

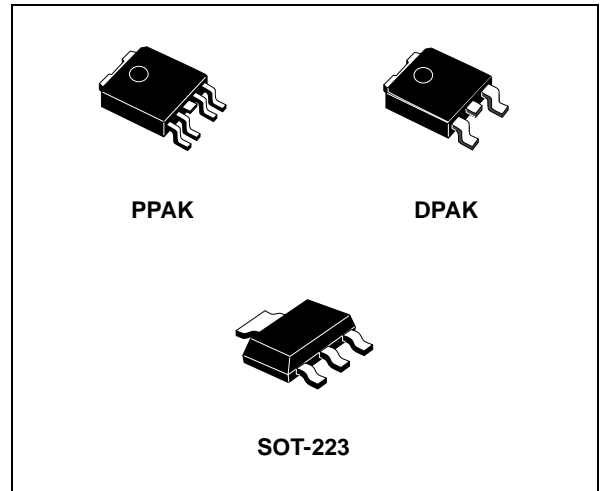
## 800mA FIXED AND ADJUSTABLE OUTPUT VERY LOW DROP VOLTAGE REGULATOR

PRELIMINARY DATA

- VERY LOW DROPOUT VOLTAGE (TYP. 0.4V AT 800mA)
- GUARANTEED OUTPUT CURRENT UP TO 800mA
- FIXED AND ADJUSTABLE OUTPUT VOLTAGE ( $\pm 1\%$  AT 25°C)
- INTERNAL CURRENT AND THERMAL LIMIT
- LOGIC CONTROLLED ELECTRONIC SHUTDOWN

### DESCRIPTION

The LD29080 is a high current, high accuracy, low-dropout voltage regulators series. These regulators feature 400mV dropout voltages and very low ground current. Designed for high 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.

**Figure 1: Schematic Diagram For Adjustable Version**

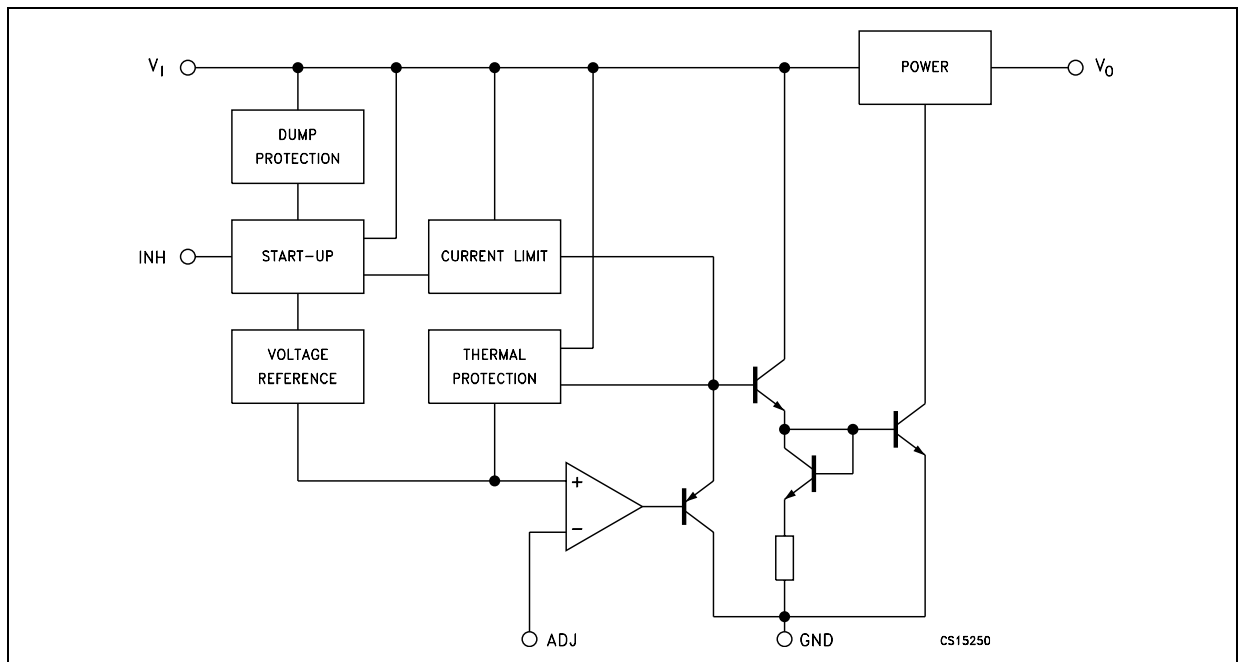


Figure 2: Schematic Diagram For Fixed Version

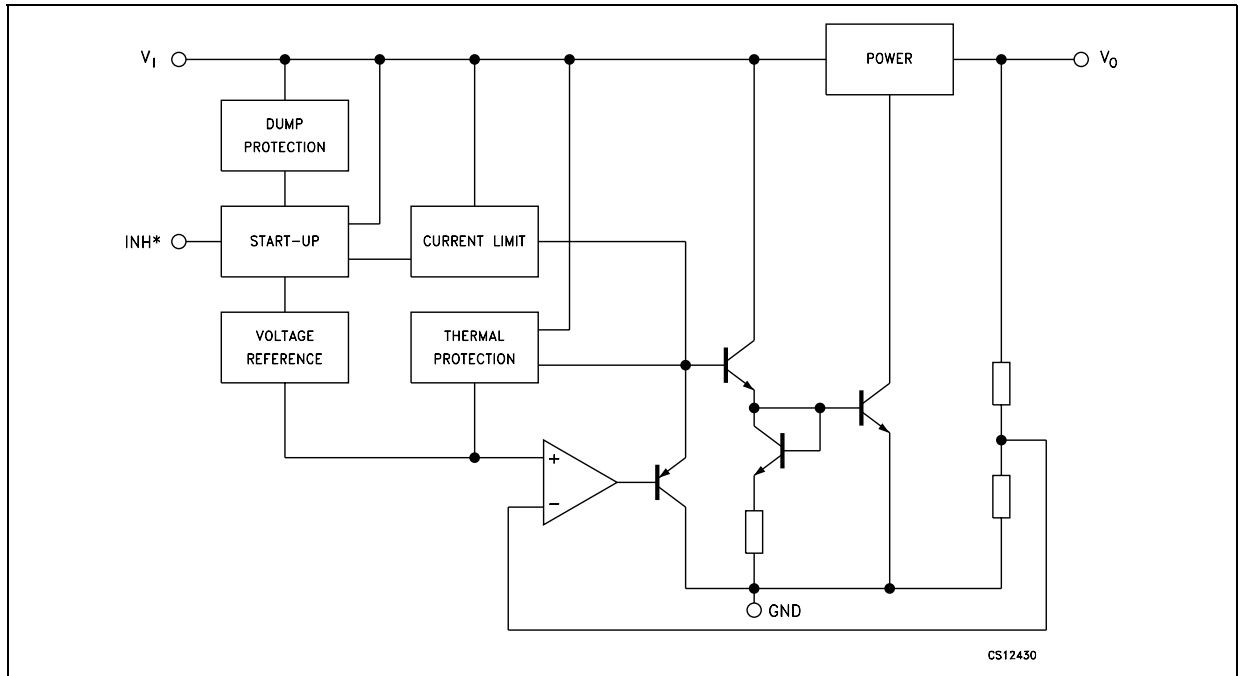


Table 1: Ordering Codes

DPAK (*)	PPAK (*)	SOT-223	OUTPUT VOLTAGE
LD29080DT15	LD29080PT15	LD29080S15	1.5 V
LD29080DT18	LD29080PT18	LD29080S18	1.8 V
LD29080DT25	LD29080PT25	LD29080S25	2.5 V
LD29080DT33	LD29080PT33	LD29080S33	3.3 V
LD29080DT50	LD29080PT50	LD29080S50	5.0 V
LD29080DT80	LD29080PT80	LD29080S80	8.0 V (**)
LD29080DT90	LD29080PT90	LD29080S90	9.0 V (**)
	LD29080PT		ADJ

(\*) Available in Tape & Reel with the suffix "R", for the adj version "-R"

(\*\*) Available on Request

Table 2: Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
$V_I$	DC Input Voltage	30 (*)	V
$V_{INH}$	Inhibit Input Voltage	14	V
$I_O$	Output Current	Internally Limited	mA
$P_D$	Power Dissipation	Internally Limited	mW
$T_{stg}$	Storage Temperature Range	-55 to 150	°C
$T_{op}$	Storage Temperature Range	-40 to 125	°C

(\*) Above 14V the device is automatically in shut-down.

Absolute Maximum Ratings are those beyond which damage to the device may occur. Functional operation under these condition is not implied.

Table 3: Thermal Data

Symbol	Parameter	DDPAK	PPAK	SOT-223	Unit
$R_{thj-case}$	Thermal Resistance Junction-case	8	8	15	°C/W
$R_{thj-amb}$	Thermal Resistance Junction-ambient	100	100		°C/W

Figure 3: Pin Connection (top view)

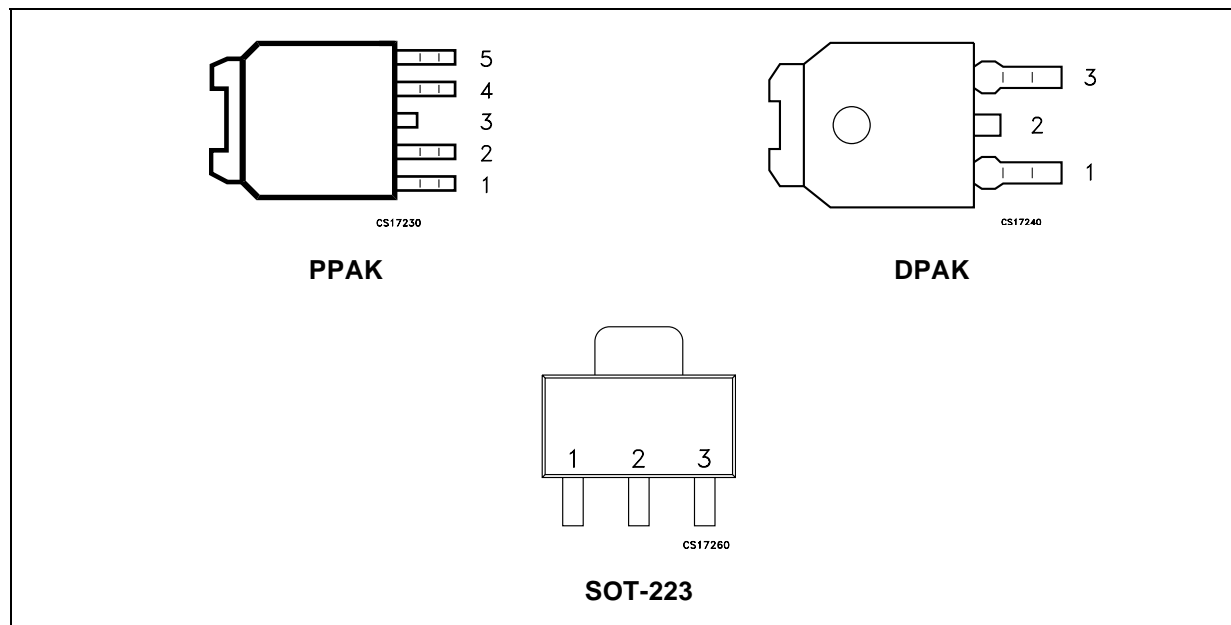


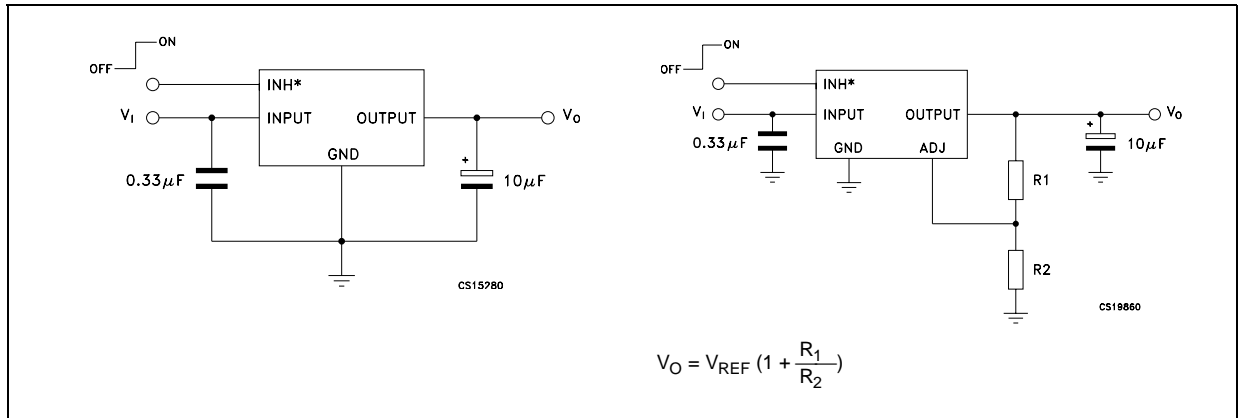
Table 4: Pin Description

Symbol	PPAK	DDPAK	SOT-223
$V_I$	2	1	1
GND	3	2	2
$V_O$	4	3	3
ADJ/N.C.**	5		
INHIBIT*	1		

\* 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 2V.

\*\* Not connect for fixed version.

Figure 4: Application Circuit



\* Only for version with inhibit function.

Table 5: Electrical Characteristics Of LD29080#15

( $I_O = 10\text{mA}$  (Note 4),  $T_J = 25^\circ\text{C}$ ,  $V_I = 3.5\text{V}$ ,  $V_{INH} = 2\text{V}$ ,  $C_I = 330\text{nF}$ ,  $C_O = 10\mu\text{F}$ , unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_I$	Operating Input Voltage	$I_O = 10\text{mA}$ to $800\text{mA}$	2.5		13	V
$V_O$	Output Voltage	$I_O = 10\text{mA}$ to $800\text{mA}$ , $V_I = 3$ to $7\text{V}$ $T_J = -40$ to $125^\circ\text{C}$	1.485 1.463	1.5	1.515 1.537	V
$\Delta V_O$	Load Regulation	$I_O = 10\text{mA}$ to $800\text{mA}$		0.2	1.0	%
$\Delta V_O$	Line Regulation	$V_I = 3$ to $13\text{V}$		0.06	0.5	%
SVR	Supply Voltage Rejection	$f = 120\text{Hz}$ , $V_I = 3.5 \pm 1\text{V}$ , $I_O = 400\text{mA}$ (Note 1)	65	75		dB
$I_q$	Quiescent Current	$I_O = 10\text{mA}$ , $T_J = -40$ to $125^\circ\text{C}$		2	5	mA
		$I_O = 400\text{mA}$ , $T_J = -40$ to $125^\circ\text{C}$		8	20	
		$I_O = 800\text{mA}$ , $T_J = -40$ to $125^\circ\text{C}$		14	35	
		$V_I = 13\text{V}$ , $V_{INH} = \text{GND}$ , $T_J = -40$ to $125^\circ\text{C}$		130	180	$\mu\text{A}$
$I_{sc}$	Short Circuit Current	$R_L = 0$		1.2		A
$V_{IL}$	Control Input Logic Low	OFF MODE $T_J = -40$ to $125^\circ\text{C}$			0.8	V
$V_{IH}$	Control Input Logic High	ON MODE $T_J = -40$ to $125^\circ\text{C}$	2			V
$I_{INH}$	Control Input Current	$V_{INH} = 13\text{V}$ , $T_J = -40$ to $125^\circ\text{C}$		5	10	$\mu\text{A}$
eN	Output Noise Voltage	$B_P = 10\text{Hz}$ to $100\text{KHz}$ , $I_O = 100\text{mA}$		60		$\mu\text{V}_{RMS}$

NOTE 1: Guaranteed by design.

NOTE 2: Dropout voltage is defined as the input-to-output differential when the output voltage drops to 99% of its nominal value with  $V_O + 1\text{V}$  applied to  $V_I$ .

NOTE 3: Reference Voltage is measured between output and GND pins, with ADJ PIN tied to  $V_{OUT}$ .

NOTE 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 2mA is required.

**Table 6: Electrical Characteristics Of LD29080#18**(I<sub>O</sub> = 10mA (Note 4), T<sub>J</sub> = 25°C, V<sub>I</sub> = 3.5V, V<sub>INH</sub> = 2V, C<sub>I</sub> = 330nF, C<sub>O</sub> = 10μF, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V <sub>I</sub>	Operating Input Voltage	I <sub>O</sub> = 10mA to 800mA	2.5		13	V
V <sub>O</sub>	Output Voltage	I <sub>O</sub> = 10mA to 800mA, V <sub>I</sub> = 3 to 7.3V T <sub>J</sub> = -40 to 125°C	1.782	1.8	1.818	V
			1.755		1.845	
ΔV <sub>O</sub>	Load Regulation	I <sub>O</sub> = 10mA to 800mA		0.2	1.0	%
ΔV <sub>O</sub>	Line Regulation	V <sub>I</sub> = 3 to 13V		0.06	0.5	%
SVR	Supply Voltage Rejection	f = 120 Hz, V <sub>I</sub> = 3.8 ± 1V, I <sub>O</sub> = 400mA (Note 1)	62	72		dB
V <sub>DROP</sub>	Dropout Voltage	I <sub>O</sub> = 150mA, T <sub>J</sub> = -40 to 125°C (Note 2)		0.1		V
		I <sub>O</sub> = 400mA, T <sub>J</sub> = -40 to 125°C (Note 2)		0.2		
		I <sub>O</sub> = 800mA, T <sub>J</sub> = -40 to 125°C (Note 2)		0.4	0.7	
I <sub>q</sub>	Quiescent Current	I <sub>O</sub> = 10mA, T <sub>J</sub> = -40 to 125°C		2	5	mA
		I <sub>O</sub> = 400mA, T <sub>J</sub> = -40 to 125°C		8	20	
		I <sub>O</sub> = 800mA, T <sub>J</sub> = -40 to 125°C		14	35	
		V <sub>I</sub> = 13V, V <sub>INH</sub> = GND T <sub>J</sub> = -40 to 125°C		130	180	μA
I <sub>sc</sub>	Short Circuit Current	R <sub>L</sub> = 0		1.2		A
V <sub>IL</sub>	Control Input Logic Low	OFF MODE T <sub>J</sub> = -40 to 125°C			0.8	V
V <sub>IH</sub>	Control Input Logic High	ON MODE T <sub>J</sub> = -40 to 125°C	2			V
I <sub>INH</sub>	Control Input Current	V <sub>INH</sub> = 13V T <sub>J</sub> = -40 to 125°C		5	10	μA
eN	Output Noise Voltage	B <sub>P</sub> = 10Hz to 100KHz I <sub>O</sub> = 100mA		72		μV <sub>RMS</sub>

NOTE 1: Guaranteed by design.

NOTE 2: Dropout voltage is defined as the input-to-output differential when the output voltage drops to 99% of its nominal value with V<sub>O</sub>+1V applied to V<sub>I</sub>.NOTE 3: Reference Voltage is measured between output and GND pins, with ADJ PIN tied to V<sub>OUT</sub>.

NOTE 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 2mA is required.

**Table 7: Electrical Characteristics Of LD29080#25**(I<sub>O</sub> = 10mA (Note 4), T<sub>J</sub> = 25°C, V<sub>I</sub> = 4.5V, V<sub>INH</sub> = 2V, C<sub>I</sub> = 330nF, C<sub>O</sub> = 10μF, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V <sub>I</sub>	Operating Input Voltage	I <sub>O</sub> = 10mA to 800mA			13	V
V <sub>O</sub>	Output Voltage	I <sub>O</sub> = 10mA to 800mA, V <sub>I</sub> = 3.5 to 8V T <sub>J</sub> = -40 to 125°C	2.475	2.5	2.525	V
			2.438		2.562	
ΔV <sub>O</sub>	Load Regulation	I <sub>O</sub> = 10mA to 800mA		0.2	1.0	%
ΔV <sub>O</sub>	Line Regulation	V <sub>I</sub> = 3.5 to 13V		0.06	0.5	%
SVR	Supply Voltage Rejection	f = 120 Hz, V <sub>I</sub> = 4.5 ± 1V, I <sub>O</sub> = 400mA (Note 1)	55	70		dB
V <sub>DROP</sub>	Dropout Voltage	I <sub>O</sub> = 150mA, T <sub>J</sub> = -40 to 125°C (Note 2)		0.1		V
		I <sub>O</sub> = 400mA, T <sub>J</sub> = -40 to 125°C (Note 2)		0.2		
		I <sub>O</sub> = 800mA, T <sub>J</sub> = -40 to 125°C (Note 2)		0.4	0.7	
I <sub>q</sub>	Quiescent Current	I <sub>O</sub> = 10mA, T <sub>J</sub> = -40 to 125°C		2	5	mA
		I <sub>O</sub> = 400mA, T <sub>J</sub> = -40 to 125°C		8	20	
		I <sub>O</sub> = 800mA, T <sub>J</sub> = -40 to 125°C		14	35	
		V <sub>I</sub> = 13V, V <sub>INH</sub> = GND T <sub>J</sub> = -40 to 125°C		130	180	μA
I <sub>sc</sub>	Short Circuit Current	R <sub>L</sub> = 0		1.2		A
V <sub>IL</sub>	Control Input Logic Low	OFF MODE T <sub>J</sub> = -40 to 125°C			0.8	V
V <sub>IH</sub>	Control Input Logic High	ON MODE T <sub>J</sub> = -40 to 125°C	2			V
I <sub>INH</sub>	Control Input Current	V <sub>INH</sub> = 13V T <sub>J</sub> = -40 to 125°C		5	10	μA
eN	Output Noise Voltage	B <sub>P</sub> = 10Hz to 100KHz I <sub>O</sub> = 100mA		100		μV <sub>RMS</sub>

NOTE 1: Guaranteed by design.

NOTE 2: Dropout voltage is defined as the input-to-output differential when the output voltage drops to 99% of its nominal value with V<sub>O</sub>+1V applied to V<sub>I</sub>.NOTE 3: Reference Voltage is measured between output and GND pins, with ADJ PIN tied to V<sub>OUT</sub>.

NOTE 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 2mA is required.

**Table 8: Electrical Characteristics Of LD29080#33**(I<sub>O</sub> = 10mA (Note 4), T<sub>J</sub> = 25°C, V<sub>I</sub> = 5.3V, V<sub>INH</sub> = 2V, C<sub>I</sub> = 330nF, C<sub>O</sub> = 10μF, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V <sub>I</sub>	Operating Input Voltage	I <sub>O</sub> = 10mA to 800mA			13	V
V <sub>O</sub>	Output Voltage	I <sub>O</sub> = 10mA to 800mA, V <sub>I</sub> = 4.3 to 8.8V T <sub>J</sub> = -40 to 125°C	3.267	3.3	3.333	V
			3.218		3.382	
ΔV <sub>O</sub>	Load Regulation	I <sub>O</sub> = 10mA to 800mA		0.2	1.0	%
ΔV <sub>O</sub>	Line Regulation	V <sub>I</sub> = 4.3 to 13V		0.06	0.5	%
SVR	Supply Voltage Rejection	f = 120 Hz, V <sub>I</sub> = 5.3 ± 1V, I <sub>O</sub> = 400mA (Note 1)	52	67		dB
V <sub>DROP</sub>	Dropout Voltage	I <sub>O</sub> = 150mA, T <sub>J</sub> = -40 to 125°C (Note 2)		0.1		V
		I <sub>O</sub> = 400mA, T <sub>J</sub> = -40 to 125°C (Note 2)		0.2		
		I <sub>O</sub> = 800mA, T <sub>J</sub> = -40 to 125°C (Note 2)		0.4	0.7	
I <sub>q</sub>	Quiescent Current	I <sub>O</sub> = 10mA, T <sub>J</sub> = -40 to 125°C		2	5	mA
		I <sub>O</sub> = 400mA, T <sub>J</sub> = -40 to 125°C		8	20	
		I <sub>O</sub> = 800mA, T <sub>J</sub> = -40 to 125°C		14	35	
		V <sub>I</sub> = 13V, V <sub>INH</sub> = GND T <sub>J</sub> = -40 to 125°C		130	180	μA
I <sub>sc</sub>	Short Circuit Current	R <sub>L</sub> = 0		1.2		A
V <sub>IL</sub>	Control Input Logic Low	OFF MODE T <sub>J</sub> = -40 to 125°C			0.8	V
V <sub>IH</sub>	Control Input Logic High	ON MODE T <sub>J</sub> = -40 to 125°C	2			V
I <sub>INH</sub>	Control Input Current	V <sub>INH</sub> = 13V T <sub>J</sub> = -40 to 125°C		5	10	μA
eN	Output Noise Voltage	B <sub>P</sub> = 10Hz to 100KHz I <sub>O</sub> = 100mA		132		μV <sub>RMS</sub>

NOTE 1: Guaranteed by design.

NOTE 2: Dropout voltage is defined as the input-to-output differential when the output voltage drops to 99% of its nominal value with V<sub>O</sub>+1V applied to V<sub>I</sub>.NOTE 3: Reference Voltage is measured between output and GND pins, with ADJ PIN tied to V<sub>OUT</sub>.

NOTE 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 2mA is required.

**Table 9: Electrical Characteristics Of LD29080#50**(I<sub>O</sub> = 10mA (Note 4), T<sub>J</sub> = 25°C, V<sub>I</sub> = 7V, V<sub>INH</sub> = 2V, C<sub>I</sub> = 330nF, C<sub>O</sub> = 10μF, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V <sub>I</sub>	Operating Input Voltage	I <sub>O</sub> = 10mA to 800mA			13	V
V <sub>O</sub>	Output Voltage	I <sub>O</sub> = 10mA to 800mA, V <sub>I</sub> = 6 to 10.5V T <sub>J</sub> = -40 to 125°C	4.95	5	5.05	V
			4.875		5.125	
ΔV <sub>O</sub>	Load Regulation	I <sub>O</sub> = 10mA to 800mA		0.2	1.0	%
ΔV <sub>O</sub>	Line Regulation	V <sub>I</sub> = 6 to 13V		0.06	0.5	%
SVR	Supply Voltage Rejection	f = 120 Hz, V <sub>I</sub> = 7 ± 1V, I <sub>O</sub> = 400mA (Note 1)	49	64		dB
V <sub>DROP</sub>	Dropout Voltage	I <sub>O</sub> = 150mA, T <sub>J</sub> = -40 to 125°C (Note 2)		0.1		V
		I <sub>O</sub> = 400mA, T <sub>J</sub> = -40 to 125°C (Note 2)		0.2		
		I <sub>O</sub> = 800mA, T <sub>J</sub> = -40 to 125°C (Note 2)		0.4	0.7	
I <sub>q</sub>	Quiescent Current	I <sub>O</sub> = 10mA, T <sub>J</sub> = -40 to 125°C		2	5	mA
		I <sub>O</sub> = 400mA, T <sub>J</sub> = -40 to 125°C		8	20	
		I <sub>O</sub> = 800mA, T <sub>J</sub> = -40 to 125°C		14	35	
		V <sub>I</sub> = 13V, V <sub>INH</sub> = GND T <sub>J</sub> = -40 to 125°C		130	180	μA
I <sub>sc</sub>	Short Circuit Current	R <sub>L</sub> = 0		1.2		A
V <sub>IL</sub>	Control Input Logic Low	OFF MODE T <sub>J</sub> = -40 to 125°C			0.8	V
V <sub>IH</sub>	Control Input Logic High	ON MODE T <sub>J</sub> = -40 to 125°C	2			V
I <sub>INH</sub>	Control Input Current	V <sub>INH</sub> = 13V T <sub>J</sub> = -40 to 125°C		5	10	μA
eN	Output Noise Voltage	B <sub>P</sub> = 10Hz to 100KHz I <sub>O</sub> = 100mA		320		μV <sub>RMS</sub>

NOTE 1: Guaranteed by design.

NOTE 2: Dropout voltage is defined as the input-to-output differential when the output voltage drops to 99% of its nominal value with V<sub>O</sub>+1V applied to V<sub>I</sub>.NOTE 3: Reference Voltage is measured between output and GND pins, with ADJ PIN tied to V<sub>OUT</sub>.

NOTE 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 2mA is required.



**Table 10: Electrical Characteristics Of LD29080#80**(I<sub>O</sub> = 10mA (Note 4), T<sub>J</sub> = 25°C, V<sub>I</sub> = 10V, V<sub>INH</sub> = 2V, C<sub>I</sub> = 330nF, C<sub>O</sub> = 10μF, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V <sub>I</sub>	Operating Input Voltage	I <sub>O</sub> = 10mA to 800mA			13	V
V <sub>O</sub>	Output Voltage	I <sub>O</sub> = 10mA to 800mA, V <sub>I</sub> = 9 to 13V T <sub>J</sub> = -40 to 125°C	7.92	8	8.08	V
			7.80		8.20	
ΔV <sub>O</sub>	Load Regulation	I <sub>O</sub> = 10mA to 800mA		0.2	1.0	%
ΔV <sub>O</sub>	Line Regulation	V <sub>I</sub> = 9 to 13V		0.06	0.5	%
SVR	Supply Voltage Rejection	f = 120 Hz, V <sub>I</sub> = 9 ± 1V, I <sub>O</sub> = 400mA (Note 1)	45	59		dB
V <sub>DROP</sub>	Dropout Voltage	I <sub>O</sub> = 150mA, T <sub>J</sub> = -40 to 125°C (Note 2)		0.1		V
		I <sub>O</sub> = 400mA, T <sub>J</sub> = -40 to 125°C (Note 2)		0.2		
		I <sub>O</sub> = 800mA, T <sub>J</sub> = -40 to 125°C (Note 2)		0.4	0.7	
I <sub>q</sub>	Quiescent Current	I <sub>O</sub> = 10mA, T <sub>J</sub> = -40 to 125°C		2	5	mA
		I <sub>O</sub> = 400mA, T <sub>J</sub> = -40 to 125°C		8	20	
		I <sub>O</sub> = 800mA, T <sub>J</sub> = -40 to 125°C		14	35	
		V <sub>I</sub> = 13V, V <sub>INH</sub> = GND T <sub>J</sub> = -40 to 125°C		130	180	μA
I <sub>sc</sub>	Short Circuit Current	R <sub>L</sub> = 0		1.2		A
V <sub>IL</sub>	Control Input Logic Low	OFF MODE T <sub>J</sub> = -40 to 125°C			0.8	V
V <sub>IH</sub>	Control Input Logic High	ON MODE T <sub>J</sub> = -40 to 125°C	2			V
I <sub>INH</sub>	Control Input Current	V <sub>INH</sub> = 13V T <sub>J</sub> = -40 to 125°C		5	10	μA
eN	Output Noise Voltage	B <sub>P</sub> = 10Hz to 100KHz I <sub>O</sub> = 100mA		320		μV <sub>RMS</sub>

NOTE 1: Guaranteed by design.

NOTE 2: Dropout voltage is defined as the input-to-output differential when the output voltage drops to 99% of its nominal value with V<sub>O</sub>+1V applied to V<sub>I</sub>.NOTE 3: Reference Voltage is measured between output and GND pins, with ADJ PIN tied to V<sub>OUT</sub>.

NOTE 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 2mA is required.

**Table 11: Electrical Characteristics Of LD29080#90**(I<sub>O</sub> = 10mA (Note 4), T<sub>J</sub> = 25°C, V<sub>I</sub> = 11V, V<sub>INH</sub> = 2V, C<sub>1</sub> = 330nF, C<sub>O</sub> = 10μF, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V <sub>I</sub>	Operating Input Voltage	I <sub>O</sub> = 10mA to 800mA			13	V
V <sub>O</sub>	Output Voltage	I <sub>O</sub> = 10mA to 800mA, V <sub>I</sub> = 10 to 13V T <sub>J</sub> = -40 to 125°C	8.91	9	9.09	V
			8.775		9.225	
ΔV <sub>O</sub>	Load Regulation	I <sub>O</sub> = 10mA to 800mA		0.2	1.0	%
ΔV <sub>O</sub>	Line Regulation	V <sub>I</sub> = 10 to 13V		0.06	0.5	%
SVR	Supply Voltage Rejection	f = 120 Hz, V <sub>I</sub> = 11 ± 1V, I <sub>O</sub> = 400mA (Note 1)	45	58		dB
V <sub>DROP</sub>	Dropout Voltage	I <sub>O</sub> = 150mA, T <sub>J</sub> = -40 to 125°C (Note 2)		0.1		V
		I <sub>O</sub> = 400mA, T <sub>J</sub> = -40 to 125°C (Note 2)		0.2		
		I <sub>O</sub> = 800mA, T <sub>J</sub> = -40 to 125°C (Note 2)		0.4	0.7	
I <sub>q</sub>	Quiescent Current	I <sub>O</sub> = 10mA, T <sub>J</sub> = -40 to 125°C		2	5	mA
		I <sub>O</sub> = 400mA, T <sub>J</sub> = -40 to 125°C		8	20	
		I <sub>O</sub> = 800mA, T <sub>J</sub> = -40 to 125°C		14	35	
		V <sub>I</sub> = 13V, V <sub>INH</sub> = GND T <sub>J</sub> = -40 to 125°C		130	180	μA
I <sub>sc</sub>	Short Circuit Current	R <sub>L</sub> = 0		1.2		A
V <sub>IL</sub>	Control Input Logic Low	OFF MODE T <sub>J</sub> = -40 to 125°C			0.8	V
V <sub>IH</sub>	Control Input Logic High	ON MODE T <sub>J</sub> = -40 to 125°C	2			V
I <sub>INH</sub>	Control Input Current	V <sub>INH</sub> = 13V T <sub>J</sub> = -40 to 125°C		5	10	μA
eN	Output Noise Voltage	B <sub>P</sub> = 10Hz to 100KHz I <sub>O</sub> = 100mA		360		μV <sub>RMS</sub>

NOTE 1: Guaranteed by design.

NOTE 2: Dropout voltage is defined as the input-to-output differential when the output voltage drops to 99% of its nominal value with V<sub>O</sub>+1V applied to V<sub>I</sub>.NOTE 3: Reference Voltage is measured between output and GND pins, with ADJ PIN tied to V<sub>OUT</sub>.

NOTE 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 2mA is required.

**Table 12: Electrical Characteristics Of LD29080#ADJ**

( $I_O = 10\text{mA}$  (Note 4),  $T_J = 25^\circ\text{C}$ ,  $V_I = 3.23\text{V}$ ,  $V_{INH} = 2\text{V}$ ,  $C_I = 330\text{nF}$ ,  $C_O = 10\mu\text{F}$  adjust pin tied to output pin, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_I$	Minimum Operating Input Voltage	$I_O = 10\text{mA}$ to $800\text{mA}$	2.5		13	V
$\Delta V_O$	Load Regulation	$I_O = 10\text{mA}$ to $800\text{mA}$		0.2	1.0	%
$\Delta V_O$	Line Regulation	$V_I = 2.5\text{V}$ to $13\text{V}$ $I_O = 10\text{mA}$		0.06	0.5	%
$V_{REF}$	Reference Voltage	$I_O = 10\text{mA}$ to $800\text{mA}$ , $V_I = 2.5$ to $6.73\text{V}$ $T_J = -40$ to $125^\circ\text{C}$ (Note 3)	1.2177 1.1993	1.23	1.2423 1.2607	V
SVR	Supply Voltage Rejection	$f = 120\text{Hz}$ , $V_I = 3.23 \pm 1\text{V}$ , $I_O = 400\text{mA}$ (Note 1)	45	75		dB
$I_q$	Quiescent Current	$I_O = 10\text{mA}$ , $T_J = -40$ to $125^\circ\text{C}$		2	5	mA
		$I_O = 400\text{mA}$ , $T_J = -40$ to $125^\circ\text{C}$		8	20	
		$I_O = 800\text{mA}$ , $T_J = -40$ to $125^\circ\text{C}$		14	35	
		$V_I = 13\text{V}$ , $V_{INH} = \text{GND}$ $T_J = -40$ to $125^\circ\text{C}$		130	180	$\mu\text{A}$
$I_{ADJ}$	Adjust Pin Current	$T_J = -40$ to $125^\circ\text{C}$ (Note 1)			1	$\mu\text{A}$
$I_{sc}$	Short Circuit Current	$R_L = 0$		1.2		A
$V_{IL}$	Control Input Logic Low	OFF MODE $T_J = -40$ to $125^\circ\text{C}$			0.8	V
$V_{IH}$	Control Input Logic High	ON MODE $T_J = -40$ to $125^\circ\text{C}$	2			V
$I_{INH}$	Control Input Current	$V_{INH} = 13\text{V}$ $T_J = -40$ to $125^\circ\text{C}$		5	10	$\mu\text{A}$
eN	Output Noise Voltage	$B_p = 10\text{Hz}$ to $100\text{KHz}$ $I_O = 100\text{mA}$		50		$\mu\text{V}_{RMS}$

NOTE 1: Guaranteed by design.

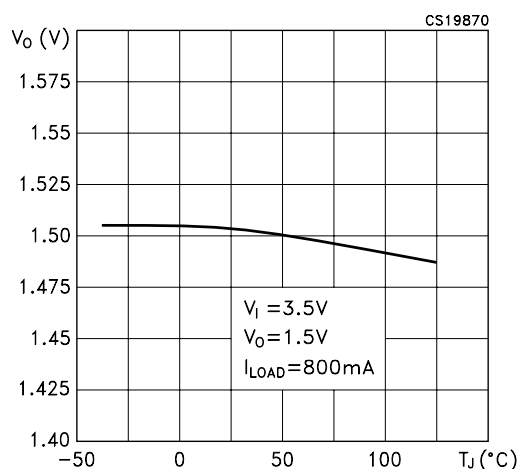
NOTE 2: Dropout voltage is defined as the input-to-output differential when the output voltage drops to 99% of its nominal value with  $V_O + 1\text{V}$  applied to  $V_I$ .

NOTE 3: Reference Voltage is measured between output and GND pins, with ADJ PIN tied to  $V_{OUT}$ .

NOTE 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 2mA is required.

## TYPICAL CHARACTERISTICS

**Figure 5: Output Voltage vs Temperature**



**Figure 6: Reference Voltage vs Temperature**

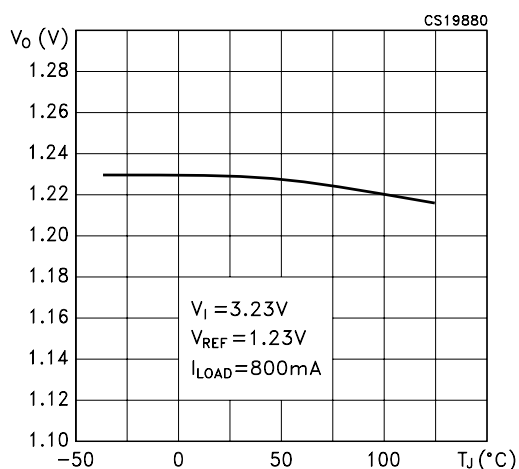


Figure 7: Dropout Voltage vs Temperature

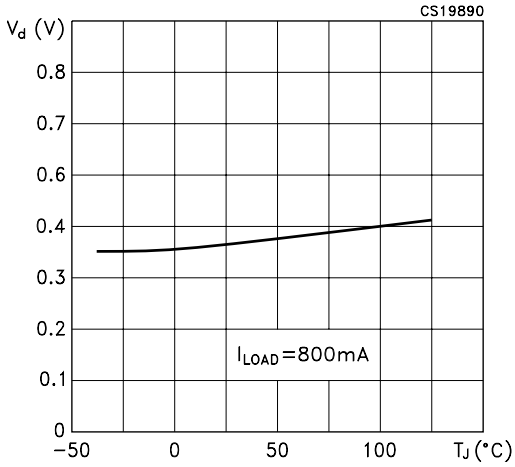


Figure 8: Dropout Voltage vs Output Current

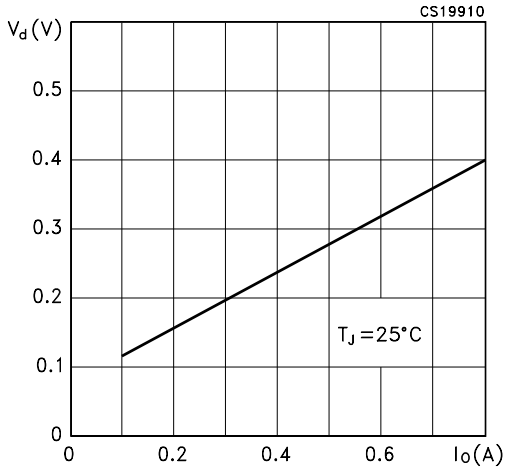


Figure 9: Quiescent Current vs Output Current

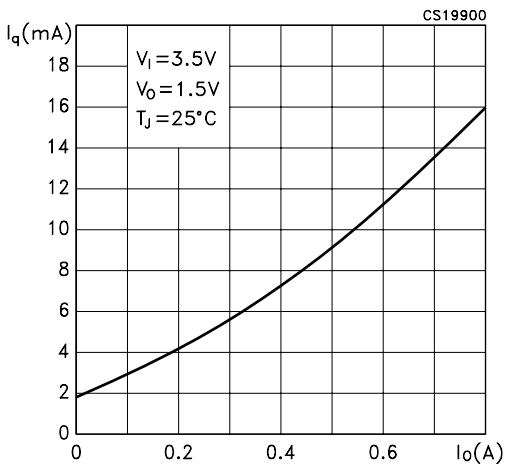


Figure 10: Quiescent Current vs Temperature

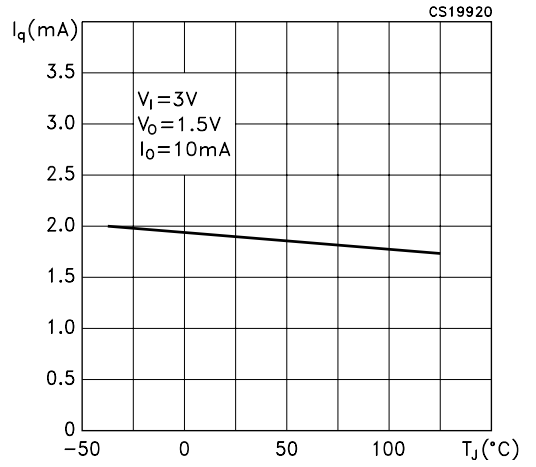


Figure 11: Quiescent Current vs Supply Voltage

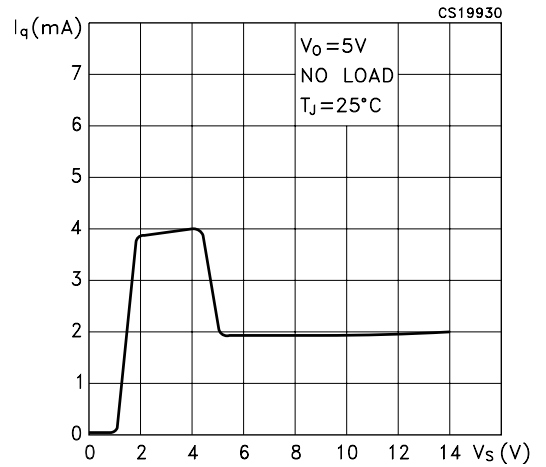


Figure 12: Quiescent Current vs Temperature

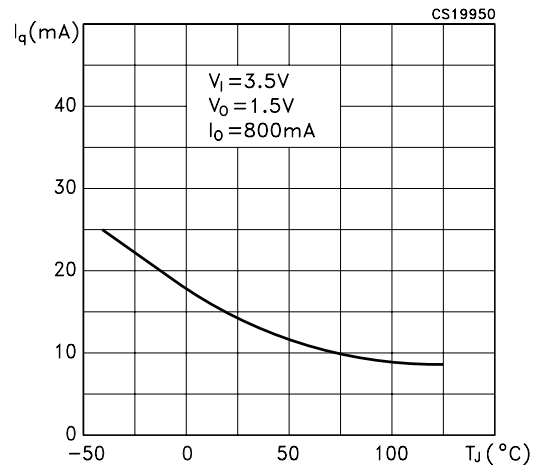


Figure 13: Short Circuit Current vs Temperature

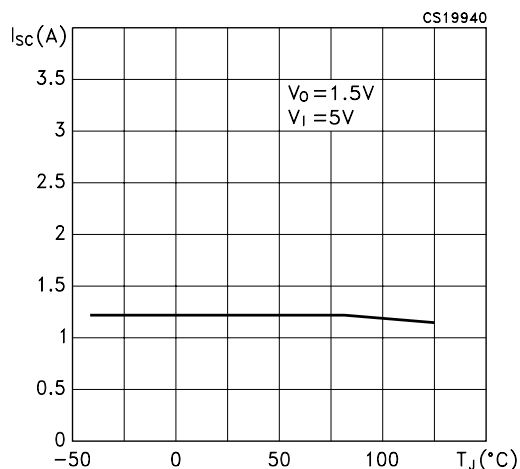


Figure 16: Output Voltage vs Input Voltage

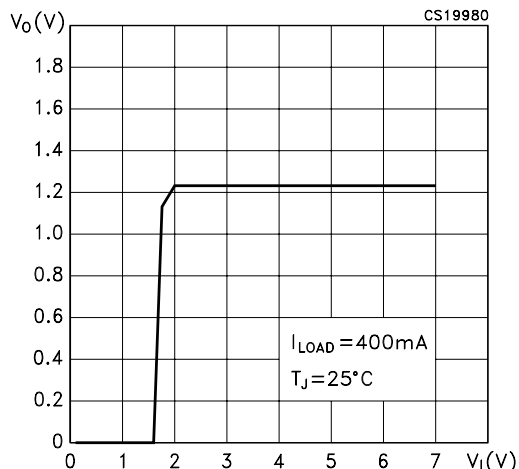


Figure 14: Adjust Pin Current vs Temperature

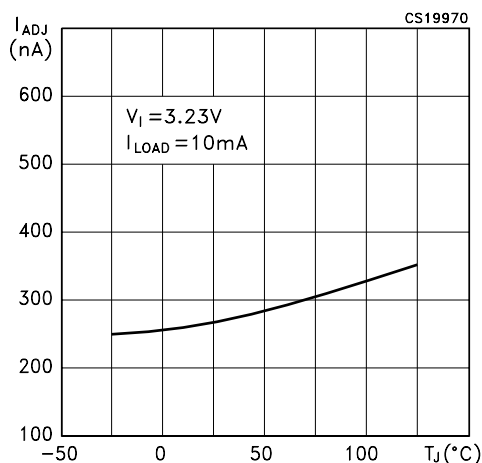


Figure 17: Stability vs C\_OUT

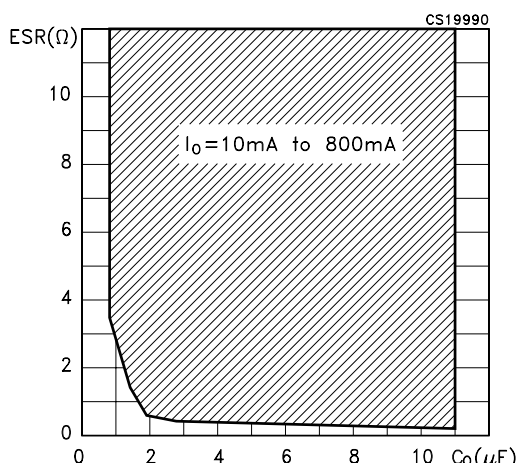


Figure 15: Supply Voltage Rejection vs Temperature

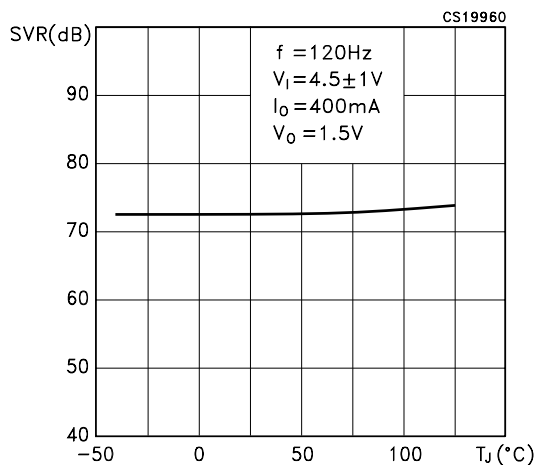


Figure 18: Line Transient

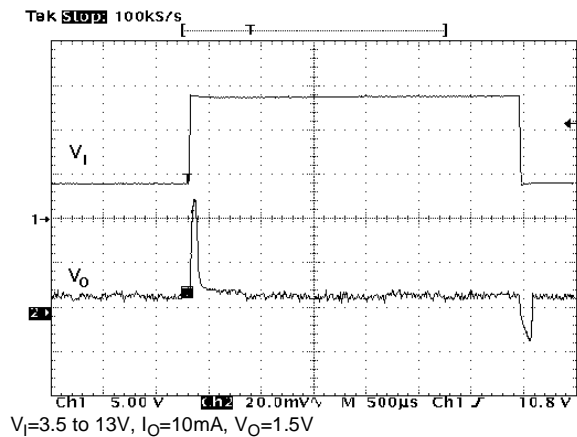
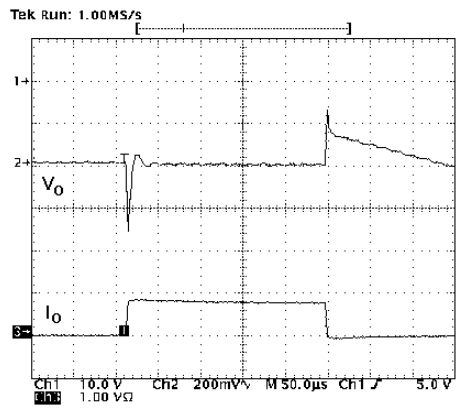


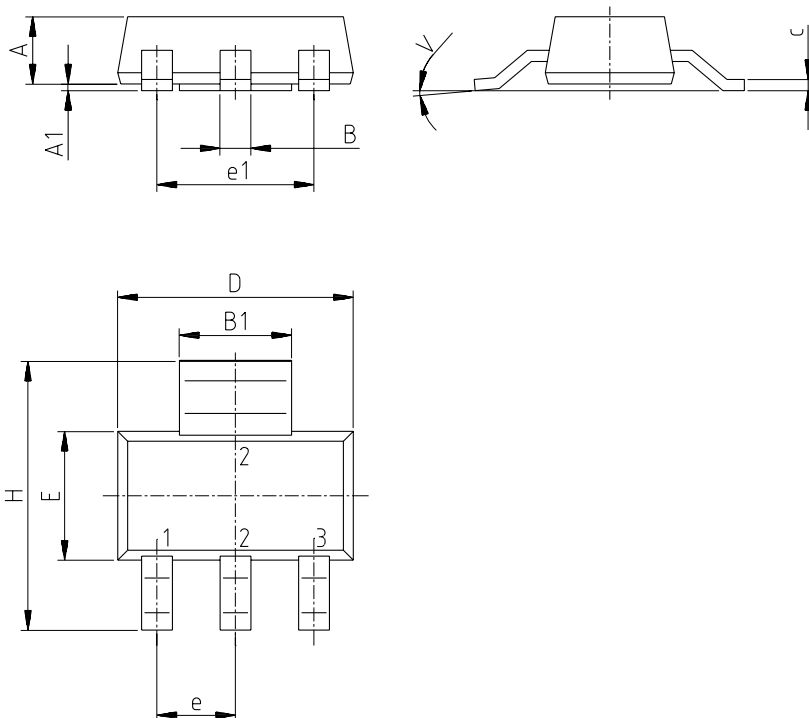
Figure 19: Load Transient



$V_I=3.5V$ ,  $V_O=1.5V$ ,  $I_O=10mA$  to  $0.8A$

## SOT-223 MECHANICAL DATA

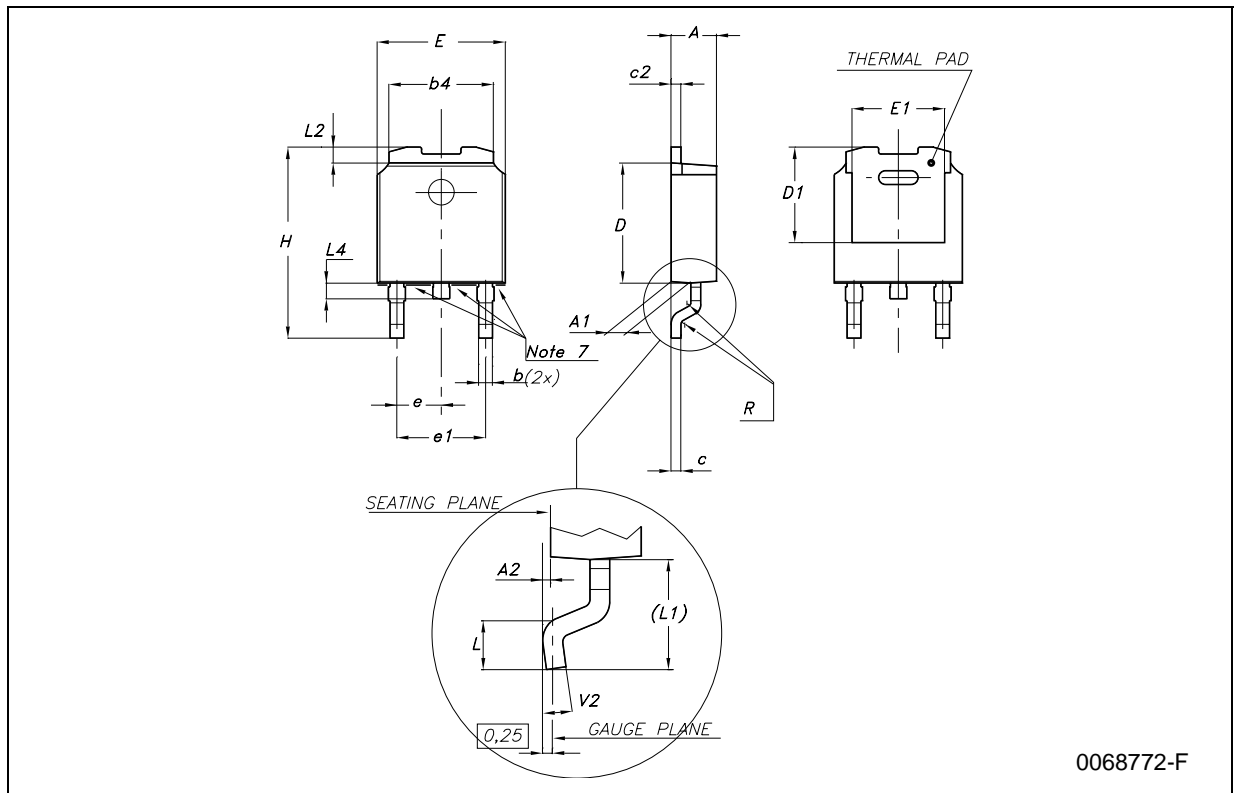
DIM.	mm.			mils		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			1.8			70.9
A1	0.02		0.1	0.8		3.9
B	0.6	0.7	0.85	23.6	27.6	33.5
B1	2.9	3	3.15	114.2	118.1	124.0
c	0.24	0.26	0.35	9.4	10.2	13.8
D	6.3	6.5	6.7	248.0	255.9	263.8
e		2.3			90.6	
e1		4.6			181.1	
E	3.3	3.5	3.7	129.9	137.8	145.7
H	6.7	7	7.3	129.9	137.8	145.7
V			10°			10°



0046067/H

**DPAK MECHANICAL DATA**

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	2.2		2.4	0.086		0.094
A1	0.9		1.1	0.035		0.043
A2	0.03		0.23	0.001		0.009
B	0.64		0.9	0.025		0.035
B2	5.2		5.4	0.204		0.212
C	0.45		0.6	0.017		0.023
C2	0.48		0.6	0.019		0.023
D	6		6.2	0.236		0.244
D1		5.1			0.200	
E	6.4		6.6	0.252		0.260
E1		4.7			0.185	
e		2.28			0.090	
e1	4.4		4.6	0.173		0.181
H	9.35		10.1	0.368		0.397
L	1			0.039		
(L1)		2.8			0.110	
L2		0.8			0.031	
L4	0.6		1	0.023		0.039

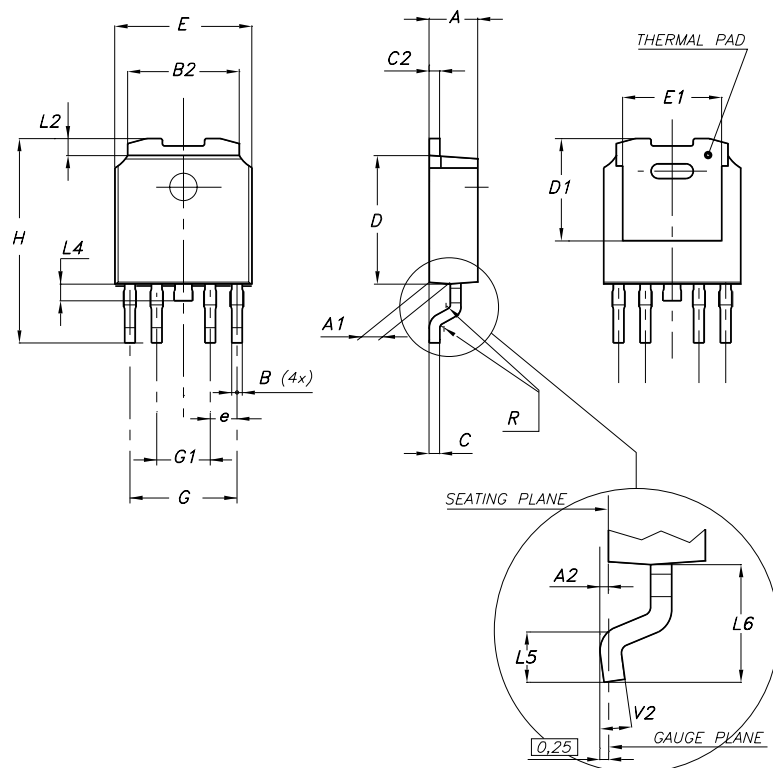


0068772-F



## PPAK MECHANICAL DATA

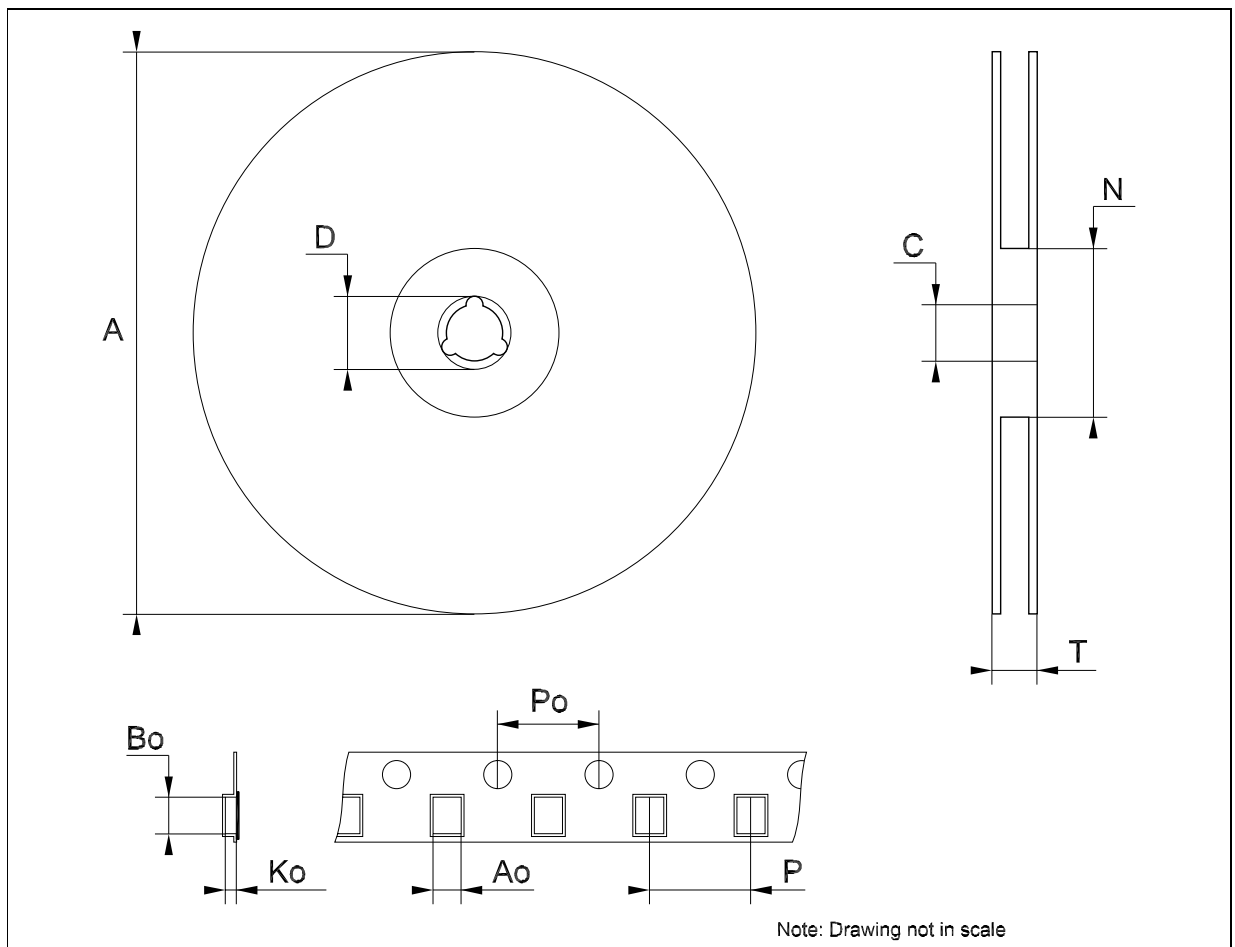
DIM.	mm.			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	2.2		2.4	0.086		0.094
A1	0.9		1.1	0.035		0.043
A2	0.03		0.23	0.001		0.009
B	0.4		0.6	0.015		0.023
B2	5.2		5.4	0.204		0.212
C	0.45		0.6	0.017		0.023
C2	0.48		0.6	0.019		0.023
D	6		6.2	0.236		0.244
D1		5.1			0.201	
E	6.4		6.6	0.252		0.260
E1		4.7			0.185	
e		1.27			0.050	
G	4.9		5.25	0.193		0.206
G1	2.38		2.7	0.093		0.106
H	9.35		10.1	0.368		0.397
L2		0.8	1		0.031	0.039
L4	0.6		1	0.023		0.039
L5	1			0.039		
L6		2.8			0.110	



0078180-E

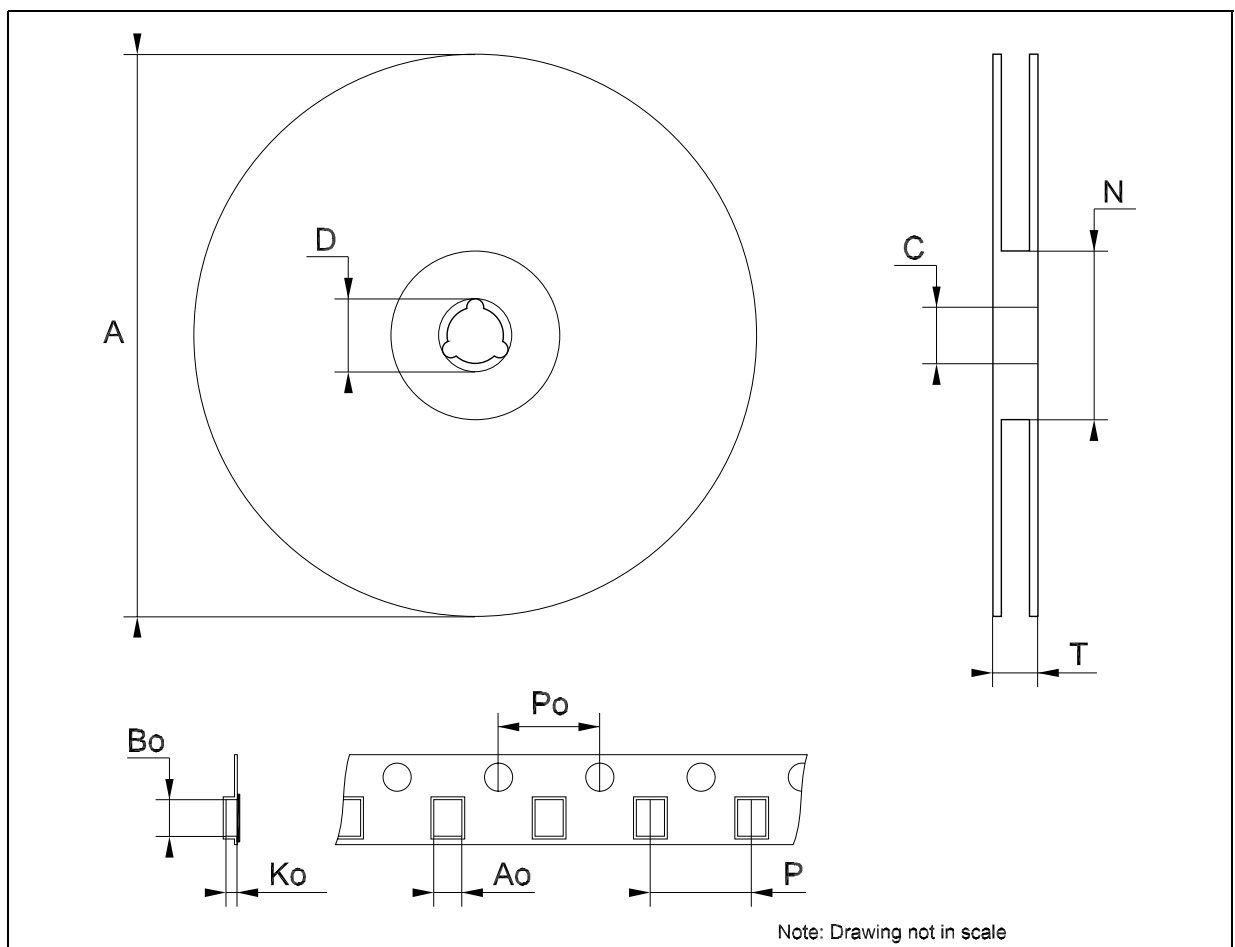
**Tape & Reel SOT223 MECHANICAL DATA**

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A			330			12.992
C	12.8	13.0	13.2	0.504	0.512	0.519
D	20.2			0.795		
N	60			2.362		
T			14.4			0.567
Ao	6.73	6.83	6.93	0.265	0.269	0.273
Bo	7.32	7.42	7.52	0.288	0.292	0.296
Ko	1.78		2	0.070		0.078
Po	3.9	4.0	4.1	0.153	0.157	0.161
P	7.9	8.0	8.1	0.311	0.315	0.319



## Tape &amp; Reel DPAK-PPAK MECHANICAL DATA

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A			330			12.992
C	12.8	13.0	13.2	0.504	0.512	0.519
D	20.2			0.795		
N	60			2.362		
T			22.4			0.882
Ao	6.80	6.90	7.00	0.268	0.272	0.276
Bo	10.40	10.50	10.60	0.409	0.413	0.417
Ko	2.55	2.65	2.75	0.100	0.104	0.105
Po	3.9	4.0	4.1	0.153	0.157	0.161
P	7.9	8.0	8.1	0.311	0.315	0.319



**Table 13: Revision History**

Date	Revision	Description of Changes
15-Oct-2004	1	First Release.

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