LM2735X 5-Pin SOT23 Demo Board

National Semiconductor
Application Note 1664
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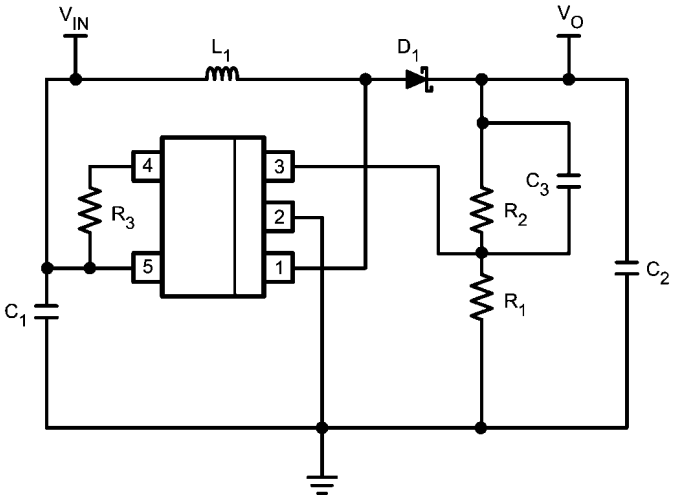
Introduction

The demo board included in this shipment uses the LM2735X 1.6MHz DC-DC switching regulator that converts 3V to 5.5V input to 12V output for up to 500mA load current depending on Vin. This is a 2-layer board using the bottom layer as a Ground plane.

A bill of materials below describes the parts used on this demo board. A schematic and layout have also been included below along with measured performance characteristics. The above restrictions for the input voltage are valid only for the demo board as shipped with the demo board schematic below.

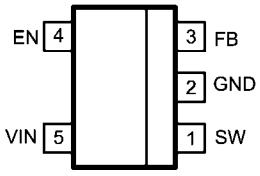
Operating Conditions

V_{IN} = 3V to 5.5V
V_O = 12V
I_O_max @ 3Vin = 300mA
I_O_max @ 5Vin = 500mA



LM2735X 5-Pin SOT Schematic

Pin-Out



Top View

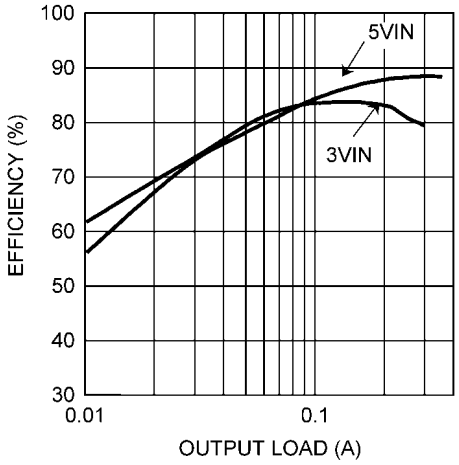
Pin Description for 5-Pin SOT23

Pin	Name	Function
1	SW	Output switch. Connect to the inductor, output diode.
2	GND	Signal and power ground pin. Place the bottom resistor of the feedback network as close as possible to this pin.
3	FB	Feedback pin. Connect FB to external resistor divider to set output voltage.
4	EN	Shutdown control input. Logic high enables operation. Do not allow this pin to float or be greater than VIN + 0.3V.
5	VIN	Supply voltage for power stage, and Input supply voltage.

Bill of Materials

Part ID	Part Value	Manufacturer	Part Number
U1	2.1A Boost Regulator	NSC	LM2735XMF
C1, Input Cap	22µF, 6.3V, X5R	TDK	C2012X5R0J226M
C2 Output Cap	10µF, 25V, X5R	TDK	C3216X5R1E106M
C3 Comp Cap	330pF	TDK	C1608X5R1H331K
D1, Catch Diode	0.4V_f Schottky 1A, 20V_R	ST	STPS120M
L1	6.2µH 3A	Coilcraft	MSS7341-622
R1	10.2kΩ, 1%	Vishay	CRCW06031022F
R2	86.6kΩ, 1%	Vishay	CRCW06038662F
R3	100kΩ, 1%	Vishay	CRCW06031003F

Efficiency



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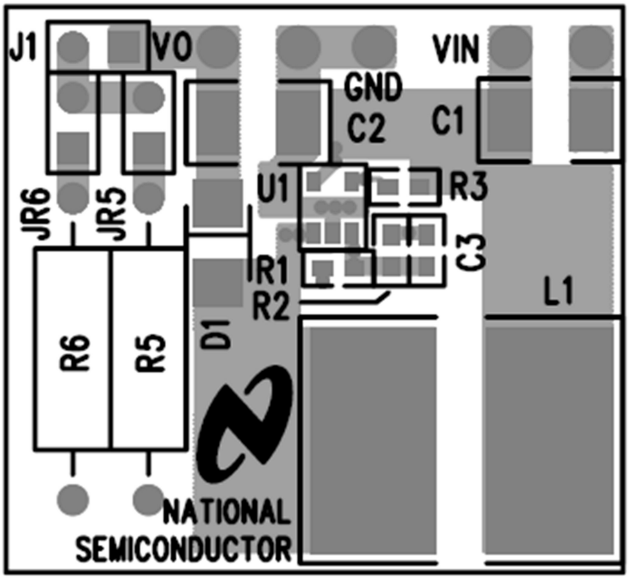
LM2735X η vs Load Current, V_O = 12V

PCB Layout



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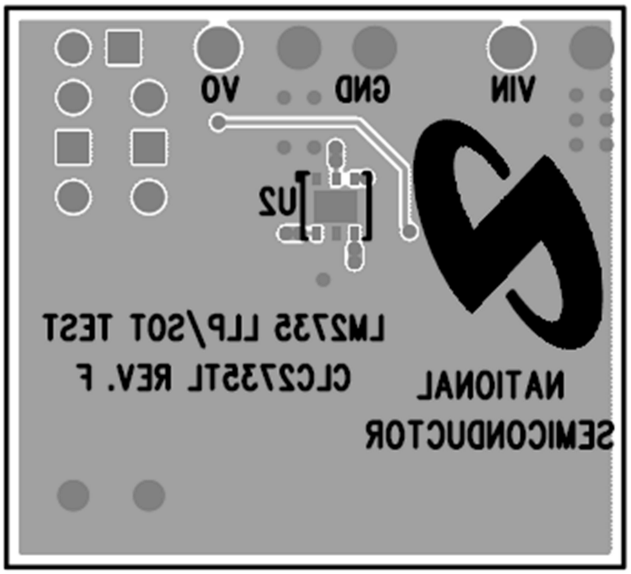
Top Layer



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Bottom Layer

Notes

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