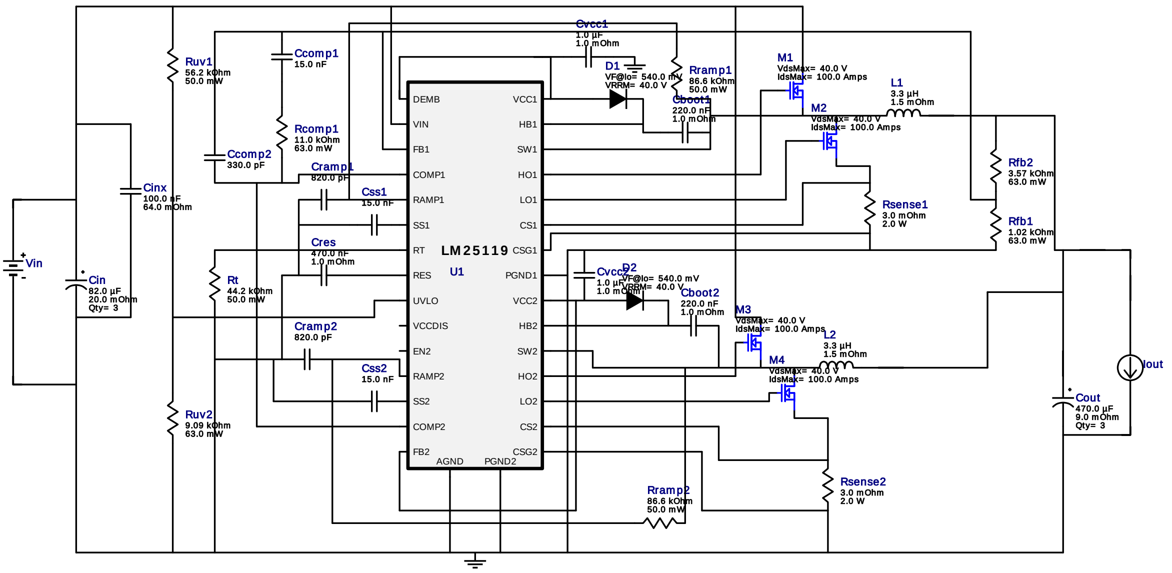
TEXAS INSTRUMENTS

WEBENCH ® Design Report

VinMin = 11.0V
VinMax = 25.0V
Vout = 3.6V
Iout = 40.0A

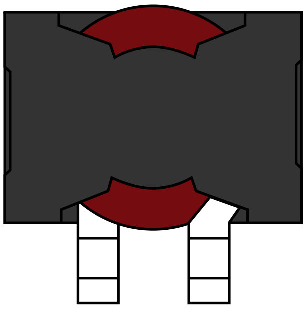
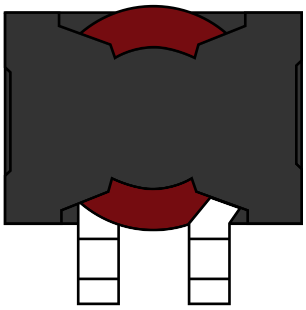
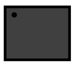
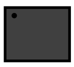
Device = LM25119PSQ/NOPB
Topology = Buck
Created = 2024-10-12 12:25:10.458
BOM Cost = $15.21
BOM Count = 37
Total Pd = 12.68W

Design : 96 LM25119PSQ/NOPB
LM25119PSQNOPB 11V-25V to 3.60V @ 40A

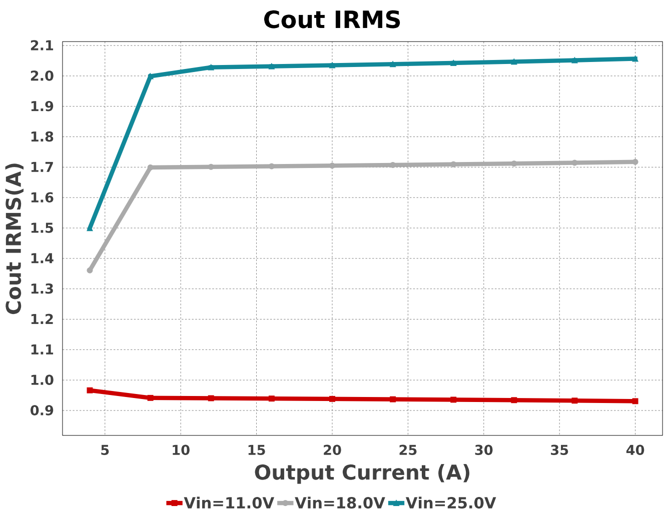


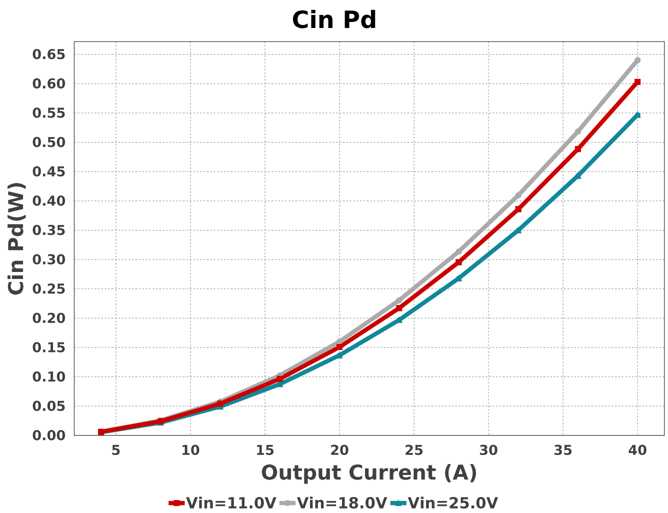
Electrical BOM

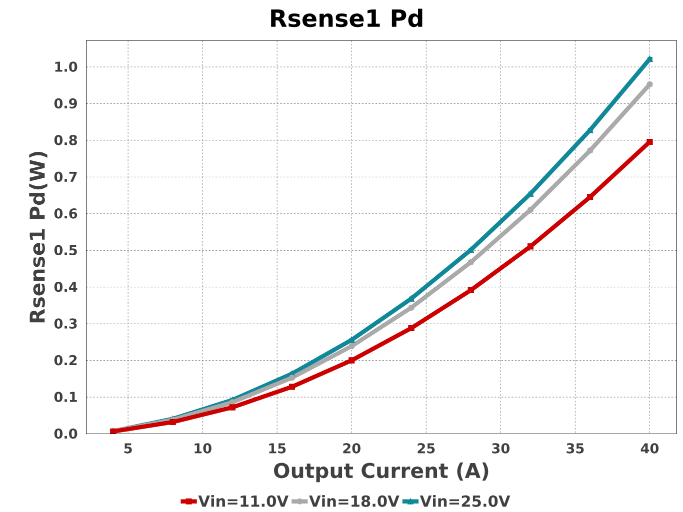
Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
Cboot1	MuRata	GRM155R61A224KE19D Series= X5R	Cap= 220.0 nF ESR= 1.0 mOhm VDC= 10.0 V IRMS= 0.0 A	1	$0.01	0402 3 mm²
Cboot2	MuRata	GRM155R61A224KE19D Series= X5R	Cap= 220.0 nF ESR= 1.0 mOhm VDC= 10.0 V IRMS= 0.0 A	1	$0.01	0402 3 mm²
Ccomp1	TDK	C2012C0G1H153J085AA Series= C0G/NP0	Cap= 15.0 nF VDC= 50.0 V IRMS= 0.0 A	1	$0.06	0805 7 mm²
Ccomp2	Samsung Electro-Mechanics	CL21C331JBANNNC Series= C0G/NP0	Cap= 330.0 pF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	0805 7 mm²
Cin	Panasonic	35SVPF82M Series= SVPF	Cap= 82.0 uF ESR= 20.0 mOhm VDC= 35.0 V IRMS= 4.0 A	3	$1.17	CAPSMT_62_E12 106 mm²
Cinx	Kemet	C0805C104M5RACTU Series= X7R	Cap= 100.0 nF ESR= 64.0 mOhm VDC= 50.0 V IRMS= 1.64 A	1	$0.01	0805 7 mm²
Cout	Chemi-Con	APXF6R3ARA471MH80G Series= PXF	Cap= 470.0 uF ESR= 9.0 mOhm VDC= 6.3 V IRMS= 4.5 A	3	$0.44	CAPSMT_62_H80 106 mm²
Cramp1	Samsung Electro-Mechanics	CL21C821JBCNNNC Series= C0G/NP0	Cap= 820.0 pF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	0805 7 mm²

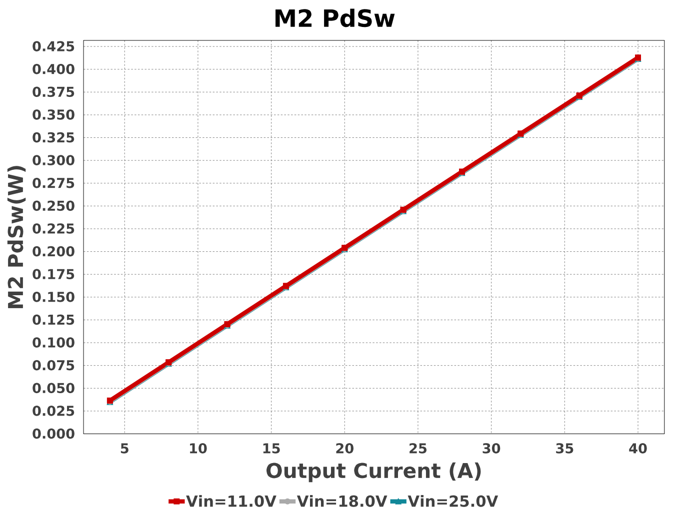
Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
Cramp2	Samsung Electro-Mechanics	CL21C821JBCNNNC Series= C0G/NP0	Cap= 820.0 pF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	0805 7 mm²
Cres	Taiyo Yuden	GMK212BJ474KG-T Series= X5R	Cap= 470.0 nF ESR= 1.0 mOhm VDC= 35.0 V IRMS= 0.0 A	1	$0.03	0805 7 mm²
Css1	TDK	C2012C0G1H153J085AA Series= C0G/NP0	Cap= 15.0 nF VDC= 50.0 V IRMS= 0.0 A	1	$0.06	0805 7 mm²
Css2	TDK	C2012C0G1H153J085AA Series= C0G/NP0	Cap= 15.0 nF VDC= 50.0 V IRMS= 0.0 A	1	$0.06	0805 7 mm²
Cvcc1	Kemet	C0603C105Z8VACTU Series= Y5V	Cap= 1.0 uF ESR= 1.0 mOhm VDC= 10.0 V IRMS= 0.0 A	1	$0.01	0603 5 mm²
Cvcc2	Kemet	C0603C105Z8VACTU Series= Y5V	Cap= 1.0 uF ESR= 1.0 mOhm VDC= 10.0 V IRMS= 0.0 A	1	$0.01	0603 5 mm²
D1	Torex USA Corporation	XBS104S13R-G	VF@Io= 540.0 mV VRRM= 40.0 V	1	$0.16	SOD-323 9 mm²
D2	Torex USA Corporation	XBS104S13R-G	VF@Io= 540.0 mV VRRM= 40.0 V	1	$0.16	SOD-323 9 mm²
L1	Coilcraft	SER2915L-332KL	L= 3.3 µH 1.5 mOhm	1	$1.88	 SER2915L 652 mm²
L2	Coilcraft	SER2915L-332KL	L= 3.3 µH 1.5 mOhm	1	$1.88	 SER2915L 652 mm²
M1	Texas Instruments	CSD18511Q5A	VdsMax= 40.0 V IdsMax= 100.0 Amps	1	$0.32	 TRANS_NexFET_Q5A 55 mm²
M2	Texas Instruments	CSD18512Q5B	VdsMax= 40.0 V IdsMax= 100.0 Amps	1	$0.53	 TRANS_NexFET_Q5B 58 mm²
M3	Texas Instruments	CSD18511Q5A	VdsMax= 40.0 V IdsMax= 100.0 Amps	1	$0.32	 TRANS_NexFET_Q5A 55 mm²

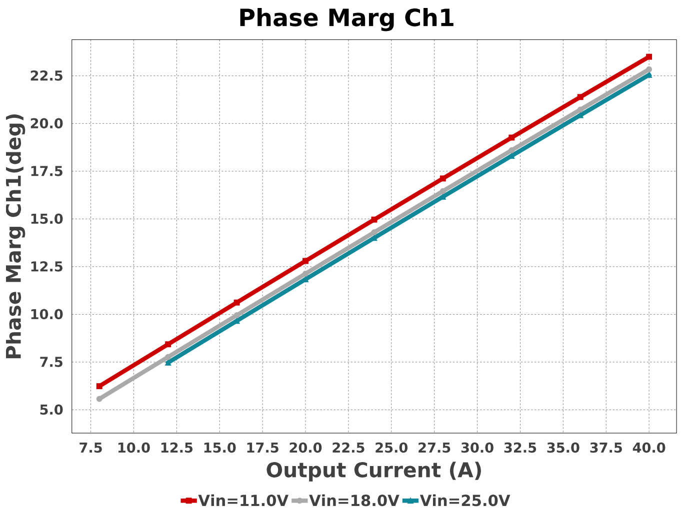
Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
M4	Texas Instruments	CSD18512Q5B	VdsMax= 40.0 V IdsMax= 100.0 Amps	1	$0.53	TRANS_NexFET_Q5B 58 mm^2
Rcomp1	Vishay-Dale	CRCW040211K0FKED Series= CRCW..e3	Res= 11.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm^2
Rfb1	Vishay-Dale	CRCW04021K02FKED Series= CRCW..e3	Res= 1.02 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm^2
Rfb2	Vishay-Dale	CRCW04023K57FKED Series= CRCW..e3	Res= 3.57 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm^2
Rramp1	Yageo	RC0201FR-0786K6L Series= ?	Res= 86.6 kOhm Power= 50.0 mW Tolerance= 1.0%	1	$0.01	0201 2 mm^2
Rramp2	Yageo	RC0201FR-0786K6L Series= ?	Res= 86.6 kOhm Power= 50.0 mW Tolerance= 1.0%	1	$0.01	0201 2 mm^2
Rsense1	Vishay-Dale	WSR23L000FEA Series= WSR	Res= 3.0 mOhm Power= 2.0 W Tolerance= 1.0%	1	$0.74	4527 122 mm^2
Rsense2	Vishay-Dale	WSR23L000FEA Series= WSR	Res= 3.0 mOhm Power= 2.0 W Tolerance= 1.0%	1	$0.74	4527 122 mm^2
Rt	Vishay-Dale	CRCW020144K2FNED Series= ?	Res= 44.2 kOhm Power= 50.0 mW Tolerance= 1.0%	1	$0.01	0201 2 mm^2
Ruv1	Yageo	RC0201FR-0756K2L Series= ?	Res= 56.2 kOhm Power= 50.0 mW Tolerance= 1.0%	1	$0.01	0201 2 mm^2
Ruv2	Vishay-Dale	CRCW04029K09FKED Series= CRCW..e3	Res= 9.09 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm^2
U1	Texas Instruments	LM25119PSQ/NOPB	Switcher	1	$2.75	SQA32A 49 mm^2

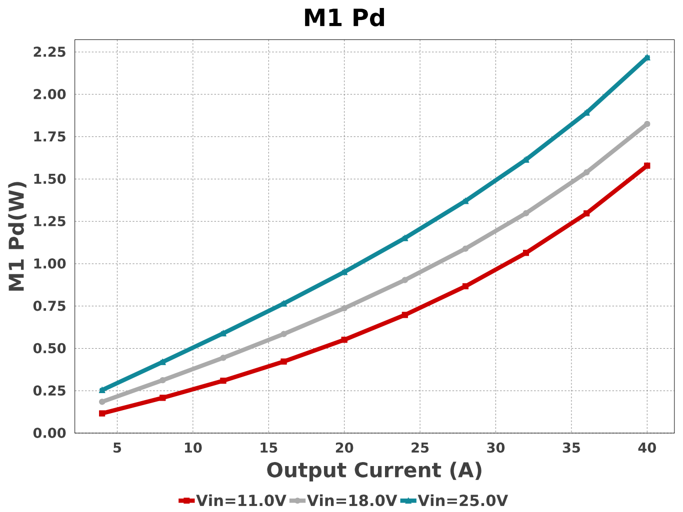


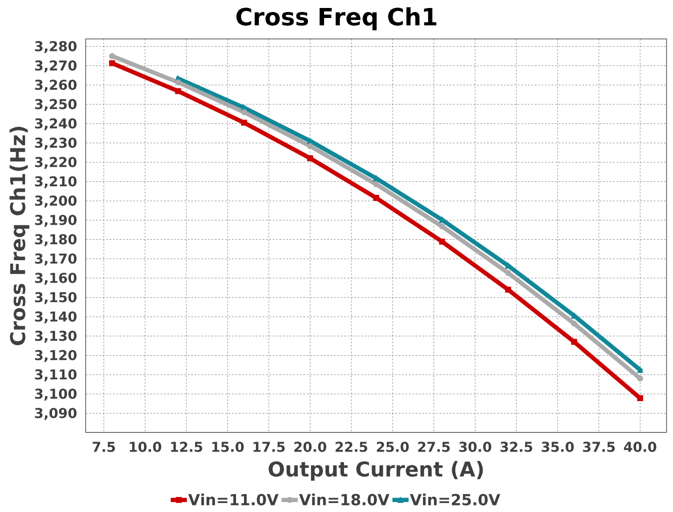


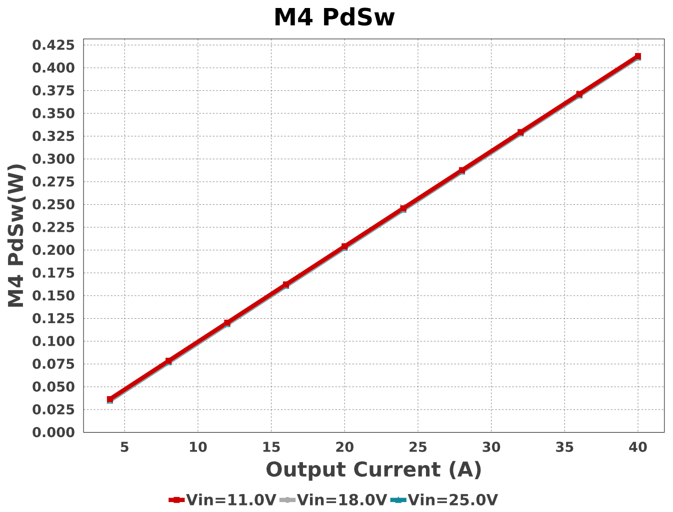

Rsense1 Pd
Rsense1 Pd(W)
Output Current (A)
Vin=11.0V Vin=18.0V Vin=25.0V

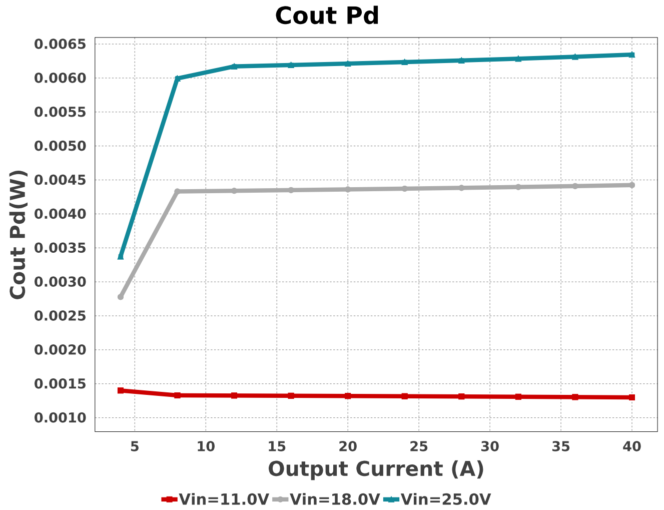

M2 PdSw
M2 PdSw(W)
Output Current (A)
Vin=11.0V Vin=18.0V Vin=25.0V

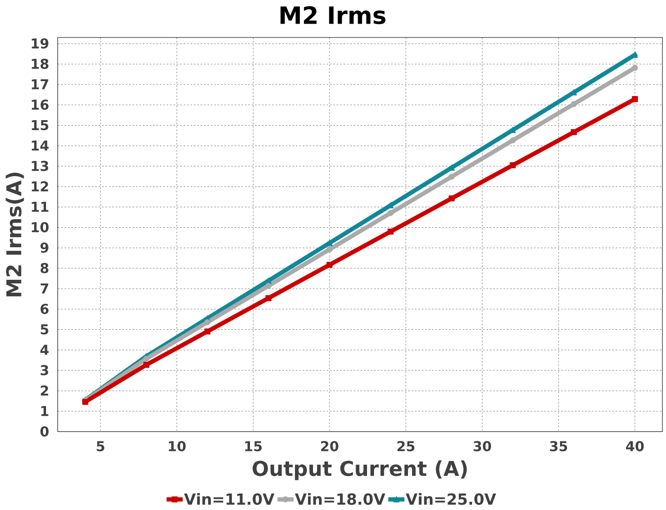

Phase Marg Ch1
Phase Marg Ch1(deg)
Output Current (A)
Vin=11.0V Vin=18.0V Vin=25.0V

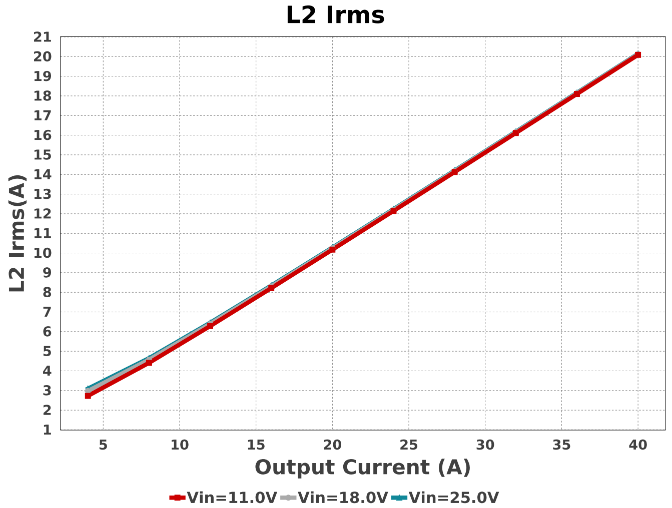

M1 Pd
M1 Pd(W)
Output Current (A)
Vin=11.0V Vin=18.0V Vin=25.0V

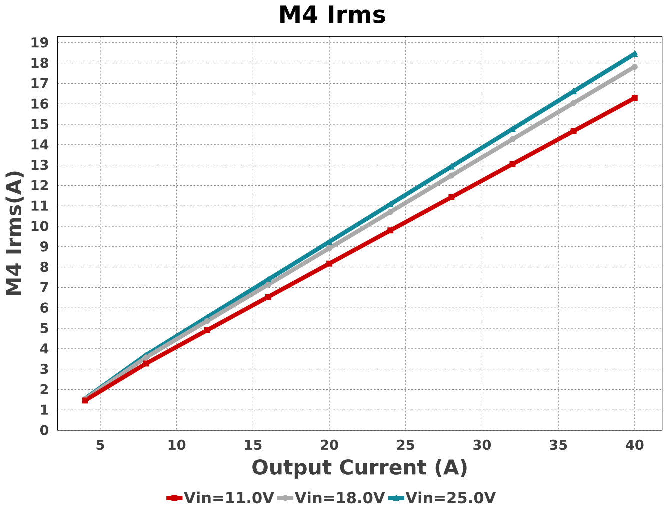

Cross Freq Ch1
Cross Freq Ch1(Hz)
Output Current (A)
Vin=11.0V Vin=18.0V Vin=25.0V

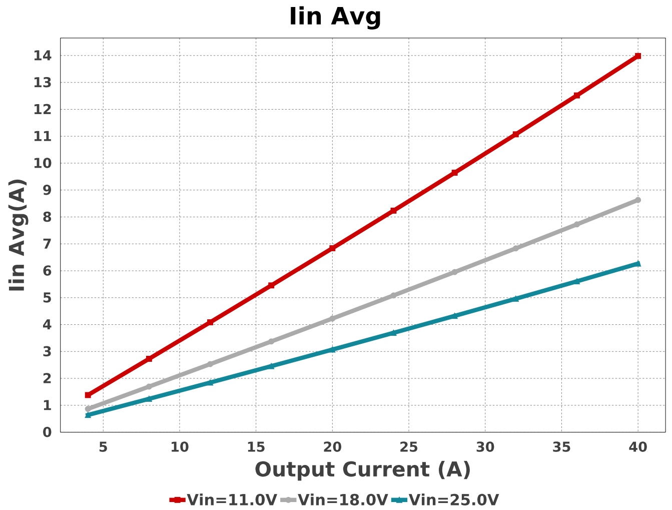

M4 PdSw
M4 PdSw(W)
Output Current (A)
Vin=11.0V Vin=18.0V Vin=25.0V

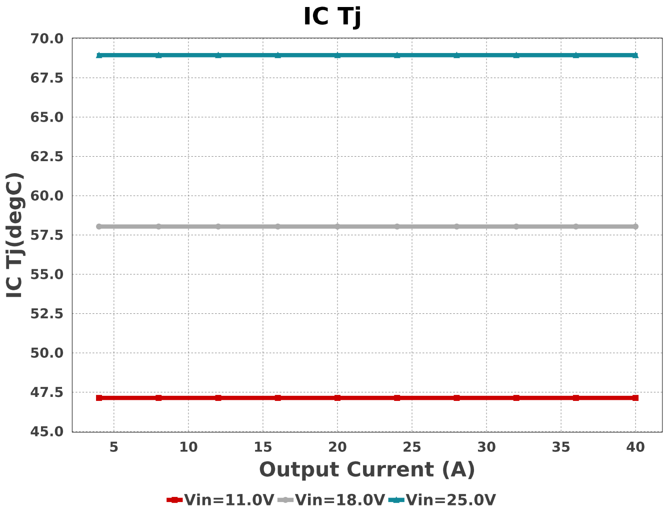

Cout Pd
Cout Pd(W)
Output Current (A)
Vin=11.0V
Vin=18.0V
Vin=25.0V

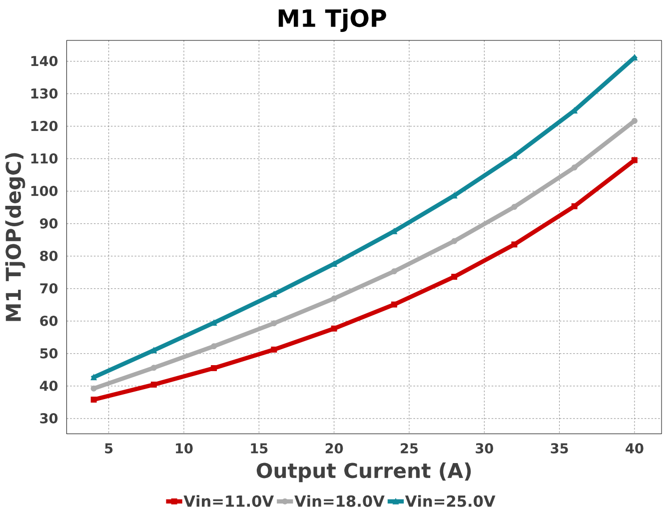

M2 Irms
M2 Irms(A)
Output Current (A)
Vin=11.0V
Vin=18.0V
Vin=25.0V

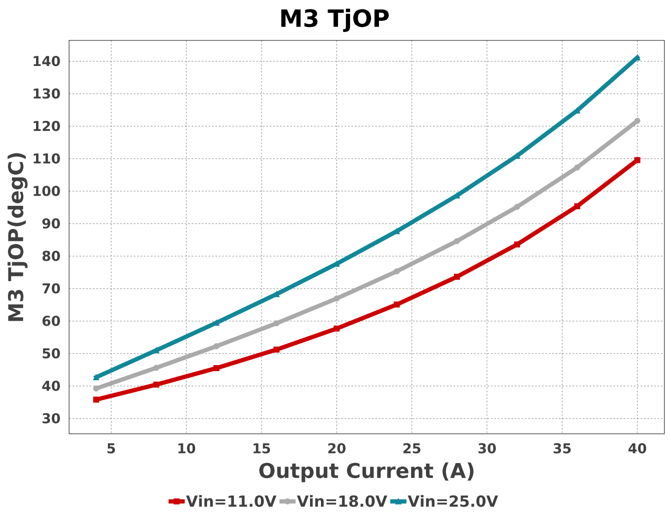

L2 Irms
L2 Irms(A)
Output Current (A)
Vin=11.0V
Vin=18.0V
Vin=25.0V

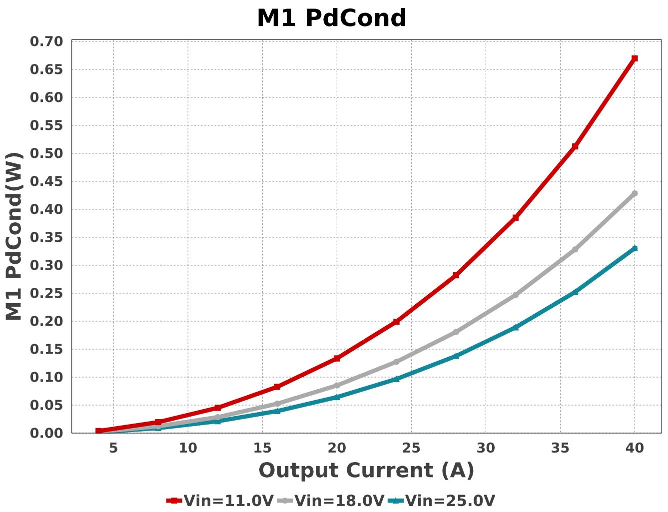

M4 Irms
M4 Irms(A)
Output Current (A)
Vin=11.0V
Vin=18.0V
Vin=25.0V

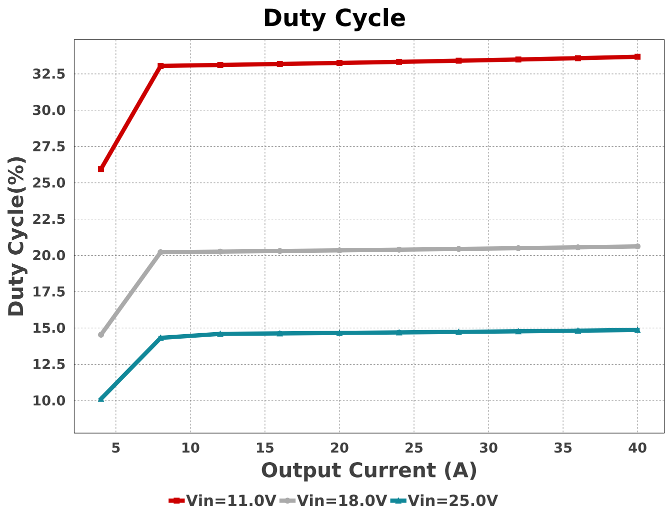

Iin Avg
Iin Avg(A)
Output Current (A)
Vin=11.0V
Vin=18.0V
Vin=25.0V

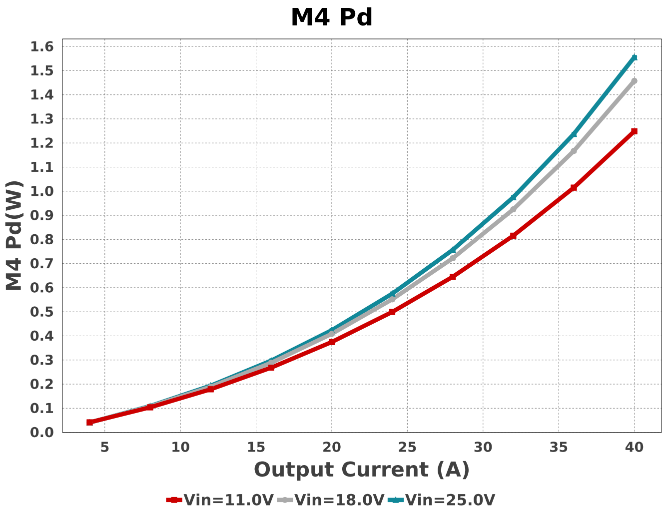

IC Tj
IC Tj(degC)
Output Current (A)
Vin=11.0V
Vin=18.0V
Vin=25.0V

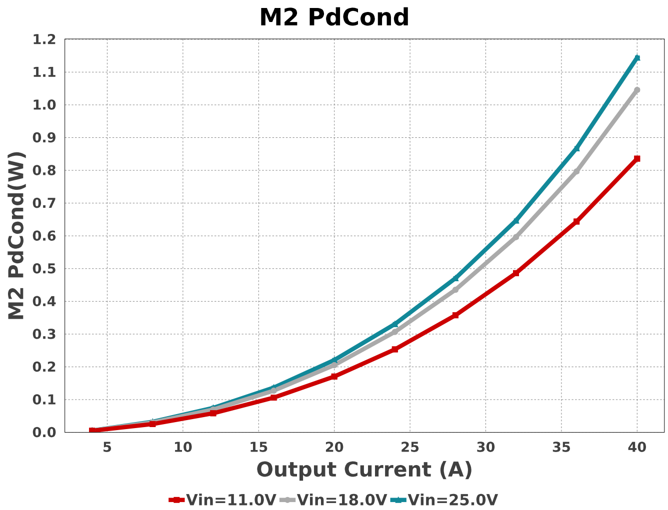

M1 TjOP
M1 TjOP(degC)
140
130
120
110
100
90
80
70
60
50
40
30
5
10
15
20
25
30
35
40
Output Current (A)
Vin=11.0V
Vin=18.0V
Vin=25.0V

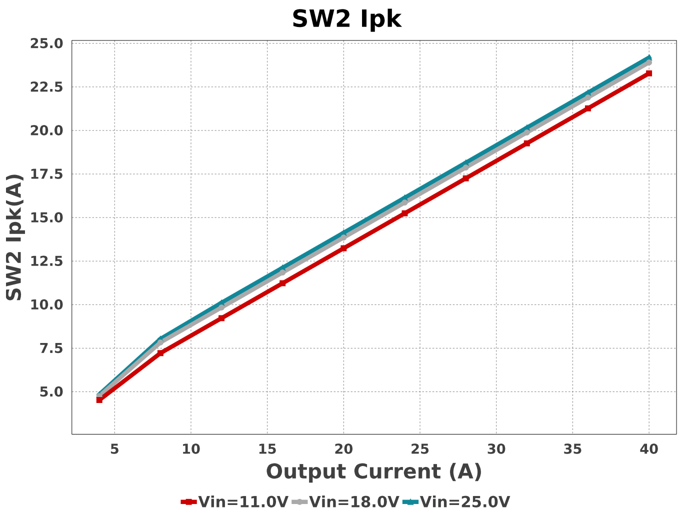

M3 TjOP
M3 TjOP(degC)
140
130
120
110
100
90
80
70
60
50
40
30
5
10
15
20
25
30
35
40
Output Current (A)
Vin=11.0V
Vin=18.0V
Vin=25.0V

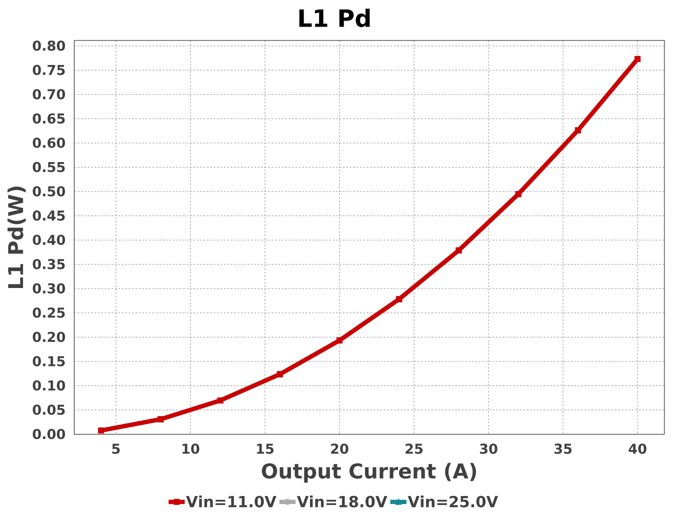

M1 PdCond
M1 PdCond(W)
0.70
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
5
10
15
20
25
30
35
40
Output Current (A)
Vin=11.0V
Vin=18.0V
Vin=25.0V

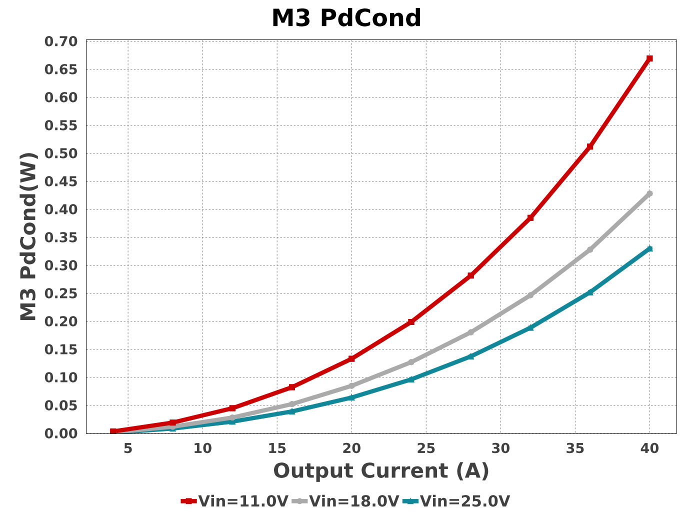

Duty Cycle
Duty Cycle(%)
32.5
30.0
27.5
25.0
22.5
20.0
17.5
15.0
12.5
10.0
5
10
15
20
25
30
35
40
Output Current (A)
Vin=11.0V
Vin=18.0V
Vin=25.0V

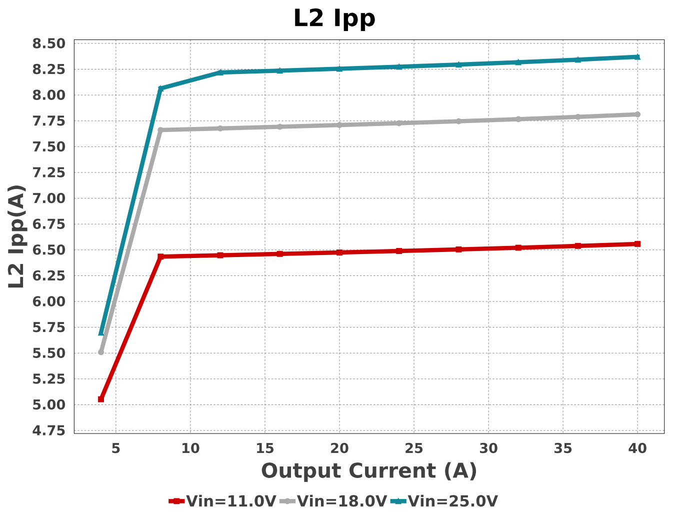

M4 Pd
M4 Pd(W)
1.6
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
5
10
15
20
25
30
35
40
Output Current (A)
Vin=11.0V
Vin=18.0V
Vin=25.0V

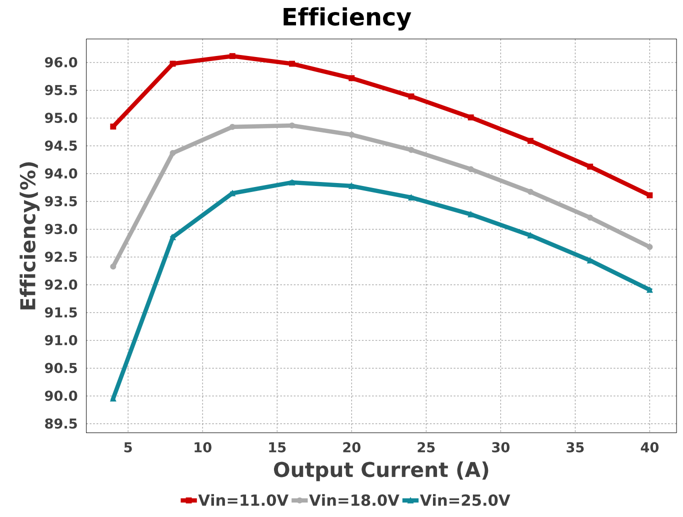

M2 PdCond
M2 PdCond(W)
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
5
10
15
20
25
30
35
40
Output Current (A)
Vin=11.0V
Vin=18.0V
Vin=25.0V

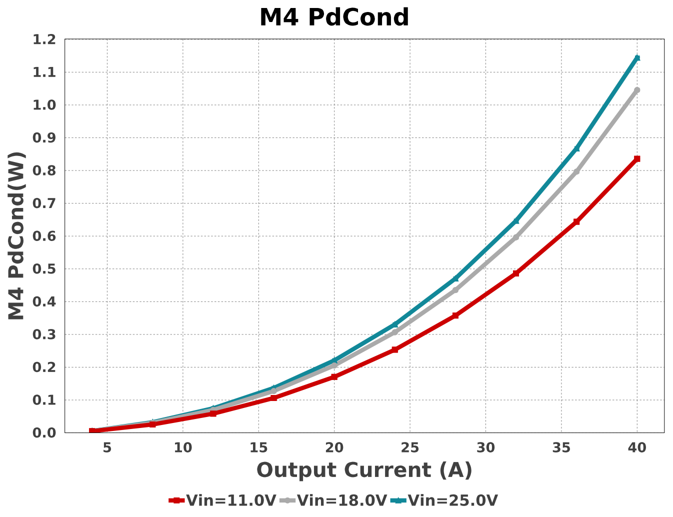

SW2 Ipk
SW2 Ipk(A)
Output Current (A)
Vin=11.0V Vin=18.0V Vin=25.0V


L1 Pd
L1 Pd(W)
Output Current (A)
Vin=11.0V Vin=18.0V Vin=25.0V

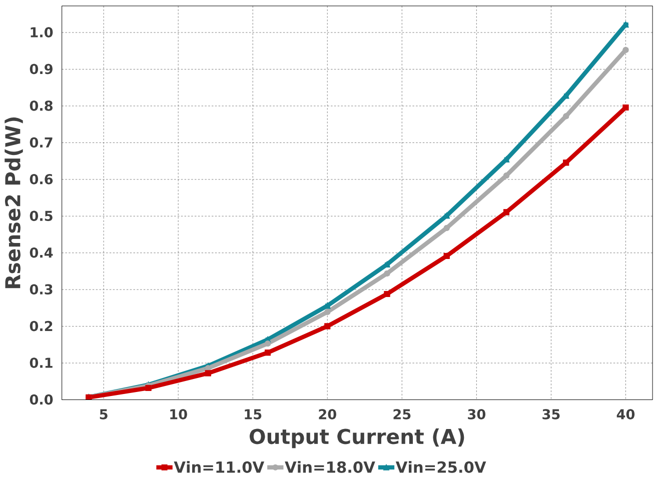

M3 PdCond
M3 PdCond(W)
Output Current (A)
Vin=11.0V Vin=18.0V Vin=25.0V


L2 Ipp
L2 Ipp(A)
Output Current (A)
Vin=11.0V Vin=18.0V Vin=25.0V

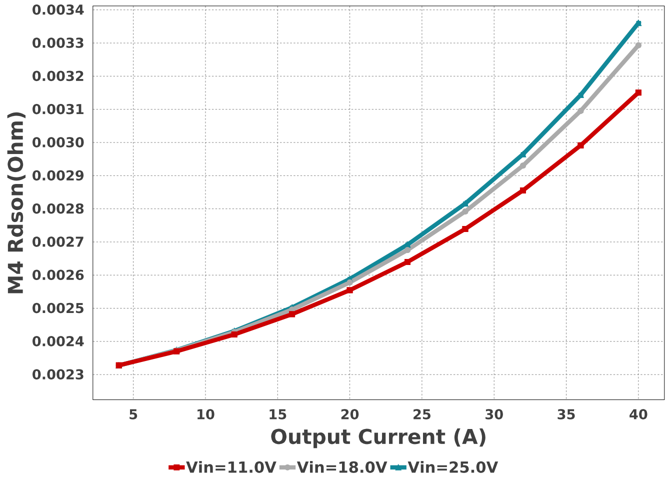

Efficiency
Efficiency(%)
Output Current (A)
Vin=11.0V Vin=18.0V Vin=25.0V


M4 PdCond
M4 PdCond(W)
Output Current (A)
Vin=11.0V Vin=18.0V Vin=25.0V

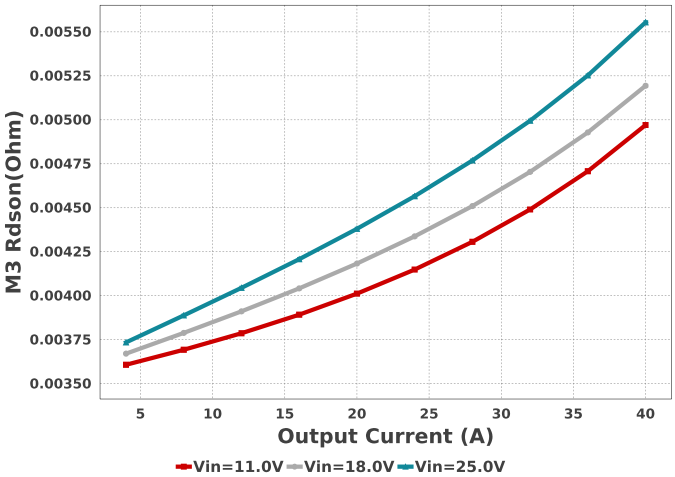
Rsense2 Pd



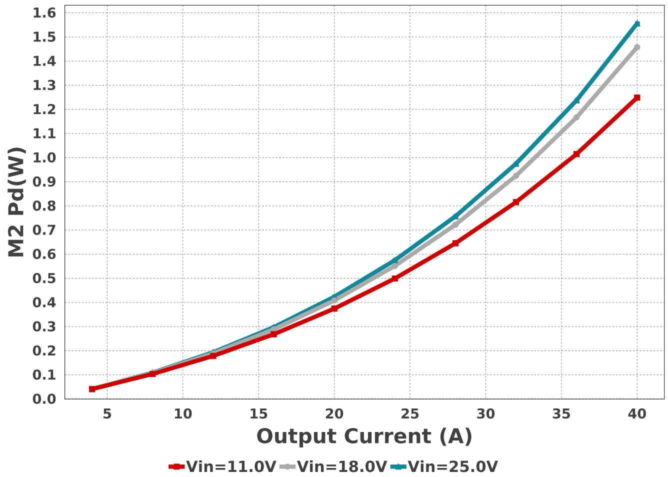
M4 Rdson



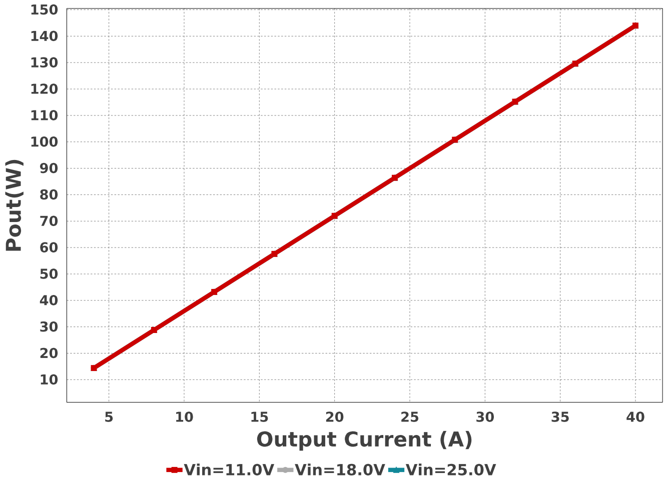
M3 Rdson



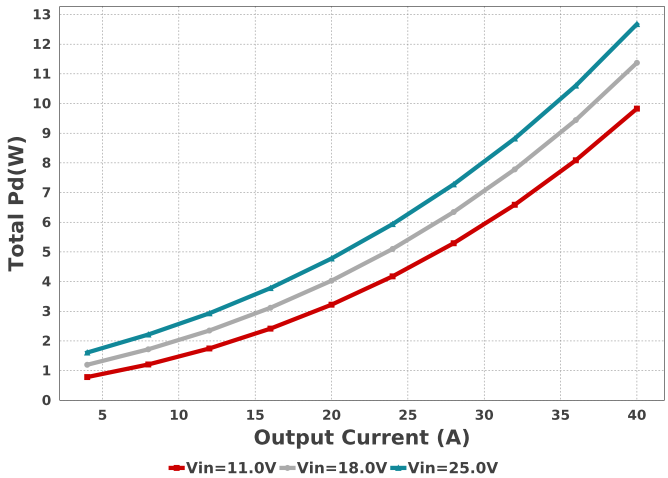
M2 Pd

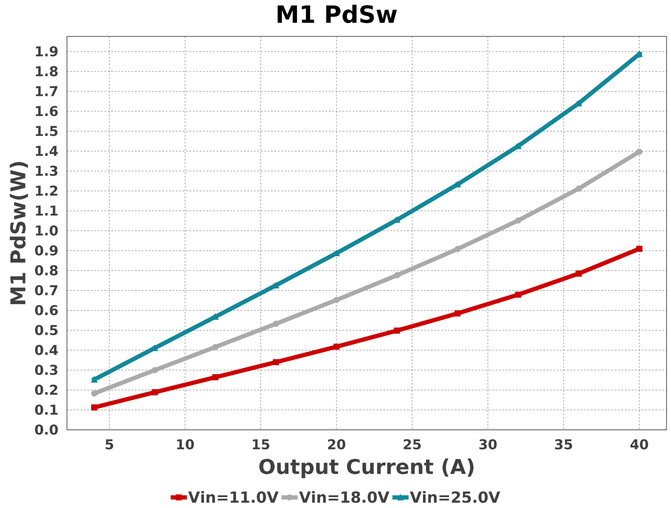


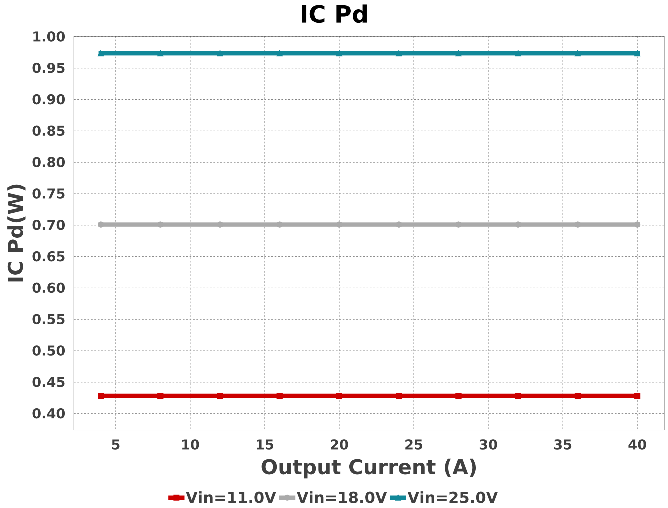
Pout

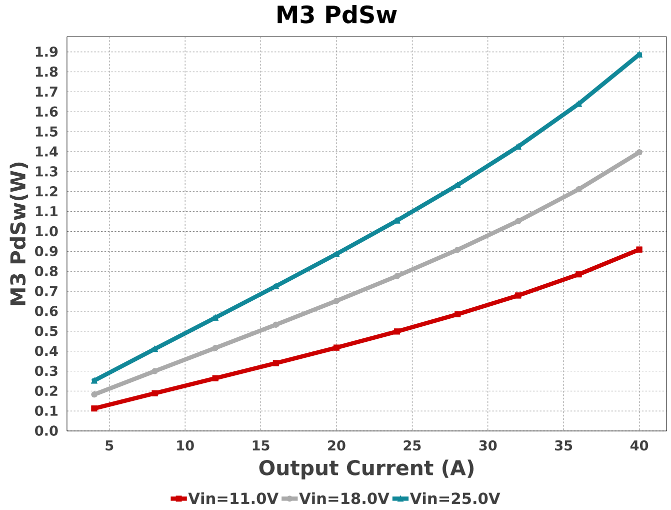


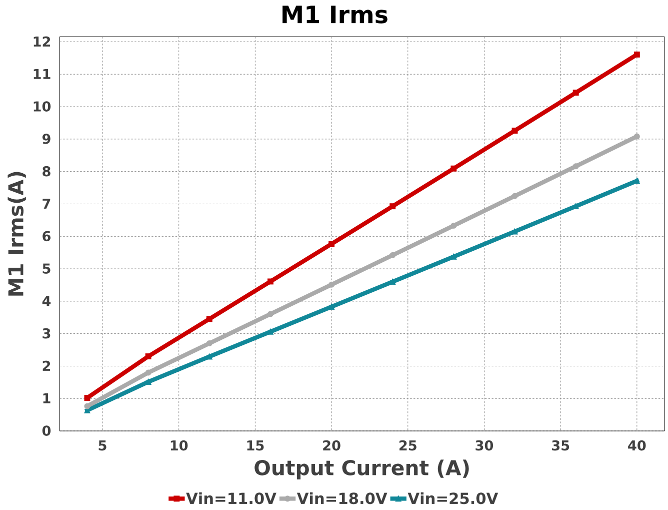
Total Pd

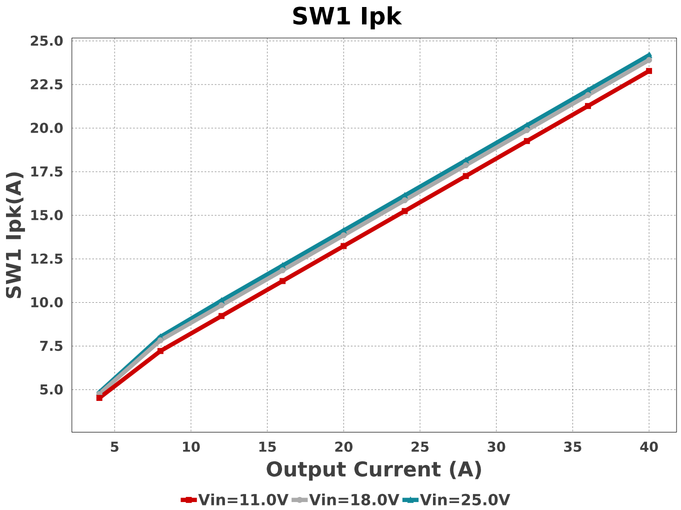


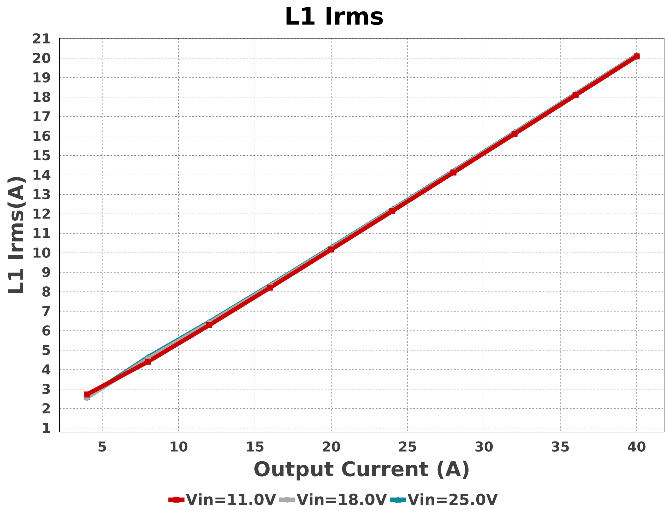

M1 PdSw
M1 PdSw(W)
Output Current (A)
Vin=11.0V Vin=18.0V Vin=25.0V

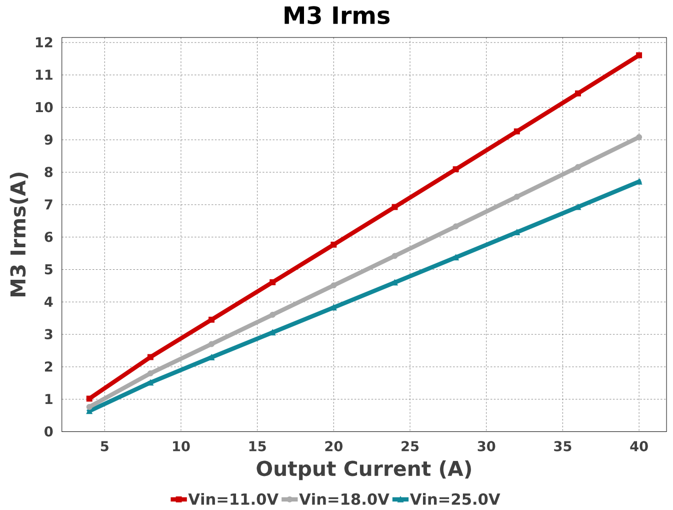

IC Pd
IC Pd(W)
Output Current (A)
Vin=11.0V Vin=18.0V Vin=25.0V

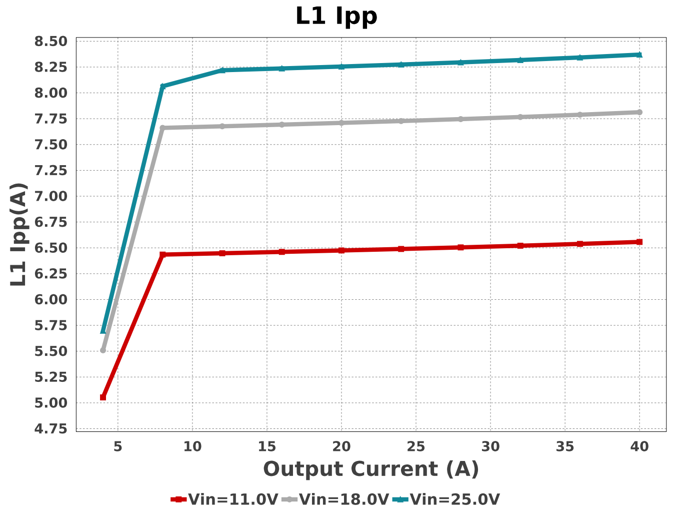

M3 PdSw
M3 PdSw(W)
Output Current (A)
Vin=11.0V Vin=18.0V Vin=25.0V

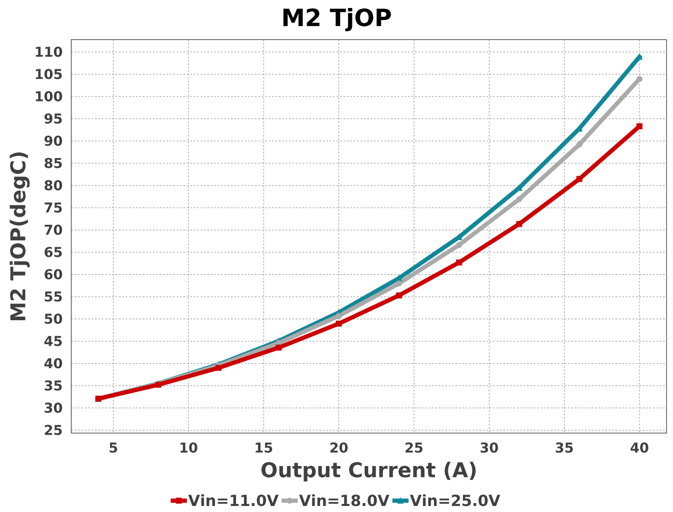

M1 Irms
M1 Irms(A)
Output Current (A)
Vin=11.0V Vin=18.0V Vin=25.0V

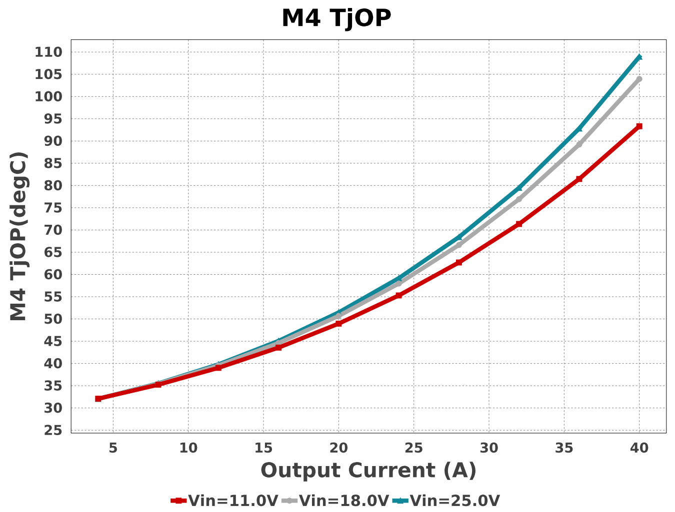

SW1 Ipk
SW1 Ipk(A)
Output Current (A)
Vin=11.0V Vin=18.0V Vin=25.0V

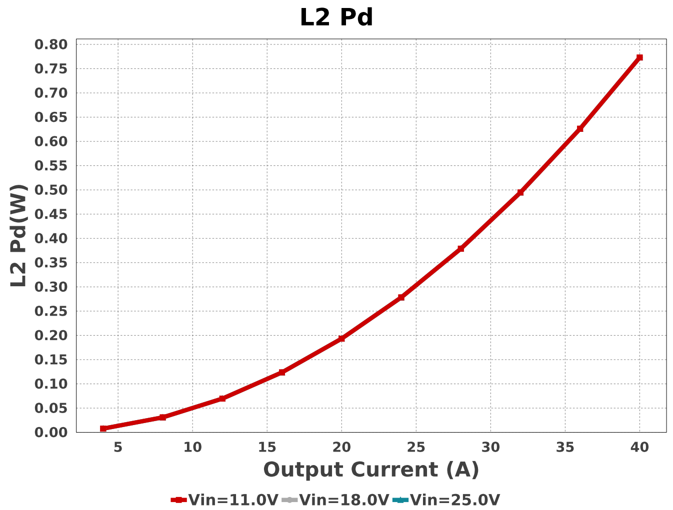

L1 Irms
L1 Irms(A)
Output Current (A)
Vin=11.0V Vin=18.0V Vin=25.0V

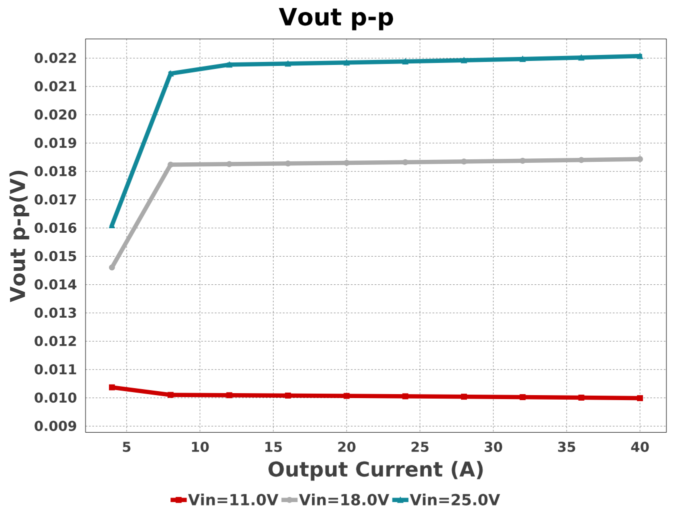

M3 Irms
M3 Irms(A)
Output Current (A)
Vin=11.0V Vin=18.0V Vin=25.0V

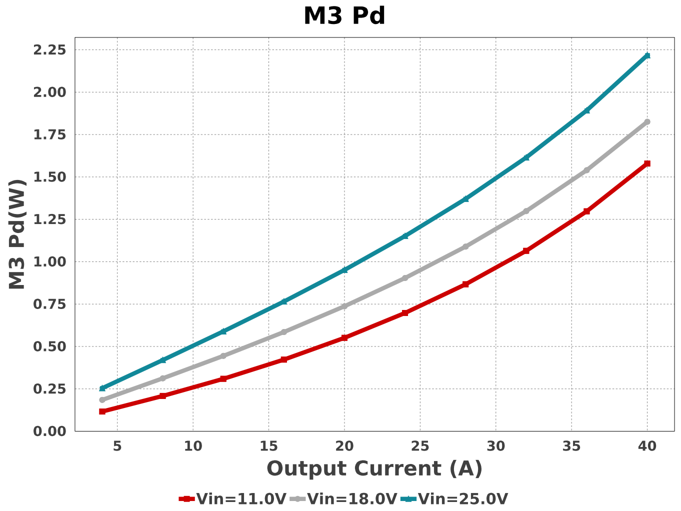

L1 Ipp
L1 Ipp(A)
Output Current (A)
Vin=11.0V Vin=18.0V Vin=25.0V

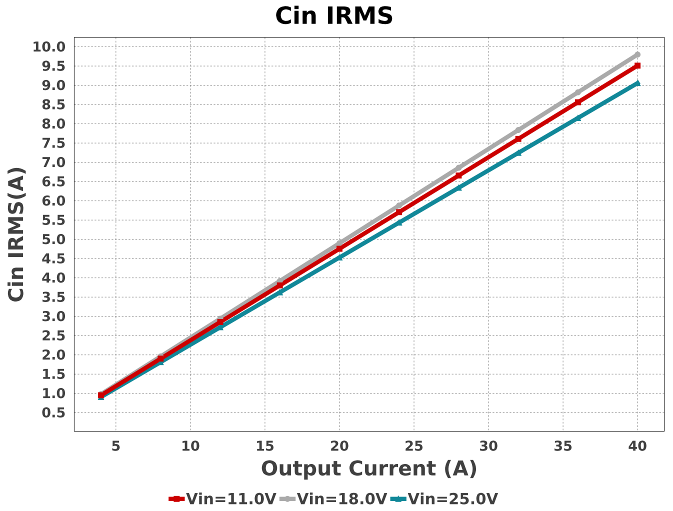

M2 TjOP
M2 TjOP(degC)
Output Current (A)
Vin=11.0V Vin=18.0V Vin=25.0V

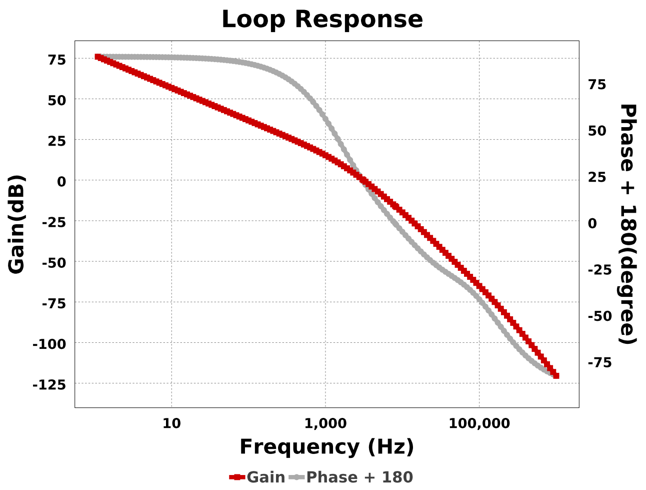

M4 TjOP
M4 TjOP(degC)
Output Current (A)
Vin=11.0V Vin=18.0V Vin=25.0V


L2 Pd
L2 Pd(W)
Output Current (A)
Vin=11.0V Vin=18.0V Vin=25.0V


Vout p-p
Vout p-p(V)
Output Current (A)
Vin=11.0V Vin=18.0V Vin=25.0V







Operating Values

#	Name	Value	Category	Description
1.	BOM Count	37		Total Design BOM count
2.	Total BOM	$15.206		Total BOM Cost
3.	Cin IRMS	9.057 A	Capacitor	Input capacitor RMS ripple current
4.	Cin Pd	546.82 mW	Capacitor	Input capacitor power dissipation
5.	Cout IRMS	2.057 A	Capacitor	Output capacitor RMS ripple current
6.	Cout Pd	6.344 mW	Capacitor	Output capacitor power dissipation
7.	SW1 Ipk	24.185 A	Current	Peak switch current
8.	SW2 Ipk	24.185 A	Current	Peak switch current
9.	IC Pd	973.56 mW	IC	IC power dissipation
10.	IC Tj	68.942 degC	IC	IC junction temperature
11.	IC Tolerance	12.0 mV	IC	IC Feedback Tolerance
12.	Iin Avg	6.267 A	IC	Average input current
13.	L1 Ipp	8.37 A	Inductor	Peak-to-peak inductor ripple current
14.	L1 Irms	20.144 A	Inductor	Inductor ripple current
15.	L1 Pd	773.04 mW	Inductor	Inductor power dissipation
16.	L2Ipp	8.37 A	Inductor	Channel 2 Inductor Peak to peak Current
17.	L2 Irms	20.144 A	Inductor	Inductor ripple current
18.	L2 Pd	773.04 mW	Inductor	Inductor power dissipation
19.	M1 Irms	7.711 A	Mosfet	MOSFET RMS ripple current
20.	M1 Pd	2.218 W	Mosfet	M1 MOSFET total power dissipation
21.	M1 PdCond	330.29 mW	Mosfet	M1 MOSFET conduction losses
22.	M1 PdSw	1.887 W	Mosfet	M1 MOSFET switching losses
23.	M1 TjOP	141.158 degC	Mosfet	M1 MOSFET junction temperature
24.	M2 Irms	18.454 A	Mosfet	MOSFET RMS ripple current
25.	M2 Pd	1.556 W	Mosfet	M2 MOSFET total power dissipation
26.	M2 PdCond	1.144 W	Mosfet	M2 MOSFET conduction losses
27.	M2 PdSw	411.49 mW	Mosfet	M2 MOSFET switching losses
28.	M2 TjOP	108.931 degC	Mosfet	M2 MOSFET junction temperature
29.	M3 Irms	7.711 A	Mosfet	MOSFET RMS ripple current
30.	M3 Pd	2.218 W	Mosfet	M3 MOSFET total power dissipation
31.	M3 PdCond	330.29 mW	Mosfet	M3 MOSFET conduction losses
32.	M3 PdSw	1.887 W	Mosfet	M3 MOSFET switching losses

#	Name	Value	Category	Description
33.	M3 TjOP	141.158 degC	Mosfet	M3 MOSFET junction temperature
34.	M4 Irms	18.454 A	Mosfet	MOSFET RMS ripple current
35.	M4 Pd	1.556 W	Mosfet	M4 MOSFET total power dissipation
36.	M4 PdCond	1.144 W	Mosfet	M4 MOSFET conduction losses
37.	M4 PdSw	411.49 mW	Mosfet	M4 MOSFET switching losses
38.	M4 TjOP	108.931 degC	Mosfet	M4 MOSFET junction temperature
39.	Cin Pd	546.82 mW	Power	Input capacitor power dissipation
40.	Cout Pd	6.344 mW	Power	Output capacitor power dissipation
41.	IC Pd	973.56 mW	Power	IC power dissipation
42.	L1 Pd	773.04 mW	Power	Inductor power dissipation
43.	L2 Pd	773.04 mW	Power	Inductor power dissipation
44.	M1 Pd	2.218 W	Power	M1 MOSFET total power dissipation
45.	M1 PdCond	330.29 mW	Power	M1 MOSFET conduction losses
46.	M1 PdSw	1.887 W	Power	M1 MOSFET switching losses
47.	M2 Pd	1.556 W	Power	M2 MOSFET total power dissipation
48.	M2 PdCond	1.144 W	Power	M2 MOSFET conduction losses
49.	M2 PdSw	411.49 mW	Power	M2 MOSFET switching losses
50.	M3 Pd	2.218 W	Power	M3 MOSFET total power dissipation
51.	M3 PdCond	330.29 mW	Power	M3 MOSFET conduction losses
52.	M3 PdSw	1.887 W	Power	M3 MOSFET switching losses
53.	M1 Rdson	5.554 mOhm	Power	Drain-Source On-resistance
54.	M3 Rdson	5.554 mOhm	Power	Drain-Source On-resistance
55.	M4 Pd	1.556 W	Power	M4 MOSFET total power dissipation
56.	M4 PdCond	1.144 W	Power	M4 MOSFET conduction losses
57.	M4 PdSw	411.49 mW	Power	M4 MOSFET switching losses
58.	M2 Rdson	3.36 mOhm	Power	Drain-Source On-resistance
59.	M4 Rdson	3.36 mOhm	Power	Drain-Source On-resistance
60.	Rsense1 Pd	1.022 W	Power	Current Limit Sense Resistor Power Dissipation
61.	Rsense2 Pd	1.022 W	Power	Current Limit Sense Resistor Power Dissipation
62.	Total Pd	12.676 W	Power	Total Power Dissipation
63.	Rsense1 Pd	1.022 W	Resistor	Current Limit Sense Resistor Power Dissipation
64.	Rsense2 Pd	1.022 W	Resistor	Current Limit Sense Resistor Power Dissipation
65.	Cross Freq Ch1	3.112 kHz	System Information	Bode plot crossover frequency
66.	Duty Cycle	14.867 %	System Information	Duty cycle
67.	Efficiency	91.91 %	System Information	Steady state efficiency
68.	FootPrint	2.565 k mm^2	System Information	Total Foot Print Area of BOM components
69.	Frequency	115.177 kHz	System Information	Switching frequency
70.	Gain Marg	-15.981 dB	System Information	Bode Plot Gain Margin
71.	Iout	40.0 A	System Information	Iout operating point
72.	Low Freq Gain	75.933 dB	System Information	Gain at 1Hz
73.	Mode	CCM	System Information	Conduction Mode
74.	Phase Marg Ch1	22.55 deg	System Information	Bode Plot Phase Margin
75.	Pout	144.0 W	System Information	Total output power
76.	Vin	25.0 V	System Information	Vin operating point
77.	Vout	3.6 V	System Information	Operational Output Voltage
78.	Vout Actual	3.6 V	System Information	Vout Actual calculated based on selected voltage divider resistors
79.	Vout Tolerance	3.095 %	System Information	Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable
80.	Vout p-p	22.075 mV	System Information	Peak-to-peak output ripple voltage

Design Inputs

Name	Value	Description
Iout	40.0	Maximum Output Current
VinMax	25.0	Maximum input voltage
VinMin	11.0	Minimum input voltage
Vout	3.6	Output Voltage
base_pn	LM25119	Base Product Number
source	DC	Input Source Type
Ta	30.0	Ambient temperature

WEBENCH® Assembly

Component Testing

Some published data on components in datasheets such as Capacitor ESR and Inductor DC resistance is based on conservative values that will guarantee that the components always exceed the specification. For design purposes it is usually better to work with typical values. Since this data is not always available it is a good practice to measure the Capacitance and ESR values of Cin and Cout, and the inductance and DC resistance of L1 before assembly of the board. Any large discrepancies in values should be electrically simulated in WEBENCH to check for instabilities and thermally simulated in WebTHERM to make sure critical temperatures are not exceeded.

Soldering Component to Board

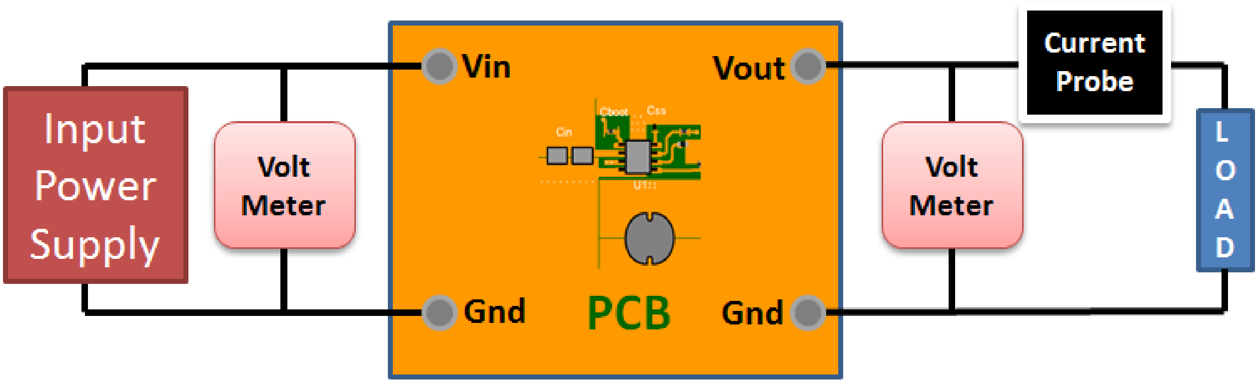
If board assembly is done in house it is best to tack down one terminal of a component on the board then solder the other terminal. For surface mount parts with large tabs, such as the DPAK, the tab on the back of the package should be pre-tinned with solder, then tacked into place by one of the pins. To solder the tab town to the board place the iron down on the board while resting against the tab, heating both surfaces simultaneously. Apply light pressure to the top of the plastic case until the solder flows around the part and the part is flush with the PCB. If the solder is not flowing around the board you may need a higher wattage iron (generally 25W to 30W is enough).

Initial Startup of Circuit

It is best to initially power up the board by setting the input supply voltage to the lowest operating input voltage 11.0V and set the input supply's current limit to zero. With the input supply off connect up the input supply to Vin and GND. Connect a digital volt meter and a load if needed to set the minimum Iout of the design from Vout and GND. Turn on the input supply and slowly turn up the current limit on the input supply. If the voltage starts to rise on the input supply continue increasing the input supply current limit while watching the output voltage. If the current increases on the input supply, but the voltage remains near zero, then there may be a short or a component misplaced on the board. Power down the board and visually inspect for solder bridges and recheck the diode and capacitor polarities. Once the power supply circuit is operational then more extensive testing may include full load testing, transient load and line tests to compare with simulation results.

Load Testing

The setup is the same as the initial startup, except that an additional digital voltmeter is connected between Vin and GND, a load is connected between Vout and GND and a current meter is connected in series between Vout and the load. The load must be able to handle at least rated output power + 50% (7.5 watts for this design). Ideally the load is supplied in the form of a variable load test unit. It can also be done in the form of suitably large power resistors. When using an oscilloscope to measure waveforms on the prototype board, the ground leads of the oscilloscope probes should be as short as possible and the area of the loop formed by the ground lead should be kept to a minimum. This will help reduce ground lead inductance and eliminate EMI noise that is not actually present in the circuit.



Design Assistance

1. Outline The LM5119 is a dual synchronous buck controller intended for step-down regulator applications from a high voltage or widely varying input supply. The control method is based upon current mode control utilizing an emulated current ramp. Current mode control provides inherent line feed-forward, cycle-by-cycle current limiting and ease of loop compensation. The use of an emulated control ramp reduces noise sensitivity of the pulse-width modulation circuit, allowing reliable control of very small duty cycles necessary in high input voltage applications. Interleaved Operation Interleaved operation can offer many advantages in single output, high current applications. The output power path is split between two identical channels reducing the current in each channel by one-half. Ripple current reduction in the output capacitors is reduced significantly since each channel operates 180 degrees out of phase from the other. Diode Emulation A fully synchronous buck regulator implemented with a freewheel MOSFET rather than a diode has the capability to sink current from the output in certain conditions such as light load, over-voltage or pre-bias startup. The LM(2)5119 provides a diode emulation feature that can be enabled to prevent reverse (drain to source) current flow in the low side free-wheel MOSFET.

2. Master key : 4403CD56E2ECE12A[v1]

3. **LM25119** Product Folder : http://www.ti.com/product/LM25119 : contains the data sheet and other resources.

Important Notice and Disclaimer

TI provides technical and reliability data (including datasheets), design resources (including reference designs), application or other design advice, web tools, safety information, and other resources AS IS and with all faults, and disclaims all warranties. These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements.

These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

Providing these resources does not expand or otherwise alter TI's applicable Terms of Sale or other applicable terms available either on ti.com or provided in conjunction with TI products.