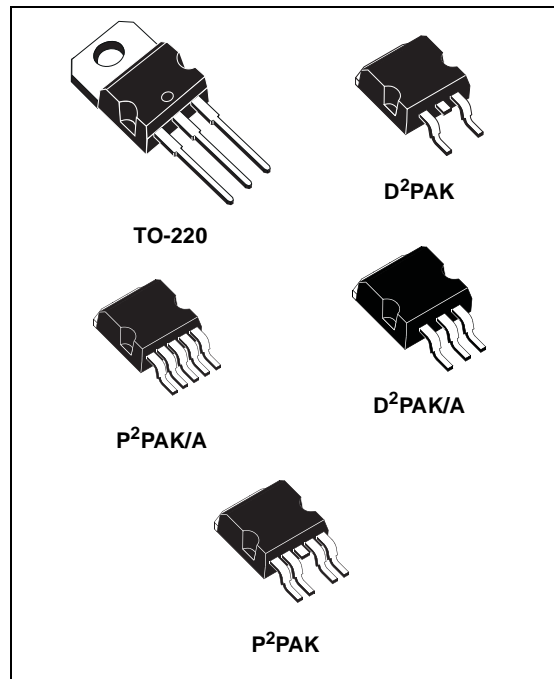


## 3A, VERY LOW DROP VOLTAGE REGULATORS

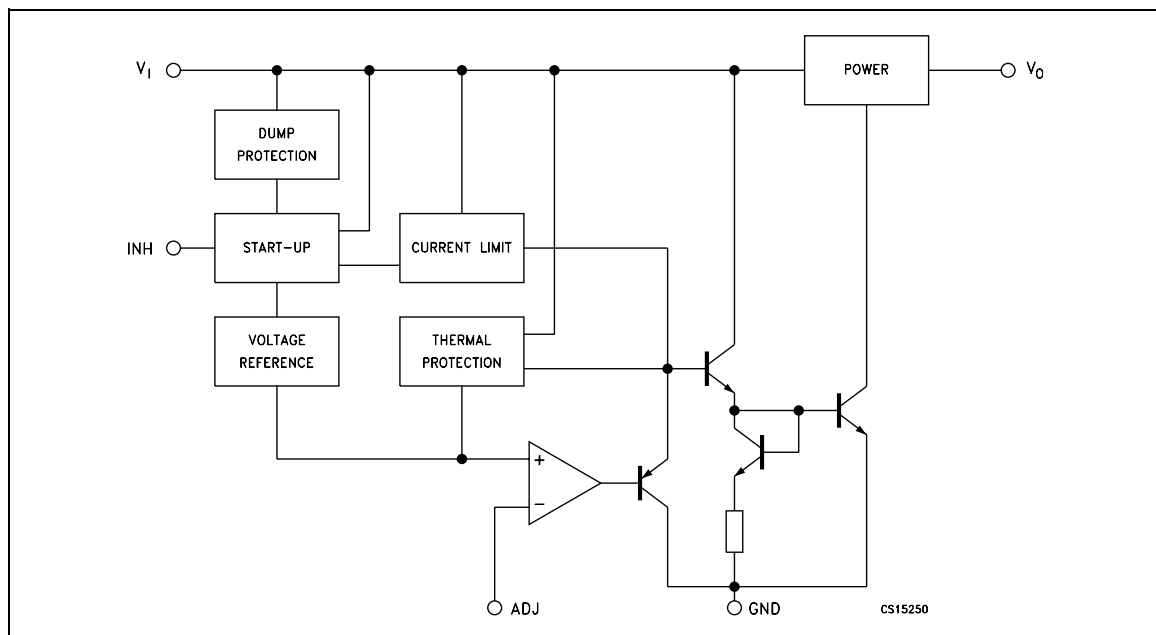
- VERY LOW DROPOUT VOLTAGE (TYP. 0.4 AT 3A)
- GUARANTEED OUTPUT CURRENT UP TO 3A
- FIXED VOLTAGE WITH  $\pm 1\%$  TOLERANCE AT 25°C
- INTERNAL CURRENT AND THERMAL LIMIT
- LOGIC CONTROLLED ELECTRONIC SHUTDOWN AVAILABLE IN PPAK

### DESCRIPTION

The LD29300 is a high current, high accuracy, low-dropout voltage regulator series. These regulators feature 400mV dropout voltage and very low ground current. Designed for high current loads, these devices are also used in lower current, extremely low dropout-critical systems, where their tiny dropout voltage and ground current values are important attributes. Typical applications 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.

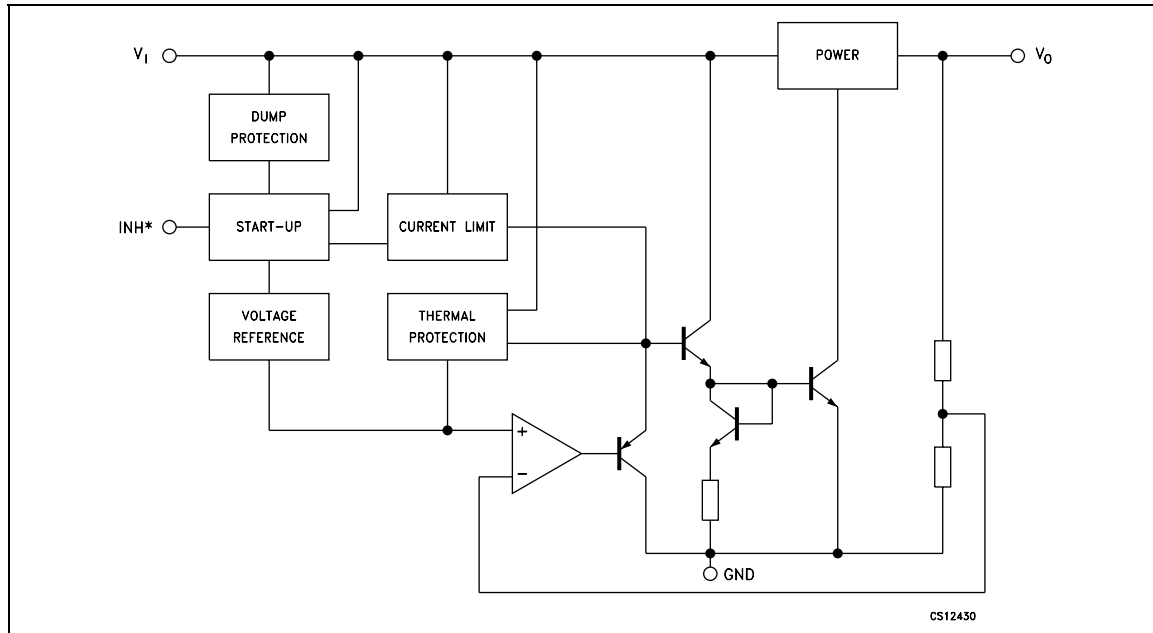


### SCHEMATIC DIAGRAM FOR ADJUSTABLE VERSION



## LD29300 SERIES

### SCHEMATIC DIAGRAM FOR FIXED VERSION



\* Only for version with inhibit function.

### ORDERING CODES

TO-220	D <sup>2</sup> PAK (*)	D <sup>2</sup> PAK/A (*)	P <sup>2</sup> PAK (*) (#)	P <sup>2</sup> PAK/A (*)	OUTPUT VOLTAGE
LD29300V15	LD29300D2T15	LD29300D2M15	LD29300P2T15	LD29300P2M15	1.5 V
LD29300V18	LD29300D2T18	LD29300D2M18	LD29300P2T18	LD29300P2M18	1.8 V
LD29300V25	LD29300D2T25	LD29300D2M25	LD29300P2T25	LD29300P2M25	2.5 V
LD29300V33	LD29300D2T33	LD29300D2M33	LD29300P2T33	LD29300P2M33	3.3 V
LD29300V50	LD29300D2T50	LD29300D2M50	LD29300P2T50	LD29300P2M50	5.0 V
LD29300V80	LD29300D2T80	LD29300D2M80	LD29300P2T80	LD29300P2M80	8.0 V
LD29300V90	LD29300D2T90	LD29300D2M90	LD29300P2T90	LD29300P2M90	9.0 V
			LD29300P2T	LD29300P2M	ADJ

(\*) Available in Tape & Reel with the suffix "R".

(#) Available on request.

### ABSOLUTE MAXIMUM RATINGS

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

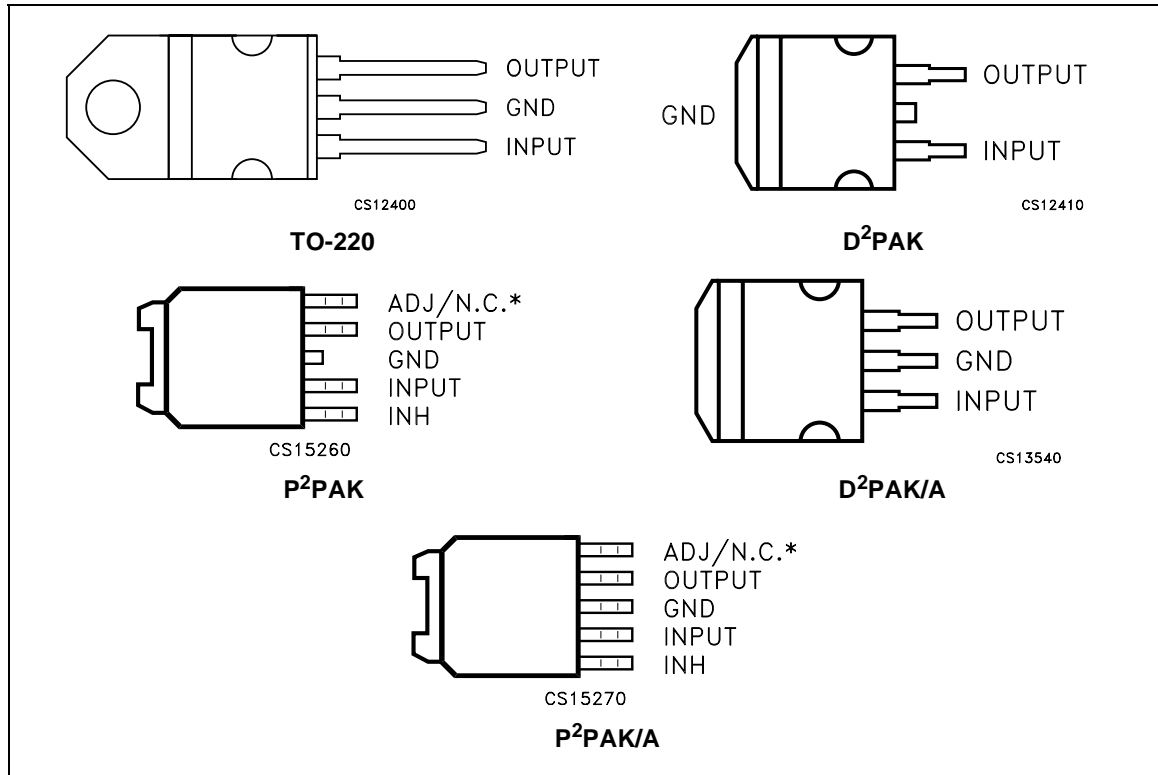
(\*) Above 14V the device is automatically in shut-down.

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

THERMAL DATA

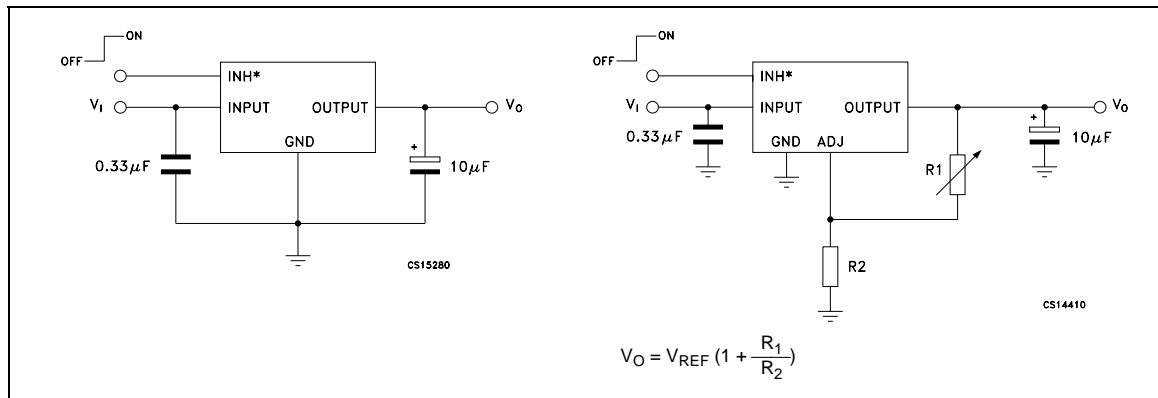
Symbol	Parameter	TO-220	D <sup>2</sup> PAK-P <sup>2</sup> PAK D <sup>2</sup> PAK/A-P <sup>2</sup> PAK/A	Unit
R <sub>thj-case</sub>	Thermal Resistance Junction-case	3	3	°C/W
R <sub>thj-amb</sub>	Thermal Resistance Junction-ambient	50	60	°C/W

CONNECTION DIAGRAM (top view)



\* Not connected for fixed version.

APPLICATION CIRCUIT



\* Only for version with inhibit function.



## LD29300 SERIES

### ELECTRICAL CHARACTERISTICS OF LD29300#15

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_I$	Minimum Operating Input Voltage	$I_O = 10\text{mA}$ to $3\text{A}$ $T_J = -40$ to $125^\circ\text{C}$	2.5			V
$V_O$	Output Voltage	$I_O = 10\text{mA}$ to $3\text{A}$ , $V_I = 3$ to $7\text{V}$ $T_J = -40$ to $125^\circ\text{C}$	1.485	1.5	1.515	V
$\Delta V_O$	Load Regulation	$I_O = 10\text{mA}$ to $3\text{A}$		0.2	1.0	%
$\Delta V_O$	Line Regulation	$V_I = 3$ to $13\text{V}$		0.06	0.5	%
SVR	Supply Voltage Rejection	$f = 120\text{Hz}$ , $V_I = 3.5 \pm 1\text{V}$ , $I_O = 1.5\text{A}$ (Note 1)	65	75		dB
$I_q$	Quiescent Current	$I_O = 1.5\text{A}$ , $T_J = -40$ to $125^\circ\text{C}$		20	50	mA
		$I_O = 3\text{A}$ , $T_J = -40$ to $125^\circ\text{C}$		45	100	
		$V_I = 13\text{V}$ , $V_{INH} = \text{GND}$ $T_J = -40$ to $125^\circ\text{C}$		130	180	$\mu\text{A}$
$I_{sc}$	Short Circuit Current	$V_I - V_O = 5.5\text{V}$		4.5		A
$V_{IL}$	Control Input Logic Low	OFF MODE, (NOTE 2) $T_J = -40$ to $125^\circ\text{C}$			0.8	V
$V_{IH}$	Control Input Logic High	ON MODE, (NOTE 2) $T_J = -40$ to $125^\circ\text{C}$	2			V
$I_{INH}$	Control Input Current	$T_J = -40$ to $125^\circ\text{C}$ $V_{INH} = 13\text{V}$		5	10	$\mu\text{A}$
eN	Output Noise Voltage	$B_p = 10\text{Hz}$ to $100\text{KHz}$ $I_O = 100\text{mA}$		60		$\mu\text{V}_{\text{RMS}}$

NOTE 1: Guaranteed by design.

NOTE 2: Only for version with Inhibit function.

### ELECTRICAL CHARACTERISTICS OF LD29300#18

( $I_O = 10\text{mA}$ ,  $T_J = 25^\circ\text{C}$ ,  $V_I = 3.8\text{V}$ ,  $V_{INH} = 2\text{V}$  (Note 3),  $C_I = 330\text{nF}$ ,  $C_O = 10\mu\text{F}$ , unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$I_O = 10\text{mA}$ to $3\text{A}$ , $V_I = 3$ to $7.3\text{V}$ $T_J = -40$ to $125^\circ\text{C}$	1.782	1.8	1.818	V
			1.764		1.836	
$\Delta V_O$	Load Regulation	$I_O = 10\text{mA}$ to $3\text{A}$		0.2	1.0	%
$\Delta V_O$	Line Regulation	$V_I = 3$ to $13\text{V}$		0.06	0.5	%
SVR	Supply Voltage Rejection	$f = 120\text{Hz}$ , $V_I = 3.8 \pm 1\text{V}$ , $I_O = 1.5\text{A}$ (Note 1)	62	72		dB
$V_{\text{DROP}}$	Dropout Voltage	$I_O = 500\text{mA}$ , $T_J = -40$ to $125^\circ\text{C}$ (Note 2)		0.1		V
		$I_O = 1.5\text{A}$ , $T_J = -40$ to $125^\circ\text{C}$ (Note 2)		0.2		
		$I_O = 3\text{A}$ , $T_J = -40$ to $125^\circ\text{C}$ (Note 2)		0.4	0.7	
$I_q$	Quiescent Current	$I_O = 1.5\text{A}$ , $T_J = -40$ to $125^\circ\text{C}$		20	50	mA
		$I_O = 3\text{A}$ , $T_J = -40$ to $125^\circ\text{C}$		45	100	
		$V_I = 13\text{V}$ , $V_{INH} = \text{GND}$ $T_J = -40$ to $125^\circ\text{C}$		130	180	$\mu\text{A}$
$I_{sc}$	Short Circuit Current	$V_I - V_O = 5.5\text{V}$		4.5		A
$V_{IL}$	Control Input Logic Low	OFF MODE, (NOTE 3) $T_J = -40$ to $125^\circ\text{C}$			0.8	V
$V_{IH}$	Control Input Logic High	ON MODE, (NOTE 3) $T_J = -40$ to $125^\circ\text{C}$	2			V
$I_{INH}$	Control Input Current	$T_J = -40$ to $125^\circ\text{C}$ $V_{INH} = 13\text{V}$		5	10	$\mu\text{A}$
eN	Output Noise Voltage	$B_p = 10\text{Hz}$ to $100\text{KHz}$ $I_O = 100\text{mA}$		60		$\mu\text{V}_{\text{RMS}}$

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: Only for version with Inhibit function.

**ELECTRICAL CHARACTERISTICS OF LD29300#25**(I<sub>O</sub> = 10mA, T<sub>J</sub> = 25°C, V<sub>I</sub> = 4.5V, V<sub>INH</sub> = 2V (Note 3), C<sub>I</sub> = 330nF, C<sub>O</sub> = 10μF, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V <sub>O</sub>	Output Voltage	I <sub>O</sub> = 10mA to 3A, V <sub>I</sub> = 3.5 to 8V T <sub>J</sub> = -40 to 125°C	2.475	2.5	2.525	V
ΔV <sub>O</sub>	Load Regulation	I <sub>O</sub> = 10mA to 3A		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> = 1.5A (Note 1)	55	70		dB
V <sub>DROP</sub>	Dropout Voltage	I <sub>O</sub> = 500mA, T <sub>J</sub> = -40 to 125°C (Note 2)		0.1		V
		I <sub>O</sub> = 1.5A, T <sub>J</sub> = -40 to 125°C (Note 2)		0.2		
		I <sub>O</sub> = 3A, T <sub>J</sub> = -40 to 125°C (Note 2)		0.4	0.7	
I <sub>q</sub>	Quiescent Current	I <sub>O</sub> = 1.5A, T <sub>J</sub> = -40 to 125°C		20	50	mA
		I <sub>O</sub> = 3A, T <sub>J</sub> = -40 to 125°C		45	100	
		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	V <sub>I</sub> - V <sub>O</sub> = 5.5V		4.5		A
V <sub>IL</sub>	Control Input Logic Low	OFF MODE, (NOTE 3) T <sub>J</sub> = -40 to 125°C			0.8	V
V <sub>IH</sub>	Control Input Logic High	ON MODE, (NOTE 3) T <sub>J</sub> = -40 to 125°C	2			V
I <sub>INH</sub>	Control Input Current	T <sub>J</sub> = -40 to 125°C V <sub>INH</sub> = 13V		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: Only for version with Inhibit function.

**ELECTRICAL CHARACTERISTICS OF LD29300#33**(I<sub>O</sub> = 10mA, T<sub>J</sub> = 25°C, V<sub>I</sub> = 5.3V, V<sub>INH</sub> = 2V (Note 3), C<sub>I</sub> = 330nF, C<sub>O</sub> = 10μF, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V <sub>O</sub>	Output Voltage	I <sub>O</sub> = 10mA to 3A, V <sub>I</sub> = 4.3 to 8.8V T <sub>J</sub> = -40 to 125°C	3.267	3.3	3.333	V
			3.234		3.366	
ΔV <sub>O</sub>	Load Regulation	I <sub>O</sub> = 10mA to 3A		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> = 1.5A (Note 1)	52	67		dB
V <sub>DROP</sub>	Dropout Voltage	I <sub>O</sub> = 500mA, T <sub>J</sub> = -40 to 125°C (Note 2)		0.1		V
		I <sub>O</sub> = 1.5A, T <sub>J</sub> = -40 to 125°C (Note 2)		0.2		
		I <sub>O</sub> = 3A, T <sub>J</sub> = -40 to 125°C (Note 2)		0.4	0.7	
I <sub>q</sub>	Quiescent Current	I <sub>O</sub> = 1.5A, T <sub>J</sub> = -40 to 125°C		20	50	mA
		I <sub>O</sub> = 3A, T <sub>J</sub> = -40 to 125°C		45	100	
		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	V <sub>I</sub> - V <sub>O</sub> = 5.5V		4.5		A
V <sub>IL</sub>	Control Input Logic Low	OFF MODE, (NOTE 3) T <sub>J</sub> = -40 to 125°C			0.8	V
V <sub>IH</sub>	Control Input Logic High	ON MODE, (NOTE 3) T <sub>J</sub> = -40 to 125°C	2			V
I <sub>INH</sub>	Control Input Current	T <sub>J</sub> = -40 to 125°C V <sub>INH</sub> = 13V		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: Only for version with Inhibit function.



## LD29300 SERIES

### ELECTRICAL CHARACTERISTICS OF LD29300#50

( $I_O = 10\text{mA}$ ,  $T_J = 25^\circ\text{C}$ ,  $V_I = 7\text{V}$ ,  $V_{INH} = 2\text{V}$  (Note 3),  $C_I = 330\text{nF}$ ,  $C_O = 10\mu\text{F}$ , unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$I_O = 10\text{mA}$ to $3\text{A}$ , $V_I = 6$ to $10.5\text{V}$ $T_J = -40$ to $125^\circ\text{C}$	4.95	5	5.05	V
			4.9		5.1	
$\Delta V_O$	Load Regulation	$I_O = 10\text{mA}$ to $3\text{A}$		0.2	1.0	%
$\Delta V_O$	Line Regulation	$V_I = 6$ to $13\text{V}$		0.06	0.5	%
SVR	Supply Voltage Rejection	$f = 120\text{Hz}$ , $V_I = 7 \pm 1\text{V}$ , $I_O = 1.5\text{A}$ (Note 1)	49	64		dB
$V_{DROP}$	Dropout Voltage	$I_O = 500\text{mA}$ , $T_J = -40$ to $125^\circ\text{C}$ (Note 2)		0.1		V
		$I_O = 1.5\text{A}$ , $T_J = -40$ to $125^\circ\text{C}$ (Note 2)		0.2		
		$I_O = 3\text{A}$ , $T_J = -40$ to $125^\circ\text{C}$ (Note 2)		0.4	0.7	
$I_q$	Quiescent Current	$I_O = 1.5\text{A}$ , $T_J = -40$ to $125^\circ\text{C}$		20	50	mA
		$I_O = 3\text{A}$ , $T_J = -40$ to $125^\circ\text{C}$		45	100	
		$V_I = 13\text{V}$ , $V_{INH} = \text{GND}$ $T_J = -40$ to $125^\circ\text{C}$		130	180	$\mu\text{A}$
$I_{sc}$	Short Circuit Current	$V_I - V_O = 5.5\text{V}$		4.5		A
$V_{IL}$	Control Input Logic Low	OFF MODE, (NOTE 3) $T_J = -40$ to $125^\circ\text{C}$			0.8	V
$V_{IH}$	Control Input Logic High	ON MODE, (NOTE 3) $T_J = -40$ to $125^\circ\text{C}$	2			V
$I_{INH}$	Control Input Current	$T_J = -40$ to $125^\circ\text{C}$ $V_{INH} = 13\text{V}$		5	10	$\mu\text{A}$
eN	Output Noise Voltage	$B_p = 10\text{Hz}$ to $100\text{KHz}$ $I_O = 100\text{mA}$		200		$\mu\text{V}_{RMS}$

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: Only for version with Inhibit function.

### ELECTRICAL CHARACTERISTICS OF LD29300#80

( $I_O = 10\text{mA}$ ,  $T_J = 25^\circ\text{C}$ ,  $V_I = 10\text{V}$ ,  $V_{INH} = 2\text{V}$  (Note 3),  $C_I = 330\text{nF}$ ,  $C_O = 10\mu\text{F}$ , unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$I_O = 10\text{mA}$ to $3\text{A}$ , $V_I = 9$ to $13\text{V}$ $T_J = -40$ to $125^\circ\text{C}$	7.92	8	8.08	V
			7.84		8.16	
$\Delta V_O$	Load Regulation	$I_O = 10\text{mA}$ to $3\text{A}$		0.2	1.0	%
$\Delta V_O$	Line Regulation	$V_I = 9$ to $13\text{V}$		0.06	0.5	%
SVR	Supply Voltage Rejection	$f = 120\text{Hz}$ , $V_I = 9 \pm 1\text{V}$ , $I_O = 1.5\text{A}$ (Note 1)	45	59		dB
$V_{DROP}$	Dropout Voltage	$I_O = 500\text{mA}$ , $T_J = -40$ to $125^\circ\text{C}$ (Note 2)		0.1		V
		$I_O = 1.5\text{A}$ , $T_J = -40$ to $125^\circ\text{C}$ (Note 2)		0.2		
		$I_O = 3\text{A}$ , $T_J = -40$ to $125^\circ\text{C}$ (Note 2)		0.4	0.7	
$I_q$	Quiescent Current	$I_O = 1.5\text{A}$ , $T_J = -40$ to $125^\circ\text{C}$		20	50	mA
		$I_O = 3\text{A}$ , $T_J = -40$ to $125^\circ\text{C}$		45	100	
		$V_I = 13\text{V}$ , $V_{INH} = \text{GND}$ $T_J = -40$ to $125^\circ\text{C}$		130	180	$\mu\text{A}$
$I_{sc}$	Short Circuit Current	$V_I - V_O = 5.5\text{V}$		4.5		A
$V_{IL}$	Control Input Logic Low	OFF MODE, (NOTE 3) $T_J = -40$ to $125^\circ\text{C}$			0.8	V
$V_{IH}$	Control Input Logic High	ON MODE, (NOTE 3) $T_J = -40$ to $125^\circ\text{C}$	2			V
$I_{INH}$	Control Input Current	$T_J = -40$ to $125^\circ\text{C}$ $V_{INH} = 13\text{V}$		5	10	$\mu\text{A}$
eN	Output Noise Voltage	$B_p = 10\text{Hz}$ to $100\text{KHz}$ $I_O = 100\text{mA}$		320		$\mu\text{V}_{RMS}$

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: Only for version with Inhibit function.

**ELECTRICAL CHARACTERISTICS OF LD29300#90**(I<sub>O</sub> = 10mA, T<sub>J</sub> = 25°C, V<sub>I</sub> = 11V, V<sub>INH</sub> = 2V (Note 3), C<sub>I</sub> = 330nF, C<sub>O</sub> = 10μF, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V <sub>O</sub>	Output Voltage	I <sub>O</sub> = 10mA to 3A, V <sub>I</sub> = 10 to 13V T <sub>J</sub> = -40 to 125°C	8.91	9	9.09	V
ΔV <sub>O</sub>	Load Regulation	I <sub>O</sub> = 10mA to 3A		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> = 1.5A (Note 1)	45	58		dB
V <sub>DROP</sub>	Dropout Voltage	I <sub>O</sub> = 500mA, T <sub>J</sub> = -40 to 125°C (Note 2)		0.1		V
		I <sub>O</sub> = 1.5A, T <sub>J</sub> = -40 to 125°C (Note 2)		0.2		
		I <sub>O</sub> = 3A, T <sub>J</sub> = -40 to 125°C (Note 2)		0.4	0.7	
I <sub>q</sub>	Quiescent Current	I <sub>O</sub> = 1.5A, T <sub>J</sub> = -40 to 125°C		20	50	mA
		I <sub>O</sub> = 3A, T <sub>J</sub> = -40 to 125°C		50	100	
		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	V <sub>I</sub> - V <sub>O</sub> = 5.5V		4.5		A
V <sub>IL</sub>	Control Input Logic Low	OFF MODE, (NOTE 3) T <sub>J</sub> = -40 to 125°C			0.8	V
V <sub>IH</sub>	Control Input Logic High	ON MODE, (NOTE 3) T <sub>J</sub> = -40 to 125°C	2			V
I <sub>INH</sub>	Control Input Current	T <sub>J</sub> = -40 to 125°C V <sub>INH</sub> = 13V		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: Only for version with Inhibit function.

**ELECTRICAL CHARACTERISTICS OF LD29300#ADJ**(I<sub>O</sub> = 10mA, T<sub>J</sub> = 25°C, V<sub>I</sub> = 3.23 V, V<sub>INH</sub> = 2V (Note 3), C<sub>I</sub> = 330nF, C<sub>O</sub> = 10μF adjust pin tied to output)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V <sub>I</sub>	Minimum Operating Input Voltage	I <sub>O</sub> = 10mA to 3A T <sub>J</sub> = -40 to 125°C	2.5			V
ΔV <sub>O</sub>	Load Regulation	I <sub>O</sub> = 10mA to 3A		0.2	1.0	%
ΔV <sub>O</sub>	Line Regulation	V <sub>I</sub> = 2.5 V to 13V		0.06	0.5	%
V <sub>REF</sub>	Reference Voltage	I <sub>O</sub> = 10mA to 3A, V <sub>I</sub> = 2.5 to 4.5V T <sub>J</sub> = -40 to 125°C (Note 2)	-1%	1.23	+1%	V
			-2%		+2%	
SVR	Supply Voltage Rejection	f = 120 Hz, V <sub>I</sub> = 3.23 ± 1V, I <sub>O</sub> = 1.5A (Note 1)	65	75		dB
I <sub>q</sub>	Quiescent Current	I <sub>O</sub> = 1.5A, T <sub>J</sub> = -40 to 125°C		20	50	mA
		I <sub>O</sub> = 3A, T <sub>J</sub> = -40 to 125°C		45	100	
		V <sub>I</sub> = 13V, V <sub>INH</sub> = GND T <sub>J</sub> = -40 to 125°C		130	180	μA
I <sub>ADJ</sub>	Adjust Pin Current	T <sub>J</sub> = -40 to 125°C (Note 1)			1	μA
I <sub>sc</sub>	Short Circuit Current	V <sub>I</sub> - V <sub>O</sub> = 5.5V		4.5		A
V <sub>IL</sub>	Control Input Logic Low	OFF MODE, (NOTE 3) T <sub>J</sub> = -40 to 125°C			0.8	V
V <sub>IH</sub>	Control Input Logic High	ON MODE, (NOTE 3) T <sub>J</sub> = -40 to 125°C	2			V
I <sub>INH</sub>	Control Input Current	T <sub>J</sub> = -40 to 125°C V <sub>INH</sub> = 13V		5	10	μA
eN	Output Noise Voltage	B <sub>p</sub> = 10Hz to 100KHz I <sub>O</sub> = 100mA		50		μV <sub>RMS</sub>

NOTE 1: Guaranteed by design.

NOTE 2: Reference Voltage is measured between output and GND pin, with ADJ PIN tied to V<sub>OUT</sub>.

NOTE 3: Only for version with Inhibit function.



## LD29300 SERIES

TYPICAL CHARACTERISTICS ( $C_I = 330\text{nF}$ ,  $C_O = 10\mu\text{F}$ )

Figure 1 : Output Voltage vs Temperature

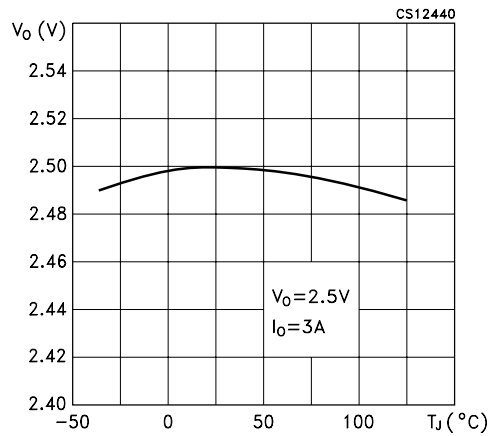


Figure 4 : Quiescent Current vs Output Current

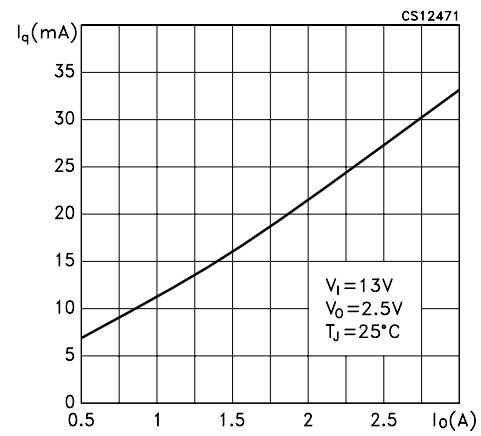


Figure 2 : Dropout Voltage vs Temperature

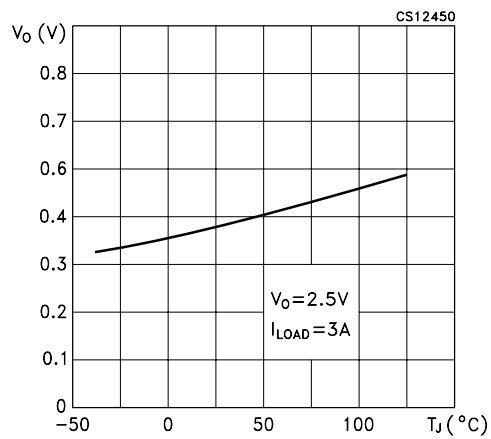


Figure 5 : Quiescent Current vs Output Current

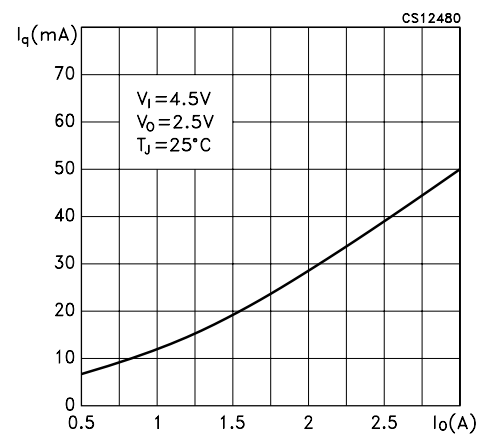


Figure 3 : Dropout Voltage vs Output Current

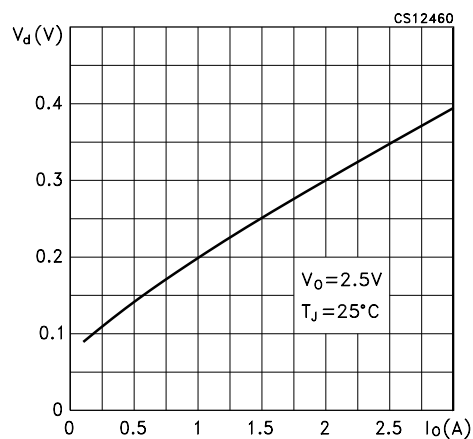


Figure 6 : Quiescent Current vs Supply Voltage

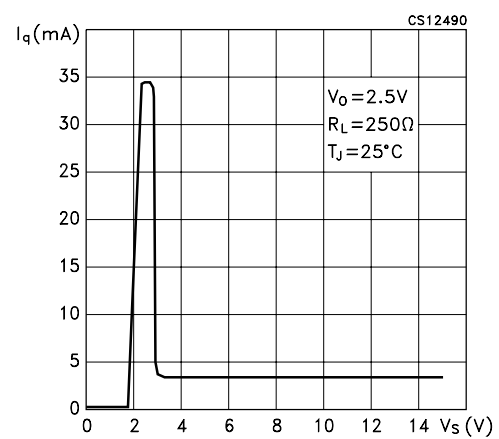




Figure 7 : Quiescent Current vs Temperature

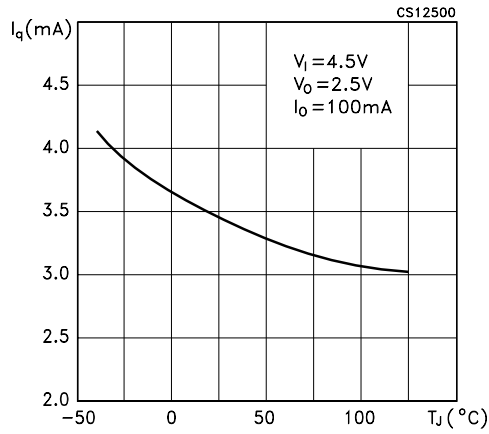


Figure 10 : Supply Voltage Rejection vs Temperature

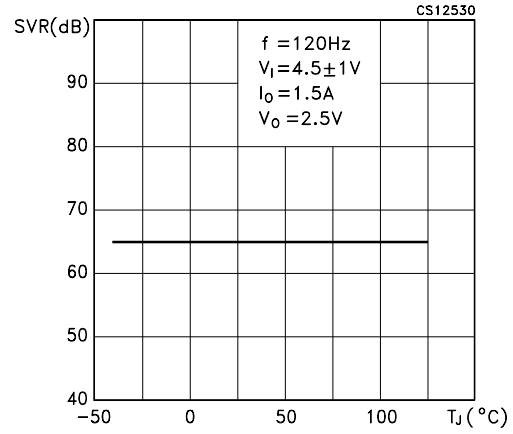


Figure 8 : Quiescent Current vs Temperature

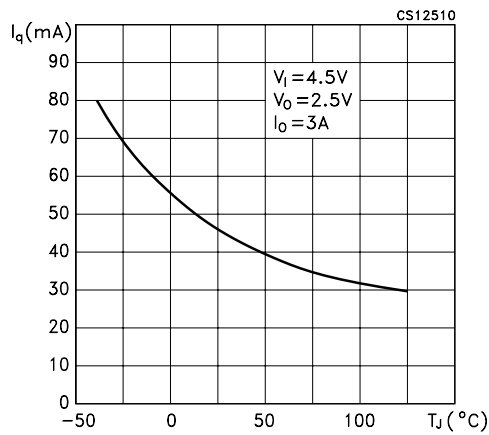


Figure 11 : Stability vs Co

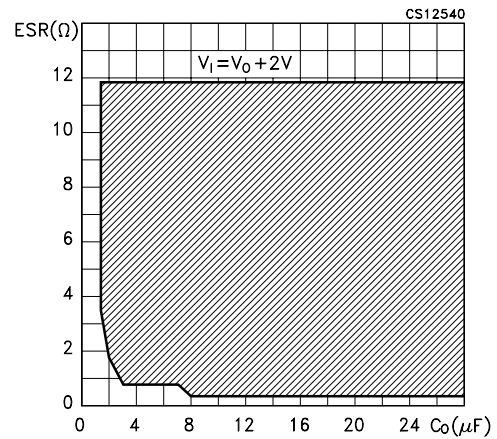


Figure 9 : Short Circuit Current vs Temperature

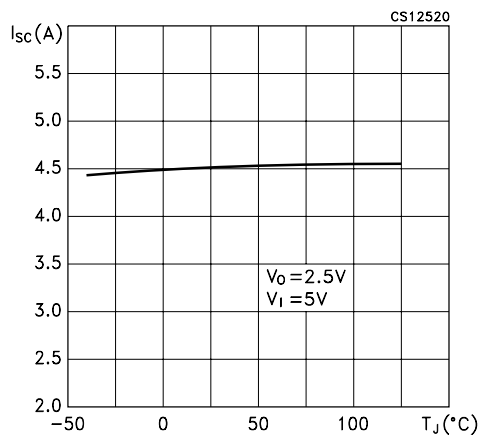
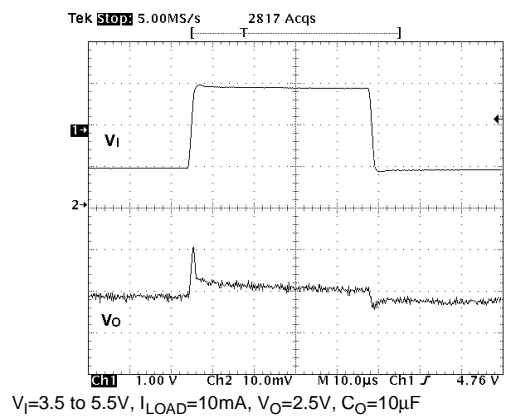


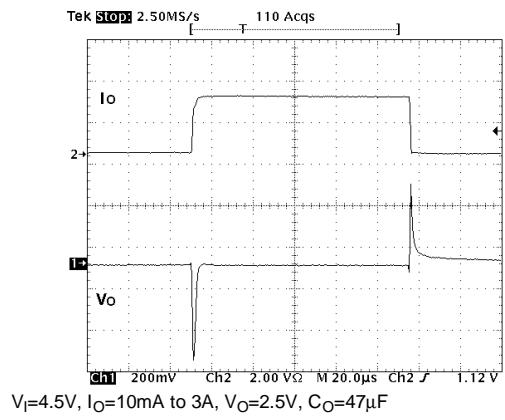
Figure 12 : Line Transient



## LD29300 SERIES

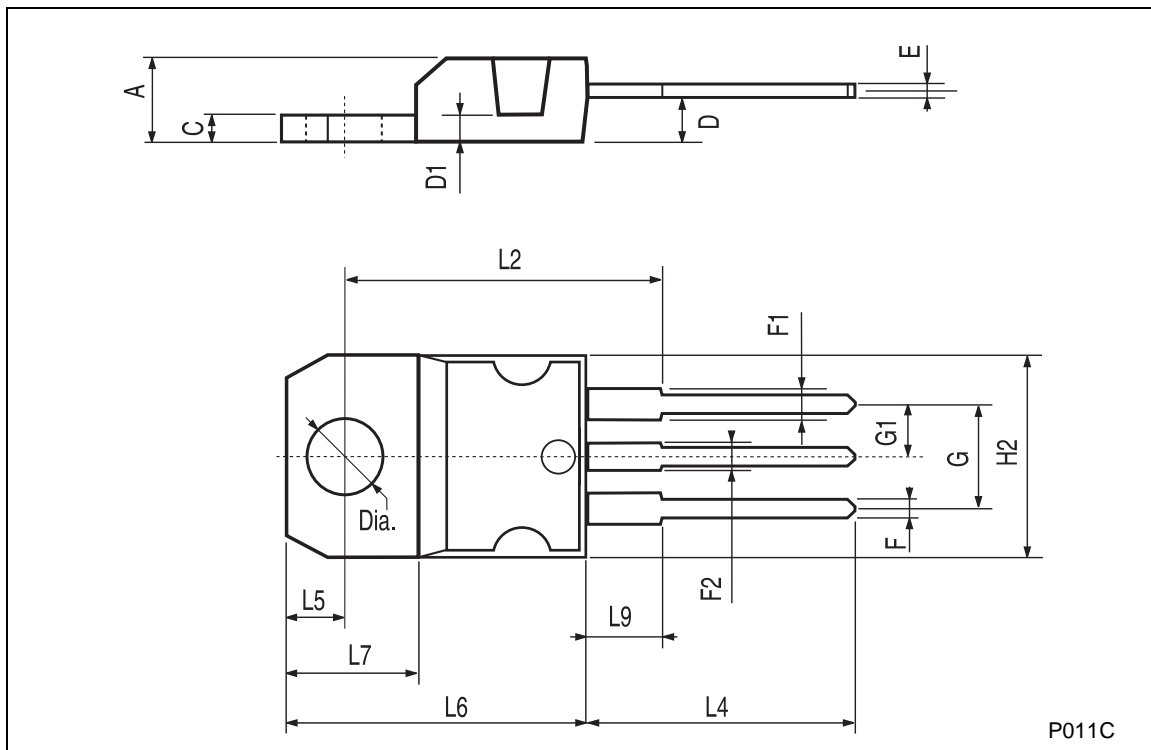
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Figure 13 : Load Transient



**TO-220 MECHANICAL DATA**

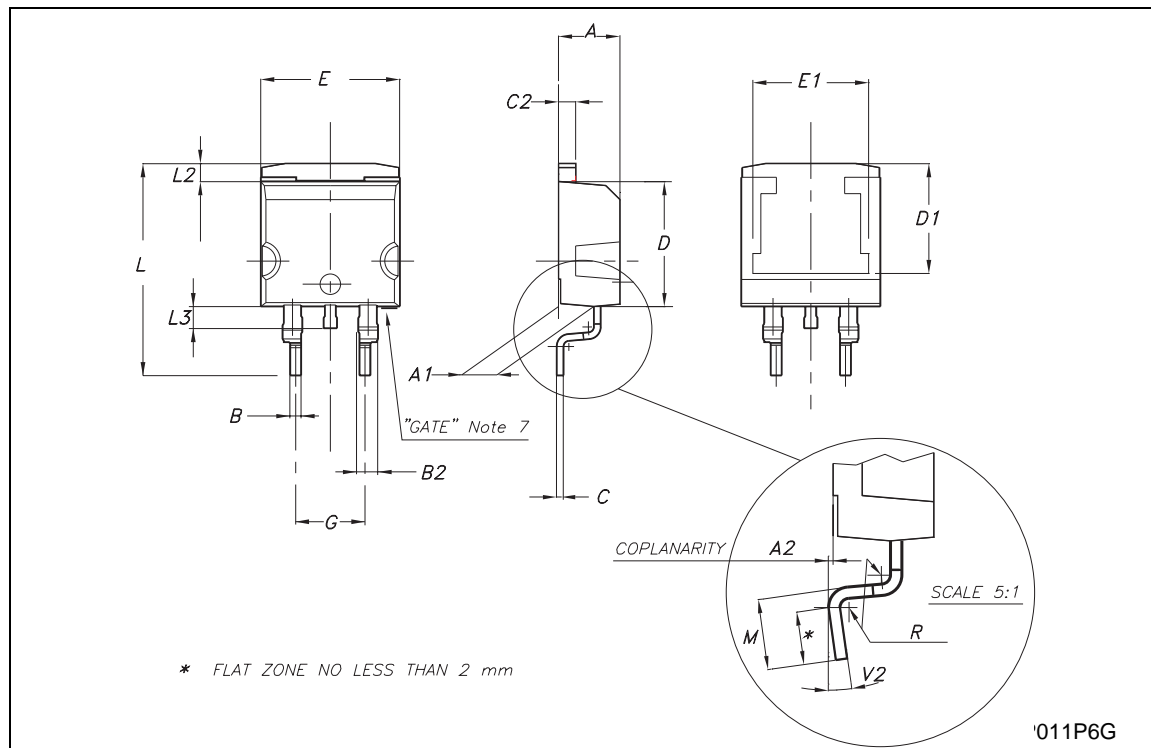
DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	4.40		4.60	0.173		0.181
C	1.23		1.32	0.048		0.051
D	2.40		2.72	0.094		0.107
D1		1.27			0.050	
E	0.49		0.70	0.019		0.027
F	0.61		0.88	0.024		0.034
F1	1.14		1.70	0.044		0.067
F2	1.14		1.70	0.044		0.067
G	4.95		5.15	0.194		0.203
G1	2.4		2.7	0.094		0.106
H2	10.0		10.40	0.393		0.409
L2		16.4			0.645	
L4	13.0		14.0	0.511		0.551
L5	2.65		2.95	0.104		0.116
L6	15.25		15.75	0.600		0.620
L7	6.2		6.6	0.244		0.260
L9	3.5		3.93	0.137		0.154
DIA.	3.75		3.85	0.147		0.151



# LD29300 SERIES

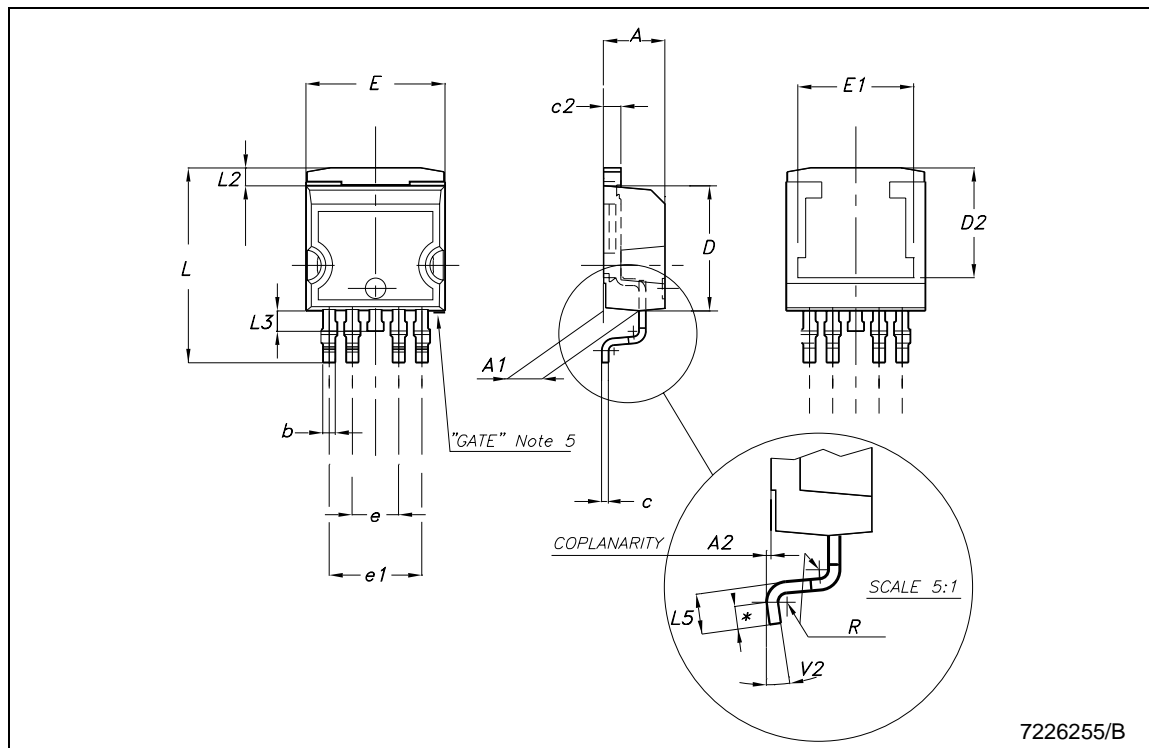
## D<sup>2</sup>PAK MECHANICAL DATA

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	4.4		4.6	0.173		0.181
A1	2.49		2.69	0.098		0.106
A2	0.03		0.23	0.001		0.009
B	0.7		0.93	0.027		0.036
B2	1.14		1.7	0.044		0.067
C	0.45		0.6	0.017		0.023
C2	1.23		1.36	0.048		0.053
D	8.95		9.35	0.352		0.368
D1		8			0.315	
E	10		10.4	0.393		0.409
E1		8.5			0.335	
G	4.88		5.28	0.192		0.208
L	15		15.85	0.590		0.624
L2	1.27		1.4	0.050		0.055
L3	1.4		1.75	0.055		0.068
M	2.4		3.2	0.094		0.126
R		0.4			0.016	
V2	0°		8°	0°		8°



P<sup>2</sup>PAK MECHANICAL DATA

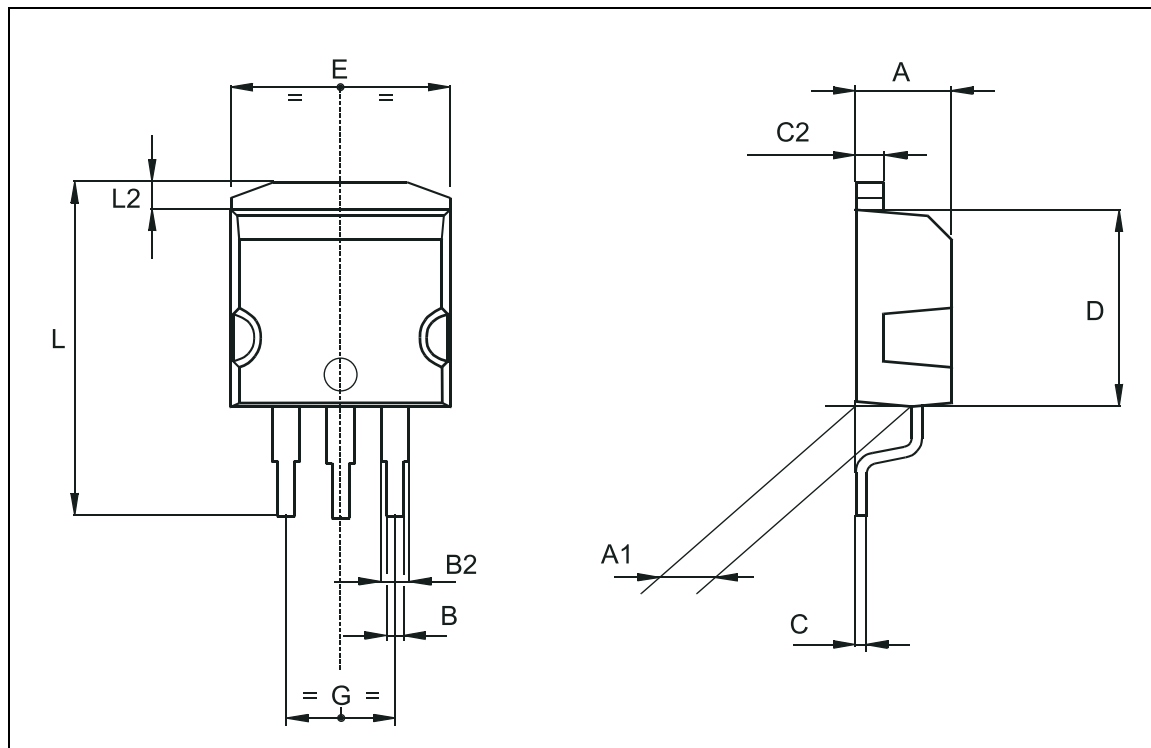
DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	4.30		4.80	0.169		0.188
A1	2.40		2.80	0.094		0.110
A2	0.03		0.23	0.001		0.009
b	0.80		1.05	0.031		0.041
c	0.45		0.60	0.017		0.023
c2	1.17		1.37	0.046		0.053
D	8.95		9.35	0.352		0.368
D2		8			0.315	
E	10.00		10.40	0.393		0.409
E1		8.5			0.334	0.409
e	3.20		3.60	0.126		0.142
e1	6.60		7.00	0.260		0.275
L	13.70		14.50	0.539		0.571
L2	1.25		1.40	0.049		0.055
L3	0.90		1.70	0.035		0.067
L5	1.55		2.40	0.061		0.094
R		0.40			0.016	
V2	0°		8°	0°		8°



## LD29300 SERIES

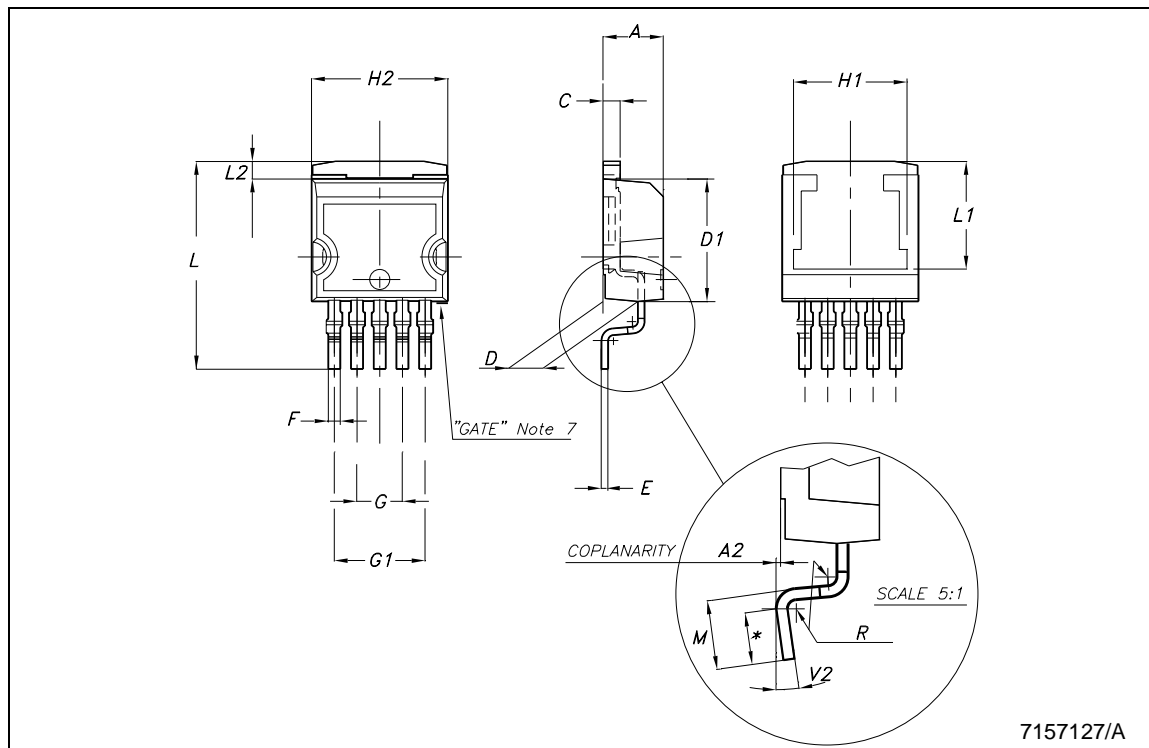
### D<sup>2</sup>PAK/A MECHANICAL DATA

DIM.	mm.			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.40		4.60	0.173		0.181
A1	2.49		2.69	0.098		0.106
B	0.7		0.93	0.027		0.036
B2	1.14		1.7	0.044		0.067
C	0.45		0.60	0.017		0.023
C2	1.21		1.36	0.047		0.053
D	8.95		9.35	0.352		0.368
E	10		10.4	0.393		0.409
G	4.88		5.28	0.192		0.208
L	15		15.85	0.590		0.106
L2	1.27		1.4	0.050		0.055



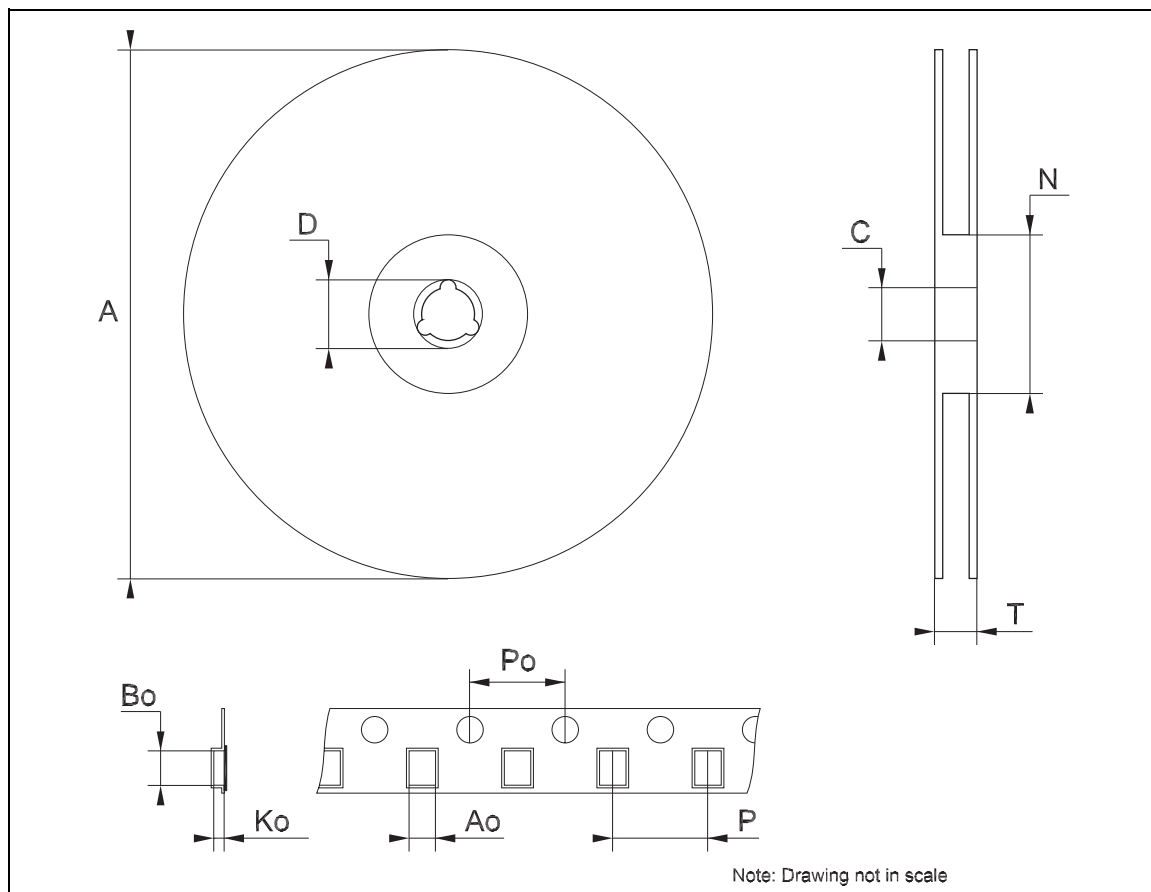
P<sup>2</sup>PAK/A MECHANICAL DATA

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	4.30		4.80	0.169		0.188
A2	0.03		0.23	0.001		0.009
C	1.17		1.37	0.046		0.053
D	2.40		2.80	0.094		0.110
D1	8.95		9.35	0.352		0.368
E	0.45		0.60	0.017		0.023
F	0.80		1.05	0.031		0.041
G	3.20		3.60	0.126		0.142
G1	6.60		7.00	0.260		0.275
H1		8.5			0.334	0.409
H2	10.00		10.40	0.393		0.409
L	15		15.85	0.590		0.624
L1		8			0.315	
L2	1.27		1.40	0.050		0.055
M	2.4		3.2	0.094		0.126
R		0.40	3.2		0.016	
V2	0°		8°	0°		8°



**Tape & Reel D<sup>2</sup>PAK-P<sup>2</sup>PAK-D<sup>2</sup>PAK/A-P<sup>2</sup>PAK/A MECHANICAL DATA**

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A			180			7.086
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	10.50	10.6	10.70	0.413	0.417	0.421
Bo	15.70	15.80	15.90	0.618	0.622	0.626
Ko	4.80	4.90	5.00	0.189	0.193	0.197
Po	3.9	4.0	4.1	0.153	0.157	0.161
P	11.9	12.0	12.1	0.468	0.472	0.476





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