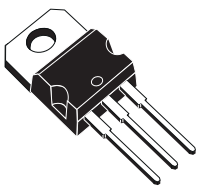
L78xxAB
L78xxAC

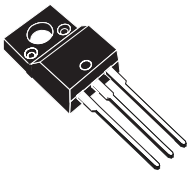
Precision 1 A regulators

Features

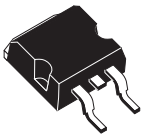
- Output current in excess of 1 A
- Output voltages of 5; 6; 8; 9; 12; 15; 24 V
- Thermal overload protection
- Output transition SOA protection
- 2 % Output voltage tolerance
- Guaranteed in extended temperature range



TO-220



TO-220FP



D²PAK

Description

The L78xxAB L78xxAC series of three terminal positive regulators are available in TO-220, TO-220FP, and D^{2}PAK packages and several fixed output voltages, making it useful in a wide range of applications. These regulators can provide local on-card regulation, eliminating the distribution problem associated with single point regulation. Each type employs internal current limiting, thermal shut-down and safe area protection, making it essentially indestructible. If adequate heat sinking is provided, they can deliver over 1 A output current, although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain adjustable voltage and currents.

Table 1. Device summary

Order codes	
L7805AB	L7809AC
L7805AC	L7812AB
L7806AB	L7812AC
L7806AC	L7815AB
L7808AB	L7815AC
L7808AC	L7824AB
L7809AB	L7824AC

Contents

1 Diagram

Figure 1. Block diagram

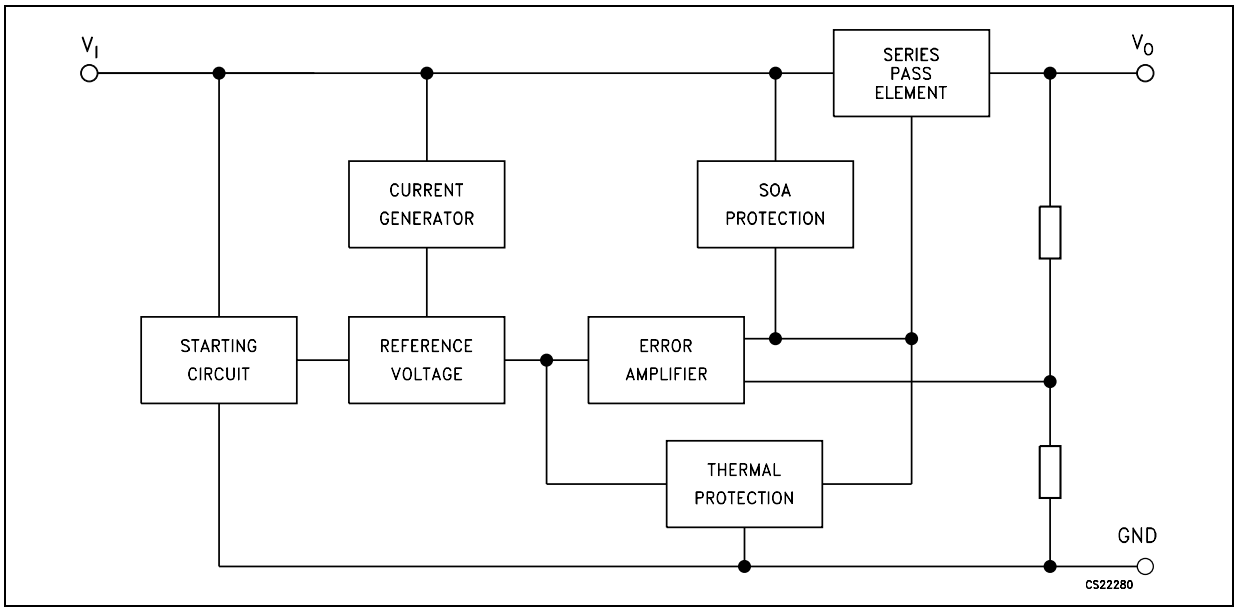
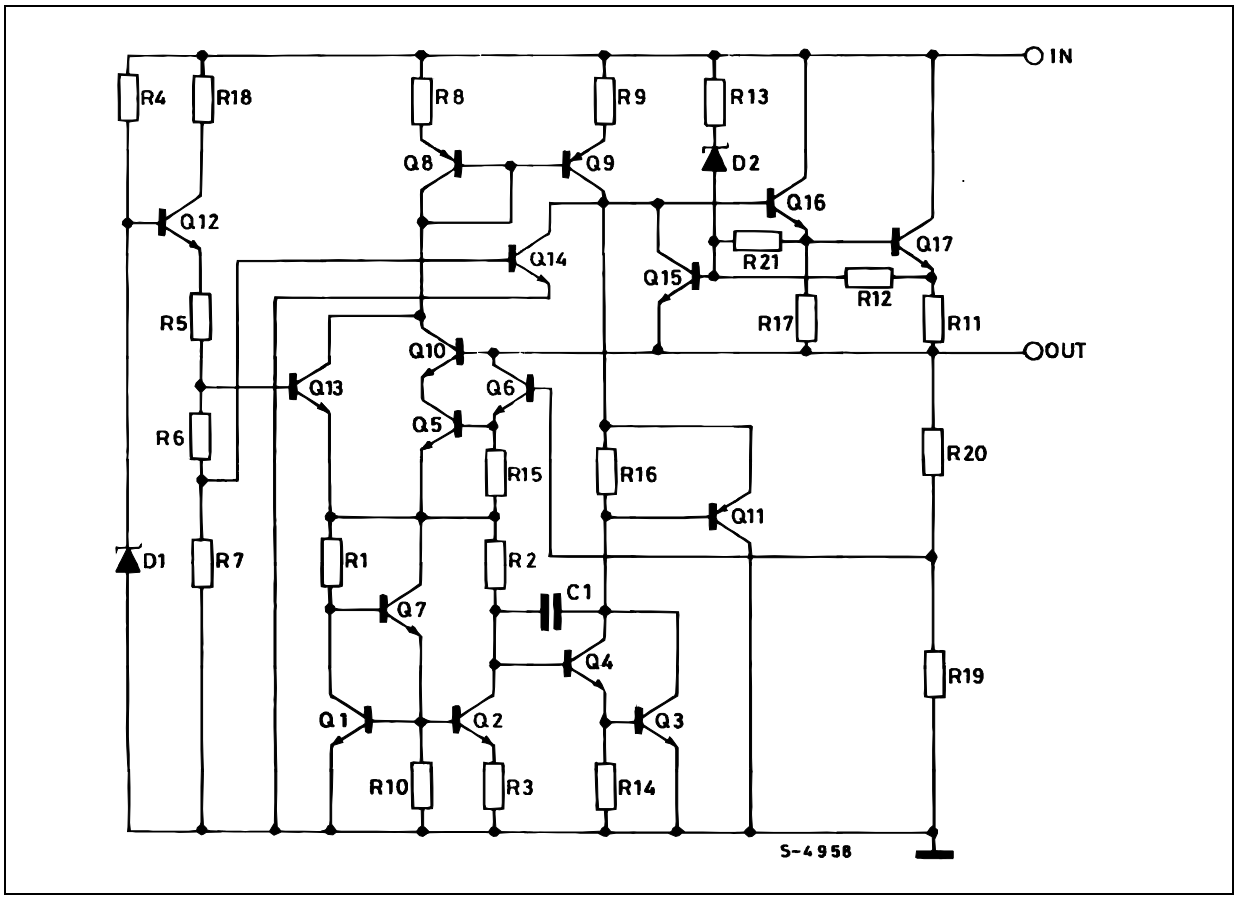
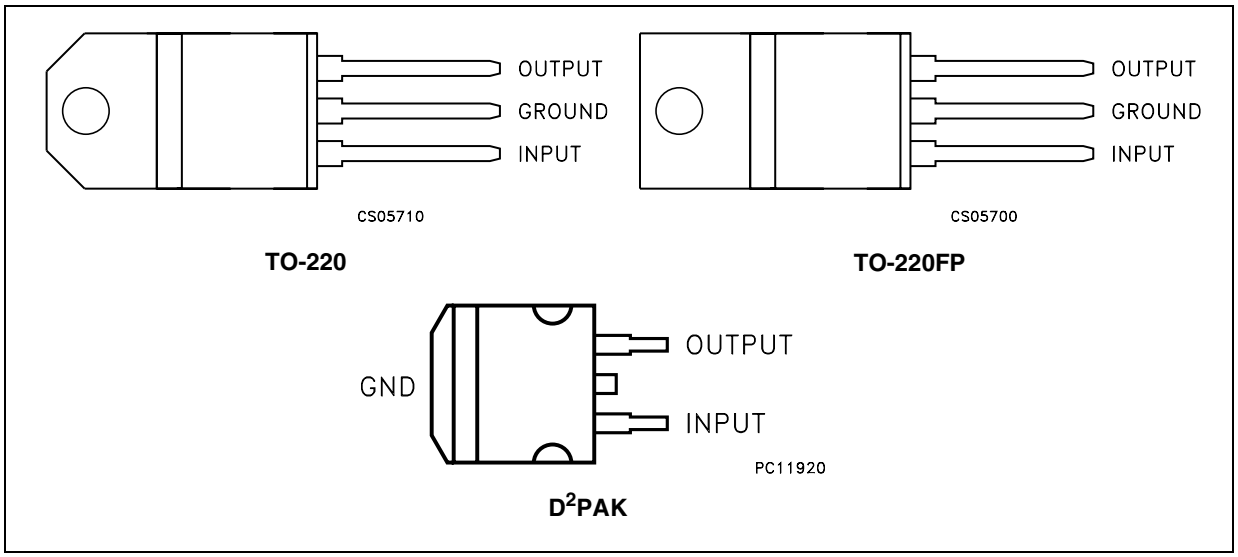


Figure 2. Schematic diagram



2 Pin configuration

Figure 3. Pin connections (top view)



3 Maximum ratings

Table 2. Absolute maximum ratings

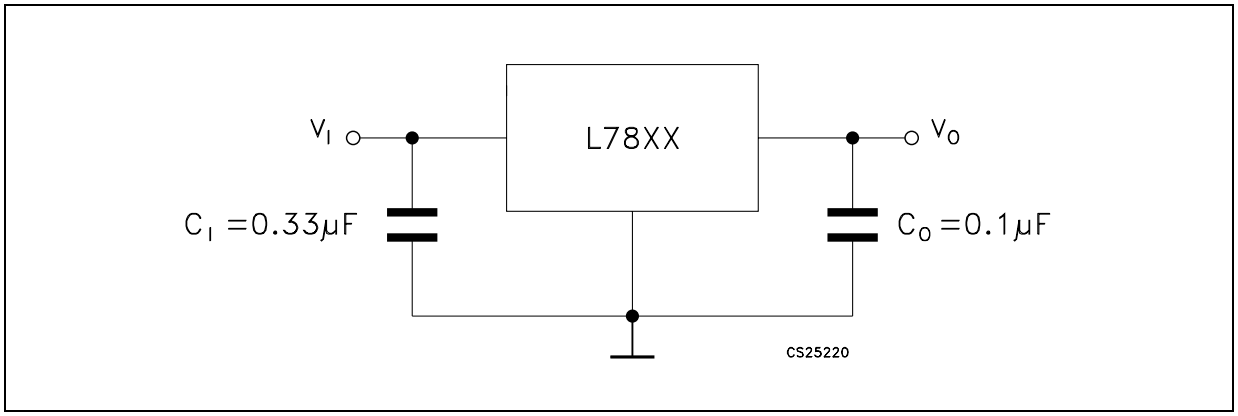
Symbol	Parameter		Value	Unit
V_I	DC input voltage	for V_O= 5 to 18V	35	V
		for V_O= 20, 24V	40	
I_O	Output current		Internally limited	mA
P_D	Power dissipation		Internally limited	mW
T_{STG}	Storage temperature range		-65 to 150	°C
T_{OP}	Operating junction temperature range	for L7800AC	0 to 150	°C
		for L7800AB	-40 to 125	

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

Table 3. Thermal data

Symbol	Parameter	TO-220	TO-220FP	D^2PAK	Unit
R_{thJC}	Thermal resistance junction-case	3	5	3	°C/W
R_{thJA}	Thermal resistance junction-ambient	50	60	62.5	°C/W

Figure 4. Application circuit



4 Test circuits

Figure 5. DC parameter

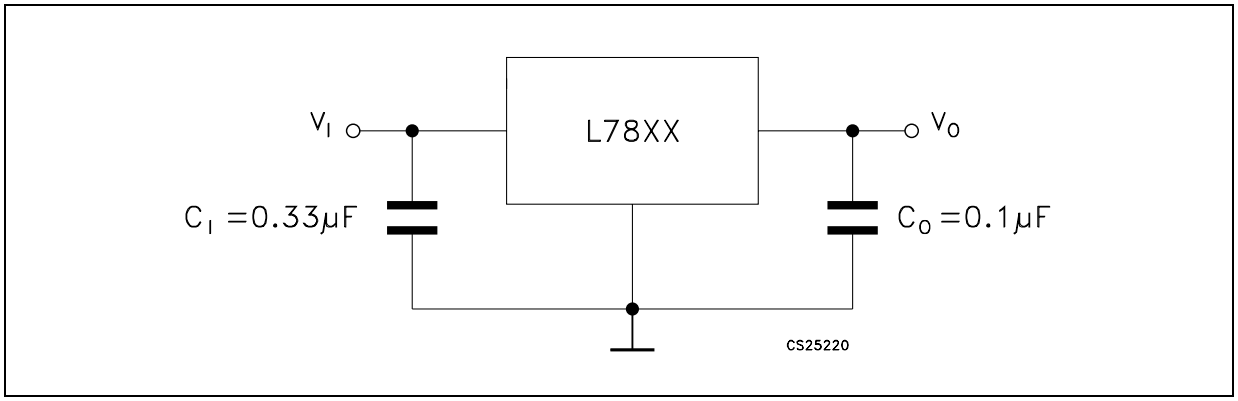


Figure 6. Load regulation

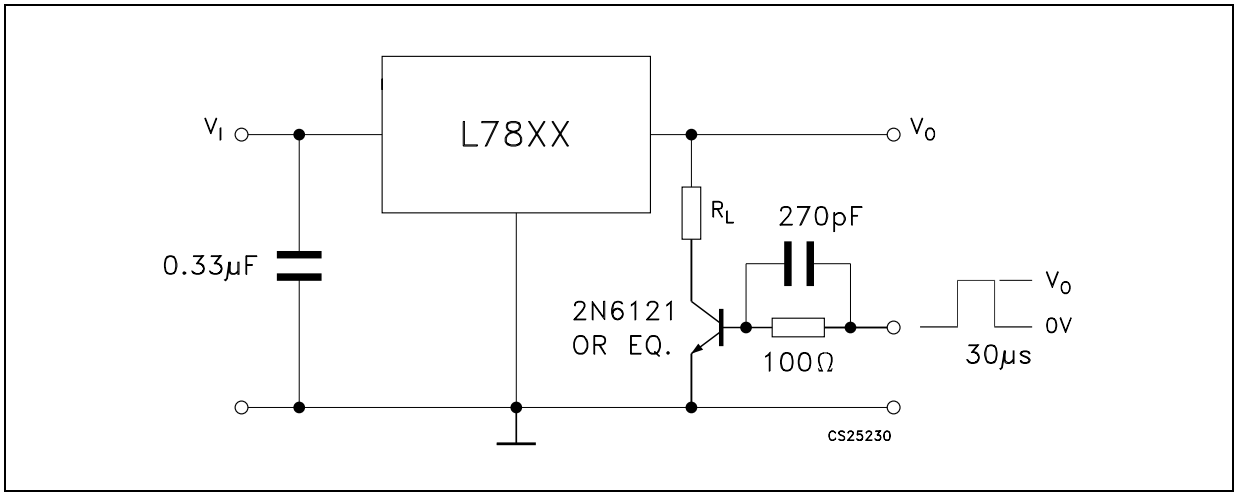
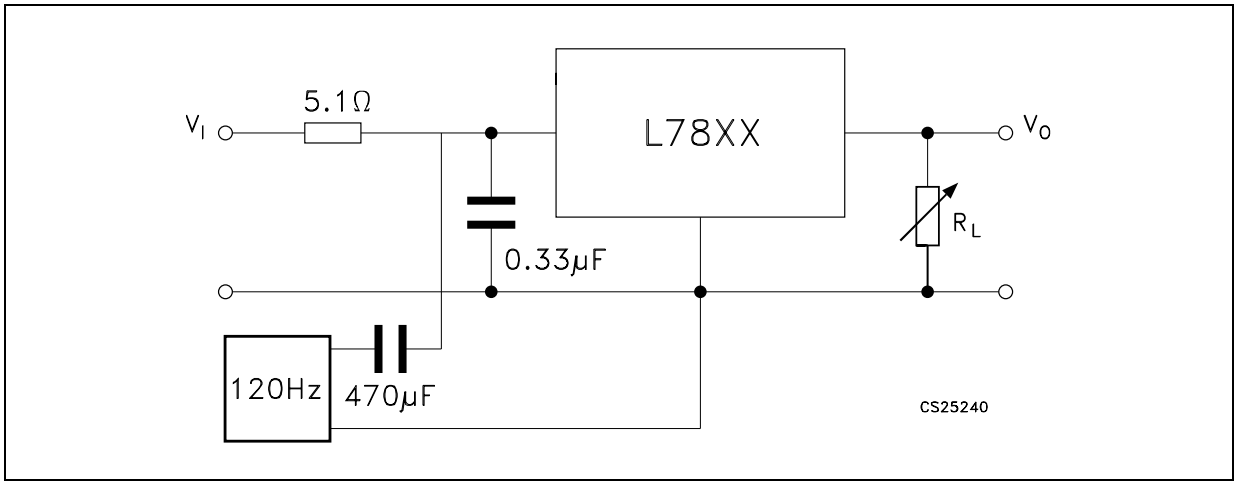


Figure 7. Ripple rejection



5 Electrical characteristics

Table 4. Electrical characteristics of L7805A (V_I = 10 V, I_O = 1 A, T_J = 0 to 150 °C (L7805AC), T_J = -40 to 125 °C (L7805AB), unless otherwise specified)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	T_J = 25°C	4.9	5	5.1	V
V_O	Output voltage	I_O = 5mA to 1A, P_O ≤15W V_I = 7.5 to 20V	4.8	5	5.2	V
ΔV_O (1)	Line regulation	V_I = 7.5 to 25V, I_O = 500 mA		7	50	mV
		V_I = 8 to 12V		10	50	mV
		V_I = 8 to 12V, T_J = 25°C		2	25	mV
		V_I = 7.3 to 20V, T_J = 25°C		7	50	mV
ΔV_O(*)	Load regulation	I_O = 5mA to 1A		25	100	mV
		I_O = 5mA to 1.5A, T_J = 25°C		30	100	V
		I_O = 250 to 750mA		8	50	V
I_q	Quiescent current	T_J = 25°C		4.3	6	mA
					6	mA
ΔI_q	Quiescent current change	V_I = 8 to 25V, I_O = 500 mA			0.8	mA
		V_I = 7.5 to 20V, T_J = 25°C			0.8	mA
		I_O = 5mA to 1A			0.5	mA
SVR	Supply voltage rejection	V_I = 8 to 18V, f = 120Hz, I_O = 500mA		68		dB
V_d	Dropout voltage	I_O = 1A, T_J = 25°C		2		V
eN	Output noise voltage	T_A = 25°C, B =10Hz to 100kHz		10		$\mu V/V_O$
R_O	Output resistance	f =1kHz		17		mΩ
I_{sc}	Short circuit current	V_I = 35V, T_A = 25°C		0.2		A
I_{scp}	Short circuit peak current	T_J = 25°C		2.2		A
$\Delta V_O/\Delta T$	Output voltage drift			-1.1		mV/°C

1. Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty cycle is used.

Table 5. Electrical characteristics of L7806A (V_I = 11 V, I_O = 1 A, T_J = 0 to 150 °C (L7806AC), T_J = -40 to 125 °C (L7806AB), unless otherwise specified)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	T_J = 25°C	5.88	6	6.12	V
V_O	Output voltage	I_O = 5mA to 1A, $P_O \leq$15W V_I = 8.6 to 21V	5.76	6	6.24	V
ΔV_O (1)	Line regulation	V_I = 8.6 to 25V, I_O = 500 mA		9	60	mV
		V_I = 9 to 13V		11	60	mV
		V_I = 9 to 13V, T_J = 25°C		3	30	mV
		V_I = 8.3 to 21V, T_J = 25°C		9	60	mV
ΔV_O (1)	Load regulation	I_O = 5mA to 1A		25	100	mV
		I_O = 5mA to 1.5A, T_J = 25°C		30	100	V
		I_O = 250 to 750mA		10	50	V
I_q	Quiescent current	T_J = 25°C		4.3	6	mA
					6	mA
ΔI_q	Quiescent current change	V_I = 9 to 25V, I_O = 500 mA			0.8	mA
		V_I = 8.6 to 21V, T_J = 25°C			0.8	mA
		I_O = 5mA to 1A			0.5	mA
SVR	Supply voltage rejection	V_I = 9 to 19V, f = 120Hz, I_O = 500mA		65		dB
V_d	Dropout voltage	I_O = 1A, T_J = 25°C		2		V
eN	Output noise voltage	T_A = 25°C, B =10Hz to 100kHz		10		$\mu V/V_O$
R_O	Output resistance	f =1kHz		17		mΩ
I_{sc}	Short circuit current	V_I = 35V, T_A = 25°C		0.2		A
I_{scp}	Short circuit peak current	T_J = 25°C		2.2		A
$\Delta V_O/\Delta T$	Output voltage drift			-0.8		mV/°C

1. Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty cycle is used.

Table 6. Electrical characteristics of L7808A (V_I = 14 V, I_O = 1 A, T_J = 0 to 150 °C (L7808AC), T_J = -40 to 125 °C (L7808AB), unless otherwise specified)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	T_J = 25°C	7.84	8	8.16	V
V_O	Output voltage	I_O = 5mA to 1A, P_O ≤15W V_I = 10.6 to 23V	7.7	8	8.3	V
ΔV_O (1)	Line regulation	V_I = 10.6 to 25V, I_O = 500 mA		12	80	mV
		V_I = 11 to 17V		15	80	mV
		V_I = 11 to 17V, T_J = 25°C		5	40	mV
		V_I = 10.4 to 23V, T_J = 25°C		12	80	mV
ΔV_O (1)	Load regulation	I_O = 5mA to 1A		25	100	mV
		I_O = 5mA to 1.5A, T_J = 25°C		30	100	V
		I_O = 250 to 750mA		10	50	V
I_q	Quiescent current	T_J = 25°C		4.3	6	mA
					6	mA
ΔI_q	Quiescent current change	V_I = 11 to 25V, I_O = 500 mA			0.8	mA
		V_I = 10.6 to 23V, T_J = 25°C			0.8	mA
		I_O = 5mA to 1A			0.5	mA
SVR	Supply voltage rejection	V_I = 11.5 to 21.5V, f = 120Hz, I_O = 500mA		62		dB
V_d	Dropout voltage	I_O = 1A, T_J = 25°C		2		V
eN	Output noise voltage	T_A = 25°C, B =10Hz to 100kHz		10		$\mu V/V_O$
R_O	Output resistance	f =1kHz		18		mΩ
I_{sc}	Short circuit current	V_I = 35V, T_A = 25°C		0.2		A
I_{scp}	Short circuit peak current	T_J = 25°C		2.2		A
$\Delta V_O/\Delta T$	Output voltage drift			-0.8		mV/°C

1. Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty cycle is used.

Table 7. Electrical characteristics of L7809A (V_I = 15 V, I_O = 1 A, T_J = 0 to 150 °C (L7809AC), T_J = -40 to 125 °C (L7809AB), unless otherwise specified)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	T_J = 25°C	8.82	9	9.18	V
V_O	Output voltage	I_O = 5mA to 1A, $P_O \leq$15W V_I = 10.6 to 23V	8.65	9	9.35	V
ΔV_O (1)	Line regulation	V_I = 10.6 to 25V, I_O = 500 mA		12	90	mV
		V_I = 11 to 17V		15	90	mV
		V_I = 11 to 17V, T_J = 25°C		5	45	mV
		V_I = 10.4 to 23V, T_J = 25°C		12	90	mV
ΔV_O (1)	Load regulation	I_O = 5mA to 1A		25	100	mV
		I_O = 5mA to 1.5A, T_J = 25°C		30	100	V
		I_O = 250 to 750mA		10	50	V
I_q	Quiescent current	T_J = 25°C		4.3	6	mA
					6	mA
ΔI_q	Quiescent current change	V_I = 11 to 25V, I_O = 500 mA			0.8	mA
		V_I = 10.6 to 23V, T_J = 25°C			0.8	mA
		I_O = 5mA to 1A			0.5	mA
SVR	Supply voltage rejection	V_I = 11.5 to 21.5V, f = 120Hz, I_O = 500mA		61		dB
V_d	Dropout voltage	I_O = 1A, T_J = 25°C		2		V
eN	Output noise voltage	T_A = 25°C, B =10Hz to 100kHz		10		$\mu V/V_O$
R_O	Output resistance	f =1kHz		18		mΩ
I_{sc}	Short circuit current	V_I = 35V, T_A = 25°C		0.2		A
I_{scp}	Short circuit peak current	T_J = 25°C		2.2		A
$\Delta V_O/\Delta T$	Output voltage drift			-0.8		mV/°C

1. Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty cycle is used.

Table 8. Electrical characteristics of L7812A (V_I = 19 V, I_O = 1 A, T_J = 0 to 150 °C (L7812AC), T_J = -40 to 125 °C (L7812AB), unless otherwise specified)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	T_J = 25°C	11.75	12	12.25	V
V_O	Output voltage	I_O = 5mA to 1A, $P_O \leq$15W V_I = 14.8 to 27V	11.5	12	12.5	V
ΔV_O (1)	Line regulation	V_I = 14.8 to 30V, I_O = 500 mA		13	120	mV
		V_I = 16 to 12V		16	120	mV
		V_I = 16 to 12V, T_J = 25°C		6	60	mV
		V_I = 14.5 to 27V, T_J = 25°C		13	120	mV
ΔV_O (1)	Load regulation	I_O = 5mA to 1A		25	100	mV
		I_O = 5mA to 1.5A, T_J = 25°C		30	100	V
		I_O = 250 to 750mA		10	50	V
I_q	Quiescent current	T_J = 25°C		4.4	6	mA
					6	mA
ΔI_q	Quiescent current change	V_I = 15 to 30V, I_O = 500 mA			0.8	mA
		V_I = 14.8 to 27V, T_J = 25°C			0.8	mA
		I_O = 5mA to 1A			0.5	mA
SVR	Supply voltage rejection	V_I = 15 to 25V, f = 120Hz, I_O = 500mA		60		dB
V_d	Dropout voltage	I_O = 1A, T_J = 25°C		2		V
eN	Output noise voltage	T_A = 25°C, B =10Hz to 100kHz		10		$\mu V/V_O$
R_O	Output resistance	f =1kHz		18		mΩ
I_{sc}	Short circuit current	V_I = 35V, T_A = 25°C		0.2		A
I_{scp}	Short circuit peak current	T_J = 25°C		2.2		A
$\Delta V_O/\Delta T$	Output voltage drift			-1		mV/°C

1. Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty cycle is used.

Table 9. Electrical characteristics of L7815A (V_I = 23 V, I_O = 1 A, T_J = 0 to 150 °C (L7815AC), T_J = -40 to 125 °C (L7815AB), unless otherwise specified)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	T_J = 25°C	14.7	15	15.3	V
V_O	Output voltage	I_O = 5mA to 1A, $P_O \leq$15W V_I = 17.9 to 30V	14.4	15	15.6	V
ΔV_O (1)	Line regulation	V_I = 17.9 to 30V, I_O = 500 mA		13	150	mV
		V_I = 20 to 26V		16	150	mV
		V_I = 20 to 26V, T_J = 25°C		6	75	mV
		V_I = 17.5 to 30V, T_J = 25°C		13	150	mV
ΔV_O (1)	Load regulation	I_O = 5mA to 1A		25	100	mV
		I_O = 5mA to 1.5A, T_J = 25°C		30	100	V
		I_O = 250 to 750mA		10	50	V
I_q	Quiescent current	T_J = 25°C		4.4	6	mA
					6	mA
ΔI_q	Quiescent current change	V_I = 17.5 to 30V, I_O = 500 mA			0.8	mA
		V_I = 17.5 to 30V, T_J = 25°C			0.8	mA
		I_O = 5mA to 1A			0.5	mA
SVR	Supply voltage rejection	V_I = 18.5 to 28.5V, f = 120Hz, I_O = 500mA		58		dB
V_d	Dropout voltage	I_O = 1A, T_J = 25°C		2		V
eN	Output noise voltage	T_A = 25°C, B =10Hz to 100kHz		10		$\mu V/V_O$
R_O	Output resistance	f =1kHz		19		mΩ
I_{sc}	Short circuit current	V_I = 35V, T_A = 25°C		0.2		A
I_{scp}	Short circuit peak current	T_J = 25°C		2.2		A
$\Delta V_O/\Delta T$	Output voltage drift			-1		mV/°C

1. Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty cycle is used.

Table 10. Electrical characteristics of L7824A (V_I = 33 V, I_O = 1 A, T_J = 0 to 150 °C (L7824AC), T_J = -40 to 125 °C (L7824AB), unless otherwise specified)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	T_J = 25°C	23.5	24	24.5	V
V_O	Output voltage	I_O = 5mA to 1A, $P_O \leq$15W V_I = 27.3 to 38V	23	24	25	V
ΔV_O (1)	Line regulation	V_I = 27 to 38V, I_O = 500 mA		31	240	mV
		V_I = 30 to 36V		35	200	mV
		V_I = 30 to 36V, T_J = 25°C		14	120	mV
		V_I = 26.7 to 38V, T_J = 25°C		31	240	mV
ΔV_O (1)	Load regulation	I_O = 5mA to 1A		25	100	mV
		I_O = 5mA to 1.5A, T_J = 25°C		30	100	V
		I_O = 250 to 750mA		10	50	V
I_q	Quiescent current	T_J = 25°C		4.6	6	mA
					6	mA
ΔI_q	Quiescent current change	V_I = 27.3 to 38V, I_O = 500 mA			0.8	mA
		V_I = 27.3 to 38V, T_J = 25°C			0.8	mA
		I_O = 5mA to 1A			0.5	mA
SVR	Supply voltage rejection	V_I = 28 to 38V, f = 120Hz, I_O = 500mA		54		dB
V_d	Dropout voltage	I_O = 1A, T_J = 25°C		2		V
eN	Output noise voltage	T_A = 25°C, B =10Hz to 100kHz		10		$\mu V/V_O$
R_O	Output resistance	f =1kHz		20		mΩ
I_{sc}	Short circuit current	V_I = 35V, T_A = 25°C		0.2		A
I_{scp}	Short circuit peak current	T_J = 25°C		2.2		A
$\Delta V_O/\Delta T$	Output voltage drift			-1.5		mV/°C

1. Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty cycle is used.

6 Application information

6.1 Design consideration

The L78xxA Series of fixed voltage regulators are designed with Thermal Overload Protection that shuts down the circuit when subjected to an excessive power overload condition, internal short-circuit protection that limits the maximum current the circuit will pass, and output transistor safe-area compensation that reduces the output short-circuit current as the voltage across the pass transistor is increased. In many low current applications, compensation capacitors are not required. However, it is recommended that the regulator input be bypassed with capacitor if the regulator is connected to the power supply filter with long lengths, or if the output load capacitance is large. An input bypass capacitor should be selected to provide good high frequency characteristics to insure stable operation under all load conditions. A 0.33 µF or larger tantalum, mylar or other capacitor having low internal impedance at high frequencies should be chosen. The bypass capacitor should be mounted with the shortest possible leads directly across the regulators input terminals. Normally good construction techniques should be used to minimize ground loops and lead resistance drops since the regulator has no external sense lead.

The addition of an operational amplifier allows adjustment to higher or intermediate values while retaining regulation characteristics. The minimum voltage obtained with the arrangement is 2 V greater than the regulator voltage.

The circuit of figure 6 can be modified to provide supply protection against short circuit by adding a short circuit sense resistor, RSC, and an additional PNP transistor. The current sensing PNP must be able to handle the short circuit current of the three terminal regulator Therefore a four ampere plastic power transistor is specified.

Figure 8. DC parameter

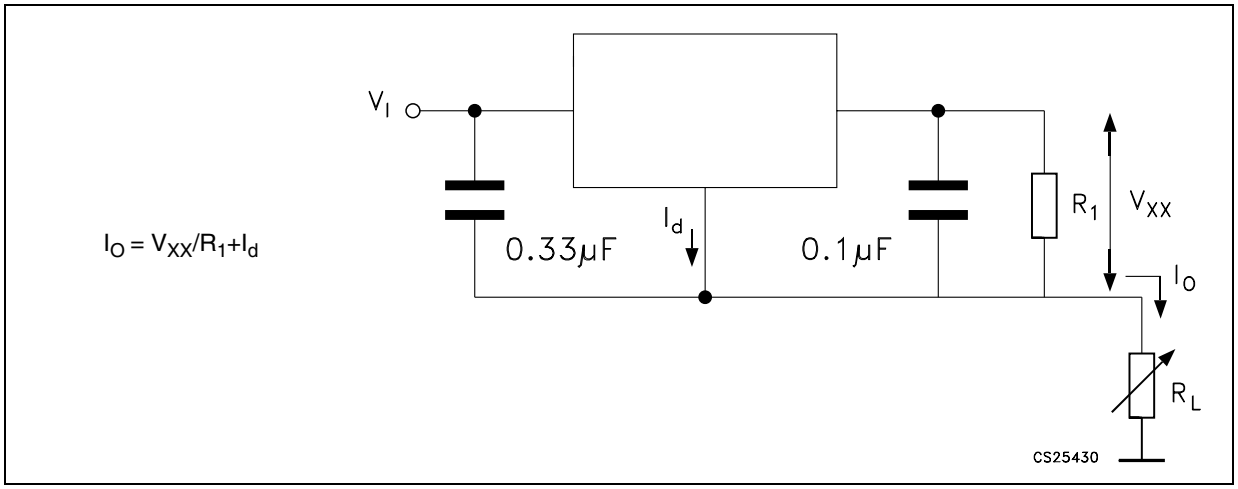


Figure 9. DC parameter

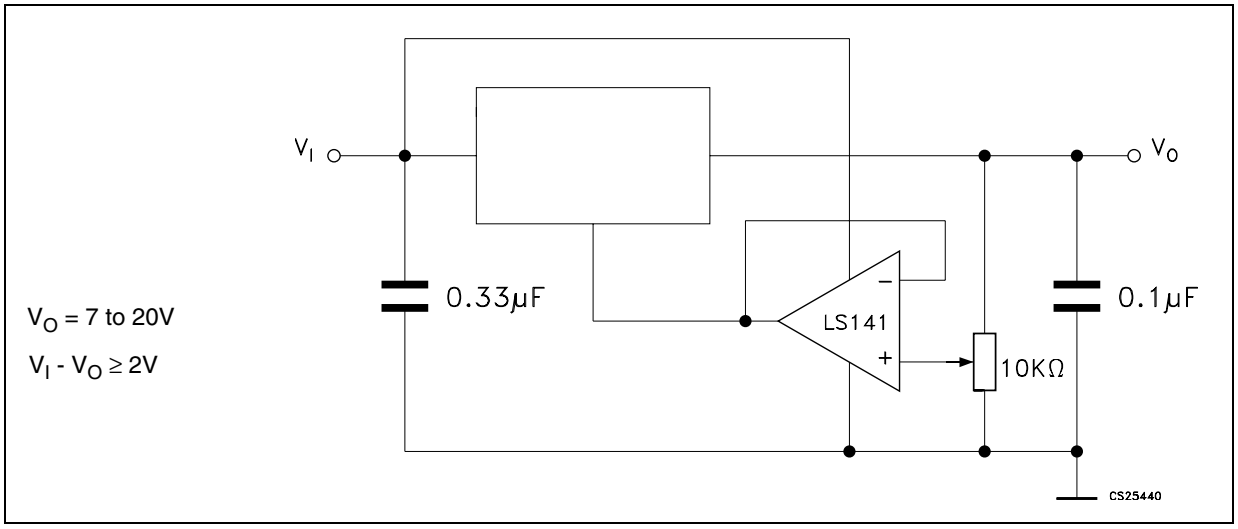


Figure 10. DC parameter

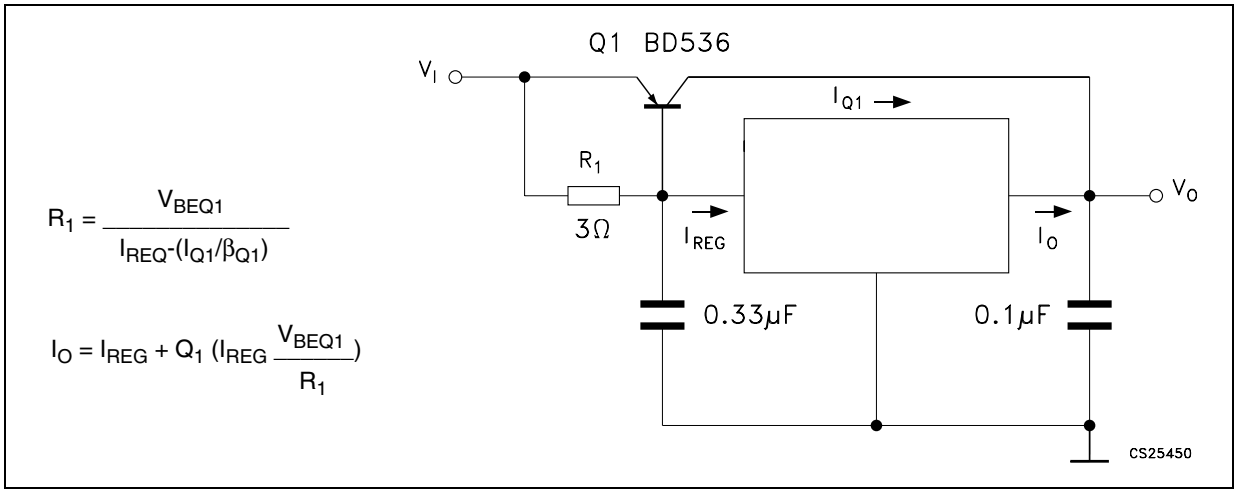
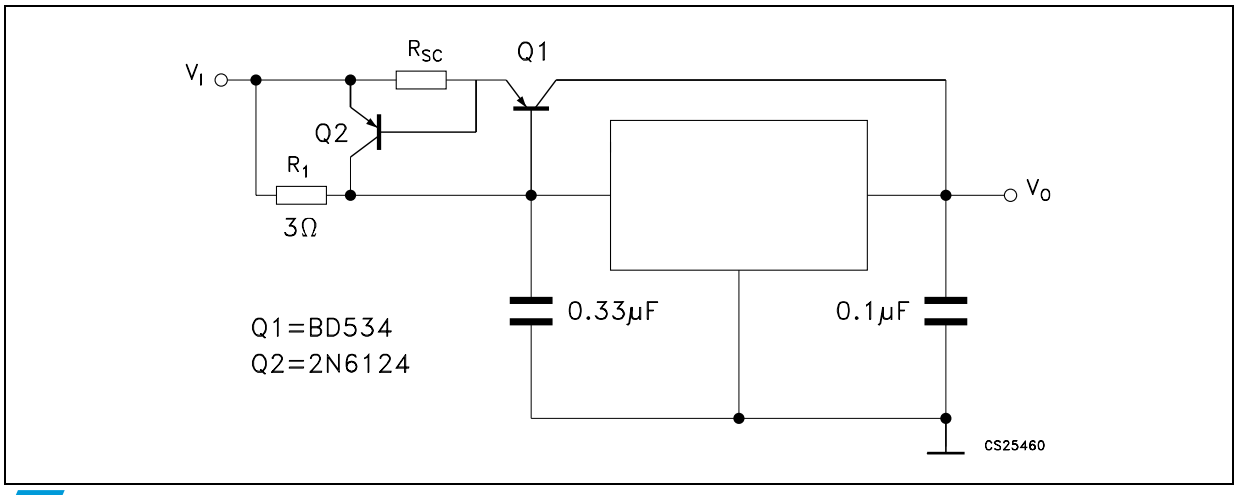


Figure 11. DC parameter

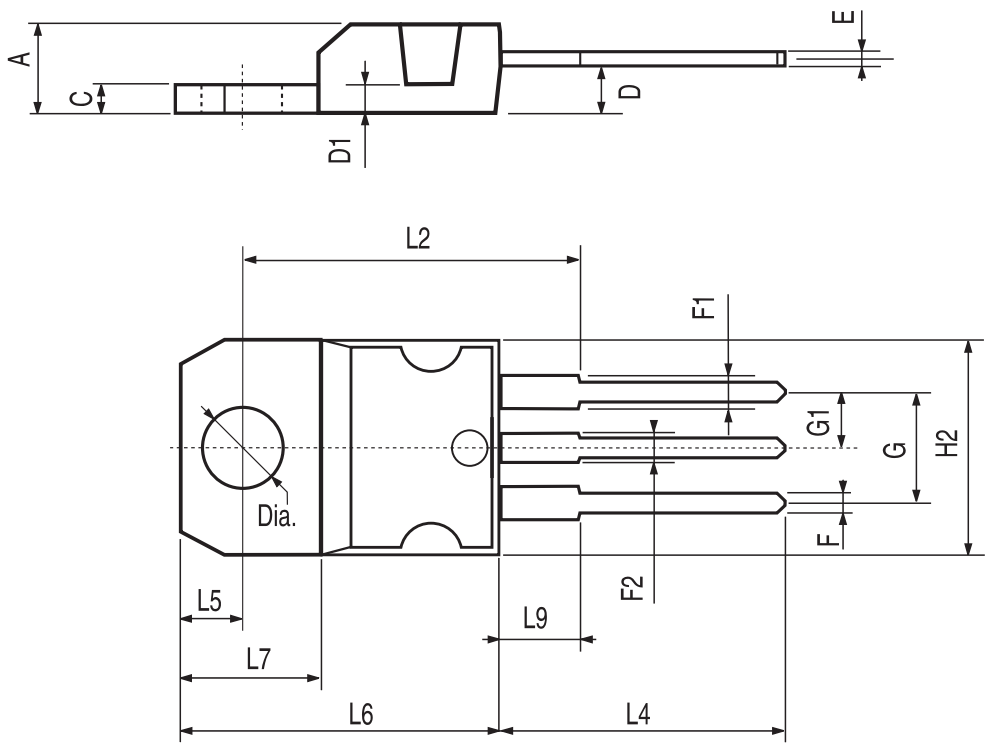


7 Package mechanical data

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a lead-free second level interconnect. The category of second Level Interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com.

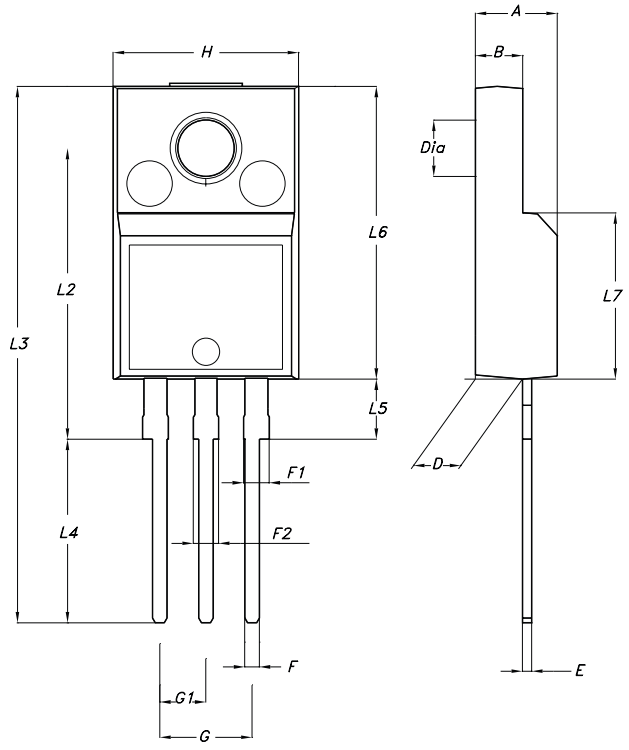
TO-220 mechanical data

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



TO-220FP mechanical data

Dim.	mm.			inch.		
	Min.	Typ	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	2.5		2.7	0.098		0.106
D	2.5		2.75	0.098		0.108
E	0.45		0.70	0.017		0.027
F	0.75		1	0.030		0.039
F1	1.15		1.50	0.045		0.059
F2	1.15		1.50	0.045		0.059
G	4.95		5.2	0.194		0.204
G1	2.4		2.7	0.094		0.106
H	10.0		10.40	0.393		0.409
L2		16			0.630	
L3	28.6		30.6	1.126		1.204
L4	9.8		10.6	0.385		0.417
L5	2.9		3.6	0.114		0.142
L6	15.9		16.4	0.626		0.645
L7	9		9.3	0.354		0.366
DIA.	3		3.2	0.118		0.126



7012510A-H

Figure 12. Drawing dimension D²PAK (type STD-ST)

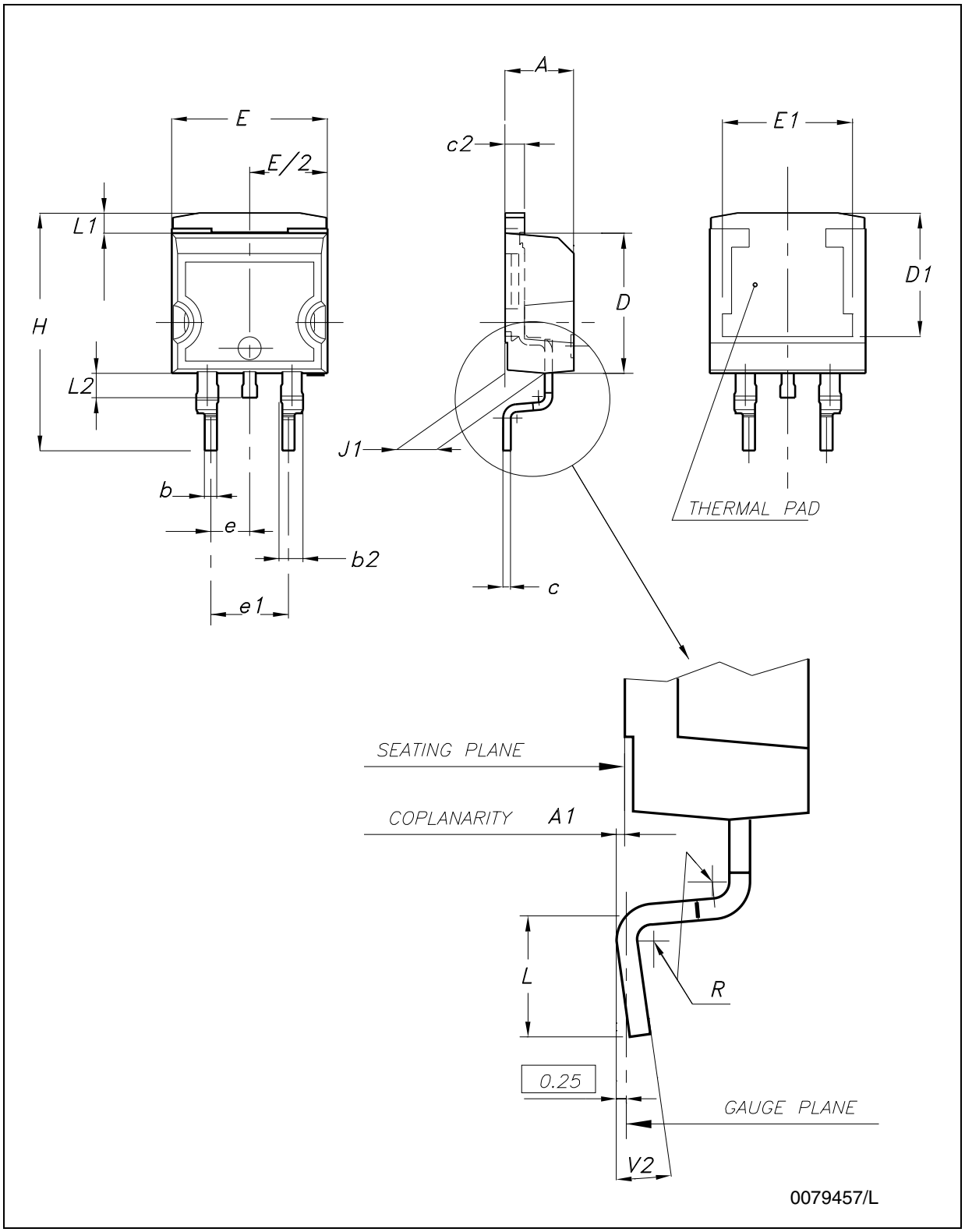


Figure 13. Drawing dimension D²PAK (type WOOSEOK-Subcon.)

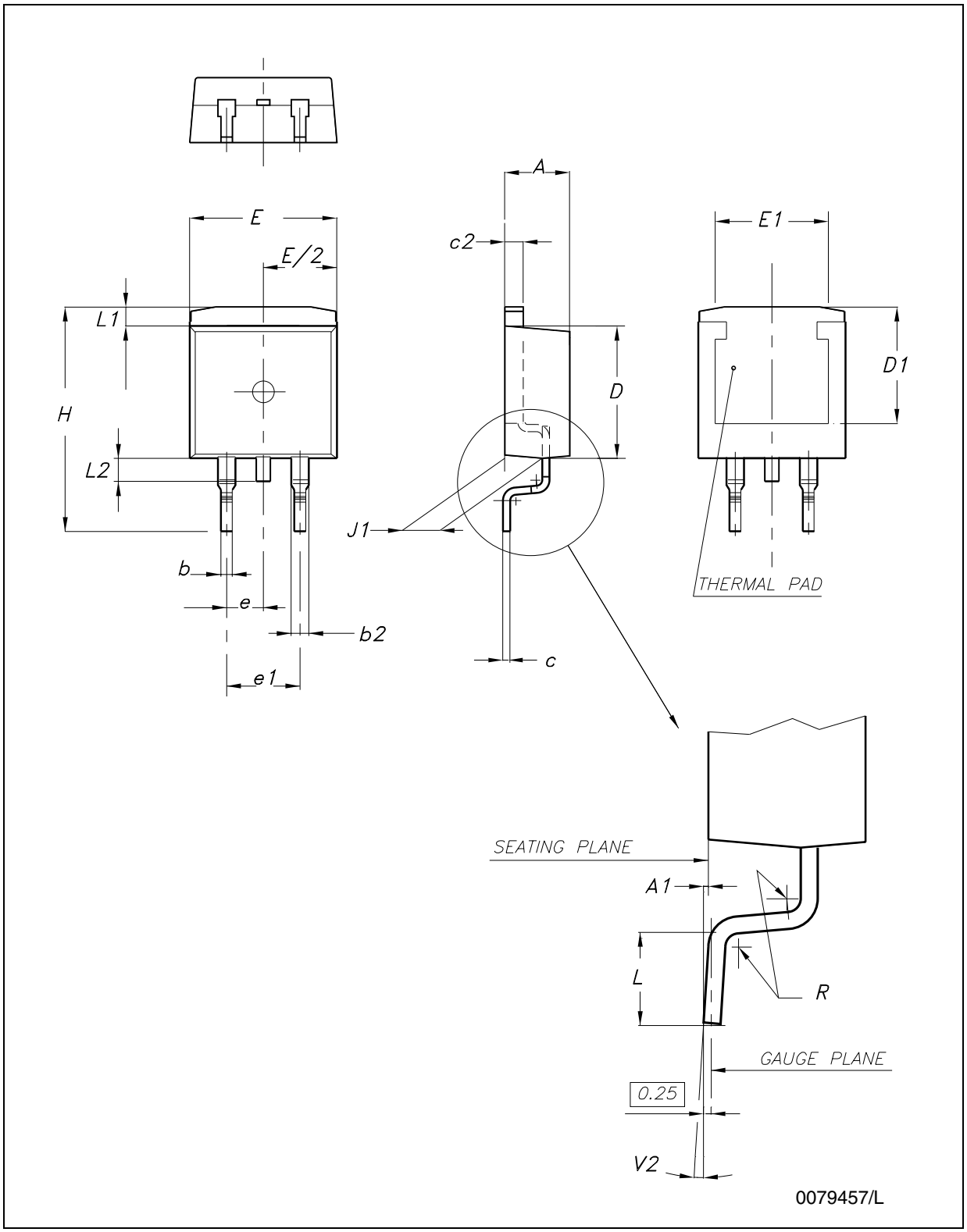


Table 11. D²PAK mechanical data

Dim.	Type STD-ST			Type WOOSEOK-Subcon.		
	mm.			mm.		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	4.30		4.70
A1	0.03		0.23	0		0.20
b	0.70		0.93	0.70		0.90
b2	1.14		1.70	1.17		1.37
c	0.45		0.60	0.45	0.50	0.60
c2	1.23		1.36	1.25	1.30	1.40
D	8.95		9.35	9	9.20	9.40
D1	7.50			7.50		
E	10		10.40	9.80		10.20
E1	8.50			7.50		
e		2.54			2.54	
e1	4.88		5.28		5.08	
H	15		15.85	15	15.30	15.60
J1	2.49		2.69	2.20		2.60
L	2.29		2.79	1.79		2.79
L1	1.27		1.40	1		1.40
L2	1.30		1.75	1.20		1.60
R		0.4			0.30	
V2	0°		8°	0°		3°

Note: The D²PAK package coming from the subcontractor Wooseok is fully compatible with the ST's package suggested footprint.

Figure 14. D²PAK footprint recommended data

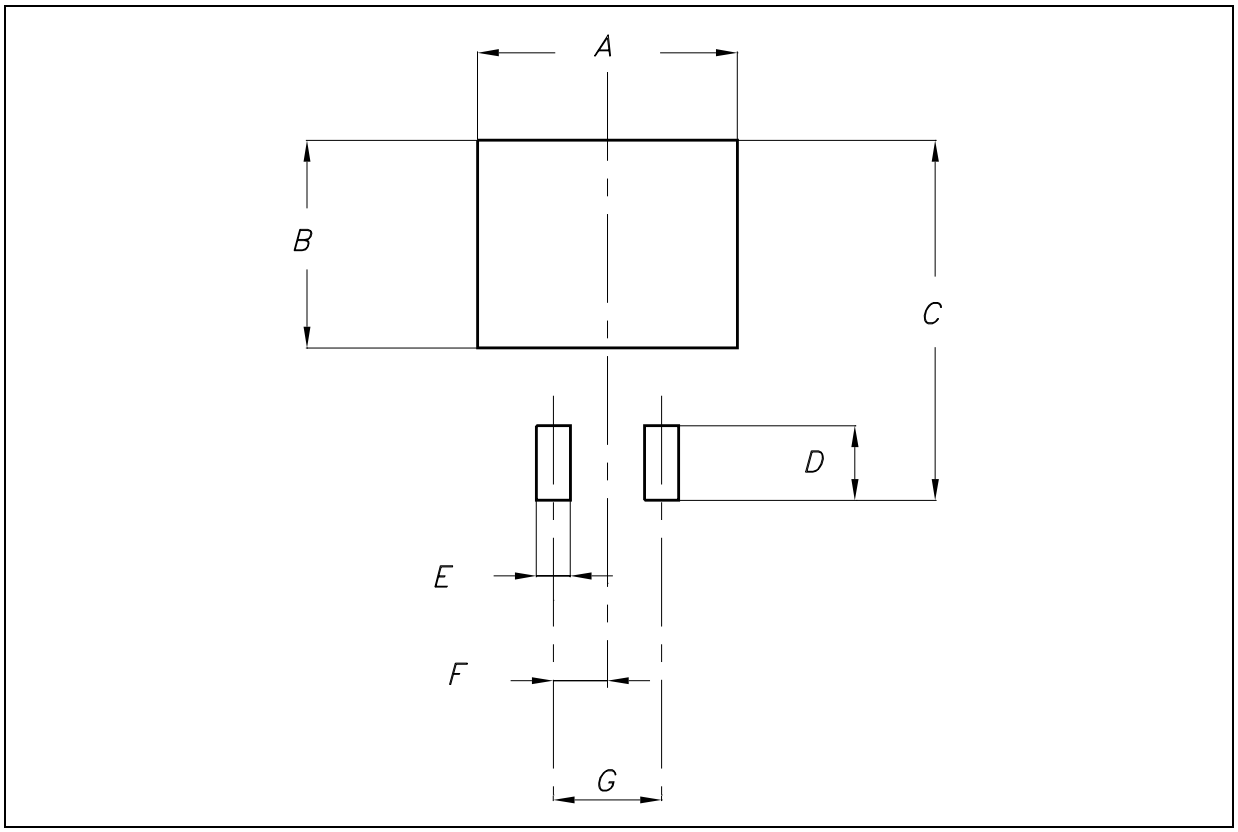
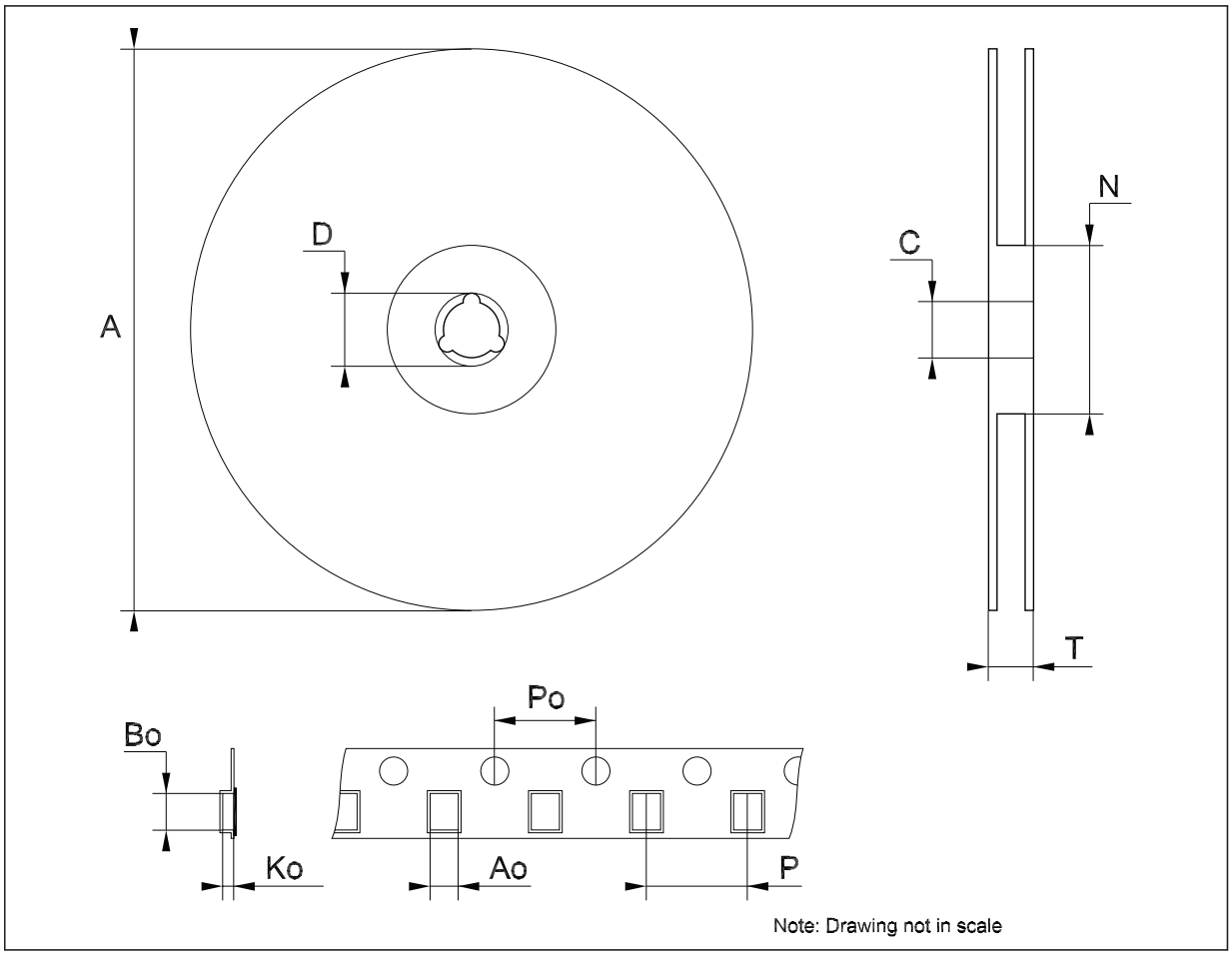


Table 12. Footprint data

Values		
Dim.	**mm.**	**inch.**
A	12.20	0.480
B	9.75	0.384
C	16.90	0.665
D	3.50	0.138
E	1.60	0.063
F	2.54	0.100
G	5.08	0.200

Tape & reel D^2PAK-P^2PAK-D^2PAK/A-P^2PAK/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



Note: Drawing not in scale

8 Order codes

Table 13. Order codes

Part number	Packaging			Output voltage
	TO-220	TO-220FP	D^2PAK	
L7805AB	L7805ABV	L7805ABP	L7805ABD2T-TR	5 V
L7805AC	L7805ACV	L7805ACP	L7805ACD2T-TR	5 V
L7806AB	L7806ABV		L7806ABD2T-TR	6 V
L7806AC	L7806ACV		L7806ACD2T-TR	6 V
L7808AB	L7808ABV		L7808ABD2T-TR	8 V
L7808AC	L7808ACV		L7808ACD2T-TR	8 V
L7809AB	L7809ABV		L7809ABD2T-TR	9 V
L7809AC	L7809ACV		L7809ACD2T-TR	9 V
L7812AB	L7812ABV		L7812ABD2T-TR	12 V
L7812AC	L7812ACV		L7812ACD2T-TR	12 V
L7815AB	L7815ABV		L7815ABD2T-TR	15 V
L7815AC	L7815ACV		L7815ACD2T-TR	15 V
L7824AB	L7824ABV		L7824ABD2T-TR	24 V
L7824AC	L7824ACV			24 V

9 Revision history

Table 14. Document revision history

Date	Revision	Changes
21-Jun-2004	9	Document updating.
04-Aug-2006	10	Order codes updated and new template.
19-Jan-2007	11	D^2PAK mechanical data has been updated and add footprint data.
07-Mar-2007	12	Update figure D^2PAK in cover page.
01-Jun-2007	13	Order codes updated.
25-Jul-2007	14	Add *Table 1* in cover page.
11-Dec-2007	15	Modified: *Table 13*.
20-Feb-2008	16	Modified: *Table 13 on page 24*.
15-Jul-2008	17	Modified: *Table 1 on page 1* and *Table 13 on page 24*.

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