



L78xx, L78xxC L78xxAB, L78xxAC

Positive voltage regulator ICs

Datasheet — production data

Features

- Output current up to 1.5 A
- Output voltages of 5; 6; 8; 8.5; 9; 12; 15; 18; 24 V
- Thermal overload protection
- Short circuit protection
- Output transition SOA protection
- 2 % output voltage tolerance (A version)
- Guaranteed in extended temperature range (A version)

Description

The L78xx series of three-terminal positive regulators is available in TO-220, TO-220FP, TO-3, D²PAK and DPAK 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 problems 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.

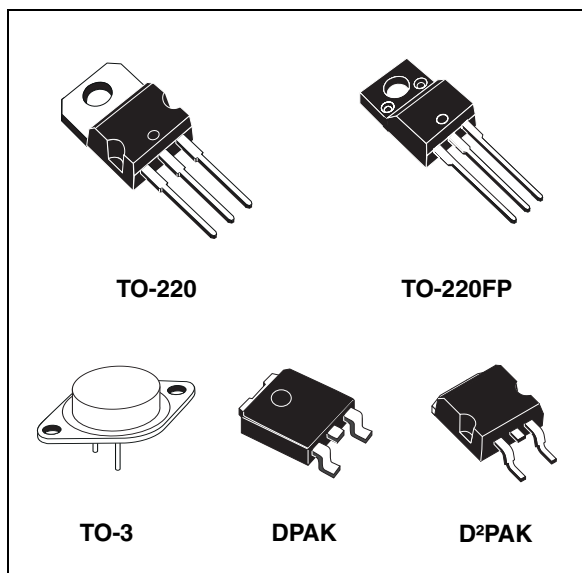


Table 1. Device summary

Part numbers			
L7805	L7806AC	L7809AB	L7815AB
L7805C	L7808C	L7809AC	L7815AC
L7805AB	L7808AB	L7812C	L7818C
L7805AC	L7808AC	L7812AB	L7824C
L7806C	L7885C	L7812AC	L7824AB
L7806AB	L7809C	L7815C	L7824AC

3 Maximum ratings

Table 2. Absolute maximum ratings

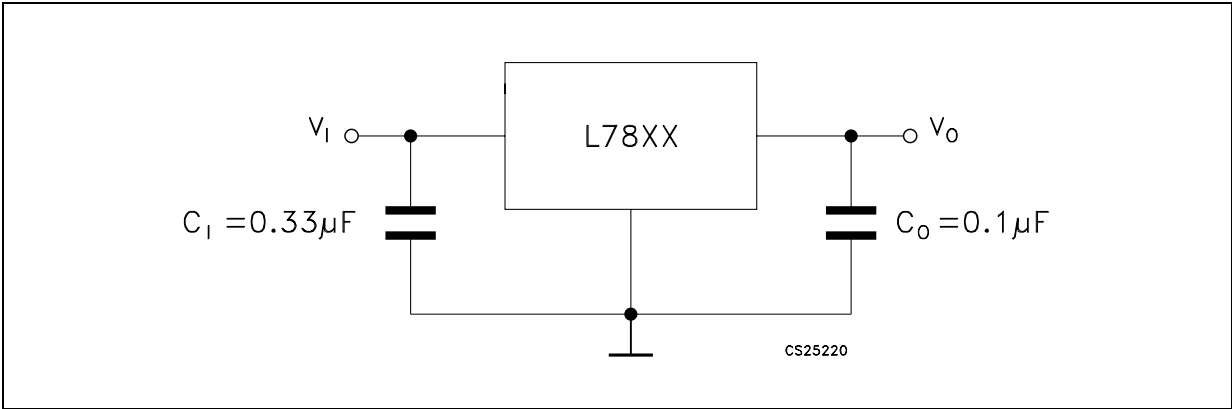
Symbol	Parameter		Value	Unit
V_I	DC input voltage	for $V_O = 5$ to 18 V	35	V
		for $V_O = 20, 24$ V	40	
I_O	Output current		Internally limited	
P_D	Power dissipation		Internally limited	
T_{STG}	Storage temperature range		-65 to 150	°C
T_{OP}	Operating junction temperature range	for L78xx	-55 to 150	°C
		for L78xxC, L78xxAC	0 to 125	
		for L78xxAB	-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	D ² PAK	DPAK	TO-220	TO-220FP	TO-3	Unit
R_{thJC}	Thermal resistance junction-case	3	8	5	5	4	°C/W
R_{thJA}	Thermal resistance junction-ambient	62.5	100	50	60	35	°C/W

Figure 4. Application circuits



5 Electrical characteristics

Refer to the test circuits, $T_J = -55$ to $150\text{ }^{\circ}\text{C}$, $V_I = 10\text{ V}$, $I_O = 500\text{ mA}$, $C_I = 0.33\text{ }\mu\text{F}$, $C_O = 0.1\text{ }\mu\text{F}$ unless otherwise specified.

Table 4. Electrical characteristics of L7805

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$T_J = 25^{\circ}\text{C}$	4.8	5	5.2	V
V_O	Output voltage	$I_O = 5\text{ mA to }1\text{ A}$, $V_I = 8\text{ to }20\text{ V}$	4.65	5	5.35	V
$\Delta V_O^{(1)}$	Line regulation	$V_I = 7\text{ to }25\text{ V}$, $T_J = 25^{\circ}\text{C}$		3	50	mV
		$V_I = 8\text{ to }12\text{ V}$, $T_J = 25^{\circ}\text{C}$		1	25	
$\Delta V_O^{(1)}$	Load regulation	$I_O = 5\text{ mA to }1.5\text{ A}$, $T_J = 25^{\circ}\text{C}$			100	mV
		$I_O = 250\text{ to }750\text{ mA}$, $T_J = 25^{\circ}\text{C}$			25	
I_d	Quiescent current	$T_J = 25^{\circ}\text{C}$			6	mA
ΔI_d	Quiescent current change	$I_O = 5\text{ mA to }1\text{ A}$			0.5	mA
		$V_I = 8\text{ to }25\text{ V}$			0.8	
$\Delta V_O/\Delta T$	Output voltage drift	$I_O = 5\text{ mA}$		0.6		mV/ $^{\circ}\text{C}$
eN	Output noise voltage	$B = 10\text{ Hz to }100\text{ kHz}$, $T_J = 25^{\circ}\text{C}$			40	$\mu\text{V}/V_O$
SVR	Supply voltage rejection	$V_I = 8\text{ to }18\text{ V}$, $f = 120\text{ Hz}$	68			dB
V_d	Dropout voltage	$I_O = 1\text{ A}$, $T_J = 25^{\circ}\text{C}$		2	2.5	V
R_O	Output resistance	$f = 1\text{ kHz}$		17		m Ω
I_{sc}	Short circuit current	$V_I = 35\text{ V}$, $T_J = 25^{\circ}\text{C}$		0.75	1.2	A
I_{scp}	Short circuit peak current	$T_J = 25^{\circ}\text{C}$	1.3	2.2	3.3	A

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.

$V_I = 10\text{ V}$, $I_O = 1\text{ A}$, $T_J = 0\text{ to }125\text{ °C}$ (L7805AC), $T_J = -40\text{ to }125\text{ °C}$ (L7805AB), unless otherwise specified.

Table 5. Electrical characteristics of L7805A

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$T_J = 25\text{ °C}$	4.9	5	5.1	V
V_O	Output voltage	$I_O = 5\text{ mA to }1\text{ A}$, $V_I = 7.5\text{ to }18\text{ V}$	4.8	5	5.2	V
V_O	Output voltage	$I_O = 1\text{ A}$, $V_I = 18\text{ to }20\text{ V}$, $T_J = 25\text{ °C}$	4.8	5	5.2	V
$\Delta V_O^{(1)}$	Line regulation	$V_I = 7.5\text{ to }25\text{ V}$, $I_O = 500\text{ mA}$, $T_J = 25\text{ °C}$		7	50	mV
		$V_I = 8\text{ to }12\text{ V}$		10	50	mV
		$V_I = 8\text{ to }12\text{ V}$, $T_J = 25\text{ °C}$		2	25	mV
		$V_I = 7.3\text{ to }20\text{ V}$, $T_J = 25\text{ °C}$		7	50	mV
$\Delta V_O^{(1)}$	Load regulation	$I_O = 5\text{ mA to }1\text{ A}$		25	100	mV
		$I_O = 5\text{ mA to }1.5\text{ A}$, $T_J = 25\text{ °C}$		30	100	V
		$I_O = 250\text{ to }750\text{ mA}$		8	50	V
I_q	Quiescent current	$T_J = 25\text{ °C}$		4.3	6	mA
					6	mA
ΔI_q	Quiescent current change	$V_I = 8\text{ to }23\text{ V}$, $I_O = 500\text{ mA}$			0.8	mA
		$V_I = 7.5\text{ to }20\text{ V}$, $T_J = 25\text{ °C}$			0.8	mA
		$I_O = 5\text{ mA to }1\text{ A}$			0.5	mA
SVR	Supply voltage rejection	$V_I = 8\text{ to }18\text{ V}$, $f = 120\text{ Hz}$, $I_O = 500\text{ mA}$		68		dB
V_d	Dropout voltage	$I_O = 1\text{ A}$, $T_J = 25\text{ °C}$		2		V
eN	Output noise voltage	$T_A = 25\text{ °C}$, $B = 10\text{ Hz to }100\text{ kHz}$		10		$\mu\text{V}/V_O$
R_O	Output resistance	$f = 1\text{ kHz}$		17		$\text{m}\Omega$
I_{sc}	Short circuit current	$V_I = 35\text{ V}$, $T_A = 25\text{ °C}$		0.2		A
I_{scp}	Short circuit peak current	$T_J = 25\text{ °C}$		2.2		A
$\Delta V_O/\Delta T$	Output voltage drift			-1.1		$\text{mV}/\text{°C}$

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.

$V_I = 11\text{ V}$, $I_O = 1\text{ A}$, $T_J = 0\text{ to }125\text{ }^\circ\text{C}$ (L7806AC), $T_J = -40\text{ to }125\text{ }^\circ\text{C}$ (L7806AB), unless otherwise specified.

Table 6. Electrical characteristics of L7806A

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$T_J = 25^\circ\text{C}$	5.88	6	6.12	V
V_O	Output voltage	$I_O = 5\text{ mA to }1\text{ A}$, $V_I = 8.6\text{ to }19\text{ V}$	5.76	6	6.24	V
V_O	Output voltage	$I_O = 1\text{ A}$, $V_I = 19\text{ to }21\text{ V}$, $T_J = 25^\circ\text{C}$	5.76	6	6.24	V
$\Delta V_O^{(1)}$	Line regulation	$V_I = 8.6\text{ to }25\text{ V}$, $I_O = 500\text{ mA}$, $T_J = 25^\circ\text{C}$		9	60	mV
		$V_I = 9\text{ to }13\text{ V}$		11	60	mV
		$V_I = 9\text{ to }13\text{ V}$, $T_J = 25^\circ\text{C}$		3	30	mV
		$V_I = 8.3\text{ to }21\text{ V}$, $T_J = 25^\circ\text{C}$		9	60	mV
$\Delta V_O^{(1)}$	Load regulation	$I_O = 5\text{ mA to }1\text{ A}$		25	100	mV
		$I_O = 5\text{ mA to }1.5\text{ A}$, $T_J = 25^\circ\text{C}$		30	100	V
		$I_O = 250\text{ to }750\text{ mA}$		10	50	V
I_q	Quiescent current	$T_J = 25^\circ\text{C}$		4.3	6	mA
					6	mA
ΔI_q	Quiescent current change	$V_I = 9\text{ to }24\text{ V}$, $I_O = 500\text{ mA}$			0.8	mA
		$V_I = 8.6\text{ to }21\text{ V}$, $T_J = 25^\circ\text{C}$			0.8	mA
		$I_O = 5\text{ mA to }1\text{ A}$			0.5	mA
SVR	Supply voltage rejection	$V_I = 9\text{ to }19\text{ V}$, $f = 120\text{ Hz}$, $I_O = 500\text{ mA}$		65		dB
V_d	Dropout voltage	$I_O = 1\text{ A}$, $T_J = 25^\circ\text{C}$		2		V
eN	Output noise voltage	$T_A = 25^\circ\text{C}$, $B = 10\text{ Hz to }100\text{ kHz}$		10		$\mu\text{V}/V_O$
R_O	Output resistance	$f = 1\text{ kHz}$		17		$\text{m}\Omega$
I_{sc}	Short circuit current	$V_I = 35\text{ V}$, $T_A = 25^\circ\text{C}$		0.2		A
I_{scp}	Short circuit peak current	$T_J = 25^\circ\text{C}$		2.2		A
$\Delta V_O/\Delta T$	Output voltage drift			-0.8		$\text{mV}/^\circ\text{C}$

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.

$V_I = 14\text{ V}$, $I_O = 1\text{ A}$, $T_J = 0\text{ to }125\text{ }^\circ\text{C}$ (L7808AC), $T_J = -40\text{ to }125\text{ }^\circ\text{C}$ (L7808AB), unless otherwise specified.

Table 7. Electrical characteristics of L7808A

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$T_J = 25^\circ\text{C}$	7.84	8	8.16	V
V_O	Output voltage	$I_O = 5\text{ mA to }1\text{ A}$, $V_I = 10.6\text{ to }21\text{ V}$	7.7	8	8.3	V
V_O	Output voltage	$I_O = 1\text{ A}$, $V_I = 21\text{ to }23\text{ V}$, $T_J = 25^\circ\text{C}$	7.7	8	8.3	V
$\Delta V_O^{(1)}$	Line regulation	$V_I = 10.6\text{ to }25\text{ V}$, $I_O = 500\text{ mA}$, $T_J = 25^\circ\text{C}$		12	80	mV
		$V_I = 11\text{ to }17\text{ V}$		15	80	mV
		$V_I = 11\text{ to }17\text{ V}$, $T_J = 25^\circ\text{C}$		5	40	mV
		$V_I = 10.4\text{ to }23\text{ V}$, $T_J = 25^\circ\text{C}$		12	80	mV
$\Delta V_O^{(1)}$	Load regulation	$I_O = 5\text{ mA to }1\text{ A}$		25	100	mV
		$I_O = 5\text{ mA to }1.5\text{ A}$, $T_J = 25^\circ\text{C}$		30	100	V
		$I_O = 250\text{ to }750\text{ mA}$		10	50	V
I_q	Quiescent current	$T_J = 25^\circ\text{C}$		4.3	6	mA
					6	mA
ΔI_q	Quiescent current change	$V_I = 11\text{ to }23\text{ V}$, $I_O = 500\text{ mA}$			0.8	mA
		$V_I = 10.6\text{ to }23\text{ V}$, $T_J = 25^\circ\text{C}$			0.8	mA
		$I_O = 5\text{ mA to }1\text{ A}$			0.5	mA
SVR	Supply voltage rejection	$V_I = 11.5\text{ to }21.5\text{ V}$, $f = 120\text{ Hz}$, $I_O = 500\text{ mA}$		62		dB
V_d	Dropout voltage	$I_O = 1\text{ A}$, $T_J = 25^\circ\text{C}$		2		V
eN	Output noise voltage	$T_A = 25^\circ\text{C}$, $B = 10\text{ Hz to }100\text{ kHz}$		10		$\mu\text{V}/V_O$
R_O	Output resistance	$f = 1\text{ kHz}$		18		$\text{m}\Omega$
I_{sc}	Short circuit current	$V_I = 35\text{ V}$, $T_A = 25^\circ\text{C}$		0.2		A
I_{scp}	Short circuit peak current	$T_J = 25^\circ\text{C}$		2.2		A
$\Delta V_O/\Delta T$	Output voltage drift			-0.8		$\text{mV}/^\circ\text{C}$

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.

$V_I = 15\text{ V}$, $I_O = 1\text{ A}$, $T_J = 0\text{ to }125\text{ }^\circ\text{C}$ (L7809AC), $T_J = -40\text{ to }125\text{ }^\circ\text{C}$ (L7809AB), unless otherwise specified.

Table 8. Electrical characteristics of L7809A

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$T_J = 25^\circ\text{C}$	8.82	9	9.18	V
V_O	Output voltage	$I_O = 5\text{ mA to }1\text{ A}$, $V_I = 10.6\text{ to }22\text{ V}$	8.65	9	9.35	V
V_O	Output voltage	$I_O = 1\text{ A}$, $V_I = 22\text{ to }24\text{ V}$, $T_J = 25^\circ\text{C}$	8.65	9	9.35	V
$\Delta V_O^{(1)}$	Line regulation	$V_I = 10.6\text{ to }25\text{ V}$, $I_O = 500\text{ mA}$, $T_J = 25^\circ\text{C}$		12	90	mV
		$V_I = 11\text{ to }17\text{ V}$		15	90	mV
		$V_I = 11\text{ to }17\text{ V}$, $T_J = 25^\circ\text{C}$		5	45	mV
		$V_I = 11.4\text{ to }23\text{ V}$, $T_J = 25^\circ\text{C}$		12	90	mV
$\Delta V_O^{(1)}$	Load regulation	$I_O = 5\text{ mA to }1\text{ A}$		25	100	mV
		$I_O = 5\text{ mA to }1.5\text{ A}$, $T_J = 25^\circ\text{C}$		30	100	V
		$I_O = 250\text{ to }750\text{ mA}$		10	50	V
I_q	Quiescent current	$T_J = 25^\circ\text{C}$		4.3	6	mA
					6	mA
ΔI_q	Quiescent current change	$V_I = 11\text{ to }25\text{ V}$, $I_O = 500\text{ mA}$			0.8	mA
		$V_I = 10.6\text{ to }23\text{ V}$, $T_J = 25^\circ\text{C}$			0.8	mA
		$I_O = 5\text{ mA to }1\text{ A}$			0.5	mA
SVR	Supply voltage rejection	$V_I = 11.5\text{ to }21.5\text{ V}$, $f = 120\text{ Hz}$, $I_O = 500\text{ mA}$		61		dB
V_d	Dropout voltage	$I_O = 1\text{ A}$, $T_J = 25^\circ\text{C}$		2		V
eN	Output noise voltage	$T_A = 25^\circ\text{C}$, $B = 10\text{ Hz to }100\text{ kHz}$		10		$\mu\text{V}/V_O$
R_O	Output resistance	$f = 1\text{ kHz}$		18		$\text{m}\Omega$
I_{sc}	Short circuit current	$V_I = 35\text{ V}$, $T_A = 25^\circ\text{C}$		0.2		A
I_{scp}	Short circuit peak current	$T_J = 25^\circ\text{C}$		2.2		A
$\Delta V_O/\Delta T$	Output voltage drift			-0.8		$\text{mV}/^\circ\text{C}$

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.

$V_I = 19\text{ V}$, $I_O = 1\text{ A}$, $T_J = 0\text{ to }125\text{ }^\circ\text{C}$ (L7812AC), $T_J = -40\text{ to }125\text{ }^\circ\text{C}$ (L7812AB), unless otherwise specified.

Table 9. Electrical characteristics of L7812A

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

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.

$V_I = 23\text{ V}$, $I_O = 1\text{ A}$, $T_J = 0\text{ to }125\text{ }^\circ\text{C}$ (L7815AC), $T_J = -40\text{ to }125\text{ }^\circ\text{C}$ (L7815AB), unless otherwise specified.

Table 10. Electrical characteristics of L7815A

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$T_J = 25^\circ\text{C}$	14.7	15	15.3	V
V_O	Output voltage	$I_O = 5\text{ mA to }1\text{ A}$, $V_I = 17.9\text{ to }28\text{ V}$	14.4	15	15.6	V
V_O	Output voltage	$I_O = 1\text{ A}$, $V_I = 28\text{ to }30\text{ V}$, $T_J = 25^\circ\text{C}$	14.4	15	15.6	V
$\Delta V_O^{(1)}$	Line regulation	$V_I = 17.9\text{ to }30\text{ V}$, $I_O = 500\text{ mA}$, $T_J = 25^\circ\text{C}$		13	150	mV
		$V_I = 20\text{ to }26\text{ V}$		16	150	mV
		$V_I = 20\text{ to }26\text{ V}$, $T_J = 25^\circ\text{C}$		6	75	mV
		$V_I = 17.5\text{ to }30\text{ V}$, $T_J = 25^\circ\text{C}$		13	150	mV
$\Delta V_O^{(1)}$	Load regulation	$I_O = 5\text{ mA to }1\text{ A}$		25	100	mV
		$I_O = 5\text{ mA to }1.5\text{ A}$, $T_J = 25^\circ\text{C}$		30	100	V
		$I_O = 250\text{ to }750\text{ mA}$		10	50	V
I_q	Quiescent current	$T_J = 25^\circ\text{C}$		4.4	6	mA
					6	mA
ΔI_q	Quiescent current change	$V_I = 17.5\text{ to }30\text{ V}$, $I_O = 500\text{ mA}$			0.8	mA
		$V_I = 17.5\text{ to }30\text{ V}$, $T_J = 25^\circ\text{C}$			0.8	mA
		$I_O = 5\text{ mA to }1\text{ A}$			0.5	mA
SVR	Supply voltage rejection	$V_I = 18.5\text{ to }28.5\text{ V}$, $f = 120\text{ Hz}$, $I_O = 500\text{ mA}$		58		dB
V_d	Dropout voltage	$I_O = 1\text{ A}$, $T_J = 25^\circ\text{C}$		2		V
eN	Output noise voltage	$T_A = 25^\circ\text{C}$, $B = 10\text{ Hz to }100\text{ kHz}$		10		$\mu\text{V}/V_O$
R_O	Output resistance	$f = 1\text{ kHz}$		19		$\text{m}\Omega$
I_{sc}	Short circuit current	$V_I = 35\text{ V}$, $T_A = 25^\circ\text{C}$		0.2		A
I_{scp}	Short circuit peak current	$T_J = 25^\circ\text{C}$		2.2		A
$\Delta V_O/\Delta T$	Output voltage drift			-1		$\text{mV}/^\circ\text{C}$

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.

$V_I = 33\text{ V}$, $I_O = 1\text{ A}$, $T_J = 0\text{ to }125\text{ }^\circ\text{C}$ (L7824AC), $T_J = -40\text{ to }125\text{ }^\circ\text{C}$ (L7824AB), unless otherwise specified.

Table 11. Electrical characteristics of L7824A

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$T_J = 25^\circ\text{C}$	23.5	24	24.5	V
V_O	Output voltage	$I_O = 5\text{ mA to }1\text{ A}$, $V_I = 27.3\text{ to }37\text{ V}$	23	24	25	V
V_O	Output voltage	$I_O = 1\text{ A}$, $V_I = 37\text{ to }38\text{ V}$, $T_J = 25^\circ\text{C}$	23	24	25	V
$\Delta V_O^{(1)}$	Line regulation	$V_I = 27\text{ to }38\text{ V}$, $I_O = 500\text{ mA}$, $T_J = 25^\circ\text{C}$		31	240	mV
		$V_I = 30\text{ to }36\text{ V}$		35	200	mV
		$V_I = 30\text{ to }36\text{ V}$, $T_J = 25^\circ\text{C}$		14	120	mV
		$V_I = 26.7\text{ to }38\text{ V}$, $T_J = 25^\circ\text{C}$		31	240	mV
$\Delta V_O^{(1)}$	Load regulation	$I_O = 5\text{ mA to }1\text{ A}$		25	100	mV
		$I_O = 5\text{ mA to }1.5\text{ A}$, $T_J = 25^\circ\text{C}$		30	100	V
		$I_O = 250\text{ to }750\text{ mA}$		10	50	V
I_q	Quiescent current	$T_J = 25^\circ\text{C}$		4.6	6	mA
					6	mA
ΔI_q	Quiescent current change	$V_I = 27.3\text{ to }38\text{ V}$, $I_O = 500\text{ mA}$			0.8	mA
		$V_I = 27.3\text{ to }38\text{ V}$, $T_J = 25^\circ\text{C}$			0.8	mA
		$I_O = 5\text{ mA to }1\text{ A}$			0.5	mA
SVR	Supply voltage rejection	$V_I = 28\text{ to }38\text{ V}$, $f = 120\text{ Hz}$, $I_O = 500\text{ mA}$		54		dB
V_d	Dropout voltage	$I_O = 1\text{ A}$, $T_J = 25^\circ\text{C}$		2		V
eN	Output noise voltage	$T_A = 25^\circ\text{C}$, $B = 10\text{ Hz to }100\text{ kHz}$		10		$\mu\text{V}/V_O$
R_O	Output resistance	$f = 1\text{ kHz}$		20		$\text{m}\Omega$
I_{sc}	Short circuit current	$V_I = 35\text{ V}$, $T_A = 25^\circ\text{C}$		0.2		A
I_{scp}	Short circuit peak current	$T_J = 25^\circ\text{C}$		2.2		A
$\Delta V_O/\Delta T$	Output voltage drift			-1.5		$\text{mV}/^\circ\text{C}$

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.

Refer to the test circuits, $T_J = 0$ to 125°C , $V_I = 10\text{ V}$, $I_O = 500\text{ mA}$, $C_I = 0.33\text{ }\mu\text{F}$, $C_O = 0.1\text{ }\mu\text{F}$ unless otherwise specified.

Table 12. Electrical characteristics of L7805C

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$T_J = 25^\circ\text{C}$	4.8	5	5.2	V
V_O	Output voltage	$I_O = 5\text{ mA}$ to 1 A , $V_I = 7$ to 18 V	4.75	5	5.25	V
V_O	Output voltage	$I_O = 1\text{ A}$, $V_I = 18$ to 20 V , $T_J = 25^\circ\text{C}$	4.75	5	5.25	V
$\Delta V_O^{(1)}$	Line regulation	$V_I = 7$ to 25 V , $T_J = 25^\circ\text{C}$		3	100	mV
		$V_I = 8$ to 12 V , $T_J = 25^\circ\text{C}$		1	50	
$\Delta V_O^{(1)}$	Load regulation	$I_O = 5\text{ mA}$ to 1.5 A , $T_J = 25^\circ\text{C}$			100	mV
		$I_O = 250$ to 750 mA , $T_J = 25^\circ\text{C}$			50	
I_d	Quiescent current	$T_J = 25^\circ\text{C}$			8	mA
ΔI_d	Quiescent current change	$I_O = 5\text{ mA}$ to 1 A			0.5	mA
		$V_I = 7$ to 23 V			0.8	
$\Delta V_O/\Delta T$	Output voltage drift	$I_O = 5\text{ mA}$		-1.1		mV/ $^\circ\text{C}$
eN	Output noise voltage	$B = 10\text{ Hz}$ to 100 kHz , $T_J = 25^\circ\text{C}$		40		$\mu\text{V}/V_O$
SVR	Supply voltage rejection	$V_I = 8$ to 18 V , $f = 120\text{ Hz}$	62			dB
V_d	Dropout voltage	$I_O = 1\text{ A}$, $T_J = 25^\circ\text{C}$		2		V
R_O	Output resistance	$f = 1\text{ kHz}$		17		m Ω
I_{sc}	Short circuit current	$V_I = 35\text{ V}$, $T_J = 25^\circ\text{C}$		0.75		A
I_{scp}	Short circuit peak current	$T_J = 25^\circ\text{C}$		2.2		A

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.

Refer to the test circuits, $T_J = 0$ to 125°C , $V_I = 11\text{ V}$, $I_O = 500\text{ mA}$, $C_I = 0.33\text{ }\mu\text{F}$, $C_O = 0.1\text{ }\mu\text{F}$ unless otherwise specified.

Table 13. Electrical characteristics of L7806C

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$T_J = 25^\circ\text{C}$	5.75	6	6.25	V
V_O	Output voltage	$I_O = 5\text{ mA}$ to 1 A , $V_I = 8$ to 19 V	5.7	6	6.3	V
V_O	Output voltage	$I_O = 1\text{ A}$, $V_I = 19$ to 21 V , $T_J = 25^\circ\text{C}$	5.7	6	6.3	V
$\Delta V_O^{(1)}$	Line regulation	$V_I = 8$ to 25 V , $T_J = 25^\circ\text{C}$			120	mV
		$V_I = 9$ to 13 V , $T_J = 25^\circ\text{C}$			60	
$\Delta V_O^{(1)}$	Load regulation	$I_O = 5\text{ mA}$ to 1.5 A , $T_J = 25^\circ\text{C}$			120	mV
		$I_O = 250$ to 750 mA , $T_J = 25^\circ\text{C}$			60	
I_d	Quiescent current	$T_J = 25^\circ\text{C}$			8	mA
ΔI_d	Quiescent current change	$I_O = 5\text{ mA}$ to 1 A			0.5	mA
		$V_I = 8$ to 24 V			1.3	
$\Delta V_O/\Delta T$	Output voltage drift	$I_O = 5\text{ mA}$		-0.8		mV/ $^\circ\text{C}$
eN	Output noise voltage	$B = 10\text{ Hz}$ to 100 kHz , $T_J = 25^\circ\text{C}$		45		$\mu\text{V}/V_O$
SVR	Supply voltage rejection	$V_I = 9$ to 19 V , $f = 120\text{ Hz}$	59			dB
V_d	Dropout voltage	$I_O = 1\text{ A}$, $T_J = 25^\circ\text{C}$		2		V
R_O	Output resistance	$f = 1\text{ kHz}$		19		m Ω
I_{sc}	Short circuit current	$V_I = 35\text{ V}$, $T_J = 25^\circ\text{C}$		0.55		A
I_{scp}	Short circuit peak current	$T_J = 25^\circ\text{C}$		2.2		A

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.

Refer to the test circuits, $T_J = 0$ to 125°C , $V_I = 14\text{ V}$, $I_O = 500\text{ mA}$, $C_I = 0.33\text{ }\mu\text{F}$, $C_O = 0.1\text{ }\mu\text{F}$ unless otherwise specified.

Table 14. Electrical characteristics of L7808C

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$T_J = 25^\circ\text{C}$	7.7	8	8.3	V
V_O	Output voltage	$I_O = 5\text{ mA}$ to 1 A , $V_I = 10.5$ to 21 V	7.6	8	8.4	V
V_O	Output voltage	$I_O = 1\text{ A}$, $V_I = 21$ to 25 V , $T_J = 25^\circ\text{C}$	7.6	8	8.4	V
$\Delta V_O^{(1)}$	Line regulation	$V_I = 10.5$ to 25 V , $T_J = 25^\circ\text{C}$			160	mV
		$V_I = 11$ to 17 V , $T_J = 25^\circ\text{C}$			80	
$\Delta V_O^{(1)}$	Load regulation	$I_O = 5\text{ mA}$ to 1.5 A , $T_J = 25^\circ\text{C}$			160	mV
		$I_O = 250$ to 750 mA , $T_J = 25^\circ\text{C}$			80	
I_d	Quiescent current	$T_J = 25^\circ\text{C}$			8	mA
ΔI_d	Quiescent current change	$I_O = 5\text{ mA}$ to 1 A			0.5	mA
		$V_I = 10.5$ to 25 V			1	
$\Delta V_O/\Delta T$	Output voltage drift	$I_O = 5\text{ mA}$		-0.8		mV/ $^\circ\text{C}$
eN	Output noise voltage	$B = 10\text{ Hz}$ to 100 kHz , $T_J = 25^\circ\text{C}$		52		$\mu\text{V}/V_O$
SVR	Supply voltage rejection	$V_I = 11.5$ to 21.5 V , $f = 120\text{ Hz}$	56			dB
V_d	Dropout voltage	$I_O = 1\text{ A}$, $T_J = 25^\circ\text{C}$		2		V
R_O	Output resistance	$f = 1\text{ kHz}$		16		m Ω
I_{sc}	Short circuit current	$V_I = 35\text{ V}$, $T_J = 25^\circ\text{C}$		0.45		A
I_{scp}	Short circuit peak current	$T_J = 25^\circ\text{C}$		2.2		A

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.

Refer to the test circuits, $T_J = 0$ to 125°C , $V_I = 14.5\text{ V}$, $I_O = 500\text{ mA}$, $C_I = 0.33\text{ }\mu\text{F}$, $C_O = 0.1\text{ }\mu\text{F}$ unless otherwise specified.

Table 15. Electrical characteristics of L7885C

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$T_J = 25^\circ\text{C}$	8.2	8.5	8.8	V
V_O	Output voltage	$I_O = 5\text{ mA to }1\text{ A}$, $V_I = 11\text{ to }21.5\text{ V}$	8.1	8.5	8.9	V
V_O	Output voltage	$I_O = 1\text{ A}$, $V_I = 21.5\text{ to }26\text{ V}$, $T_J = 25^\circ\text{C}$	8.1	8.5	8.9	V
$\Delta V_O^{(1)}$	Line regulation	$V_I = 11\text{ to }27\text{ V}$, $T_J = 25^\circ\text{C}$			160	mV
		$V_I = 11.5\text{ to }17.5\text{ V}$, $T_J = 25^\circ\text{C}$			80	
$\Delta V_O^{(1)}$	Load regulation	$I_O = 5\text{ mA to }1.5\text{ A}$, $T_J = 25^\circ\text{C}$			160	mV
		$I_O = 250\text{ to }750\text{ mA}$, $T_J = 25^\circ\text{C}$			80	
I_d	Quiescent current	$T_J = 25^\circ\text{C}$			8	mA
ΔI_d	Quiescent current change	$I_O = 5\text{ mA to }1\text{ A}$			0.5	mA
		$V_I = 11\text{ to }26\text{ V}$			1	
$\Delta V_O/\Delta T$	Output voltage drift	$I_O = 5\text{ mA}$		-0.8		mV/ $^\circ\text{C}$
eN	Output noise voltage	$B = 10\text{ Hz to }100\text{ kHz}$, $T_J = 25^\circ\text{C}$		55		$\mu\text{V}/V_O$
SVR	Supply voltage rejection	$V_I = 12\text{ to }22\text{ V}$, $f = 120\text{ Hz}$	56			dB
V_d	Dropout voltage	$I_O = 1\text{ A}$, $T_J = 25^\circ\text{C}$		2		V
R_O	Output resistance	$f = 1\text{ kHz}$		16		m Ω
I_{sc}	Short circuit current	$V_I = 35\text{ V}$, $T_J = 25^\circ\text{C}$		0.45		A
I_{scp}	Short circuit peak current	$T_J = 25^\circ\text{C}$		2.2		A

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.

Refer to the test circuits, $T_J = 0$ to 125°C , $V_I = 15\text{ V}$, $I_O = 500\text{ mA}$, $C_I = 0.33\text{ }\mu\text{F}$, $C_O = 0.1\text{ }\mu\text{F}$ unless otherwise specified.

Table 16. Electrical characteristics of L7809C

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$T_J = 25^\circ\text{C}$	8.64	9	9.36	V
V_O	Output voltage	$I_O = 5\text{ mA}$ to 1 A , $V_I = 11.5$ to 22 V	8.55	9	9.45	V
V_O	Output voltage	$I_O = 1\text{ A}$, $V_I = 22$ to 26 V , $T_J = 25^\circ\text{C}$	8.55	9	9.45	V
$\Delta V_O^{(1)}$	Line regulation	$V_I = 11.5$ to 26 V , $T_J = 25^\circ\text{C}$			180	mV
		$V_I = 12$ to 18 V , $T_J = 25^\circ\text{C}$			90	
$\Delta V_O^{(1)}$	Load regulation	$I_O = 5\text{ mA}$ to 1.5 A , $T_J = 25^\circ\text{C}$			180	mV
		$I_O = 250$ to 750 mA , $T_J = 25^\circ\text{C}$			90	
I_d	Quiescent current	$T_J = 25^\circ\text{C}$			8	mA
ΔI_d	Quiescent current change	$I_O = 5\text{ mA}$ to 1 A			0.5	mA
		$V_I = 11.5$ to 26 V			1	
$\Delta V_O/\Delta T$	Output voltage drift	$I_O = 5\text{ mA}$		-1		mV/ $^\circ\text{C}$
eN	Output noise voltage	$B = 10\text{ Hz}$ to 100 kHz , $T_J = 25^\circ\text{C}$		70		$\mu\text{V}/V_O$
SVR	Supply voltage rejection	$V_I = 12$ to 23 V , $f = 120\text{ Hz}$	55			dB
V_d	Dropout voltage	$I_O = 1\text{ A}$, $T_J = 25^\circ\text{C}$		2		V
R_O	Output resistance	$f = 1\text{ kHz}$		17		$\text{m}\Omega$
I_{sc}	Short circuit current	$V_I = 35\text{ V}$, $T_J = 25^\circ\text{C}$		0.40		A
I_{scp}	Short circuit peak current	$T_J = 25^\circ\text{C}$		2.2		A

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.

Refer to the test circuits, $T_J = 0$ to 125°C , $V_I = 15\text{ V}$, $I_O = 500\text{ mA}$, $C_I = 0.33\text{ }\mu\text{F}$, $C_O = 0.1\text{ }\mu\text{F}$ unless otherwise specified.

Table 17. Electrical characteristics of L7810C

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$T_J = 25^\circ\text{C}$	9.6	10	10.4	V
V_O	Output voltage	$I_O = 5\text{ mA to }1\text{ A}$, $V_I = 12.5\text{ to }23\text{ V}$	9.5	10	10.5	V
V_O	Output voltage	$I_O = 1\text{ A}$, $V_I = 23\text{ to }26\text{ V}$, $T_J = 25^\circ\text{C}$	9.5	10	10.5	V
$\Delta V_O^{(1)}$	Line regulation	$V_I = 12.5\text{ to }26\text{ V}$, $T_J = 25^\circ\text{C}$			200	mV
		$V_I = 13.5\text{ to }19\text{ V}$, $T_J = 25^\circ\text{C}$			100	
$\Delta V_O^{(1)}$	Load regulation	$I_O = 5\text{ mA to }1.5\text{ A}$, $T_J = 25^\circ\text{C}$			200	mV
		$I_O = 250\text{ to }750\text{ mA}$, $T_J = 25^\circ\text{C}$			100	
I_d	Quiescent current	$T_J = 25^\circ\text{C}$			8	mA
ΔI_d	Quiescent current change	$I_O = 5\text{ mA to }1\text{ A}$			0.5	mA
		$V_I = 12.5\text{ to }26\text{ V}$			1	
$\Delta V_O/\Delta T$	Output voltage drift	$I_O = 5\text{ mA}$		-1		mV/ $^\circ\text{C}$
eN	Output noise voltage	$B = 10\text{ Hz to }100\text{ kHz}$, $T_J = 25^\circ\text{C}$		70		$\mu\text{V}/V_O$
SVR	Supply voltage rejection	$V_I = 13\text{ to }23\text{ V}$, $f = 120\text{ Hz}$	55			dB
V_d	Dropout voltage	$I_O = 1\text{ A}$, $T_J = 25^\circ\text{C}$		2		V
R_O	Output resistance	$f = 1\text{ kHz}$		17		m Ω
I_{sc}	Short circuit current	$V_I = 35\text{ V}$, $T_J = 25^\circ\text{C}$		0.40		A
I_{scp}	Short circuit peak current	$T_J = 25^\circ\text{C}$		2.2		A

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.

Refer to the test circuits, $T_J = 0$ to 125°C , $V_I = 19\text{ V}$, $I_O = 500\text{ mA}$, $C_I = 0.33\text{ }\mu\text{F}$, $C_O = 0.1\text{ }\mu\text{F}$ unless otherwise specified.

Table 18. Electrical characteristics of L7812C

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$T_J = 25^\circ\text{C}$	11.5	12	12.5	V
V_O	Output voltage	$I_O = 5\text{ mA}$ to 1 A , $V_I = 14.5$ to 25 V	11.4	12	12.6	V
V_O	Output voltage	$I_O = 1\text{ A}$, $V_I = 25$ to 27 V , $T_J = 25^\circ\text{C}$	11.4	12	12.6	V
$\Delta V_O^{(1)}$	Line regulation	$V_I = 14.5$ to 30 V , $T_J = 25^\circ\text{C}$			240	mV
		$V_I = 16$ to 22 V , $T_J = 25^\circ\text{C}$			120	
$\Delta V_O^{(1)}$	Load regulation	$I_O = 5\text{ mA}$ to 1.5 A , $T_J = 25^\circ\text{C}$			240	mV
		$I_O = 250$ to 750 mA , $T_J = 25^\circ\text{C}$			120	
I_d	Quiescent current	$T_J = 25^\circ\text{C}$			8	mA
ΔI_d	Quiescent current change	$I_O = 5\text{ mA}$ to 1 A			0.5	mA
		$V_I = 14.5$ to 30 V			1	
$\Delta V_O/\Delta T$	Output voltage drift	$I_O = 5\text{ mA}$		-1		mV/ $^\circ\text{C}$
eN	Output noise voltage	$B = 10\text{ Hz}$ to 100 kHz , $T_J = 25^\circ\text{C}$		75		$\mu\text{V}/V_O$
SVR	Supply voltage rejection	$V_I = 15$ to 25 V , $f = 120\text{ Hz}$	55			dB
V_d	Dropout voltage	$I_O = 1\text{ A}$, $T_J = 25^\circ\text{C}$		2		V
R_O	Output resistance	$f = 1\text{ kHz}$		18		m Ω
I_{sc}	Short circuit current	$V_I = 35\text{ V}$, $T_J = 25^\circ\text{C}$		0.35		A
I_{scp}	Short circuit peak current	$T_J = 25^\circ\text{C}$		2.2		A

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.

Refer to the test circuits, $T_J = 0$ to 125°C , $V_I = 23\text{ V}$, $I_O = 500\text{ mA}$, $C_I = 0.33\text{ }\mu\text{F}$, $C_O = 0.1\text{ }\mu\text{F}$ unless otherwise specified.

Table 19. Electrical characteristics of L7815C

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$T_J = 25^\circ\text{C}$	14.5	15	15.6	V
V_O	Output voltage	$I_O = 5\text{ mA}$ to 1 A , $V_I = 17.5$ to 28 V	14.25	15	15.75	V
V_O	Output voltage	$I_O = 1\text{ A}$, $V_I = 28$ to 30 V , $T_J = 25^\circ\text{C}$	14.25	15	15.75	V
$\Delta V_O^{(1)}$	Line regulation	$V_I = 17.5$ to 30 V , $T_J = 25^\circ\text{C}$			300	mV
		$V_I = 20$ to 26 V , $T_J = 25^\circ\text{C}$			150	
$\Delta V_O^{(1)}$	Load regulation	$I_O = 5\text{ mA}$ to 1.5 A , $T_J = 25^\circ\text{C}$			300	mV
		$I_O = 250$ to 750 mA , $T_J = 25^\circ\text{C}$			150	
I_d	Quiescent current	$T_J = 25^\circ\text{C}$			8	mA
ΔI_d	Quiescent current change	$I_O = 5\text{ mA}$ to 1 A			0.5	mA
		$V_I = 17.5$ to 30 V			1	
$\Delta V_O/\Delta T$	Output voltage drift	$I_O = 5\text{ mA}$		-1		mV/ $^\circ\text{C}$
eN	Output noise voltage	$B = 10\text{ Hz}$ to 100 kHz , $T_J = 25^\circ\text{C}$		90		$\mu\text{V}/V_O$
SVR	Supply voltage rejection	$V_I = 18.5$ to 28.5 V , $f = 120\text{ Hz}$	54			dB
V_d	Dropout voltage	$I_O = 1\text{ A}$, $T_J = 25^\circ\text{C}$		2		V
R_O	Output resistance	$f = 1\text{ kHz}$		19		m Ω
I_{sc}	Short circuit current	$V_I = 35\text{ V}$, $T_J = 25^\circ\text{C}$		0.23		A
I_{scp}	Short circuit peak current	$T_J = 25^\circ\text{C}$		2.2		A

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.

Refer to the test circuits, $T_J = 0$ to $125\text{ }^{\circ}\text{C}$, $V_I = 26\text{ V}$, $I_O = 500\text{ mA}$, $C_I = 0.33\text{ }\mu\text{F}$, $C_O = 0.1\text{ }\mu\text{F}$ unless otherwise specified.

Table 20. Electrical characteristics of L7818C

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$T_J = 25^{\circ}\text{C}$	17.3	18	18.7	V
V_O	Output voltage	$I_O = 5\text{ mA}$ to 1 A , $V_I = 21$ to 31 V	17.1	18	18.9	V
V_O	Output voltage	$I_O = 1\text{ A}$, $V_I = 31$ to 33 V , $T_J = 25^{\circ}\text{C}$	17.1	18	18.9	V
$\Delta V_O^{(1)}$	Line regulation	$V_I = 21$ to 33 V , $T_J = 25^{\circ}\text{C}$			360	mV
		$V_I = 24$ to 30 V , $T_J = 25^{\circ}\text{C}$			180	
$\Delta V_O^{(1)}$	Load regulation	$I_O = 5\text{ mA}$ to 1.5 A , $T_J = 25^{\circ}\text{C}$			360	mV
		$I_O = 250$ to 750 mA , $T_J = 25^{\circ}\text{C}$			180	
I_d	Quiescent current	$T_J = 25^{\circ}\text{C}$			8	mA
ΔI_d	Quiescent current change	$I_O = 5\text{ mA}$ to 1 A			0.5	mA
		$V_I = 21$ to 33 V			1	
$\Delta V_O/\Delta T$	Output voltage drift	$I_O = 5\text{ mA}$		-1		mV/ $^{\circ}\text{C}$
eN	Output noise voltage	$B = 10\text{ Hz}$ to 100 kHz , $T_J = 25^{\circ}\text{C}$		110		$\mu\text{V}/V_O$
SVR	Supply voltage rejection	$V_I = 22$ to 32 V , $f = 120\text{ Hz}$	53			dB
V_d	Dropout voltage	$I_O = 1\text{ A}$, $T_J = 25^{\circ}\text{C}$		2		V
R_O	Output resistance	$f = 1\text{ kHz}$		22		m Ω
I_{sc}	Short circuit current	$V_I = 35\text{ V}$, $T_J = 25^{\circ}\text{C}$		0.20		A
I_{scp}	Short circuit peak current	$T_J = 25^{\circ}\text{C}$		2.1		A

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.

Refer to the test circuits, $T_J = 0$ to 125°C , $V_I = 28\text{ V}$, $I_O = 500\text{ mA}$, $C_I = 0.33\text{ }\mu\text{F}$, $C_O = 0.1\text{ }\mu\text{F}$ unless otherwise specified.

Table 21. Electrical characteristics of L7820C

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$T_J = 25^\circ\text{C}$	19.2	20	20.8	V
V_O	Output voltage	$I_O = 5\text{ mA to }1\text{ A}$, $V_I = 23\text{ to }33\text{ V}$	19	20	21	V
V_O	Output voltage	$I_O = 1\text{ A}$, $V_I = 33\text{ to }35\text{ V}$, $T_J = 25^\circ\text{C}$	19	20	21	V
$\Delta V_O^{(1)}$	Line regulation	$V_I = 22.5\text{ to }35\text{ V}$, $T_J = 25^\circ\text{C}$			400	mV
		$V_I = 26\text{ to }32\text{ V}$, $T_J = 25^\circ\text{C}$			200	
$\Delta V_O^{(1)}$	Load regulation	$I_O = 5\text{ mA to }1.5\text{ A}$, $T_J = 25^\circ\text{C}$			400	mV
		$I_O = 250\text{ to }750\text{ mA}$, $T_J = 25^\circ\text{C}$			200	
I_d	Quiescent current	$T_J = 25^\circ\text{C}$			8	mA
ΔI_d	Quiescent current change	$I_O = 5\text{ mA to }1\text{ A}$			0.5	mA
		$V_I = 23\text{ to }35\text{ V}$			1	
$\Delta V_O/\Delta T$	Output voltage drift	$I_O = 5\text{ mA}$		-1		mV/ $^\circ\text{C}$
eN	Output noise voltage	$B = 10\text{ Hz to }100\text{ kHz}$, $T_J = 25^\circ\text{C}$		150		$\mu\text{V}/V_O$
SVR	Supply voltage rejection	$V_I = 24\text{ to }35\text{ V}$, $f = 120\text{ Hz}$	52			dB
V_d	Dropout voltage	$I_O = 1\text{ A}$, $T_J = 25^\circ\text{C}$		2		V
R_O	Output resistance	$f = 1\text{ kHz}$		24		m Ω
I_{sc}	Short circuit current	$V_I = 35\text{ V}$, $T_J = 25^\circ\text{C}$		0.18		A
I_{scp}	Short circuit peak current	$T_J = 25^\circ\text{C}$		2.1		A

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.

Refer to the test circuits, $T_J = 0$ to 125°C , $V_I = 33\text{ V}$, $I_O = 500\text{ mA}$, $C_I = 0.33\text{ }\mu\text{F}$, $C_O = 0.1\text{ }\mu\text{F}$ unless otherwise specified.

Table 22. Electrical characteristics of L7824C

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$T_J = 25^\circ\text{C}$	23	24	25	V
V_O	Output voltage	$I_O = 5\text{ mA}$ to 1 A , $V_I = 27$ to 37 V	22.8	24	25.2	V
V_O	Output voltage	$I_O = 1\text{ A}$, $V_I = 37$ to 38 V , $T_J = 25^\circ\text{C}$	22.8	24	25.2	V
$\Delta V_O^{(1)}$	Line regulation	$V_I = 27$ to 38 V , $T_J = 25^\circ\text{C}$			480	mV
		$V_I = 30$ to 36 V , $T_J = 25^\circ\text{C}$			240	
$\Delta V_O^{(1)}$	Load regulation	$I_O = 5\text{ mA}$ to 1.5 A , $T_J = 25^\circ\text{C}$			480	mV
		$I_O = 250$ to 750 mA , $T_J = 25^\circ\text{C}$			240	
I_d	Quiescent current	$T_J = 25^\circ\text{C}$			8	mA
ΔI_d	Quiescent current change	$I_O = 5\text{ mA}$ to 1 A			0.5	mA
		$V_I = 27$ to 38 V			1	
$\Delta V_O/\Delta T$	Output voltage drift	$I_O = 5\text{ mA}$		-1.5		mV/ $^\circ\text{C}$
eN	Output noise voltage	$B = 10\text{ Hz}$ to 100 kHz , $T_J = 25^\circ\text{C}$		170		$\mu\text{V}/V_O$
SVR	Supply voltage rejection	$V_I = 28$ to 38 V , $f = 120\text{ Hz}$	50			dB
V_d	Dropout voltage	$I_O = 1\text{ A}$, $T_J = 25^\circ\text{C}$		2		V
R_O	Output resistance	$f = 1\text{ kHz}$		28		m Ω
I_{sc}	Short circuit current	$V_I = 35\text{ V}$, $T_J = 25^\circ\text{C}$		0.15		A
I_{scp}	Short circuit peak current	$T_J = 25^\circ\text{C}$		2.1		A

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.