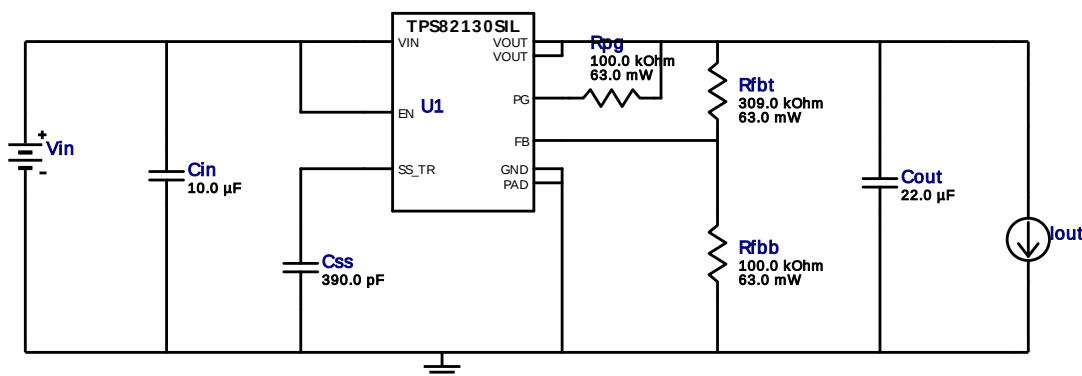


WEBENCH® Design Report

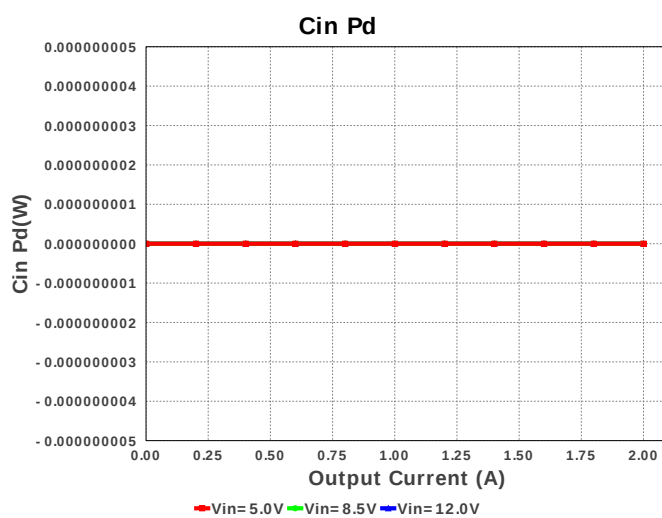
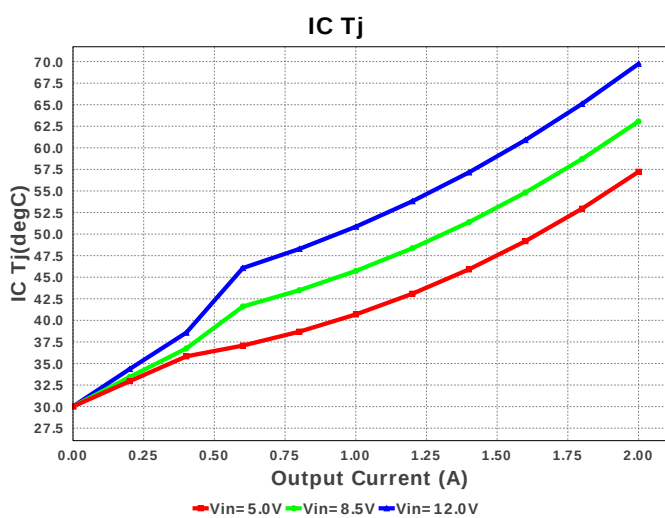
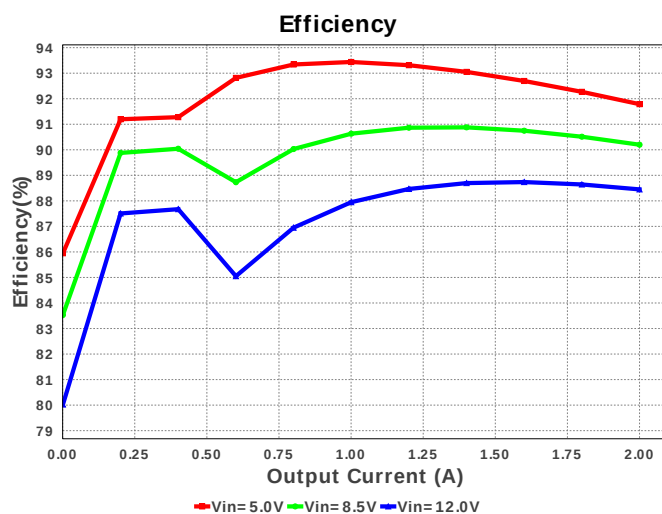
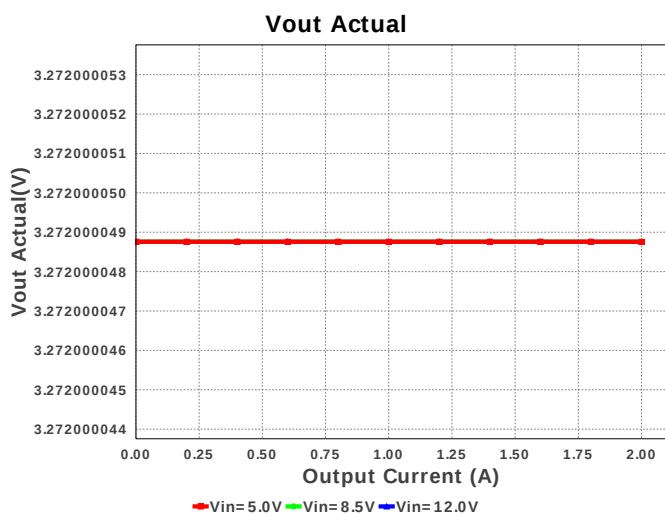
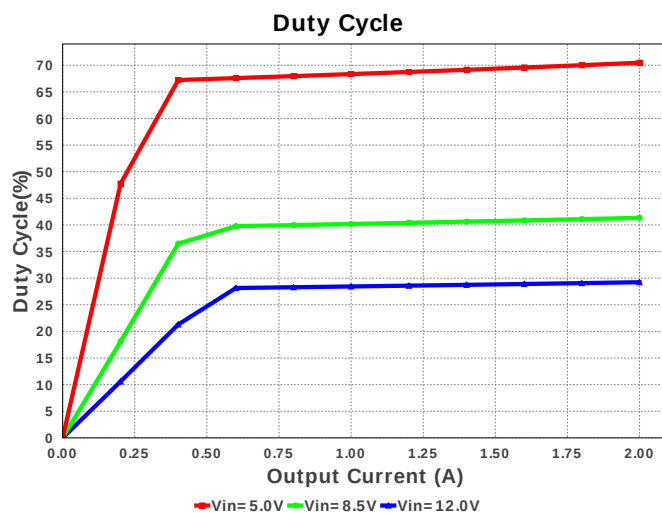
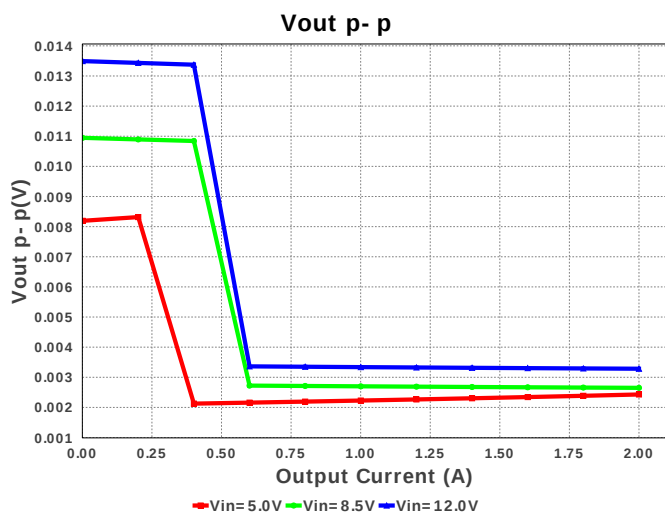
Design : 4077713/25 TPS82130SILR
TPS82130SILR 5.0V-12.0V to 3.30V @ 2.0A

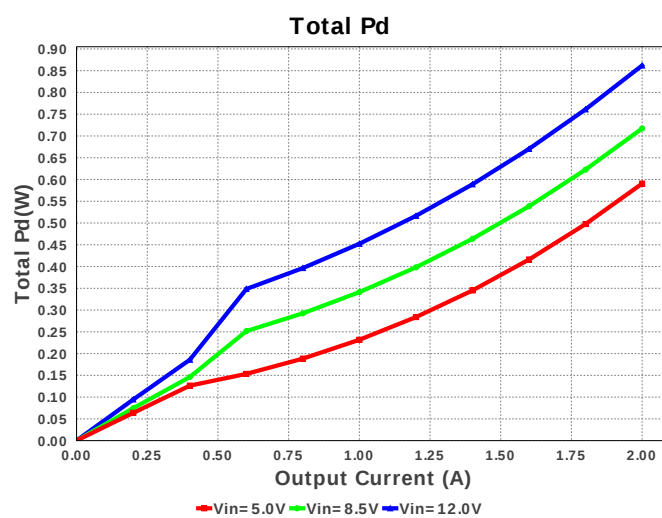
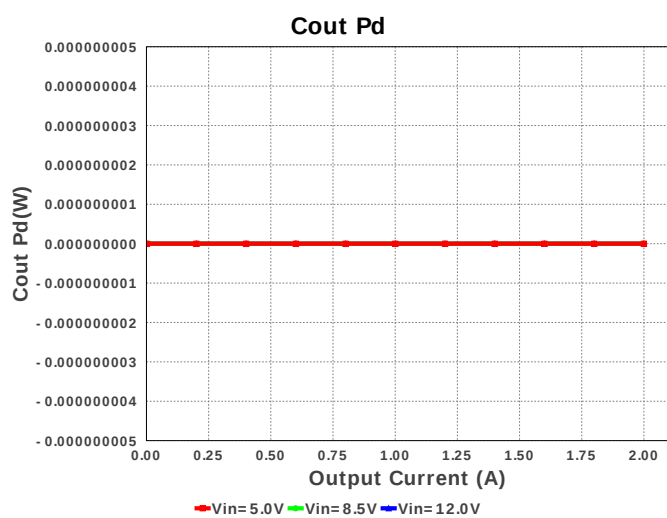
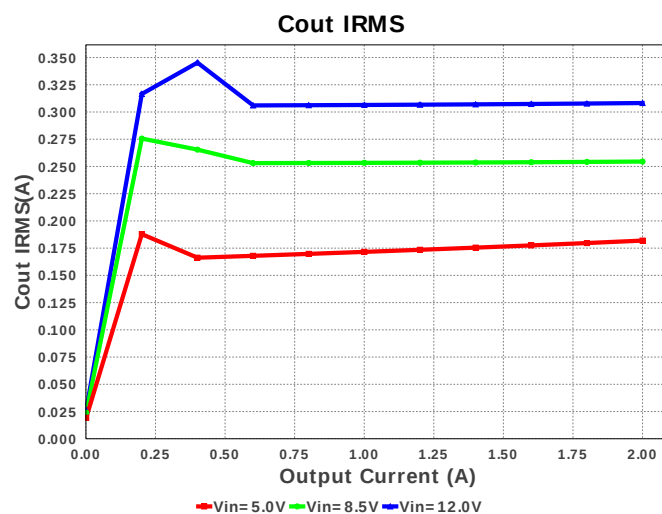
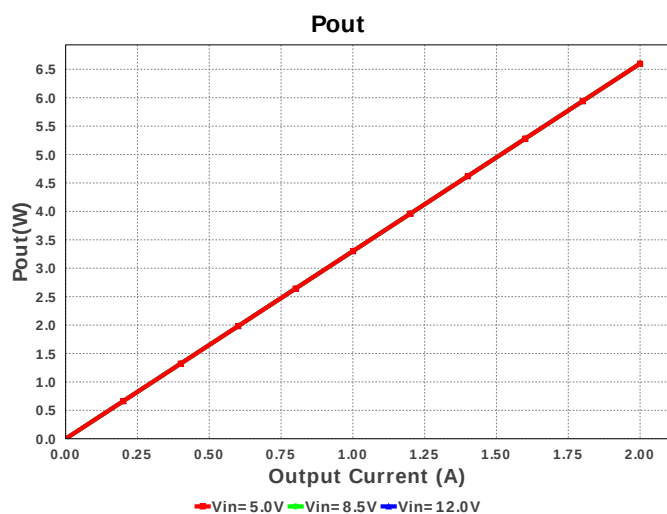
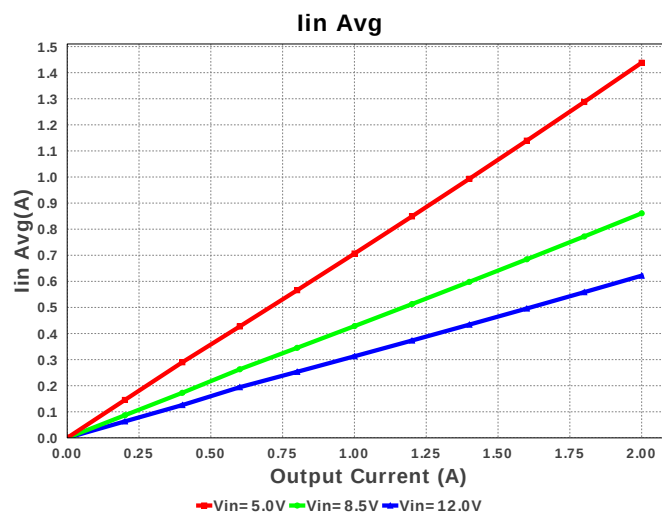
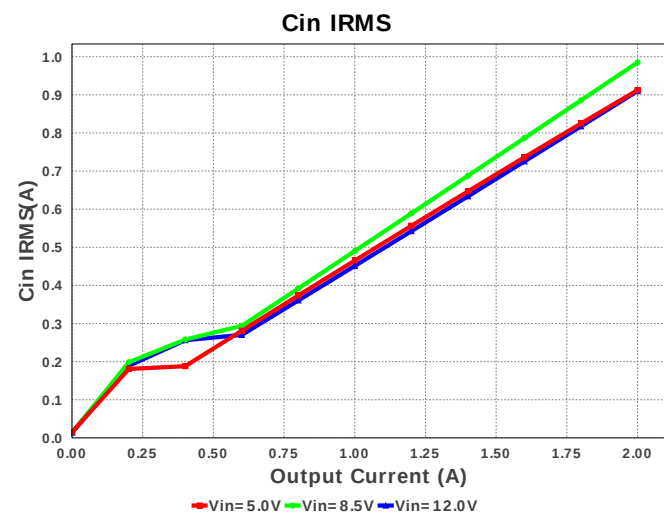
Vout = 3.3V
Iout = 2.0A

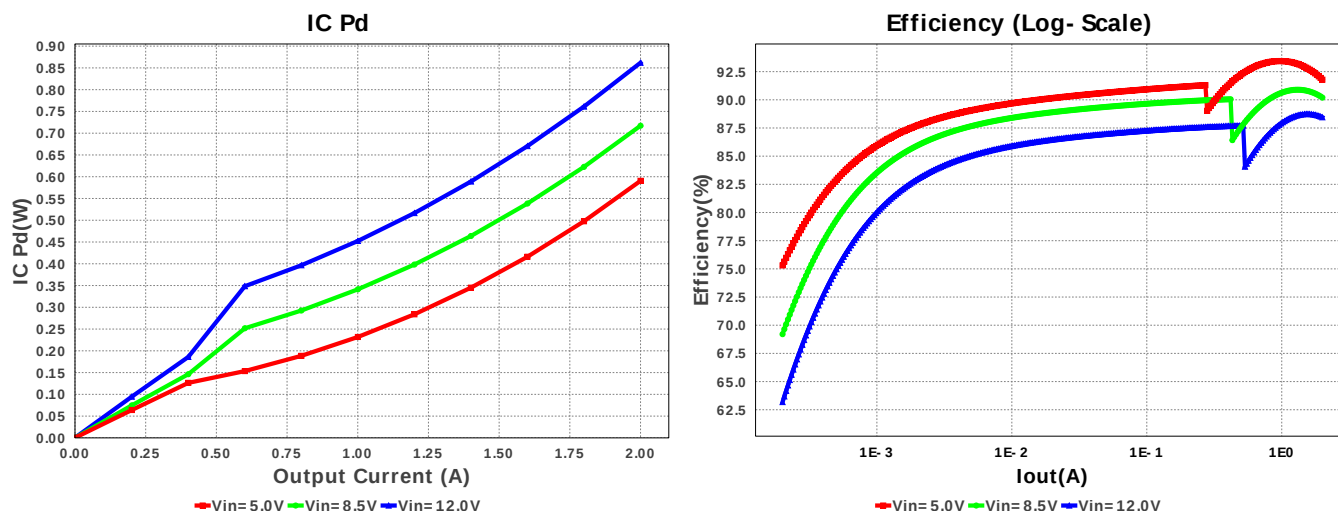


Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	Taiyo Yuden	TMK316BJ106KL-T Series= X5R	Cap= 10.0 uF VDC= 25.0 V IRMS= 0.0 A	1	\$0.05	 1206 11 mm ²
2.	Cout	Taiyo Yuden	JMK212BJ226MG-T Series= X5R	Cap= 22.0 uF VDC= 6.3 V IRMS= 0.0 A	1	\$0.05	 0805 7 mm ²
3.	Css	Yageo America	CC0805KRX7R9BB391 Series= X7R	Cap= 390.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm ²
4.	Rfbb	Vishay-Dale	CRCW0402100KFKED Series= CRCW..e3	Res= 100.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
5.	Rfbt	Vishay-Dale	CRCW0402309KFKED Series= CRCW..e3	Res= 309.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
6.	Rpg	Vishay-Dale	CRCW0402100KFKED Series= CRCW..e3	Res= 100.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
7.	U1	Texas Instruments	TPS82130SILR	Switcher	1	\$2.35	 SIL0008D_SMD 15 mm ²







Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	909.743 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	308.235 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	621.83 mA	Current	Average input current
4.	BOM Count	7	General	Total Design BOM count
5.	FootPrint	49.0 mm ²	General	Total Foot Print Area of BOM components
6.	Frequency	2.166 MHz	General	Switching frequency
7.	Pout	6.6 W	General	Total output power
8.	Total BOM	\$2.49	General	Total BOM Cost
9.	ICThetaJA Effective	46.1 degC/W	Op_Point	Effective IC Junction-to-Ambient Thermal Resistance
10.	Vout Actual	3.272 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
11.	Vout OP	3.3 V	Op_Point	Operational Output Voltage
12.	Duty Cycle	29.241 %	Op_point	Duty cycle
13.	Efficiency	88.449 %	Op_point	Steady state efficiency
14.	IC Tj	69.734 degC	Op_point	IC junction temperature
15.	IOUT_OP	2.0 A	Op_point	Iout operating point
16.	VIN_OP	12.0 V	Op_point	Vin operating point
17.	Vout p-p	3.284 mV	Op_point	Peak-to-peak output ripple voltage
18.	Cin Pd	0.0 W	Power	Input capacitor power dissipation
19.	Cout Pd	0.0 W	Power	Output capacitor power dissipation
20.	IC Pd	861.909 mW	Power	IC power dissipation
21.	Total Pd	861.931 mW	Power	Total Power Dissipation
22.	Vout Tolerance	4.445 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	2.0	Maximum Output Current
2.	VinMax	12.0	Maximum input voltage
3.	VinMin	5.0	Minimum input voltage
4.	Vout	3.3	Output Voltage
5.	base_pn	TPS82130	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature

Design Assistance

- Feature Highlights: DCS-Control(TM) Architecture with up to 3A output current, Power module with integrated inductor, 3V to 17V Input Voltage Range, Adjustable output voltage from 0.9V to 5V, Optional softstart capacitor for slow startup, Power Save Mode for light load efficiency, 100% duty cycle for lowest dropout, PG=Low when device is in shutdown through EN or Thermal Shutdown
- TPS82130 Product Folder** : <http://www.ti.com/product/TPS82130> : contains the data sheet and other resources.

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