# GL5050

500mA 500KHz DC-DC CONVERTOR BOOST REGULATOR

## Description

The GL5050 are high-efficiency, CMOS, step-up, DC-DC switching regulators for small, low input volt-age or battery-powered systems. The GL5050 accept a positive input voltage between 0.9V and $V_{OUT}$ and convert it to a higher, pin-selectable output voltage 5V. The GL5050 adjustable versions accept 0.9V to 5.0V input voltages. Typical efficiencies are greater than 80%. The GL5050 combine ultra-low quiescent supply current and high efficiency to give maximum battery life. An internal MOSFET power transistor permits high switching frequencies. This benefit, combined with internally set peak inductor current limits, permits the use of small, low-costinductors. The GL5050 have a 500mA peak inductor current limit.

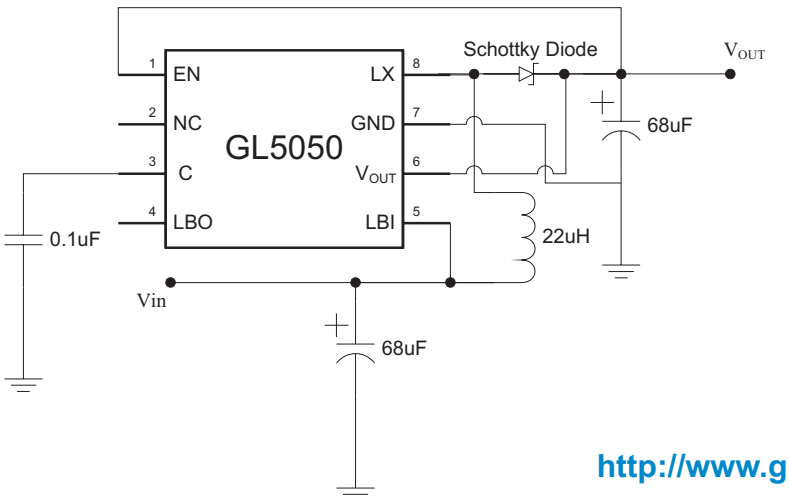
## Features

- 0.9V to 5.0V Input Supply Voltage
- 0.9V Typ Start-Up Supply Voltage
- 80% Efficiency at 100mA
- 10uA Shutdown Mode
- 500mA Switch-Current Limit
- Low-Battery Detector (LBI/LBO)
- Monolithic CMOS Design

## Application

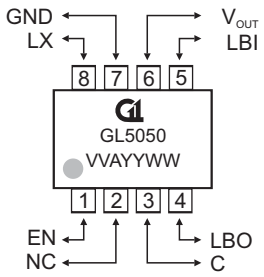
**3.3V to 5V Step-Up Conversion**
**Palmtop Computers**
**Medical Instrumentation**
**Glucose Meters**
**Portable Data-Collection Equipment**
**Personal Data Communicators/Computers**
**2-Cell & 3-Cell Battery-Operated Equipment**

## TYPICAL APPLICATIONS



## ◆ MARKING INFORMATION & PIN CONFIGURATIONS

**SOP- 8**




V V / VVV= Output Voltage
(50=5.0V , 120=12V, A=Adj)
A = Assembly Location
YY = Year
W W = Weekly

## ◆ ORDERING INFORMATION (Green Package Products are available now!)

| Ordering Number | Output Voltage | Package | Shipping |
|---|---|---|---|
| GL5050-AS8R | ADJ | SOP-8 | 2500 Units / Reel |
| GL5050-3.3S8R | 3.3 | SOP-8 | 2500 Units / Reel |
| GL5050-5.0S8R | 5.0 | SOP-8 | 2500 Units / Reel |

* For detail Ordering Number identification, please see last page.

## ◆ PIN DESCRIPTION

| PIN NUMBER | PIN SYMBOL | FUNCTION |
|---|---|---|
| 1 | EN | Shutdown Input. When low, the entire circuit is off. |
| 2 | NC | Not connected |
| 3 | C | Extermal capacity pin. |
| 4 | LBO | Low-Battery output (an open-drain N-channet MOSFET sinks current when the voltage at LBI drops below 1.25V). |
| 5 | LBI | Low0Battery input |
| 6 | $V_{OUT}$ | Supply voltage. |
| 7 | GND | Ground |
| 8 | LX | N-channel Power MOSFET drain. |

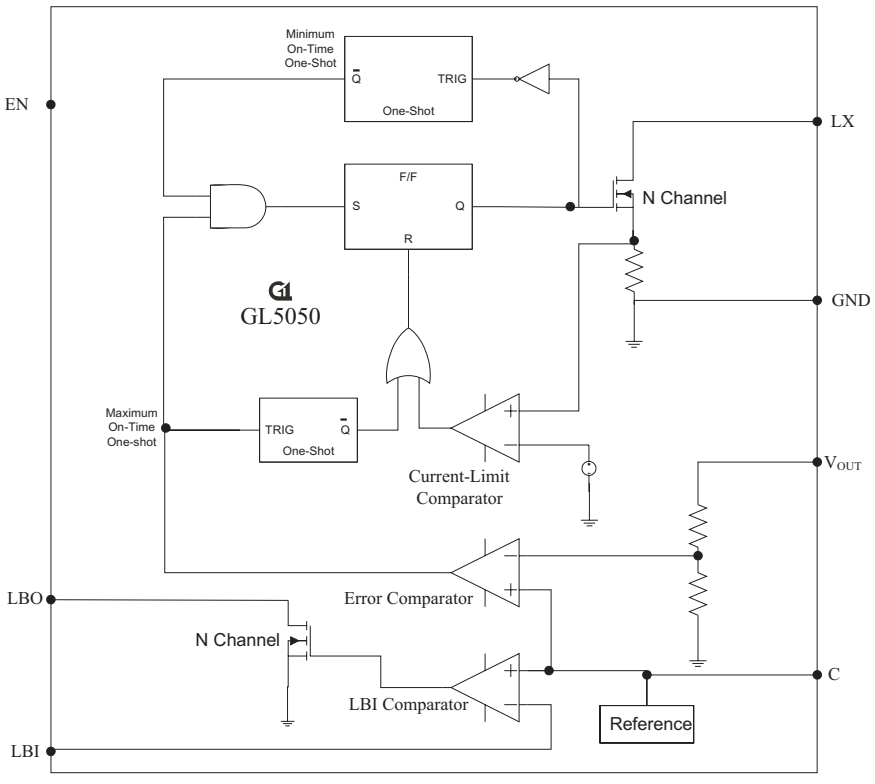
## ◆ ABSOLUTE MAXIMUM RATINGS

| Rating | Value | Unit |
|---|---|---|
| Supply Voltage (OUT to GND) | +7.0 | V |
| Switch Voltage (LX to GND) | +7.0 | V |
| EN , LBO to GND | +7.0 | V |
| Continuous Power Dissipation (TA = +70°C)<br>SO (derate 5.88mW/°C above +70°C) | 471 | mW |
| Storage Temperature Range | -65 to + 150 | °C |
| Maximum Junction Temperature | +150 | °C |
| Lead Temperature (Soldering, 10 sec.) | +260 | °C |
| Lead Temperature<br>S Package<br>Vapor Phase (60 secretary.)<br>Infrared (10 secretary.) | <br><br>+215<br>+245 | °C |

## ◆ OPERATING CONDITIONS

| Rating | Value | Unit |
|---|---|---|
| Temperature Range | - 40 ≤ $T_J$ ≤+125 | °C |
| Supply Voltage | 5.0 | V |

## ◆ BLOCK DIAGRAM



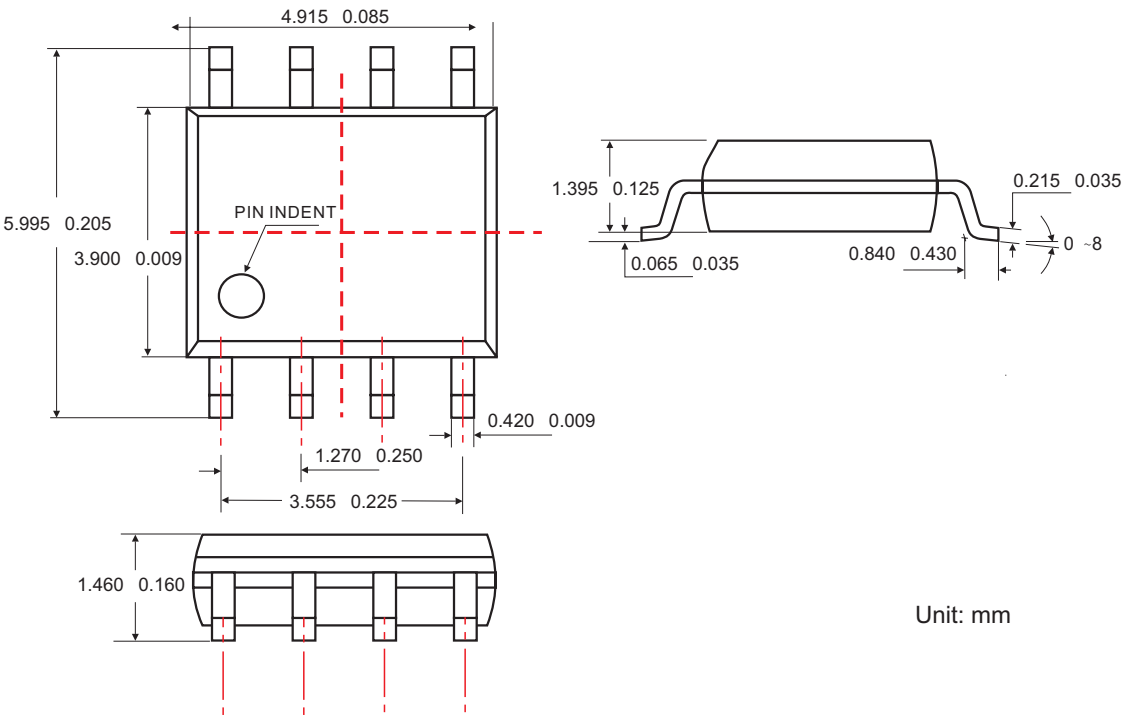
## ELECTRICAL CHARACTERISTICS

(Vin=2.5V, $I_{LOAD}$=0mA, $T_A$=$T_{MIN}$ to $T_{MAX}$, unless otherwise noted. Typical values are at $T_A$=+25deg.C)

| Parameter | Conditions | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Output Voltage | 0.9V≤Vin≤5.0V, 0mA≤$I_{LOAD}$≤100mA | $V_{OUT}$ | 1.171 | 1.22 | 1.269 | V |
| | Vin=2.0V, 0mA≤$I_{LOAD}$≤100mA | $V_{OUT}$ | 3.168 | 3.3 | 3.432 | V |
| | Vin=2.5V, 0mA≤$I_{LOAD}$≤100mA | $V_{OUT}$ | 4.8 | 5.0 | 5.2 | V |
| Minimum Start-Up Supply Voltage | $I_{LOAD}$ = 0mA | Vstart | - | 0.8 | 1.1 | V |
| Minimum Operating Voltage | | $V_{OP}$ | - | 0.8 | | V |
| Supply Current | $V_{OUT}$=4.75V, measurement of the IC input current | | | 80 | 180 | uA |
| Shutdown Quiescent Current | EN = 0V | $I_{EN}$ | | | 10 | uA |
| LBI Input Threshold | With falling edge | | 1.22 | 1.25 | 1.28 | V |
| LBI Input Hysteresis | | | | 25 | | mV |
| LBO Output Voltage Low | $I_{LBO}$ = 2mA | | - | | 0.6 | V |
| LBO Output Leakage Current | LBO = 5V | | - | | 3 | uA |
| EN Voltage Low | | | - | | 0.4 | V |
| EN Voltage High | | | 1.6 | | | uA |

**Note 1:** Minimum values is production tested. Maximum values is guarenteed by design and production tested.

## SOP-8 PACKAGE OUTLINE DIMENSIONS




Unit: mm

## ◆ ORDERING NUMBER