



**THE DATASHEET OF
LV59033M-TLM-H**





SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

LV59033M — Bi-CMOS LSI 3.3V Constant-Voltage Power Supply IC

Overview

The LV59033M is a constant-voltage power supply IC incorporating the output ON/OFF function, which offers advantages such as small current drain when output OFF and saves power dissipation of the equipment.

Features

- 3.3V output
- Output voltage ON/OFF function with the control pin (active, high)
- Output current of 1A obtainable (V_{IN1} , $V_{IN2} \geq 4.3V$)
- Small current drain (1 μ A max) when output OFF and optimum for power saving
- MFP8 (200mil) package, ensuring easy mounting design
- Full compliment of protection circuits incorporated (including overcurrent protection, thermal protection)

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 \times 50mm \times 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 | 3.4 to 6 | V |
| | V_{IN2} | V_{IN2} pin | 3.4 to 6 | V |
| Output current | I_O | | 0 to 1 | A |

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Electrical Characteristics at $T_a = 25^\circ\text{C}$, $V_{IN1} = V_{IN2} = 5\text{V}$

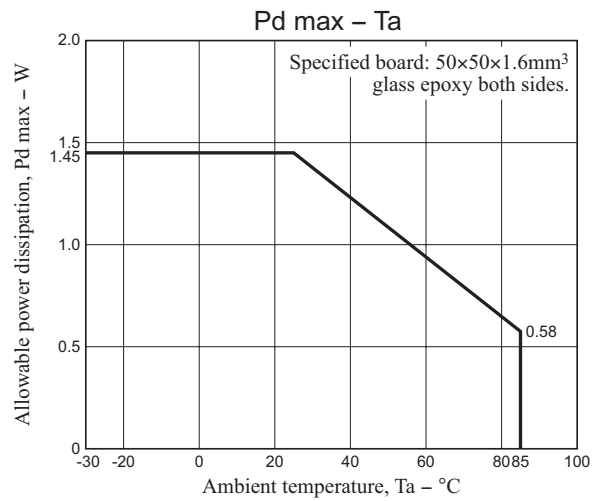
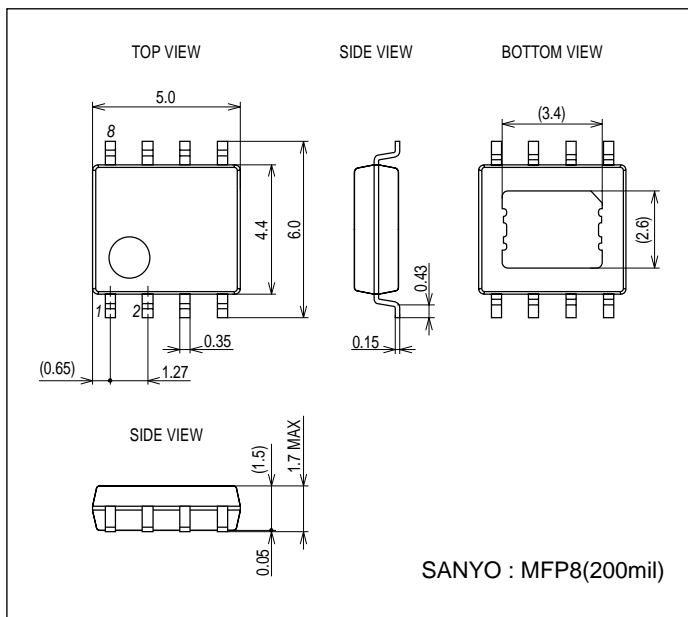
| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---------------------------------|----------------|---|---------|-----------|-------|-----------------------|
| | | | min | typ | max | |
| Current drain | I_{VIN} | LDO ON | | 110 | 160 | μA |
| Standby current | I_{STBY} | CTL = Low | | | 1 | μA |
| Output | | | | | | |
| Output voltage | V_O | $I_O = 10\text{mA}$ | 3.234 | 3.3 | 3.366 | V |
| Dropout voltage | V_{drop1_1} | $I_O = 1\text{A}$ | | | 1.0 | V |
| | V_{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} | $V_{IN1} = V_{IN2} = 3.4\text{V to } 6\text{V}$, $I_O = 10\text{mA}$ | | 10 | 50 | mV |
| Voltage temperature coefficient | ΔVT | $T_a = -30 \text{ to } +85^\circ\text{C}$, $I_O = 10\text{mA}$ | * | ± 100 | | ppm/ $^\circ\text{C}$ |
| Ripple Rejection | V_{RL} | $I_O = 10\text{mA}$, $V_{Rpp}=1\text{V}$, $f_{RR} = 1\text{kHz}$ | * | 60 | | dB |
| Output Noise Voltage | V_{ON} | $20\text{Hz} < f < 20\text{kHz}$ | * | 150 | | μVrms |
| CTL pin | | | | | | |
| 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 | μA |

* Design guarantee

Package Dimensions

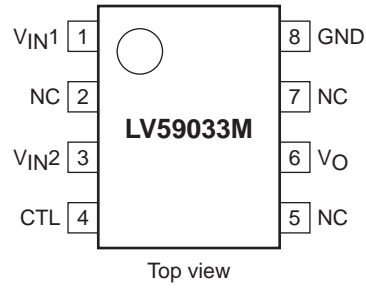
unit : mm (typ)

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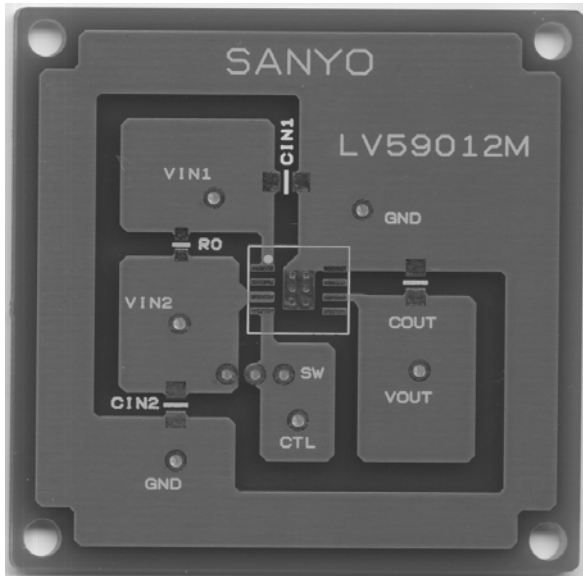


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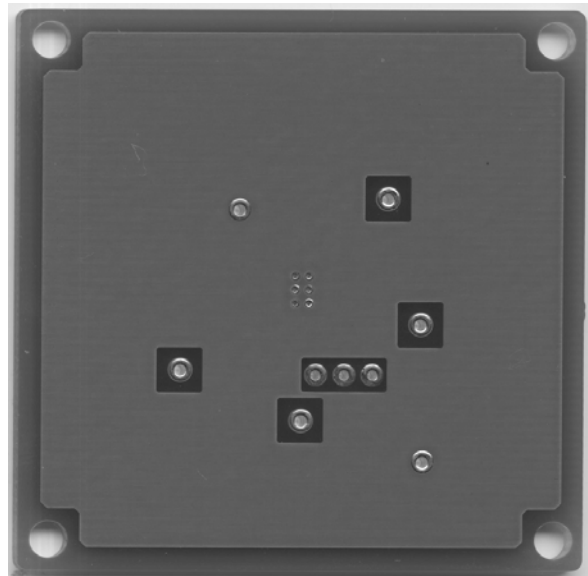
Pin Assignment



Specified Board (Top side)

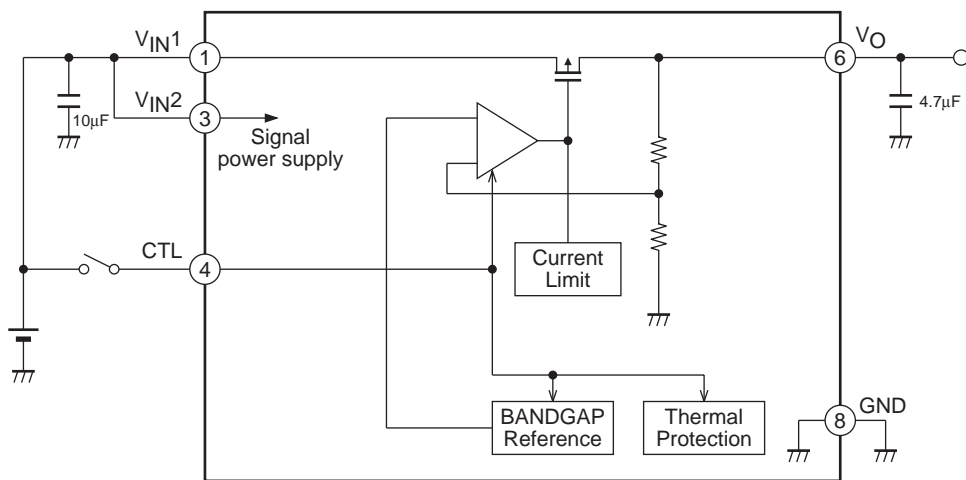


Specified Board (Bottom side)



Note: The substrate is common with LV59012M.

Block Diagram

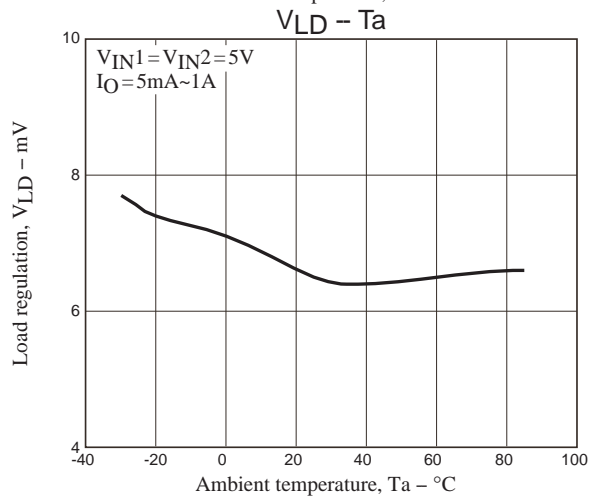
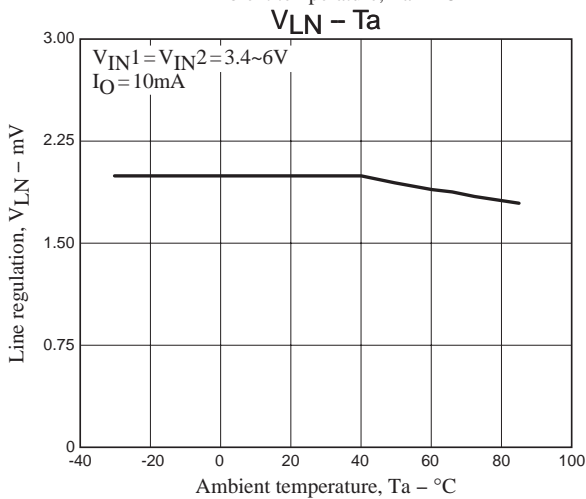
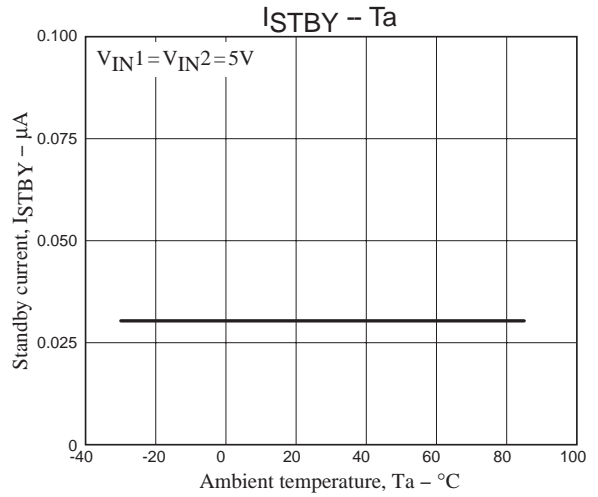
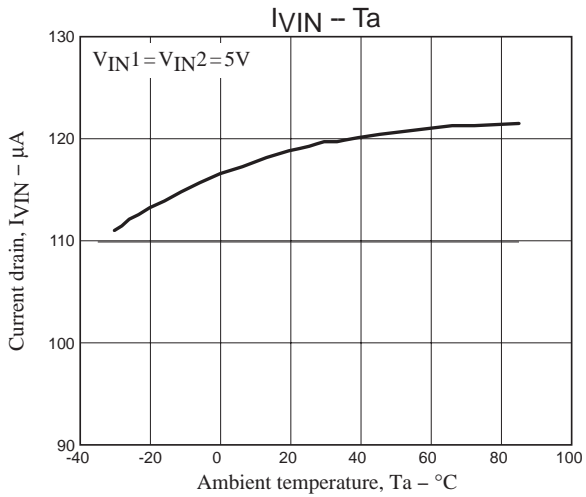


Pins 2,5,7 NC
Connect and use V_{IN1} and V_{IN2}.

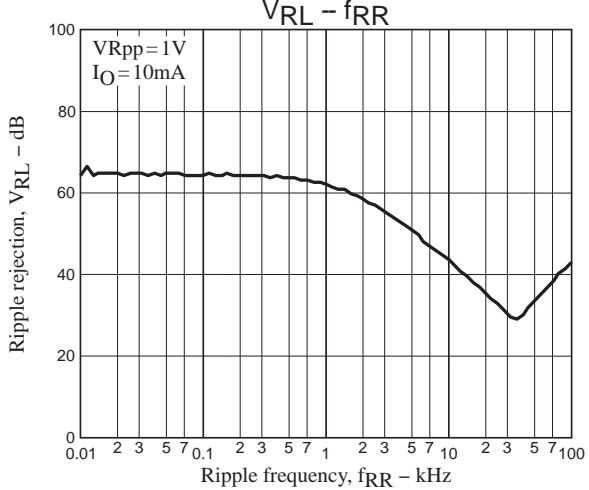
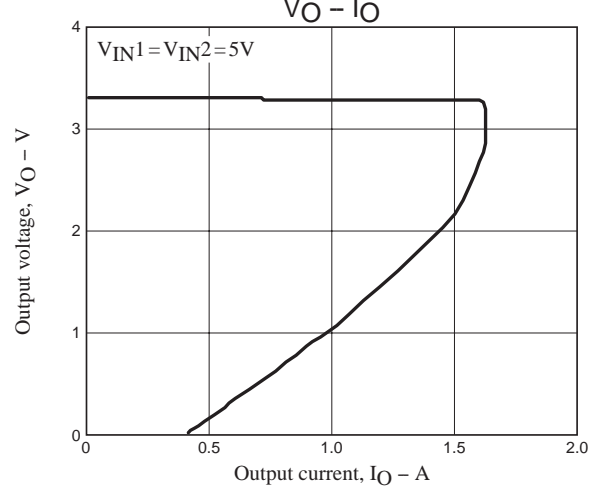
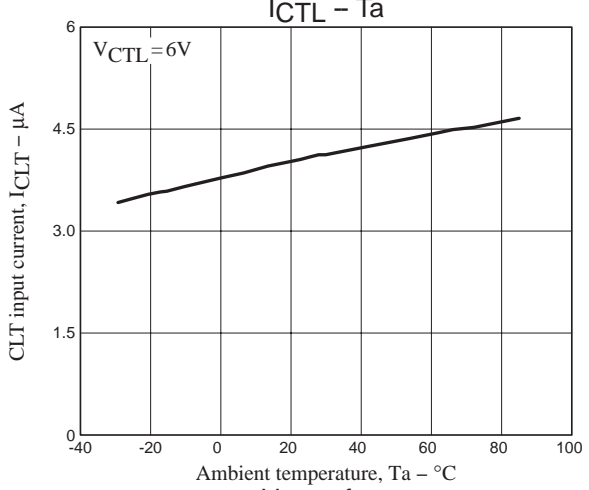
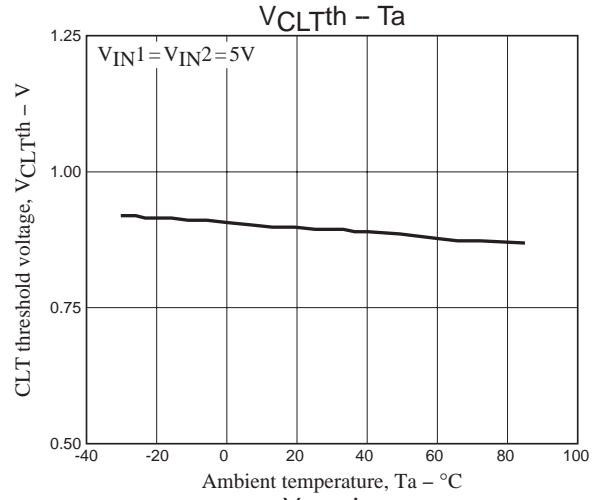
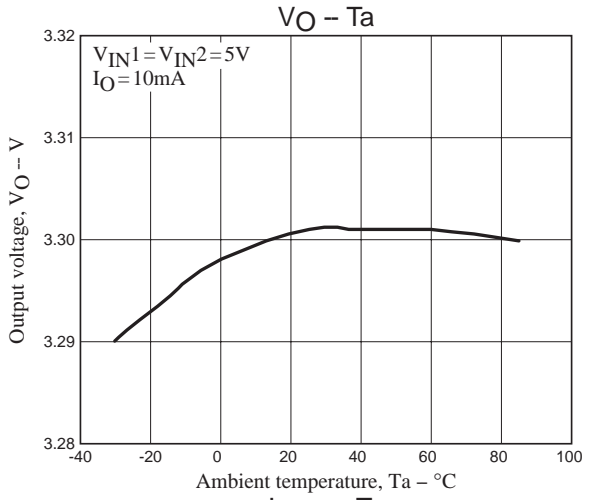
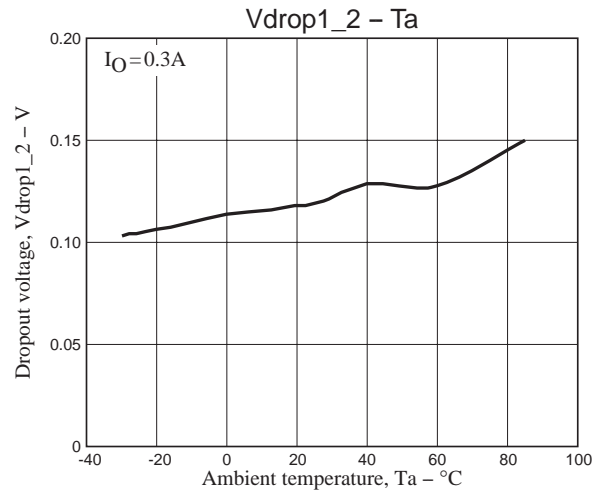
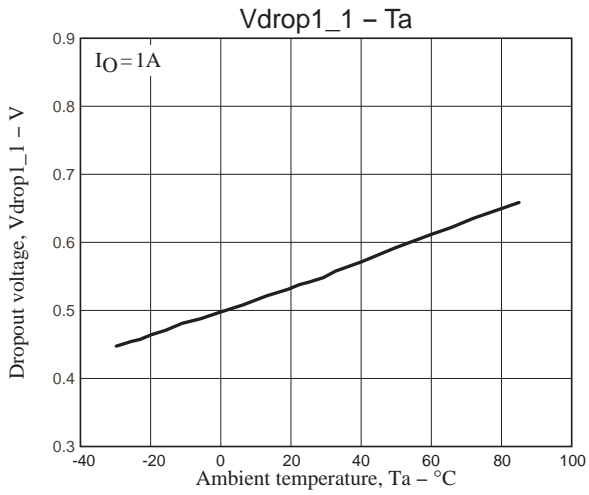
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Pin Function

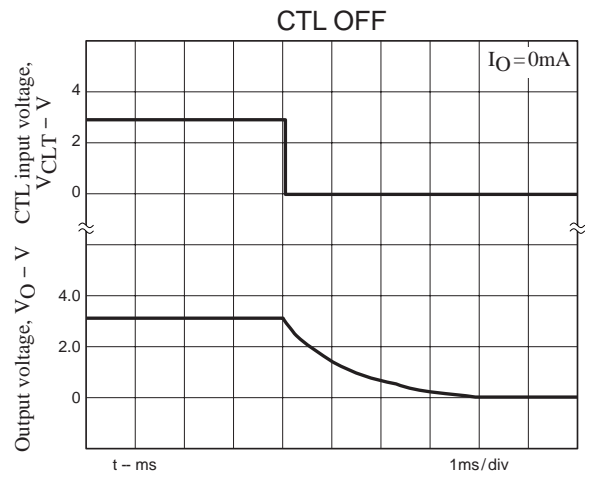
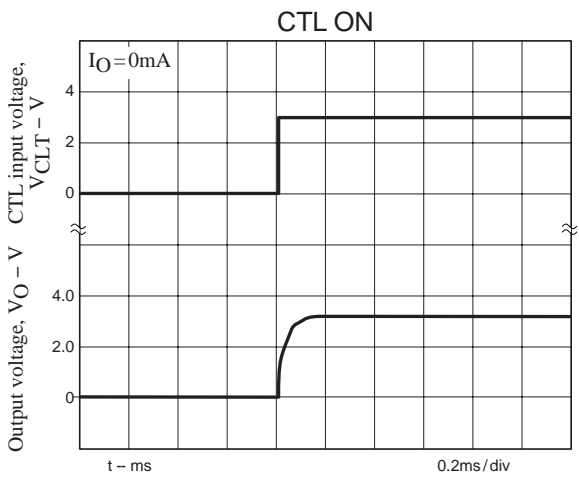
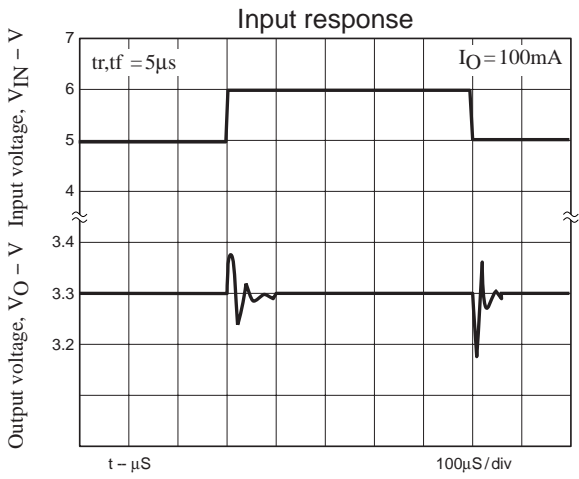
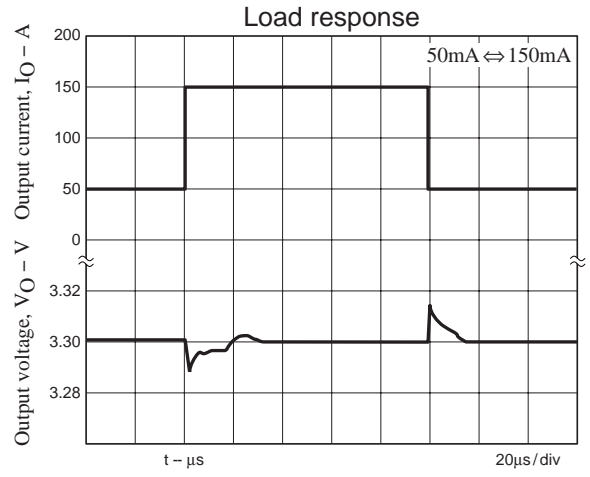
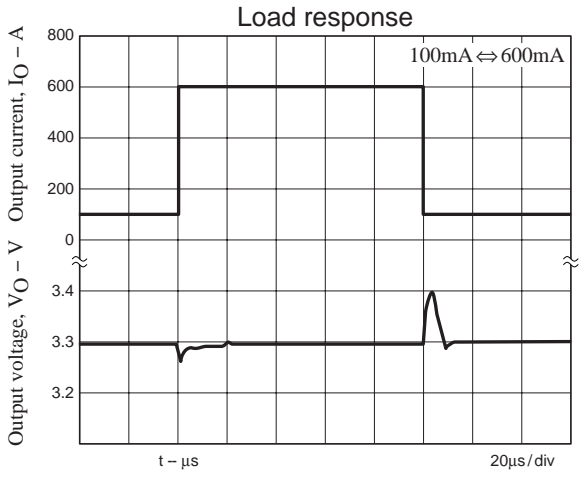
| Pin No. | Pin name | Function | Equivalent circuit |
|---------|------------------|---------------------------------|--------------------|
| 1 | V _{IN1} | Power system supply pin. | |
| 6 | V _O | Output voltage pin. | |
| 2 | NC | No contact. | |
| 3 | V _{IN2} | Signal system power supply pin. | |
| 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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