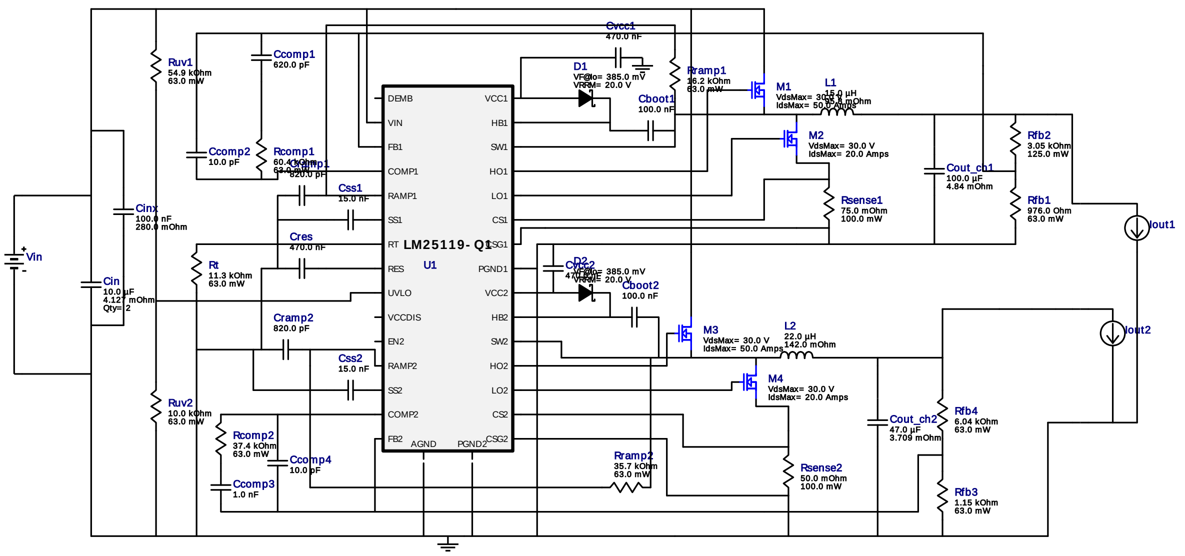
TEXAS INSTRUMENTS

WEBENCH® Design Report

VinMin = 10.0V
VinMax = 12.0V
Vout = 3.3V
Iout = 1.0A

Device = LM25119QPSQ/NOPB
Topology = Buck
Created = 8/24/16 1:41:46 AM
BOM Cost = $5.18
BOM Count = 40
Total Pd = 0.85W

Design : 4049284/20 LM25119QPSQ/NOPB
LM25119QPSQ/NOPB 10.0V-12.0V to 5.00V @ 1.0A



1. This regulator device is qualified for Automotive applications. All passives and other components selected in this design may not be qualified for Automotive applications. The user is required to verify that all components in the design meet the qualification and safety requirements for their specific application.View WEBENCH(R) Disclaimer.

My Comments

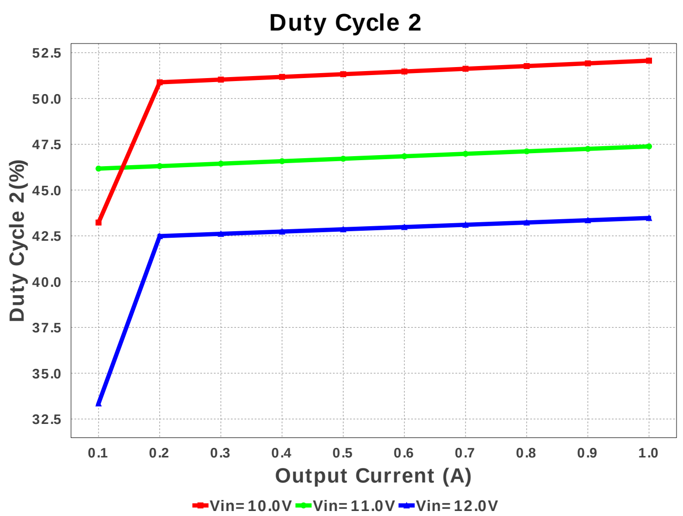
No comments

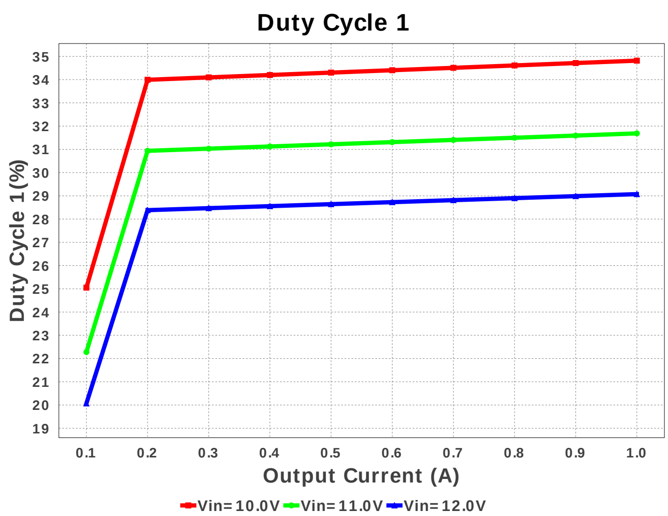
Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot1	MuRata	GRM155R61A104KA01D Series= X5R	Cap= 100.0 nF VDC= 10.0 V IRMS= 0.0 A	1	$0.01	0402 3 mm^2
2.	Cboot2	MuRata	GRM155R61A104KA01D Series= X5R	Cap= 100.0 nF VDC= 10.0 V IRMS= 0.0 A	1	$0.01	0402 3 mm^2
3.	Ccomp1	Samsung Electro-Mechanics	CL21C621JBCNNNC Series= C0G/NP0	Cap= 620.0 pF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	0805 7 mm^2
4.	Ccomp2	Kemet	C0805C100K5GACTU Series= C0G/NP0	Cap= 10.0 pF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	0805 7 mm^2
5.	Ccomp3	Samsung Electro-Mechanics	CL21C102JBCNFNC Series= C0G/NP0	Cap= 1.0 nF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	0805 7 mm^2
6.	Ccomp4	Kemet	C0805C100K5GACTU Series= C0G/NP0	Cap= 10.0 pF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	0805 7 mm^2
7.	Cin	MuRata	GRM21BR61C106KE15L Series= X5R	Cap= 10.0 uF ESR= 4.127 mOhm VDC= 16.0 V IRMS= 2.46634 A	2	$0.03	0805 7 mm^2
8.	Cinx	AVX	08053C104KAT2A Series= X7R	Cap= 100.0 nF ESR= 280.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.01	0805 7 mm^2

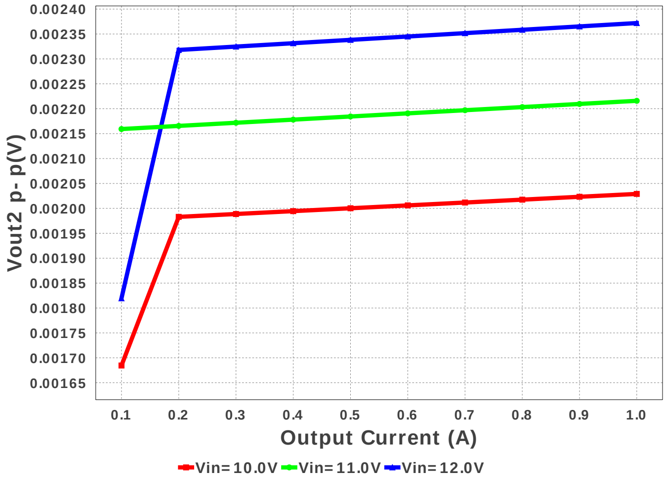
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
9.	Cout_ch1	MuRata	GRM31CD80G107ME39L Series= X6T	Cap= 100.0 uF ESR= 4.84 mOhm VDC= 4.0 V IRMS= 4.3381 A	1	$0.14	1206_190 11 mm²
10.	Cout_ch2	MuRata	GRM31CR61A476KE15L Series= X5R	Cap= 47.0 uF ESR= 3.709 mOhm VDC= 10.0 V IRMS= 4.2862 A	1	$0.15	1206_190 11 mm²
11.	Cramp1	Yageo America	CC0805KRX7R9BB821 Series= X7R	Cap= 820.0 pF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	0805 7 mm²
12.	Cramp2	Yageo America	CC0805KRX7R9BB821 Series= X7R	Cap= 820.0 pF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	0805 7 mm²
13.	Cres	MuRata	GRM155C80J474KE19D Series= X6S	Cap= 470.0 nF VDC= 6.3 V IRMS= 0.0 A	1	$0.01	0402 3 mm²
14.	Css1	Yageo America	CC0805KRX7R9BB153 Series= X7R	Cap= 15.0 nF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	0805 7 mm²
15.	Css2	Yageo America	CC0805KRX7R9BB153 Series= X7R	Cap= 15.0 nF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	0805 7 mm²
16.	Cvcc1	MuRata	GRM155R61A474KE15D Series= X5R	Cap= 470.0 nF VDC= 10.0 V IRMS= 0.0 A	1	$0.01	0402 3 mm²
17.	Cvcc2	MuRata	GRM155R61A474KE15D Series= X5R	Cap= 470.0 nF VDC= 10.0 V IRMS= 0.0 A	1	$0.01	0402 3 mm²
18.	D1	ON Semiconductor	MBR0520LT1G	VF@Io= 385.0 mV VRRM= 20.0 V	1	$0.06	SOD-123 13 mm²
19.	D2	ON Semiconductor	MBR0520LT1G	VF@Io= 385.0 mV VRRM= 20.0 V	1	$0.06	SOD-123 13 mm²
20.	L1	Bourns	SRN6045-150M	L= 15.0 µH DCR= 95.8 mOhm	1	$0.16	SRN6045 64 mm²
21.	L2	Bourns	SRN6045-220M	L= 22.0 µH DCR= 142.0 mOhm	1	$0.16	SRN6045 64 mm²
22.	M1	Texas Instruments	CSD17308Q3	VdsMax= 30.0 V IdsMax= 50.0 Amps	1	$0.28	DQG0008A 18 mm²
23.	M2	Texas Instruments	CSD17579Q3A	VdsMax= 30.0 V IdsMax= 20.0 Amps	1	$0.19	DNH0008A 18 mm²
24.	M3	Texas Instruments	CSD17308Q3	VdsMax= 30.0 V IdsMax= 50.0 Amps	1	$0.28	DQG0008A 18 mm²
25.	M4	Texas Instruments	CSD17579Q3A	VdsMax= 30.0 V IdsMax= 20.0 Amps	1	$0.19	DNH0008A 18 mm²
26.	Rcomp1	Vishay-Dale	CRCW040260K4FKED Series= CRCW..e3	Res= 60.4 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
27.	Rcomp2	Vishay-Dale	CRCW040237K4FKED Series= CRCW..e3	Res= 37.4 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
28.	Rfb1	Vishay-Dale	CRCW0402976RFKED Series= CRCW..e3	Res= 976.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
29.	Rfb2	Yageo America	RT0805BRD073K05L Series= ?	Res= 3.05 kOhm Power= 125.0 mW Tolerance= 0.1%	1	$0.04	0805 7 mm²
30.	Rfb3	Vishay-Dale	CRCW04021K15FKED Series= CRCW..e3	Res= 1.15 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
31.	Rfb4	Vishay-Dale	CRCW04026K04FKED Series= CRCW..e3	Res= 6.04 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
32.	Rramp1	Vishay-Dale	CRCW040216K2FKED Series= CRCW..e3	Res= 16.2 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
33.	Rramp2	Vishay-Dale	CRCW040235K7FKED Series= CRCW..e3	Res= 35.7 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
34.	Rsense1	Panasonic	ERJ-L03UF75MV Series= ERJ-L03	Res= 75.0 mOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.09	0603 5 mm²
35.	Rsense2	Panasonic	ERJ-L03KF50MV Series= ERJ-L03	Res= 50.0 mOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.09	0603 5 mm²
36.	Rt	Vishay-Dale	CRCW040211K3FKED Series= CRCW..e3	Res= 11.3 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
37.	Ruv1	Vishay-Dale	CRCW040254K9FKED Series= CRCW..e3	Res= 54.9 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
38.	Ruv2	Vishay-Dale	CRCW040210K0FKED Series= CRCW..e3	Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
39.	U1	Texas Instruments	LM25119QPSQ/NOPB	Switcher	1	$2.99	SQA32A 49 mm²

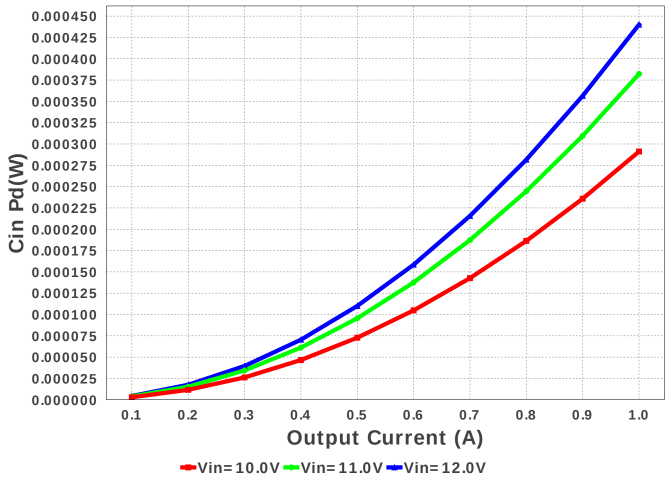




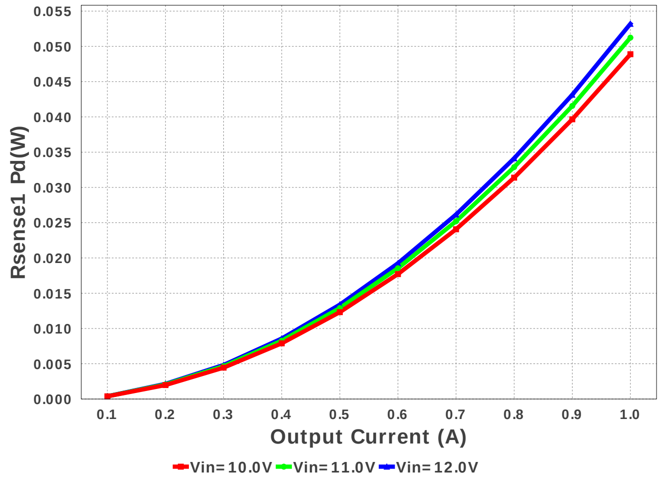
Vout2 p-p



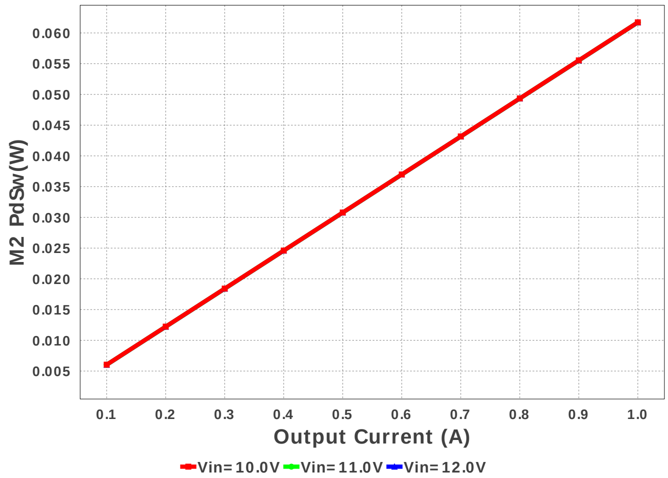
Cin Pd



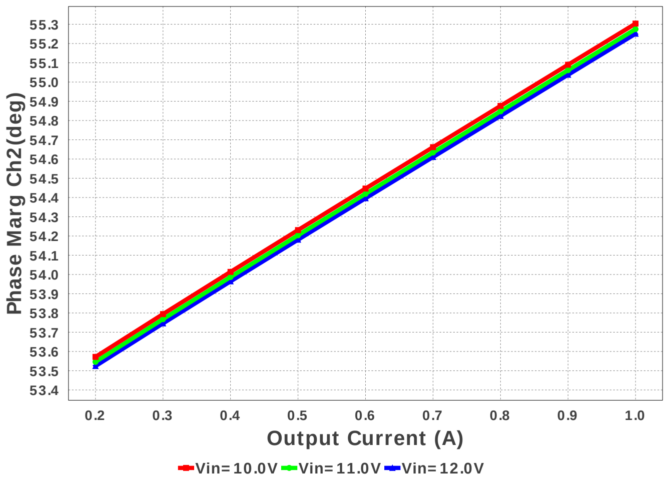
Rsense1 Pd



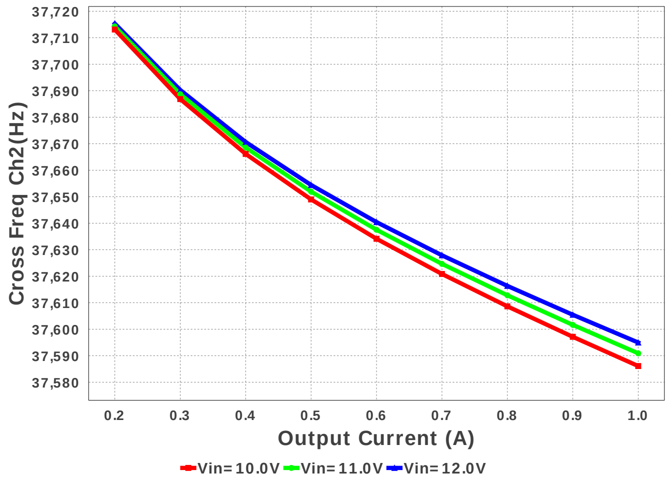
M2 PdSw

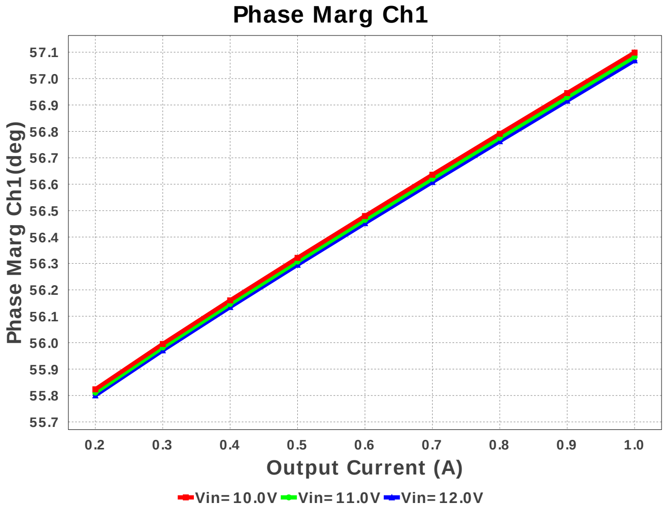


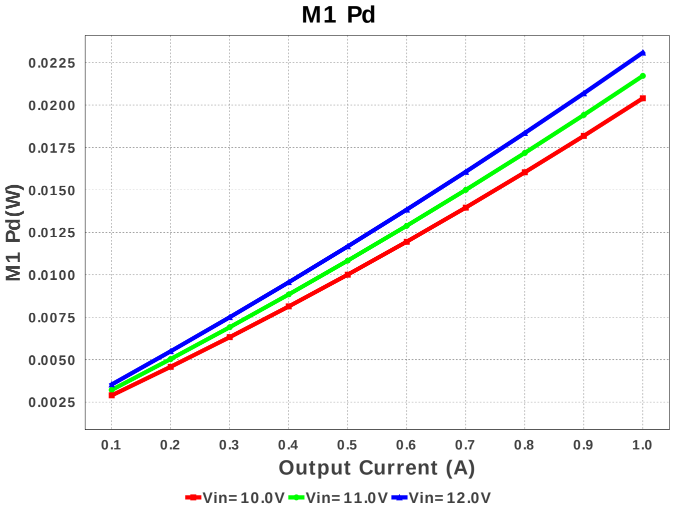
Phase Marg Ch2

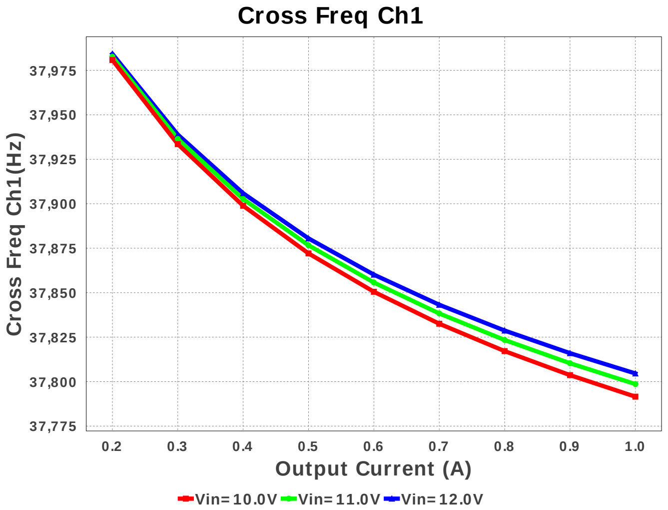


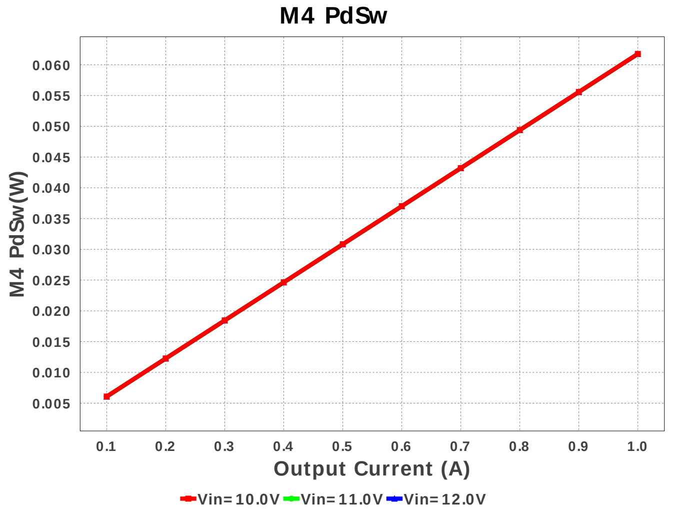
Cross Freq Ch2

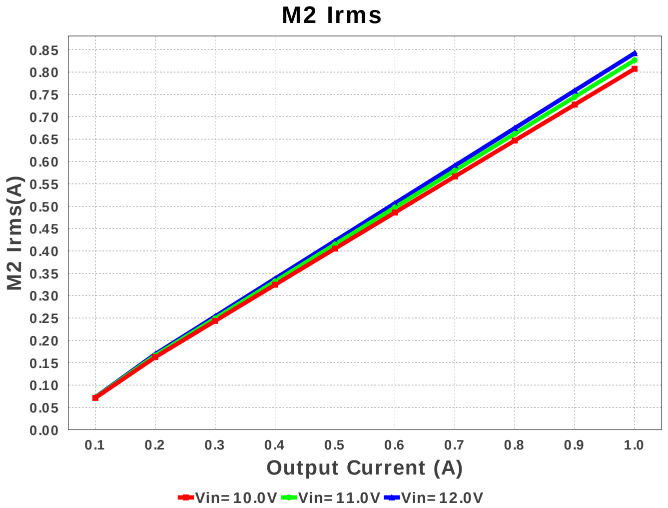


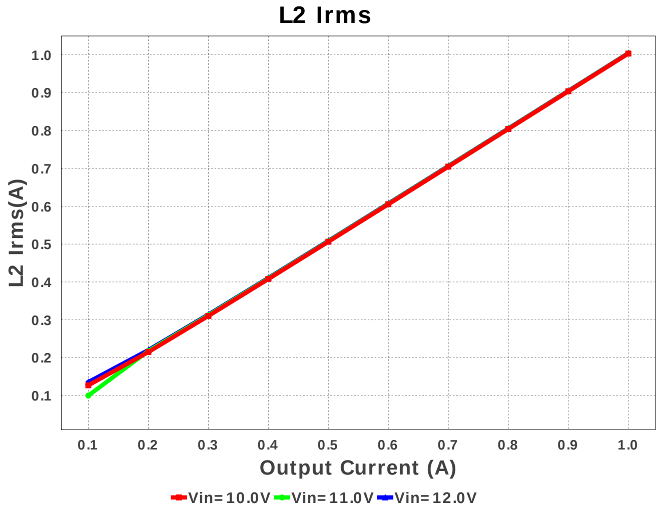

Phase Marg Ch1
Phase Marg Ch1(deg)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

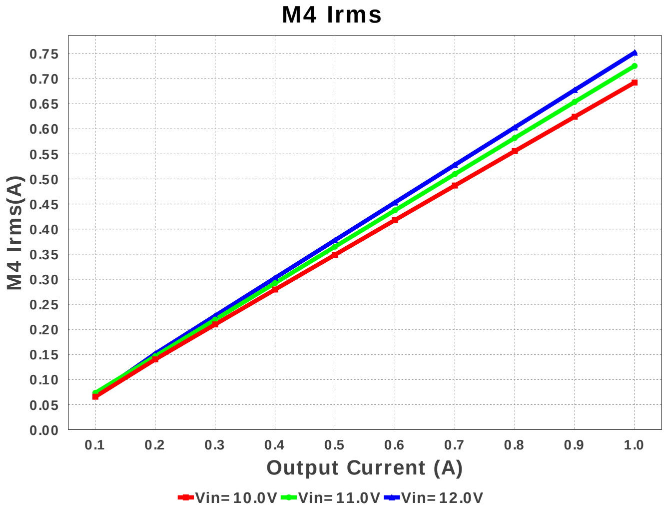

M1 Pd
M1 Pd(W)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

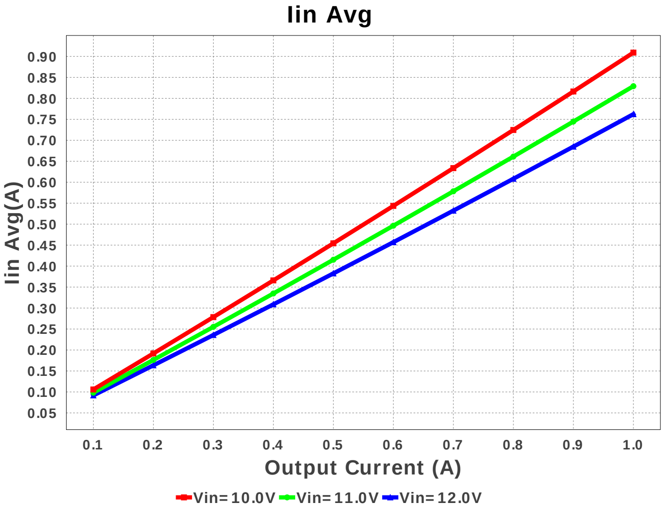

Cross Freq Ch1
Cross Freq Ch1(Hz)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

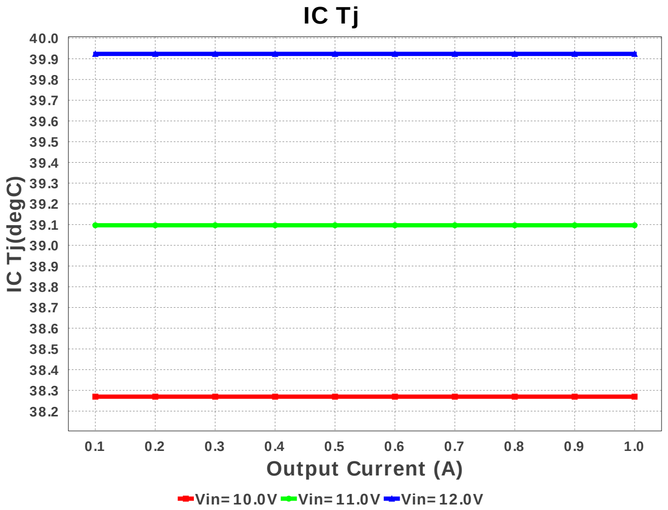

M4 PdSw
M4 PdSw(W)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

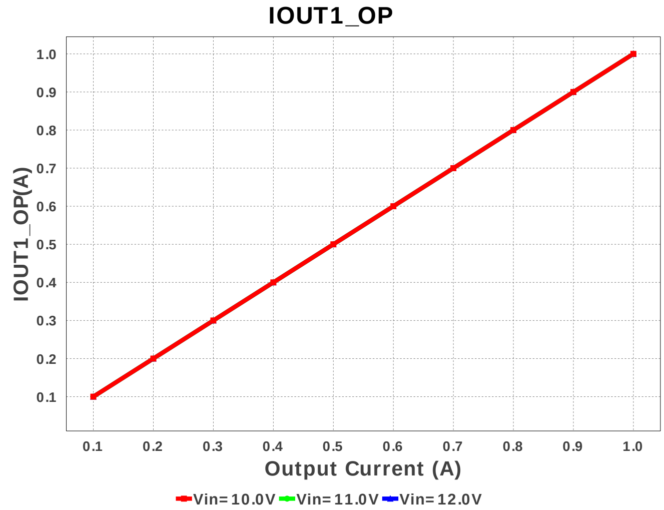

M2 Irms
M2 Irms(A)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

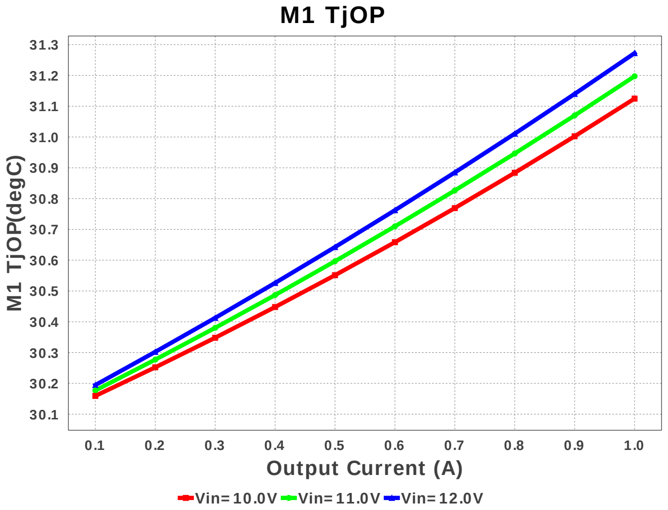

L2 Irms
L2 Irms(A)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

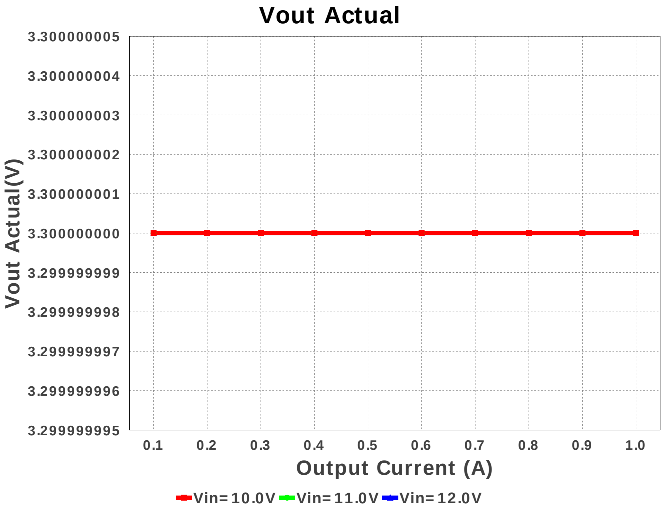

M4 Irms
M4 Irms(A)
0.75
0.70
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

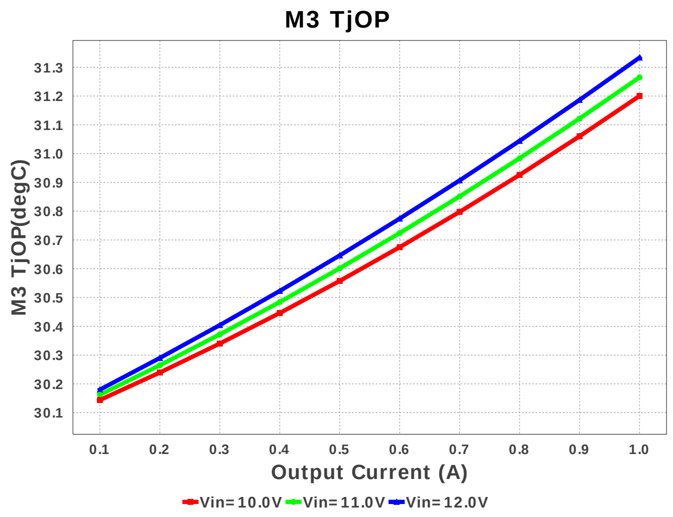

Iin Avg
Iin Avg(A)
0.90
0.85
0.80
0.75
0.70
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

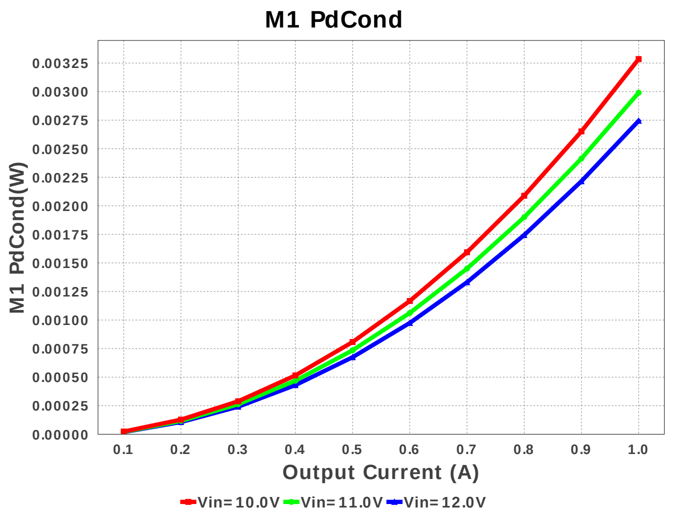

IC Tj
IC Tj(degC)
40.0
39.9
39.8
39.7
39.6
39.5
39.4
39.3
39.2
39.1
39.0
38.9
38.8
38.7
38.6
38.5
38.4
38.3
38.2
0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

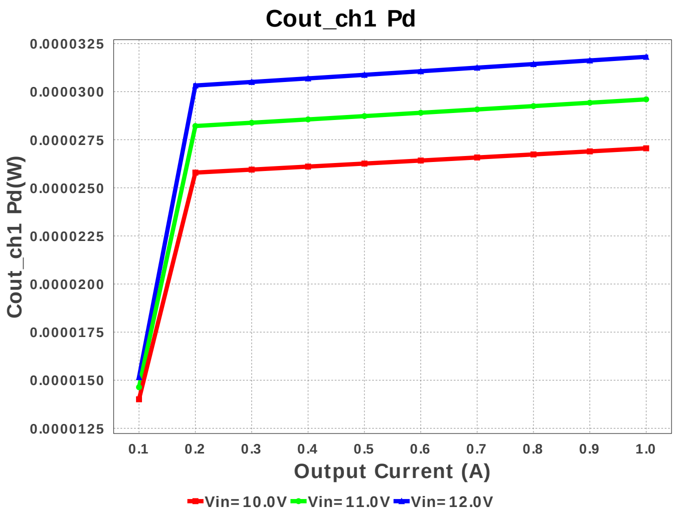

IOUT1_OP
IOUT1_OP(A)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

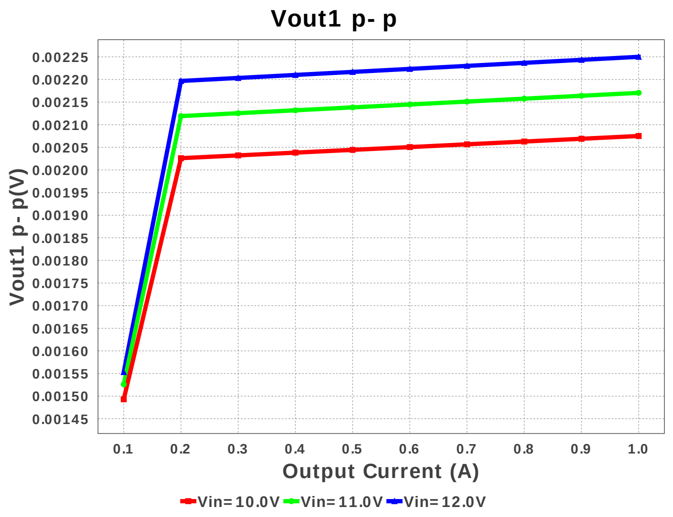

M1 TjOP
M1 TjOP(degC)
31.3
31.2
31.1
31.0
30.9
30.8
30.7
30.6
30.5
30.4
30.3
30.2
30.1
0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

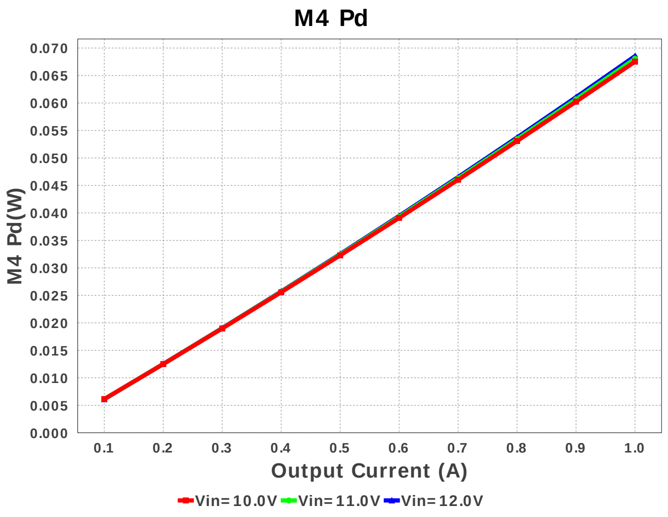

Vout Actual
Vout Actual(V)
3.300000005
3.300000004
3.300000003
3.300000002
3.300000001
3.300000000
3.299999999
3.299999998
3.299999997
3.299999996
3.299999995
0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

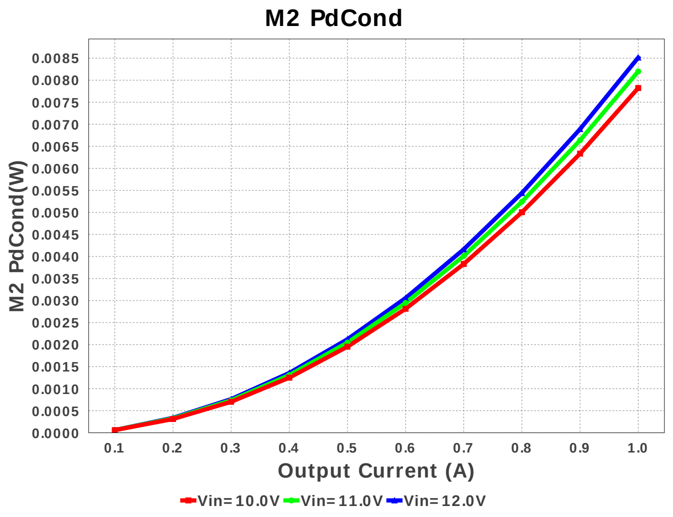

M3 TjOP
M3 TjOP(degC)
31.3
31.2
31.1
31.0
30.9
30.8
30.7
30.6
30.5
30.4
30.3
30.2
30.1
0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

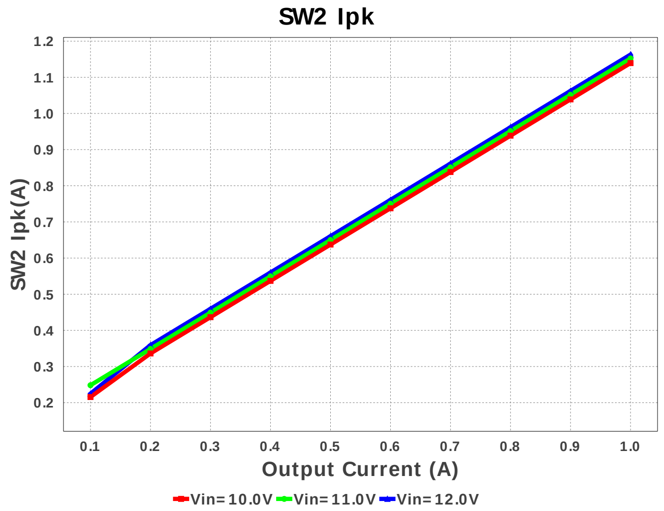

M1 PdCond
M1 PdCond(W)
0.00325
0.00300
0.00275
0.00250
0.00225
0.00200
0.00175
0.00150
0.00125
0.00100
0.00075
0.00050
0.00025
0.00000
0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

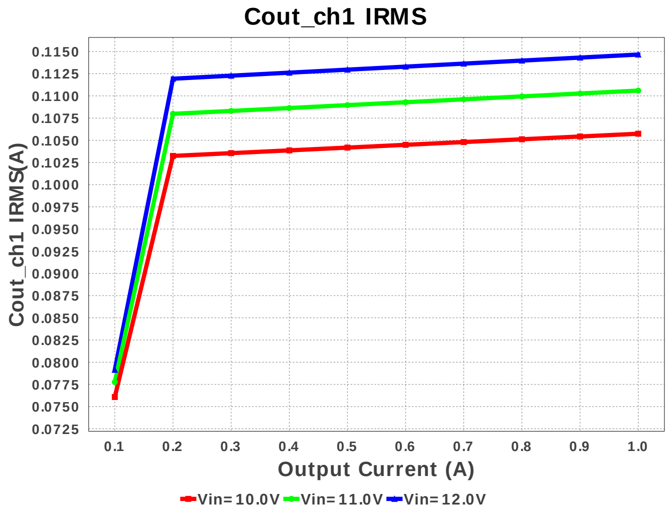

Cout_ch1 Pd
Cout_ch1 Pd(W)
0.0000325
0.0000300
0.0000275
0.0000250
0.0000225
0.0000200
0.0000175
0.0000150
0.0000125
0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

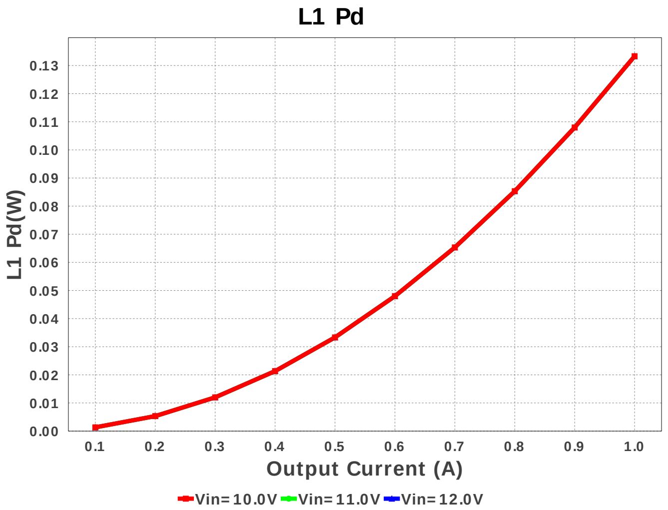

Vout1 p- p
Vout1 p- p(V)
0.00225
0.00220
0.00215
0.00210
0.00205
0.00200
0.00195
0.00190
0.00185
0.00180
0.00175
0.00170
0.00165
0.00160
0.00155
0.00150
0.00145
0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

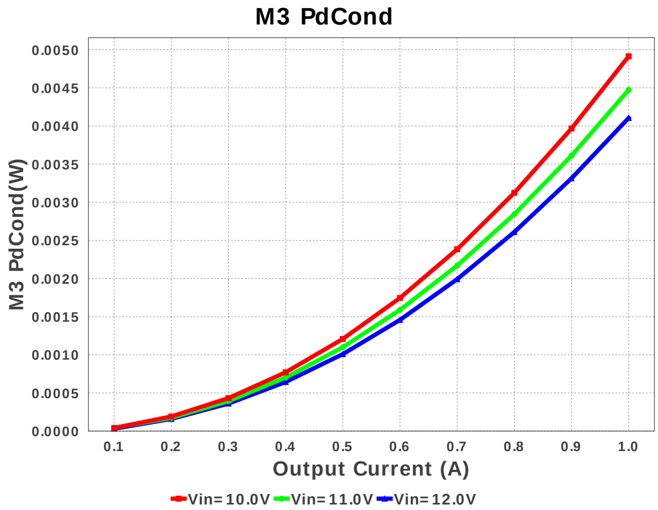

M4 Pd
M4 Pd(W)
0.070
0.065
0.060
0.055
0.050
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

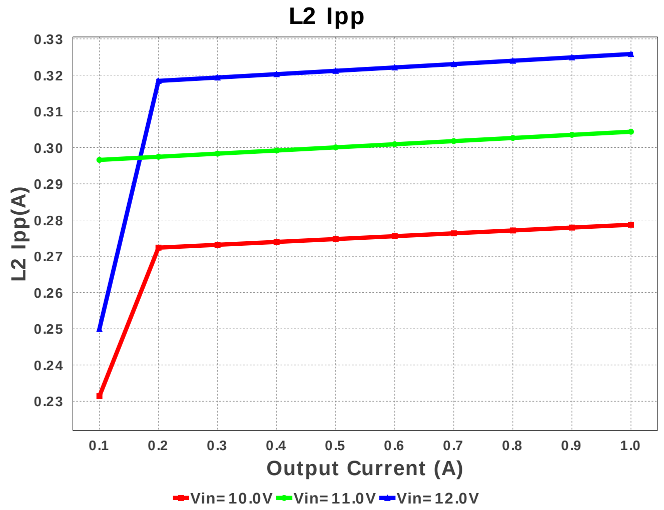

M2 PdCond
M2 PdCond(W)
0.0085
0.0080
0.0075
0.0070
0.0065
0.0060
0.0055
0.0050
0.0045
0.0040
0.0035
0.0030
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

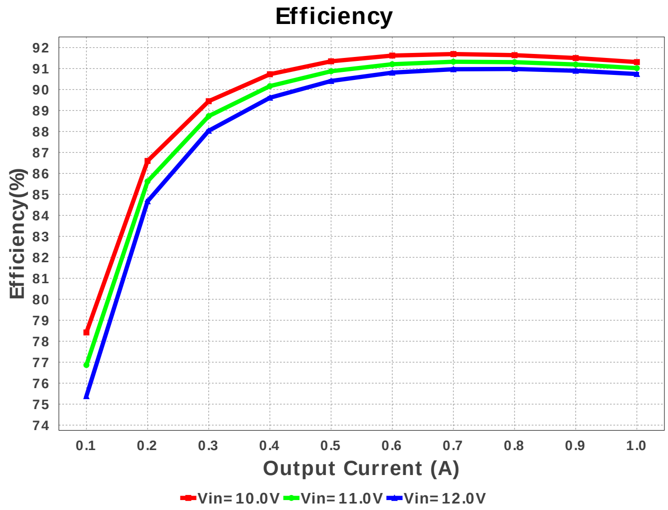

SW2 Ipk
SW2 Ipk(A)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V


Cout_ch1 IRMS
Cout_ch1 IRMS(A)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

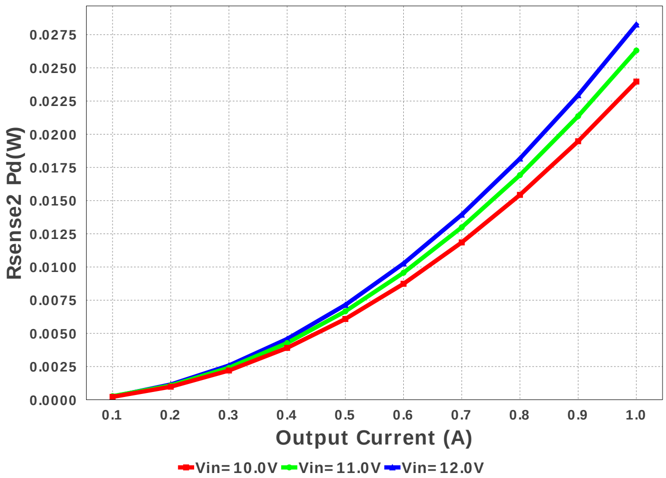

L1 Pd
L1 Pd(W)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V


M3 PdCond
M3 PdCond(W)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

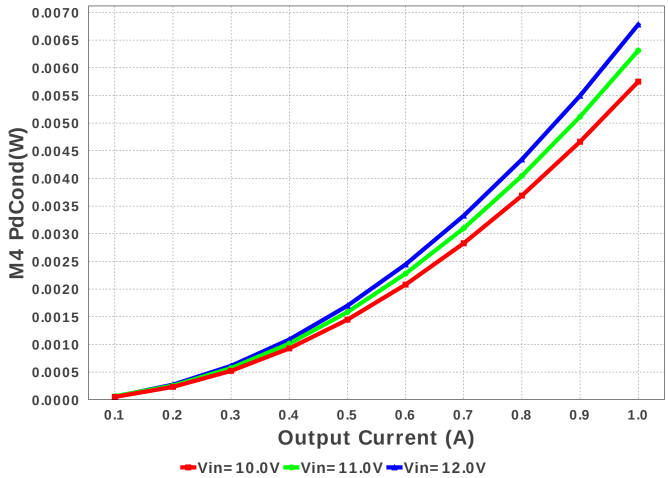

L2 Ipp
L2 Ipp(A)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V


Efficiency
Efficiency(%)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

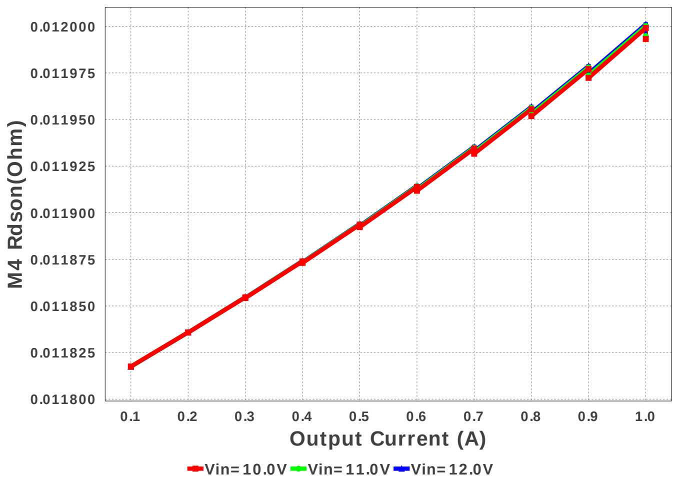
Rsense2 Pd



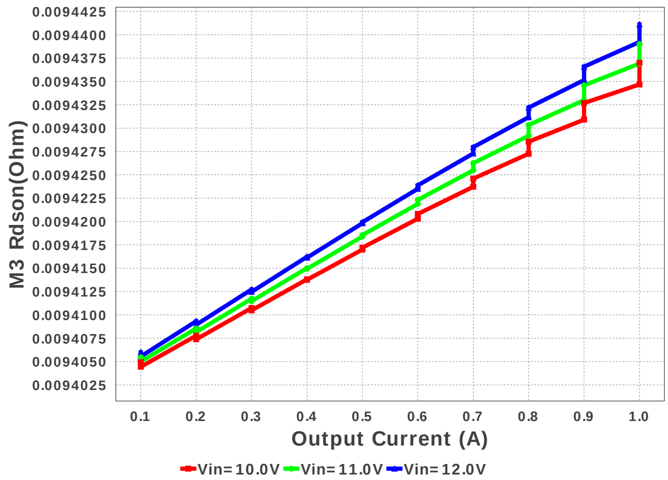
M4 PdCond



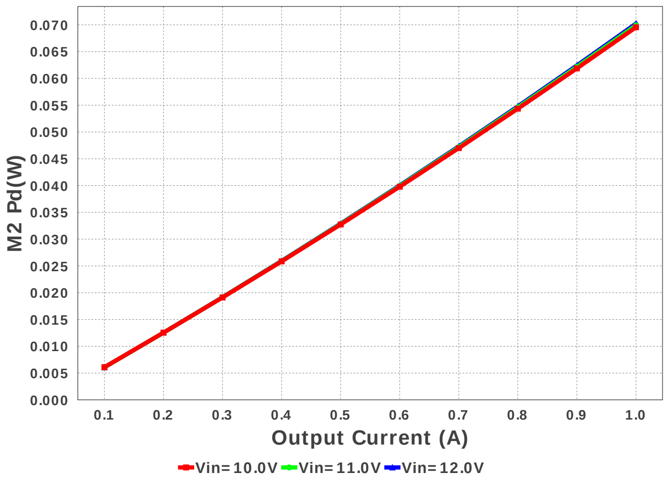
M4 Rdson



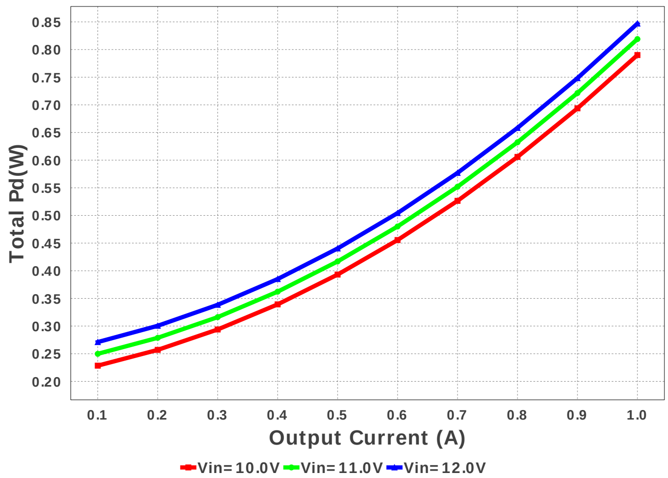
M3 Rdson

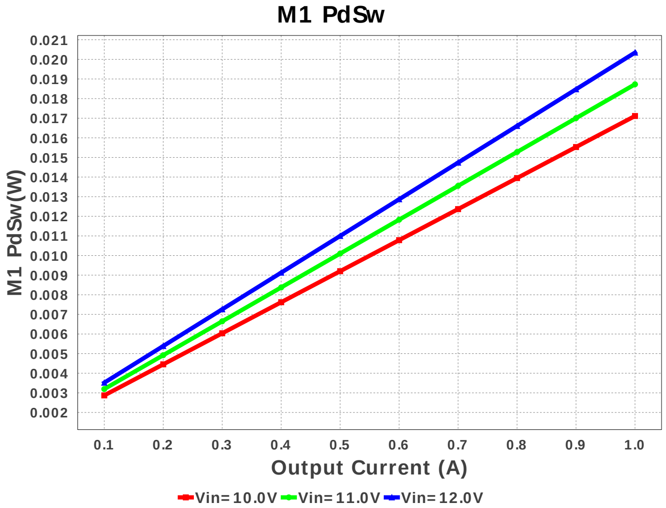


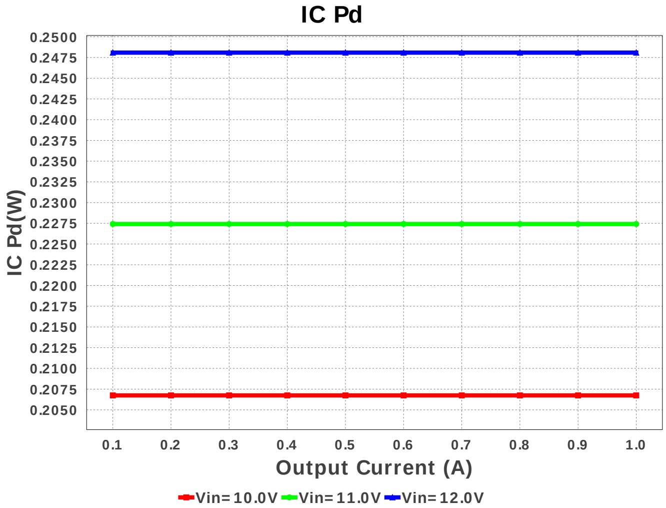
M2 Pd

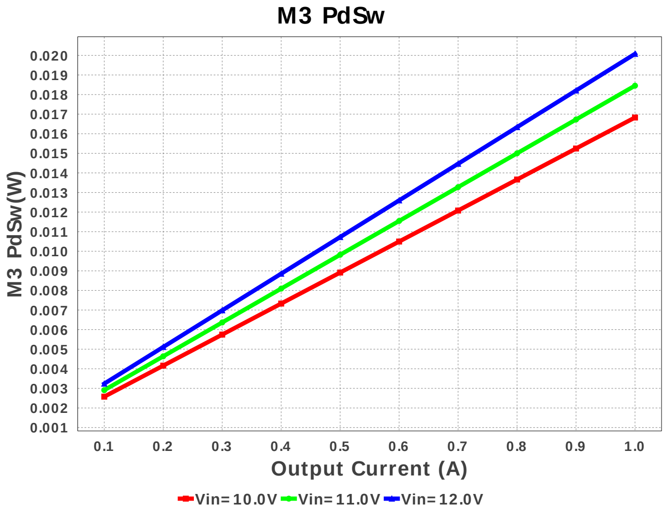


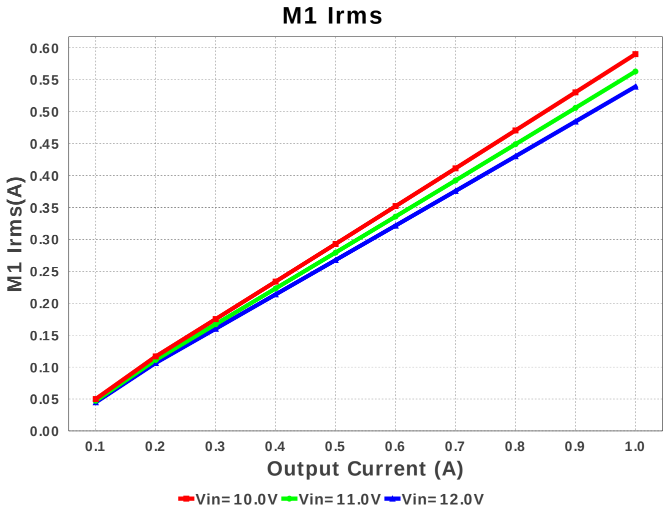
Total Pd

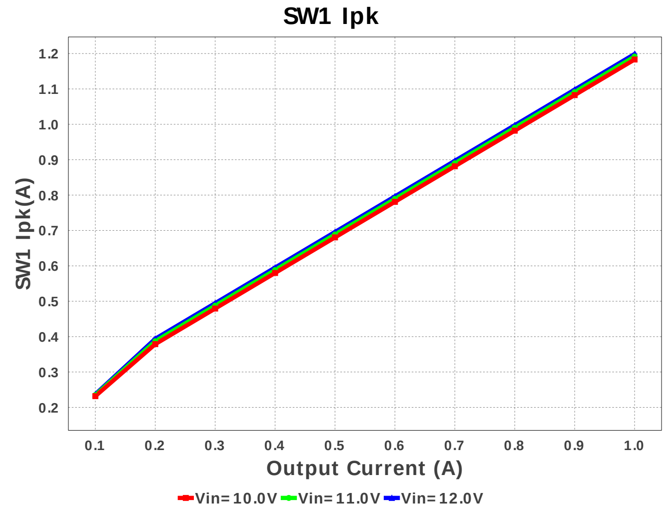


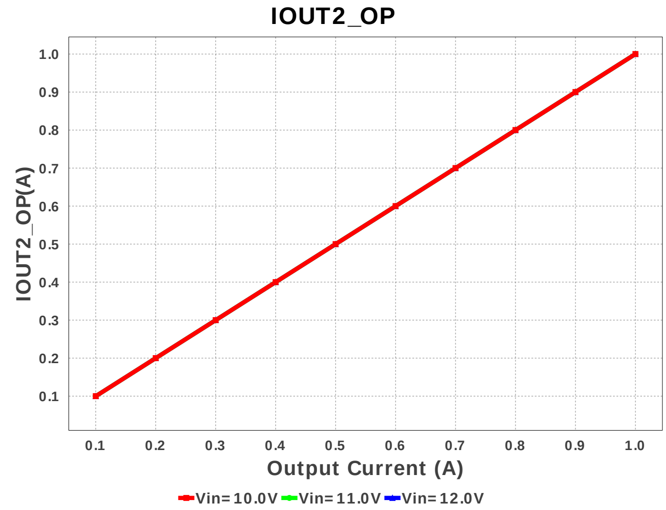

M1 PdSw
M1 PdSw(W)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

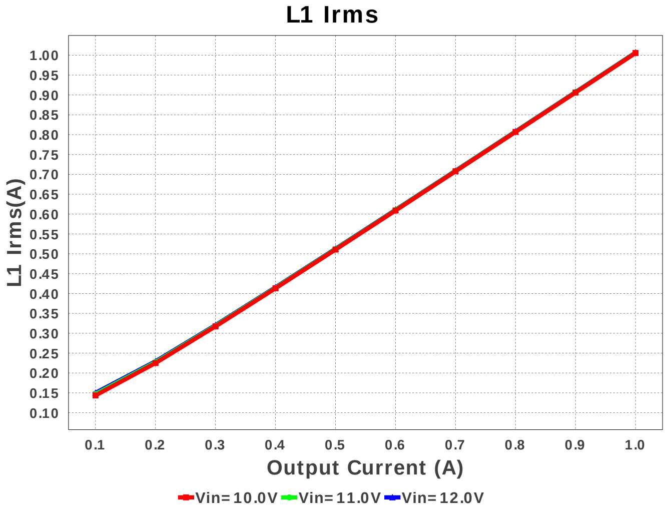

IC Pd
IC Pd(W)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

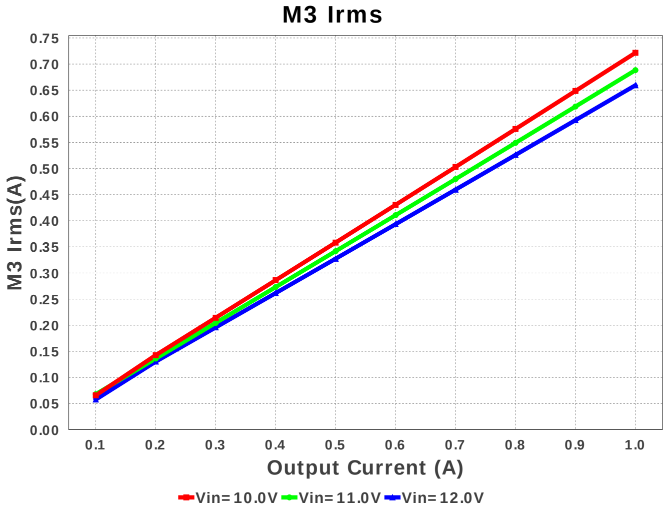

M3 PdSw
M3 PdSw(W)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

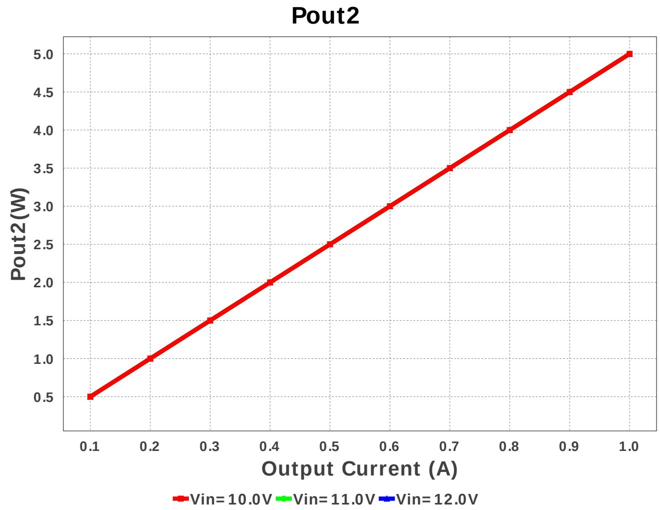

M1 Irms
M1 Irms(A)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

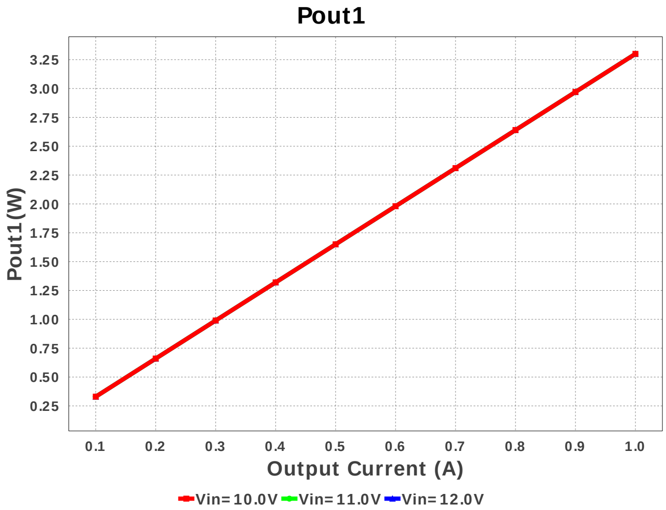

SW1 Ipk
SW1 Ipk(A)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

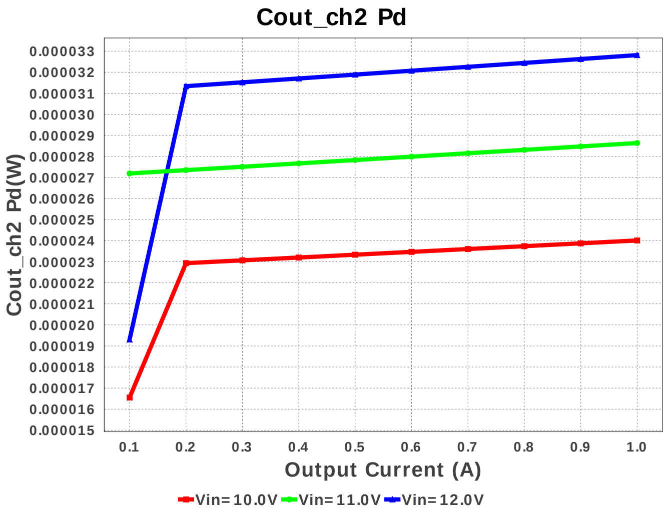

IOUT2_OP
IOUT2_OP(A)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

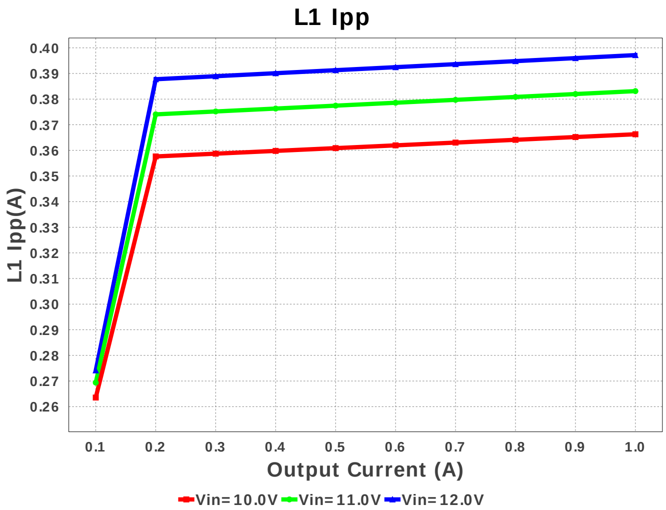

L1 Irms
L1 Irms(A)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

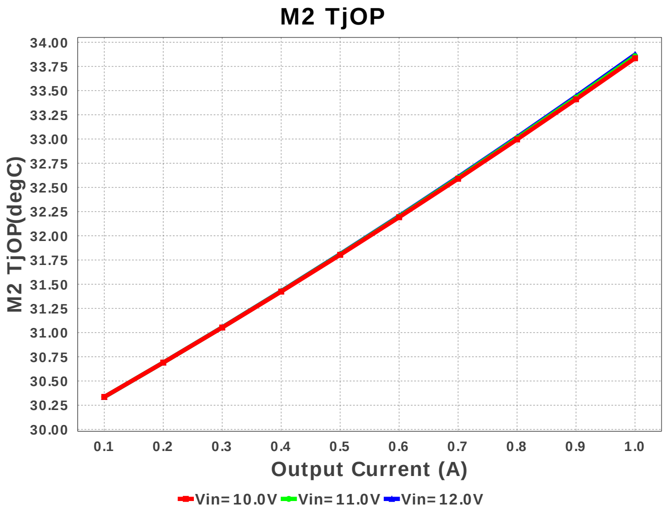

M3 Irms
M3 Irms(A)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

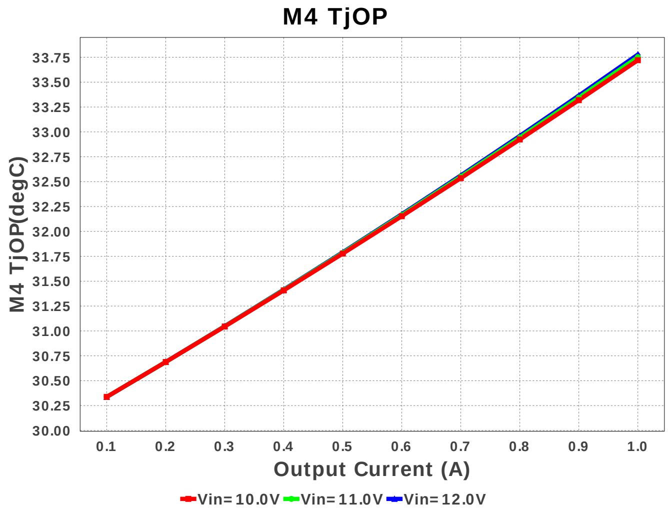

Pout2
Pout2(W)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

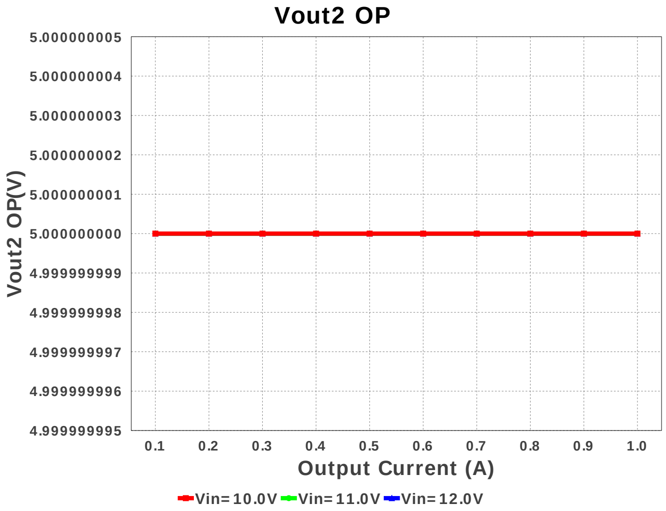

Pout1
Pout1(W)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

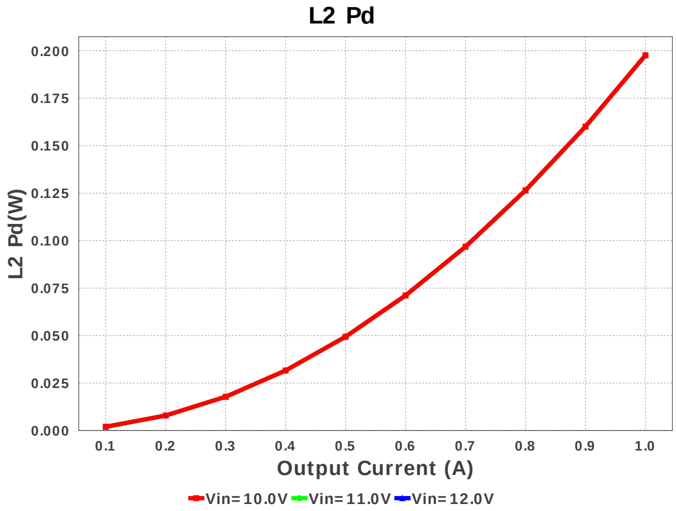

Cout_ch2 Pd
Cout_ch2 Pd(W)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

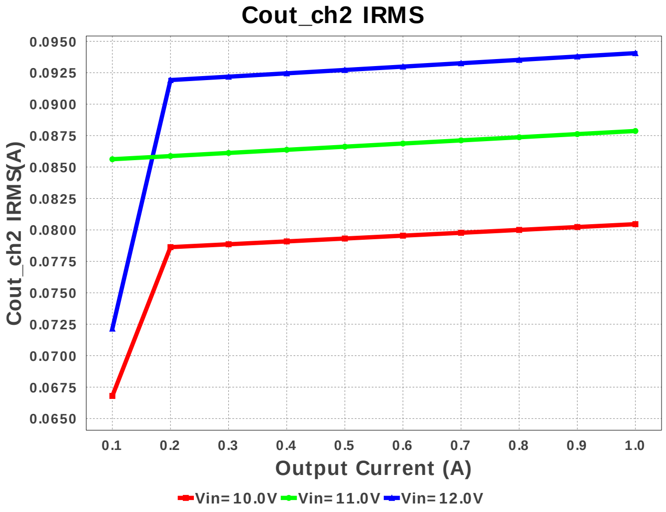

L1 Ipp
L1 Ipp(A)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

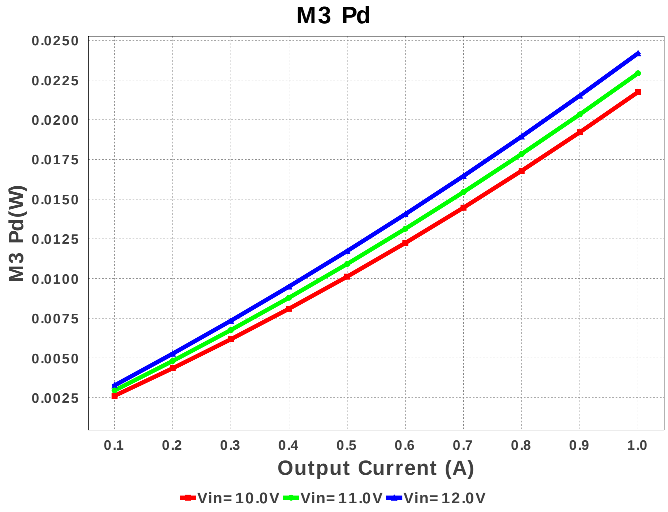

M2 TjOP
M2 TjOP(degC)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V

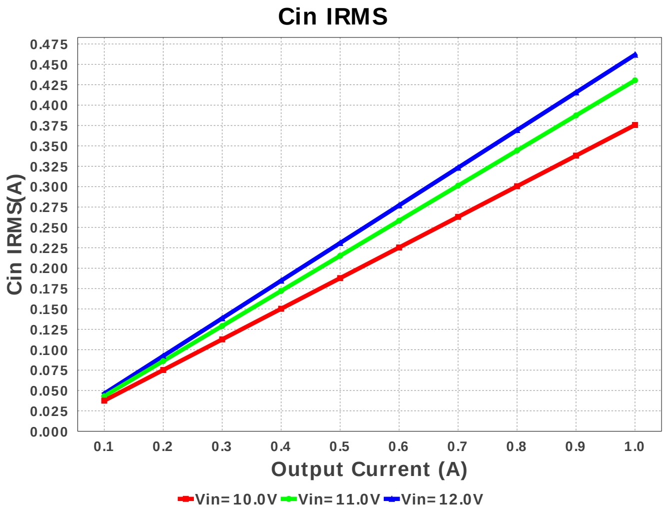

M4 TjOP
M4 TjOP(degC)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V


Vout2 OP
Vout2 OP(V)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V


L2 Pd
L2 Pd(W)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V


Cout_ch2 IRMS
Cout_ch2 IRMS(A)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V


M3 Pd
M3 Pd(W)
Output Current (A)
Vin=10.0V Vin=11.0V Vin=12.0V



Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	461.745 mA	Current	Input capacitor RMS ripple current
2.	Cout_ch1 IRMS	114.654 mA	Current	Output Channel 1 Capacitor RMS ripple current
3.	Cout_ch2 IRMS	94.064 mA	Current	Output Channel 2 Capacitor RMS ripple current
4.	Iin Avg	762.39 mA	Current	Average input current
5.	L1 Ipp	397.173 mA	Current	Peak-to-peak inductor ripple current
6.	L1 Irms	1.007 A	Current	Inductor ripple current
7.	L2Ipp	325.846 mA	Current	Channel 2 Inductor Peak to peak Current
8.	L2 Irms	1.004 A	Current	Inductor ripple current
9.	M1 Irms	539.194 mA	Current	MOSFET RMS ripple current
10.	M2 Irms	842.181 mA	Current	MOSFET RMS ripple current
11.	M3 Irms	659.464 mA	Current	MOSFET RMS ripple current
12.	M4 Irms	751.736 mA	Current	MOSFET RMS ripple current
13.	SW1 Ipk	1.199 A	Current	Peak switch current
14.	SW2 Ipk	1.163 A	Current	Peak switch current
15.	BOM Count	40	General	Total Design BOM count
16.	FootPrint	434.0 mm^2	General	Total Foot Print Area of BOM components
17.	Frequency	424.559 kHz	General	Switching frequency
18.	IC Tolerance	12.0 mV	General	IC Feedback Tolerance
19.	Pout1	3.3 W	General	Channel 1 output Power
20.	Pout2	5.002 W	General	Channel 2 output Power
21.	Total BOM	$5.18	General	Total BOM Cost
22.	Ch1 Mode	CCM	General	Conduction Mode
23.	Ch2 Mode	CCM	General	Conduction Mode
24.	M3 TjOP	31.334 degC	Op_Point	M3 MOSFET junction temperature
25.	M4 TjOP	33.777 degC	Op_Point	M4 MOSFET junction temperature
26.	Vout Actual	3.3 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
27.	Duty Cycle 1	29.073 %	Op_point	Duty cycle for Channel 1
28.	Duty Cycle 2	43.489 %	Op_point	Duty cycle for Channel 2
29.	Efficiency	90.742 %	Op_point	Steady state efficiency
30.	IC Tj	39.924 degC	Op_point	IC junction temperature
31.	IOUT1_OP	1.0 A	Op_point	Iout1 operating point
32.	IOUT2_OP	1.0 A	Op_point	Iout2 operating point
33.	M1 TjOP	31.272 degC	Op_point	M1 MOSFET junction temperature
34.	M2 TjOP	33.872 degC	Op_point	M2 MOSFET junction temperature
35.	VIN_OP	12.0 V	Op_point	Vin operating point
36.	Vout1 OP	3.3 V	Op_point	Operational Voltage 1
37.	Vout1 p-p	2.25 mV	Op_point	Peak-to-peak output1 ripple voltage
38.	Vout2 OP	5.002 V	Op_point	Operational Voltage 2
39.	Vout2 p-p	2.372 mV	Op_point	Peak-to-peak output2 ripple voltage
40.	Cin Pd	439.955 µW	Power	Input capacitor power dissipation
41.	Cout_ch1 Pd	31.812 µW	Power	Ouput channel 1 capacitor power dissipation
42.	Cout_ch2 Pd	32.817 µW	Power	Ouput channel 2 capacitor power dissipation
43.	IC Pd	248.091 mW	Power	IC power dissipation
44.	L1 Pd	133.308 mW	Power	Inductor power dissipation
45.	L2 Pd	197.596 mW	Power	Inductor power dissipation
46.	M1 Pd	23.089 mW	Power	M1 MOSFET total power dissipation
47.	M1 PdCond	2.744 mW	Power	M1 MOSFET conduction losses
48.	M1 PdSw	20.344 mW	Power	M1 MOSFET switching losses
49.	M2 Pd	70.225 mW	Power	M2 MOSFET total power dissipation
50.	M2 PdCond	8.512 mW	Power	M2 MOSFET conduction losses
51.	M2 PdSw	61.713 mW	Power	M2 MOSFET switching losses
52.	M3 Pd	24.183 mW	Power	M3 MOSFET total power dissipation

#	Name	Value	Category	Description
53.	M3 PdCond	4.106 mW	Power	M3 MOSFET conduction losses
54.	M3 PdSw	20.077 mW	Power	M3 MOSFET switching losses
55.	M1 Rdson	9.439 mOhm	Power	Drain-Source On-resistance
56.	M3 Rdson	9.441 mOhm	Power	Drain-Source On-resistance
57.	M4 Pd	68.526 mW	Power	M4 MOSFET total power dissipation
58.	M4 PdCond	6.779 mW	Power	M4 MOSFET conduction losses
59.	M4 PdSw	61.747 mW	Power	M4 MOSFET switching losses
60.	M2 Rdson	12.001 mOhm	Power	Drain-Source On-resistance
61.	M4 Rdson	11.996 mOhm	Power	Drain-Source On-resistance
62.	Rsense1 Pd	53.195 mW	Power	Current Limit Sense Resistor Power Dissipation
63.	Rsense2 Pd	28.255 mW	Power	Current Limit Sense Resistor Power Dissipation
64.	Total Pd	846.972 mW	Power	Total Power Dissipation
65.	Cross Freq Ch1	37.806 kHz		Bode plot crossover frequency
66.	Cross Freq Ch2	37.596 kHz		Bode plot crossover frequency
67.	Phase Marg Ch1	57.065 deg		Bode Plot Phase Margin
68.	Phase Marg Ch2	55.246 deg		Bode Plot Phase Margin
69.	Vout Tolerance	2.354 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	1.0	Maximum Output Current
2.	Iout1	1.0	Output Current #1
3.	Iout2	1.0	Output Current #2
4.	VinMax	12.0	Maximum input voltage
5.	VinMin	10.0	Minimum input voltage
6.	Vout	3.3	Output Voltage
7.	Vout1	3.3	Output Voltage #1
8.	Vout2	5.0	Output Voltage #2
9.	base_pn	LM25119-Q1	Base Product Number
10.	source	DC	Input Source Type
11.	Ta	30.0	Ambient temperature

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. Sequencing the 2 outputs The LM(2)5119 contains an enable function allowing shutdown control of channel2, independent of channel1. If the EN2 pin is pulled below 2.0V, channel2 enters shutdown mode. If the EN2 input is greater than 2.5V, channel2 returns to normal operation. 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. **LM25119-Q1** Product Folder : http://www.ti.com/product/LM25119Q : contains the data sheet and other resources.