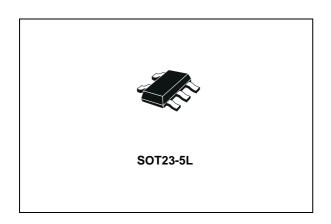


### Very low drop voltage regulators with inhibit

**Datasheet - production data** 



#### **Features**

- Very low dropout voltage (0.2 V typ. at 50 mA load)
- Very low quiescent current (typ. 500 μA at 50 mA load)
- Output current up to 50 mA
- Logic-controlled electronic shutdown
- Output voltages of 3.0 and 3.3 V
- Internal current and thermal limit
- Supply voltage rejection: 63 dB (typ)
- Only 1 µF for stability
- Temperature range: -25 °C to 125 °C
- Package available: SOT23-5L

#### **Description**

The LD2979 is a very low drop regulator available in SOT23-5L.

The very low drop-voltage and the very low quiescent current make them particularly suitable for low noise, low power applications and in battery powered systems.

Shutdown logic control function is available on five pin version (TTL compatible). This means that when the device is used as local regulator, it is possible to put a part of the board in standby, decreasing the total power consumption.

**Table 1. Device summary** 

Order codes	Output voltages
LD2979M30TR	3.0 V
LD2979M33TR	3.3 V

Contents LD2979

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Diagram LD2979

#### Diagram 1

v₀ —○ CURRENT LIMIT INHIBIT CONTROL START REFERENCE 0-DRIVER INHIBIT VOLTAGE ERROR AMPLIFIER TERM. PROTEC. O-GND SC07920

Figure 1. Schematic diagram



Pin configuration LD2979

## 2 Pin configuration

Figure 2. Pin connections (top view)

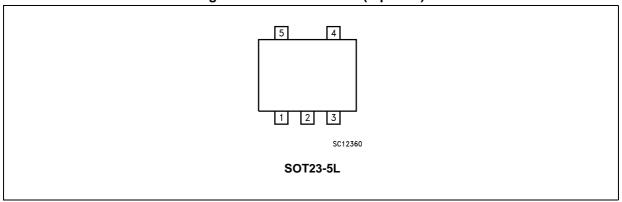


Table 2. Pin description

Symbol	Name and function	Pin number
V <sub>I</sub>	Input voltage	1
GND	Ground	2
INHIBIT	Control switch ON/OFF (1)	3
NC	Not to be connected	4
V <sub>O</sub>	Output voltage	5

<sup>1.</sup> Inhibit pin is not internally pulled-up then it must not be left floating. Connect to a positive voltage higher than 2 V to able the device.

LD2979 Maximum ratings

## 3 Maximum ratings

**Table 3. Absolute maximum ratings** 

Symbol	Parameter	Value	Unit
V <sub>I</sub>	DC input voltage	16	V
V <sub>INH</sub>	DC inhibit input voltage	V <sub>IN</sub>	V
Io	Output current	Internally limited	
P <sub>D</sub>	Power dissipation	Internally limited	
T <sub>STG</sub>	Storage temperature range	-40 to 150	°C
T <sub>OP</sub>	Operating junction temperature range	-25 to 125	°C

Note: Absolute maximum ratings are those values beyond which damage to the device may occur. Functional operation under these condition is not implied.



Electrical characteristics LD2979

## 4 Electrical characteristics

(Refer to the test circuits, Ta = 25 °C,  $V_{IN}$  =  $V_{O(NOM)}$  + 1 V,  $I_{O}$  = 1 mA,  $V_{INH}$  = 2 V,  $C_{O}$  = 1  $\mu$ F, unless otherwise specified).

**Table 4. Electrical characteristics** 

Symbol	Parameter	Test conditions	Min.	Тур.	Max.	Unit	
\/ -	Output voltage	V <sub>IN</sub> = 4 V	2.940	3	3.060	V	
Vo	Output voltage	$I_O = 1$ to 50mA, $T_a = -25$ to 125°C	2.880		3.120	'	
V Quitnut valtage	V <sub>IN</sub> = 4.3 V	3.234	3.3	3.366	V		
Vo	Output voltage	I <sub>O</sub> = 1 to 50mA, T <sub>a</sub> = -25 to 125°C	3.168		3.432		
Io	Output current limit		100			mA	
۸۷/ -	Line regulation	$V_{IN} = V_{O(NOM)} + 1V$ to 16V, $I_O = 1$ mA			0.028	0/ 0/	
$\Delta V_{O}$	Line regulation	T <sub>a</sub> = -25 to 125°C			0.064	%/V <sub>IN</sub>	
		I <sub>O</sub> = 0		80	110		
	Quiescent current (On	$I_{O} = 0$ , $T_{a} = -25$ to $125^{\circ}$ C			170		
	Mode)	I <sub>O</sub> = 50mA		500	700	μA	
I <sub>d</sub>		$I_O = 50$ mA, $T_a = -25$ to $125$ °C			1300		
	Quiescent current (Off	V <sub>INH</sub> < 0.18 V		0			
Mode)	Mode)	V <sub>INH</sub> < 0.18 V, T <sub>a</sub> = -25 to 125°C			1	μΑ	
SVR	Supply voltage rejection	$I_{O} = 50$ mA, $C_{OUT} = 10\mu$ F, $f = 120$ Hz		63		dB	
		I <sub>O</sub> = 0		6	12		
		$I_{\rm O} = 0$ , $T_{\rm a} = -25$ to $125^{\circ}{\rm C}$			18	mV	
	Dropout voltage	I <sub>O</sub> = 1mA		30	60		
V		$I_O = 1$ mA, $T_a = -25$ to $125$ °C			90		
V <sub>d</sub>		I <sub>O</sub> = 10mA		100	200		
		I <sub>O</sub> = 10mA, T <sub>a</sub> = -25 to 125°C			300		
		I <sub>O</sub> = 50mA		200	400		
		I <sub>O</sub> = 50mA, T <sub>a</sub> = -25 to 125°C			600		
V <sub>IL</sub>	Inhibit input logic low	Device Off, T <sub>a</sub> = -25 to 125°C			0.18	V	
V <sub>IH</sub>	Inhibit input logic high	Device On, T <sub>a</sub> = -25 to 125°C	2			V	
,	Inhibit input current	V <sub>INH</sub> = 0 V		0	-1		
I <sub>I</sub>		V <sub>INH</sub> = 5V, T <sub>a</sub> = -25 to 125°C		5	15	μA	
eN	Output noise voltage (RMS)	BW= 300Hz to 50kHz, $C_0 = 10\mu F$		160		μV	

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## 5 Typical characteristics

(unless otherwise specified  $T_A = 25$  °C)

Figure 3. Output voltage vs temperature

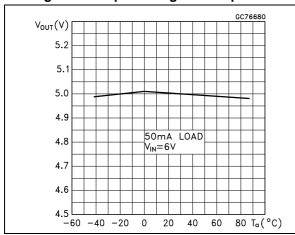


Figure 4. Output voltage vs input voltage

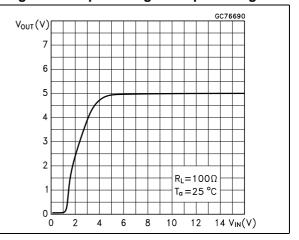


Figure 5. Output voltage vs input voltage

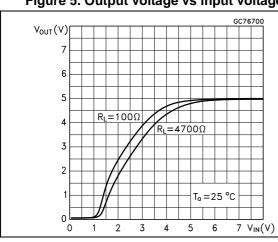


Figure 6. Dropout voltage vs output current

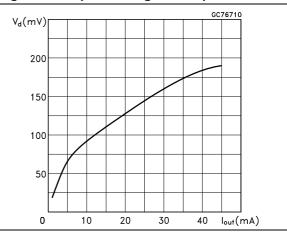


Figure 7. Dropout voltage vs temperature

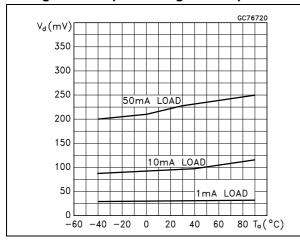
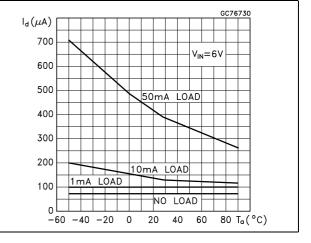


Figure 8. Quiescent current vs temperature



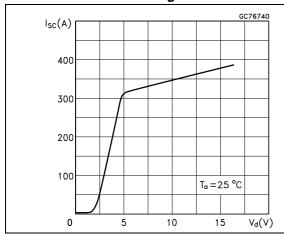
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Figure 9. Short circuit current vs dropout voltage

Figure 10. Inhibit voltage vs temperature



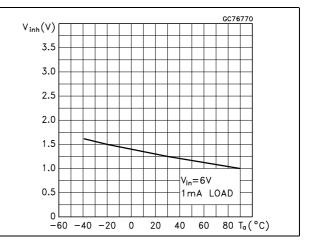
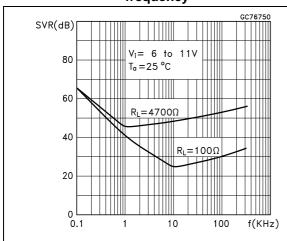
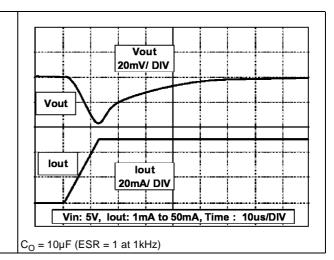


Figure 11. Supply voltage rejection vs frequency

Figure 12. Load transient response





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Figure 13. Inhibit current vs temperature

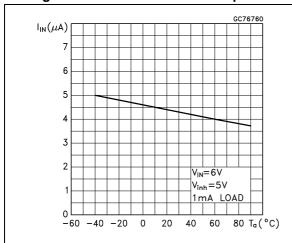


Figure 14. Load transient response

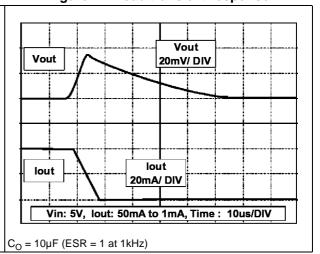
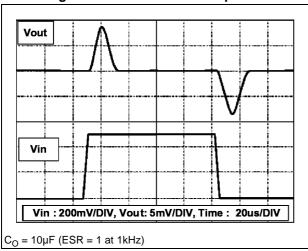


Figure 15. Line transient response





## 6 Package mechanical data

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK<sup>®</sup> packages, depending on their level of environmental compliance. ECOPACK<sup>®</sup> specifications, grade definitions and product status are available at: <a href="https://www.st.com">www.st.com</a>. ECOPACK<sup>®</sup> is an ST trademark.

Table 5. SOT23-5L mechanical data

Dim.	mm			
	Min.	Тур.	Max.	
А	0.90		1.45	
A1	0		0.15	
A2	0.90		1.30	
b	0.30		0.50	
С	2.09		0.20	
D		2.95		
E		1.60		
е		0.95		
Н		2.80		
L	0.30		0.60	
θ	0		8	



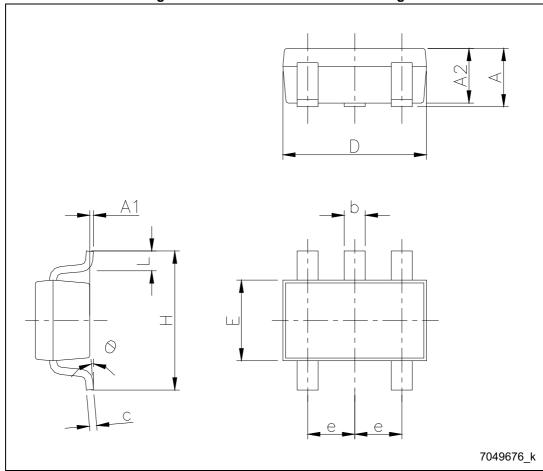
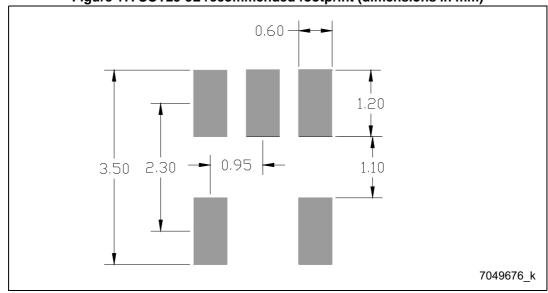


Figure 16. SOT23-5L mechanical drawing





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# 7 Packaging mechanical data

Table 6. Tape and reel SOT23-5L mechanical data

Dim.	mm			
	Min.	Тур.	Max.	
А			180	
С	12.8	13.0	13.2	
D	20.2			
N	60			
Т			14.4	
Ao	3.13	3.23	3.33	
Во	3.07	3.17	3.27	
Ко	1.27	1.37	1.47	
Po	3.9	4.0	4.1	
Р	3.9	4.0	4.1	

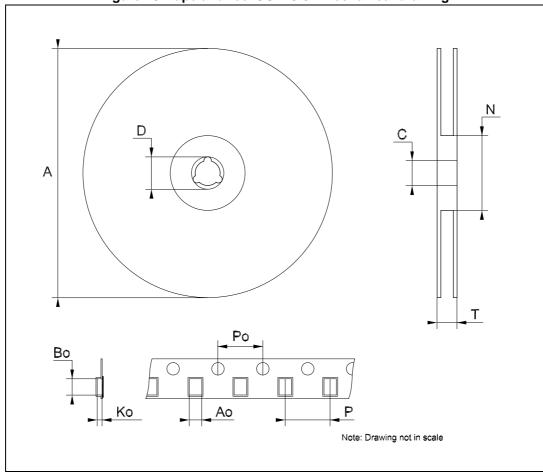


Figure 18. Tape and reel SOT23-5L mechanical drawing

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Revision history LD2979

# 8 Revision history

Table 7. Document revision history

Date	Revision	Changes	
15-Mar-2005	10	Add tape & reel for TO-92.	
03-Jul-2006	11	Order codes updated.	
16-May-2007	12	Order codes updated.	
08-Jun-2007	13	Order codes updated.	
09-Apr-2008	14	Modified: Table 1 on page 1.	
06-Nov-2013 15		Document name changed from LD2979xx to LD2979.  Updated <i>Table 1: Device summary</i> , <i>Table 1: Device summary</i> and <i>Section Table 4.: Electrical characteristics</i> .  Minor text changes in features and description in cover page.	



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