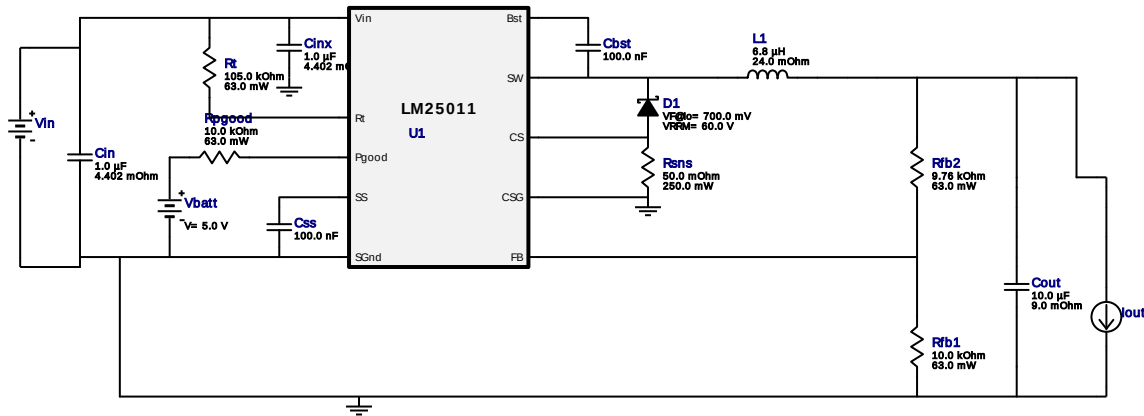


WEBENCH® Design Report

Design : 3893481/4 LM25011MYX/NOPB
LM25011MYX/NOPB 20.0V-30.0V to 5.00V @ 2.0A

Vout = 5.0V
Iout = 2.0A



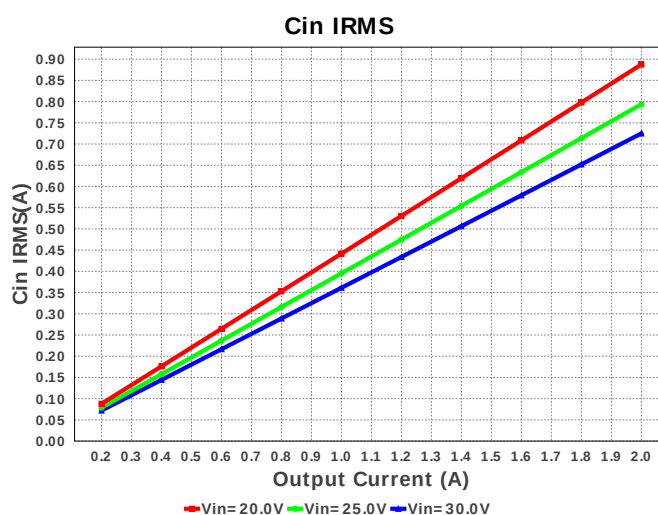
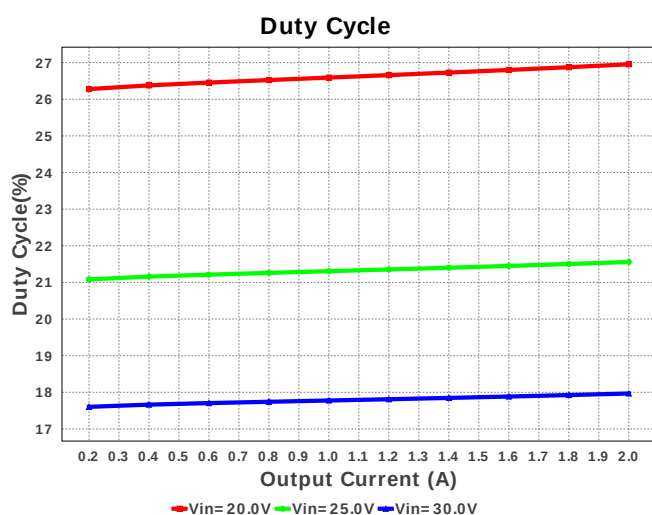
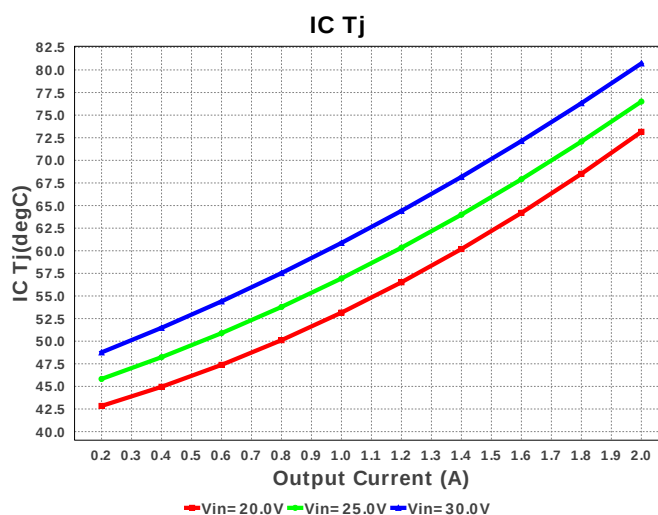
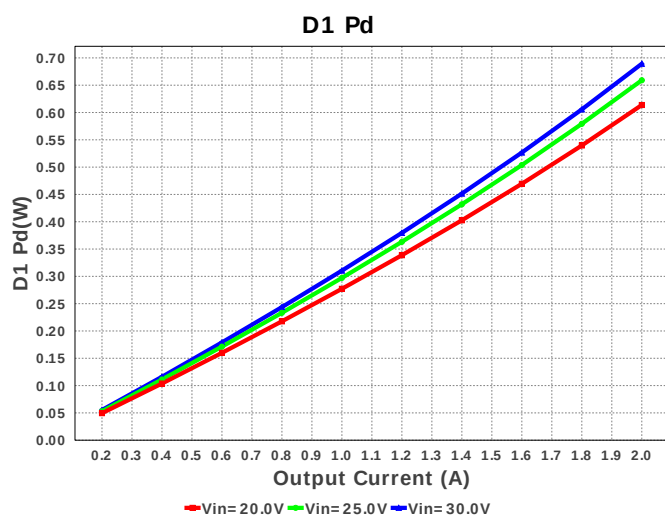
My Comments

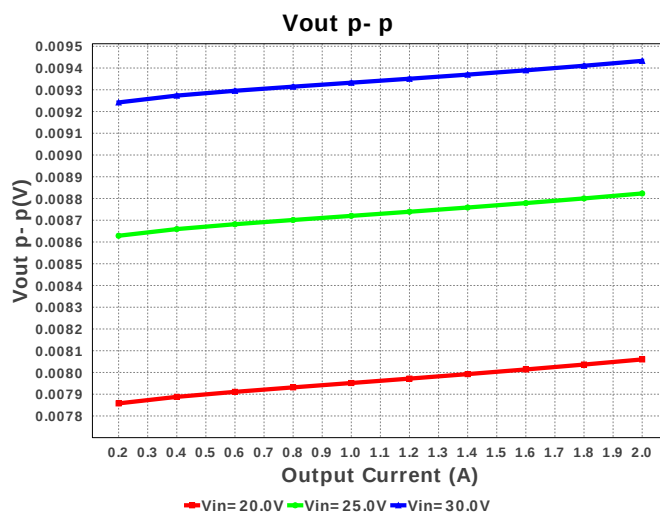
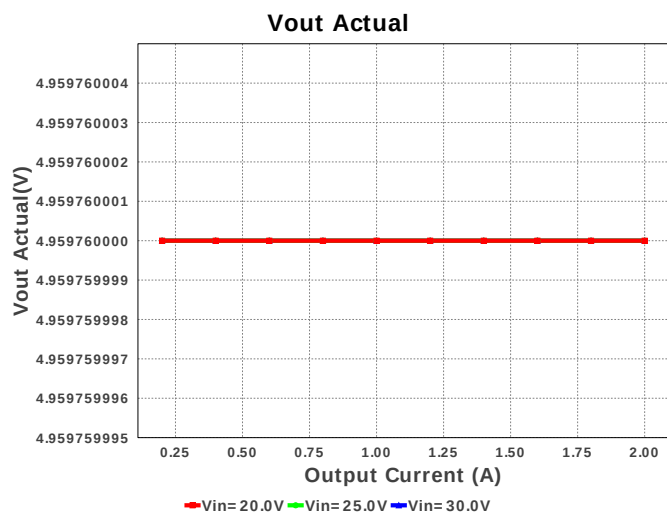
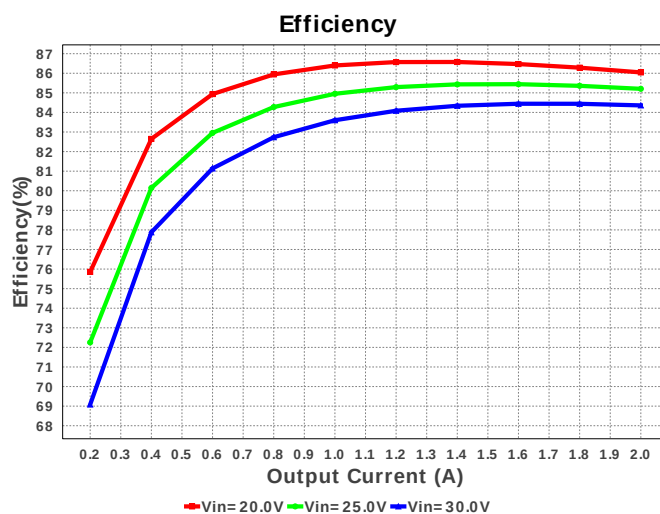
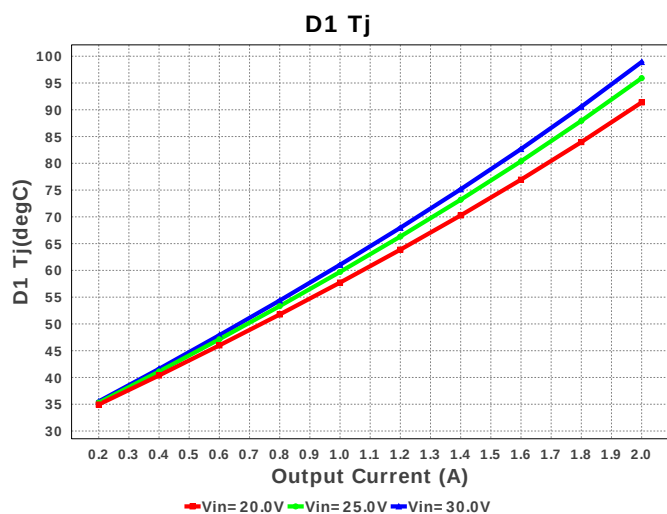
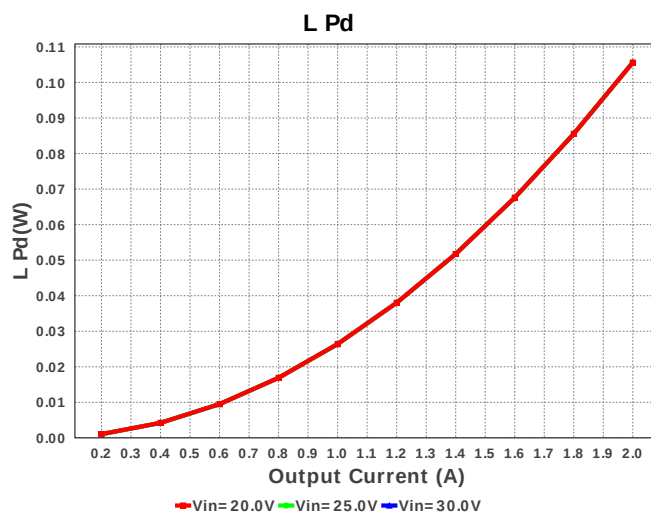
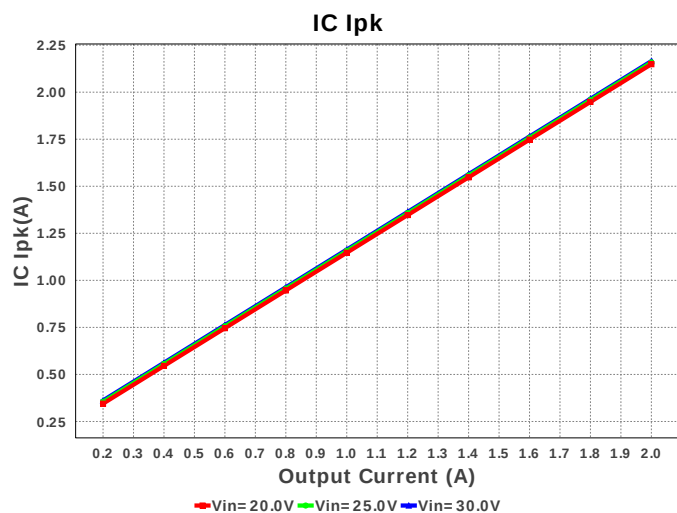
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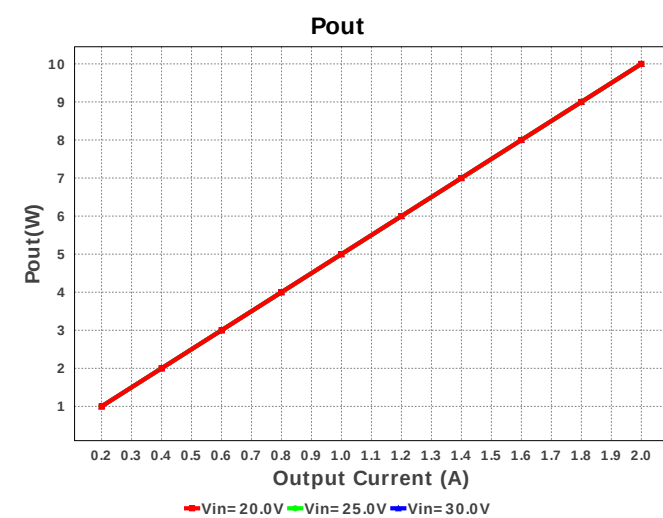
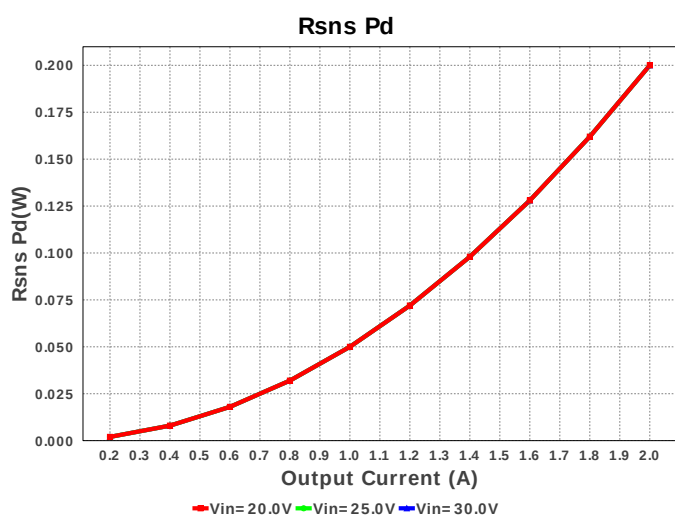
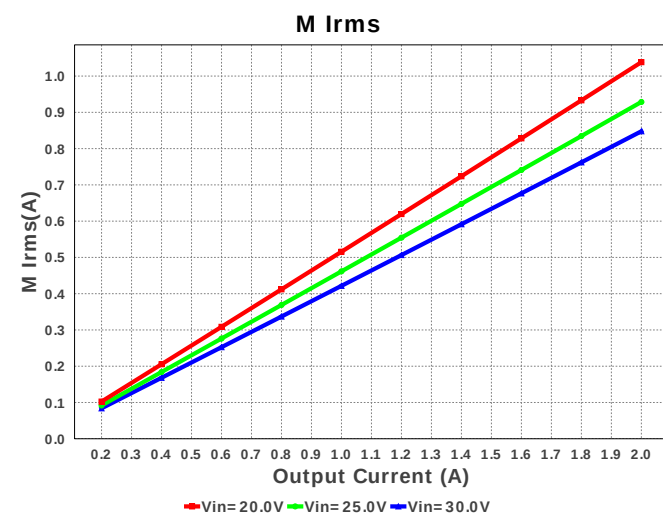
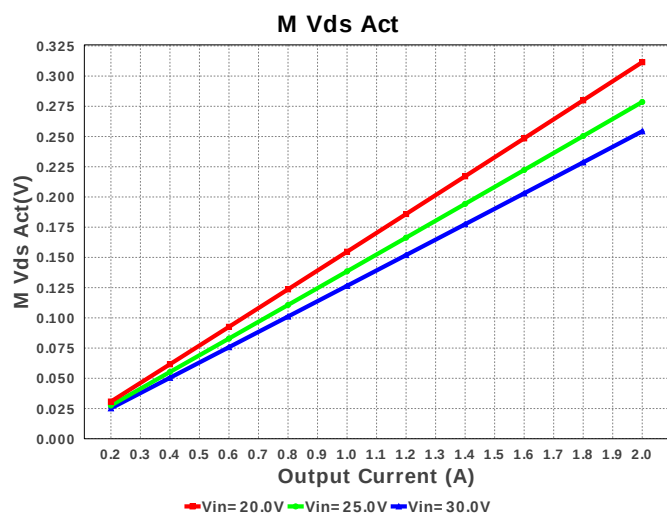
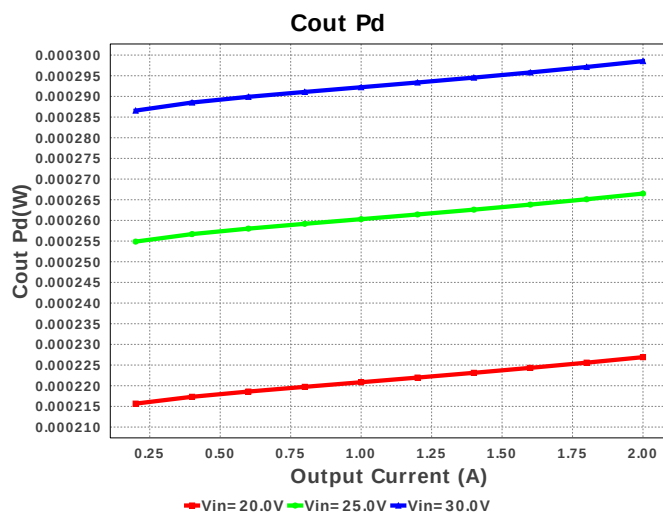
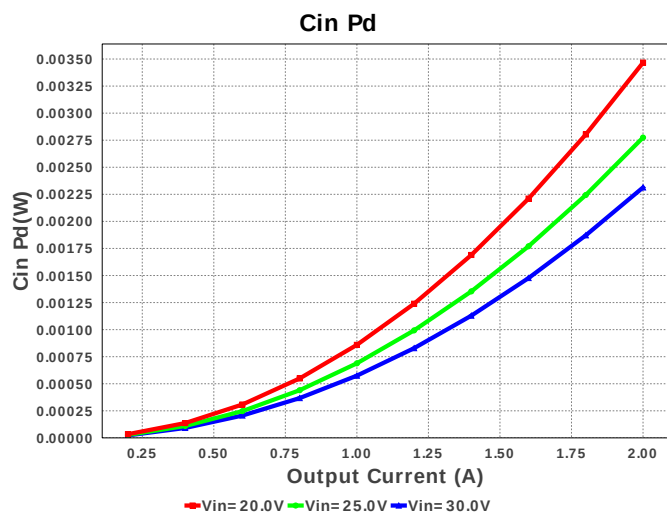
Electrical BOM

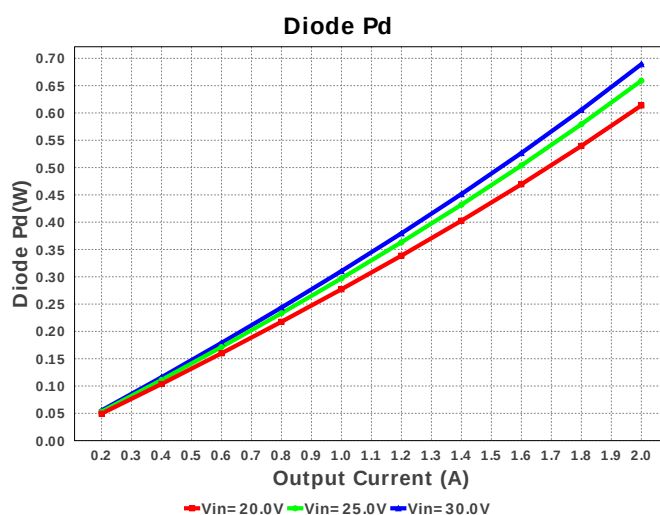
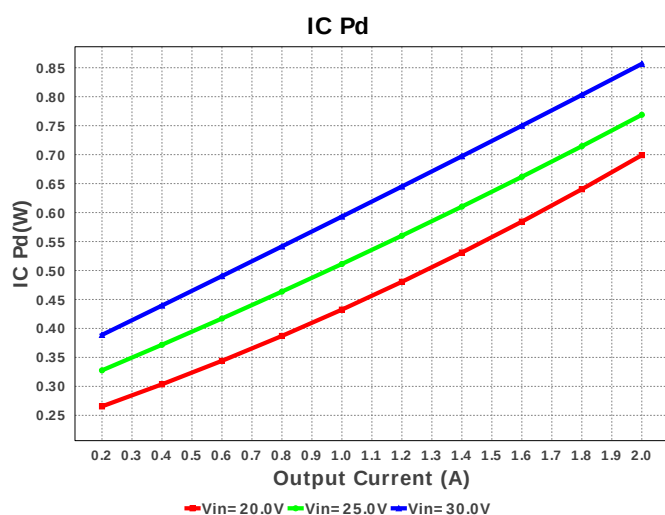
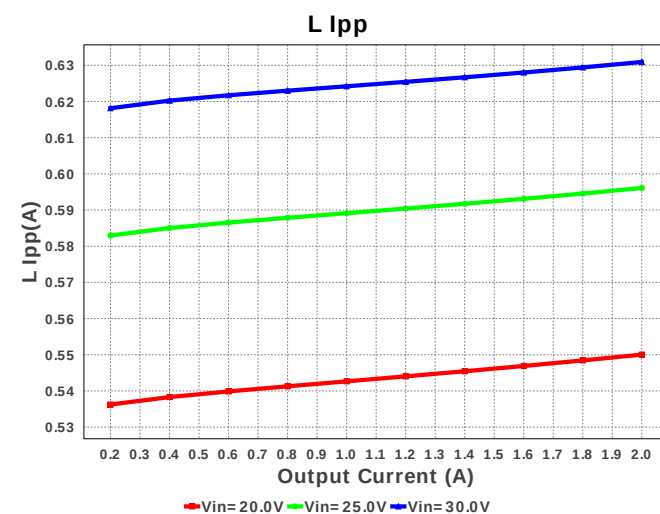
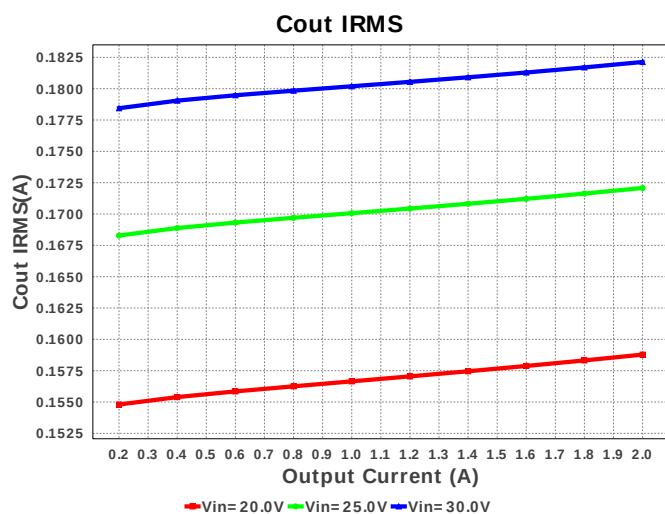
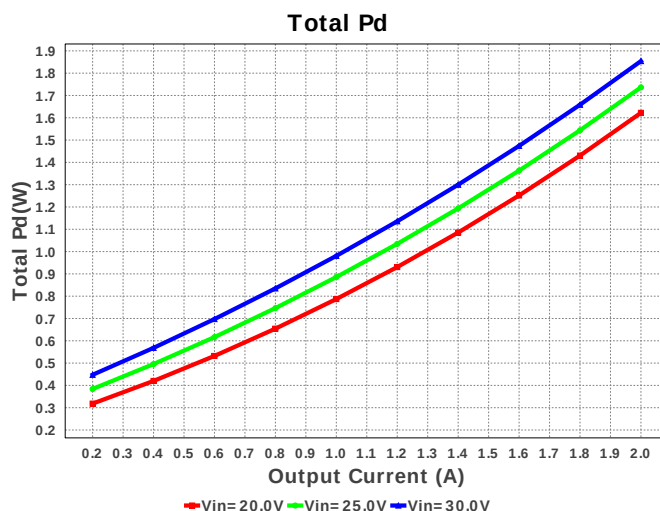
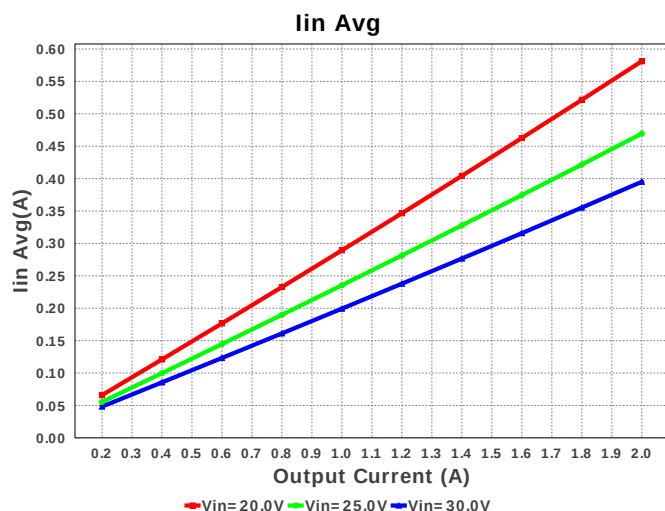
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cbst	MuRata	GRM21BR71E104KA01L Series= X7R	Cap= 100.0 nF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
2.	Cin	MuRata	GRM21BR71H105KA12L Series= X7R	Cap= 1.0 uF ESR= 4.402 mOhm VDC= 50.0 V IRMS= 1.677 A	1	\$0.05	0805 7 mm ²
3.	Cinx	MuRata	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	TDK	VLP8040T-6R8M	L= 6.8 uH DCR= 24.0 mOhm	1	\$0.22	VLP8040 113 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	CRCW04029K76FKED Series= CRCW..e3	Res= 9.76 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	CRCW0402105KFKED Series= CRCW..e3	Res= 105.0 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









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	724.939 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	182.13 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	2.315 A	Current	Peak switch current in IC
4.	Iin Avg	395.14 mA	Current	Average input current
5.	L Ipp	630.92 mA	Current	Peak-to-peak inductor ripple current
6.	M1 Irms	847.767 mA	Current	Q lavg
7.	BOM Count	13	General	Total Design BOM count
8.	FootPrint	225.0 mm ²	General	Total Foot Print Area of BOM components
9.	Frequency	1.047 MHz	General	Switching frequency
10.	IC Tolerance	50.0 mV	General	IC Feedback Tolerance
11.	M Vds Act	254.33 mV	General	Voltage drop across the MosFET

#	Name	Value	Category	Description
12.	Pout	10.0 W	General	Total output power
13.	Total BOM	\$1.57	General	Total BOM Cost
14.	D1 Tj	98.925 degC	Op_Point	D1 junction temperature
15.	Vout Actual	4.96 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
16.	Vout OP	5.0 V	Op_Point	Operational Output Voltage
17.	Duty Cycle	17.968 %	Op_point	Duty cycle
18.	Efficiency	84.359 %	Op_point	Steady state efficiency
19.	IC Tj	80.719 degC	Op_point	IC junction temperature
20.	ICThetaJA	48.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
21.	IOUT_OP	2.0 A	Op_point	Iout operating point
22.	VIN_OP	30.0 V	Op_point	Vin operating point
23.	Vout p-p	9.433 mV	Op_point	Peak-to-peak output ripple voltage
24.	Cin Pd	2.313 mW	Power	Input capacitor power dissipation
25.	Cout Pd	298.544 µW	Power	Output capacitor power dissipation
26.	D1 Pd	689.246 mW	Power	Output Diode Power Dissipation
27.	Diode Pd	689.246 mW	Power	Diode power dissipation
28.	IC Pd	1.057 W	Power	IC power dissipation
29.	L Pd	105.6 mW	Power	Inductor power dissipation
30.	Rsns Pd	145.307 mW	Power	Current Limit Sense Resistor Power Dissipation
31.	Total Pd	1.999 W	Power	Total Power Dissipation
32.	Vout Tolerance	3.01 %		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	5.0	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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You should completely validate and test your design implementation to confirm the system functionality for your application prior to production.

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