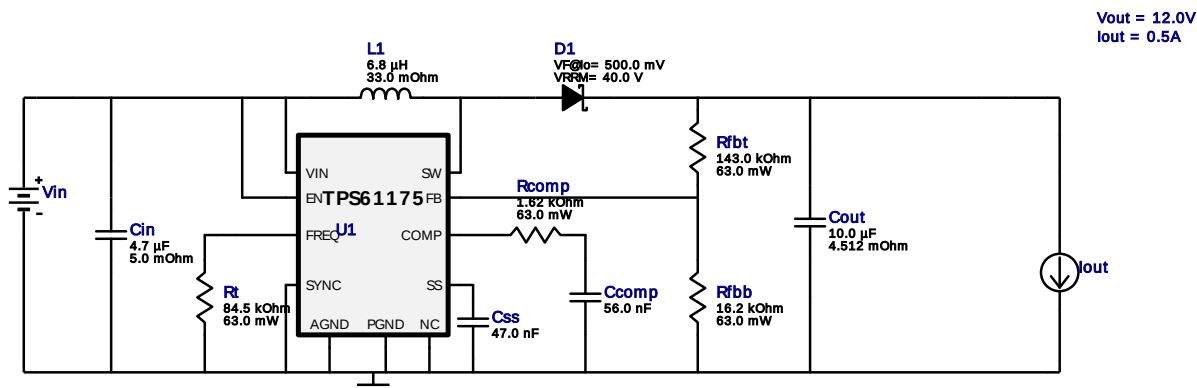


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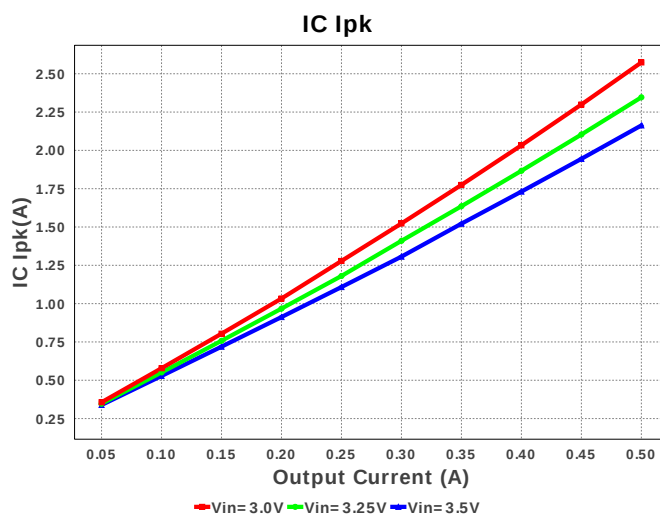
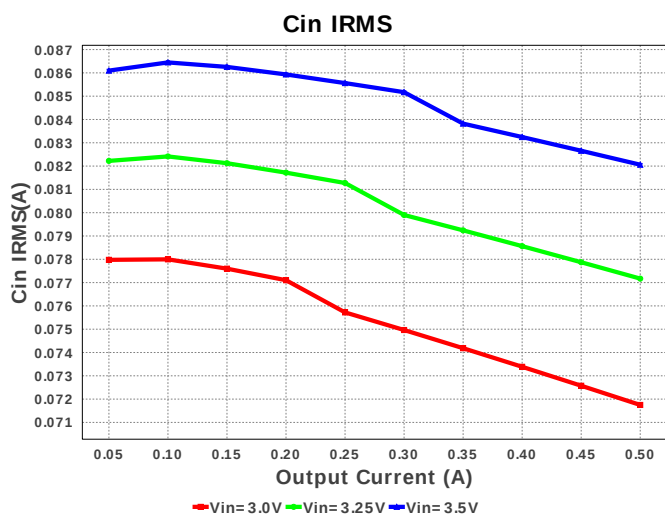
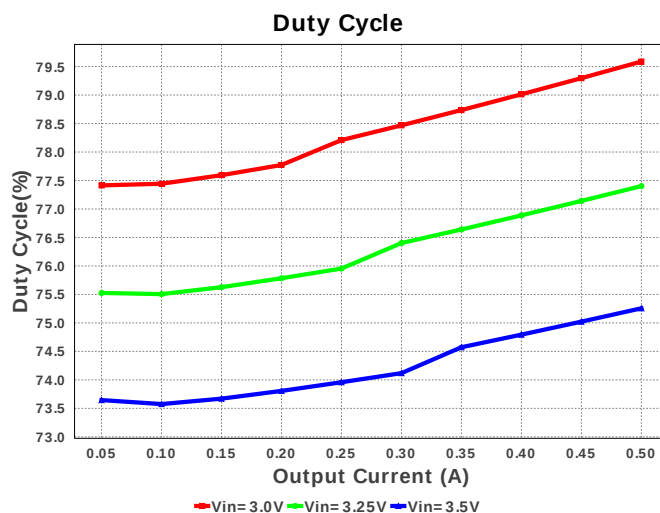
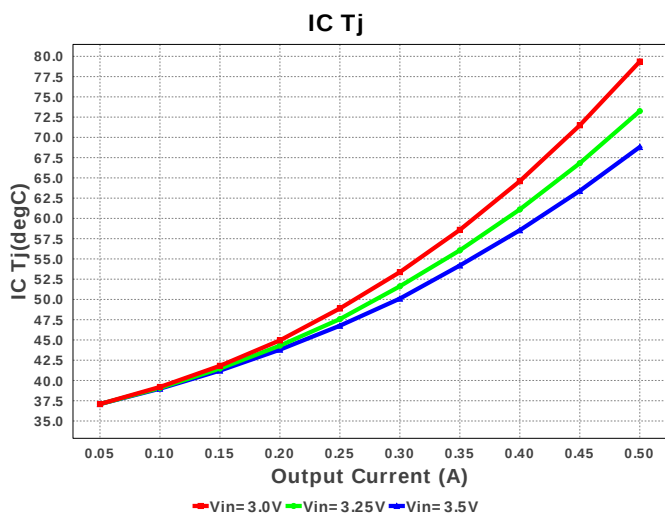
Design : 3496425/11 TPS61175PWPR
TPS61175PWPR 3.0V-3.5V to 12.00V @ 0.5A

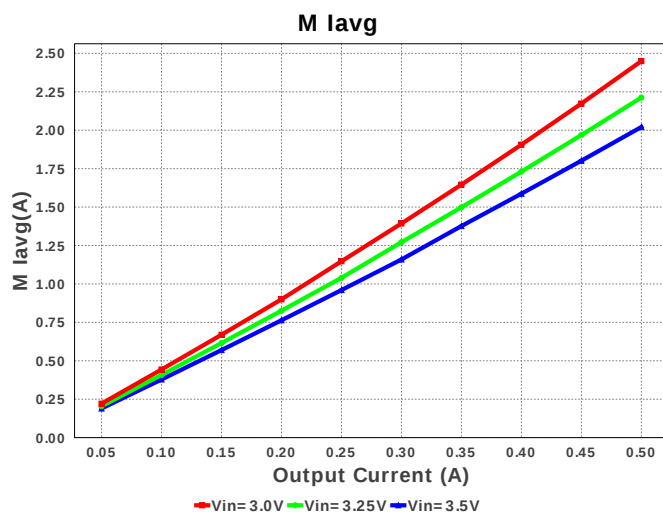
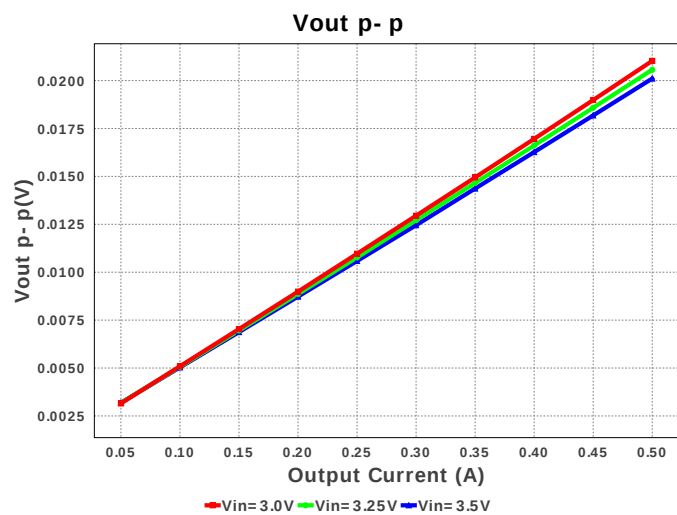
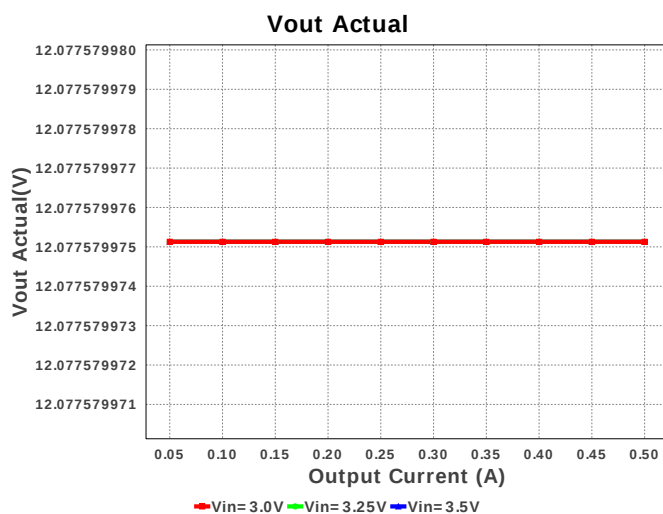
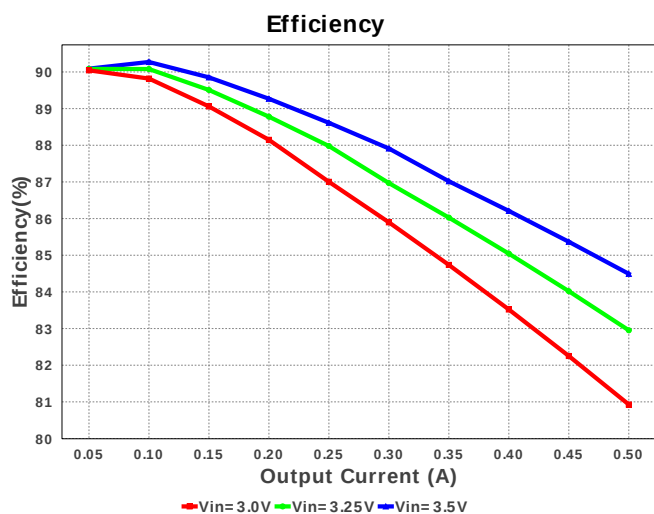
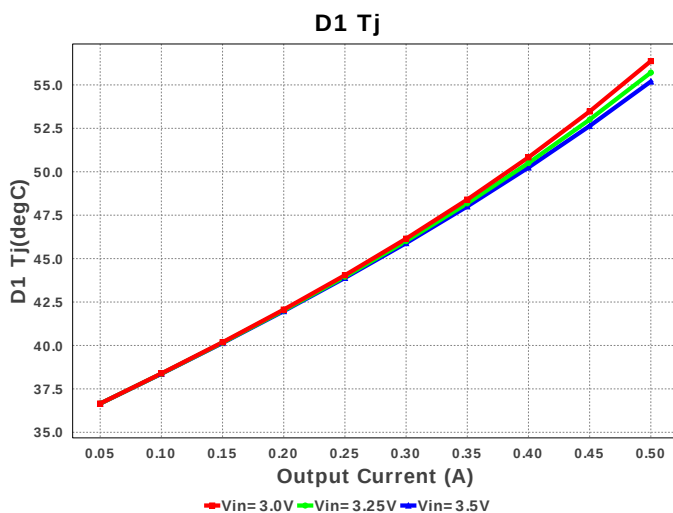
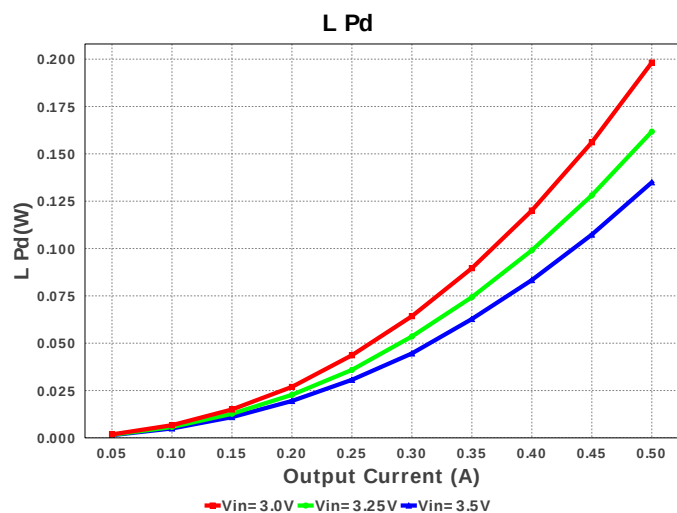


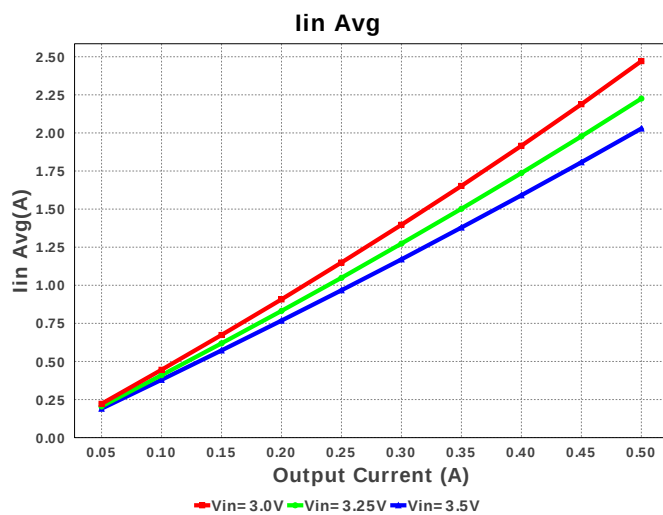
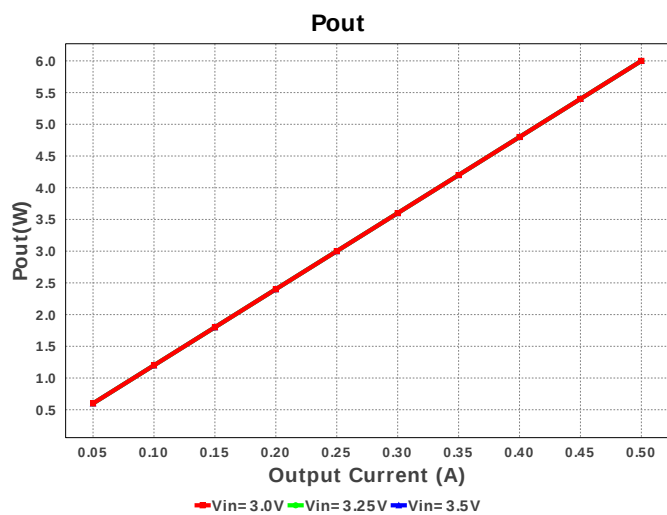
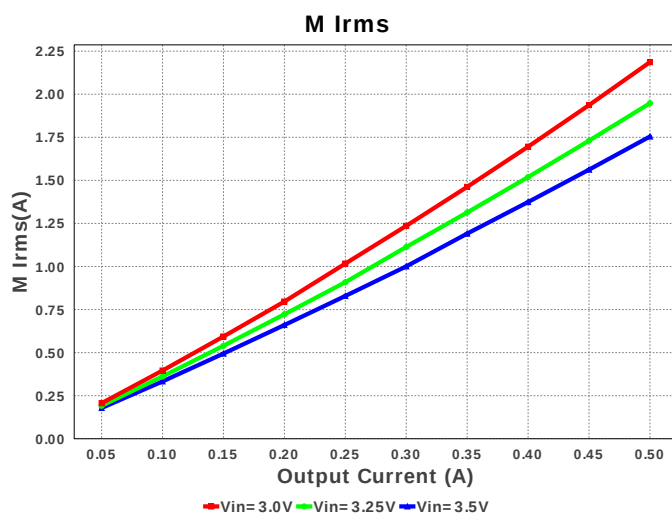
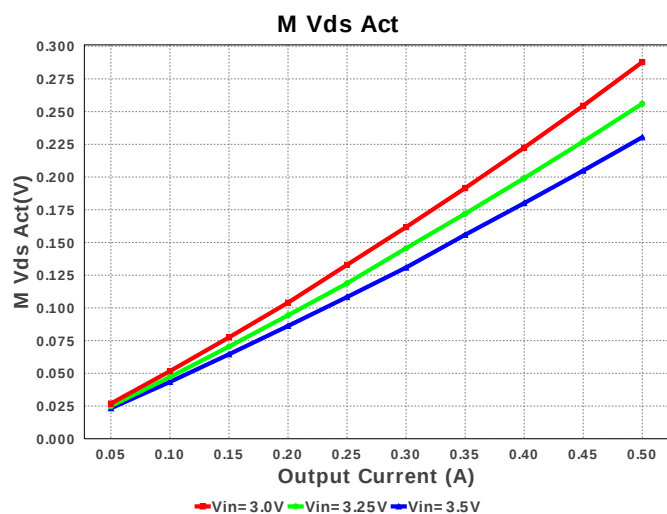
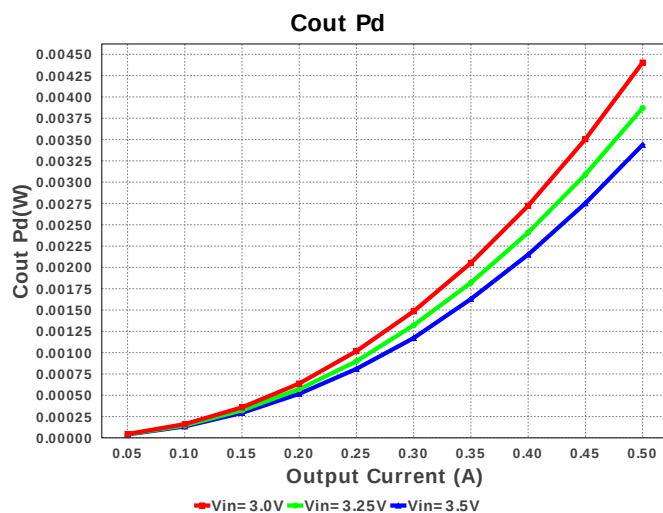
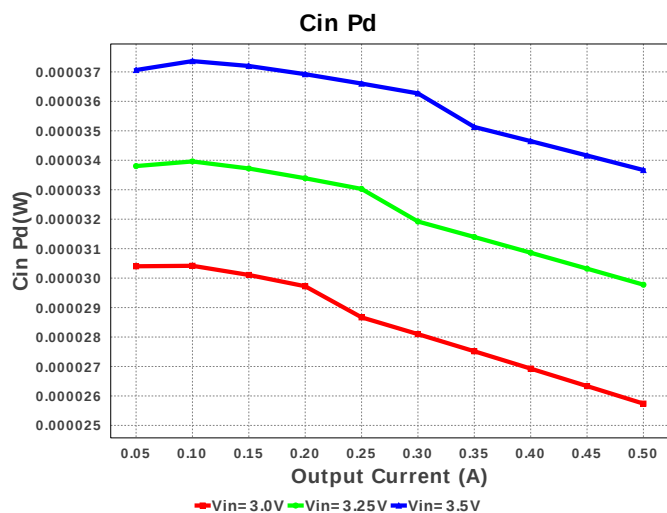
Electrical BOM

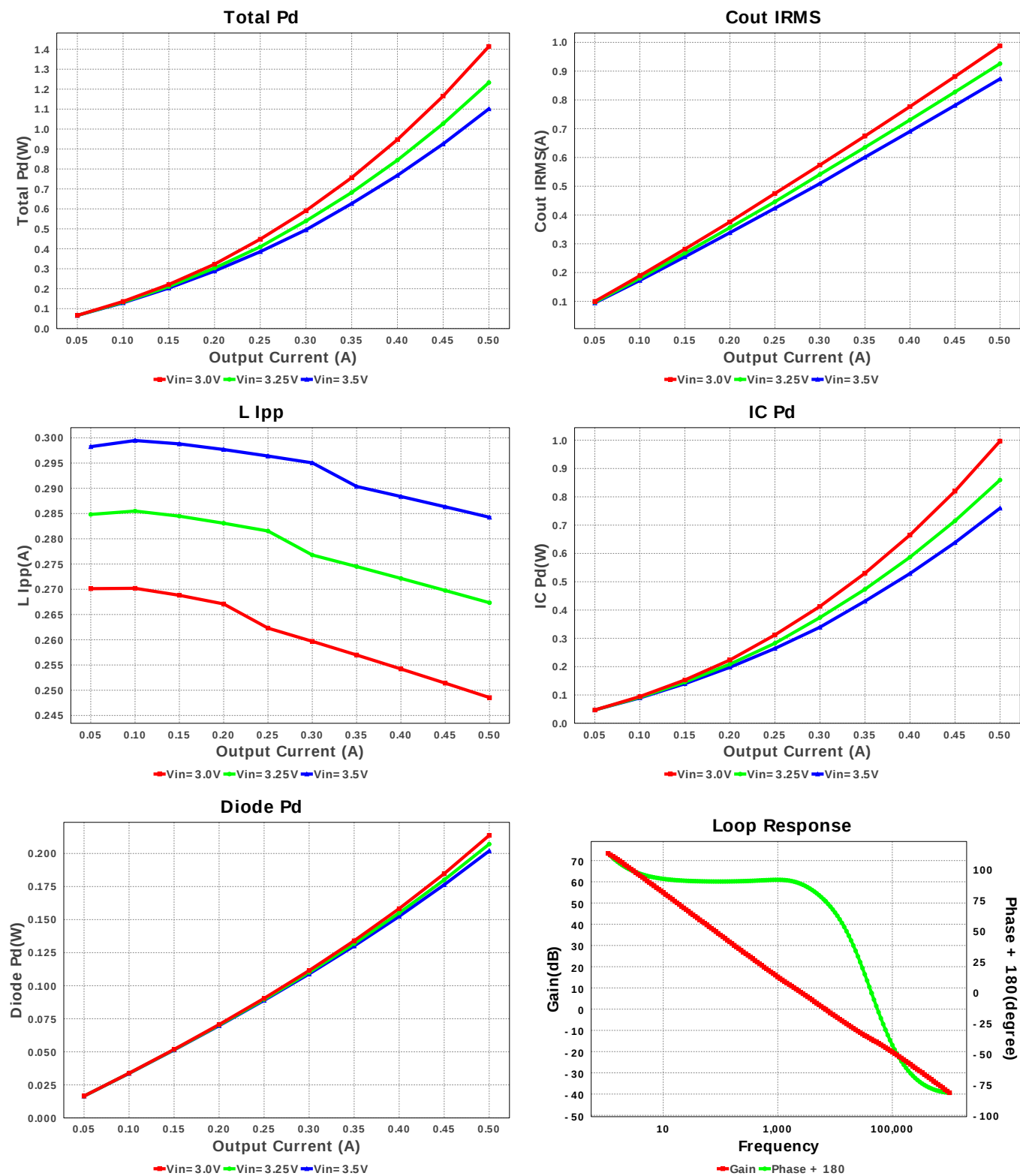
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Ccomp	MuRata	GRM155R61A563KA01D Series= X5R	Cap= 56.0 nF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
2.	Cin	MuRata	GRM188R60J475KE19D Series= X5R	Cap= 4.7 uF ESR= 5.0 mOhm VDC= 6.3 V IRMS= 2.0 A	1	\$0.01	0603 5 mm ²
3.	Cout	MuRata	GRM31CR61E106KA12L Series= X5R	Cap= 10.0 uF ESR= 4.512 mOhm VDC= 25.0 V IRMS= 2.447 A	1	\$0.05	1206_190 11 mm ²
4.	Css	Taiyo Yuden	TMK212B7473KD-T Series= X7R	Cap= 47.0 nF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
5.	D1	Diodes Inc.	B340A-13-F	VF@Io= 500.0 mV VRRM= 40.0 V	1	\$0.11	SMA 37 mm ²
6.	L1	Bourns	SRN8040-6R8Y	L= 6.8 uH DCR= 33.0 mOhm	1	\$0.22	SRN8040 100 mm ²
7.	Rcomp	Vishay-Dale	CRCW04021K62FKED Series= CRCW..e3	Res= 1.62 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
8.	Rfbb	Vishay-Dale	CRCW040216K2FKED Series= CRCW..e3	Res= 16.2 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
9.	Rfbb	Vishay-Dale	CRCW0402143KFKED Series= CRCW..e3	Res= 143.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
10.	Rt	Vishay-Dale	CRCW040284K5FKED Series= CRCW..e3	Res= 84.5 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
11. U1		Texas Instruments	TPS61175PWPR	Switcher	1	\$1.40	 R-PDSO-G14 61 mm ²









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	71.749 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	987.849 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	2.574 A	Current	Peak switch current in IC
4.	Iin Avg	2.471 A	Current	Average input current
5.	L Ipp	248.55 mA	Current	Peak-to-peak inductor ripple current
6.	M Iavg	2.45 A	Current	MOSFET Average current
7.	M Irms	2.186 A	Current	MOSFET RMS current
8.	BOM Count	11	General	Total Design BOM count
9.	FootPrint	236.0 mm ²	General	Total Foot Print Area of BOM components
10.	Frequency	1.148 MHz	General	Switching frequency
11.	IC Tolerance	20.0 mV	General	IC Feedback Tolerance

#	Name	Value	Category	Description
12.	M Vds Act	287.781 mV	General	Voltage drop across the MosFET
13.	Pout	6.0 W	General	Total output power
14.	Total BOM	\$1.85	General	Total BOM Cost
15.	D1 Tj	56.371 degC	Op_Point	D1 junction temperature
16.	Low Freq Gain	72.34 dB	Op_Point	Gain at 10Hz
17.	Vout Actual	12.078 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
18.	Vout OP	12.0 V	Op_Point	Operational Output Voltage
19.	Cross Freq	4.977 kHz	Op_point	Bode plot crossover frequency
20.	Duty Cycle	79.588 %	Op_point	Duty cycle
21.	Efficiency	80.928 %	Op_point	Steady state efficiency
22.	Gain Marg	-13.635 dB	Op_point	Bode Plot Gain Margin
23.	IC Tj	79.358 degC	Op_point	IC junction temperature
24.	ICThetaJA	44.5 degC/W	Op_point	IC junction-to-ambient thermal resistance
25.	IOUT_OP	500.0 mA	Op_point	Iout operating point
26.	Phase Marg	71.781 deg	Op_point	Bode Plot Phase Margin
27.	VIN_OP	3.0 V	Op_point	Vin operating point
28.	Vout p-p	18.449 mV	Op_point	Peak-to-peak output ripple voltage
29.	Cin Pd	25.74 µW	Power	Input capacitor power dissipation
30.	Cout Pd	4.403 mW	Power	Output capacitor power dissipation
31.	Diode Pd	213.707 mW	Power	Diode power dissipation
32.	IC Pd	996.811 mW	Power	IC power dissipation
33.	L Pd	198.186 mW	Power	Inductor power dissipation
34.	Total Pd	1.414 W	Power	Total Power Dissipation
35.	Vout Tolerance	3.471 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	500.0 m	Maximum Output Current
2.	VinMax	3.5	Maximum input voltage
3.	VinMin	3.0	Minimum input voltage
4.	Vout	12.0	Output Voltage
5.	base_pn	TPS61175	Texas Instruments Base Part Number
6.	source	DC	Input Source Type
7.	ta	35.0	Ambient temperature

Design Assistance

1. TPS61175 Product Folder : <http://www.ti.com/product/TPS61175> : contains the data sheet and other resources.

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