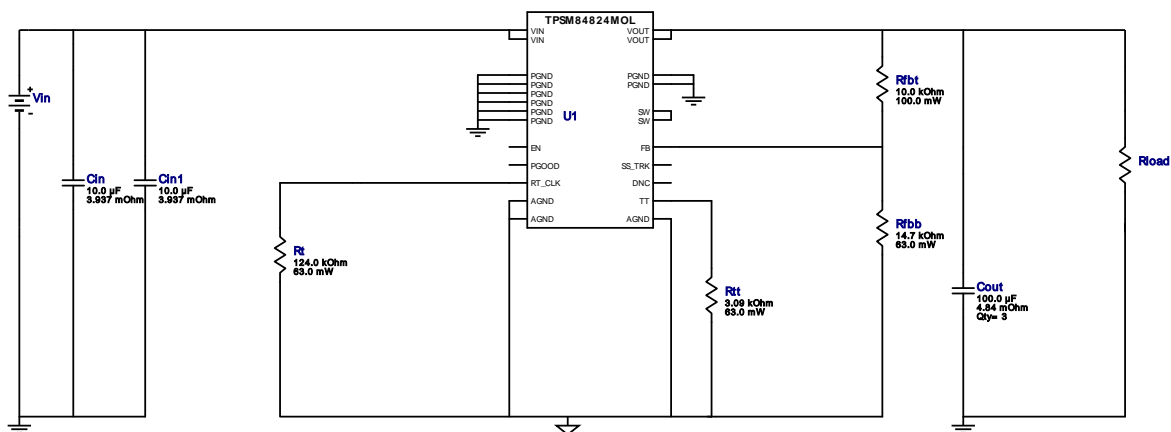


WEBENCH® Design Report

Design : 1269753/1 TPSM84824MOLR
TPSM84824MOLR 5.0V-5.0V to 1.00V @ 8.0A

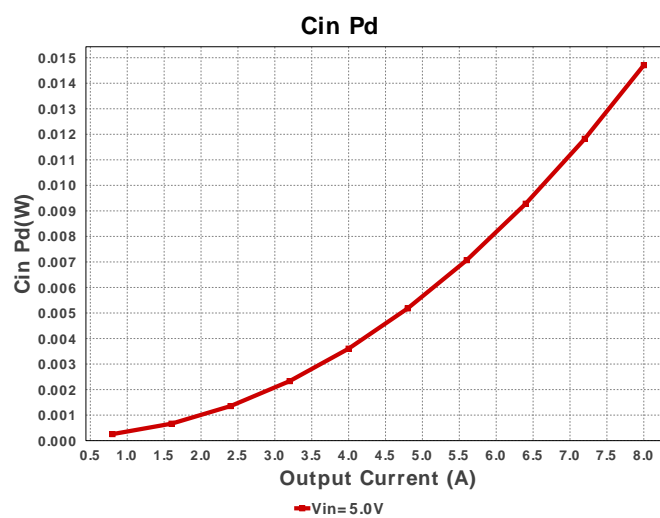
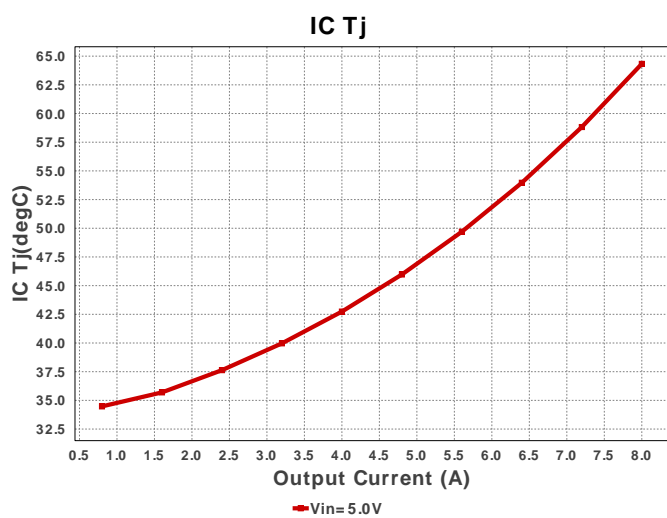
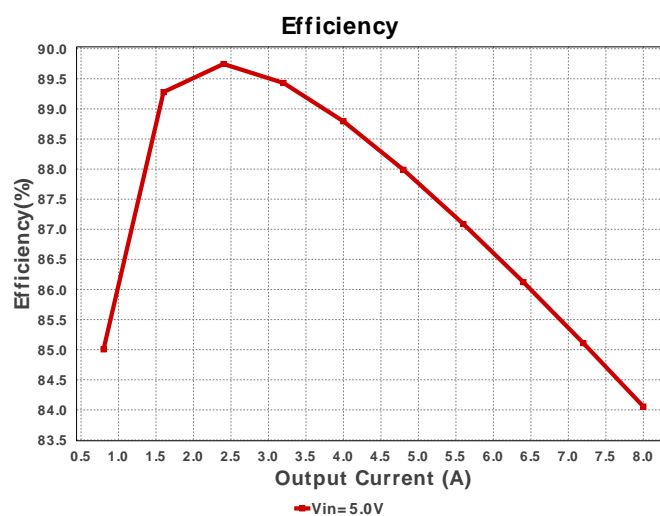
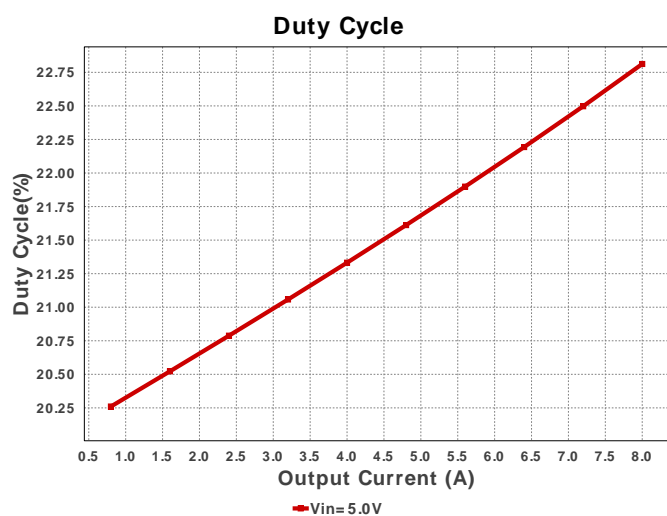
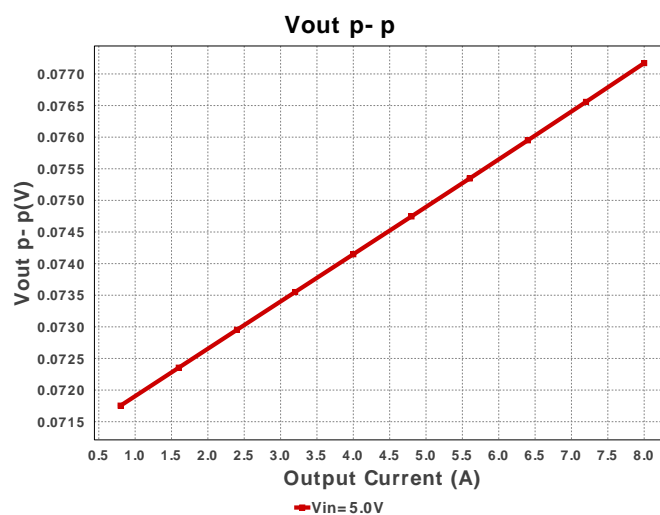
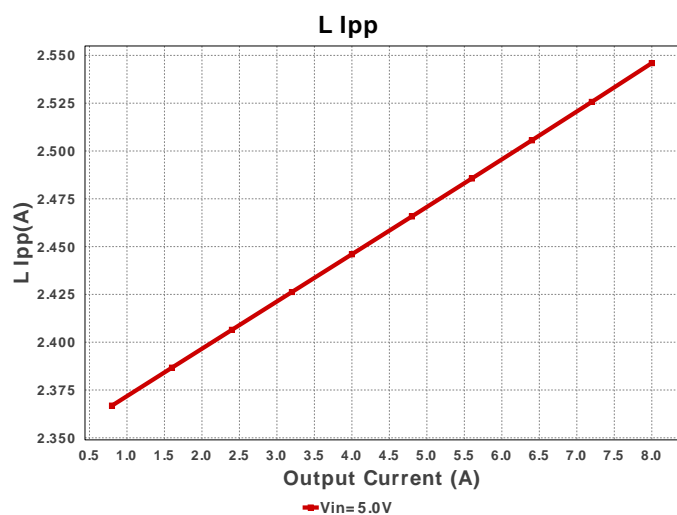
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VinMax = 5.0V
Vout = 1.0V
Vout Sch = 1.0V
Iout = 8.0A

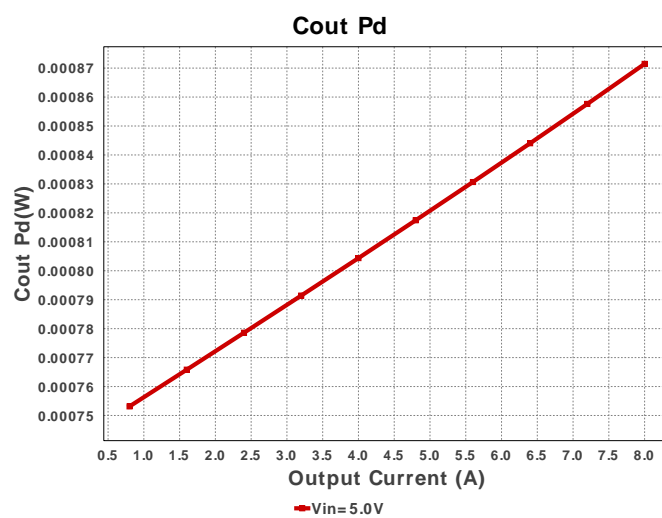
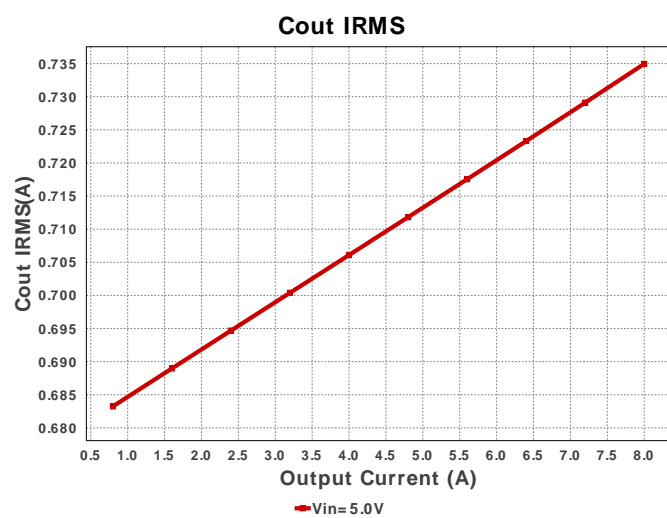
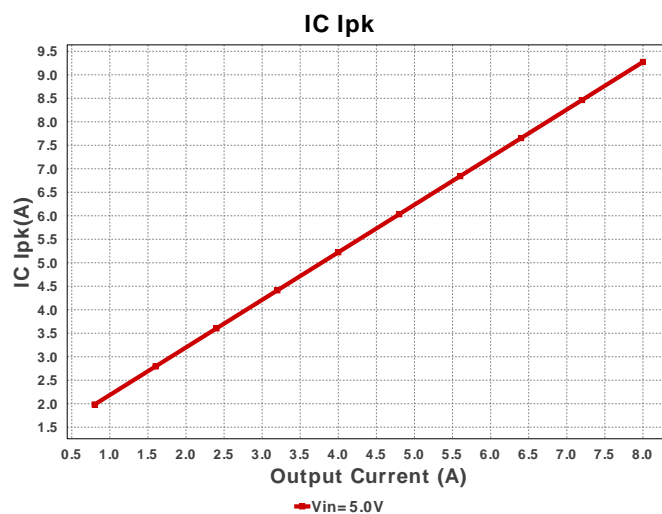
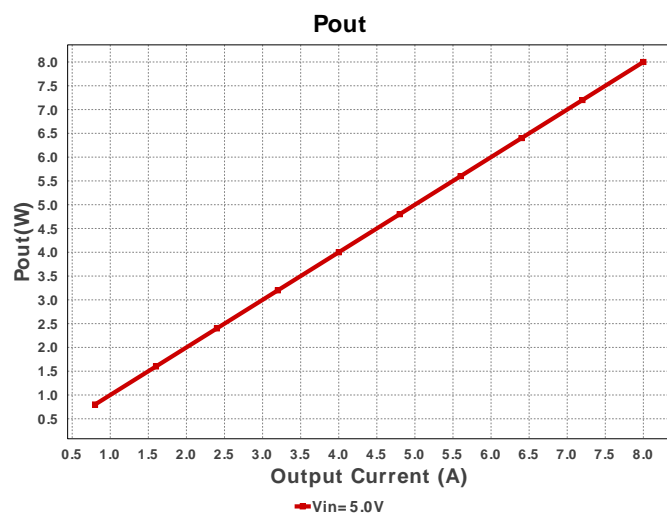
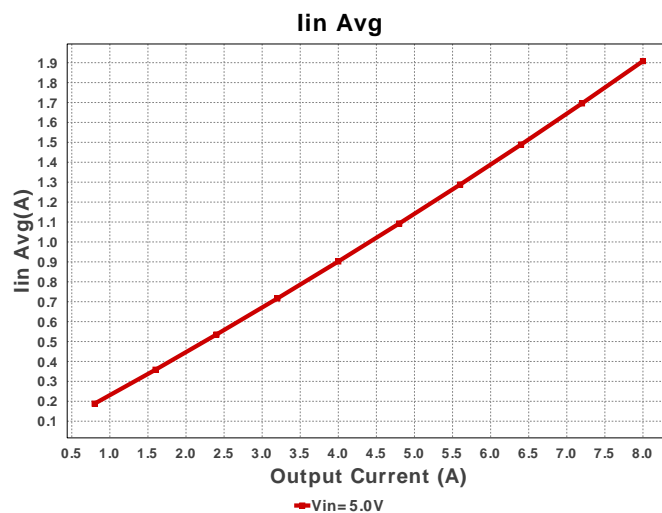
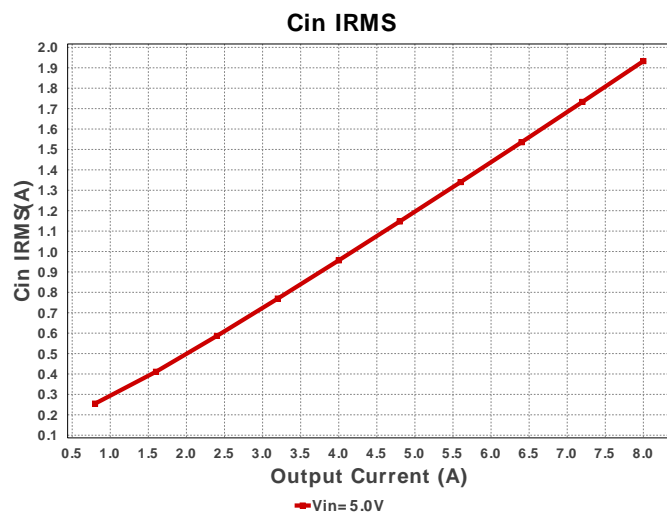
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Topology = Buck
Created = 2018-02-12 01:04:20.719
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BOM Count = 10
Total Pd = 1.52W

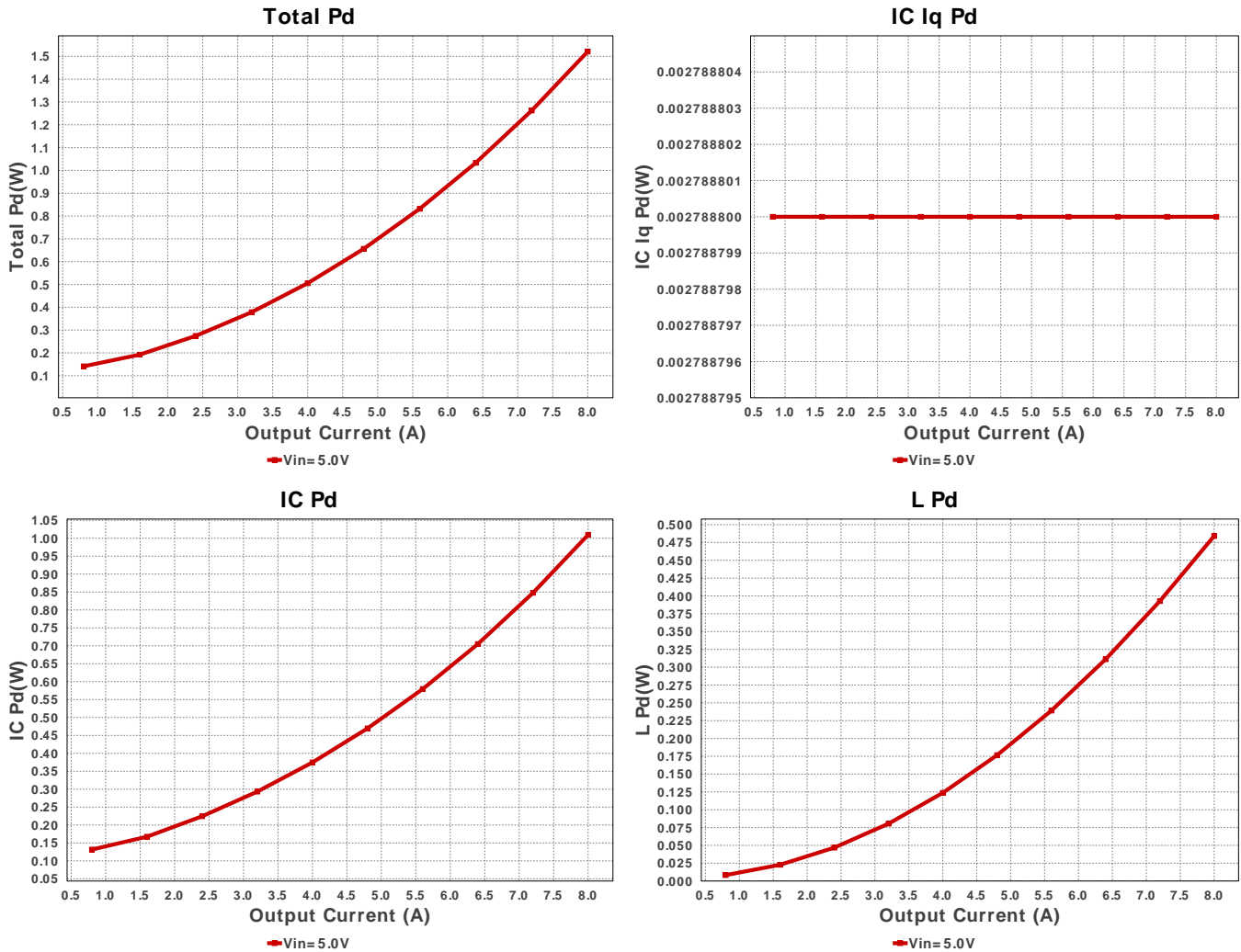


Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	MuRata	GRM219R61A106KE44D Series= X5R	Cap= 10.0 uF ESR= 3.937 mOhm VDC= 10.0 V IRMS= 2.7713 A	1	\$0.03	0805 7 mm ²
2.	Cin1	MuRata	GRM219R61A106KE44D Series= X5R	Cap= 10.0 uF ESR= 3.937 mOhm VDC= 10.0 V IRMS= 2.7713 A	1	\$0.03	0805 7 mm ²
3.	Cout	MuRata	GRM31CR60G107ME39L Series= X5R	Cap= 100.0 uF ESR= 4.84 mOhm VDC= 4.0 V IRMS= 4.3381 A	3	\$0.16	1206_190 11 mm ²
4.	Rfbb	Vishay-Dale	CRCW040214K7FKED Series= CRCW..e3	Res= 14.7 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
5.	Rfbb	Susumu Co Ltd	RR1220P-103-D Series= RR12	Res= 10.0 kOhm Power= 100.0 mW Tolerance= 0.5%	1	\$0.01	0805 7 mm ²
6.	Rt	Vishay-Dale	CRCW0402124KFKED Series= CRCW..e3	Res= 124.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
7.	Rtt	Vishay-Dale	CRCW04023K09FKED Series= CRCW..e3	Res= 3.09 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
8.	U1	Texas Instruments	TPSM84824MOLR	Switcher	1	\$4.95	MOL0024A 90 mm ²







Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	1.933 A	Current	Input capacitor RMS ripple current
2.	Cout IRMS	734.958 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	9.273 A	Current	Peak switch current in IC
4.	Iin Avg	1.908 A	Current	Average input current
5.	L Ipp	2.546 A	Current	Peak-to-peak inductor ripple current
6.	BOM Count	10	General	Total Design BOM count
7.	FootPrint	152.0 mm ²	General	Total Foot Print Area of BOM components
8.	Frequency	401.037 kHz	General	Switching frequency
9.	Mode	CCM	General	Conduction Mode
10.	Pout	8.0 W	General	Total output power
11.	Total BOM	\$5.53	General	Total BOM Cost
12.	ICThetaJA Effective	34.0 degC/W	Op_Point	Effective IC Junction-to-Ambient Thermal Resistance
13.	Vout Actual	1.008 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
14.	Vout OP	1.0 V	Op_Point	Operational Output Voltage
15.	Duty Cycle	22.812 %	Op_point	Duty cycle
16.	Efficiency	84.056 %	Op_point	Steady state efficiency
17.	IC Tj	64.327 degC	Op_point	IC junction temperature
18.	IOUT_OP	8.0 A	Op_point	Iout operating point
19.	VIN_OP	5.0 V	Op_point	Vin operating point
20.	Vout p-p	77.724 mV	Op_point	Peak-to-peak output ripple voltage
21.	Cin Pd	14.705 mW	Power	Input capacitor power dissipation
22.	Cout Pd	871.464 μ W	Power	Output capacitor power dissipation
23.	IC Iq Pd	2.789 mW	Power	IC Iq Pd
24.	IC Pd	1.01 W	Power	IC power dissipation
25.	L Pd	484.051 mW	Power	Inductor power dissipation
26.	Total Pd	1.521 W	Power	Total Power Dissipation
27.	Vout Tolerance	2.29 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	8.0	Maximum Output Current
2.	VinMax	5.0	Maximum input voltage
3.	VinMin	5.0	Minimum input voltage
4.	Vout	1.0	Output Voltage
5.	base_pn	TPSM84824	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature
1.	Vout Sch	1.0	Output voltage selected

Design Assistance

1. **TPSM84824** Product Folder : <http://www.ti.com/product/TPSM84824> : contains the data sheet and other resources.

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