crossover frequency
25.	Duty Cycle	65.5 %	Op_point	Duty cycle
26.	Efficiency	85.3 %	Op_point	Steady state efficiency
27.	Gain Marg	11.444 db	Op_point	Bode Plot Gain Margin
28.	IC Tj	67.92 degC	Op_point	IC junction temperature
29.	IOUT_OP	1.0 A	Op_point	Iout operating point
30.	M1 TjOP	84.898 degC	Op_point	M1 MOSFET junction temperature
31.	Phase Marg	56.115 deg	Op_point	Bode Plot Phase Margin
32.	Phase Shift	57.739 deg	Op_point	Bode Plot Phase Shift
33.	VIN_OP	9.0 V	Op_point	Vin operating point
34.	Vout p-p	173.375 mV	Op_point	Peak-to-peak output ripple voltage
35.	Cin Pd	7.223 μW	Power	Input capacitor power dissipation
36.	Cout Pd	84.746 mW	Power	Output capacitor power dissipation
37.	Csep Pd	5.679 mW	Power	SEPIC capacitor power dissipation
38.	D1 Pd	779.771 mW	Power	Diode power dissipation
39.	D1 PdCond	750.0 mW	Power	Diode conduction losses
40.	D1 PdSw	29.771 mW	Power	Diode switching losses
41.	IC Pd	189.6 mW	Power	IC power dissipation
42.	Iin Pd	285.673 mW	Power	Iin power dissipation
43.	Iout Pd	331.493 mW	Power	Iout power dissipation
44.	M1 Pd	845.218 mW	Power	M1 MOSFET total power dissipation
45.	M1 PdCond	336.237 mW	Power	M1 MOSFET conduction losses
46.	M1 PdSw	508.981 mW	Power	M1 MOSFET switching losses
47.	Rsense Pd	131.849 mW	Power	LED Current Rns Power Dissipation
48.	Total Pd	2.585 W	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	1.0	Maximum Output Current
2.	Iout1	1.0	Output Current #1
3.	VinMax	20.0	Maximum input voltage
4.	VinMin	9.0	Minimum input voltage
5.	Vout	15.0	Output Voltage
6.	Vout1	15.0	Output Voltage #1
7.	base_pn	LM3478	Base Product Number
8.	source	DC	Input Source Type
9.	Ta	30.0	Ambient temperature

Design Assistance

1. **LM3478** Product Folder : <http://www.ti.com/product/lm3478> : contains the data sheet and other resources.

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