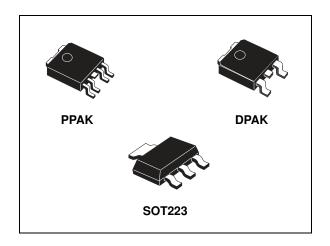


800 mA fixed and adjustable output very low drop voltage regulator

Datasheet - production data



Description

The LD29080 is a medium current, high accuracy, low-dropout voltage regulators series. These regulators feature 400 mV dropout voltage and very low ground current. Designed for medium current loads, these devices also find applications in lower current, extremely low dropout-critical systems, where their tiny dropout voltage and ground current values are important attributes. Typical application are in power supply switching post regulation, series power supply for monitors, series power supply for VCRs and TVs, computer systems and battery powered systems.

Features

- Very low dropout voltage (typ. 0.4 at 800 mA)
- · Guaranteed output current up to 800 mA
- Fixed and adjustable output voltage (± 1 % at 25 °C)
- Internal current and thermal limit
- · Logic controlled electronic shutdown

Table 1. Device summary

	Order codes	Output valtages	
DPAK (tape and reel)	PPAK (tape and reel)	SOT223	- Output voltages
LD29080DT15R	LD29080PT15R		1.5 V
LD29080DT18R	LD29080PT18R		1.8 V
LD29080DT25R	LD29080PT25R		2.5 V
LD29080DT33R	LD29080PT33R	LD29080S33R	3.3 V
LD29080DT50R	LD29080PT50R		5.0 V
LD29080DT90R	LD29080PT90R		9.0 V
	LD29080PTR		ADJ

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Contents LD29080

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LD29080 Diagram

1 Diagram

VI DUMP PROTECTION

INH OSTART-UP

CURRENT LIMIT

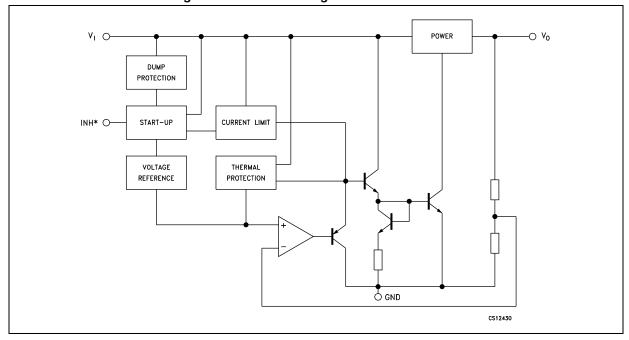
VOLTAGE PROTECTION

THERMAL PROTECTION

GND CS15250

Figure 1. Schematic diagram for adjustable version

Figure 2. Schematic diagram for fixed version



^{*} Only for version with inhibit function.

Pin configuration LD29080

2 Pin configuration

Figure 3. Pin connections (top view)

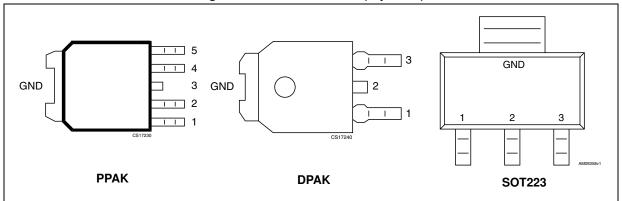
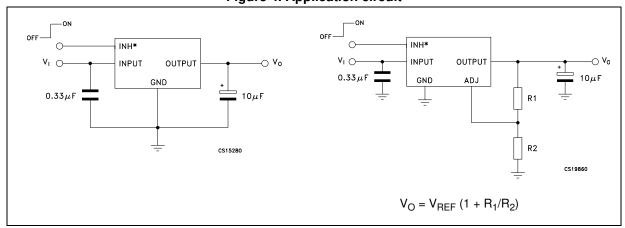


Table 2. Pin description

Symbol	PPAK	DPAK	SOT223
V _I	2	1	1
GND	3	2	2
V _O	4	3	3
ADJ/N.C. (1)	5		
INHIBIT (2)	1		

^{1.} Not connected for fixed version.

Figure 4. Application circuit



^{*} Only for version with inhibit function.

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^{2.} Not internally pulled up; in order to assure the operating condition (device in ON mode), it must be connected to a positive voltage higher than 2 V.

LD29080 Maximum ratings

3 Maximum ratings

Table 3. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V _I	DC input voltage	30 ⁽¹⁾	٧
V _{INH}	Inhibit input voltage	14	٧
Io	Output current	Internally limited	mA
P _D	Power dissipation	Internally limited	mW
T _{STG}	Storage temperature range	- 55 to 150	°C
T _{OP}	Operating temperature range	- 40 to 125	°C

^{1.} Above 14 V the device is automatically in shut-down.

Note:

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

Table 4. Thermal data

Symbol	Parameter	DPAK	PPAK	SOT223	Unit	
R_{thJC}	Thermal resistance junction-case	8	8	25	°C/W	
R_{thJA}	Thermal resistance junction-ambient	100	100	110	°C/W	

Electrical characteristics LD29080

4 Electrical characteristics

 l_O = 10 mA, (*Note 4*) T_J = 25 °C, V_I = 3.5 V, V_{INH} = 2V, C_I = 330 nF, C_O = 10 μF , unless otherwise specified.

Table 5. Electrical characteristics of LD29080#15

Symbol	Parameter	Test conditions	Min.	Тур.	Max.	Unit
VI	Operating input voltage	I _O = 10 mA to 800 mA	2.5		13	V
V.	Output voltage	$I_{O} = 10 \text{ mA to } 800 \text{ mA}, V_{I} = 3 \text{ to } 7 \text{ V}$	1.485	1.5	1.515	V
Vo	V _O Output voltage	$T_{J} = -40 \text{ to } 125 ^{\circ}\text{C}$	1.463		1.537	v
ΔV_{O}	Load regulation	I _O = 10 mA to 800 mA		0.2	1.0	%
ΔV_{O}	Line regulation	V _I = 3 to 13 V		0.06	0.5	%
SVR	Supply voltage rejection	$f = 120 \text{ Hz}, V_I = 3.8 \pm 1 \text{ V}, I_O = 400 \text{ mA}$ (<i>Note 1</i>)	65	75		dB
	Quiescent current	I_O = 10 mA, T_J = -40 to 125 °C		2	5	
		I_O = 400 mA, T_J = -40 to 125 °C		8	20	mA
I _q		I_O = 800 mA, T_J = -40 to 125 °C		14	35	
		V_I = 13 V, V_{INH} = GND, T_J = -40 to 125 °C		130	180	μΑ
I _{sc}	Short circuit current	R _L = 0		1.2		Α
V _{IL}	Control input logic low	OFF MODE, T _J = -40 to 125 °C			8.0	٧
V _{IH}	Control input logic high	ON MODE, $T_J = -40$ to 125 °C	2			V
I _{INH}	Control input current	V _{INH} = 13V, T _J = -40 to 125 °C		5	10	μΑ
eN	Output noise voltage	B _P = 10 Hz to 100 kHz, I _O = 100 mA (<i>Note 1</i>)	_	60		μV _{RMS}

Note: 1 Guaranteed by design.

- 2 Dropout voltage is defined as the input-to-output differential when the output voltage drops to 99% of its nominal value with $V_O + 1$ V applied to V_I .
- 3 Reference voltage is measured between output and GND pins, with ADJ PIN tied to V_{O} .
- 4 In order to avoid any output voltage rise within the whole operating temperature range, due to output leakage current, a minimum load current of 2 mA is required.

 I_O = 10 mA, (*Note 4*) T_J = 25 °C, V_I = 3.5 V, V_{INH} = 2 V, C_I = 330 nF, C_O = 10 μF , unless otherwise specified.

Table 6. Electrical characteristics of LD29080#18

Symbol	Parameter	Test conditions	Min.	Тур.	Max.	Unit
VI	Operating input voltage	I _O = 10 mA to 800 mA	2.5		13	V
V	Output voltage	I _O = 10 mA to 800 mA, V _I = 3 to 7.3 V	1.782	1.8	1.818	V
Vo	Output voltage	$T_{J} = -40 \text{ to } 125 ^{\circ}\text{C}$	1.755		1.845	V
ΔV_{O}	Load regulation	I _O = 10 mA to 800 mA		0.2	1.0	%
ΔV_{O}	Line regulation	V _I = 3 to 13 V		0.06	0.5	%
SVR	Supply voltage rejection	$f = 120 \text{ Hz}, V_I = 3.8 \pm 1 \text{ V}, I_O = 400 \text{ mA}$ (<i>Note 1</i>)	62	72		dB
	Dropout voltage	$I_O = 150$ mA, $T_J = -40$ to 125 °C (<i>Note 2</i>)		0.1		
V_{DROP}		$I_O = 400$ mA, $T_J = -40$ to 125 °C (<i>Note 2</i>)		0.2		V
		$I_O = 800 \text{ mA}, T_J = -40 \text{ to } 125 \text{ °C } (Note 2)$		0.4	0.7	
		I_O = 10 mA, T_J = -40 to 125 °C		2	5	
١.		I _O = 400 mA, T _J = -40 to 125 °C		8	20	mA
Iq	Quiescent current	I_{O} = 800 mA, T_{J} = -40 to 125 °C		14	35	
		V_I = 13 V, V_{INH} = GND, T_J = -40 to 125 °C		130	180	μΑ
I _{sc}	Short circuit current	R _L = 0		1.2		Α
V _{IL}	Control input logic low	OFF MODE, T _J = -40 to 125 °C			0.8	V
V _{IH}	Control input logic high	ON MODE, $T_J = -40$ to 125 °C	2			V
I _{INH}	Control input current	V _{INH} = 13 V, T _J = -40 to 125 °C		5	10	μΑ
eN	Output noise voltage	$B_P = 10 \text{ Hz to } 100 \text{ kHz}, I_O = 100 \text{ mA}$ (<i>Note 1</i>)		72		μV _{RMS}

Note: 1 Guaranteed by design.

- 2 Dropout voltage is defined as the input-to-output differential when the output voltage drops to 99% of its nominal value with $V_O + 1$ V applied to V_I .
- 3 Reference voltage is measured between output and GND pins, with ADJ PIN tied to V_{O} .
- 4 In order to avoid any output voltage rise within the whole operating temperature range, due to output leakage current, a minimum load current of 2 mA is required.

Electrical characteristics LD29080

 l_O = 10 mA, (Note 4) T_J = 25 °C, V_I = 4.5 V, V_{INH} = 2 V, C_I = 330 nF, C_O = 10 μF , unless otherwise specified.

Table 7. Electrical characteristics of LD29080#25

Symbol	Parameter	Test conditions	Min.	Тур.	Max.	Unit
VI	Operating input voltage	I _O = 10 mA to 800 mA			13	V
V	Output voltage	I _O = 10 mA to 800 mA, V _I = 3.5 to 8 V	2.475	2.5	2.525	V
Vo	Output voltage	$T_{J} = -40 \text{ to } 125 ^{\circ}\text{C}$	2.438		2.562	v
ΔV_{O}	Load regulation	I _O = 10 mA to 800 mA		0.2	1.0	%
ΔV_{O}	Line regulation	V _I = 3.5 to 13 V		0.06	0.5	%
SVR	Supply voltage rejection	$f = 120 \text{ Hz}, V_1 = 4.5 \pm 1 \text{ V}, I_0 = 400 \text{ mA}$ (<i>Note 1</i>)	55	70		dB
		$I_O = 150$ mA, $T_J = -40$ to 125 °C (<i>Note 2</i>)		0.1		
V _{DROP}	Dropout voltage	$I_O = 400 \text{ mA}, T_J = -40 \text{ to } 125 \text{ °C } (Note 2)$		0.2		V
		$I_O = 800 \text{ mA}, T_J = -40 \text{ to } 125 \text{ °C } (Note 2)$		0.4	0.7	
		I_{O} = 10 mA, T_{J} = -40 to 125 °C		2	5	
١.,		I _O = 400 mA, T _J = -40 to 125 °C		8	20	mA
Iq	Quiescent current	I_{O} = 800 mA, T_{J} = -40 to 125 °C		14	35	
		V_I = 13 V, V_{INH} = GND, T_J = -40 to 125 °C		130	180	μΑ
I _{sc}	Short circuit current	R _L = 0		1.2		Α
V _{IL}	Control input logic low	OFF MODE, T _J = -40 to 125 °C			0.8	٧
V _{IH}	Control input logic high	ON MODE, $T_J = -40$ to 125 °C	2			٧
I _{INH}	Control input current	V _{INH} = 13 V, T _J = -40 to 125 °C		5	10	μΑ
eN	Output noise voltage	$B_P = 10 \text{ Hz to } 100 \text{ kHz}, I_O = 100 \text{ mA}$ (<i>Note 1</i>)		100		μV _{RMS}

Note: 1 Guaranteed by design.

- 2 Dropout voltage is defined as the input-to-output differential when the output voltage drops to 99% of its nominal value with $V_O + 1$ V applied to V_I .
- 3 Reference voltage is measured between output and GND pins, with ADJ PIN tied to V_{O} .
- 4 In order to avoid any output voltage rise within the whole operating temperature range, due to output leakage current, a minimum load current of 2 mA is required.

 l_O = 10 mA, (*Note 4*) T_J = 25 °C, V_I = 5.3 V, V_{INH} = 2 V, C_I = 330 nF, C_O = 10 μF , unless otherwise specified.

Table 8. Electrical characteristics of LD29080#33

Symbol	Parameter	Test conditions	Min.	Тур.	Max.	Unit
V _I	Operating input voltage	I _O = 10mA to 800mA			13	V
V	Output voltage	$I_O = 10 \text{ mA to } 800 \text{ mA}, V_I = 4.3 \text{ to } 8.8 \text{ V}$	3.267	3.3	3.333	V
V _O	Output voltage	$T_{\rm J} = -40 \text{ to } 125 ^{\circ}\text{C}$	3.218		3.382	V
ΔV_{O}	Load regulation	I _O = 10 mA to 800 mA		0.2	1.0	%
ΔV _O	Line regulation	V _I = 4.3 to 13 V		0.06	0.5	%
SVR	Supply voltage rejection	f = 120 Hz, V_I = 5.3 ± 1 V, I_O = 400 mA (<i>Note 1</i>)	52	67		dB
	Dropout voltage	$I_O = 150 \text{ mA}, T_J = -40 \text{ to } 125 ^{\circ}\text{C} \text{ (Note 2)}$		0.1		
V_{DROP}		$I_{O} = 400 \text{ mA}, T_{J} = -40 \text{ to } 125 \text{ °C } (Note 2)$		0.2		V
		I_{O} = 800 mA, T_{J} = -40 to 125 °C (<i>Note 2</i>)		0.4	0.7	
		I_O = 10 mA, T_J = -40 to 125 °C		2	5	
,	Out and a summer	I_O = 400 mA, T_J = -40 to 125 °C		8	20	mA
Iq	Quiescent current	$I_{\rm O}$ = 800 mA, $T_{\rm J}$ = -40 to 125 °C		14	35	
		$V_I = 13 \text{ V}, V_{INH} = \text{GND}, T_J = -40 \text{ to } 125 ^{\circ}\text{C}$		130	180	μΑ
I _{sc}	Short circuit current	R _L = 0		1.2		Α
V _{IL}	Control input logic low	OFF MODE, T _J = -40 to 125 °C			0.8	V
V _{IH}	Control input logic high	ON MODE, T _J = -40 to 125 °C	2			V
I _{INH}	Control input current	V _{INH} = 13 V, T _J = -40 to 125 °C		5	10	μΑ
eN	Output noise voltage	B _P = 10 Hz to 100 kHz, I _O = 100 mA (<i>Note 1</i>)		132		μV_{RMS}

Note: 1 Guaranteed by design.

- 2 Dropout voltage is defined as the input-to-output differential when the output voltage drops to 99% of its nominal value with $V_O + 1$ V applied to V_I .
- 3 Reference voltage is measured between output and GND pins, with ADJ PIN tied to V_O .
- 4 In order to avoid any output voltage rise within the whole operating temperature range, due to output leakage current, a minimum load current of 2 mA is required.

Electrical characteristics LD29080

 I_O = 10 mA, (Note 4) T_J = 25 °C, V_I = 7 V, V_{INH} = 2 V, C_I = 330 nF, C_O = 10 μF , unless otherwise specified.

Table 9. Electrical characteristics of LD29080#50

Symbol	Parameter	Test conditions	Min.	Тур.	Max.	Unit
VI	Operating input voltage	I _O = 10 mA to 800 mA			13	V
V	Output valtage	I _O = 10 mA to 800 mA, V _I = 6 to 10.5 V	4.95	5	5.05	V
Vo	Output voltage	$T_{J} = -40 \text{ to } 125 ^{\circ}\text{C}$	4.875		5.125	V
ΔV_{O}	Load regulation	I _O = 10 mA to 800 mA		0.2	1.0	%
ΔV_{O}	Line regulation	V _I = 6 to 13 V		0.06	0.5	%
SVR	Supply voltage rejection	$f = 120 \text{ Hz}, V_I = 7 \pm 1 \text{ V}, I_O = 400 \text{ mA}$ (<i>Note 1</i>)	49	64		dB
	Dropout voltage	$I_O = 150$ mA, $T_J = -40$ to 125 °C (<i>Note 2</i>)		0.1		
V_{DROP}		$I_O = 400$ mA, $T_J = -40$ to 125 °C (<i>Note 2</i>)		0.2		V
		$I_O = 800 \text{ mA}, T_J = -40 \text{ to } 125 \text{ °C } (Note 2)$		0.4	0.7	
		I_O = 10 mA, T_J = -40 to 125 °C		2	5	
١.		I _O = 400 mA, T _J = -40 to 125 °C		8	20	mA
Iq	Quiescent current	I_{O} = 800 mA, T_{J} = -40 to 125 °C		14	35	
		V_I = 13 V, V_{INH} = GND, T_J = -40 to 125 °C		130	180	μΑ
I _{sc}	Short circuit current	R _L = 0		1.2		Α
V _{IL}	Control input logic low	OFF MODE, T _J = -40 to 125 °C			0.8	V
V _{IH}	Control input logic high	ON MODE, $T_J = -40$ to 125 °C	2			V
I _{INH}	Control input current	V _{INH} = 13 V, T _J = -40 to 125 °C		5	10	μΑ
eN	Output noise voltage	$B_P = 10 \text{ Hz to } 100 \text{ kHz}, I_O = 100 \text{ mA}$ (<i>Note 1</i>)		180		μV _{RMS}

Note: 1 Guaranteed by design.

- 2 Dropout voltage is defined as the input-to-output differential when the output voltage drops to 99% of its nominal value with $V_O + 1$ V applied to V_I .
- 3 Reference voltage is measured between output and GND pins, with ADJ PIN tied to V_{O} .
- 4 In order to avoid any output voltage rise within the whole operating temperature range, due to output leakage current, a minimum load current of 2 mA is required.

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 I_O = 10 mA, (Note 4) T_J = 25 °C, V_I = 10 V, V_{INH} = 2 V, C_I = 330 nF, C_O = 10 μF , unless otherwise specified)

Table 10. Electrical characteristics of LD29080#80

Symbol	Parameter	Test conditions	Min.	Тур.	Max.	Unit
V _I	Operating input voltage	I _O = 10 mA to 800 mA			13	V
V	Output voltage	I _O = 10 mA to 800 mA, V _I = 9 to 13 V	7.92	8	8.08	V
V _O	Output voltage	$T_{\rm J} = -40 \text{ to } 125 ^{\circ}\text{C}$	7.80		8.20	V
ΔV_{O}	Load regulation	I _O = 10 mA to 800 mA		0.2	1.0	%
ΔV _O	Line regulation	V _I = 9 to 13 V		0.06	0.5	%
SVR	Supply voltage rejection	$f = 120 \text{ Hz}, V_I = 10 \pm 1 \text{ V}, I_O = 400 \text{ mA}$ (<i>Note 1</i>)	45	59		dB
	Dropout voltage	$I_O = 150 \text{ mA}, T_J = -40 \text{ to } 125 ^{\circ}\text{C} (Note 2)$		0.1		
V_{DROP}		$I_{O} = 400$ mA, $T_{J} = -40$ to 125 °C (<i>Note 2</i>)		0.2		V
		I_{O} = 800 mA, T_{J} = -40 to 125 °C (<i>Note 2</i>)		0.4	0.7	
		I_O = 10 mA, T_J = -40 to 125 °C		2	5	
,	Quiescent current	I_O = 400 mA, T_J = -40 to 125 °C		8	20	mA
Iq	Quiescent current	I_{O} = 800 mA, T_{J} = -40 to 125 °C		14	35	
		$V_I = 13 \text{ V}, V_{INH} = \text{GND}, T_J = -40 \text{ to } 125 ^{\circ}\text{C}$		130	180	μΑ
I _{sc}	Short circuit current	$R_L = 0$		1.2		Α
V _{IL}	Control input logic low	OFF MODE, T _J = -40 to 125 °C			8.0	V
V _{IH}	Control input logic high	ON MODE, T _J = -40 to 125 °C	2			V
I _{INH}	Control input current	V _{INH} = 13 V, T _J = -40 to 125 °C		5	10	μΑ
eN	Output noise voltage	B _P = 10 Hz to 100 kHz, I _O = 100 mA (<i>Note 1</i>)		320		μV _{RMS}

Note: 1 Guaranteed by design.

- 2 Dropout voltage is defined as the input-to-output differential when the output voltage drops to 99% of its nominal value with $V_O + 1$ V applied to V_I .
- 3 Reference voltage is measured between output and GND pins, with ADJ PIN tied to V_O .
- 4 In order to avoid any output voltage rise within the whole operating temperature range, due to output leakage current, a minimum load current of 2 mA is required.

Electrical characteristics LD29080

 I_O = 10 mA, (*Note 4*) T_J = 25 °C, V_I = 11 V, V_{INH} = 2 V, C_I = 330 nF, C_O = 10 μ F, unless otherwise specified.

Table 11. Electrical characteristics of LD29080#90

Symbol	Parameter	Test conditions	Min.	Тур.	Max.	Unit
VI	Operating input voltage	I _O = 10 mA to 800 mA			13	٧
V	Output valtage	I _O = 10 mA to 800 mA, V _I = 9 to 13 V	8.91	9	9.09	V
Vo	Output voltage	$T_{J} = -40 \text{ to } 125 ^{\circ}\text{C}$	8.775		9.225	V
ΔV_{O}	Load regulation	I _O = 10 mA to 800 mA		0.2	1.0	%
ΔV_{O}	Line regulation	V _I = 10 to 13 V		0.06	0.5	%
SVR	Supply voltage rejection	$f = 120 \text{ Hz}, V_I = 11 \pm 1 \text{ V}, I_O = 400 \text{ mA}$ (<i>Note 1</i>)	43	57		dB
		$I_O = 150$ mA, $T_J = -40$ to 125 °C (<i>Note 2</i>)		0.1		
V _{DROP}	Dropout voltage	$I_O = 400$ mA, $T_J = -40$ to 125 °C (<i>Note 2</i>)		0.2		V
		$I_O = 800 \text{ mA}, T_J = -40 \text{ to } 125 \text{ °C } (Note 2)$		0.4	0.7	
	0.:	I_{O} = 10 mA, T_{J} = -40 to 125 °C		2	5	
		I_{O} = 400 mA, T_{J} = -40 to 125 °C		8	20	mA
Iq	Quiescent current	I_{O} = 800 mA, T_{J} = -40 to 125 °C		14	35	
		V_I = 13 V, V_{INH} = GND, T_J = -40 to 125 °C		130	180	μΑ
I _{sc}	Short circuit current	R _L = 0		1.2		Α
V _{IL}	Control input logic low	OFF MODE, T _J = -40 to 125 °C			0.8	٧
V _{IH}	Control input logic high	ON MODE, $T_J = -40$ to 125 °C	2			٧
I _{INH}	Control input current	V _{INH} = 13 V, T _J = -40 to 125 °C		5	10	μΑ
eN	Output noise voltage	$B_P = 10 \text{ Hz to } 100 \text{ kHz}, I_O = 100 \text{ mA}$ (<i>Note 1</i>)		330		μV _{RMS}

Note: 1 Guaranteed by design.

- 2 Dropout voltage is defined as the input-to-output differential when the output voltage drops to 99% of its nominal value with $V_O + 1$ V applied to V_I .
- 3 Reference voltage is measured between output and GND pins, with ADJ PIN tied to V_O .
- 4 In order to avoid any output voltage rise within the whole operating temperature range, due to output leakage current, a minimum load current of 2 mA is required.

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 I_O = 10 mA, (*Note 4*) T_J = 25 °C, V_I = 10 V, V_{INH} = 2 V, C_I = 330 nF, C_O = 10 μF , unless otherwise specified.

Table 12. Electrical characteristics of LD29080#ADJ

Symbol	Parameter	Test conditions	Min.	Тур.	Max.	Unit
V _I	Operating input voltage	I _O = 10 mA to 800 mA	2.5		13	٧
ΔV_{O}	Load regulation	I _O = 10 mA to 800 mA		0.2	1.0	%
ΔV_{O}	Line regulation	V _I = 2.5 to 13 V, I _O = 10 mA		0.06	0.5	%
	Reference voltage	$I_O = 10 \text{ mA to } 800 \text{ mA}, V_I = 2.5 \text{ to } 6.73 \text{ V}$	1.2177	1.23	1.2423	V
V _{REF}		T _J = -40 to 125 °C (<i>Note 3</i>)	1.1993		1.2607	
SVR	Supply voltage rejection	$f = 120 \text{ Hz}, V_I = 3.23 \pm 1 \text{ V}, I_O = 400 \text{ mA}$ (<i>Note 1</i>)	45	75		dB
	Quiescent current	I _O = 10 mA, T _J = -40 to 125 °C		2 5		
١.		I _O = 400 mA, T _J = -40 to 125 °C		8	20	mA
I _q		I _O = 800 mA, T _J = -40 to 125 °C		14	35	
		$V_I = 13 \text{ V}, V_{INH} = \text{GND}, T_J = -40 \text{ to } 125 \text{ °C}$		130	180	μΑ
I _{ADJ}	Adjust pin current	T _J = -40 to 125 °C			1	μΑ
I _{sc}	Short circuit current	$R_L = 0$		1.2		Α
V _{IL}	Control input logic low	OFF MODE, T _J = -40 to 125 °C			0.8	V
V _{IH}	Control input logic high	ON MODE, T _J = -40 to 125 °C	2			V
I _{INH}	Control input current	V _{INH} = 13 V, T _J = -40 to 125 °C		5	10	μΑ
eN	Output noise voltage	B _P = 10 Hz to 100 kHz, I _O = 100 mA (<i>Note 1</i>)		50		μV_{RMS}

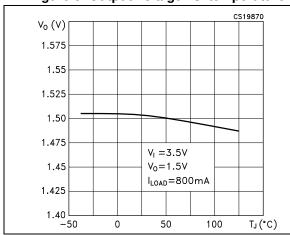
Note: 1 Guaranteed by design.

- 2 Dropout voltage is defined as the input-to-output differential when the output voltage drops to 99% of its nominal value with $V_O + 1$ V applied to V_I .
- 3 Reference voltage is measured between output and GND pins, with ADJ PIN tied to V_{O} .
- 4 In order to avoid any output voltage rise within the whole operating temperature range, due to output leakage current, a minimum load current of 2 mA is required.

5 Typical characteristics

Figure 5. Output voltage vs. temperature

Figure 6. Reference voltage vs. temperature



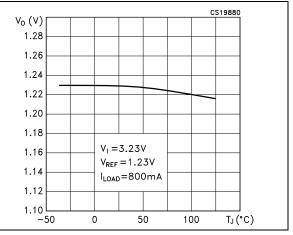
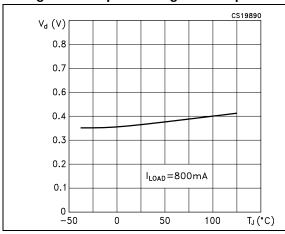


Figure 7. Dropout voltage vs. temperature

Figure 8. Dropout voltage vs. output current



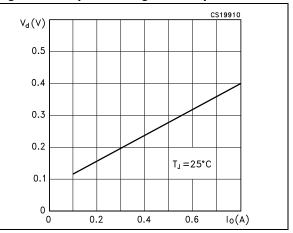
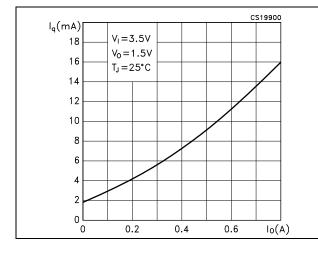
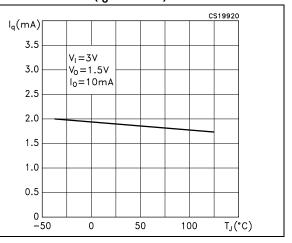


Figure 9. Quiescent current vs. output current

Figure 10. Quiescent current vs. temperature $(I_0 = 10 \text{ mA})$





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Figure 11. Quiescent current vs. supply voltage Figure 12. Quiescent current vs. temperature $(I_0 = 800 \text{ mA})$

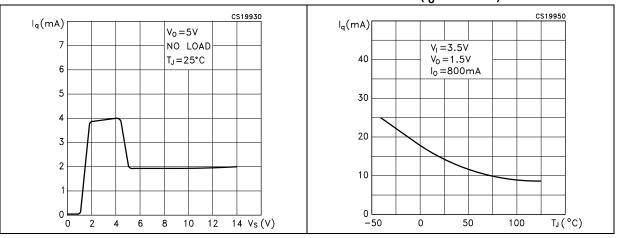


Figure 13. Short circuit current vs. temperature Figure 14. Adjust pin current vs. temperature

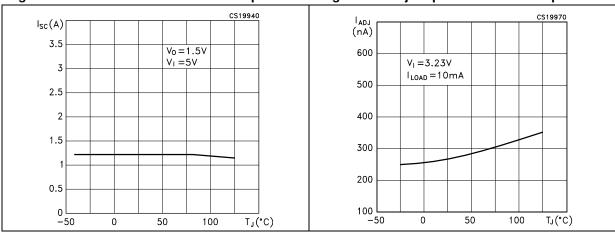
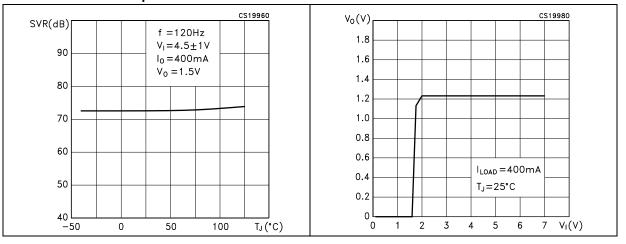


Figure 15. Supply voltage rejection vs. temperature

Figure 16. Output voltage vs. input voltage

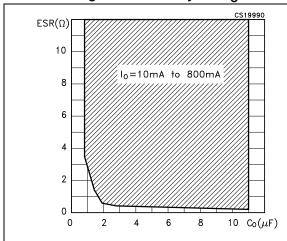


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Figure 17. Stability vs. C_O

Figure 18. Line transient



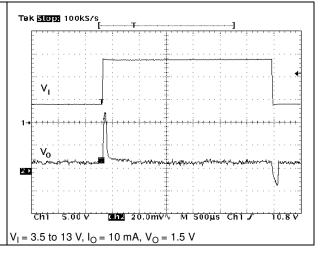
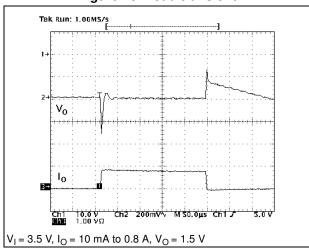


Figure 19. Load transient



6 Package mechanical data

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK packages, depending on their level of environmental compliance. ECOPACK specifications, grade definitions and product status are available at: www.st.com. ECOPACK is an ST trademark.

Table 13. PPAK mechanical data

Dim.	mm				
Dim.	Min.	Тур.	Max.		
Α	2.2		2.4		
A1	0.9		1.1		
A2	0.03		0.23		
В	0.4		0.6		
B2	5.2		5.4		
С	0.45		0.6		
C2	0.48		0.6		
D	6		6.2		
D1		5.1			
E	6.4		6.6		
E1		4.7			
е		1.27			
G	4.9		5.25		
G1	2.38		2.7		
Н	9.35		10.1		
L2		0.8	1		
L4	0.6		1		
L5	1				
L6		2.8			
R		0.20			
V2	0°		8°		

"GATE" Note 6 Ε THERMAL PAD *C2* B2 -E1 L2, D1 D Н <u>L4</u> <u>A1</u> B (4x) Note 7 R С G SEATING PLANE <u>A2</u> Ľ6 L5 GAUGE PLANE 0078180_F

Figure 20. PPAK drawing

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Table 14. DPAK mechanical data

Dim	mm			
Dim.	Min.	Тур.	Max.	
Α	2.20		2.40	
A1	0.90		1.10	
A2	0.03		0.23	
b	0.64		0.90	
b4	5.20		5.40	
С	0.45		0.60	
c2	0.48		0.60	
D	6.00		6.20	
D1		5.10		
E	6.40		6.60	
E1		4.70		
е		2.28		
e1	4.40		4.60	
Н	9.35		10.10	
L	1.00		1.50	
(L1)		2.80		
L2		0.80		
L4	0.60		1.00	
R		0.20		
V2	0°		8°	

E -THERMAL PAD c2 L2 D1 D A 1 <u>b(</u>2x) R С SEATING PLANE <u>A2</u> (L1) *V2* GAUGE PLANE 0,25 0068772_K

Figure 21. DPAK drawing

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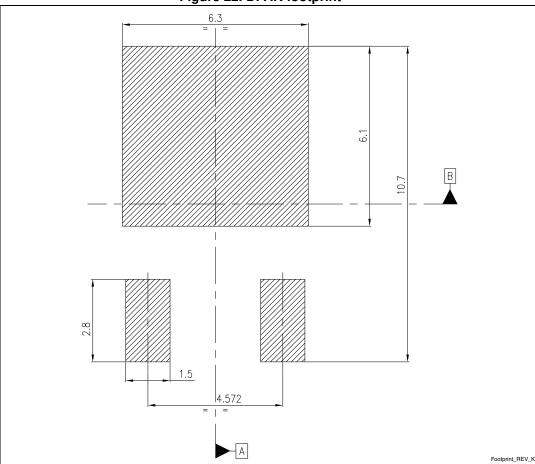


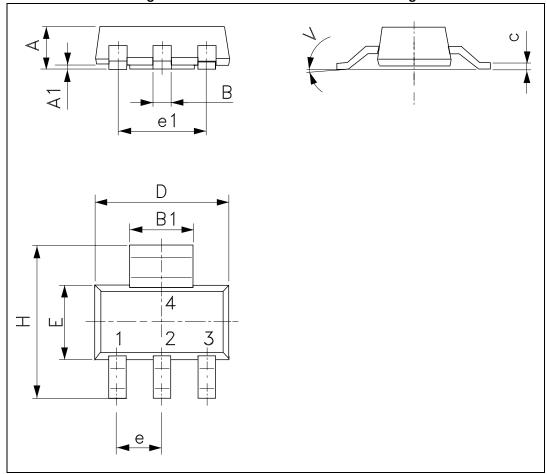
Figure 22. DPAK footprint (a)

a. All dimensions are in millimeters

Table 15. SOT-223 mechanical data

Dim	mm				
Dim.	Min.	Тур.	Max.		
А			1.80		
A1	0.02		0.1		
В	0.60	0.70	0.85		
B1	2.90	3.00	3.15		
С	0.24	0.26	0.35		
D	6.30	6.50	6.70		
е		2.30			
e1		4.60			
E	3.30	3.50	3.70		
Н	6.70	7.00	7.30		
V			10°		

Figure 23. SOT-223 mechanical data drawing



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7 Packaging mechanical data

Table 16. PPAK and DPAK tape and reel mechanical data

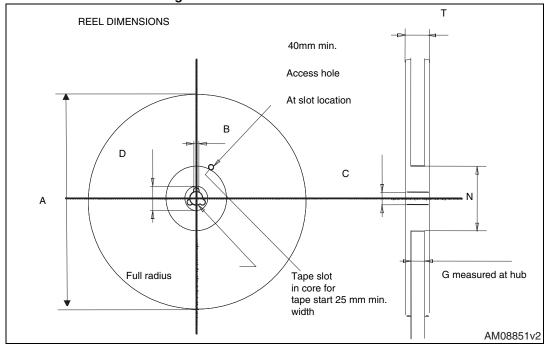
Таре				Reel	
Dim.	mm		Dim.	mm	
	Min.	Max.		Min.	Max.
A0	6.8	7	Α		330
В0	10.4	10.6	В	1.5	
B1		12.1	С	12.8	13.2
D	1.5	1.6	D	20.2	
D1	1.5		G	16.4	18.4
Е	1.65	1.85	N	50	
F	7.4	7.6	Т		22.4
K0	2.55	2.75			
P0	3.9	4.1		Base qty.	2500
P1	7.9	8.1		Bulk qty.	2500
P2	1.9	2.1			
R	40				
Т	0.25	0.35			
W	15.7	16.3			



10 pitches cumulative tolerance on tape +/- 0.2 mm P0 Top cover E. B1 ВО For machine ref. only Α0 D1 P1 including draft and radii concentric around B0 User direction of feed Bending radius User direction of feed AM08852v1

Figure 24. Tape for PPAK and DPAK





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LD29080 Revision history

8 Revision history

Table 17. Document revision history

Date	Revision	Changes
15-Oct-2004	1	First release.
20-Oct-2005	2	Order codes updated.
14-May-2007	3	Order codes updated.
26-Jan-2009	4	Modified: eN value in Table 9 on page 10.
22-Feb-2011	5	Added: new order code Table 1 on page 1 and mechanical data.
12-Jan-2012	6	Modified: R _{thJA} and R _{thJC} value for SOT223 Table 4 on page 5.
08-May-2012	7	Modified: pin connections for PPAK, DPAK and SOT223 Figure 3 on page 4.
22-Nov-2013	8	Part number LD29080xx changed to LD29080. Updated the Description in cover page, Table 1: Device summary. Updated Section 5: Typical characteristics and Section 6: Package mechanical data. Added Section 7: Packaging mechanical data. Minor text changes.
13-Feb-2020	9	Updated Figure 23: SOT-223 mechanical data drawing.

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