150 mA, high input voltage LDO Linear Regulators ME6208 Series

General Description
ME6208 series are low-dropout linear voltage regulators with a built-in voltage reference module, error correction module and phase compensation module. ME6208 series are based on the CMOS process and allow high voltage input with low quiescent current. This series has the function of internal feedback resistor setting from 3V to 5V. The output accuracy is ± 2%.

Features
- High output accuracy ± 2%
- Input voltage up to 18 V
- Output voltage 2.0 V ~ 12.0V
- Ultra-low quiescent current (Typ. = 3 µ A)
- Output Current Iout = 200mA
- When Vin = 7V and Vout =5V
- Importation good stability Typ. 0.05% / V
- Low temperature coefficient
- Ceramic capacitor can be used
- Package SOT89-3 TO92

Typical Application
- Electronic weighbridge
- SCM
- Phones, cordless phones
- Security Products
- Water meters, power meters

Selection Guide

Typical Application Circuit

![Typical Application Circuit Diagram]

CIN=10uF
VIN
VOUT
COUT=10uF
VSS
RL
Pin Configuration

![Pin Configuration Diagram]

Pin Assignment

<table>
<thead>
<tr>
<th>Pin Number</th>
<th>Pin Name</th>
<th>Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOT89-3</td>
<td>1</td>
<td>V(_{SS})</td>
</tr>
<tr>
<td>TO92</td>
<td>2</td>
<td>V(_{IN})</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>V(_{OUT})</td>
</tr>
</tbody>
</table>

Absolute Maximum Ratings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Ratings</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Voltage</td>
<td>V(_{IN})</td>
<td>18</td>
<td>V</td>
</tr>
<tr>
<td>Output Current</td>
<td>I(_{OUT})</td>
<td>250</td>
<td>mA</td>
</tr>
<tr>
<td>Output Voltage</td>
<td>V(_{OUT})</td>
<td>V(<em>{ss}) - 0.3(\text{V}</em>{IN}) + 0.3</td>
<td>V</td>
</tr>
<tr>
<td>Power Dissipation SOT89-3</td>
<td>P(_{D})</td>
<td>500</td>
<td>mW</td>
</tr>
<tr>
<td>TO92</td>
<td></td>
<td>500</td>
<td>mW</td>
</tr>
<tr>
<td>Operating Temperature Range</td>
<td>T(_{OPR})</td>
<td>25(\text{°C}) - 85</td>
<td>°C</td>
</tr>
<tr>
<td>Storage Temperature Range</td>
<td>T(_{STG})</td>
<td>40(\text{°C}) - 125</td>
<td>°C</td>
</tr>
<tr>
<td>Lead Temperature</td>
<td></td>
<td>260(\text{°C})</td>
<td>10sec</td>
</tr>
</tbody>
</table>
Block Diagram

Electrical Characteristics
ME6208A
($V_{IN} = V_{OUT} + 2.0\text{V}$, $C_{IN}, C_L = 10\mu\text{F}$, $T_a = 25^\circ\text{C}$, unless otherwise noted)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Conditions</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Voltage</td>
<td>$V_{OUT}(E)$</td>
<td>($Note 2$) $I_{OUT} = 40\text{mA}$, $V_{IN} = V_{OUT} + 2\text{V}$</td>
<td>$X \ 0.98$</td>
<td>$V_{OUT} (T)$ ($Note 1$)</td>
<td>$X \ 1.02$</td>
<td>$\text{V}$</td>
</tr>
<tr>
<td>Input Voltage</td>
<td>$V_{IN}$</td>
<td></td>
<td></td>
<td></td>
<td>$18$</td>
<td>$\text{mA}$</td>
</tr>
<tr>
<td>Maximum Output Voltage</td>
<td>$I_{OUT _\text{max}}$</td>
<td>$V_{IN} = V_{OUT} + 2\text{V}$</td>
<td>$150$</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Load Regulation</td>
<td>$\Delta V_{OUT}$</td>
<td>$V_{IN} = V_{OUT} + 2\text{V}$, $1\text{mA} \leq I_{OUT} \leq 100\text{mA}$</td>
<td>$10$</td>
<td></td>
<td></td>
<td>$\text{mV}$</td>
</tr>
<tr>
<td>Dropout Voltage ($Note 3$)</td>
<td>$V_{\text{dif}1}$</td>
<td>$I_{OUT} = 50\text{mA}$</td>
<td>$250$</td>
<td></td>
<td></td>
<td>$\text{mV}$</td>
</tr>
<tr>
<td></td>
<td>$V_{\text{dif}2}$</td>
<td>$I_{OUT} = 100\text{mA}$</td>
<td>$500$</td>
<td></td>
<td></td>
<td>$\text{mV}$</td>
</tr>
<tr>
<td></td>
<td>$V_{\text{dif}3}$</td>
<td>$I_{OUT} = 200\text{mA}$</td>
<td>$1000$</td>
<td></td>
<td></td>
<td>$\text{mV}$</td>
</tr>
<tr>
<td>Supply Current</td>
<td>$I_{SS}$</td>
<td>$V_{IN} = V_{OUT} + 2\text{V}$</td>
<td>$3$</td>
<td></td>
<td></td>
<td>$\mu\text{A}$</td>
</tr>
<tr>
<td>Line Regulations</td>
<td>$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$</td>
<td>$I_{OUT} = 40\text{mA}$, $V_{OUT} + 2\text{V} \leq V_{IN} \leq 18\text{V}$</td>
<td>$0.05$</td>
<td></td>
<td></td>
<td>$%$/$\text{V}$</td>
</tr>
</tbody>
</table>

Note:
1. $V_{OUT} (T)$ [: Specified Output Voltage
2. $V_{OUT} (E)$ [: Effective Output Voltage (ie. The output voltage when “$V_{OUT} (T) + 2.0\text{V}$” is provided at the Vin pin while maintaining a certain $I_{OUT}$ value.)
3. $V_{\text{dif}}$ [: $V_{IN1} - V_{OUT} (E)'$
   - $V_{IN1}$ [: The input voltage when $V_{OUT} (E)'$ appears as input voltage is gradually decreased.
   - $V_{OUT} (E)'$ [: A voltage equal to 98% of the output voltage whenever an amply stabilized $I_{OUT}$ and (“$V_{OUT} (T) + 2.0\text{V}$”) is input.
Type Characteristics

1. Output Current VS. Output Voltage \( Ta = 25 ^\circ C \)

![Output Voltage VS. Output Current](chart1.png)

2. Input Voltage VS. Output Voltage \( Ta = 25 ^\circ C \)

![Output Voltage VS. Input Voltage](chart2.png)
3. **Output Current VS.Droput Voltage**  
   \( T_a = 25 \, ^\circ C \)

   ME6208A50

   ![Dropdown Voltage VS.Output Current](image)

4. **Input Voltage VS. Supply Current**  
   \( T_a = 25 \, ^\circ C \)

   ME6208A50

   ![Quiescent Current VS. Input Voltage](image)
Packaging Information

- SOT89-3

- TO-92
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