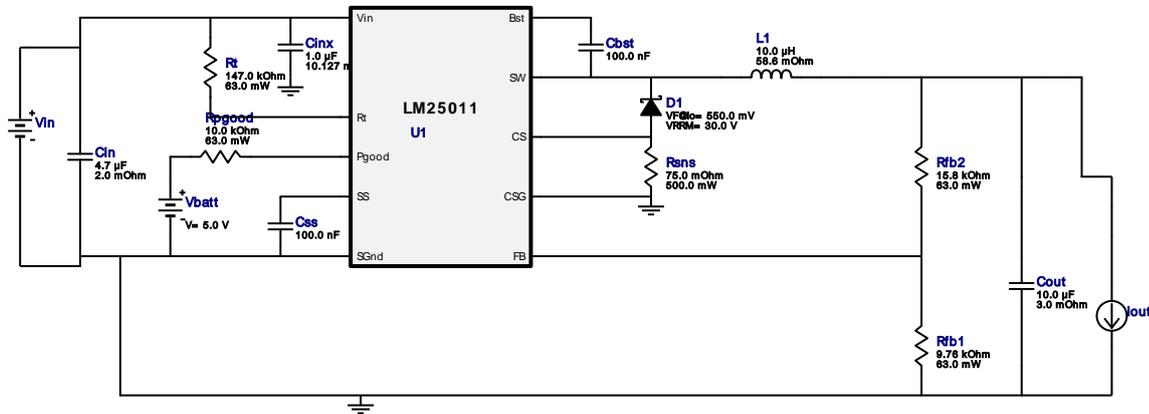


WEBENCH® Design Report

 Design : 1108023/238 LM25011MYX/NOPB
 LM25011MYX/NOPB 8.0V-13.0V to 6.50V @ 1.5A

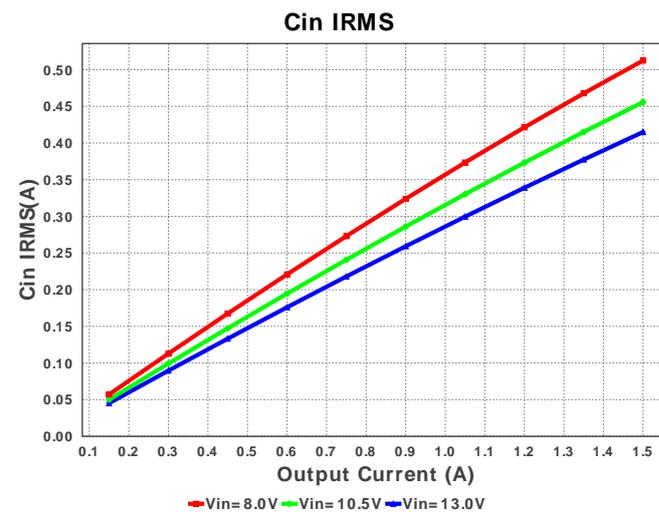
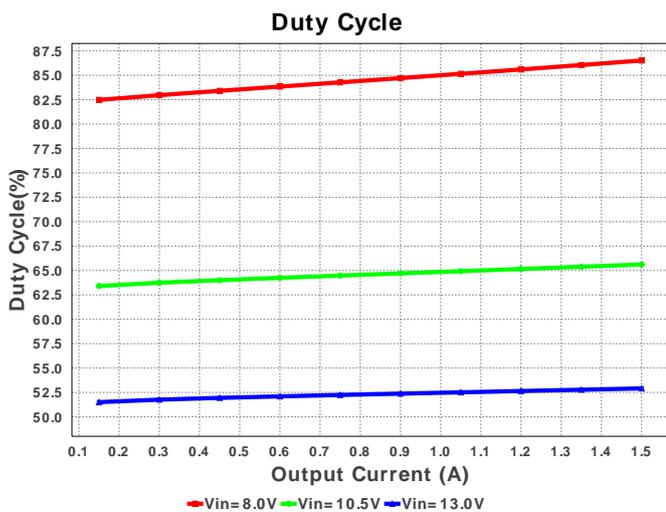
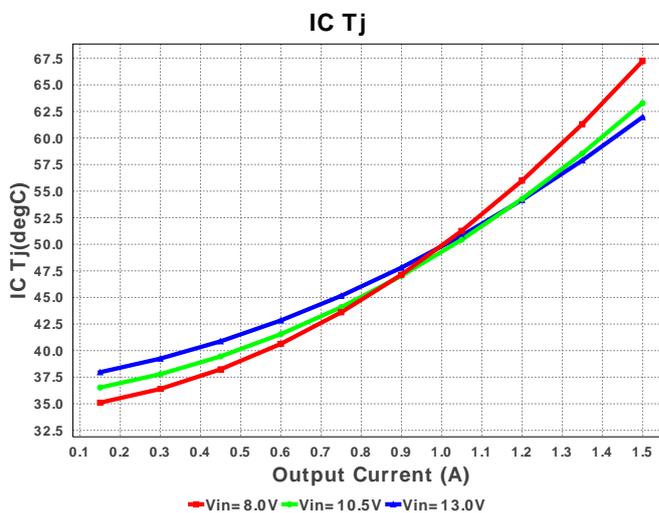
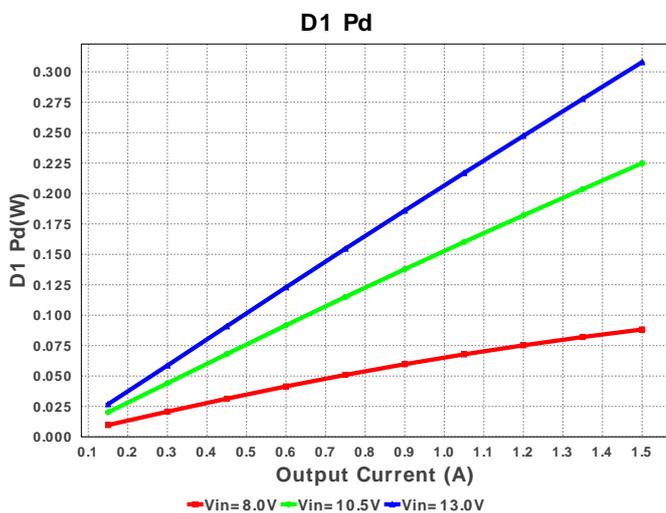
 Vout = 6.5V
 Iout = 1.5A

My Comments

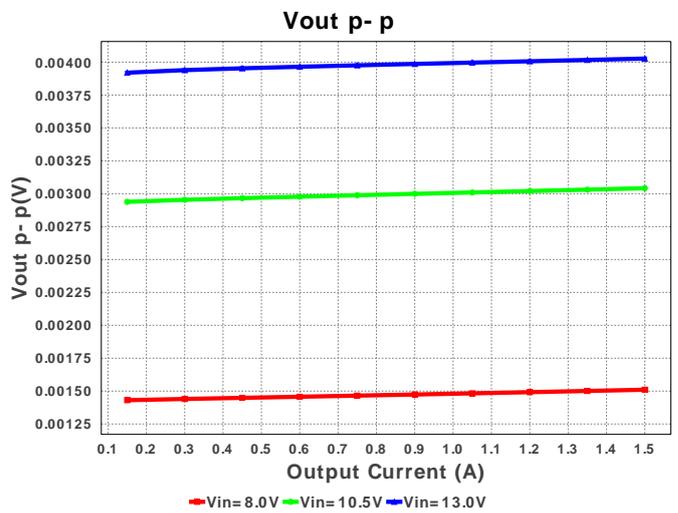
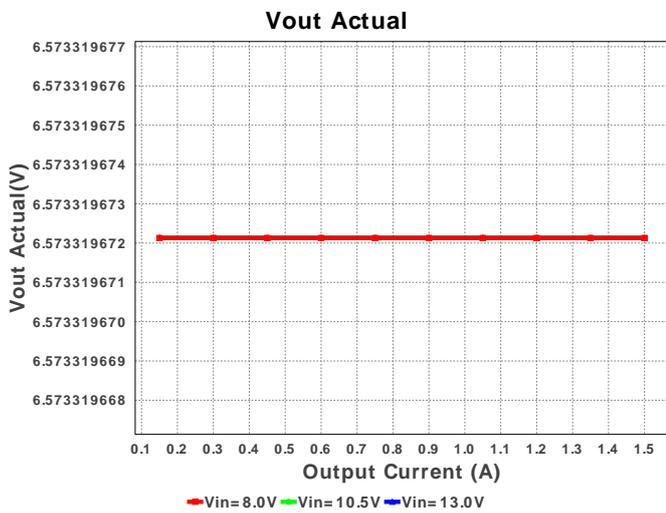
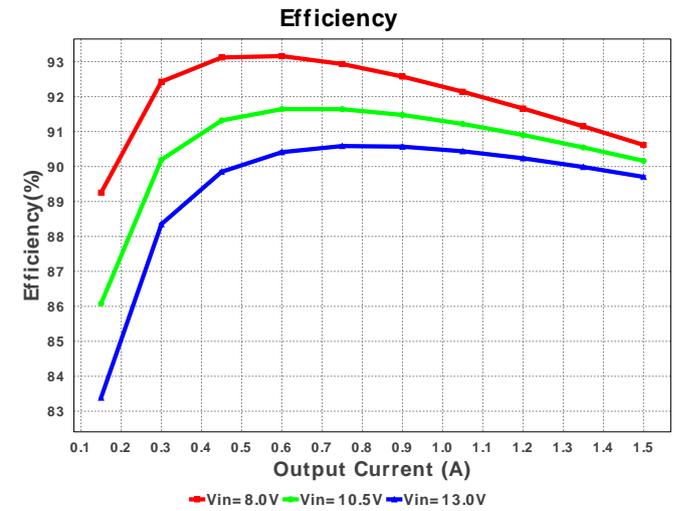
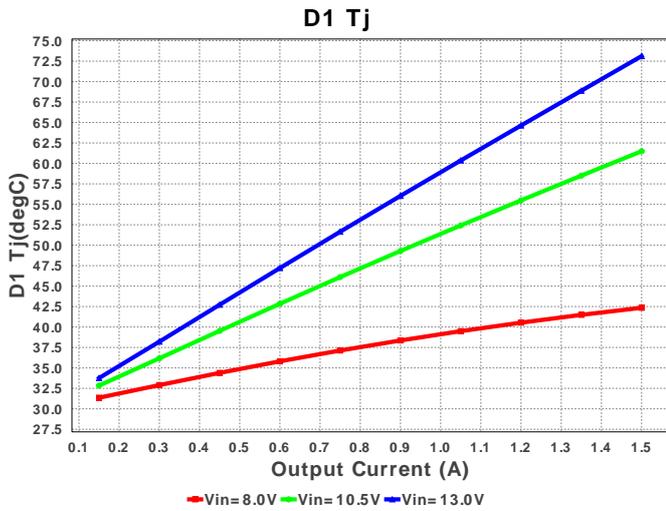
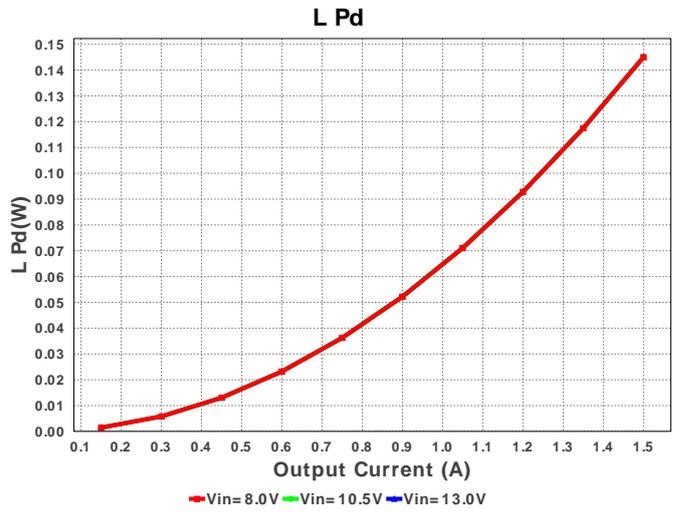
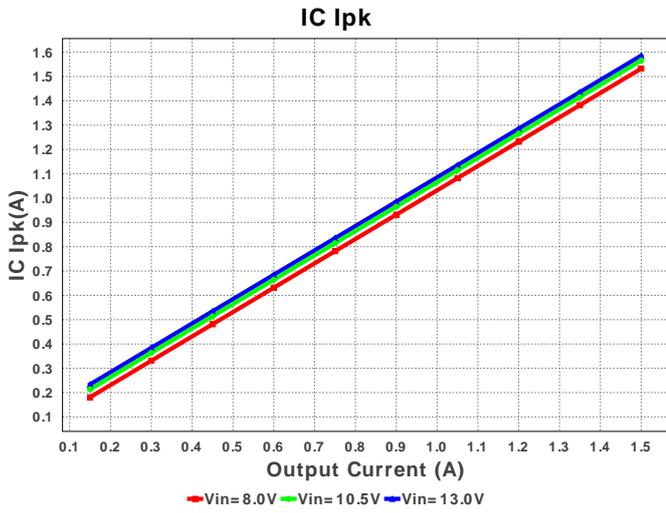
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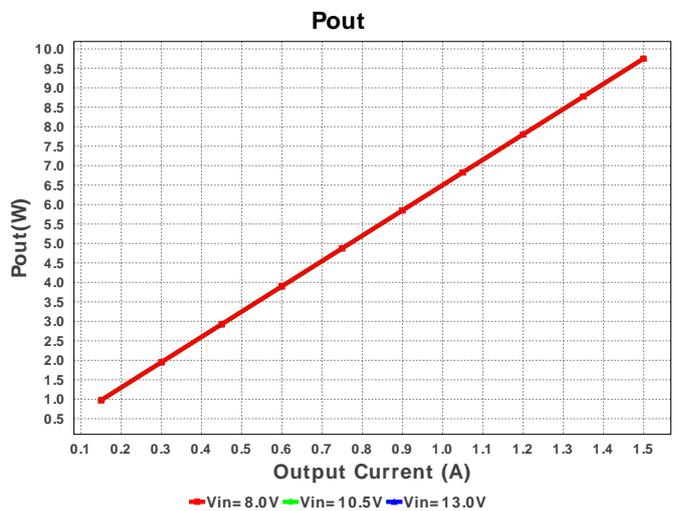
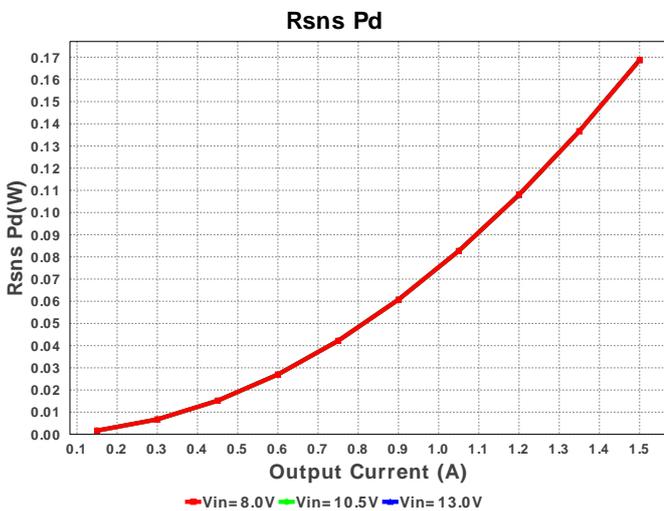
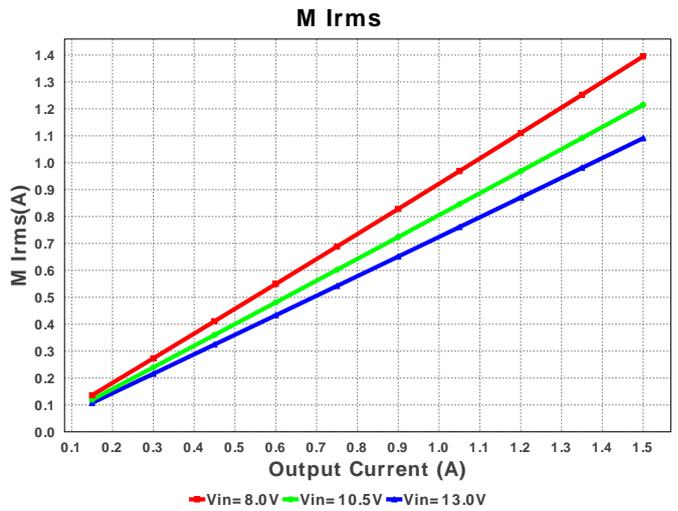
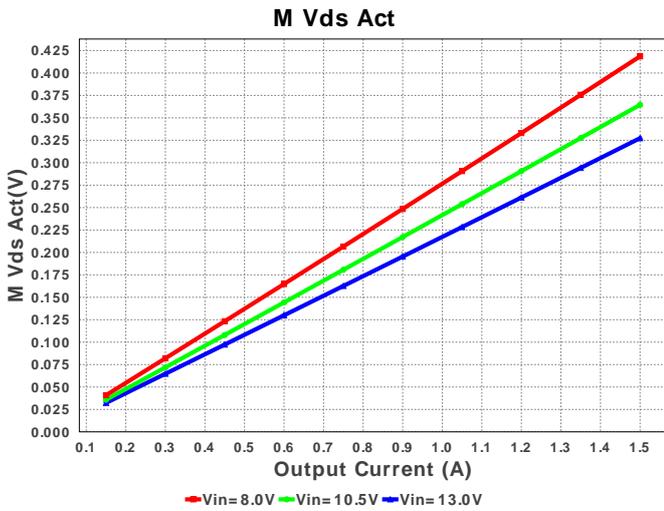
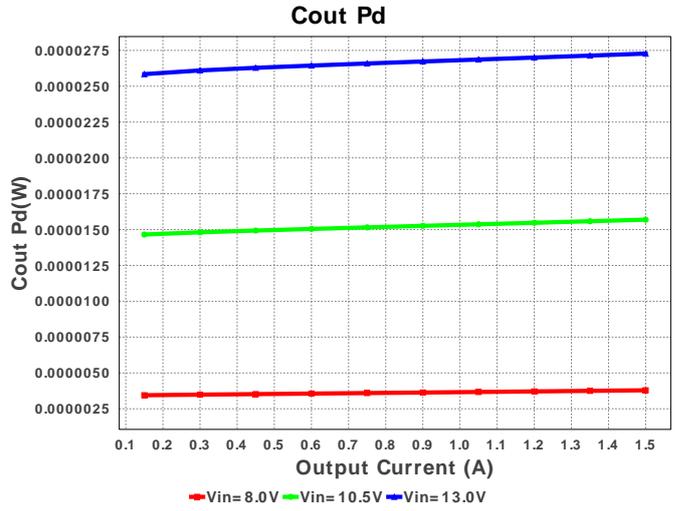
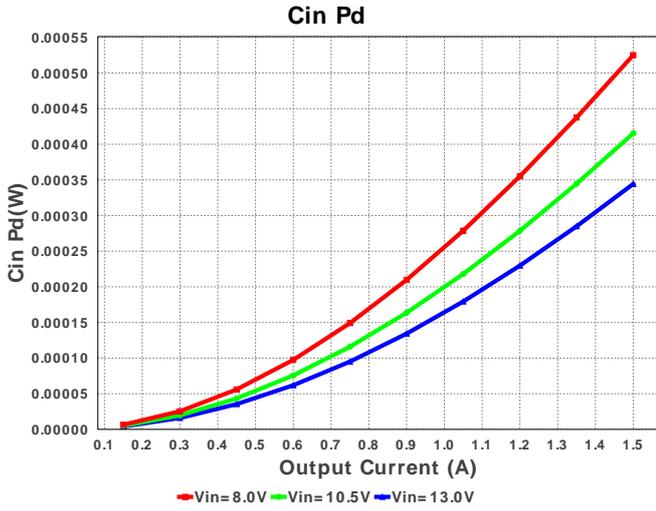
Electrical BOM

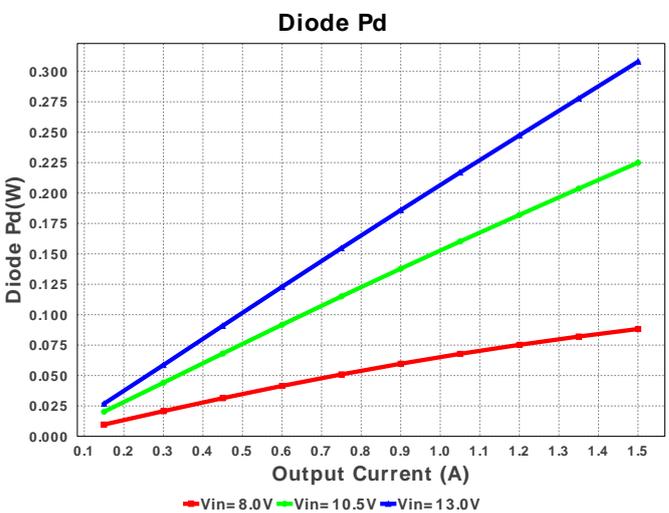
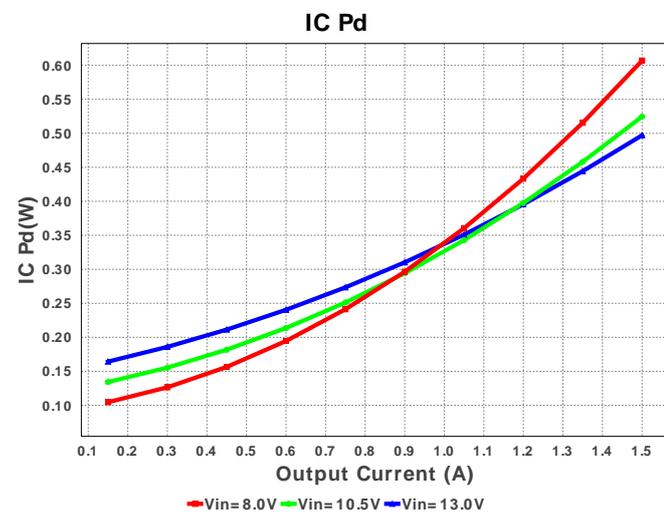
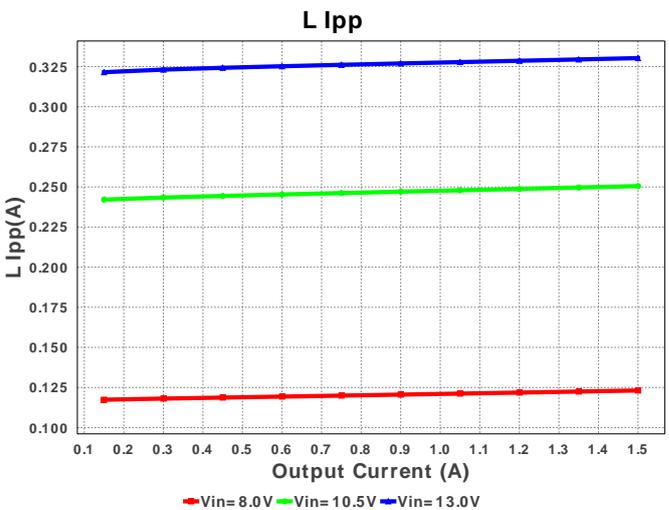
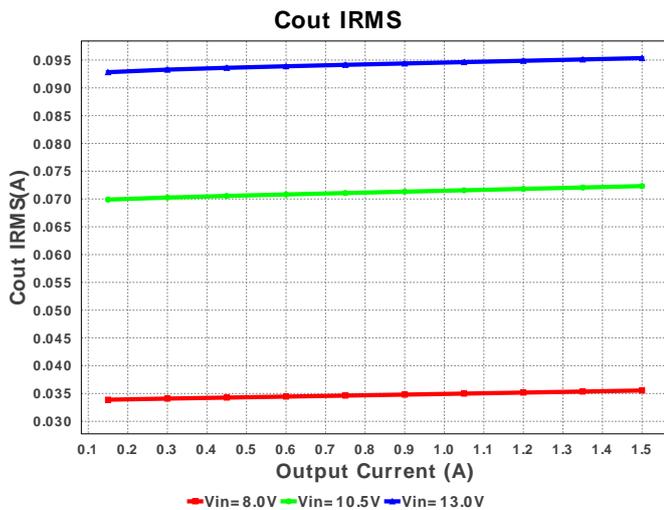
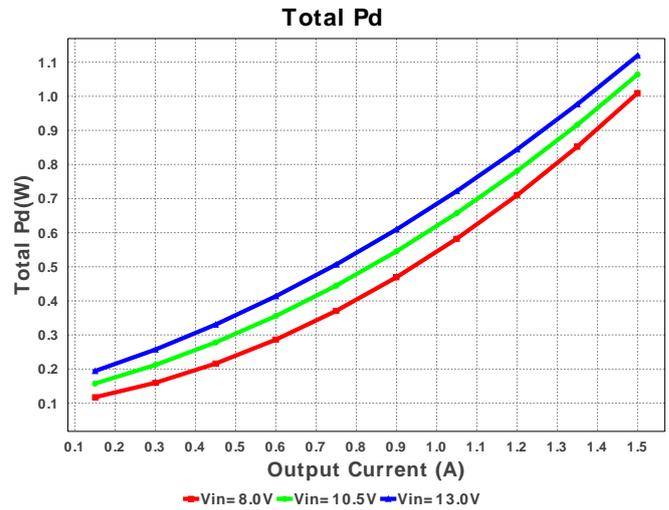
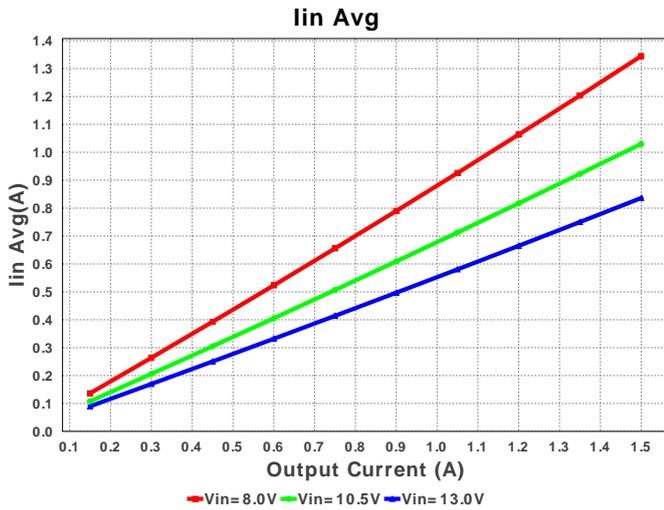
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cbst	Yageo America	CC0805KRX7R8BB104 Series= X7R	Cap= 100.0 nF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
2.	Cin	MuRata	GRM21BR61E475MA12L Series= X5R	Cap= 4.7 uF ESR= 2.0 mOhm VDC= 25.0 V IRMS= 7.29 A	1	\$0.02	0805 7 mm ²
3.	Cinx	MuRata	GRM188R61C105KA93D Series= X5R	Cap= 1.0 uF ESR= 10.127 mOhm VDC= 16.0 V IRMS= 994.63 mA	1	\$0.01	0603 5 mm ²
4.	Cout	Kemet	C0805C106K8PACTU Series= X5R	Cap= 10.0 uF ESR= 3.0 mOhm VDC= 10.0 V IRMS= 11.43 A	1	\$0.02	0805 7 mm ²
5.	Css	Yageo America	CC0805KRX7R8BB104 Series= X7R	Cap= 100.0 nF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
6.	D1	Fairchild Semiconductor	SS13FL	VF@Io= 550.0 mV VRRM= 30.0 V	1	\$0.06	SOD-123F 12 mm ²
7.	L1	Bourns	SRN6045-100M	L= 10.0 uH DCR= 58.6 mOhm	1	\$0.16	SRN6045 64 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	CRCW040215K8FKED Series= CRCW..e3	Res= 15.8 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	Stackpole Electronics Inc	CSR1206FK75L0 Series= ?	Res= 75.0 mOhm Power= 500.0 mW Tolerance= 1.0%	1	\$0.10	1206 11 mm ²
12.	Rt	Vishay-Dale	CRCW0402147KFKED Series= CRCW..e3	Res= 147.0 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	414.934 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	95.35 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	1.665 A	Current	Peak switch current in IC
4.	Iin Avg	836.09 mA	Current	Average input current
5.	L Ipp	330.3 mA	Current	Peak-to-peak inductor ripple current
6.	M1 Irms	1.091 A	Current	Q lavg
7.	BOM Count	13	General	Total Design BOM count
8.	FootPrint	154.0 mm ²	General	Total Foot Print Area of BOM components
9.	Frequency	1.041 MHz	General	Switching frequency
10.	IC Tolerance	50.0 mV	General	IC Feedback Tolerance
11.	M Vds Act	327.332 mV	General	Voltage drop across the MosFET

#	Name	Value	Category	Description
12.	Mode	CCM	General	Conduction Mode
13.	Pout	9.75 W	General	Total output power
14.	Total BOM	\$1.38	General	Total BOM Cost
15.	D1 Tj	73.118 degC	Op_Point	D1 junction temperature
16.	Vout Actual	6.573 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
17.	Vout OP	6.5 V	Op_Point	Operational Output Voltage
18.	Duty Cycle	52.912 %	Op_point	Duty cycle
19.	Efficiency	89.703 %	Op_point	Steady state efficiency
20.	IC Tj	61.959 degC	Op_point	IC junction temperature
21.	ICThetaJA	48.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
22.	IOUT_OP	1.5 A	Op_point	Iout operating point
23.	VIN_OP	13.0 V	Op_point	Vin operating point
24.	Vout p-p	4.027 mV	Op_point	Peak-to-peak output ripple voltage
25.	Cin Pd	344.34 µW	Power	Input capacitor power dissipation
26.	Cout Pd	27.275 µW	Power	Output capacitor power dissipation
27.	D1 Pd	307.988 mW	Power	Output Diode Power Dissipation
28.	Diode Pd	307.988 mW	Power	Diode power dissipation
29.	IC Pd	665.806 mW	Power	IC power dissipation
30.	L Pd	145.035 mW	Power	Inductor power dissipation
31.	Rsns Pd	22.187 mW	Power	Current Limit Sense Resistor Power Dissipation
32.	Total Pd	1.141 W	Power	Total Power Dissipation
33.	Vout Tolerance	3.266 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	1.5	Maximum Output Current
2.	VinMax	13.0	Maximum input voltage
3.	VinMin	8.0	Minimum input voltage
4.	Vout	6.5	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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