Ordering number : ENA1461

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 (1μA 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	$V_{IN}1$	$V_{IN}1$ pin	6.2	V
	$V_{IN}2$	$V_{IN}2$ pin	6.2	V
Allowable power dissipation	Pd max	Mounted on a specified board.*	1.45	W
Operating Temperature	Topr		-30 to +85	°C
Storage Temperature	Tstg		-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	$V_{IN}1$	$V_{IN}1$ pin	1.6 to 6	V
	$V_{IN}2$	$V_{IN}2$ pin	1.8 to 6	V
Output current	I_O		0 to 1	A

Electrical Characteristics at Ta = 25°C, $V_{IN}1 = V_{IN}2 = 3V$

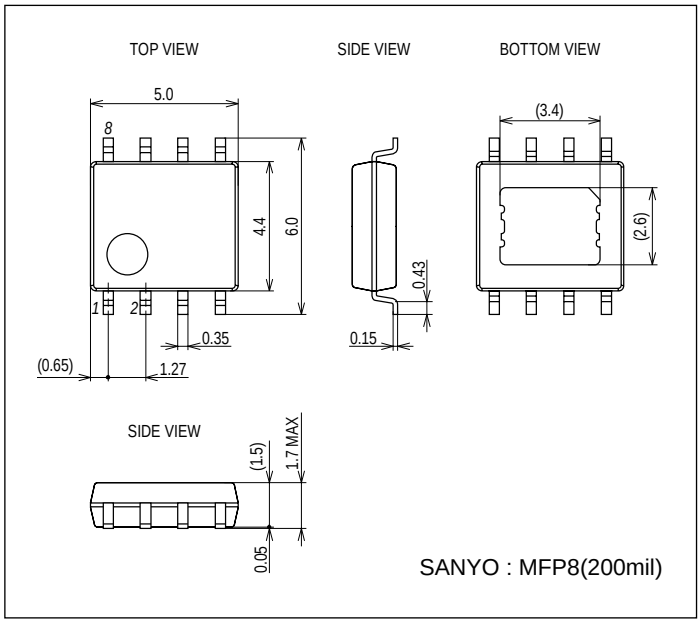
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Current drain	I_{VIN}	LDO ON		110	160	μA
Standby current	I_{STBY}	CTL = Low			1	μA
Output						
Output voltage	V_O	I_O = 10mA	1.176	1.2	1.224	V
Dropout voltage 1	Vdrop1_1	I_O = 1A, $V_{IN}1 = V_{IN}2$			1	V
	Vdrop1_2	I_O = 0.3A, $V_{IN}1 = V_{IN}2$			0.6	V
Dropout voltage 2	Vdrop2_1	I_O = 1A, $V_{IN}2$ = 3V, $V_{IN}1$ dropout voltage			1	V
	Vdrop2_2	I_O = 0.3A, $V_{IN}2$ = 3V, $V_{IN}1$ dropout voltage			0.4	V
Load Regulation	V_{LD}	I_O = 5mA to 1A		10	50	mV
Line Regulation	V_{LN}	$V_{IN}1 = V_{IN}2$ = 1.8V to 6V, I_O = 10mA		10	50	mV
Voltage temperature coefficient	ΔVT	Ta = -30 to +85°C, I_O = 10mA *		±100		ppm/°C
Ripple Rejection	V_{RL}	I_O = 10mA, VRpp=1V, f_{RR} = 1kHz *		70		dB
Output Noise Voltage	V_{ON}	I_O = 10mA, 20Hz < f < 20kHz *		60		μVrms
CTL pin						
High level voltage	$V_{CTL}H$		1.5		5	V
Low level voltage	$V_{CTL}L$		0		0.3	V
Input current	I_{CTL}	V_{CTL} = 6V			8.5	μA

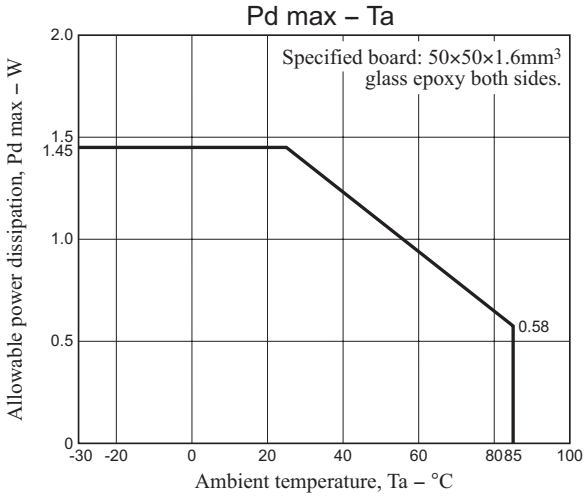
* Design guarantee

Package Dimensions

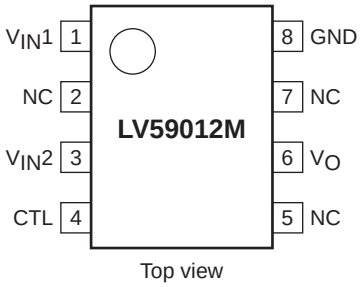
unit : mm (typ)

3372

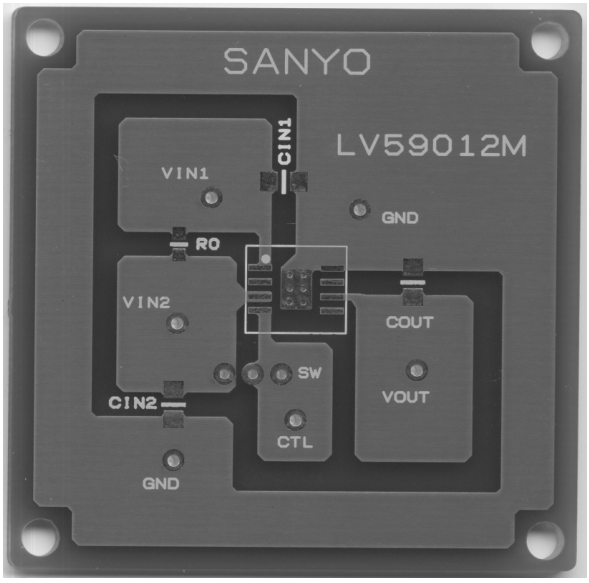




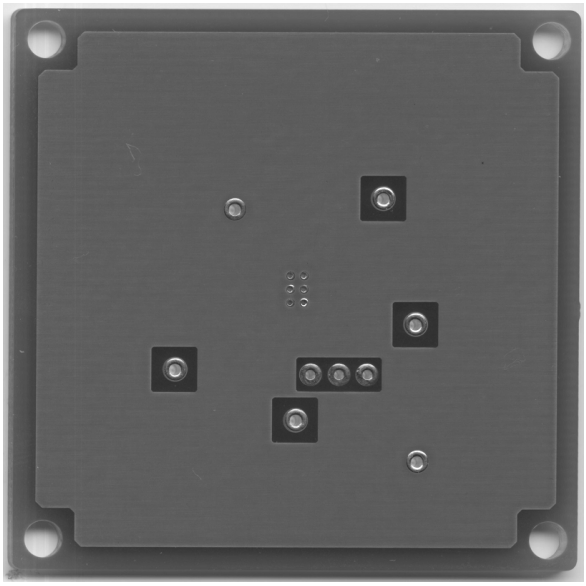
Pin Assignment



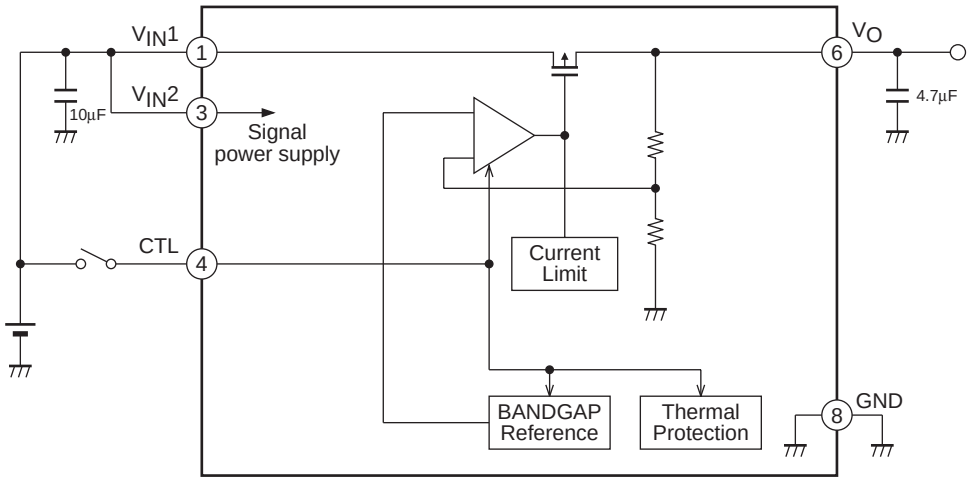
Specified Board (Top side)



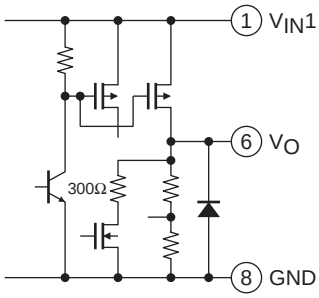
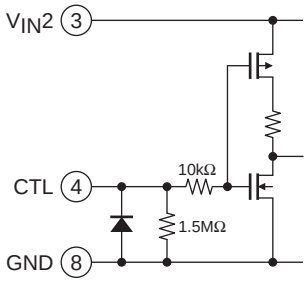
Specified Board (Bottom side)

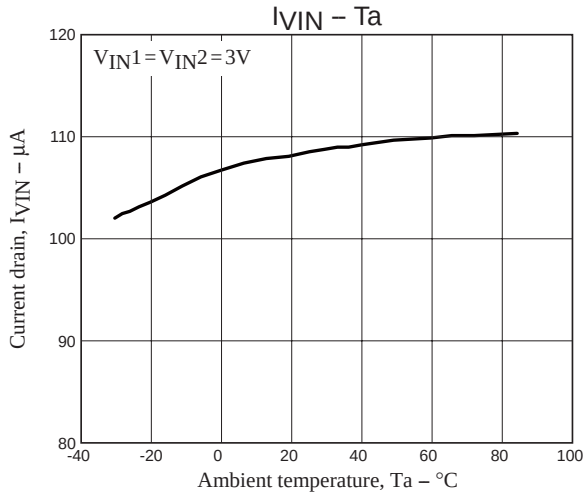


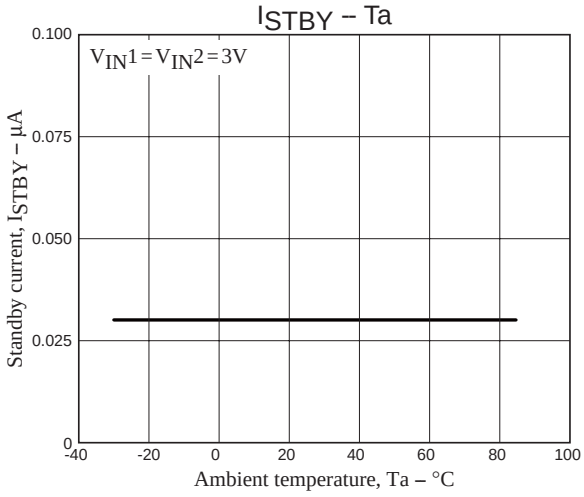
Block Diagram

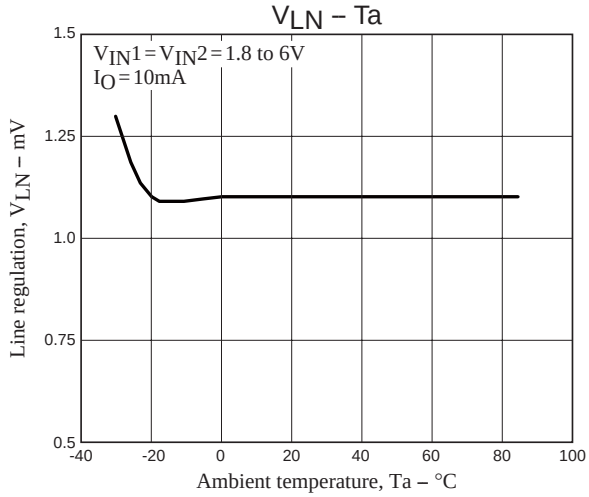


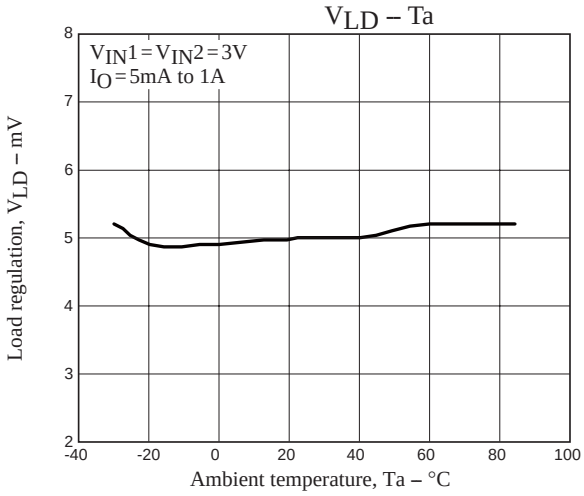
Pin Function

Pin No.	Pin name	Function	Equivalent circuit
1	$V_{IN}1$	Power system supply pin.	
6	V_O	Output voltage pin.	
2	NC	No contact.	
3	$V_{IN}2$	Signal system power supply pin.	
4	CTL	ON/OFF control pin.	
5	NC	No contact.	
7	NC	No contact.	
8	GND	Ground pin.	

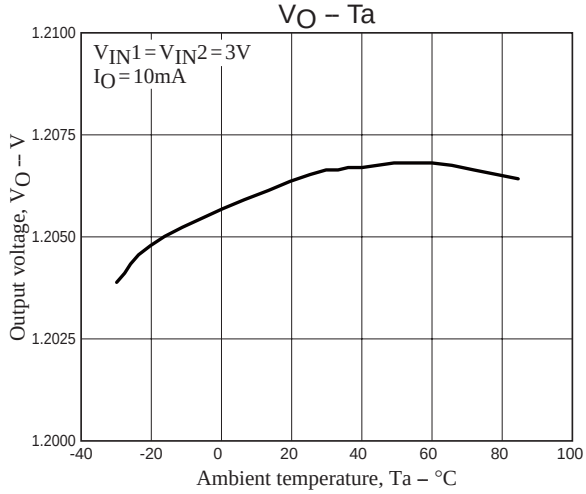




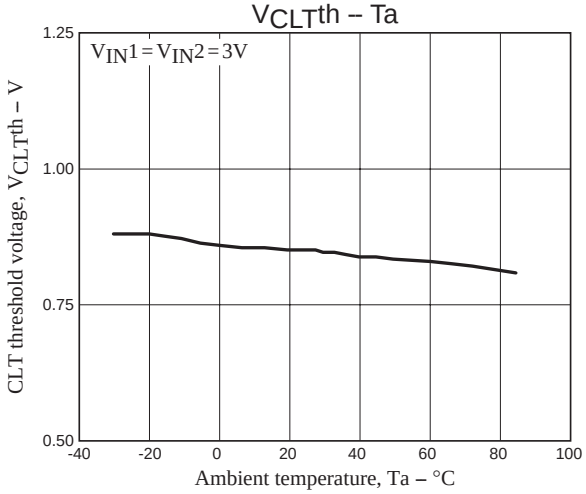




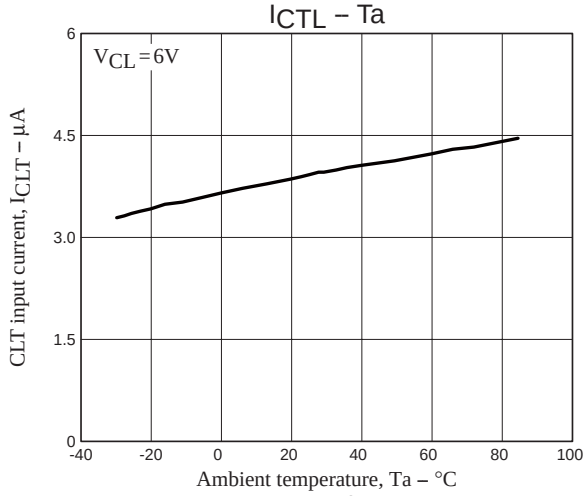
V_O – Ta



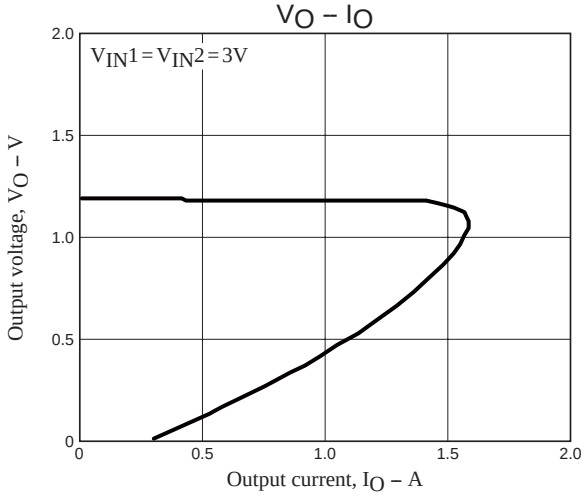
V_{CLT}th – Ta



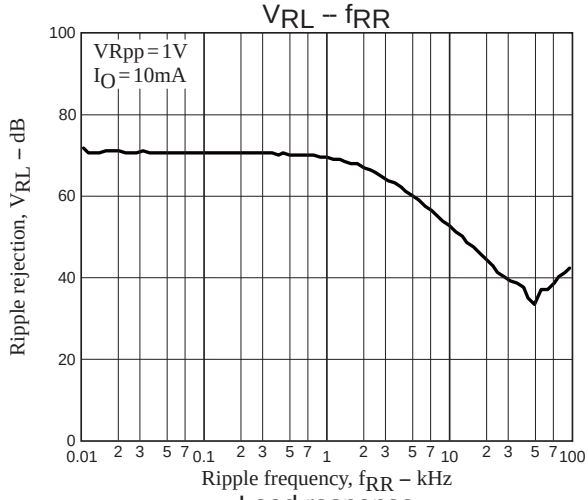
I_{CTL} – Ta



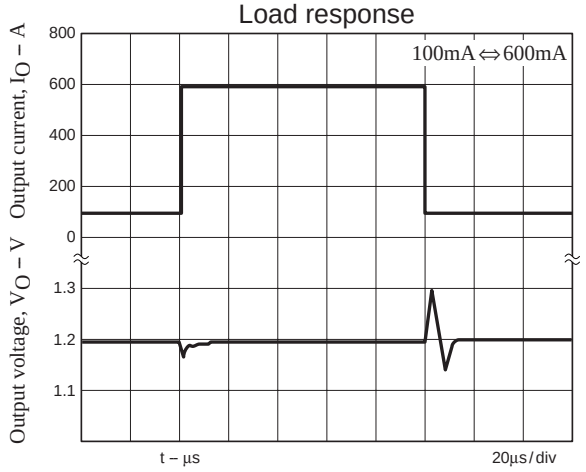
V_O – I_O



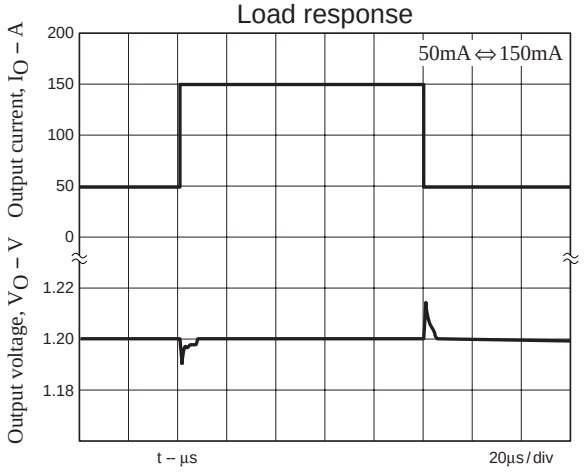
V_{RL} – f_{RR}



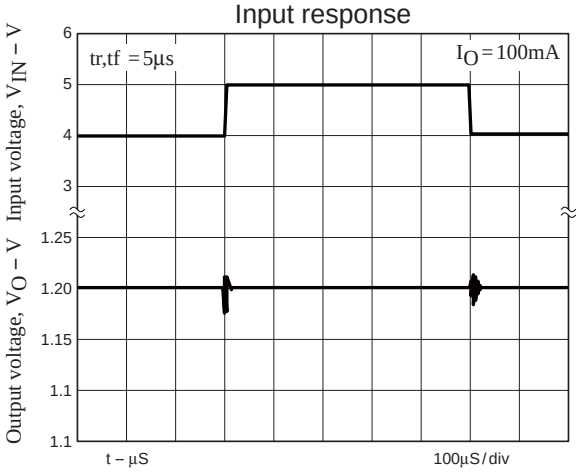
Load response



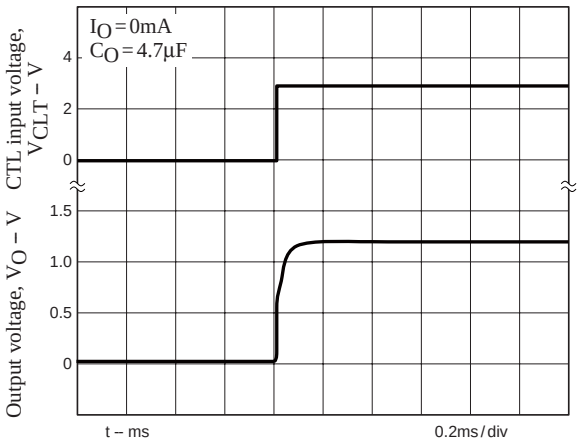
Load response



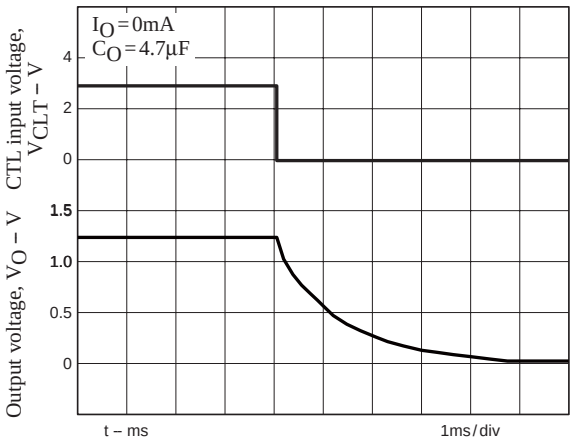
Input response



CTL ON



CTL OFF



Radiation Pad

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

$V_{IN}1$ and $V_{IN}2$

The dropout voltage can be lowered by making $V_{IN}1$ and $V_{IN}2$ another power supply within a some current range. Refer to Figure 1.

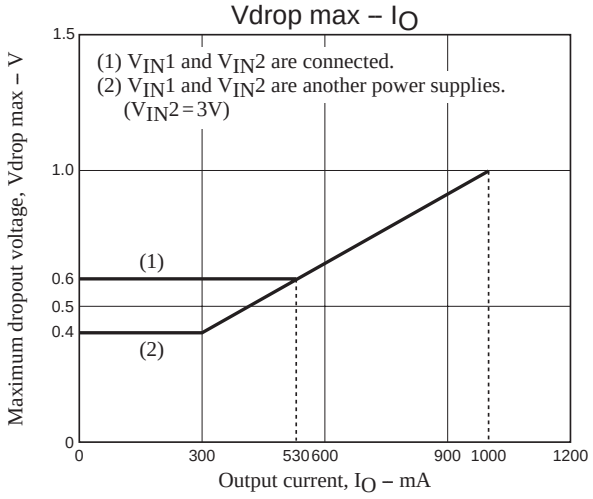


Figure 1