

## Low Dropout CMOS Voltage Regulators

# PL5209L3

### Features

- Maximum output current : 500mA
- Highly accurate : output voltage +/-2%
- Low power consumption : typ. 2  $\mu$  A
- Small input/output differential:
  - 0.4V at 160mA( $V_{out}=3.3V$ )
  - 0.12V at 100mA( $V_{out}=5V$ )

### Applications

- Battery powered equipment
- Palmtops
- Portable cameras and video recorders
- Reference voltage sources

### Product Description

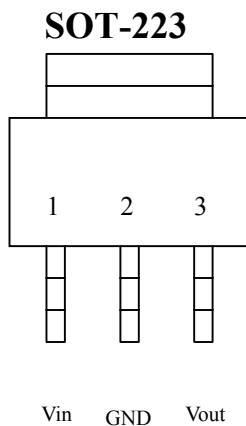
The PL5209L3 series is a group of positive voltage output, three-pin regulators, that provide a high current even when the input/output voltage differential is small. Low power consumption and high accuracy is achieved through CMOS and programmable fuse technologies. Output voltage: 2V to 6V in 0.1V increments.

The PL5209L3 consists of a high-precision voltage reference, an error correction circuit, and a current limited output driver. Transient response to load variations is improved in comparison to the existing ones.

### Absolute Maximum Ratings

| Parameter                          | Symbol    | Ratings             | Units       |
|------------------------------------|-----------|---------------------|-------------|
| Input Voltage                      | $V_{in}$  | 12                  | V           |
| Output Current                     | $I_{out}$ | 500                 | mA          |
| Output Voltage                     | $V_{out}$ | -0.3 ~ $V_{in}+0.3$ | V           |
| Continuous Total Power Dissipation | $P_D$     | Internally Limited  | W           |
| Operating Ambient Temperature      | $T_{opr}$ | -30 ~ +80           | $^{\circ}C$ |
| Storage Temperature                | $T_{stg}$ | -40 ~ +125          | $^{\circ}C$ |

### Pin Configuration





### Ordering Information

| Device        | Output Voltage | Package |
|---------------|----------------|---------|
| PL5209-3.3 L3 | 3.3V           | SOT-223 |
| PL5209-5.0 L3 | 5.0V           | SOT-223 |

### Electrical Characteristics @ $V_{IN}=5V, T_a=25^{\circ}C$ , unless otherwise noted

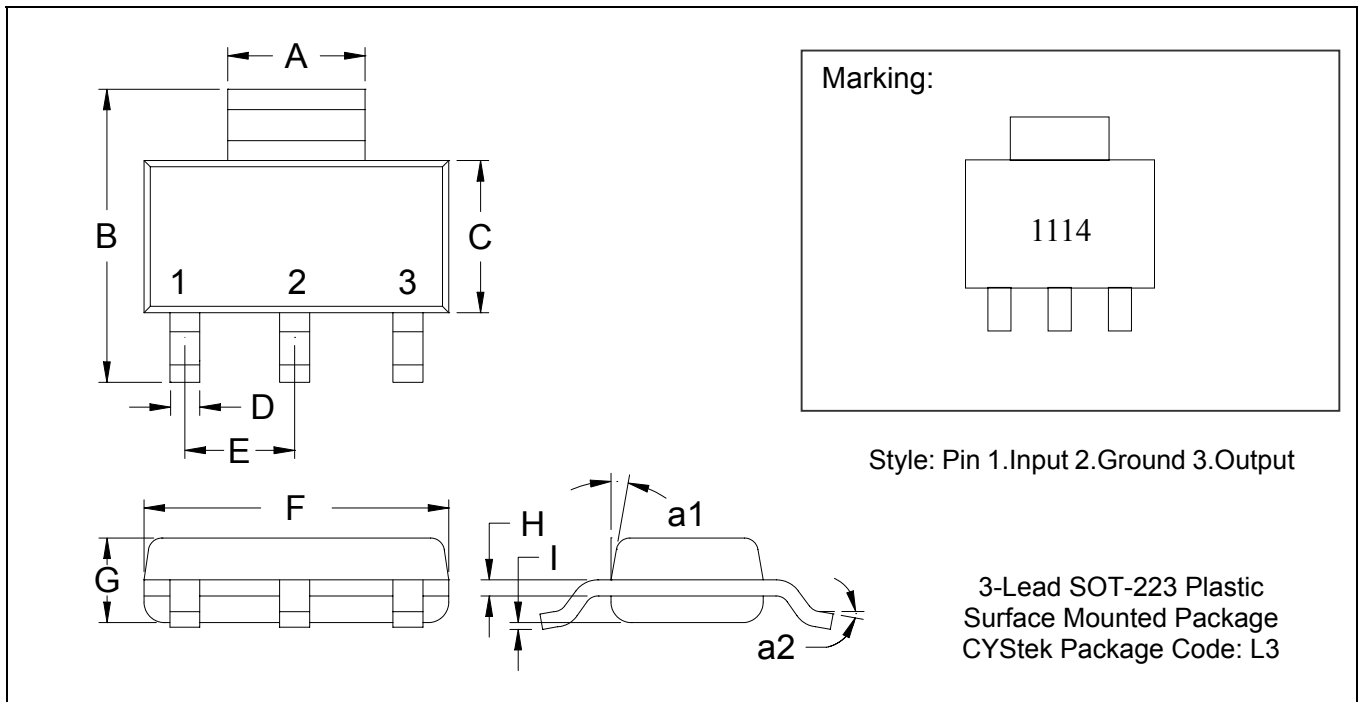
#### PL5209-3.3L3

| Parameter   | Conditions                      | Min   | Typ  | Max   | Units   |
|---|---------------------------------|-------|------|-------|---------|
| Output Voltage  | $I_o=40mA, V_{in}=4.3V$         | 3.234 | 3.30 | 3.366 | V       |
| Line Regulation $\Delta V_{out}/\Delta V_{in}V_{out}$ | $I_o=40mA, 4.3V < V_{in} < 10V$ | -     | 0.2  | 0.3   | %/V     |
| Load Regulation                                       | $V_{in}=6V, 1mA < I_o < 80mA$   | -     | 45   | 90    | mV      |
| Current Consumption                                   | $V_{in}=4.3V$                   | -     | 1.0  | 2.9   | $\mu A$ |
| Dropout Voltage                                       | $I_o=160mA$                     | -     | 0.4  | 0.7   | V       |

#### PL5209-5.0L3

| Parameter   | Conditions                      | Min   | Typ          | Max        | Units   |
|---|---------------------------------|-------|--------------|------------|---------|
| Output Voltage  | $I_o=40mA, V_{in}=6.0V$         | 4.900 | 5.000        | 5.100      | V       |
| Line Regulation $\Delta V_{out}/\Delta V_{in}V_{out}$ | $I_o=40mA, 6.0V < V_{in} < 10V$ | -     | 0.2          | 0.3        | %/V     |
| Load Regulation                                       | $V_{in}=6V, 1mA < I_o < 100mA$  | -     | 40           | 80         | mV      |
| Current Consumption                                   | $V_{in}=6.0V$                   | -     | 2.0          | 4.5        | $\mu A$ |
| Dropout Voltage                                       | $I_o=100mA$<br>$I_o=200mA$      | -     | 0.12<br>0.38 | 0.3<br>0.6 | V       |

**SOT-223 Dimension**



\*: Typical

| DIM | Inches  |        | Millimeters |      | DIM | Inches |        | Millimeters |      |
|-----|---------|--------|-------------|------|-----|--------|--------|-------------|------|
|     | Min.    | Max.   | Min.        | Max. |     | Min.   | Max.   | Min.        | Max. |
| A   | 0.1142  | 0.1220 | 2.90        | 3.10 | G   | 0.0551 | 0.0709 | 1.40        | 1.80 |
| B   | 0.2638  | 0.2874 | 6.70        | 7.30 | H   | 0.0098 | 0.0138 | 0.25        | 0.35 |
| C   | 0.1299  | 0.1457 | 3.30        | 3.70 | I   | 0.0008 | 0.0039 | 0.02        | 0.10 |
| D   | 0.0236  | 0.0315 | 0.60        | 0.80 | a1  | *13°   | -      | *13°        | -    |
| E   | *0.0906 | -      | *2.30       | -    | a2  | 0°     | 10°    | 0°          | 10°  |
| F   | 0.2480  | 0.2638 | 6.30        | 6.70 |     |        |        |             |      |

Notes: 1.Controlling dimension: millimeters.  
 2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.  
 3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

**Material:**

- Lead: 42 Alloy; solder plating
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

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