

Micro-power Inverting DC/DC Converters in SOT-23-5

Features

- Configurable Output Voltage Up to -30V
- 20 μ A Quiescent Current
- <1 μ A Shutdown Current
- <1 μ A Shutdown Pin Current
- Supply Range from 2.5V to 6.5V
- Low $R_{DS(ON)}$: 0.8 Ω
- Tiny SOT23-5 Package

Applications

- STN/TFT LCD Bias
- Personal Digital Assistants (PDAs)
- Handheld Computers
- Digital Still Cameras
- Cellular Phones
- Web Pad

General Description

The G5122 inverting DC/DC converter is designed for small/ medium size LCD panel of high bias voltage.

Due to a typical 20 μ A quiescent current and 2.5V~6.5V supply voltage range, it is suitable for battery powered portable applications. Such as PDAs and Handheld Computers. When the IC sets to shutdown mode, it only consumes less than 1 μ A.

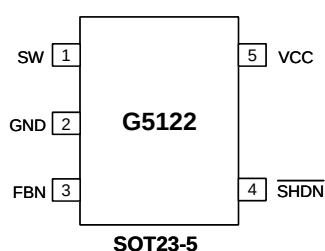
Furthermore, the 350mA current limit, 500ns fixed minimum off-time and tiny SOT23-5 package facilitates the use of smaller inductor and other surface-mount components to minimize the PCB size in those space-conscious applications.

To control the IC, no other external current is needed for the shutdown pin. It typically consumes less than 1 μ A of full supply range.

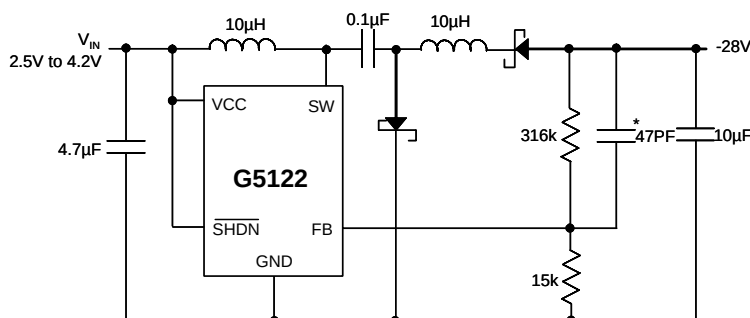
Ordering Information

ORDER NUMBER	ORDER NUMBER (Pb free)	MARKING	TEMP. RANGE	PACKAGE
G5122T11U	G5122T11Uf	5122x	-40°C ~ +85°C	SOT-23-5

Pin Configuration



Typical Application Circuit



* option

Absolute Maximum Ratings

SW to GND.....-0.3V to +33V
 FBN to GND..... -V_{CC} to +0.3V
 V_{CC}, $\overline{\text{SHDN}}$ to GND.....-0.3V to +7V
 Operating Temperature Range (Note 1) ..-40°C to +85°C

Junction Temperature+125°C
 Storage Temperature..... -65°C to +150°C
 Reflow Temperature (Soldering, 10 sec).....260°C

Stress beyond those listed under "Absolute Maximum Rating" may cause permanent damage to the device.

Electrical Characteristics

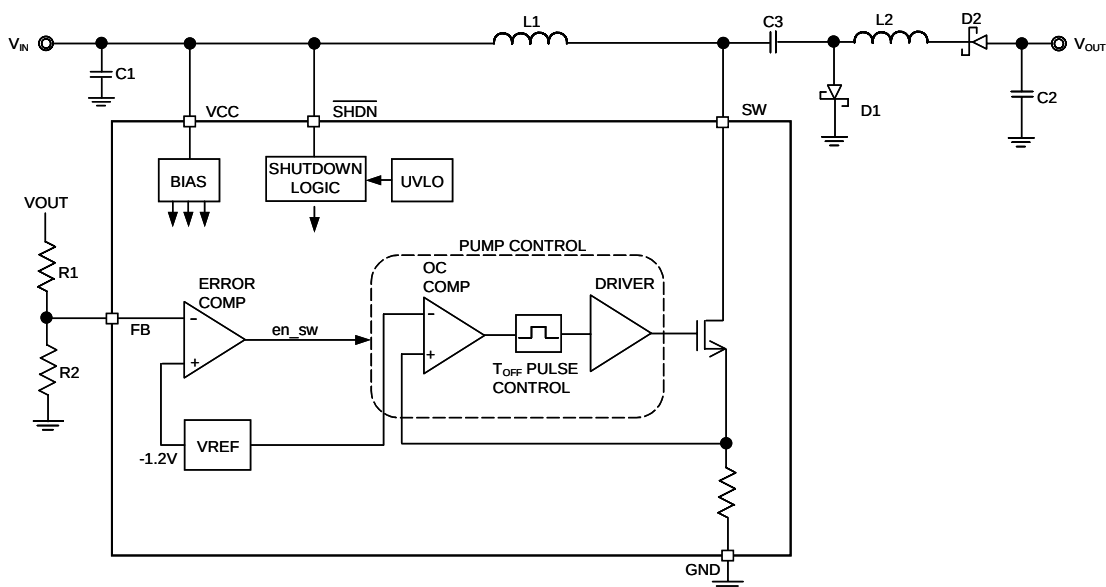
(V_{CC} = 3.6V, V_{SHDN} = 3.6V, T_A = 25°C)

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Input Voltage Range		2.5	---	6.5	V
Quiescent Current	Not Switching	---	20	35	μA
	V _{SHDN} = 0V	---	0.1	1	μA
FBN Comparator Trip Point		-1.18	-1.2	-1.22	V
Output Voltage Line Regulation	2.5V < V _{IN} < 6.5V	---	-0.05	---	%/V
FBN Pin Bias Current (Note 2)	V _{FBN} = -1.2V	---	-1.6	-2.4	μA
Switch Off Time	V _{FBN} < -1V	---	500	---	ns
Switch R _{DS(ON)}	I _{SW} = 150mA	---	0.8	1	Ω
Switch Current Limit		300	350	400	mA
$\overline{\text{SHDN}}$ Pin Current		---	0.1	1	μA
$\overline{\text{SHDN}}$ Input Voltage High		0.9	---	---	V
$\overline{\text{SHDN}}$ Input Voltage Low		---	---	0.25	V
Switch Leakage Current	Switch Off, V _{SW} = 33V	---	0.01	5	μA
Input Voltage UVLO		---	1.9	---	V

Note 1: The G5122 are guaranteed to meet performance specifications from 0°C to 85°C. Specifications over the -40°C to 85°C operating temperature range are assured by design, characterization and correlation with statistical process controls.

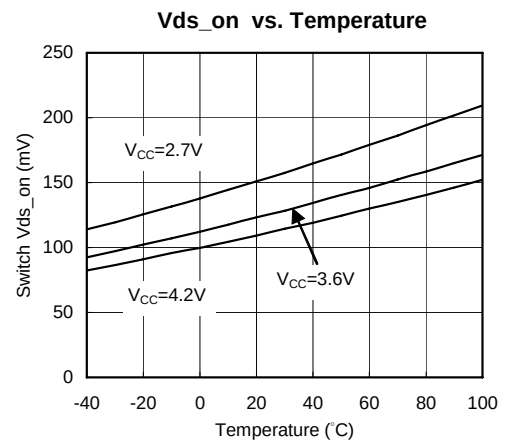
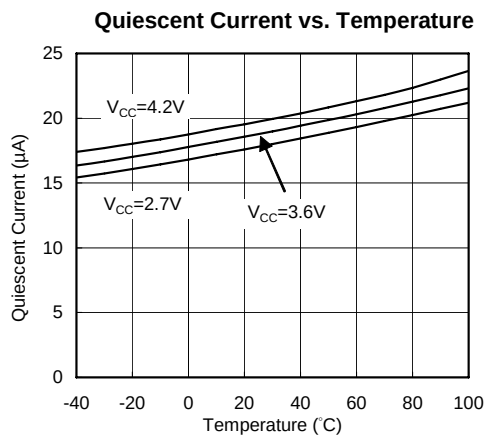
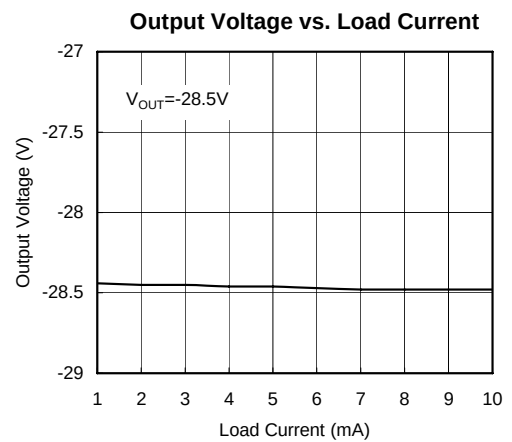
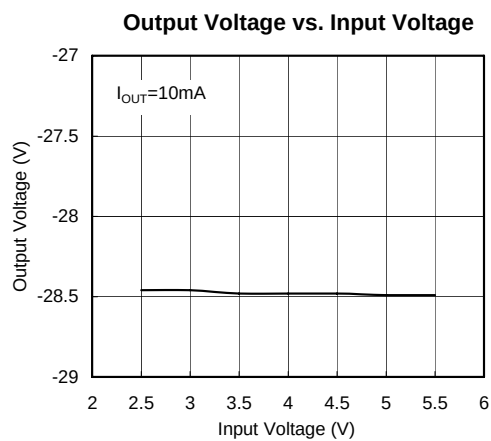
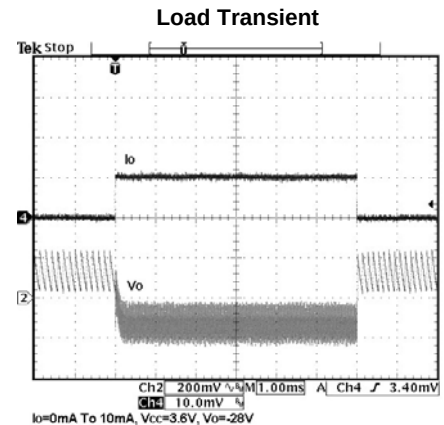
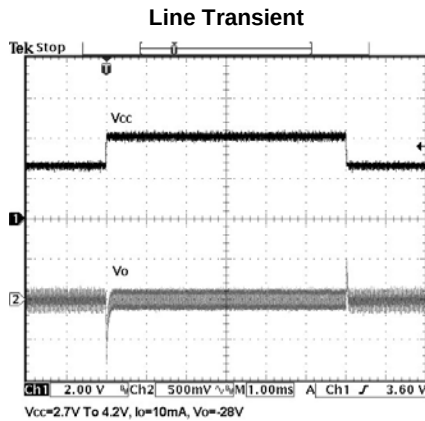
Note 2: Bias current flows into the FBN pin.

Block Diagram

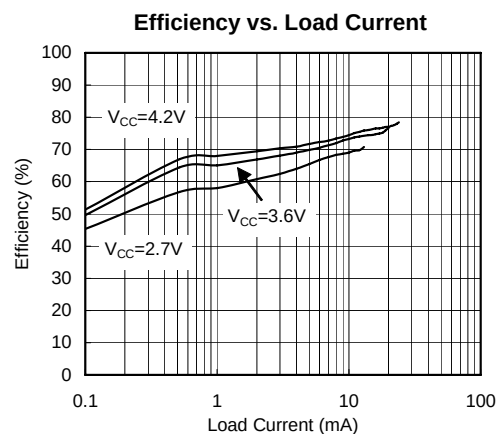
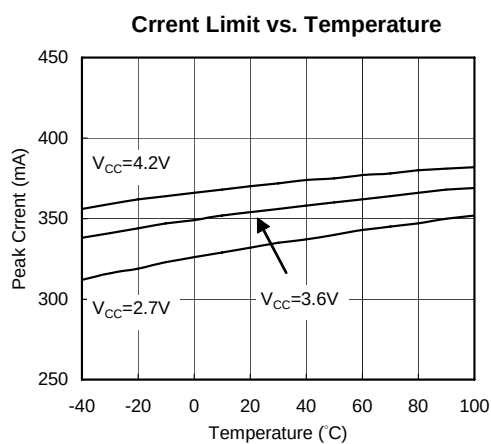
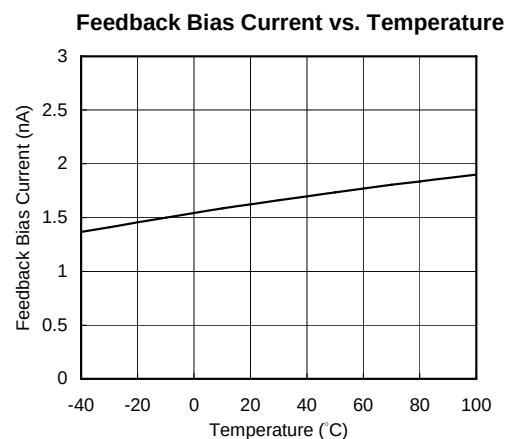
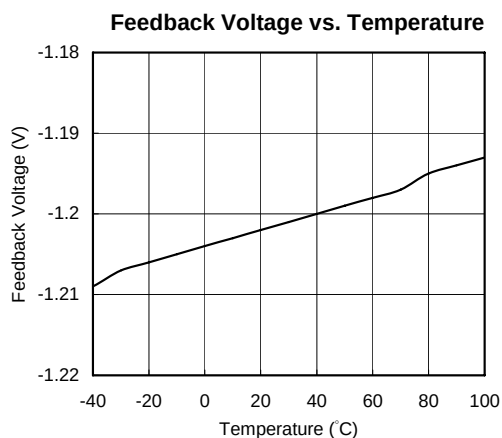




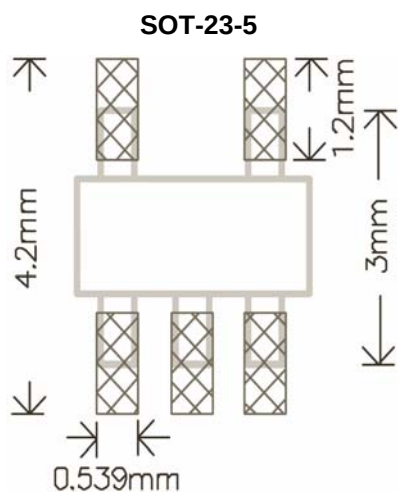
Typical Performance Characteristics

 $(V_{CC}=+3.6V, V_{SHDN}=+3.6V, L=10\mu H, T_A=25^\circ C, \text{ unless otherwise noted.})$ 

Typical Performance Characteristics (Continued)



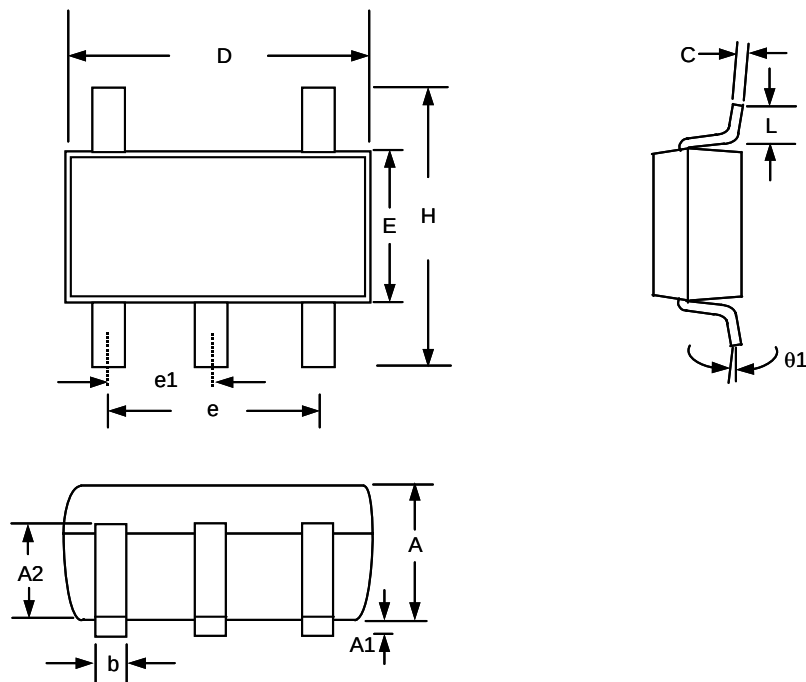
Recommended Minimum Footprint



**Pin Description**

PIN	NAME	FUNCTION
1	SW	Switch Pin. The drain of the internal NMOS power switch. Connect this pin to inductor.
2	GND	Ground.
3	FBN	Feedback Pin. Set the output voltage by selecting values for R1 and R2 (see Block Diagram): $R1 = \frac{ V_{OUT} - 1.2}{1.2/R2 + (1.6 \times 10^{-6})}$
4	SHDN	Active-Low Shutdown Pin. Tie this pin to logic-high to enable the device or tied it to logic-low to turn this device off.
5	VCC	Input Supply Pin. Bypass this pin with a capacitor as close to the device as possible.

Package Information

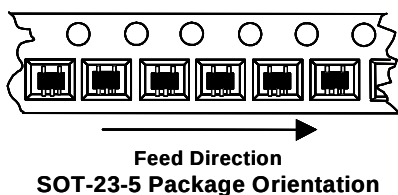


Note:

1. Package body sizes exclude mold flash protrusions or gate burrs
2. Tolerance ± 0.1000 mm (4mil) unless otherwise specified
3. Coplanarity: 0.1000mm
4. Dimension L is measured in gage plane

SYMBOLS	DIMENSIONS IN MILLIMETERS		
	MIN	NOM	MAX
A	1.00	1.10	1.30
A1	0.00	-----	0.10
A2	0.70	0.80	0.90
b	0.35	0.40	0.50
C	0.10	0.15	0.25
D	2.70	2.90	3.10
E	1.40	1.60	1.80
e	-----	1.90(TYP)	-----
e1	-----	0.95	-----
H	2.60	2.80	3.00
L	0.37	-----	-----
$\theta 1$	1°	5°	9°

Taping Specification



PACKAGE	Q'TY/REEL
SOT-23-5	3,000 ea

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