



SANYO Semiconductors

DATA SHEET

LV59012M — Bi-CMOS LSI For Potable Electronic Devices 1.2V Constant-Voltage Power Supply IC

Overview

The LV59012M is a constant-voltage power supply IC for potable electronic devices 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

- Output voltage ON/OFF function with the control pin (active, high)
- Output current of 1A obtainable
- 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 Ta = 25°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	Pd max	Mounted on a specified board.*	1.45	W
Operating Temperature	T _{opr}		-30 to +85	°C
Storage Temperature	T _{stg}		-40 to +150	°C

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

Recommended Operating Ranges at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
power supply	V _{IN1}	V _{IN1} pin	1.6 to 6	V
	V _{IN2}	V _{IN2} pin	1.8 to 6	V
Output current	I _O		0 to 1	A

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Electrical Characteristics at $T_a = 25^\circ\text{C}$, $V_{IN1} = V_{IN2} = 3\text{V}$

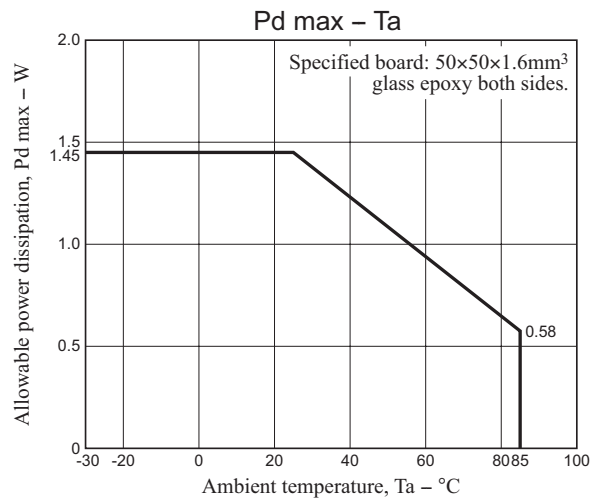
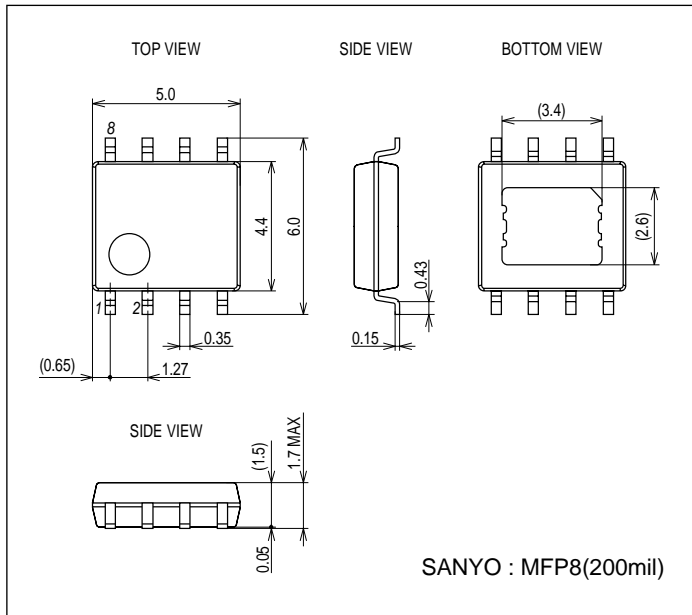
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Current drain	I_{VIN}	LDO ON		110	160	μA
Standby current	I_{STBY}	CTL = Low			1	μA
Output						
Output voltage	V_O	$I_O = 10\text{mA}$	1.176	1.2	1.224	V
Dropout voltage 1	V_{drop1_1}	$I_O = 1\text{A}$, $V_{IN1} = V_{IN2}$			1	V
	V_{drop1_2}	$I_O = 0.3\text{A}$, $V_{IN1} = V_{IN2}$			0.6	V
Dropout voltage 2	V_{drop2_1}	$I_O = 1\text{A}$, $V_{IN2} = 3\text{V}$, V_{IN1} dropout voltage			1	V
	V_{drop2_2}	$I_O = 0.3\text{A}$, $V_{IN2} = 3\text{V}$, V_{IN1} dropout voltage			0.4	V
Load Regulation	V_{LD}	$I_O = 5\text{mA}$ to 1A		10	50	mV
Line Regulation	V_{LN}	$V_{IN1} = V_{IN2} = 1.8\text{V}$ to 6V , $I_O = 10\text{mA}$		10	50	mV
Voltage temperature coefficient	ΔVT	$T_a = -30$ to $+85^\circ\text{C}$, $I_O = 10\text{mA}$	*	± 100		ppm/ $^\circ\text{C}$
Ripple Rejection	V_{RL}	$I_O = 10\text{mA}$, $V_{Rpp} = 1\text{V}$, $f_{RR} = 1\text{kHz}$	*	70		dB
Output Noise Voltage	V_{ON}	$I_O = 10\text{mA}$, $20\text{Hz} < f < 20\text{kHz}$	*	60		μVrms
CTL pin						
High level voltage	V_{CTLH}		1.5		5	V
Low level voltage	$V_{CTL L}$		0		0.3	V
Input current	I_{CTL}	$V_{CTL} = 6\text{V}$			8.5	μA

* Design guarantee

Package Dimensions

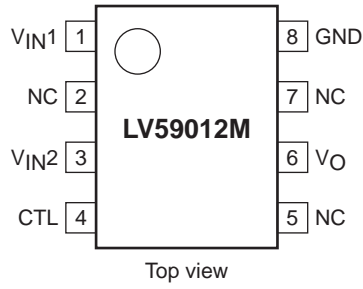
unit : mm (typ)

3372

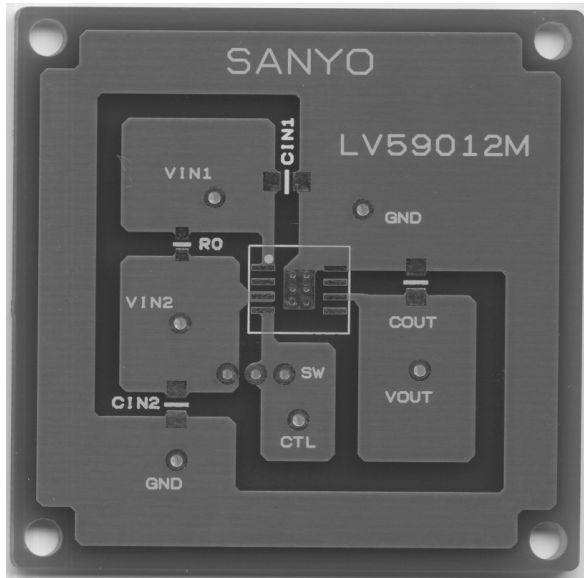


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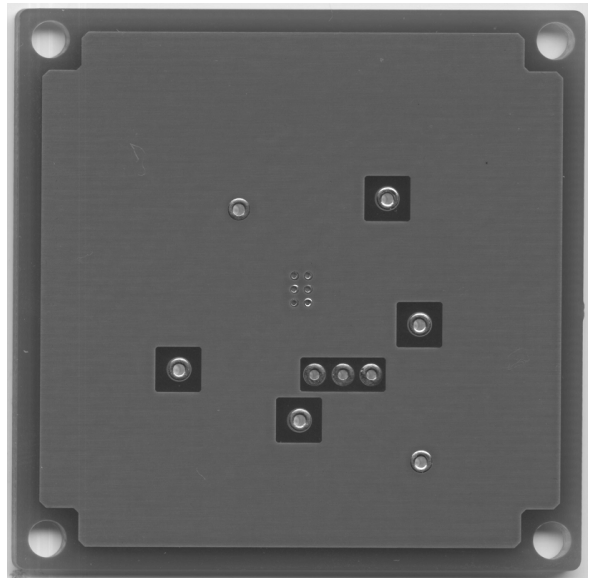
Pin Assignment



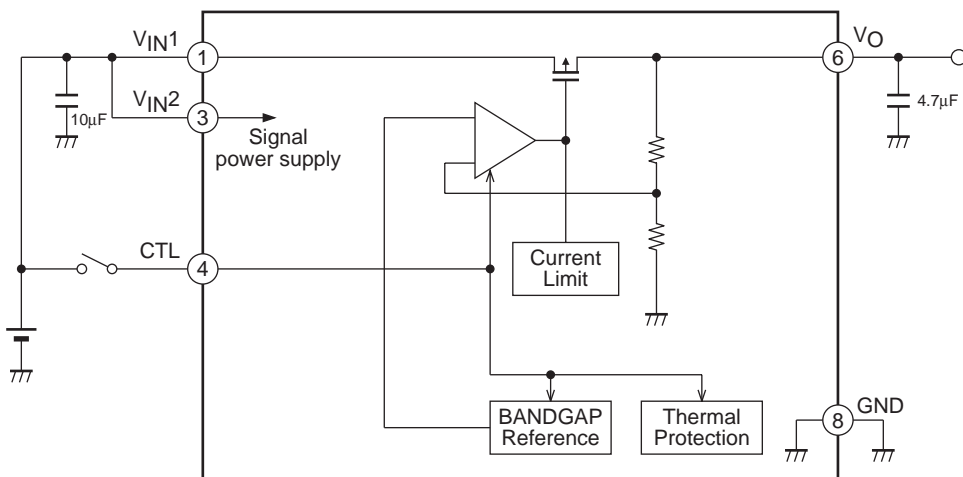
Specified Board (Top side)



Specified Board (Bottom side)



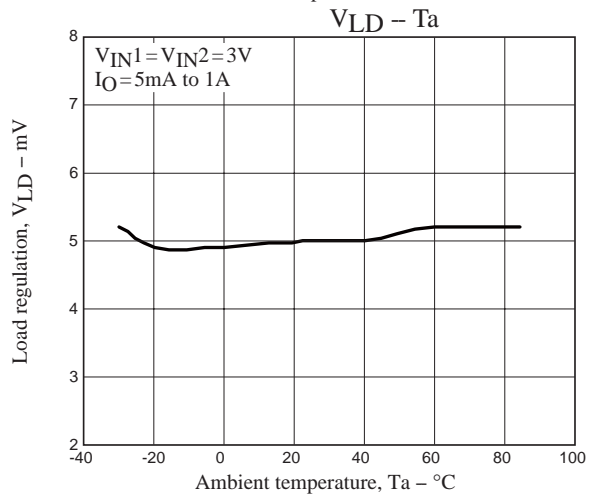
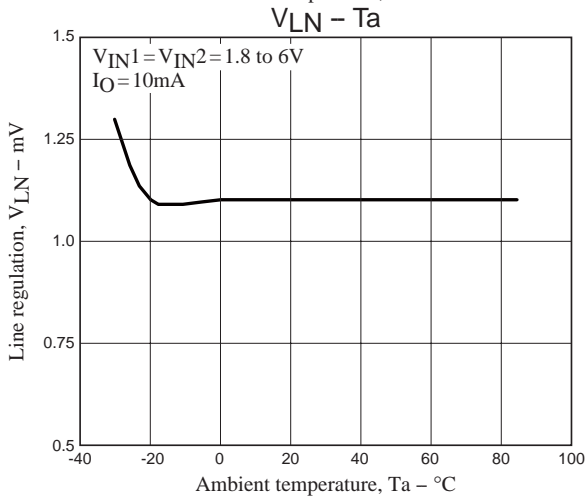
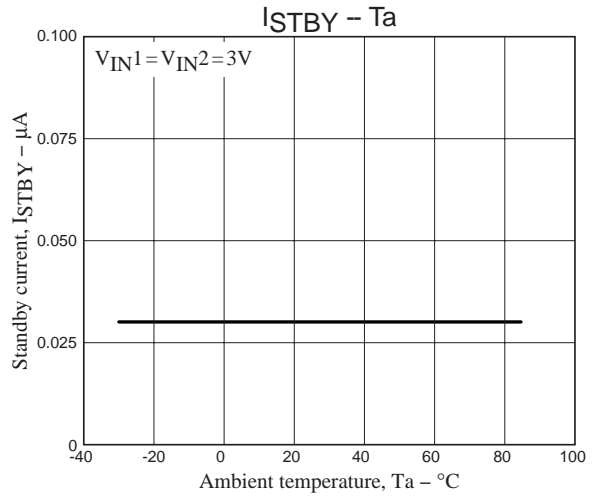
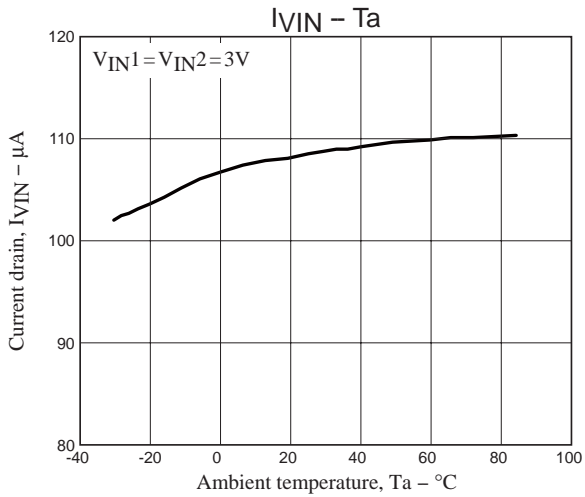
Block Diagram



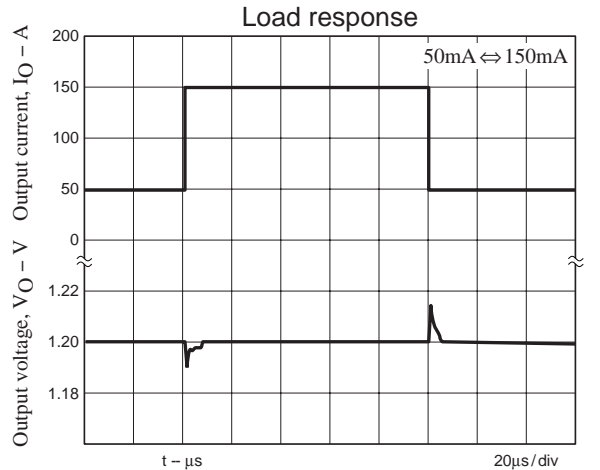
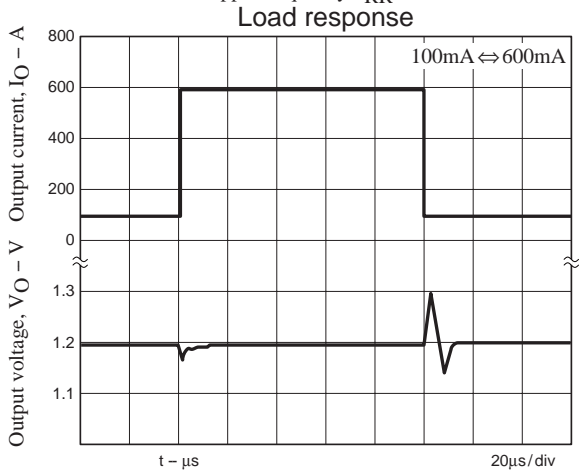
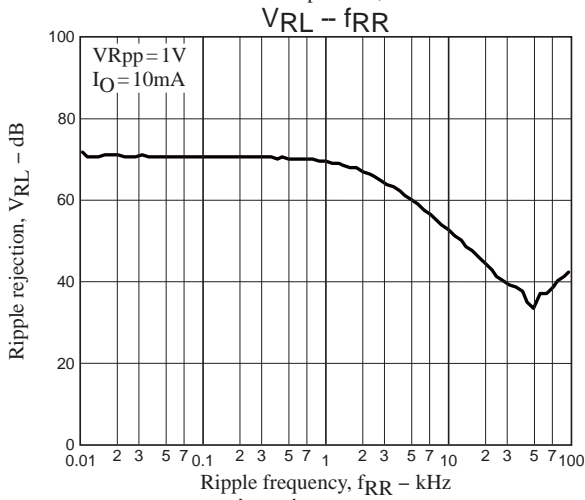
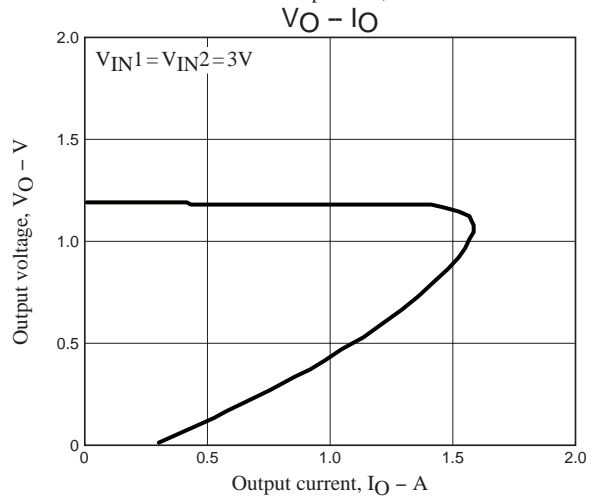
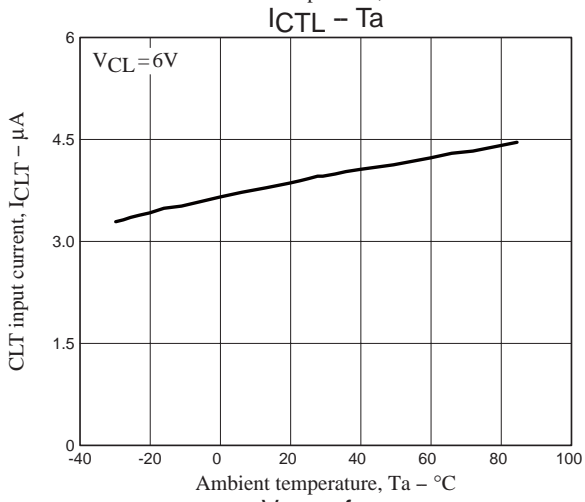
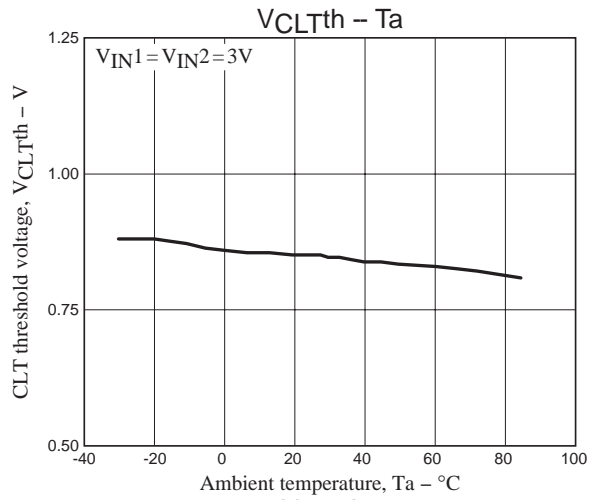
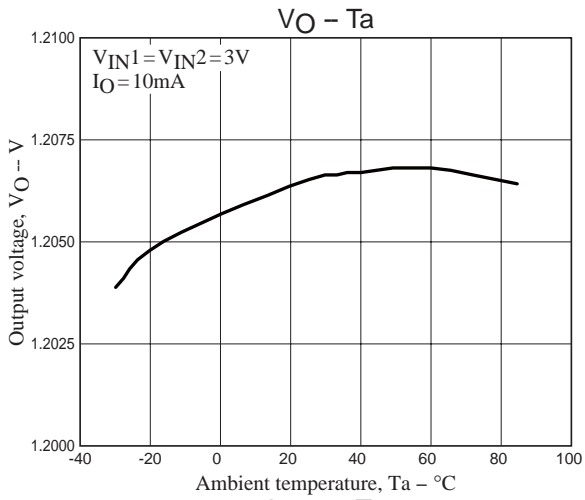
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Pin Function

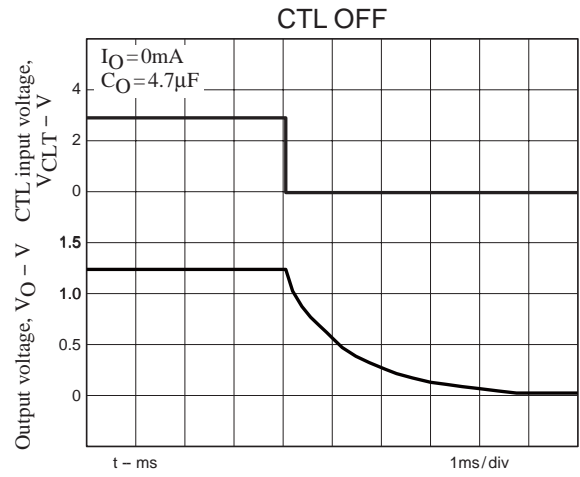
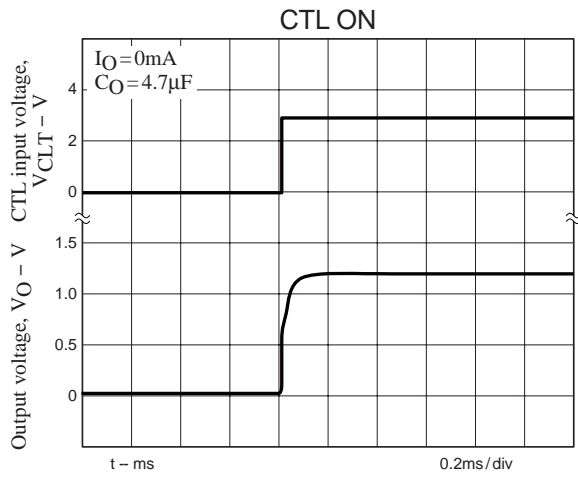
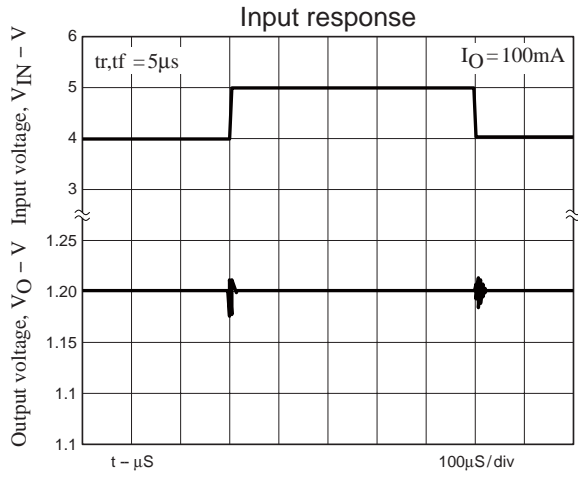
Pin No.	Pin name	Function	Equivalent circuit
1	V _{IN1}	Power system supply pin.	
6	V _O	Output voltage pin.	
2	NC	No contact.	
3	V _{IN2}	Signal system power supply pin.	
4	CTL	ON/OFF control pin.	
5	NC	No contact.	
7	NC	No contact.	
8	GND	Ground pin.	



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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.

V_{IN1} and V_{IN2}

The dropout voltage can be lowered by making V_{IN1} and V_{IN2} another power supply within a some current range. Refer to Figure 1.

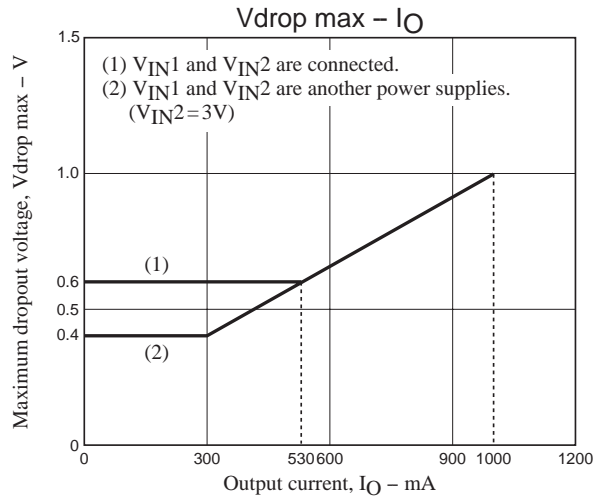


Figure 1

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