



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

## LV59025M — Bi-CMOS LSI 2.5V Constant-Voltage Power Supply IC

### Overview

The LV59025M is a constant-voltage power supply IC. It is the best for the constant-voltage power supply of the battery machine used.

### Features

- 2.5V output
- Output current of 1A obtainable ( $V_{IN1}$ ,  $V_{IN2} \geq 3.5V$ )
- Low current consumption
- MFP8 (200mil) package, ensuring easy mounting design
- With ON/OFF-switch

### Specifications

#### Absolute Maximum Ratings at $T_a = 25^\circ C$

| Parameter                   | Symbol    | Conditions                     | Ratings     | Unit       |
|-----------------------------|-----------|--------------------------------|-------------|------------|
| Maximum power supply        | $V_{IN1}$ | $V_{IN1}$ pin                  | 6.2         | V          |
|                             | $V_{IN2}$ | $V_{IN2}$ pin                  | 6.2         | V          |
| Allowable power dissipation | $P_d$ max | Mounted on a specified board.* | 1.45        | W          |
| Operating Temperature       | $T_{opr}$ |                                | -30 to +85  | $^\circ C$ |
| Storage Temperature         | $T_{stg}$ |                                | -40 to +125 | $^\circ C$ |

\* Specified board: 50mm × 50mm × 1.6mm, glass epoxy both sides

#### Recommended Operating Ranges at $T_a = 25^\circ C$

| Parameter      | Symbol    | Conditions    | Ratings  | Unit |
|----------------|-----------|---------------|----------|------|
| power supply   | $V_{IN1}$ | $V_{IN1}$ pin | 2.6 to 6 | V    |
|                | $V_{IN2}$ | $V_{IN2}$ pin | 2.6 to 6 | V    |
| Output current | $I_O$     |               | 0 to 1   | A    |

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# LV59025M

**Electrical Characteristics** at  $T_a = 25^\circ\text{C}$ ,  $V_{IN1} = V_{IN2} = 4.3\text{V}$

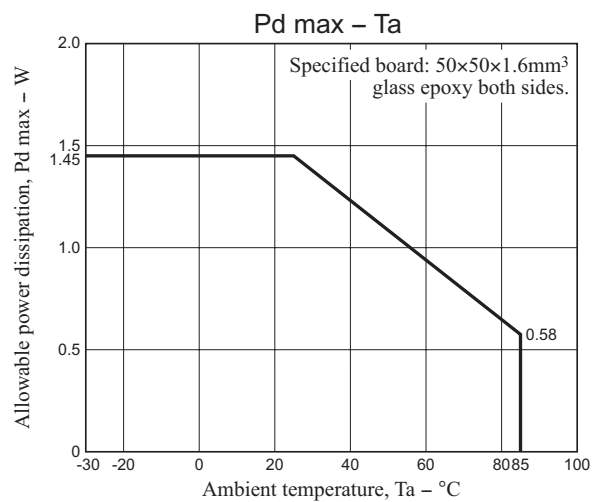
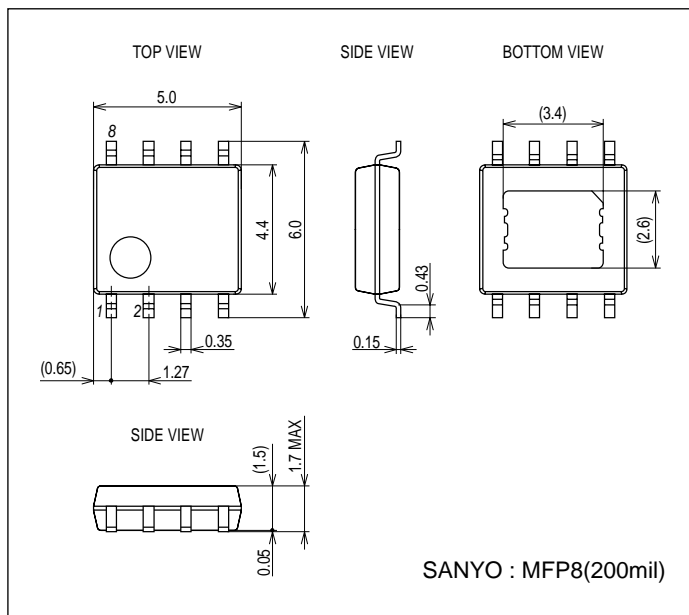
| Parameter                       | Symbol                | Conditions  | Ratings |           |      | Unit                  |
|---------------------------------|-----------------------|---|---------|-----------|------|-----------------------|
|                                 |                       |   | min     | typ       | max  |                       |
| Current drain                   | $I_{VIN}$             | $CTL = 4.3\text{V}$ , $I_O = 0\text{mA}$                              |         | 110       | 160  | $\mu\text{A}$         |
| Standby current                 | $I_{STBY}$            | $CTL = \text{Low}$  |         |           | 1    | $\mu\text{A}$         |
| <b>Output</b>                   |                       |   |         |           |      |                       |
| Output voltage                  | $V_O$                 | $I_O = 10\text{mA}$   | 2.45    | 2.50      | 2.55 | V                     |
| Dropout voltage                 | $V_{\text{drop1\_1}}$ | $I_O = 1\text{A}$   |         |           | 1.0  | V                     |
|                                 | $V_{\text{drop1\_2}}$ | $I_O = 0.3\text{A}$   |         |           | 0.4  | V                     |
| Load Regulation                 | $V_{LD}$              | $I_O = 5\text{mA to } 1\text{A}$                                      |         | 10        | 50   | mV                    |
| Line Regulation                 | $V_{LN}$              | $V_{IN1} = V_{IN2} = 2.6\text{V to } 6\text{V}$ , $I_O = 10\text{mA}$ |         | 10        | 50   | mV                    |
| Voltage temperature coefficient | $\Delta VT$           | $T_a = -30 \text{ to } +85^\circ\text{C}$ , $I_O = 10\text{mA}$       | *       | $\pm 100$ |      | ppm/ $^\circ\text{C}$ |
| Ripple Rejection                | $V_{RL}$              | $I_O = 10\text{mA}$ , $V_{Rpp}=1\text{V}$ , $f_{RR} = 1\text{kHz}$    | *       | 65        |      | dB                    |
| Output Noise Voltage            | $V_{ON}$              | $20\text{Hz} < f < 20\text{kHz}$                                      | *       | 150       |      | $\mu\text{Vrms}$      |
| <b>CTL pin</b>                  |                       |   |         |           |      |                       |
| High level voltage              | $V_{CTLH}$            |   | 1.5     |           | 5    | V                     |
| Low level voltage               | $V_{CTLL}$            |   | 0       |           | 0.3  | V                     |
| Input current                   | $I_{CTL}$             | $V_{CTL} = 6\text{V}$   |         |           | 8.5  | $\mu\text{A}$         |

\* Design guarantee

## Package Dimensions

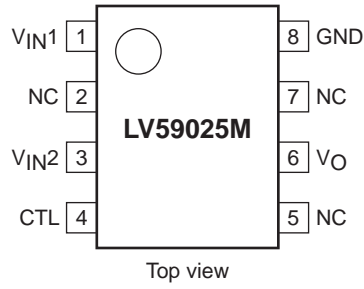
unit : mm (typ)

3372

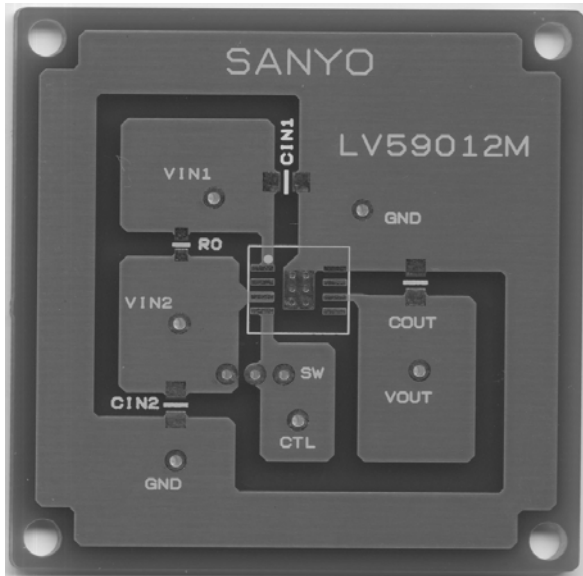


# LV59025M

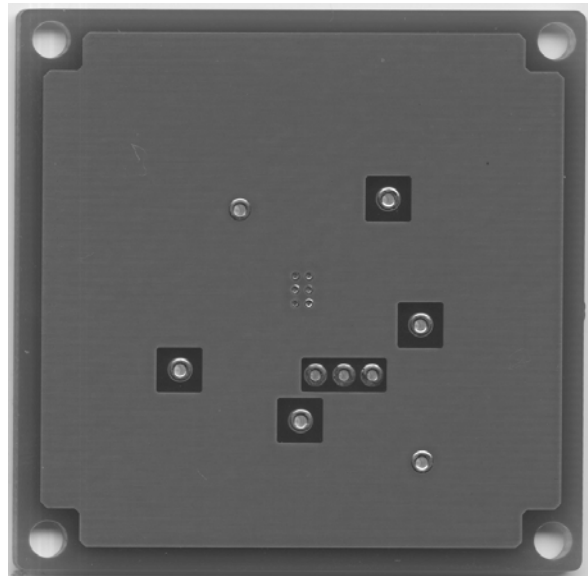
## Pin Assignment



Specified Board (Top side)

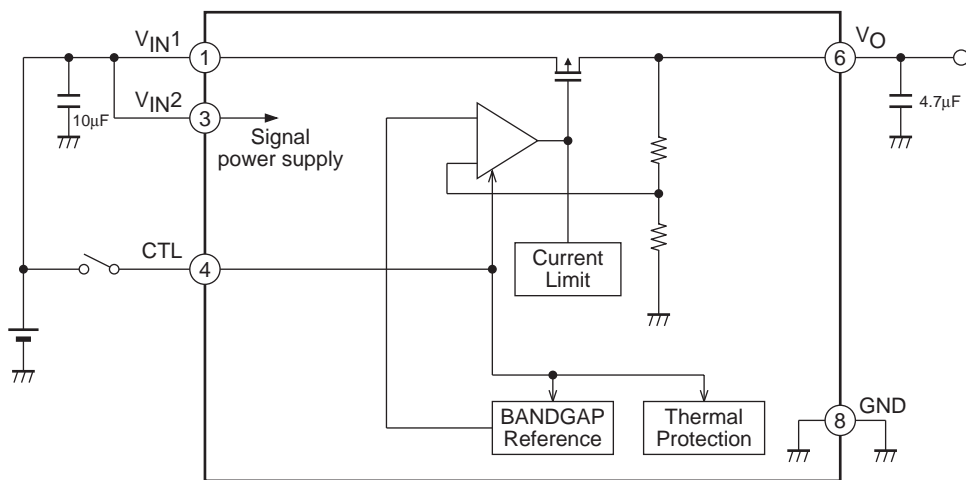


Specified Board (Bottom side)



Note: The substrate is common with LV59012M.

## Block Diagram

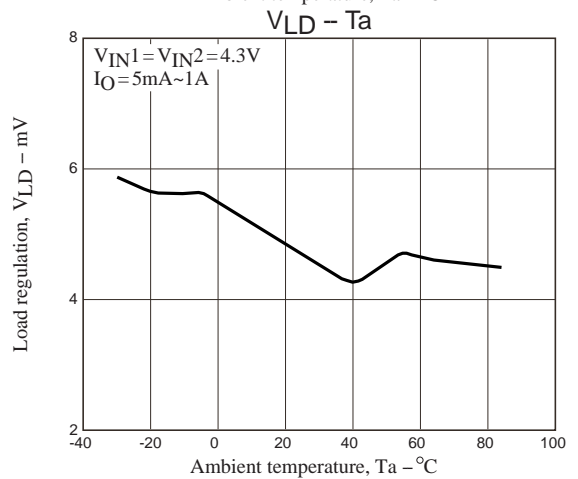
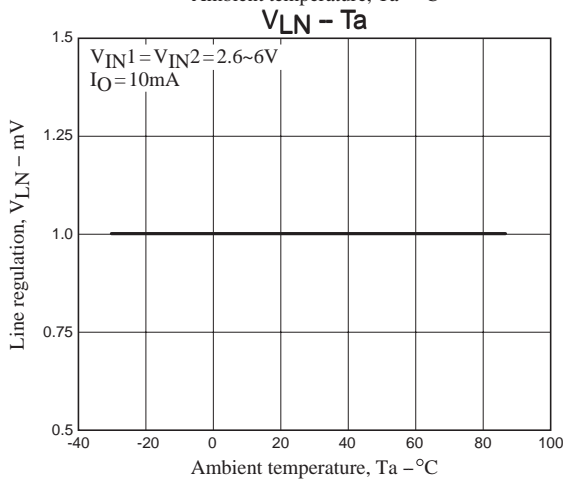
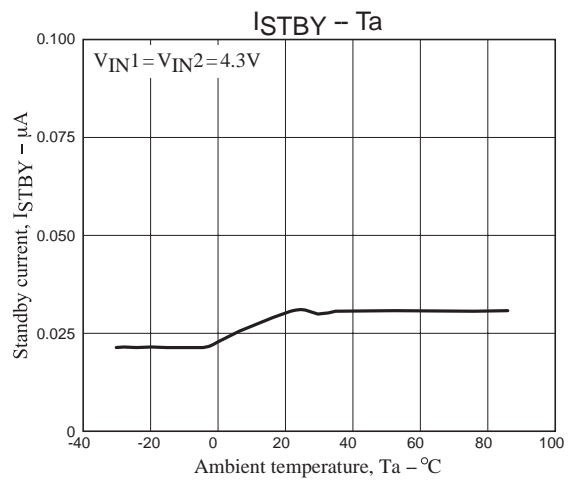
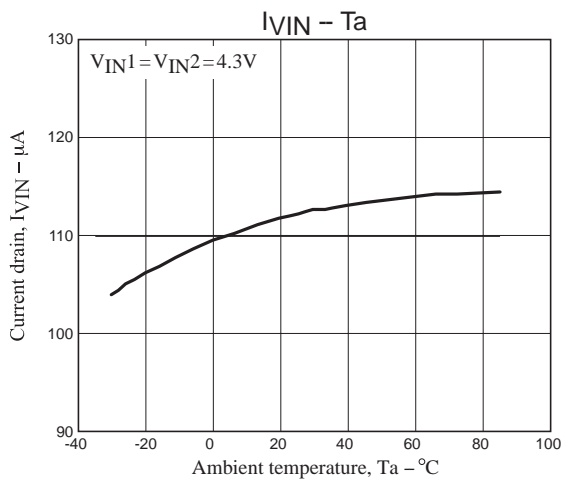


Pins 2,5,7 NC  
Connect and use VIN1 and VIN2.

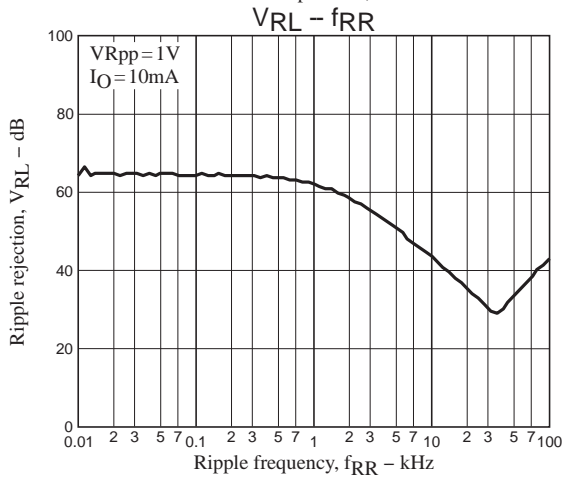
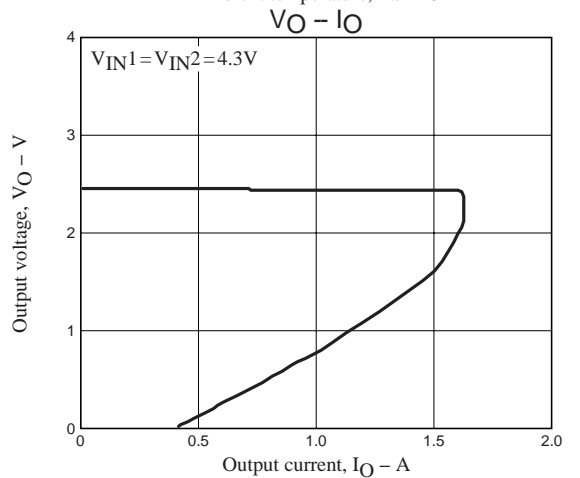
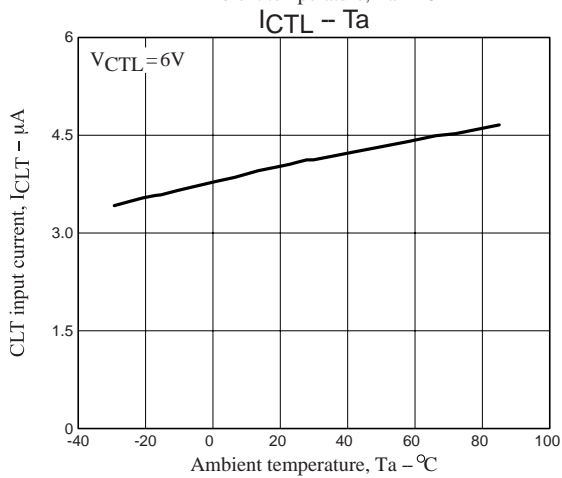
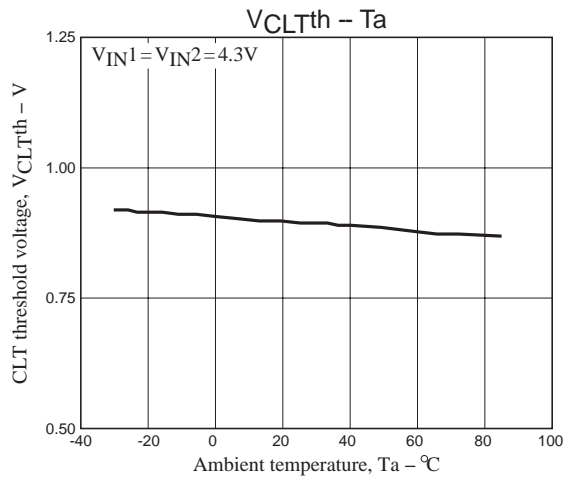
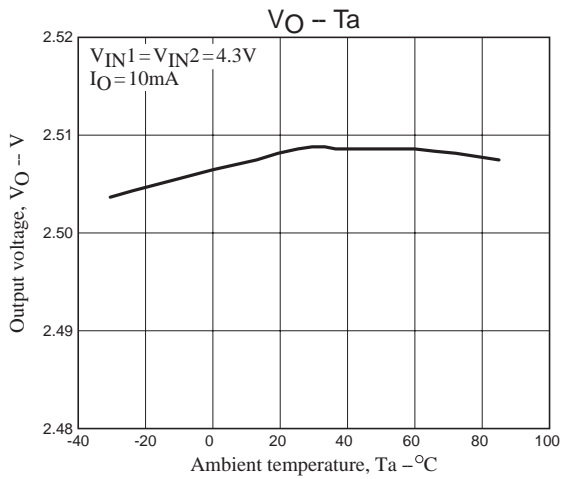
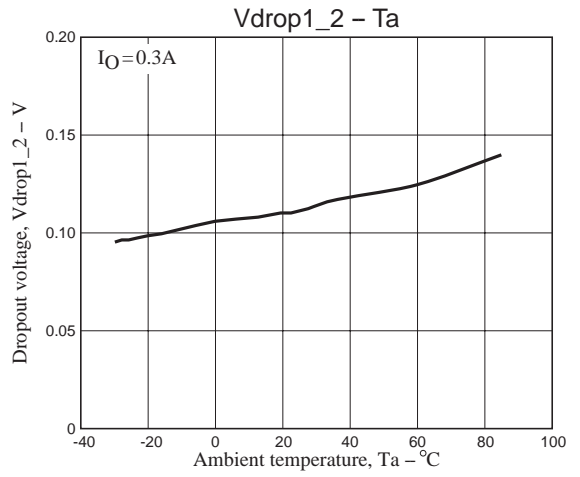
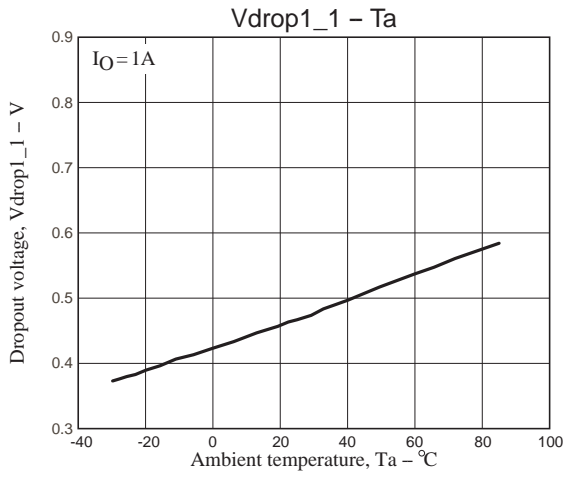
# LV59025M

## Pin Function

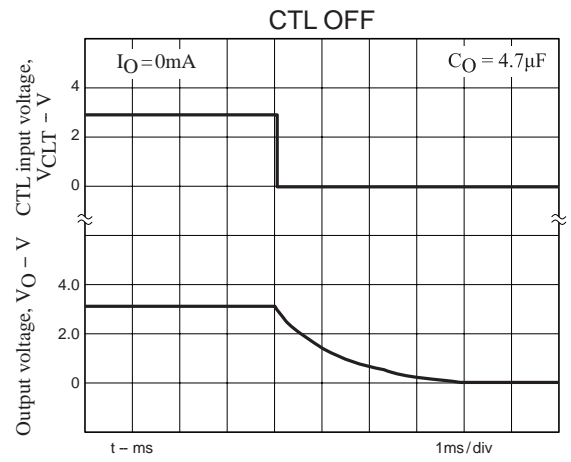
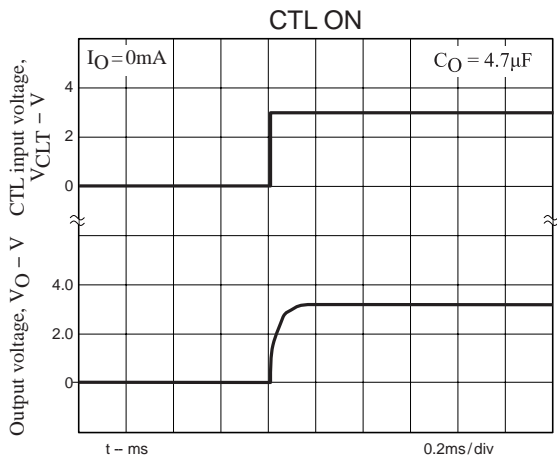
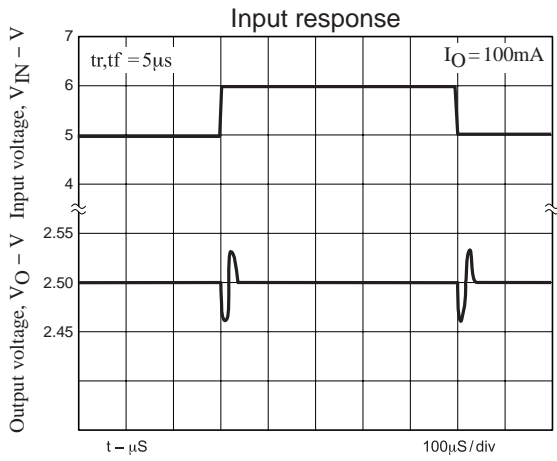
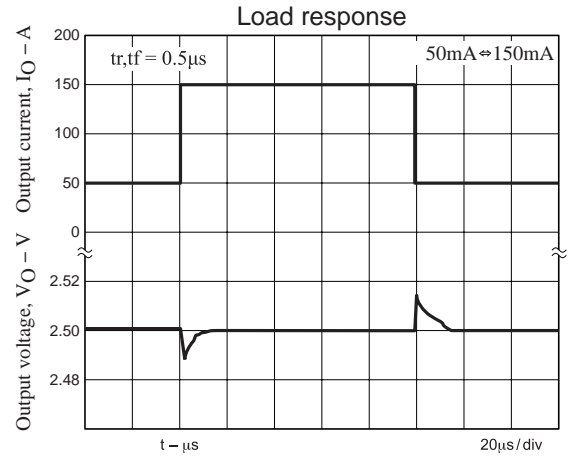
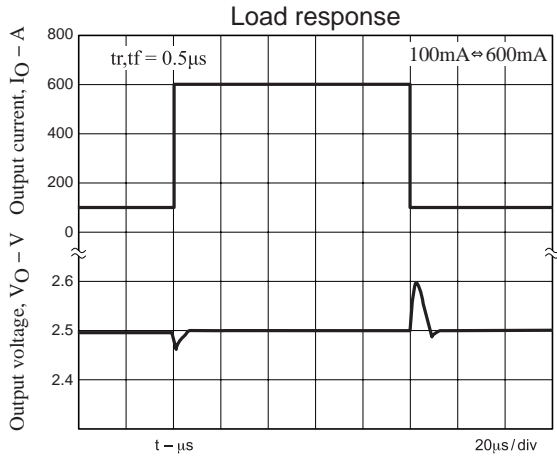
| Pin No. | Pin name         | Function                        | Equivalent circuit |
|---------|------------------|---------------------------------|--------------------|
| 1       | V <sub>IN1</sub> | Power system supply pin.        |                    |
| 6       | V <sub>O</sub>   | Output voltage pin.             |                    |
| 2       | NC               | No contact.                     |                    |
| 3       | V <sub>IN2</sub> | Signal system power supply pin. |                    |
| 4       | CTL              | ON/OFF control pin.             |                    |
| 5       | NC               | No contact.                     |                    |
| 7       | NC               | No contact.                     |                    |
| 8       | GND              | Ground pin.                     |                    |



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## Radiation Pad

- Radiation pad is high impedance and connected with a substrate of IC.
- Use radiation pad by GND or opening.

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