# GL6300

## 300mA ULTRA - LOW DROPOUT CMOS VOLTAGE REGULATOR

## Description

The GL6300 series is a low-dorpout linear regulators. There are devices designed specifically for battery-operated systems. Ground current is very small (2uA-Typ.), That significantly extending battery life. Low power consumption and high accuracy is achieved through CMOS and programmable fuse technologies. Output voltage: 1.5V to 6.0V. The GL6300 consists of a hogh precision voltage reference, an error correction circuit, and a current limited output driver. With good transient responses, output remains stable even during load changes. Also the GL6300 having high ripple rejection tatios, the series can be used with power supply noise. If output noise isn't a concern, this input may be left unconnected. Larger capacitor values can be used, but results in a longer time period to rated output voltage when power is initially applied. The GL6300 incorporates both OTP & OCP.

## Features

- Maximum output current 300mA
- Output voltage 1.5V to 6.0V
- Output voltage ±1.4%
- CMOS Low power consumption
- Ultra-low dropout voltage (typ. 0.165V at 300mA)
- SOT-89 (500mW) & SOT-25 packages

## Application

**PDA's**

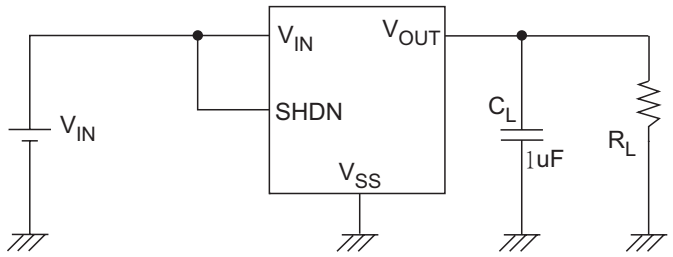
**Cameras and camcorders**

**VCR's**

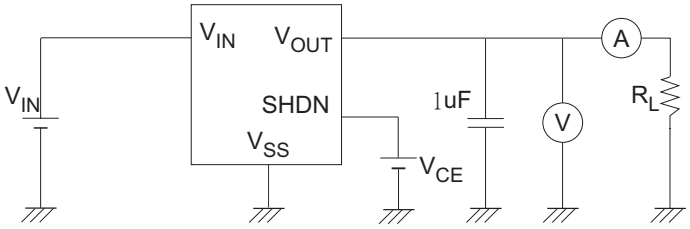
**Battery Powered Equipment**

**Voltage Supply for Cellular Phones**

## STANDARD CIRCUIT



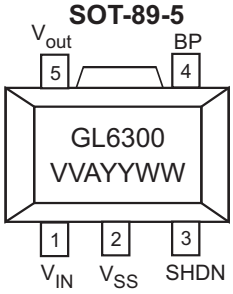

## TYPICAL APPLICATION CIRCUITS



# 300mA ULTRA - LOW DROPOUT CMOS VOLTAGE REGULATOR

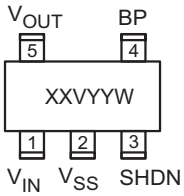
## MARKING INFORMATION & PIN CONFIGURATIONS (TOP VIEW)

**SOT-89-5**




VV = Voltage Suffix (18=1.8V, 50=5.0V)
A = Assembly Location
Y = Year
WW = Weekly

**SOT-25 (SOT-23-5)**




XX = Marking Code(**EA** = GL6300)
V = Voltage Code
YY = Year
W = Weekly

## ORDERING INFORMATION

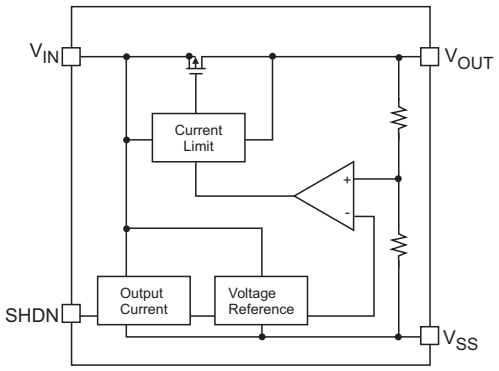
| Ordering Number | Output Voltage | Voltage Code | Package | Shipping |
|---|---|---|---|---|
| GL6300-1.5ST85R | 1.5 | | SOT-89-5 | 1,000 Units/ Tape & Reel |
| GL6300-1.5ST25R | 1.5 | C | SOT-25 | 3,000 Units/ Tape & Reel |
| GL6300-1.8ST85R | 1.8 | | SOT-89-5 | 1,000 Units/ Tape & Reel |
| GL6300-1.8ST25R | 1.8 | E | SOT-25 | 3,000 Units/ Tape & Reel |
| GL6300-2.4ST85R | 2.4 | | SOT-89-5 | 1,000 Units/ Tape & Reel |
| GL6300-2.4ST25R | 2.4 | Z | SOT-25 | 3,000 Units/ Tape & Reel |
| GL6300-2.5ST85R | 2.5 | | SOT-89-5 | 1,000 Units/ Tape & Reel |
| GL6300-2.5ST25R | 2.5 | G | SOT-25 | 3,000 Units/ Tape & Reel |
| GL6300-2.7ST25R | 2.7 | T | SOT-25 | 3,000 Units/ Tape & Reel |
| GL6300-2.8ST85R | 2.8 | | SOT-89-5 | 1,000 Units/ Tape & Reel |
| GL6300-2.8ST25R | 2.8 | H | SOT-25 | 3,000 Units/ Tape & Reel |
| GL6300-3.0ST85R | 3.0 | | SOT-89-5 | 1,000 Units/ Tape & Reel |
| GL6300-3.0ST25R | 3.0 | J | SOT-25 | 3,000 Units/ Tape & Reel |
| GL6300-3.3ST85R | 3.3 | | SOT-89-5 | 1,000 Units/ Tape & Reel |
| GL6300-3.3ST25R | 3.3 | K | SOT-25 | 3,000 Units/ Tape & Reel |
| GL6300-4.0ST85R | 4.0 | | SOT-89-5 | 1,000 Units/ Tape & Reel |
| GL6300-4.0ST25R | 4.0 | M | SOT-25 | 3,000 Units/ Tape & Reel |
| GL6300-5.0ST85R | 5.0 | | SOT-89-5 | 1,000 Units/ Tape & Reel |
| GL6300-5.0ST25R | 5.0 | Q | SOT-25 | 3,000 Units/ Tape & Reel |
| GL6300-6.0ST85R | 6.0 | | SOT-89-5 | 1,000 Units/ Tape & Reel |
| GL6300-6.0ST25R | 6.0 | P | SOT-25 | 3,000 Units/ Tape & Reel |

* For detail ordering number identification, please see last page.

## PIN DESCRIPTION

| Pin Name | | Pin Name | Function |
|---|---|---|---|
| SOT-25 | SOT-89-5 | | |
| 1 | 1 | $V_{SS}$ | Ground |
| 2 | 2 | $V_{IN}$ | Supply Voltage Input |
| 3 | 3 | SHDN | Chip Shutdown |
| 4 | 4 | BP | By pass |
| 5 | 5 | $V_{OUT}$ | Regulated Voltage Output |

## BLOCK DIAGRAM




## ABSOLUTE MAXIMUM RATINGS

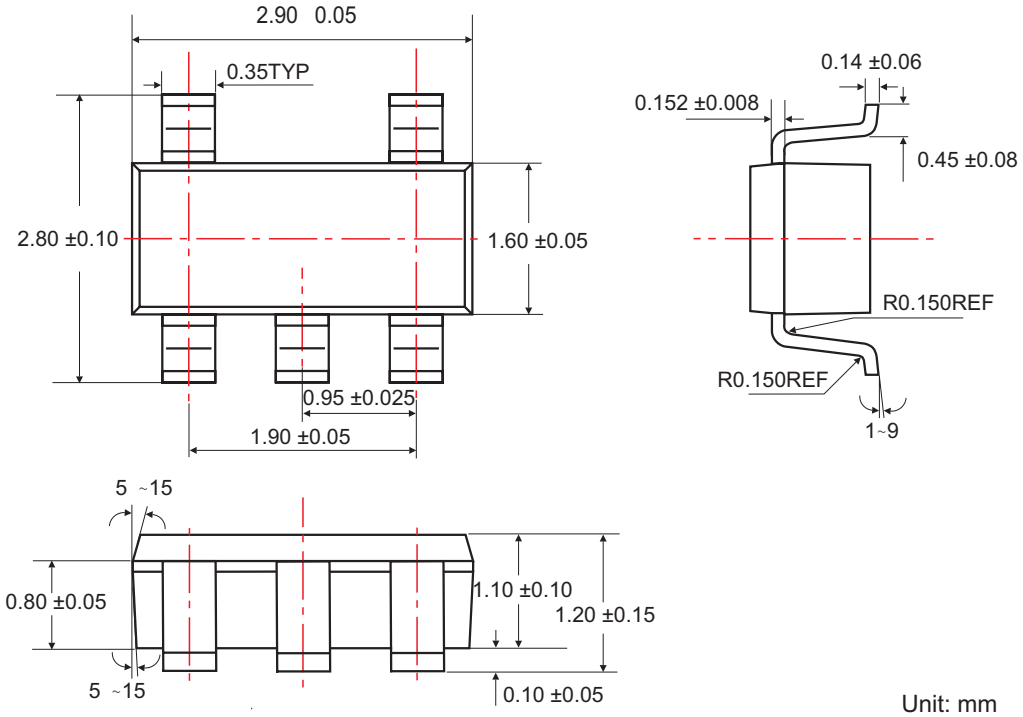
| PARAMETER | | SYMBOL | RATINGS | UNITS |
|---|---|---|---|---|
| Input Voltage | | $V_{IN}$ | 6.5 | V |
| Output Current | | $I_{OUT}$ | 300 | mA |
| Output Voltage | | $V_{OUT}$ | $V_{SS}$ -0.3 ~ $V_{IN}$ +0.3 | V |
| Continuous Total Power Dissipation | SOT-89 | $P_D$ | 500 | mW |
| | SOT-25 | | 250 | |
| Operating Ambient Temperature | | $T_{OPR}$ | -30 ~ +80 | C |
| Storage Temperature | | $T_{STG}$ | -40 ~ +125 | C |

## ELECTRICAL CHARACTERISTICS ($T_A$ = 25C, Vout (nominal) + 1V, unless otherwise noted)

| Parameter | Symbol | Test Condition | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|
| Output Voltage Accuracy | $V_{OUT}$ | $I_{OUT}$ =1mA,<br>$I_{OUT}$ =1mA to 300mA | -1.4%<br>-3 % | | +1.4%<br>+3% | % |
| Maximum Output Current | $I_{OUT}$ max | $V_{OUT}$ >0.96Vrating | 300 | | | mA |
| Load Regulation | $\Delta V_{OUT}$ | 1mA ≤ $I_{OUT}$ ≤ 300mA, Cout=1uF<br>Vin=Vout+2V | | 10 | 70 | %/mA |
| Line Regulation (Note1) | $\frac{\Delta V_{OUT}}{\Delta V_{IN} - \Delta V_{OUT}}$ | $I_{OUT}$= 1mA, (Vout+0.1)<Vin<6.5 | | 0.15 | 0.35 | %/ V |
| Dropout Voltage<br>for Vout>2.5V | Vdorp | $I_{OUT}$= 300mA | | 165 | 600 | mV |
| for 2.0V<Vout≦2.5V | Vdorp | $I_{OUT}$= 300mA | | 220 | 900 | mV |
| for Vout≦2.0V | Vdorp | $I_{OUT}$= 300mA | | 330 | 1300 | mV |
| Current Limit | | | | 500 | | mA |
| Power Supply Ripple Rejection Ratio | PSRR | f=1KHz, $I_L$ = 1mA, $C_{BP}$=470pF | | 75 | | dB |
| Shutdown Exit Delay | $V_{IN}$ | $C_{BP}$= 0uF, $C_{OUT}$=1uF, Io=100mA | | 600 | | u sec |
| Shutdown Input Bias Current | $I_{SDH}$ | $V_{SHDN}$ = $V_{IN}$ | | | 100 | nA |
| Shutdown Supply Current | $I_{SDL}$ | $V_{SHDN}$ = Gnd | | 0.01 | 1 | uA |
| Shutdown Input Threshold Low | $V_{SDL}$ | $V_{IN}$=2.5 to 5.5V | | | 0.4 | V |
| Shutdown Input Threshold High | $V_{SDH}$ | $V_{IN}$=2.5 to 5.5V | 2 | | | V |
| Ground Pin Current | $I_{CEL}$ | $I_{out}$ =0mA.....150mA | | 2 | 5 | uA |

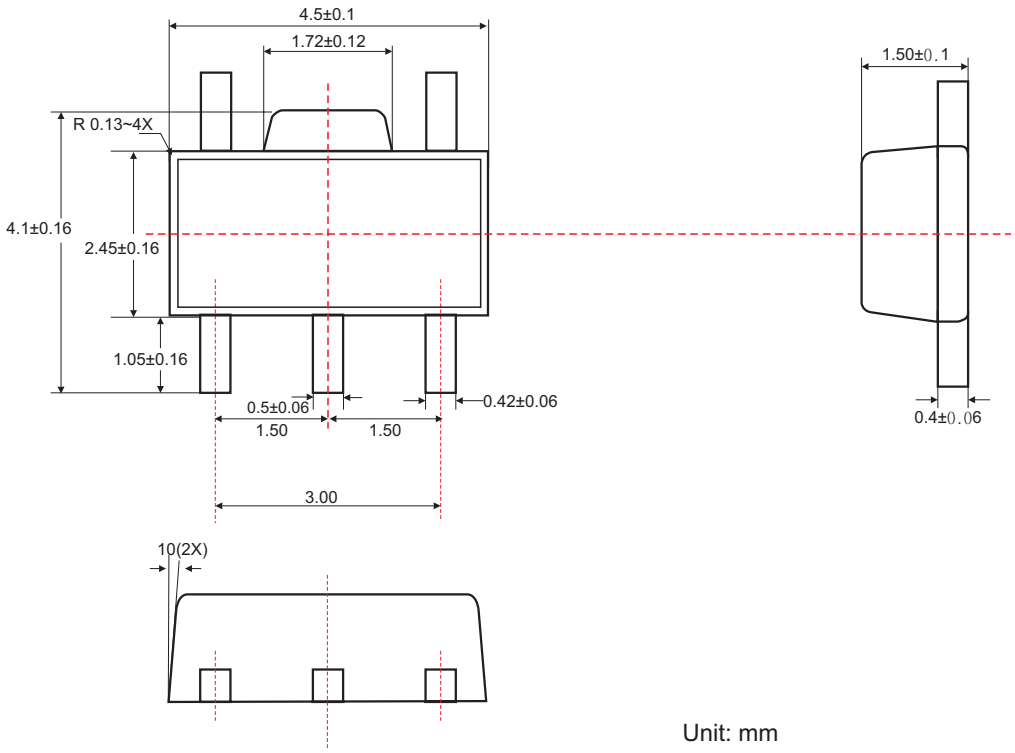
**Note:**
1.Load Regulation is measured using pulse techniques with duty cycle <5%

## SOT-25(SOT-23-5) PACKAGE OUTLINE DIMENSIONS




Unit: mm

## SOT-89-5 PACKAGE OUTLINE DIMENSIONS




Unit: mm

## ◆ ORDERING NUMBER