

**L78MG****Variable 4-Pin Voltage Regulator****Applications**

- General-purpose voltage regulator.

Features

- Wide operating voltage range : 7.5 to 35V
- 500mA output.
- On-chip thermal protector.
- On-chip overcurrent limiter.
- On-chip ASO protector.
- 4-pin SIP package facilitating mounting and thermal design as in case of transistor.
- Minimum number of external parts required.
- Easy to vary voltage.

Specifications**Maximum Ratings** at $T_a = 25^\circ\text{C}$

| Parameter | Symbol | Conditions | Ratings | Unit |
|-----------------------------|----------------------|------------|-------------|------------------|
| Maximum Supply Voltage | $V_{CC \text{ max}}$ | Pin 1 | 35 | V |
| Allowable Power Dissipation | $P_d \text{ max}$ | | 1.2 | W |
| Operating Temperature | T_{opr} | | -20 to +80 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | | -40 to +150 | $^\circ\text{C}$ |

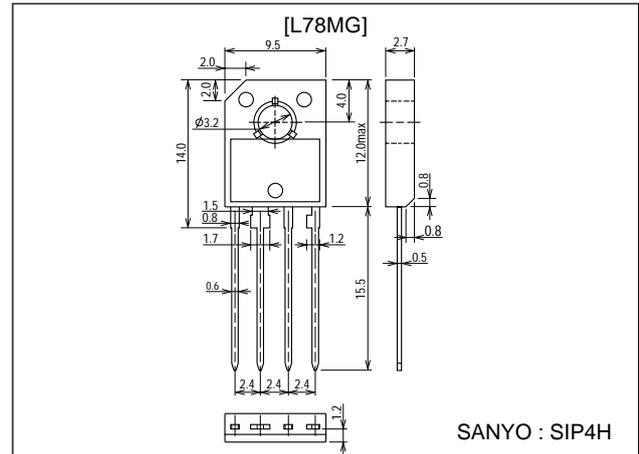
Recommended Operating Conditions at $T_a = 25^\circ\text{C}$

| Parameter | Symbol | Conditions | Ratings | Unit |
|----------------|-----------|------------|-----------------------------|------|
| Input Voltage | V_{IN} | | $V_{OUT}+3$ to $V_{OUT}+15$ | V |
| Output Current | I_{OUT} | | 500 or less | mA |

Package Dimensions

unit:mm

3027A-SIP4H



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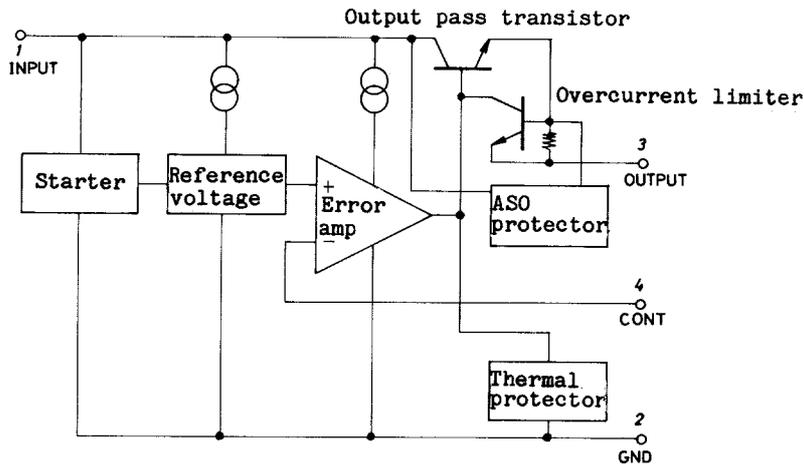
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

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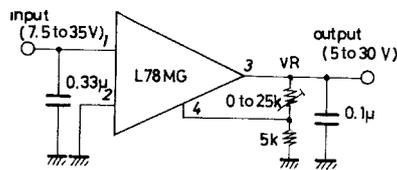
Operating Characteristics at $T_a = 25^\circ\text{C}$, $V_{IN}=10\text{V}$, $I_{OUT}=350\text{mA}$, $C_{IN}=0.33\mu\text{F}$, $C_{OUT}=0.1\mu\text{F}$

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|--|-------------------|---|---------|------|------|---------------|
| | | | min | typ | max | |
| Input Voltage | V_{IN} | $T_j=25^\circ\text{C}$ | 7.5 | | 35 | V |
| Output Voltage | V_{OUT} | $V_{IN}=V_{OUT}+5$ | 5.0 | | 30 | V |
| Line Regulation (Referenced to output voltage) | ΔV_o LINE | $T_j=25^\circ\text{C}$, $I_{OUT}=200\text{mA}$, $V_{OUT}\leq 10\text{V}$ ($V_{OUT}+2.5\text{V}\leq V_{IN}\leq (V_{OUT}+20\text{V})$) | | 0.2 | 1.0 | % |
| | | $T_j=25^\circ\text{C}$, $I_{OUT}=200\text{mA}$, $V_{OUT}\geq 10\text{V}$ ($V_{OUT}+3\text{V}\leq V_{IN}\leq (V_{OUT}+15\text{V})$) | | 0.15 | 0.75 | % |
| | | ($V_{OUT}+3\text{V}\leq V_{IN}\leq (V_{OUT}+7\text{V})$) | | 0.1 | 0.67 | % |
| Load Regulation (Referenced to output voltage) | ΔV_o LOAD | $T_j=25^\circ\text{C}$, $5\text{mA}\leq I_{OUT}\leq 500\text{mA}$, $V_{IN}=V_{OUT}+7\text{V}$ | | 0.2 | 1.0 | % |
| Control Pin Current | | $T_j=25^\circ\text{C}$ | | 1.0 | 5.0 | μA |
| Current Dissipation | I_{CC} | $T_j=25^\circ\text{C}$ | | 2.8 | 5.0 | mA |
| Ripple Rejection | Rrej | $8\text{V}\leq V_{IN}=18\text{V}$, $V_{OUT}=5\text{V}$, $f=120\text{Hz}$, $I_{OUT}=300\text{mA}$, $T_j=25^\circ\text{C}$ | 62 | 80 | | dB |
| | | $8\text{V}\leq V_{IN}=18\text{V}$, $V_{OUT}=5\text{V}$, $f=120\text{Hz}$, $I_{OUT}=100\text{mA}$ | 62 | | | dB |
| Output Noise Voltage | V_{NO} | $10\text{Hz}\leq f\leq 100\text{kHz}$, $V_{OUT}=5\text{V}$ | | 8 | 40 | μV |
| Minimum Input-Output Voltage Drop | V_{DROP} | | | 2 | 2.5 | V |
| Short Circuit Current | I_{OS} | $V_{IN}=35\text{V}$, $T_j=25^\circ\text{C}$ | | 100 | 600 | mA |
| Peak Output Current | I_{OP} | $T_j=25^\circ\text{C}$ | 0.4 | 0.8 | 1.4 | A |
| Reference Voltage | | $T_j=25^\circ\text{C}$ | 4.8 | 5.0 | 5.2 | V |

Equivalent Circuit

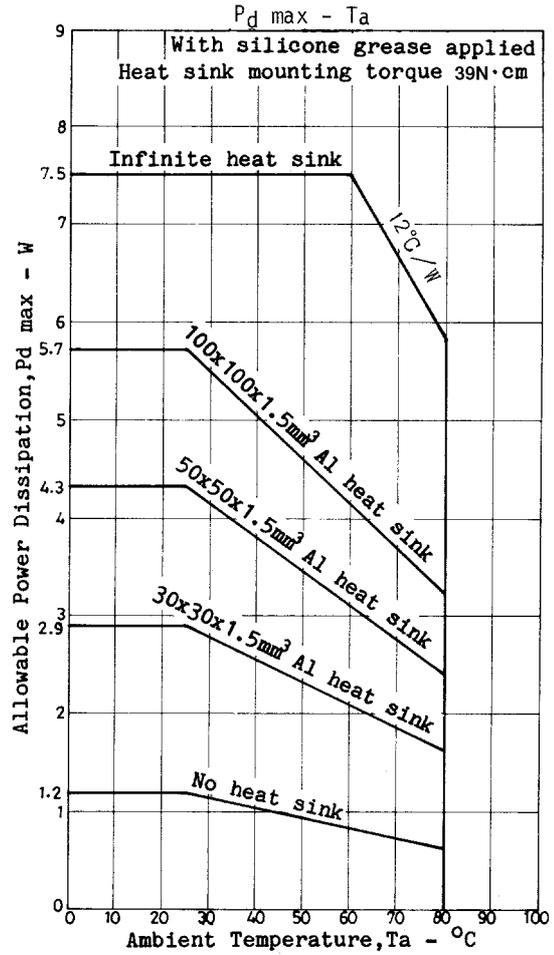
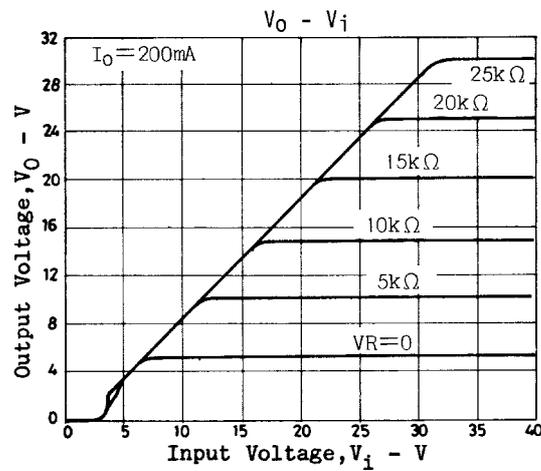
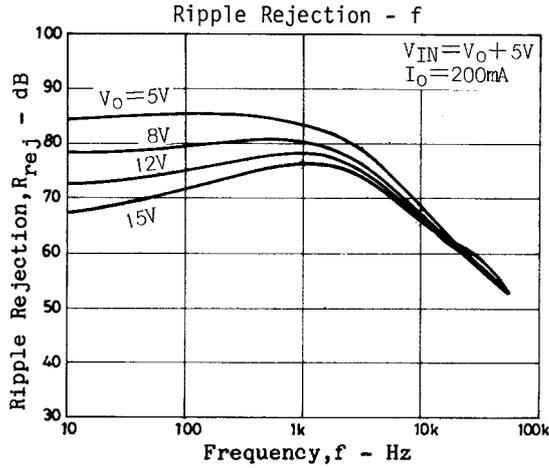


Sample Application Circuit



Unit (resistance: Ω , capacitance: F)

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