

3A, VERY LOW DROP VOLTAGE REGULATORS

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- The diagram illustrates four common power MOSFET packages:
- TO-220:** A vertical package with a circular mounting hole at the top and three leads extending from the bottom.
 - D²PAK:** A surface-mount package with a D-shaped notch and three leads extending from one side.
 - P²PAK/A:** A surface-mount package with a rectangular body and five leads extending from one side.
 - P²PAK:** A surface-mount package with a rectangular body and five leads extending from one side, similar to the P²PAK/A but potentially differing in internal structure or pin configuration.

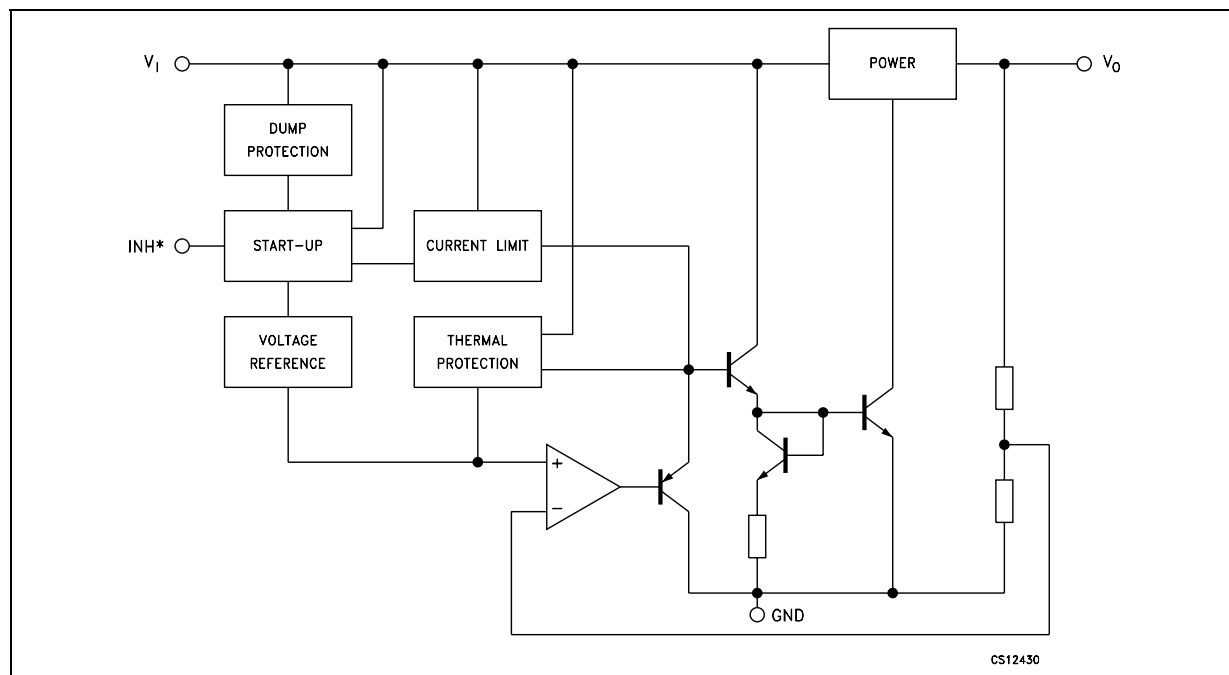
The LD29300 is a high current, high accuracy, low-dropout voltage regulator series. These regulators feature 400mV dropout voltage and very low ground current. Designed for high current loads, these devices are also used in lower current, extremely low dropout-critical systems, where their tiny dropout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

The diagram illustrates the internal architecture of the CS15250 voltage regulator. Key components and their connections are as follows:

- Inputs:**
 - V_I : Input voltage terminal.
 - INH: Inhibit terminal.
 - ADJ: Adjustment terminal, connected to the inverting input (-) of the error amplifier.
 - GND: Ground terminal.
- Internal Functional Blocks:**
 - DUMP PROTECTION:** Connected to the input voltage line.
 - START-UP:** Connected to the input voltage line and the inhibit (INH) terminal.
 - VOLTAGE REFERENCE:** Provides a reference voltage to the non-inverting input (+) of the error amplifier.
 - CURRENT LIMIT:** Monitors the output current and provides feedback to the error amplifier.
 - THERMAL PROTECTION:** Monitors the device temperature and provides feedback to the error amplifier.
 - POWER:** The output stage, represented by a block that drives the output terminal V_O .
- Output Stage:** The output of the error amplifier drives a pass transistor (represented by a BJT symbol) that regulates the output voltage V_O . A feedback resistor is connected between the output and the adjustment (ADJ) terminal.

LD29300 SERIES

SCHEMATIC DIAGRAM FOR FIXED VERSION



* Only for version with inhibit function.

ORDERING CODES

TO-220	D ² PAK (*)	D ² PAK/A (*)	P ² PAK (*) (#)	P ² 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

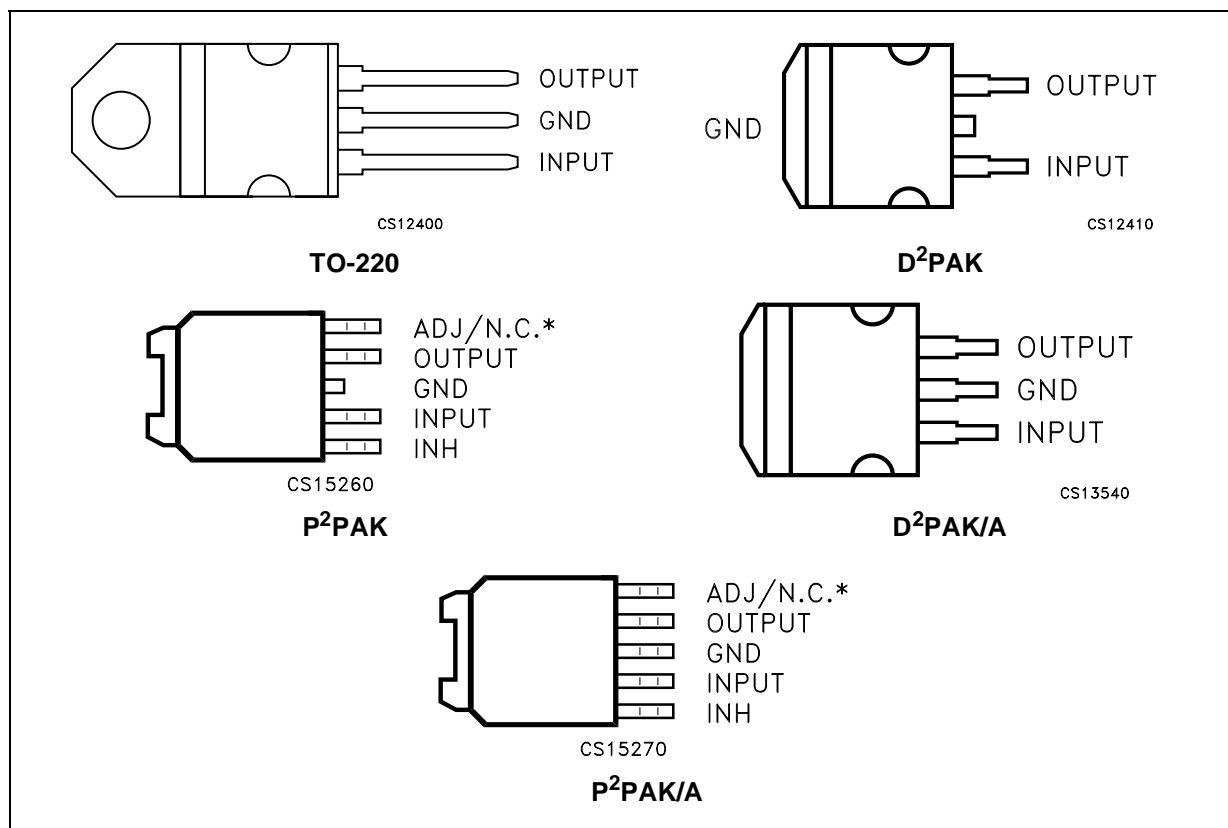
(*) Above 14V the device is automatically in shut-down.

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

THERMAL DATA

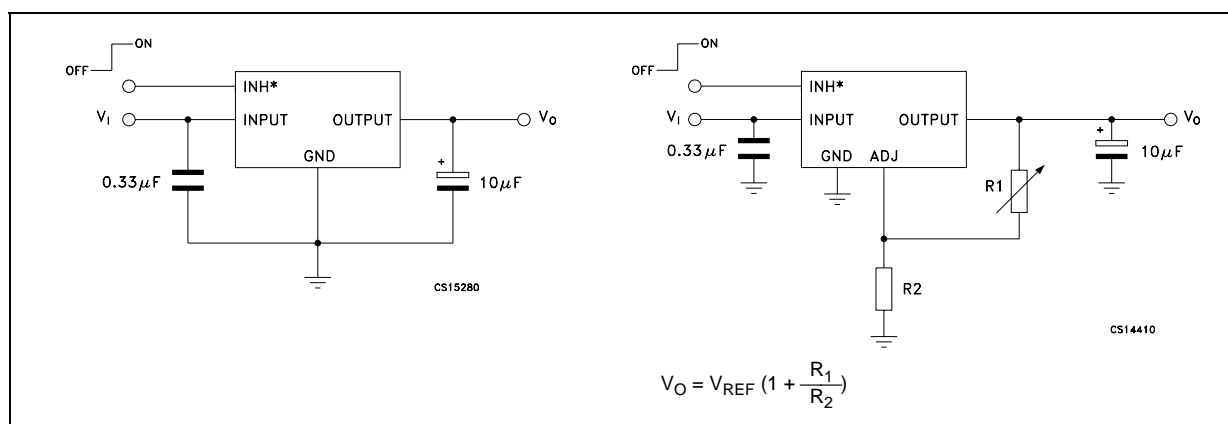
Symbol	Parameter	TO-220	D ² PAK-P ² PAK D ² PAK/A-P ² PAK/A	Unit
R _{thj-case}	Thermal Resistance Junction-case	3	3	°C/W
R _{thj-amb}	Thermal Resistance Junction-ambient	50	60	°C/W

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 3A $T_J = -40$ to 125°C	2.5			V
V_O	Output Voltage	$I_O = 10\text{mA}$ to 3A , $V_I = 3$ to 7V $T_J = -40$ to 125°C	1.485 1.47	1.5	1.515 1.53	V
ΔV_O	Load Regulation	$I_O = 10\text{mA}$ to 3A		0.2	1.0	%
ΔV_O	Line Regulation	$V_I = 3$ to 13V		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°C		20	50	mA
		$I_O = 3\text{A}$, $T_J = -40$ to 125°C		45	100	
		$V_I = 13\text{V}$, $V_{INH} = \text{GND}$, $T_J = -40$ to 125°C		130	180	μA
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°C			0.8	V
V_{IH}	Control Input Logic High	ON MODE, (NOTE 2) $T_J = -40$ to 125°C	2			V
I_{INH}	Control Input Current	$T_J = -40$ to 125°C , $V_{INH} = 13\text{V}$		5	10	μA
eN	Output Noise Voltage	$B_P = 10\text{Hz}$ to 100KHz , $I_O = 100\text{mA}$		60		μV_{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 3A , $V_I = 3$ to 7.3V $T_J = -40$ to 125°C	1.782 1.764	1.8	1.818 1.836	V
ΔV_O	Load Regulation	$I_O = 10\text{mA}$ to 3A		0.2	1.0	%
ΔV_O	Line Regulation	$V_I = 3$ to 13V		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_{DROP}	Dropout Voltage	$I_O = 500\text{mA}$, $T_J = -40$ to 125°C (Note 2)		0.1		V
		$I_O = 1.5\text{A}$, $T_J = -40$ to 125°C (Note 2)		0.2		
		$I_O = 3\text{A}$, $T_J = -40$ to 125°C (Note 2)		0.4	0.7	
I_q	Quiescent Current	$I_O = 1.5\text{A}$, $T_J = -40$ to 125°C		20	50	mA
		$I_O = 3\text{A}$, $T_J = -40$ to 125°C		45	100	
		$V_I = 13\text{V}$, $V_{INH} = \text{GND}$, $T_J = -40$ to 125°C		130	180	μA
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°C			0.8	V
V_{IH}	Control Input Logic High	ON MODE, (NOTE 3) $T_J = -40$ to 125°C	2			V
I_{INH}	Control Input Current	$T_J = -40$ to 125°C , $V_{INH} = 13\text{V}$		5	10	μA
eN	Output Noise Voltage	$B_P = 10\text{Hz}$ to 100KHz , $I_O = 100\text{mA}$		60		μV_{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_O = 10mA, T_J = 25°C, V_I = 4.5V, V_{INH} = 2V (Note 3), C_I = 330nF, C_O = 10μF, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V _O	Output Voltage	I _O = 10mA to 3A, V _I = 3.5 to 8V T _J = -40 to 125°C	2.475 2.45	2.5	2.525 2.55	V
ΔV _O	Load Regulation	I _O = 10mA to 3A		0.2	1.0	%
ΔV _O	Line Regulation	V _I = 3.5 to 13V		0.06	0.5	%
SVR	Supply Voltage Rejection	f = 120 Hz, V _I = 4.5 ± 1V, I _O = 1.5A (Note 1)	55	70		dB
V _{DROP}	Dropout Voltage	I _O = 500mA, T _J = -40 to 125°C (Note 2)		0.1		V
		I _O = 1.5A, T _J = -40 to 125°C (Note 2)		0.2		
		I _O = 3A, T _J = -40 to 125°C (Note 2)		0.4	0.7	
I _q	Quiescent Current	I _O = 1.5A, T _J = -40 to 125°C		20	50	mA
		I _O = 3A, T _J = -40 to 125°C		45	100	
		V _I = 13V, V _{INH} = GND T _J = -40 to 125°C		130	180	μA
I _{sc}	Short Circuit Current	V _I - V _O = 5.5V		4.5		A
V _{IL}	Control Input Logic Low	OFF MODE, (NOTE 3) T _J = -40 to 125°C			0.8	V
V _{IH}	Control Input Logic High	ON MODE, (NOTE 3) T _J = -40 to 125°C	2			V
I _{INH}	Control Input Current	T _J = -40 to 125°C V _{INH} = 13V		5	10	μA
eN	Output Noise Voltage	B _P = 10Hz to 100KHz I _O = 100mA		100		μV _{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+1V applied to V_I.

NOTE 3: Only for version with Inhibit function.

ELECTRICAL CHARACTERISTICS OF LD29300#33(I_O = 10mA, T_J = 25°C, V_I = 5.3V, V_{INH} = 2V (Note 3), C_I = 330nF, C_O = 10μF, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V _O	Output Voltage	I _O = 10mA to 3A, V _I = 4.3 to 8.8V T _J = -40 to 125°C	3.267 3.234	3.3	3.333 3.366	V
ΔV _O	Load Regulation	I _O = 10mA to 3A		0.2	1.0	%
ΔV _O	Line Regulation	V _I = 4.3 to 13V		0.06	0.5	%
SVR	Supply Voltage Rejection	f = 120 Hz, V _I = 5.3 ± 1V, I _O = 1.5A (Note 1)	52	67		dB
V _{DROP}	Dropout Voltage	I _O = 500mA, T _J = -40 to 125°C (Note 2)		0.1		V
		I _O = 1.5A, T _J = -40 to 125°C (Note 2)		0.2		
		I _O = 3A, T _J = -40 to 125°C (Note 2)		0.4	0.7	
I _q	Quiescent Current	I _O = 1.5A, T _J = -40 to 125°C		20	50	mA
		I _O = 3A, T _J = -40 to 125°C		45	100	
		V _I = 13V, V _{INH} = GND T _J = -40 to 125°C		130	180	μA
I _{sc}	Short Circuit Current	V _I - V _O = 5.5V		4.5		A
V _{IL}	Control Input Logic Low	OFF MODE, (NOTE 3) T _J = -40 to 125°C			0.8	V
V _{IH}	Control Input Logic High	ON MODE, (NOTE 3) T _J = -40 to 125°C	2			V
I _{INH}	Control Input Current	T _J = -40 to 125°C V _{INH} = 13V		5	10	μA
eN	Output Noise Voltage	B _P = 10Hz to 100KHz I _O = 100mA		132		μV _{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+1V applied to V_I.

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 3A , $V_I = 6$ to 10.5V $T_J = -40$ to 125°C	4.95 4.9	5	5.05 5.1	V
ΔV_O	Load Regulation	$I_O = 10\text{mA}$ to 3A		0.2	1.0	%
ΔV_O	Line Regulation	$V_I = 6$ to 13V		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°C (Note 2)		0.1		V
		$I_O = 1.5\text{A}$, $T_J = -40$ to 125°C (Note 2)		0.2		
		$I_O = 3\text{A}$, $T_J = -40$ to 125°C (Note 2)		0.4	0.7	
I_q	Quiescent Current	$I_O = 1.5\text{A}$, $T_J = -40$ to 125°C		20	50	mA
		$I_O = 3\text{A}$, $T_J = -40$ to 125°C		45	100	
		$V_I = 13\text{V}$, $V_{INH} = \text{GND}$, $T_J = -40$ to 125°C		130	180	
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°C			0.8	V
V_{IH}	Control Input Logic High	ON MODE, (NOTE 3) $T_J = -40$ to 125°C	2			V
I_{INH}	Control Input Current	$T_J = -40$ to 125°C , $V_{INH} = 13\text{V}$		5	10	μA
eN	Output Noise Voltage	$B_P = 10\text{Hz}$ to 100KHz , $I_O = 100\text{mA}$		200		μV_{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 3A , $V_I = 9$ to 13V $T_J = -40$ to 125°C	7.92 7.84	8	8.08 8.16	V
ΔV_O	Load Regulation	$I_O = 10\text{mA}$ to 3A		0.2	1.0	%
ΔV_O	Line Regulation	$V_I = 9$ to 13V		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°C (Note 2)		0.1		V
		$I_O = 1.5\text{A}$, $T_J = -40$ to 125°C (Note 2)		0.2		
		$I_O = 3\text{A}$, $T_J = -40$ to 125°C (Note 2)		0.4	0.7	
I_q	Quiescent Current	$I_O = 1.5\text{A}$, $T_J = -40$ to 125°C		20	50	mA
		$I_O = 3\text{A}$, $T_J = -40$ to 125°C		45	100	
		$V_I = 13\text{V}$, $V_{INH} = \text{GND}$, $T_J = -40$ to 125°C		130	180	
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°C			0.8	V
V_{IH}	Control Input Logic High	ON MODE, (NOTE 3) $T_J = -40$ to 125°C	2			V
I_{INH}	Control Input Current	$T_J = -40$ to 125°C , $V_{INH} = 13\text{V}$		5	10	μA
eN	Output Noise Voltage	$B_P = 10\text{Hz}$ to 100KHz , $I_O = 100\text{mA}$		320		μV_{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_O = 10mA, T_J = 25°C, V_I = 11V, V_{INH} = 2V (Note 3), C_I = 330nF, C_O = 10μF, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V _O	Output Voltage	I _O = 10mA to 3A, V _I = 10 to 13V T _J = -40 to 125°C	8.91 8.82	9	9.09 9.18	V
ΔV _O	Load Regulation	I _O = 10mA to 3A		0.2	1.0	%
ΔV _O	Line Regulation	V _I = 10 to 13V		0.06	0.5	%
SVR	Supply Voltage Rejection	f = 120 Hz, V _I = 11 ± 1V, I _O = 1.5A (Note 1)	45	58		dB
V _{DROP}	Dropout Voltage	I _O = 500mA, T _J = -40 to 125°C (Note 2)		0.1		V
		I _O = 1.5A, T _J = -40 to 125°C (Note 2)		0.2		
		I _O = 3A, T _J = -40 to 125°C (Note 2)		0.4	0.7	
I _q	Quiescent Current	I _O = 1.5A, T _J = -40 to 125°C		20	50	mA
		I _O = 3A, T _J = -40 to 125°C		50	100	
		V _I = 13V, V _{INH} = GND, T _J = -40 to 125°C		130	180	μA
I _{sc}	Short Circuit Current	V _I - V _O = 5.5V		4.5		A
V _{IL}	Control Input Logic Low	OFF MODE, (NOTE 3) T _J = -40 to 125°C			0.8	V
V _{IH}	Control Input Logic High	ON MODE, (NOTE 3) T _J = -40 to 125°C	2			V
I _{INH}	Control Input Current	T _J = -40 to 125°C V _{INH} = 13V		5	10	μA
eN	Output Noise Voltage	B _P = 10Hz to 100KHz I _O = 100mA		360		μV _{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+1S applied to V_I.

NOTE 3: Only for version with Inhibit function.

ELECTRICAL CHARACTERISTICS OF LD29300#ADJ(I_O = 10mA, T_J = 25°C, V_I = 3.23 V, V_{INH} = 2V (Note 3), C_I = 330nF, C_O = 10μF adjust pin tied to output)

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

NOTE 1: Guaranteed by design.

NOTE 2: Reference Voltage is measured between output and GND pin, with ADJ PIN tied to V_{OUT}.

NOTE 3: Only for version with Inhibit function.

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

Figure 1 : Output Voltage vs Temperature

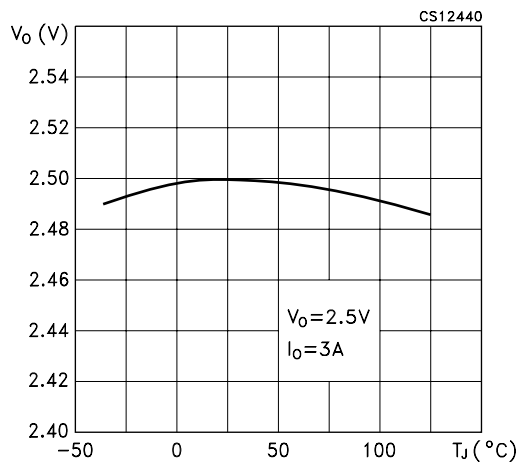


Figure 2 : Dropout Voltage vs Temperature

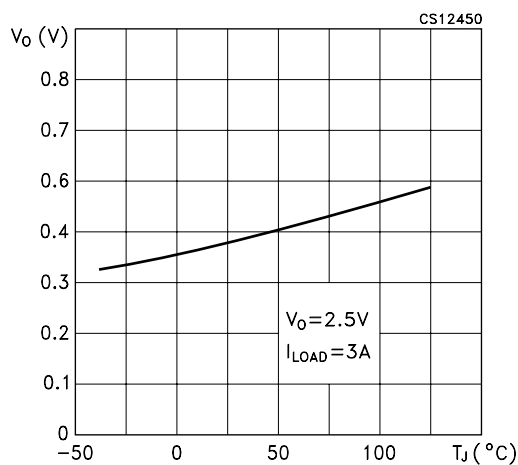


Figure 3 : Dropout Voltage vs Output Current

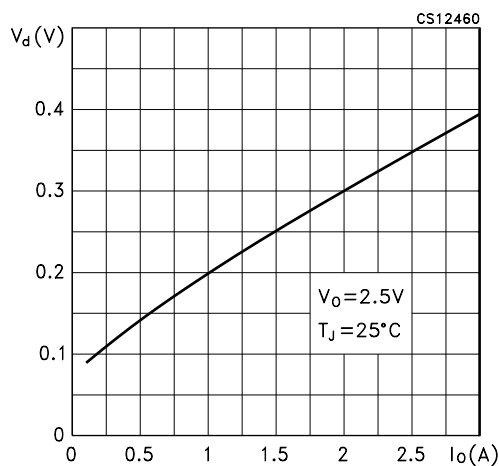


Figure 4 : Quiescent Current vs Output Current

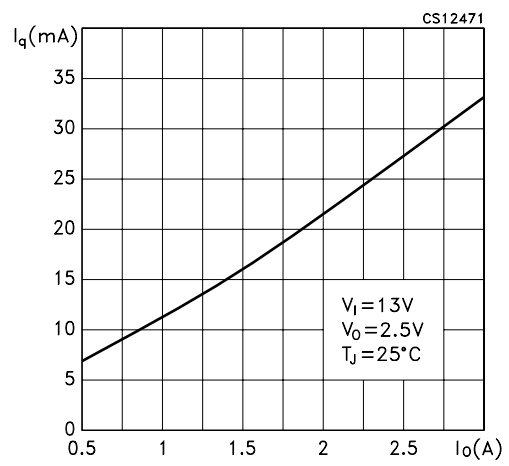


Figure 5 : Quiescent Current vs Output Current

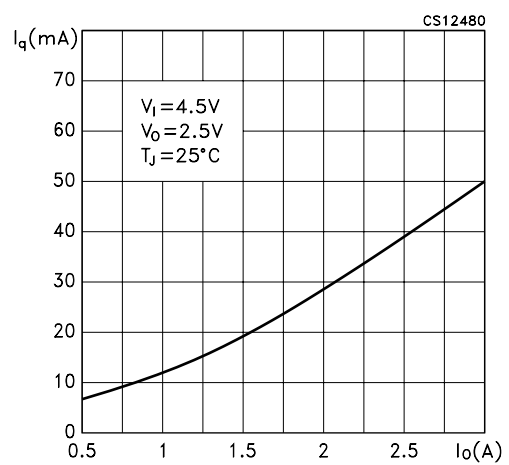


Figure 6 : Quiescent Current vs Supply Voltage

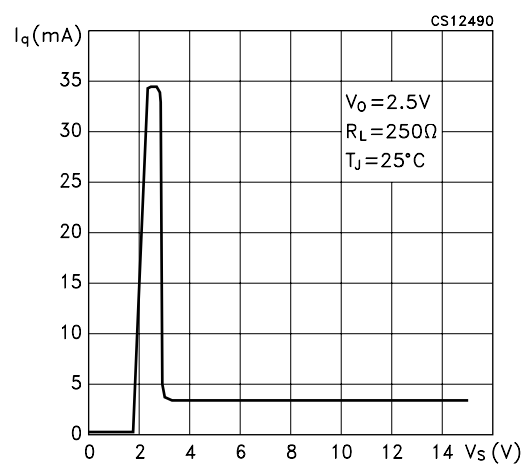


Figure 7 : Quiescent Current vs Temperature

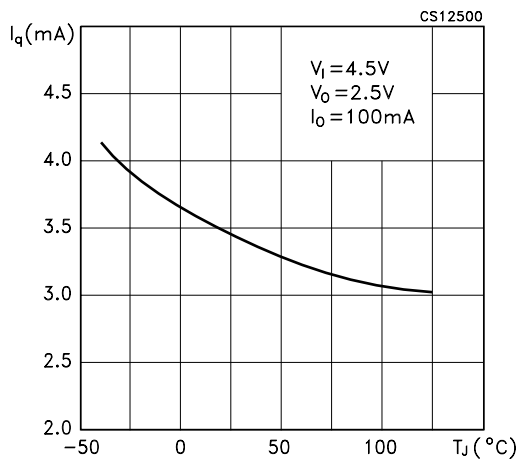


Figure 10 : Supply Voltage Rejection vs Temperature

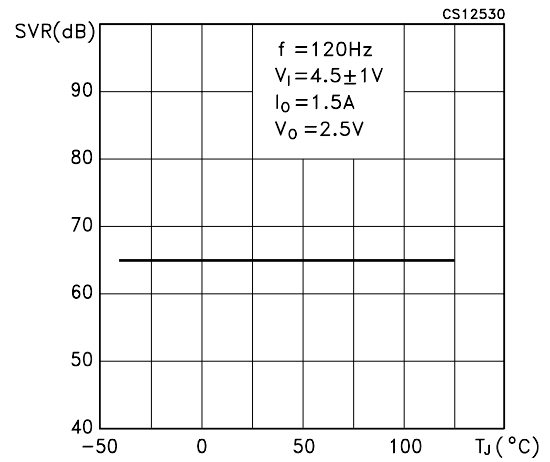


Figure 8 : Quiescent Current vs Temperature

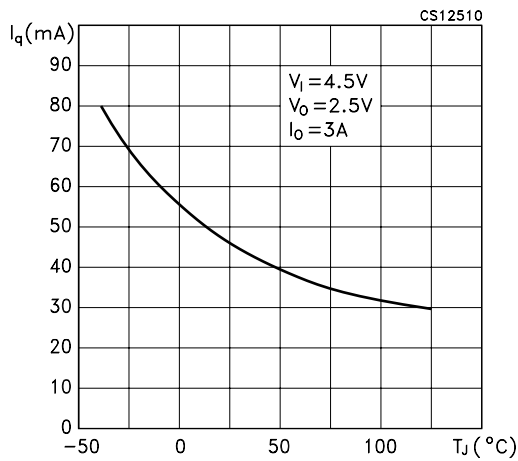


Figure 11 : Stability vs C_O

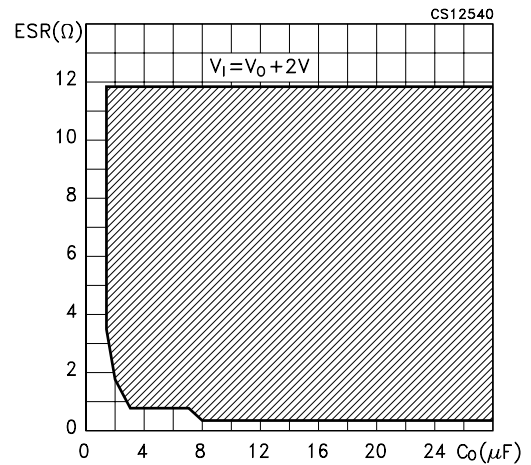


Figure 9 : Short Circuit Current vs Temperature

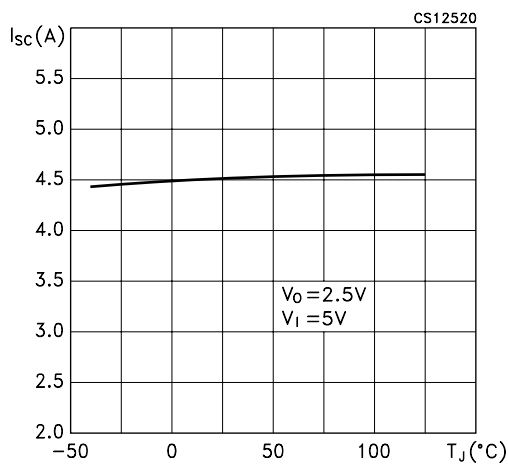


Figure 12 : Line Transient

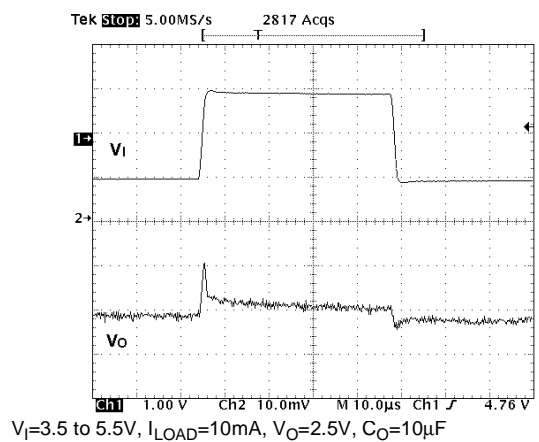
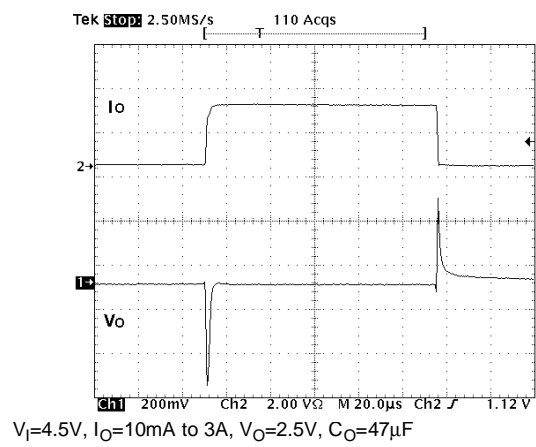
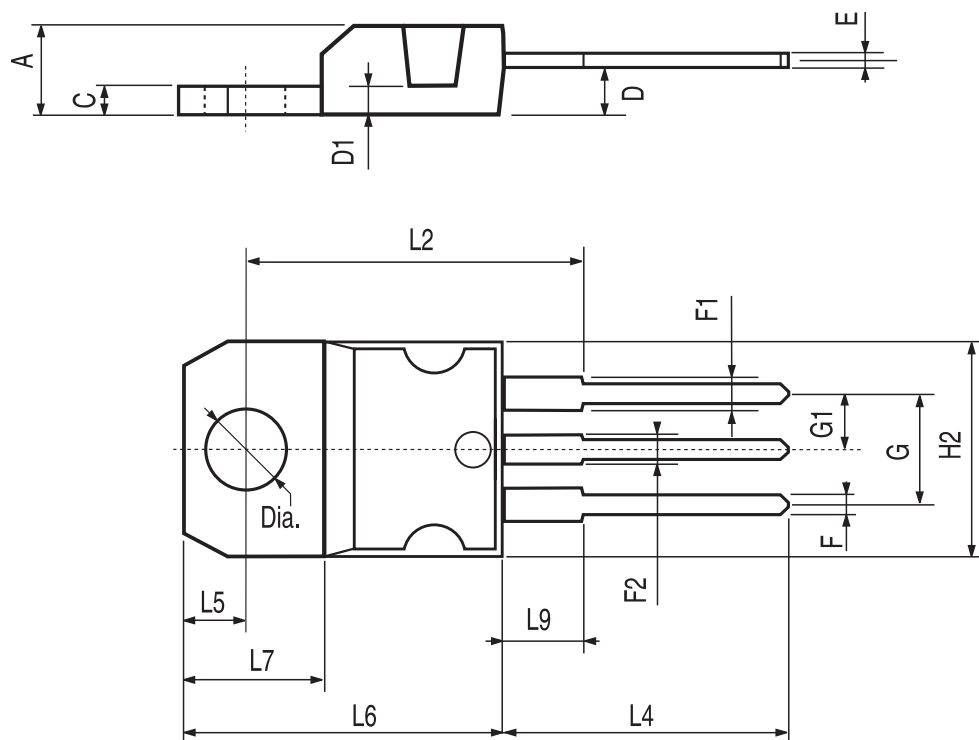


Figure 13 : Load Transient



TO-220 MECHANICAL DATA

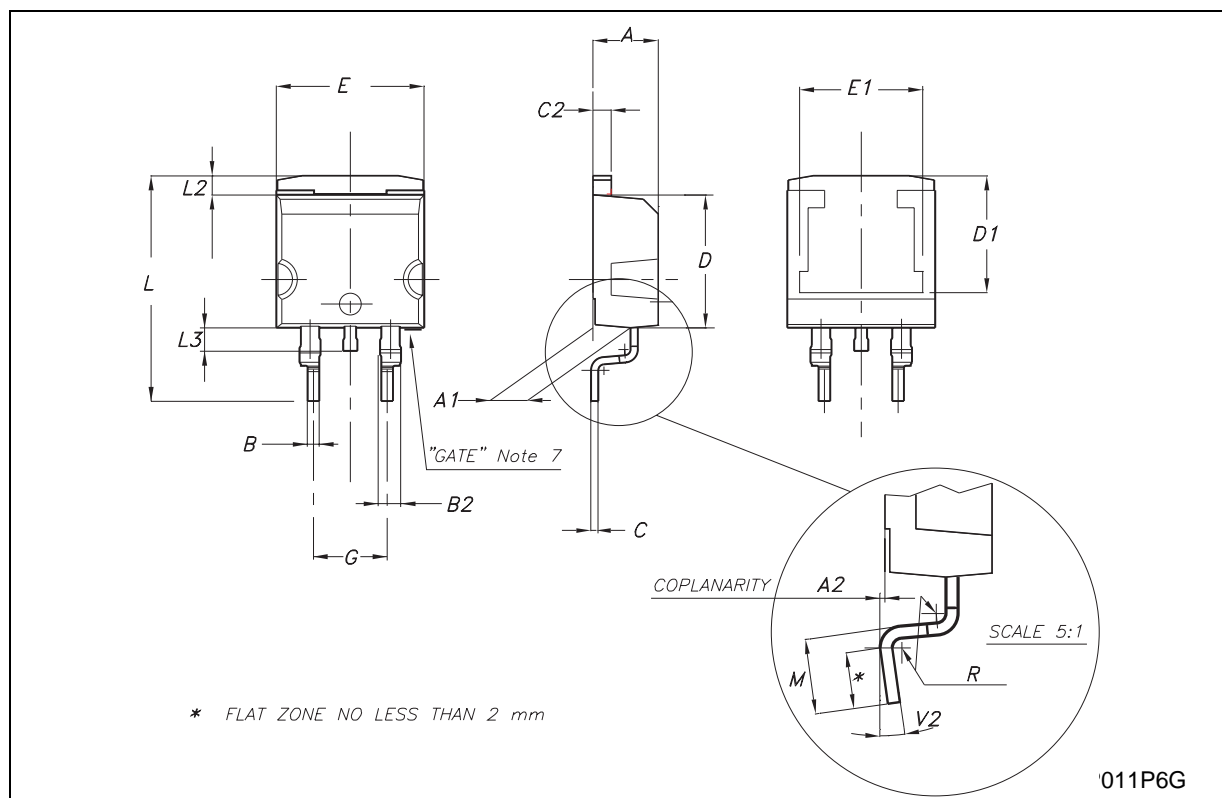
DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	4.40		4.60	0.173		0.181
C	1.23		1.32	0.048		0.051
D	2.40		2.72	0.094		0.107
D1		1.27			0.050	
E	0.49		0.70	0.019		0.027
F	0.61		0.88	0.024		0.034
F1	1.14		1.70	0.044		0.067
F2	1.14		1.70	0.044		0.067
G	4.95		5.15	0.194		0.203
G1	2.4		2.7	0.094		0.106
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



P011C

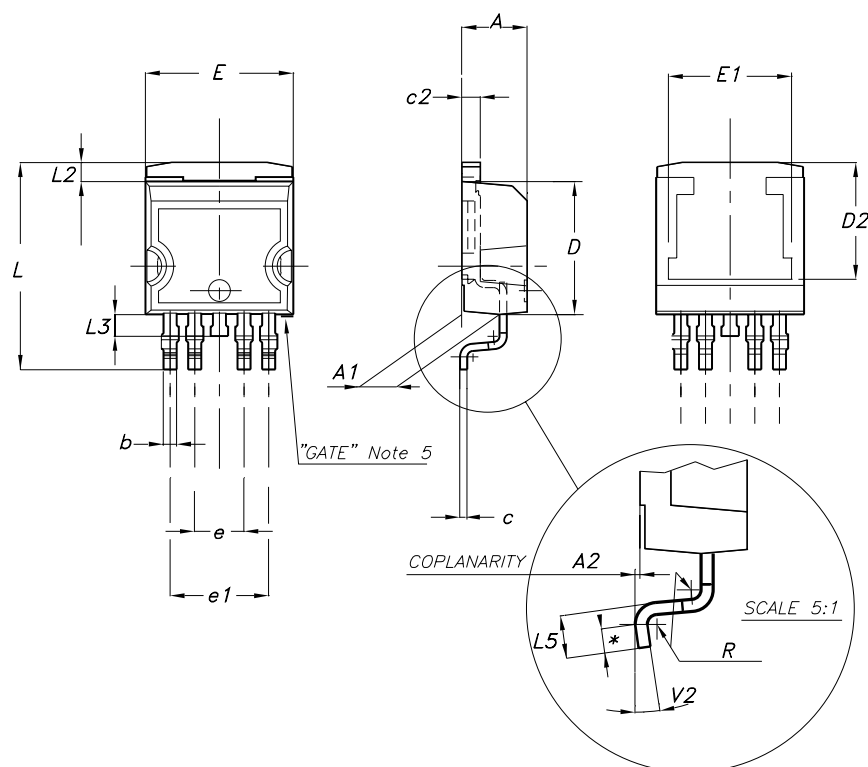
D²PAK MECHANICAL DATA

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°



P²PAK MECHANICAL DATA

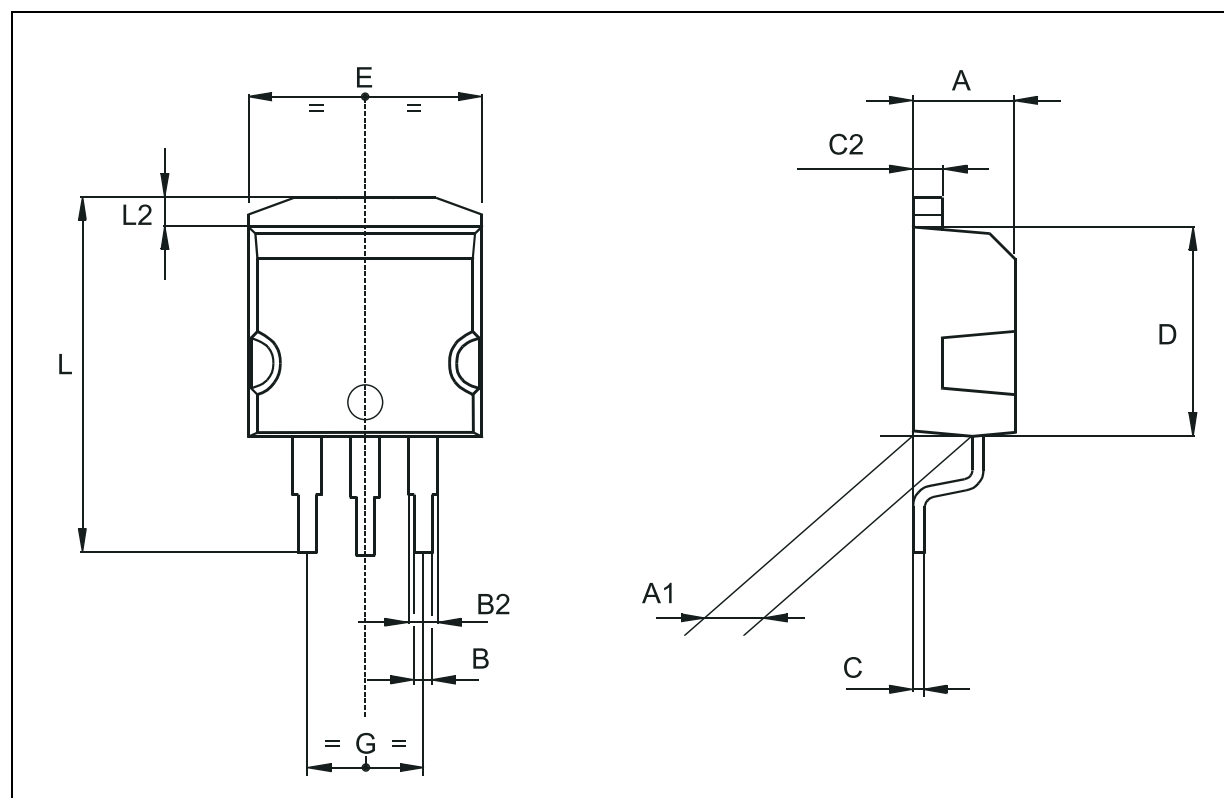
DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	4.30		4.80	0.169		0.188
A1	2.40		2.80	0.094		0.110
A2	0.03		0.23	0.001		0.009
b	0.80		1.05	0.031		0.041
c	0.45		0.60	0.017		0.023
c2	1.17		1.37	0.046		0.053
D	8.95		9.35	0.352		0.368
D2		8			0.315	
E	10.00		10.40	0.393		0.409
E1		8.5			0.334	0.409
e	3.20		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°



7226255/B

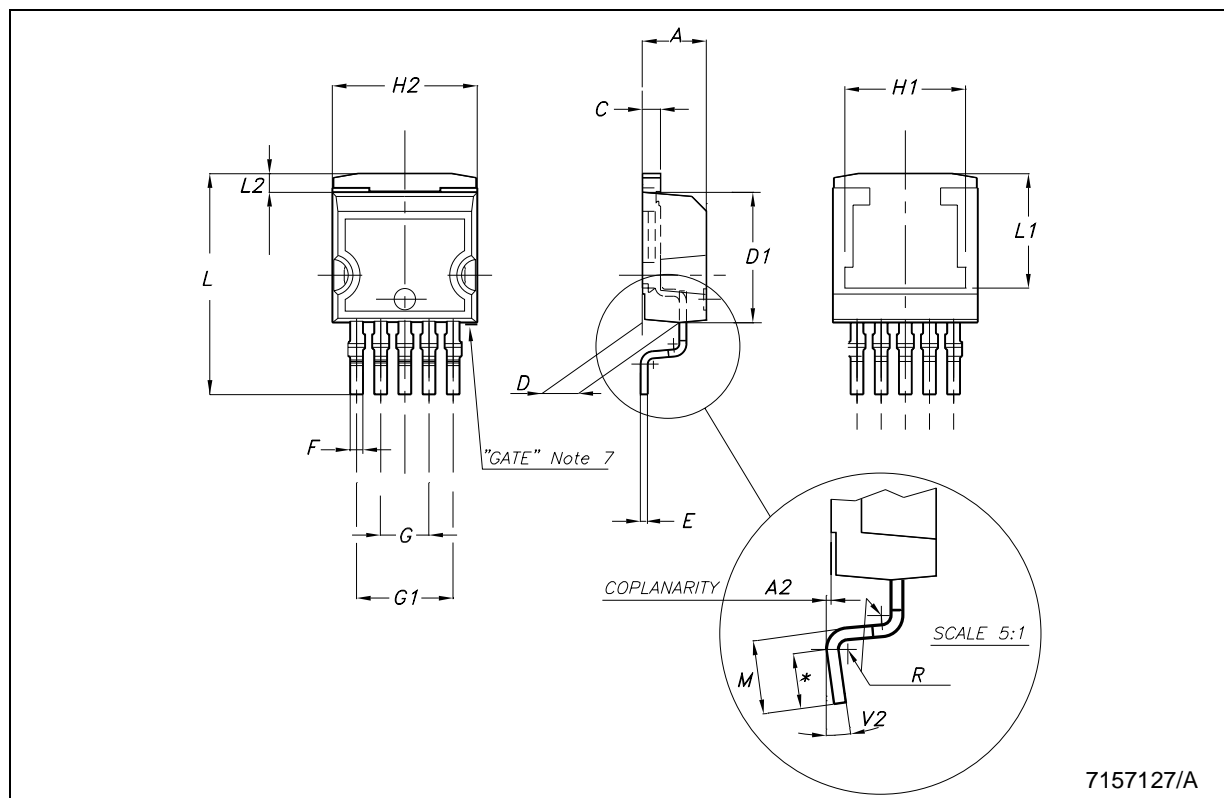
D²PAK/A MECHANICAL DATA

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



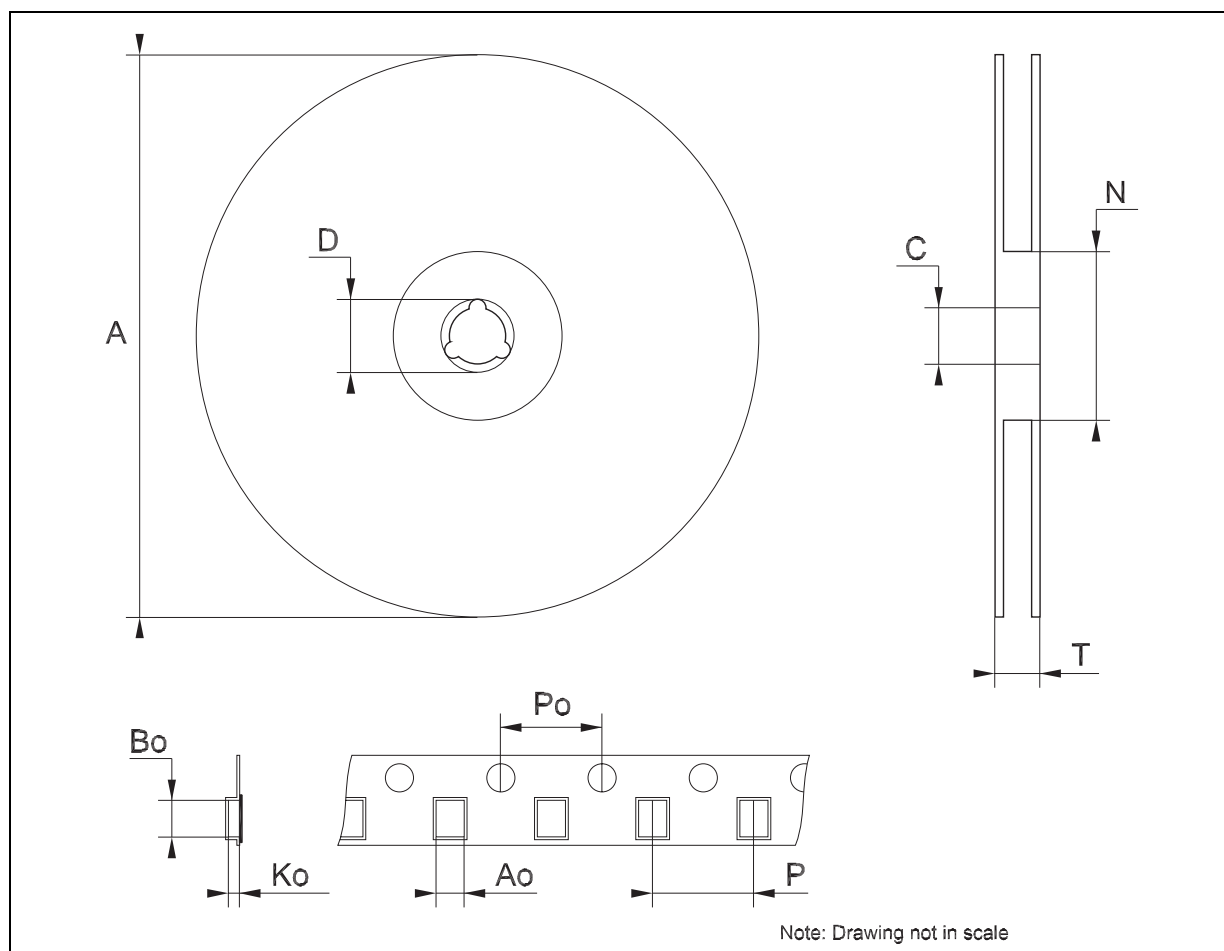
P²PAK/A MECHANICAL DATA

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			0.016	
V2	0°		8°	0°		8°



Tape & Reel D²PAK-P²PAK-D²PAK/A-P²PAK/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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