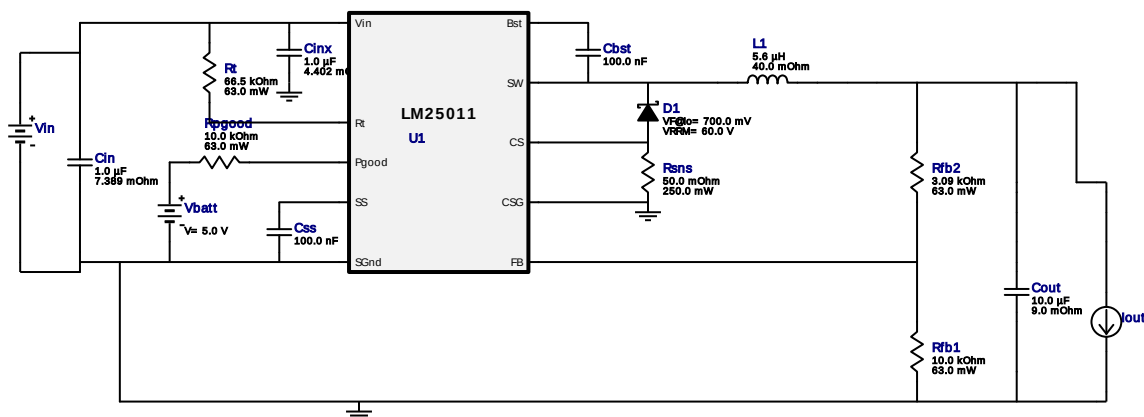


WEBENCH® Design Report

Design : 4774498/10 LM25011MYX/NOPB
LM25011MYX/NOPB 20.0V-30.0V to 3.30V @ 2.0A

Vout = 3.3V
Iout = 2.0A

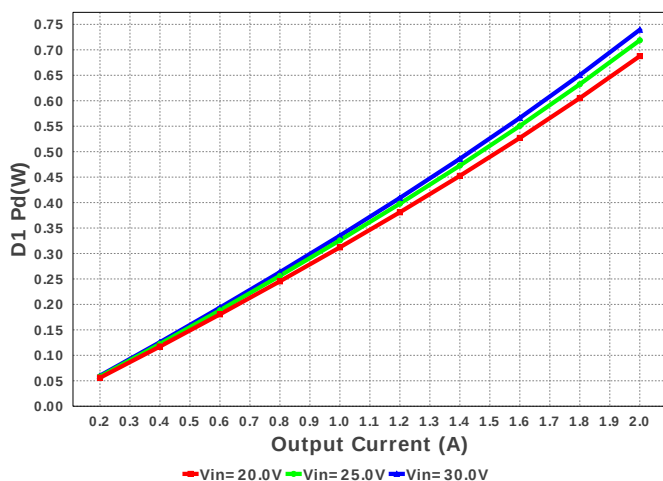


Electrical BOM

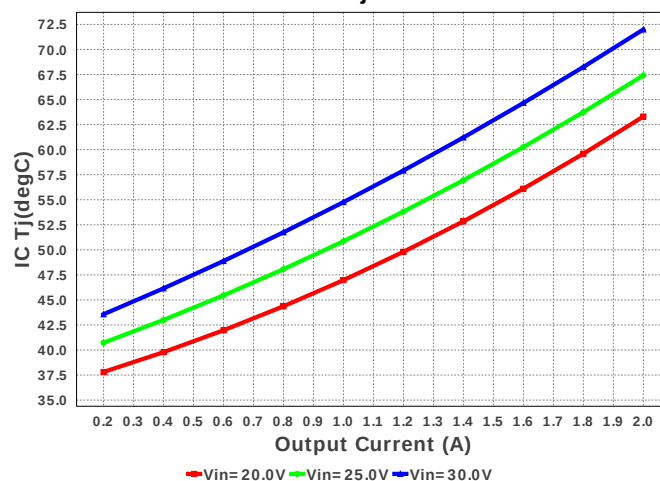
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cbst	MuRata	GRM21BR71E104KA01L Series= X7R	Cap= 100.0 nF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm ²
2.	Cin	MuRata	GRM31MR71H105KA88L Series= X7R	Cap= 1.0 uF ESR= 7.389 mOhm VDC= 50.0 V IRMS= 979.22 mA	1	\$0.03	 1206 11 mm ²
3.	Cinx	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	GRM188R60J106ME47D Series= X5R	Cap= 10.0 uF ESR= 9.0 mOhm VDC= 6.3 V IRMS= 2.74 A	1	\$0.02	 0603 5 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.	B360A-13-F	VF@Io= 700.0 mV VRRM= 60.0 V	1	\$0.12	 SMA 37 mm ²
7.	L1	Bourns	SDR0805-5R6ML	L= 5.6 uH DCR= 40.0 mOhm	1	\$0.22	 SDR0805 96 mm ²
8.	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
9.	Rfb2	Vishay-Dale	CRCW04023K09FKED Series= CRCW..e3	Res= 3.09 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
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

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
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	CRCW040266K5FKED Series= CRCW..e3	Res= 66.5 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

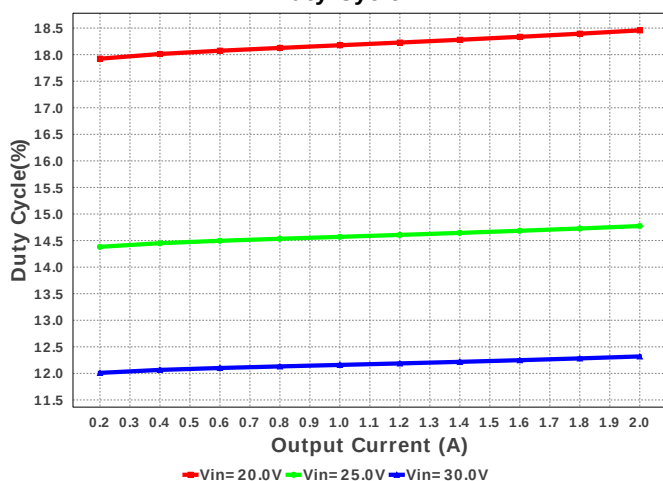
D1 Pd



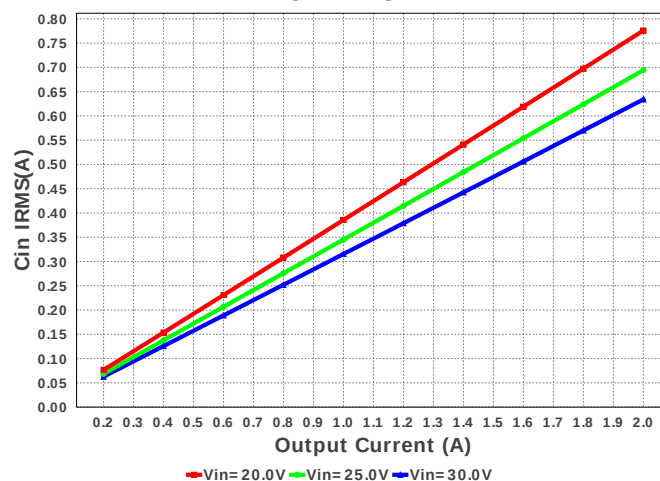
IC Tj

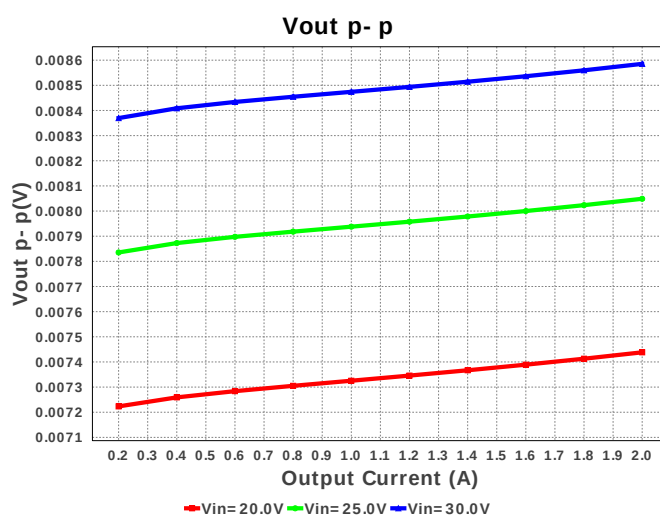
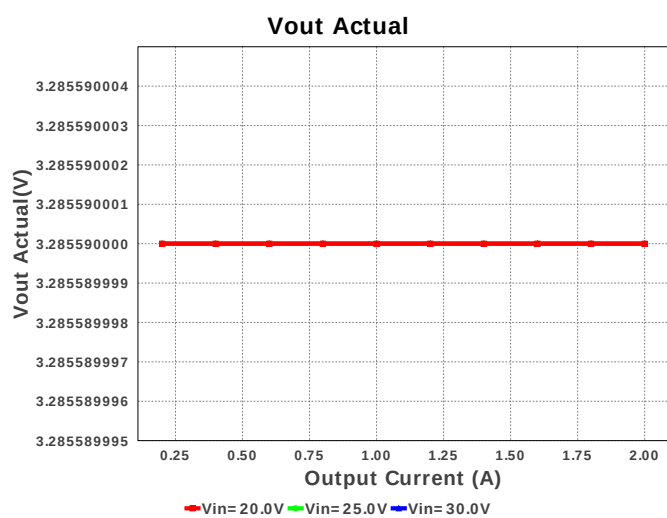
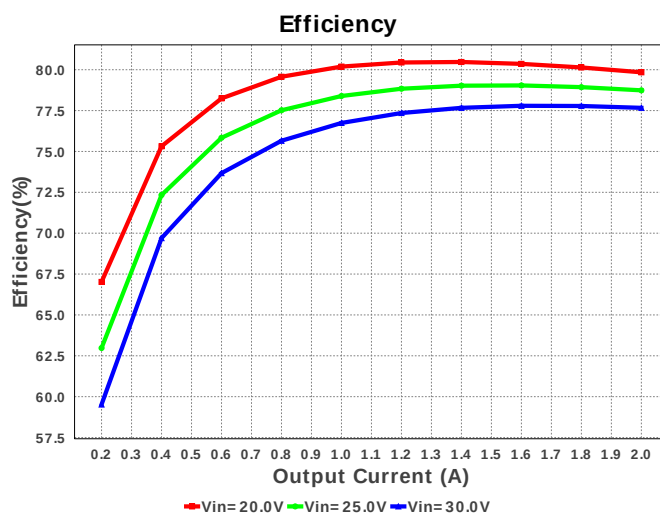
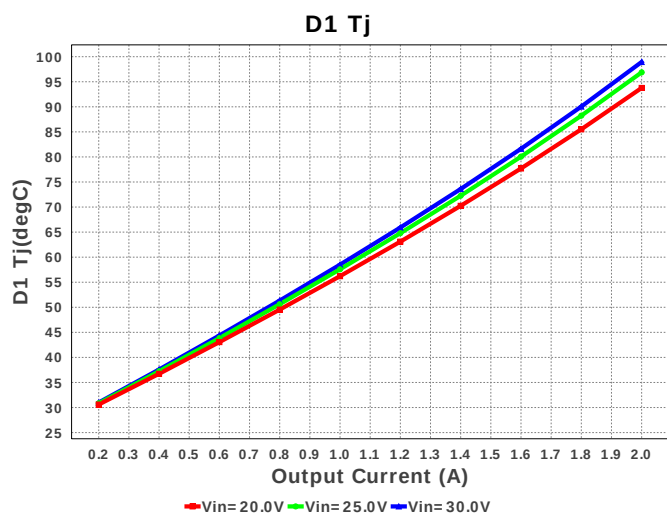
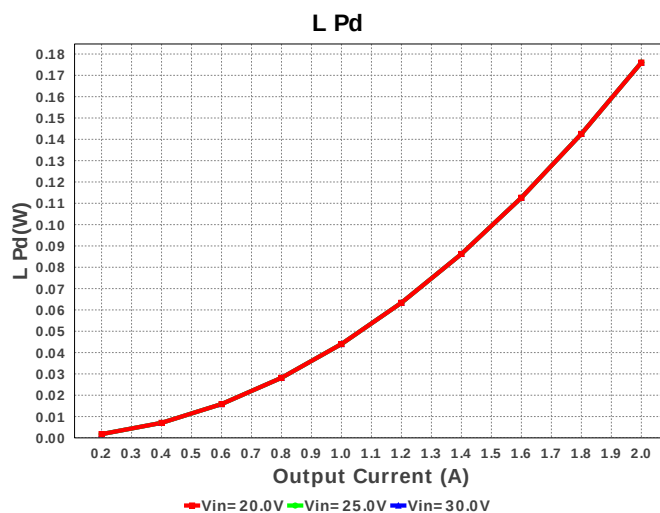
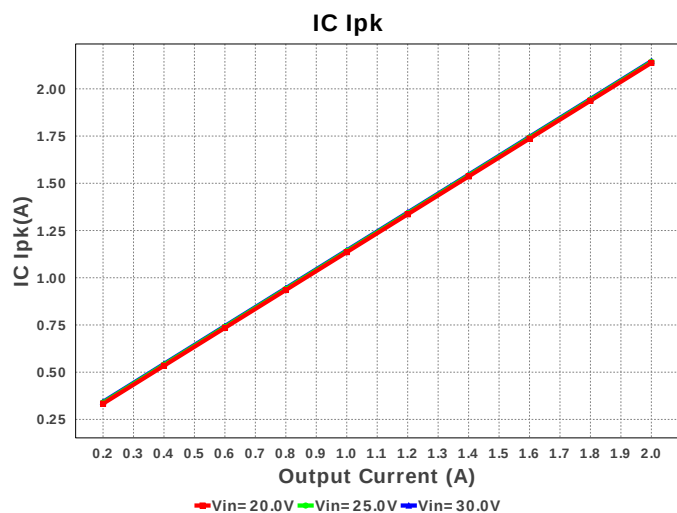


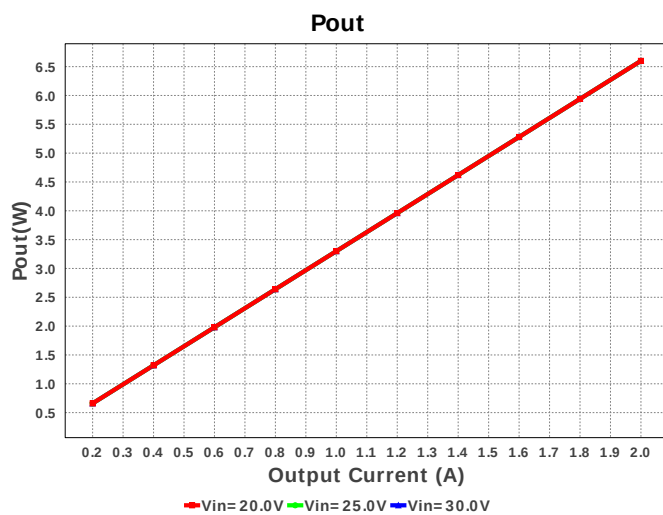
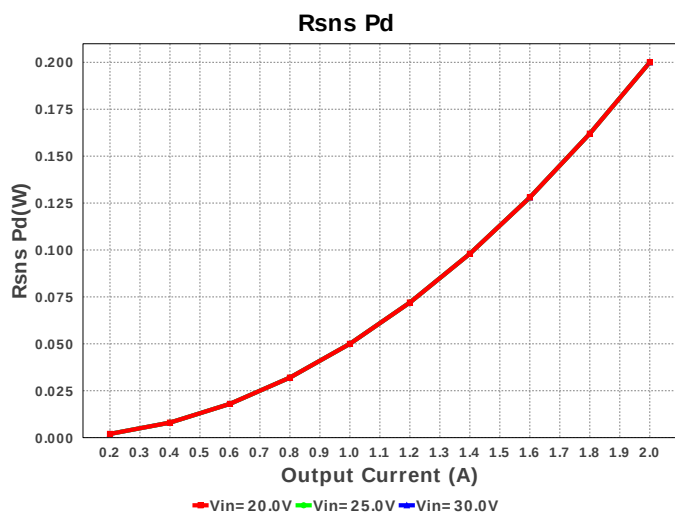
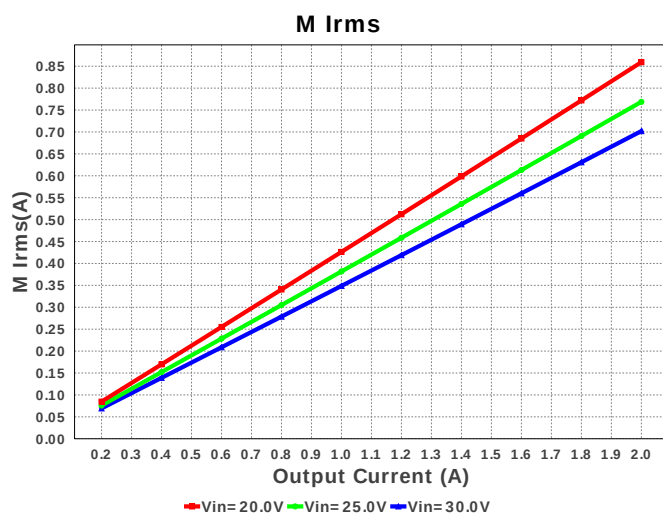
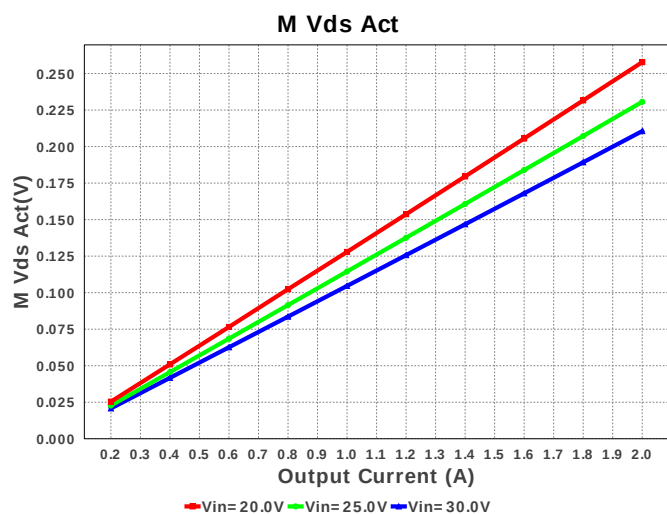
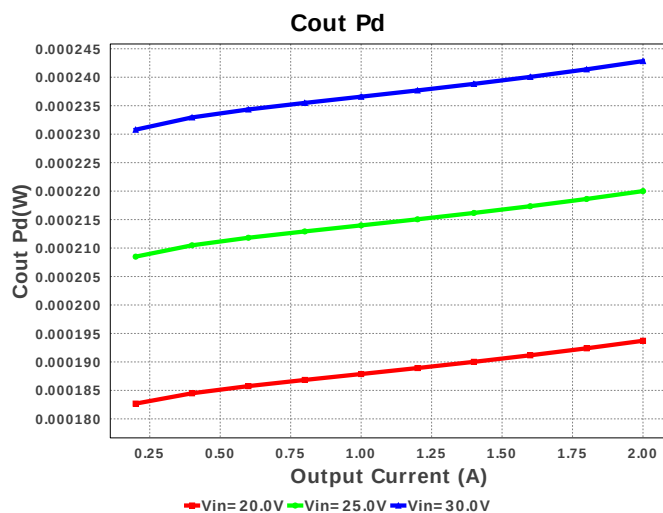
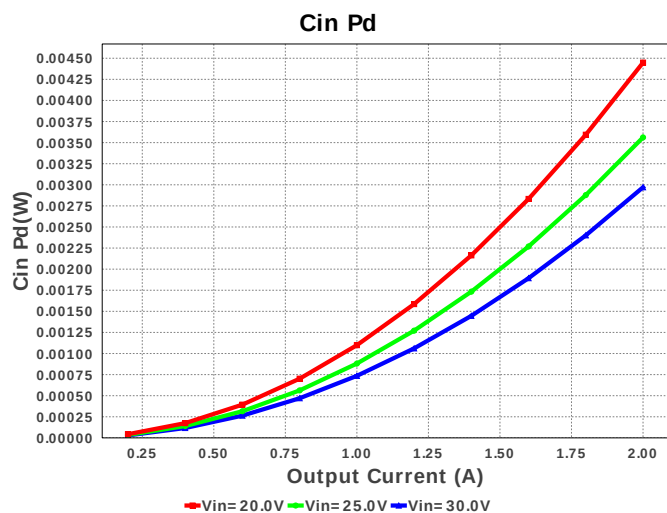
Duty Cycle

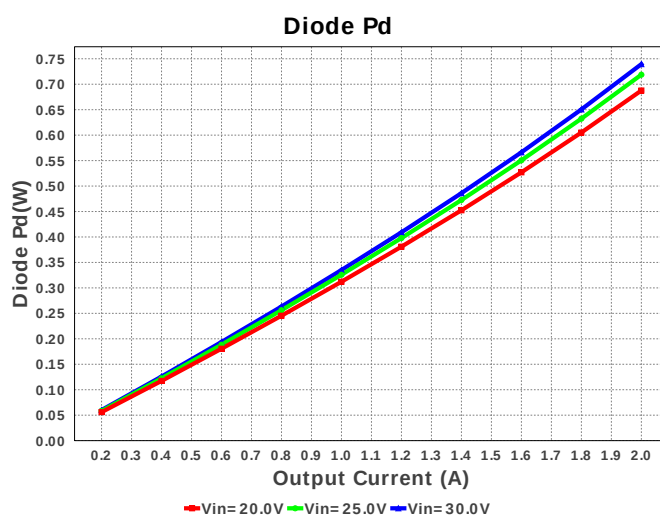
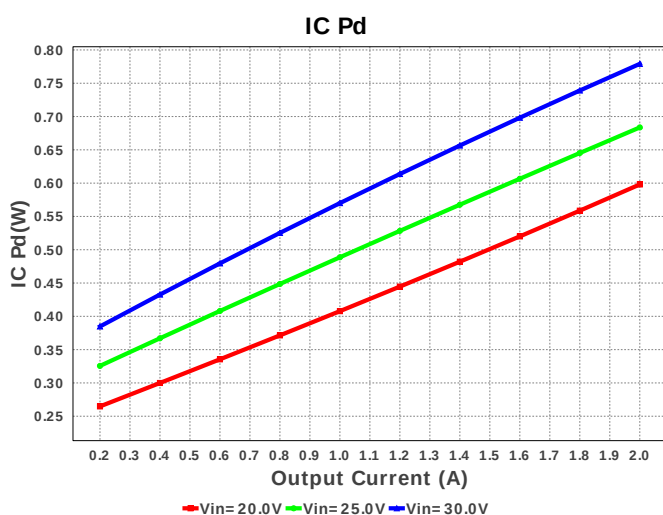
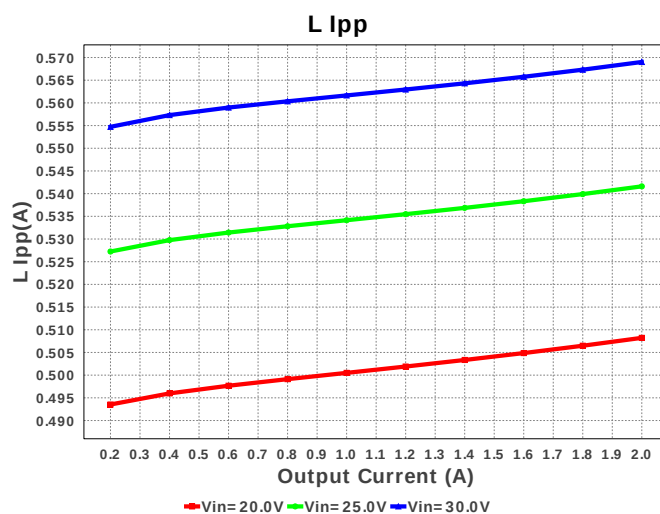
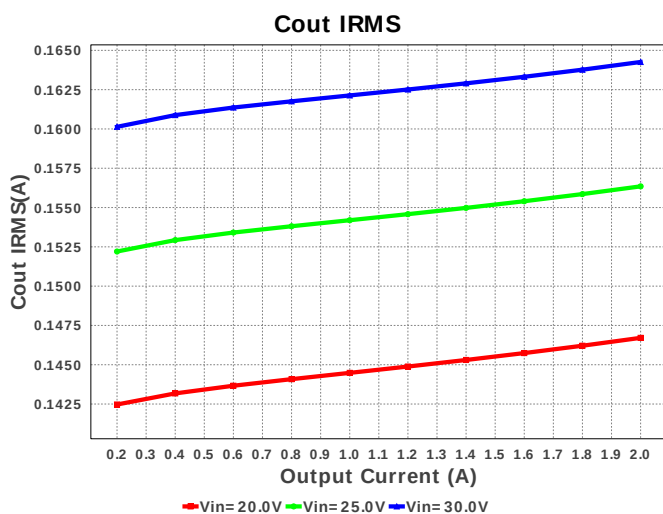
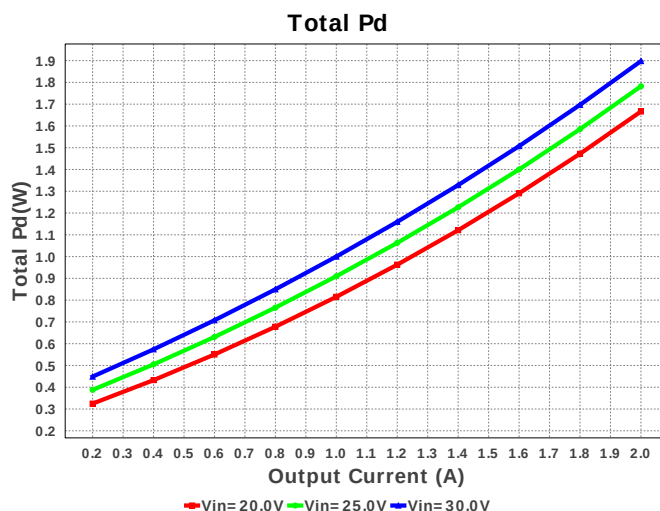
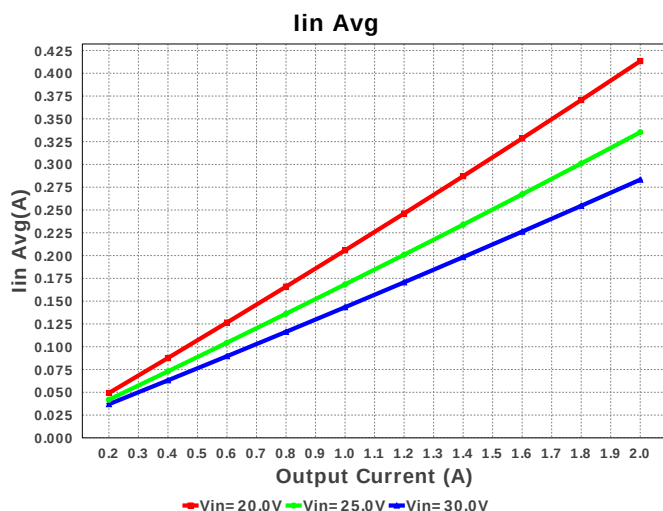


Cin IRMS









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	634.05 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	164.26 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	2.285 A	Current	Peak switch current in IC
4.	Iin Avg	283.26 mA	Current	Average input current
5.	L Ipp	569.01 mA	Current	Peak-to-peak inductor ripple current
6.	M1 Irms	701.965 mA	Current	Q lavg
7.	BOM Count	13	General	Total Design BOM count
8.	FootPrint	212.0 mm ²	General	Total Foot Print Area of BOM components
9.	Frequency	1.032 MHz	General	Switching frequency
10.	IC Tolerance	50.0 mV	General	IC Feedback Tolerance
11.	M Vds Act	210.59 mV	General	Voltage drop across the MosFET

#	Name	Value	Category	Description
12.	Mode	CCM	General	Conduction Mode
13.	Pout	6.6 W	General	Total output power
14.	Total BOM	\$1.55	General	Total BOM Cost
15.	D1 Tj	98.945 degC	Op_Point	D1 junction temperature
16.	Vout Actual	3.286 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
17.	Vout OP	3.3 V	Op_Point	Operational Output Voltage
18.	Duty Cycle	12.319 %	Op_point	Duty cycle
19.	Efficiency	77.668 %	Op_point	Steady state efficiency
20.	IC Tj	71.996 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	30.0 V	Op_point	Vin operating point
24.	Vout p-p	8.585 mV	Op_point	Peak-to-peak output ripple voltage
25.	Cin Pd	2.971 mW	Power	Input capacitor power dissipation
26.	Cout Pd	242.833 µW	Power	Output capacitor power dissipation
27.	D1 Pd	739.446 mW	Power	Output Diode Power Dissipation
28.	Diode Pd	739.446 mW	Power	Diode power dissipation
29.	IC Pd	979.09 mW	Power	IC power dissipation
30.	L Pd	176.0 mW	Power	Inductor power dissipation
31.	Rsns Pd	162.448 mW	Power	Current Limit Sense Resistor Power Dissipation
32.	Total Pd	2.06 W	Power	Total Power Dissipation
33.	Vout Tolerance	2.478 %		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	30.0	Maximum input voltage
3.	VinMin	20.0	Minimum input voltage
4.	Vout	3.3	Output Voltage
5.	base_pn	LM25011	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	25.0	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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