Solved by Sipex

Design Solution # 50

SP6136 Buck Regulator: 3.3V Input to 1.2V @ 0-10A Output

Designed by: Shahin Maloyan

Part Number: SP6136ER1

Application Description: Low-voltage Point-of-Load

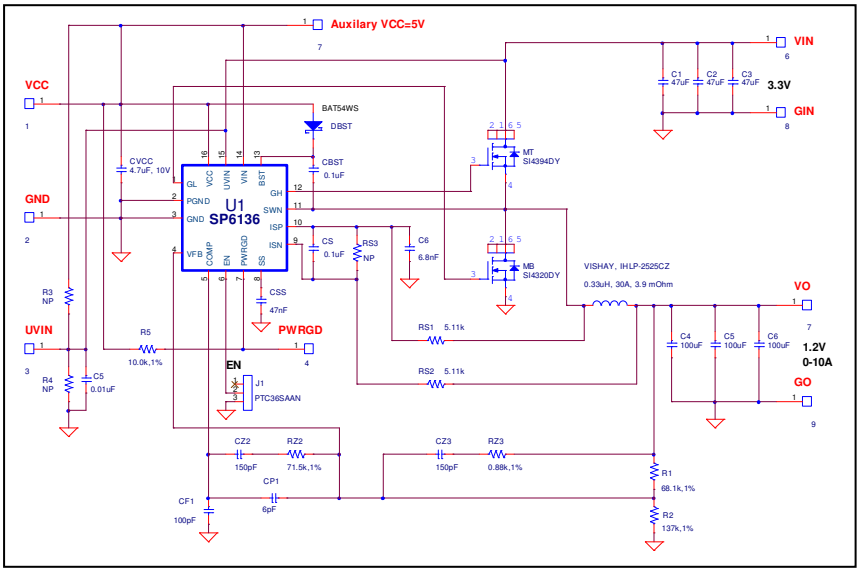
Electrical Requirements:

Input Voltage	3.3V
Output Voltage	1.2V
Output Current	0-10A

Circuit Description:

This buck converter has been designed to provide 1.2V output at 10A for Point-of-Load applications. The SP6136 is a high performance buck regulator controller that provides all necessary functions required by a buck regulator: over-current protection, power-good output, adjustable UVLO and Enable input. High switching frequency (600kHz) minimizes solution cost and size.

This report includes the application schematic complete with component part numbers and figures 1-7 illustrating electrical performance of the design.



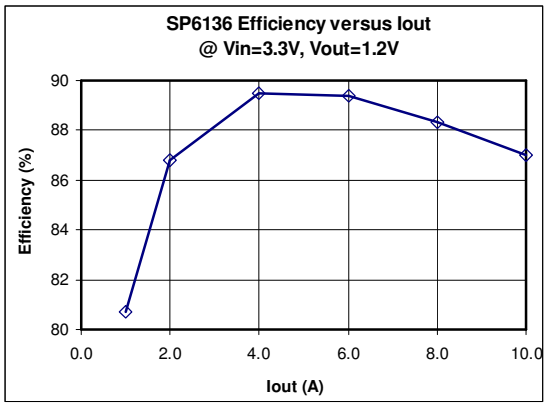


Figure 1: Efficiency Graph

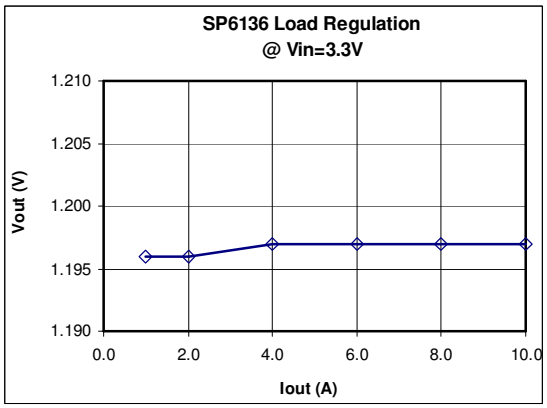


Figure 2: VOUT Regulation Graph

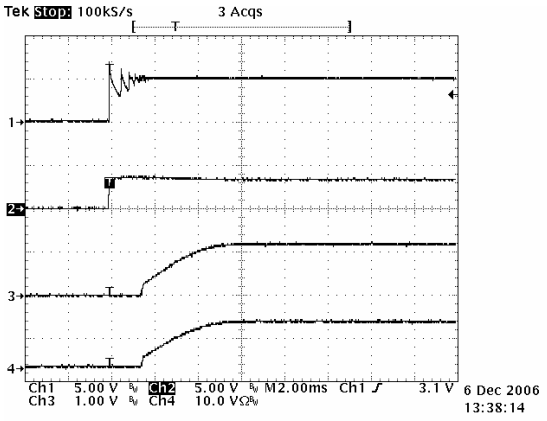


Figure 3. Startup at Io=10A, ch1:VCC, Ch2: Vin, ch3: Vout, ch4: Iout

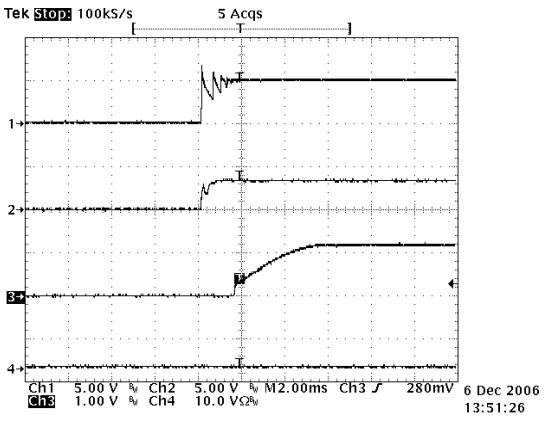


Figure 4. Startup at Io=0A, ch1:VCC, Ch2: Vin, ch3: Vout, ch4: Iout

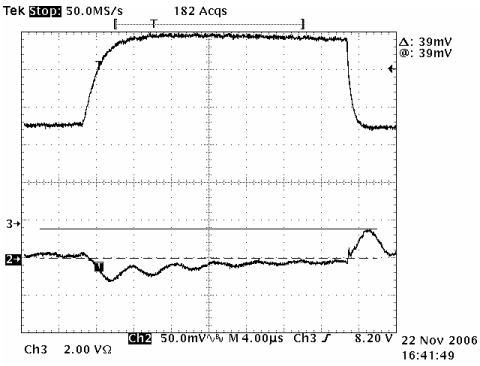


Figure 5. Step load response 5-10A

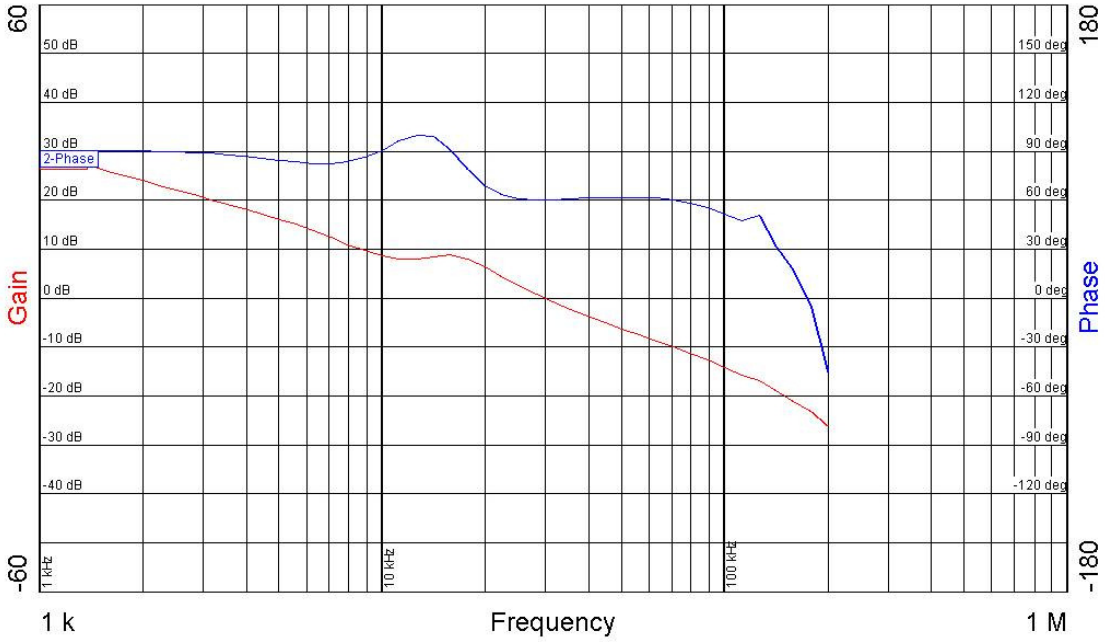


Figure 6. Loop gain-phase plot at Io=10A, fc=30kHz, phase margin=60 degrees

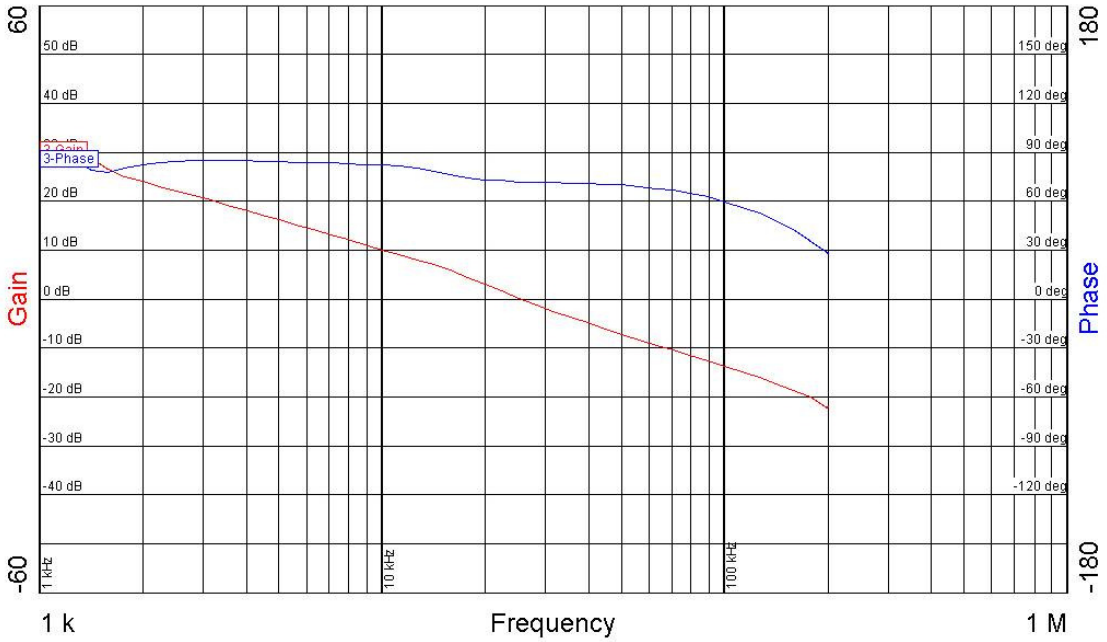
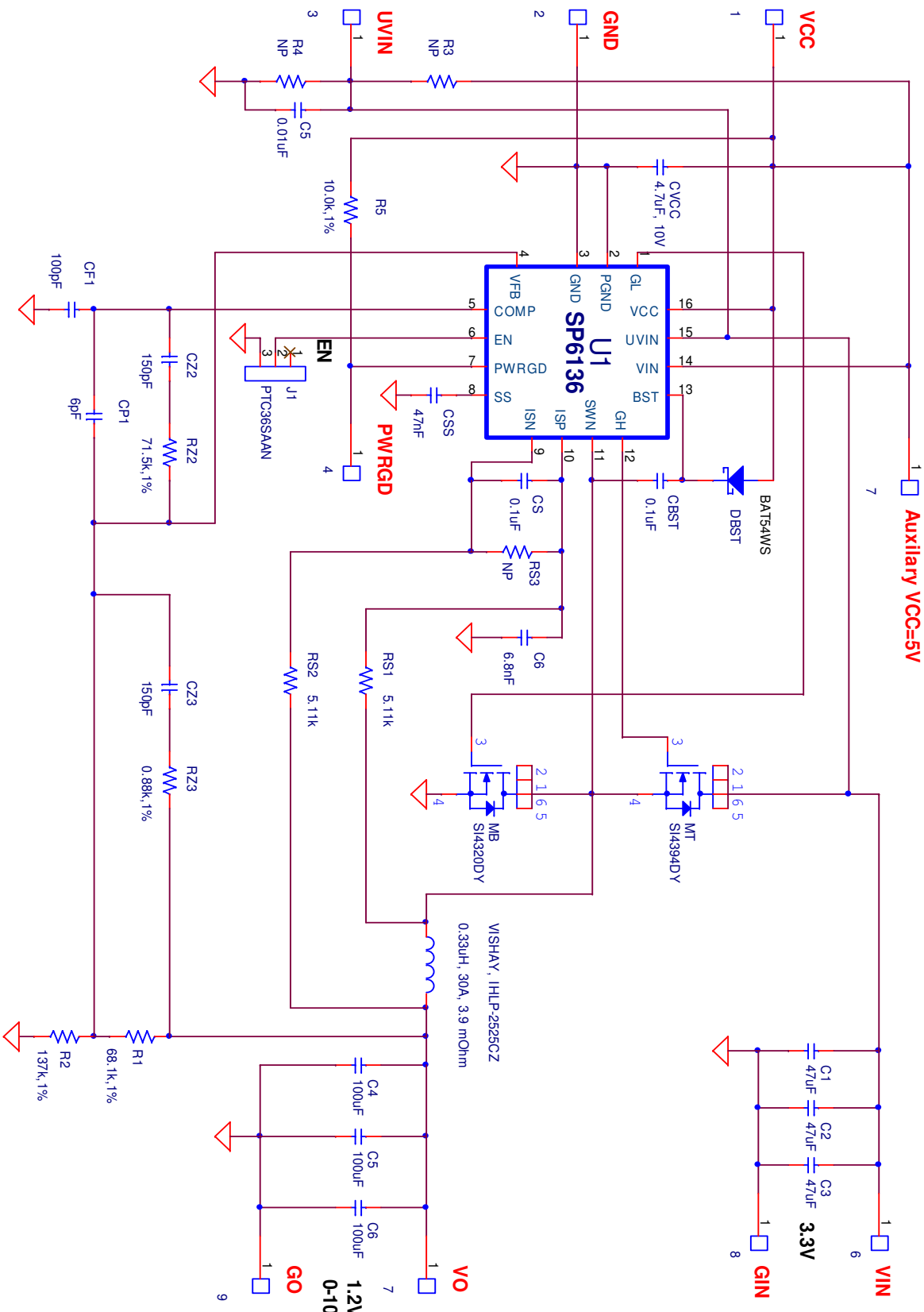


Figure 7. Loop gain-phase plot at Io=0A, fc=25kHz, phase margin=70 degrees



Circuit Schematic

For further assistance:

Email:	Sipexsupport@sipex.com
WWW Support page:	http://www.sipex.com/content.aspx?p=support
Live Technical Chat:	http://www.geolink-group.com/sipex/
Sipex Application Notes:	http://www.sipex.com/applicationNotes.aspx

Sipex Corporation
Headquarters and
Sales Office
233 South Hillview Drive
Milpitas, CA95035
tel: (408) 934-7500
faX: (408) 935-7600