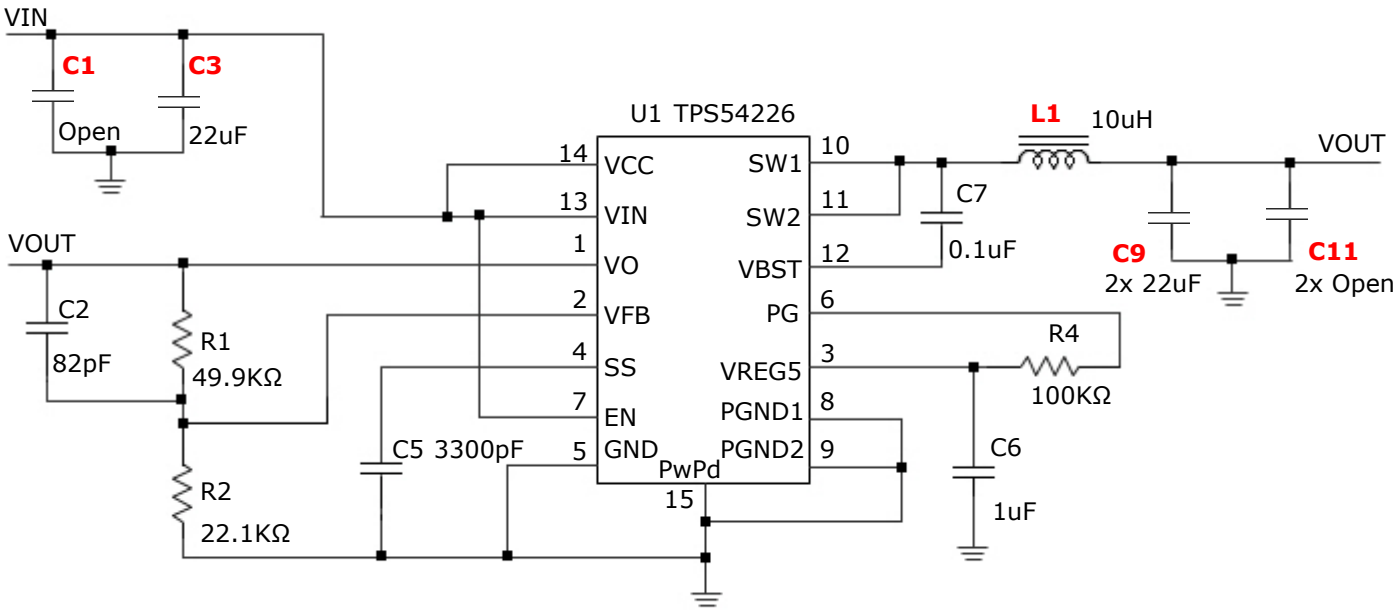
SwitcherPro Design Report
Schematic

Design Name: TPS54226-2.5V **Part:** TPS54226

VinMin: 11V **VinMax:** 13V **Vout:** 2.5V **Iout:** 0.15A



This device uses Eco-modeTM to enhance efficiency at lower output currents. Switcherpro does not currently model Eco-modeTM operation. Efficiency data is provided only for output currents above the Eco-modeTM operating threshold.

SwitcherPro Design Report
Analysis - Main

Design Name: TPS54226-2.5V **Part:** TPS54226

VinMin: 11V **VinMax:** 13V **Vout:** 2.5V **Iout:** 0.15A

Parameter Units-Symbol	User Input Minimum	User Input Nominal	User Input Maximum	Default Input Minimum	Default Input Nominal	Default Input Maximum	Calculated Minimum	Calculated Nominal	Calculated Maximum
Input Voltage Volts - V	11.00	-	13.00	-	-	-	-	-	-
Input Ripple mVp-p - mVp-p	-	-	-	-	-	260	-	-	3.6
UVLO(Start) Volts - V	-	-	-	-	-	-	-	3.80	-
UVLO(Stop) Volts - V	-	-	-	-	-	-	-	-	-
Switching Frequency KHz - KHz	-	-	-	-	700	-	-	-	-
Slow Start ms - ms	-	-	-	-	12.38	-	-	-	-
Estimated PCB Area mm² - mm²	-	-	-	-	-	-	-	332	-
Max Component Height mm - mm	-	-	-	-	-	25	-	-	4

SwitcherPro Design Report
Analysis - Output1

Design Name: TPS54226-2.5V **Part:** TPS54226

VinMin: 11V **VinMax:** 13V **Vout:** 2.5V **Iout:** 0.15A

Parameter Units-Symbol	User Input Minimum	User Input Nominal	User Input Maximum	Default Input Minimum	Default Input Nominal	Default Input Maximum	Calculated Minimum	Calculated Nominal	Calculated Maximum
Output Voltage Volts - V	-	2.500	-	-	-	-	2.434	-	2.552
Output Ripple mVp-p - mVp-p	-	-	-	-	-	50	-	-	3.1
Output Current Amps - A	-	-	0.150	0.001	-	-	-	-	-
Inductor Peak to Peak Current Amps - A	-	-	-	-	-	-	0.348	-	0.364
Current Limit Threshold Amps - A	-	-	-	-	0.225	-	-	-	-
Gain Margin dB - dB	--	-	-	--	-	-	-	-	-
Phase Margin Deg. - Deg.	--	-	-	--	-	-	-	-	-
Upper FET RDSon mOhms - mΩ	-	-	-	-	-	-	161	-	161
Lower FET RDSon mOhms - mΩ	-	-	-	-	-	-	110	-	110
Duty Cycle % - %	-	-	-	-	-	-	19.4	-	23.0
On Time Min (switch) ns - ns	-	-	-	-	-	-	-	-	-
Cross Over Frequency KHz - KHz	-	-	-	-	-	-	-	-	-

SwitcherPro Design Report
Stress Results

Design Name: TPS54226-2.5V **Part:** TPS54226

VinMin: 11V **VinMax:** 13V **Vout:** 2.5V **Iout:** 0.15A

Device	Rated Voltage	Calculated Voltage	Rated Current (RMS)	Calculated Current (RMS)	Error Message	Power	Calculated Max Temp
C3 (High Freq. Input Cap)	25V	13.1V	10A	79mA	-	13uW	-
C9 (Bulk Output Cap)	6.3V	2.51V	2A	52mA	-	66uW	-
L1 (Output Inductor)	-	-	3.2A	0.18A	-	2mW	-
U1 (Converter)	25V	13.1V	2.2A	0.18A	-	48mW	26°C

SwitcherPro Design Report
Efficiency

Design Name: TPS54226-2.5V **Part:** TPS54226

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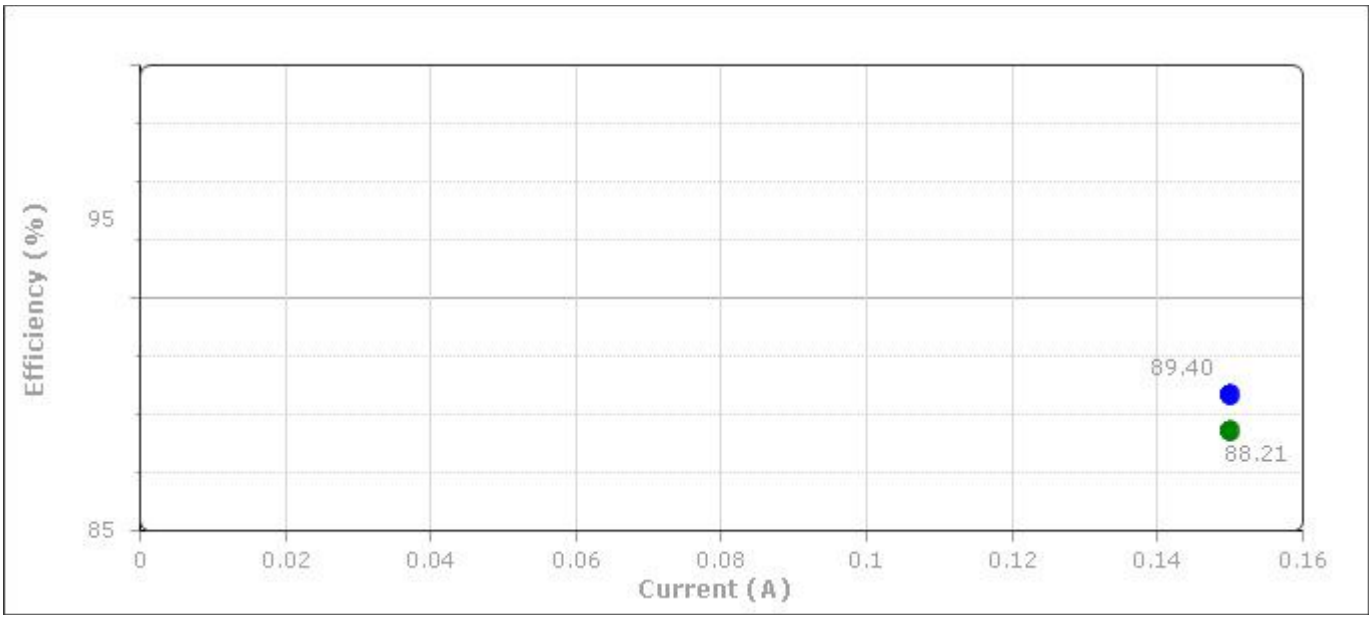

Efficiency For Vin Max
Efficiency For Vin Min

SwitcherPro Design Report
Bill of Materials

Design Name: TPS54226-2.5V **Part:** TPS54226

VinMin: 11V **VinMax:** 13V **Vout:** 2.5V **Iout:** 0.15A

Name	Quantity	Part Number	Description	Manufacturer	Package	Area(mm²)	Height(mm)
C2	1	Standard	Capacitor, Ceramic, 82pF, 35V, 10%	Standard	0603	2	1
C3	1	GRM32ER71E226KE15L	Capacitor, 8, 22uF, 25V, 10%	Murata Manufacturing	1210	8	2
C5	1	Standard	Capacitor, Ceramic, 3300pF, 35V, 10%	Standard	0805	3	1
C6	1	Standard	Capacitor, Ceramic, 1uF, 63V, 10%	Standard	1210	8	1
C7	1	Standard	Capacitor, Ceramic, 0.1uF, 20V, 10%	Standard	0603	2	1
C9	2	C3216X5R0J226M	Capacitor, Ceramic, 22uF, 6.3V, 20%	TDK	C3216 1206	7	1
L1	1	SDR1045-100M	Inductor, 10uH, 3.2A, 64mΩ	Bourns	SDR1045	100	4
R1	1	Standard	Resistor, SurfaceMount, 49.9KΩ, 100mW, 1%	Standard	0603	2	1
R2	1	Standard	Resistor, SurfaceMount, 22.1KΩ, 100mW, 1%	Standard	0603	2	1
R4	1	Standard	Resistor, SurfaceMount, 100KΩ, 100mW, 1%	Standard	0603	2	1
U1	1	TPS54226	IC, Converter, 14 pins	Texas Instruments, Inc.	14-HTSSOP	33	1

SwitcherPro Design Report
Layout

Design Name: TPS54226-2.5V **Part:** TPS54226

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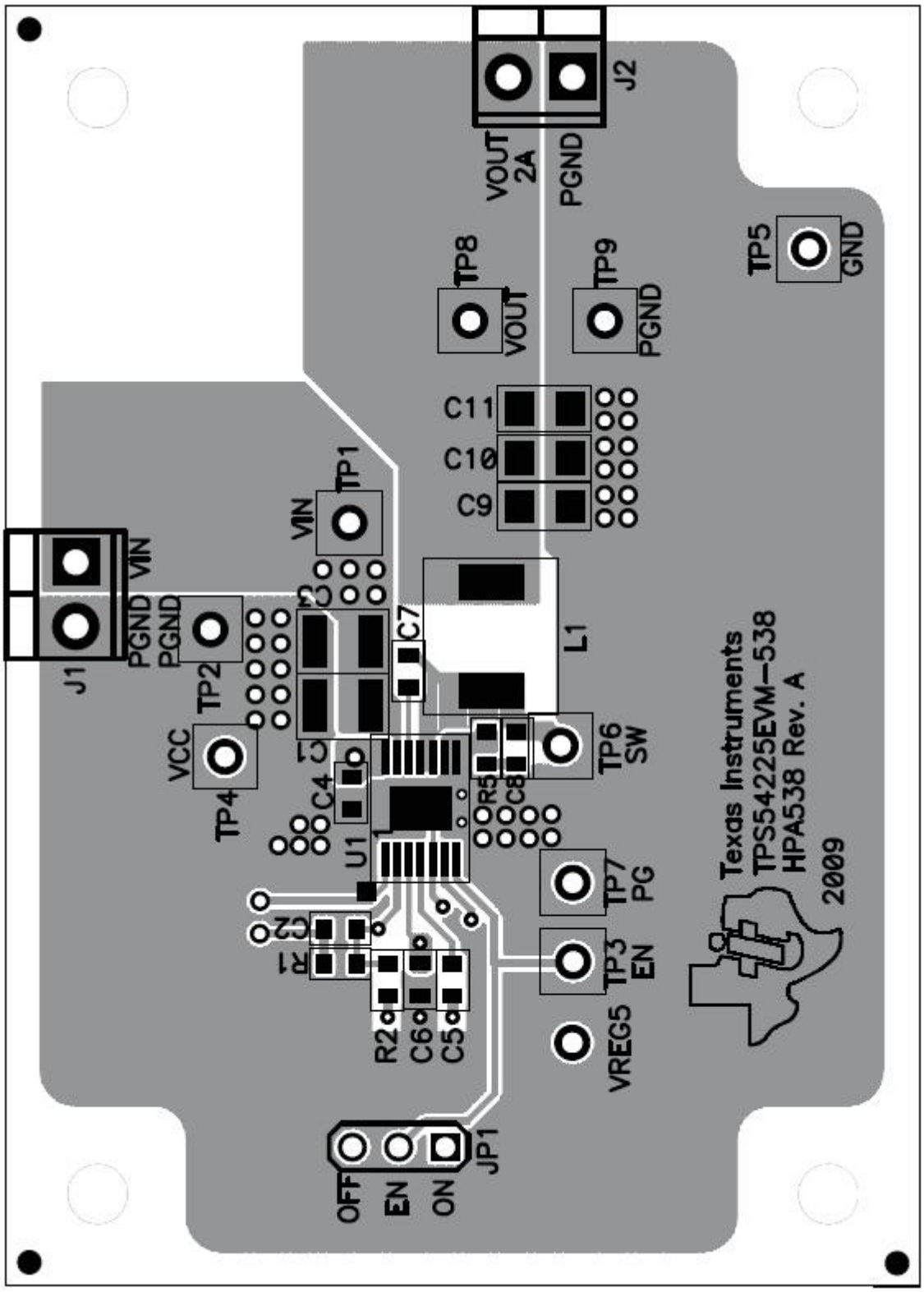

TPS54225

The board layout for the TPS54225EVM-538 and is shown. The top layer contains the main power traces for VIN, VO and ground. Also on the top layer are connections for the pins of the TPS54225 and a large area filled with ground. Many of the signal traces are also located on the top side. The input decoupling capacitor are located as close to the IC as possible. The input and output connectors, test points and most of the components are located on the top side. R3, the 0-Ω resistor that connects VIN to VCC and R4, the power good pull up, are located on the back side. Analog ground and power ground are connected at a single point on the top layer near pin 5 of the TPS54225. The internal layer 1 is a split plane containing analog and power grounds. The internal layer 2 is primarily power ground. There are also a fill area of VIN and a trace routing VCC to the enable control jumper JP1. The bottom layer is primarily analog ground. There are also traces to connect VIN to VCC through R3, traces for the power good signal and the feedback trace from VOUT to the voltage setpoint divider network.