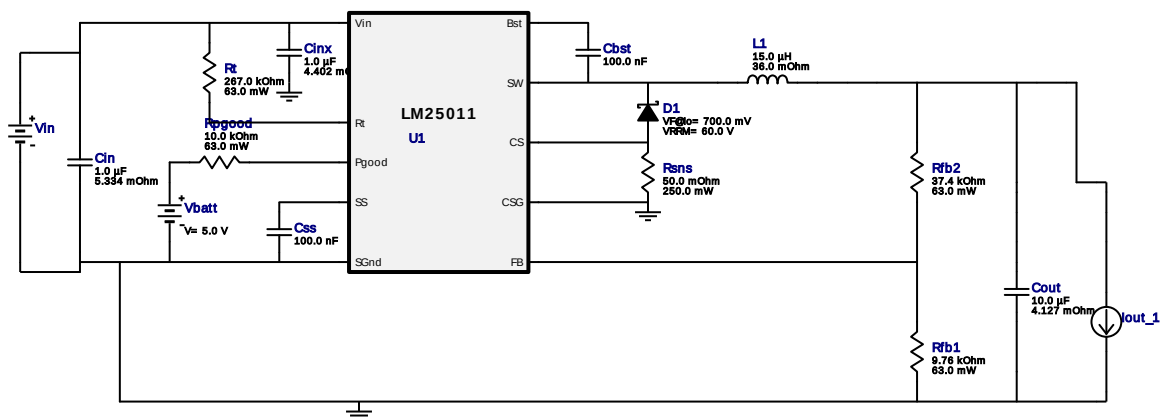


WEBENCH® Design Report

Design : 4800957/14 LM25011MYX/NOPB
LM25011MYX/NOPB 33.0V-38.0V to 12.00V @ 2.0A

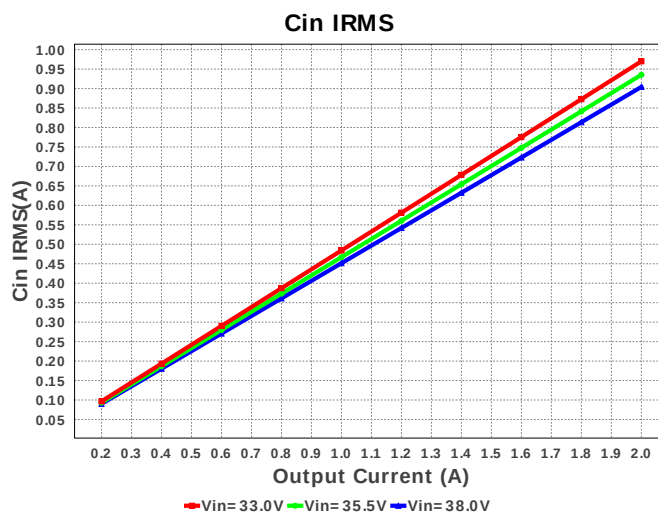
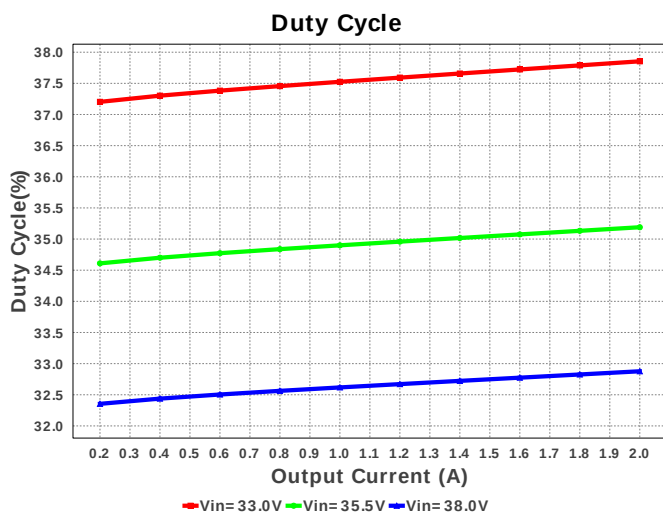
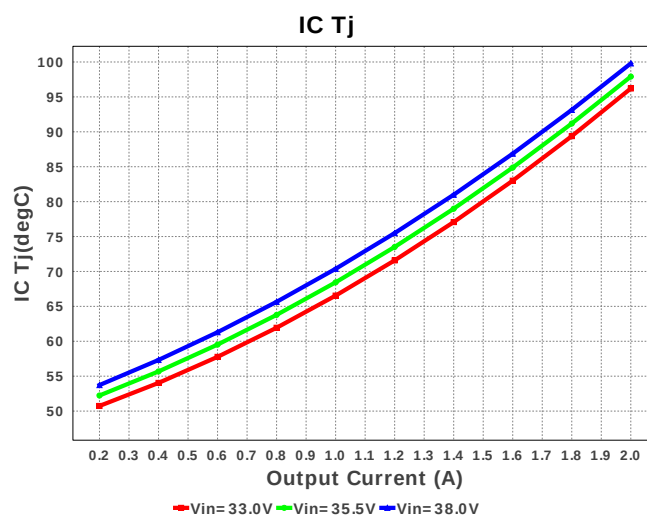
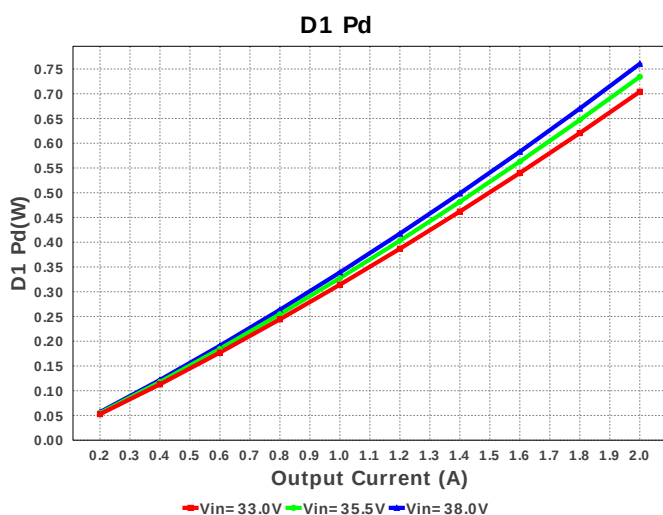
Vout = 12.0V
Iout = 2.0A

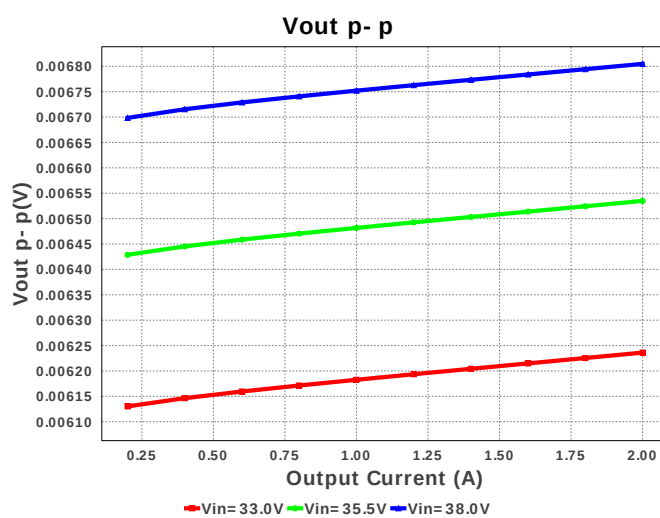
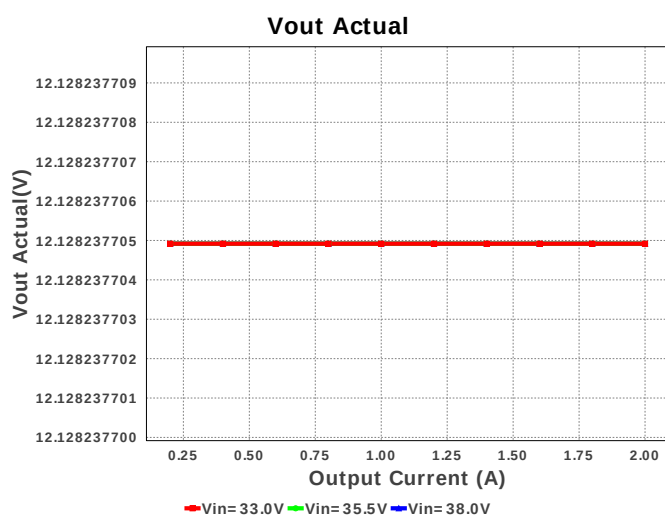
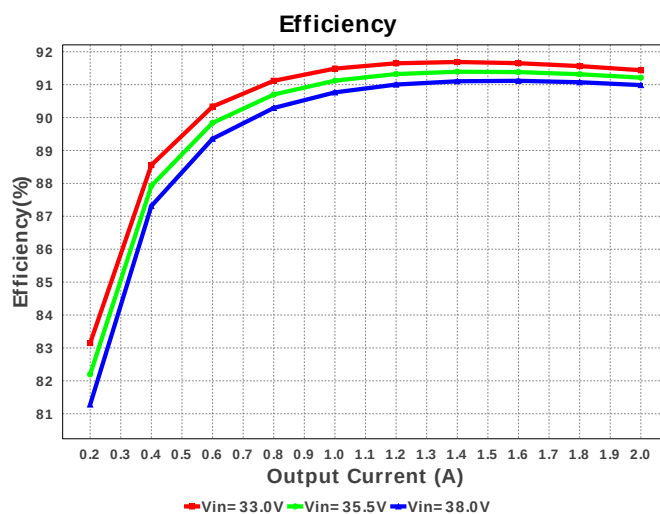
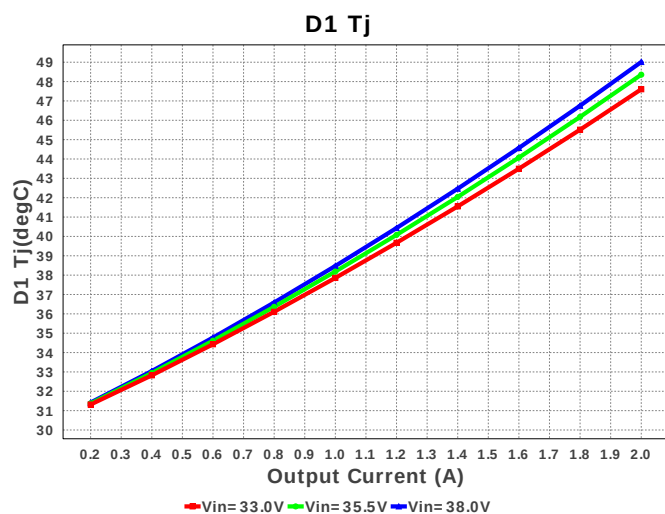
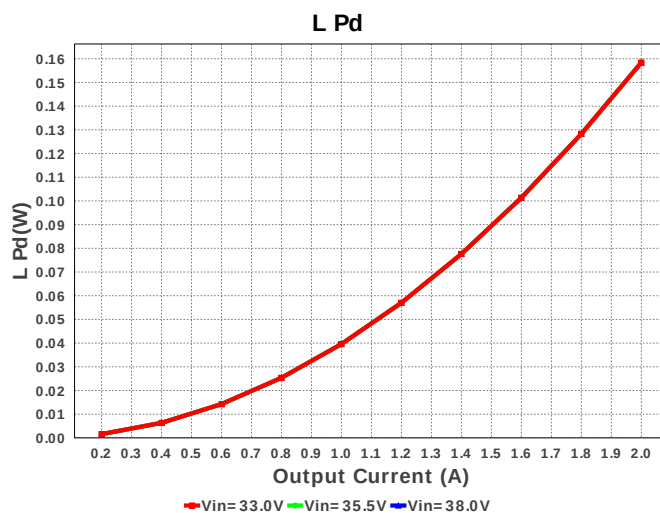
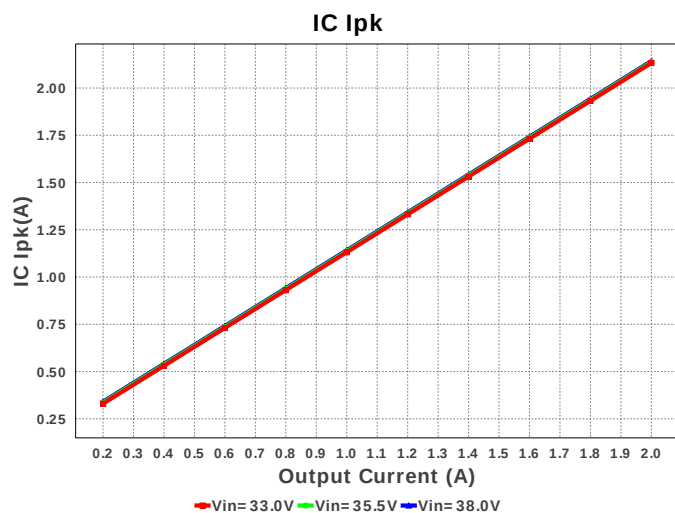


Electrical BOM

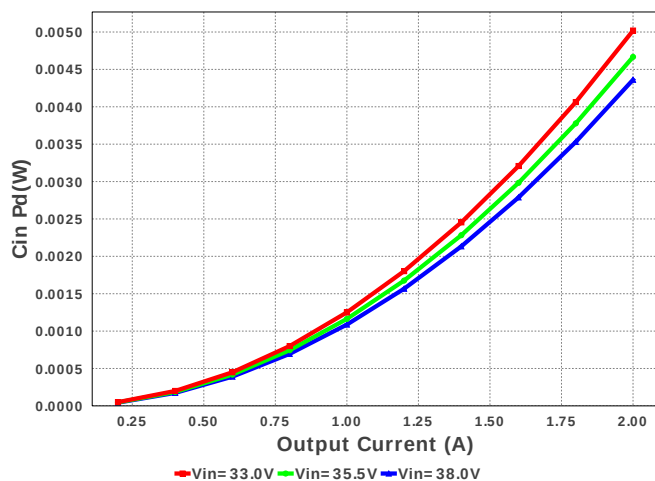
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cbst	MuRata	GRM21BR71E104KA01L Series= X7R	Cap= 100.0 nF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
2.	Cin	MuRata	GRM31CR72A105KA01L Series= X7R	Cap= 1.0 uF ESR= 5.334 mOhm VDC= 100.0 V IRMS= 1.55432 A	1	\$0.11	1206_190 11 mm ²
3.	Cinx	MuRata	GRM21BR71H105KA12L Series= X7R	Cap= 1.0 uF ESR= 4.402 mOhm VDC= 50.0 V IRMS= 1.677 A	1	\$0.05	0805 7 mm ²
4.	Cout	MuRata	GRM21BR61C106KE15L Series= X5R	Cap= 10.0 uF ESR= 4.127 mOhm VDC= 16.0 V IRMS= 2.46634 A	1	\$0.03	0805 7 mm ²
5.	Css	MuRata	GRM21BR71E104KA01L Series= X7R	Cap= 100.0 nF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
6.	D1	Diodes Inc.	B260A-13-F	VF@Io= 700.0 mV VRRM= 60.0 V	1	\$0.09	SMA 37 mm ²
7.	L1	Bourns	SRR1208-150ML	L= 15.0 µH DCR= 36.0 mOhm	1	\$0.37	SRR1208 216 mm ²
8.	Rfb1	Vishay-Dale	CRCW04029K76FKED Series= CRCW..e3	Res= 9.76 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
9.	Rfb2	Vishay-Dale	CRCW040237K4FKED Series= CRCW..e3	Res= 37.4 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
10.	Rpgood	Vishay-Dale	CRCW040210K0FKED Series= CRCW..e3	Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
11.	Rsns	Bourns	CRM0805-FW-R050ELF Series= ?	Res= 50.0 mOhm Power= 250.0 mW Tolerance= 1.0%	1	\$0.10	0805 7 mm ²
12.	Rt	Vishay-Dale	CRCW0402267KFKED Series= CRCW..e3	Res= 267.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
13.	U1	Texas Instruments	LM25011MYX/NOPB	Switcher	1	\$0.95	MUC10A 24 mm ²

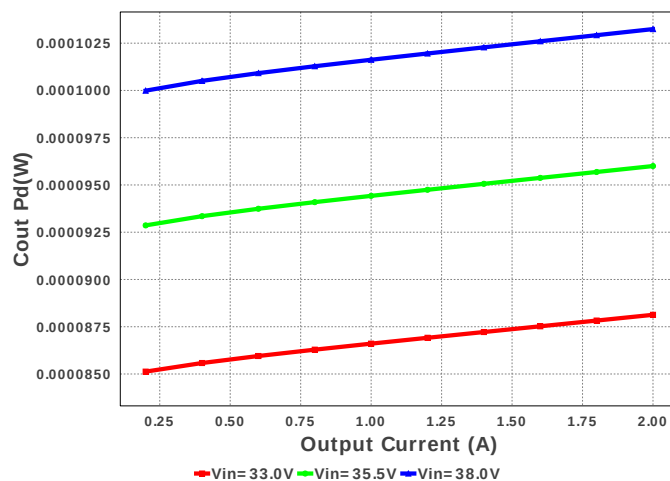




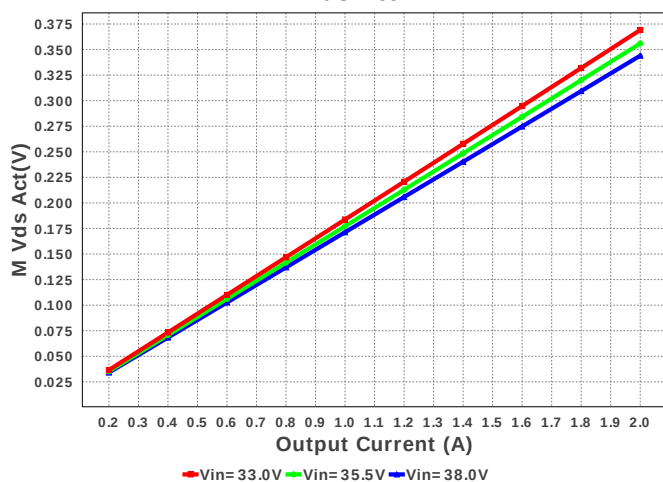
Cin Pd



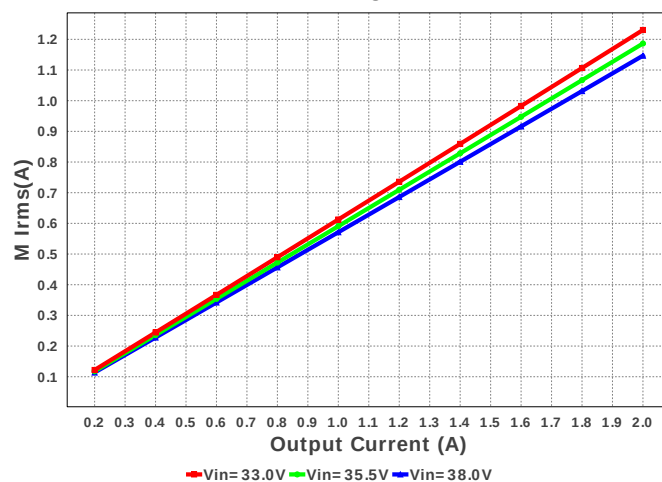
Cout Pd



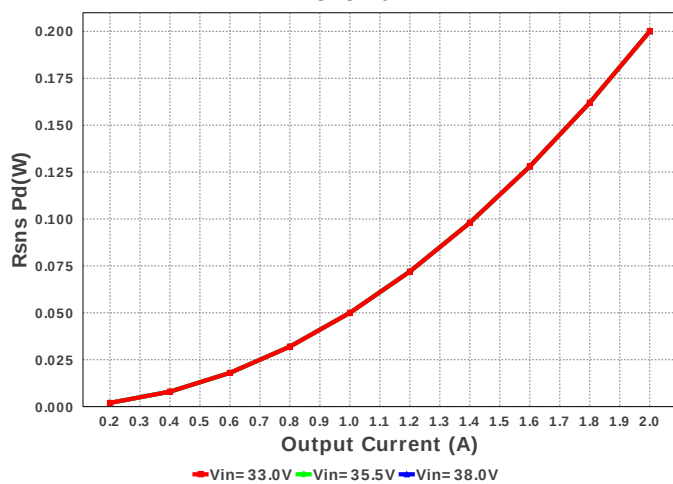
M Vds Act



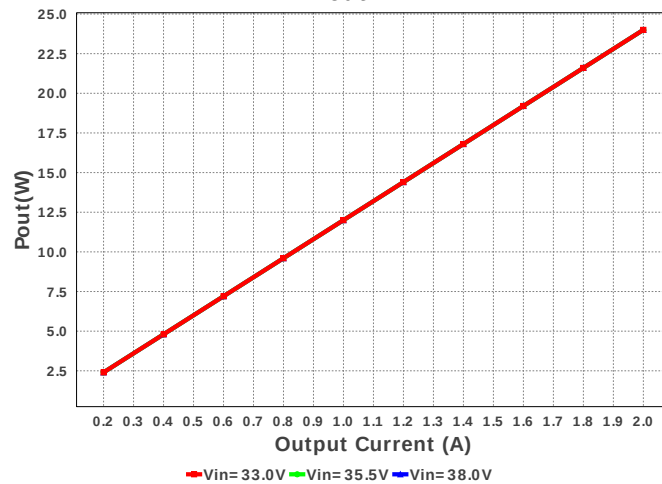
M Irms

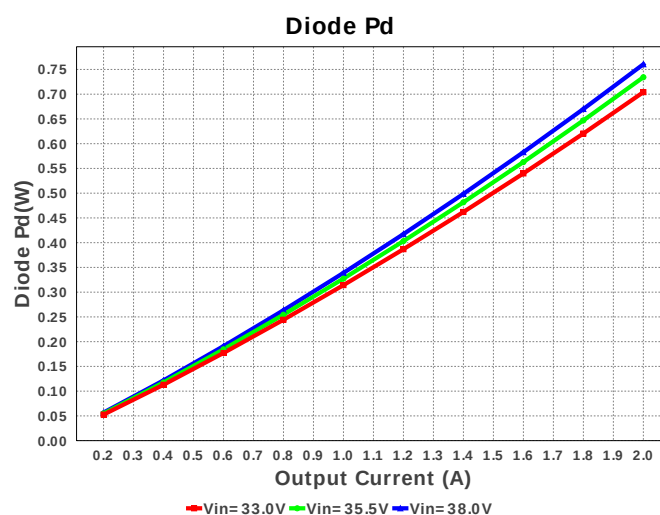
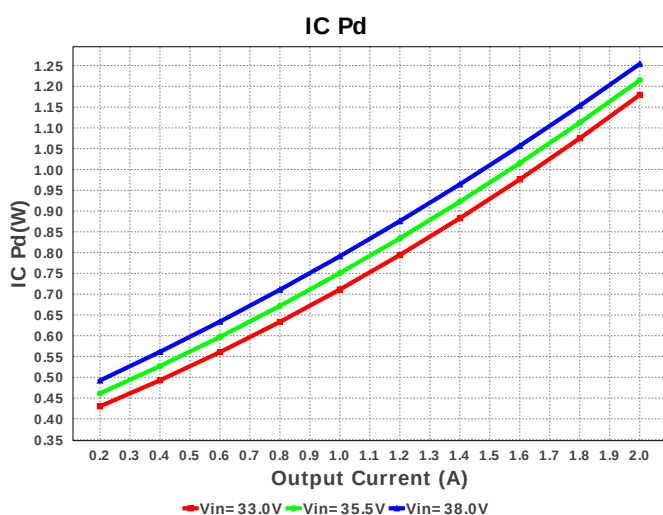
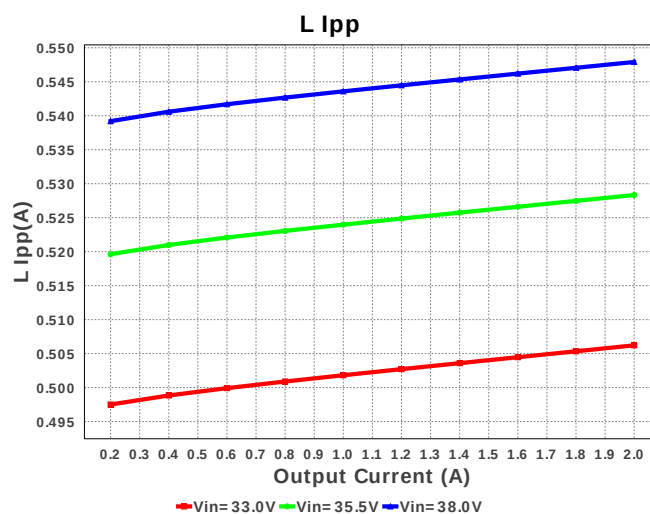
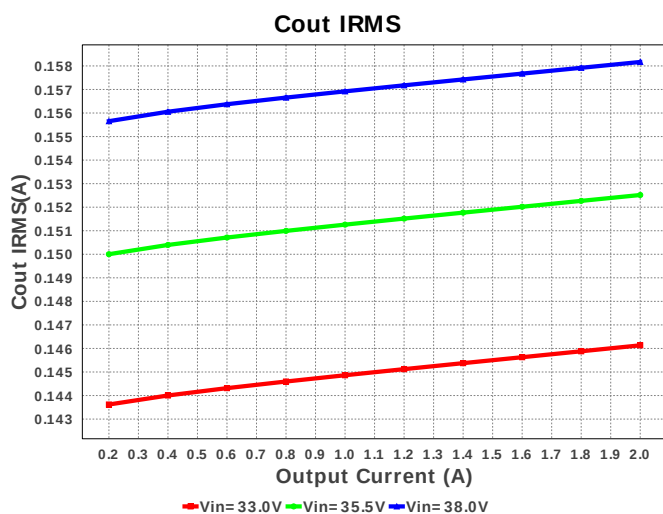
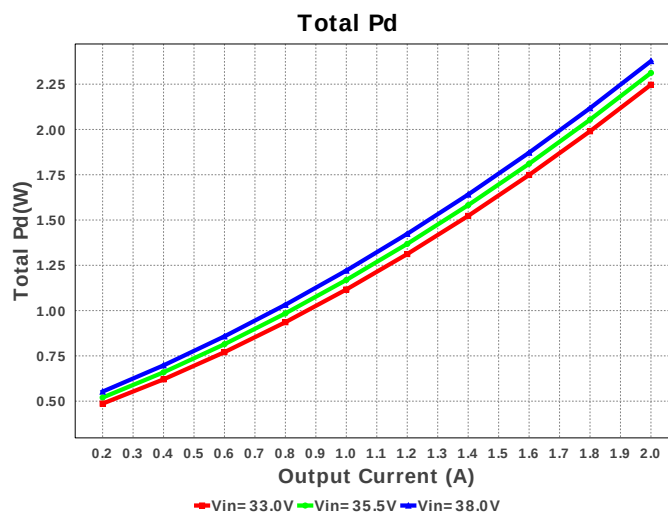
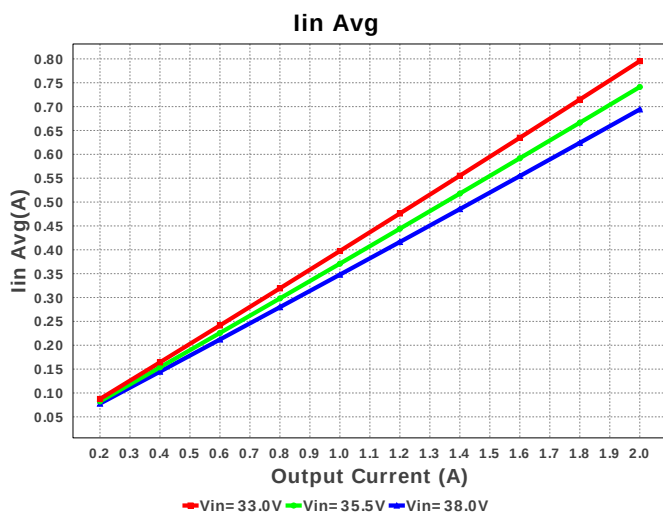


Rsns Pd



Pout





Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	904.242 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	158.167 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	2.274 A	Current	Peak switch current in IC
4.	Iin Avg	694.14 mA	Current	Average input current
5.	L Ipp	547.91 mA	Current	Peak-to-peak inductor ripple current
6.	M1 Irms	1.147 A	Current	Q lavg
7.	BOM Count	13	General	Total Design BOM count
8.	FootPrint	334.0 mm ²	General	Total Foot Print Area of BOM components
9.	Frequency	1.04 MHz	General	Switching frequency
10.	IC Tolerance	50.0 mV	General	IC Feedback Tolerance
11.	M Vds Act	344.032 mV	General	Voltage drop across the MosFET

#	Name	Value	Category	Description
12.	Mode	CCM	General	Conduction Mode
13.	Pout	24.0 W	General	Total output power
14.	Total BOM	\$1.76	General	Total BOM Cost
15.	D1 Tj	49.012 degC	Op_Point	D1 junction temperature
16.	Vout Actual	12.128 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
17.	Vout OP	12.0 V	Op_Point	Operational Output Voltage
18.	Duty Cycle	32.877 %	Op_point	Duty cycle
19.	Efficiency	90.987 %	Op_point	Steady state efficiency
20.	IC Tj	99.794 degC	Op_point	IC junction temperature
21.	ICThetaJA	48.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
22.	IOUT_OP	2.0 A	Op_point	Iout operating point
23.	VIN_OP	38.0 V	Op_point	Vin operating point
24.	Vout p-p	6.805 mV	Op_point	Peak-to-peak output ripple voltage
25.	Cin Pd	4.361 mW	Power	Input capacitor power dissipation
26.	Cout Pd	103.245 μ W	Power	Output capacitor power dissipation
27.	D1 Pd	760.477 mW	Power	Output Diode Power Dissipation
28.	Diode Pd	760.477 mW	Power	Diode power dissipation
29.	IC Pd	1.454 W	Power	IC power dissipation
30.	L Pd	158.4 mW	Power	Inductor power dissipation
31.	Rsns Pd	123.762 mW	Power	Current Limit Sense Resistor Power Dissipation
32.	Total Pd	2.501 W	Power	Total Power Dissipation
33.	Vout Tolerance	3.626 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	2.0	Maximum Output Current
2.	VinMax	38.0	Maximum input voltage
3.	VinMin	33.0	Minimum input voltage
4.	Vout	12.0	Output Voltage
5.	base_pn	LM25011	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature

Design Assistance

1. **LM25011** Product Folder : <http://www.ti.com/product/LM25011> : contains the data sheet and other resources.

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