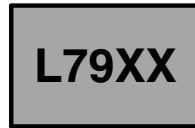
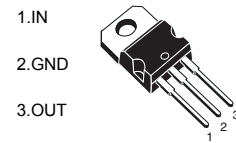


Features

- Thermal overload protection
- Short circuit protection
- Output transition SOA protection



TO-220



Absolute Maximum Ratings (T_c = 25°C)

Symbol	Parameter	Value	Unit
V _I	DC input voltage	for V _O = -5 to -18 V	-35
		for V _O = -20 to -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	0 to 150	°C

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

Thermal data

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

Electrical Characteristics

(T_c = 25°C) of 7905 (refer to the test circuits, T_J = -0 to 125°C V_I = -10V I_O = 500 mA, C_I = 2.2 μF, C_O = 1.0 μF unless otherwise specified).

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V _O	Output voltage	T _J = 25°C	-4.8	-5	-5.2	V
V _O	Output voltage	I _O = -5 mA to -1 A, P _O ≤ 15 W V _I = -8 to -20 V	-4.75	-5	-5.25	V
ΔV _O ⁽¹⁾	Line regulation	V _I = -7 to -25 V, T _J = 25°C			100	mV
		V _I = -8 to -12 V, T _J = 25°C			50	
ΔV _O ⁽¹⁾	Load regulation	I _O = 5 mA to 1.5 A, T _J = 25°C			100	mV
		I _O = 250 to 750 mA, T _J = 25°C			50	
I _d	Quiescent current	T _J = 25°C			3	mA
ΔI _d	Quiescent current change	I _O = 5 mA to 1 A			0.5	mA
		V _I = -8 to -25 V			1.3	
ΔV _O /ΔT	Output voltage drift	I _O = 5 mA		-0.4		mV/°C
e _N	Output noise voltage	B = 10Hz to 100kHz, T _J = 25°C		100		μV
SVR	Supply voltage rejection	ΔV _I = 10 V, f = 120Hz	54	60		dB
V _d	Dropout voltage	I _O = 1 A, T _J = 25°C, ΔV _O = 100 mV		1.4		V
I _{sc}	Short circuit current			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.

Electrical Characteristics

($T_C = 25^\circ\text{C}$ of 7908 (refer to the test circuits, $T_J = -0$ to 125°C $V_I = -14\text{V}$, $I_O = 500\text{ mA}$, $C_I = 2.2\ \mu\text{F}$, $C_O = 1.0\ \mu\text{F}$ unless otherwise specified)).

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	$I_O = -5\text{ mA to } -1\text{ A}$, $P_O \leq 15\text{ W}$ $V_I = -11.5\text{ to } -23\text{ V}$	-7.6	-8	-8.4	V
$\Delta V_O^{(1)}$	Line regulation	$V_I = -10.5\text{ to } -25\text{ V}$, $T_J = 25^\circ\text{C}$			160	mV
		$V_I = -11\text{ to } -17\text{ V}$, $T_J = 25^\circ\text{C}$			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	$T_J = 25^\circ\text{C}$			3	mA
ΔI_d	Quiescent current change	$I_O = 5\text{ mA to } 1\text{ A}$			0.5	mA
		$V_I = -11.5\text{ to } -25\text{ V}$			1	
$\Delta V_O/\Delta T$	Output voltage drift	$I_O = 5\text{ mA}$		-0.6		mV/ $^\circ\text{C}$
eN	Output noise voltage	$B = 10\text{ Hz to } 100\text{ kHz}$, $T_J = 25^\circ\text{C}$		175		μV
SVR	Supply voltage rejection	$\Delta V_I = 10\text{ V}$, $f = 120\text{ Hz}$	54	60		dB
V_d	Dropout voltage	$I_O = 1\text{ A}$, $T_J = 25^\circ\text{C}$, $\Delta V_O = 100\text{ mV}$		1.1		V
I_{sc}	Short circuit current			1.5		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.

($T_C = 25^\circ\text{C}$ of 7912 (refer to the test circuits, $T_J = -0$ to 125°C $V_I = -19\text{V}$, $I_O = 500\text{ mA}$, $C_I = 2.2\ \mu\text{F}$, $C_O = 1.0\ \mu\text{F}$ unless otherwise specified)).

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	$I_O = -5\text{ mA to } -1\text{ A}$, $P_O \leq 15\text{ W}$ $V_I = -15.5\text{ to } -27\text{ V}$	-11.4	-12	-12.6	V
$\Delta V_O^{(1)}$	Line regulation	$V_I = -14.5\text{ to } -30\text{ V}$, $T_J = 25^\circ\text{C}$			240	mV
		$V_I = -16\text{ to } -22\text{ V}$, $T_J = 25^\circ\text{C}$			120	
$\Delta V_O^{(1)}$	Load regulation	$I_O = 5\text{ mA to } 1.5\text{ A}$, $T_J = 25^\circ\text{C}$			240	mV
		$I_O = 250\text{ to } 750\text{ mA}$, $T_J = 25^\circ\text{C}$			120	
I_d	Quiescent current	$T_J = 25^\circ\text{C}$			3	mA
ΔI_d	Quiescent current change	$I_O = 5\text{ mA to } 1\text{ A}$			0.5	mA
		$V_I = -15\text{ to } -30\text{ V}$			1	
$\Delta V_O/\Delta T$	Output voltage drift	$I_O = 5\text{ mA}$		-0.8		mV/ $^\circ\text{C}$
eN	Output noise voltage	$B = 10\text{ Hz to } 100\text{ kHz}$, $T_J = 25^\circ\text{C}$		200		μV
SVR	Supply voltage rejection	$\Delta V_I = 10\text{ V}$, $f = 120\text{ Hz}$	54	60		dB
V_d	Dropout voltage	$I_O = 1\text{ A}$, $T_J = 25^\circ\text{C}$, $\Delta V_O = 100\text{ mV}$		1.1		V
I_{sc}	Short circuit current			1.5		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.

Electrical Characteristics

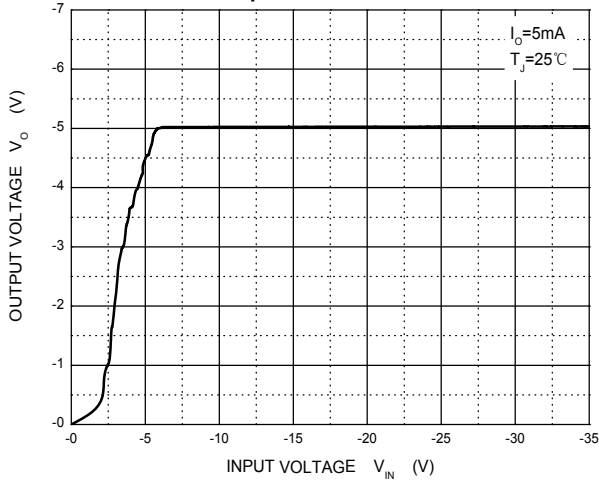
($T_c = 25^\circ\text{C}$ of 7915 (refer to the test circuits, $T_J = -0$ to 125°C $V_I = -23\text{V}$, $I_O = 500\text{ mA}$, $C_I = 2.2\ \mu\text{F}$, $C_O = 1.0\ \mu\text{F}$ unless otherwise specified).

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_O	Output voltage	$T_J = 25^\circ\text{C}$	-14.4	-15	-15.6	V
V_O	Output voltage	$I_O = -5\text{ mA to } -1\text{ A}$, $P_O \leq 15\text{ W}$ $V_I = -18.5\text{ to } -30\text{ V}$	-14.3	-15	-15.7	V
$\Delta V_O^{(1)}$	Line regulation	$V_I = -17.5\text{ to } -30\text{ V}$, $T_J = 25^\circ\text{C}$			300	mV
		$V_I = -20\text{ to } -26\text{ V}$, $T_J = 25^\circ\text{C}$			150	
$\Delta V_O^{(1)}$	Load regulation	$I_O = 5\text{ mA to } 1.5\text{ A}$, $T_J = 25^\circ\text{C}$			300	mV
		$I_O = 250\text{ to } 750\text{ mA}$, $T_J = 25^\circ\text{C}$			150	
I_d	Quiescent current	$T_J = 25^\circ\text{C}$			3	mA
ΔI_d	Quiescent current change	$I_O = 5\text{ mA to } 1\text{ A}$			0.5	mA
		$V_I = -18.5\text{ to } -30\text{ V}$			1	
$\Delta V_O/\Delta T$	Output voltage drift	$I_O = 5\text{ mA}$		-0.9		mV/ $^\circ\text{C}$
eN	Output noise voltage	$B = 10\text{ Hz to } 100\text{ kHz}$, $T_J = 25^\circ\text{C}$		250		μV
SVR	Supply voltage rejection	$\Delta V_I = 10\text{ V}$, $f = 120\text{ Hz}$	54	60		dB
V_d	Dropout voltage	$I_O = 1\text{ A}$, $T_J = 25^\circ\text{C}$, $\Delta V_O = 100\text{ mV}$		1.1		V
I_{sc}	Short circuit current			1.3		A

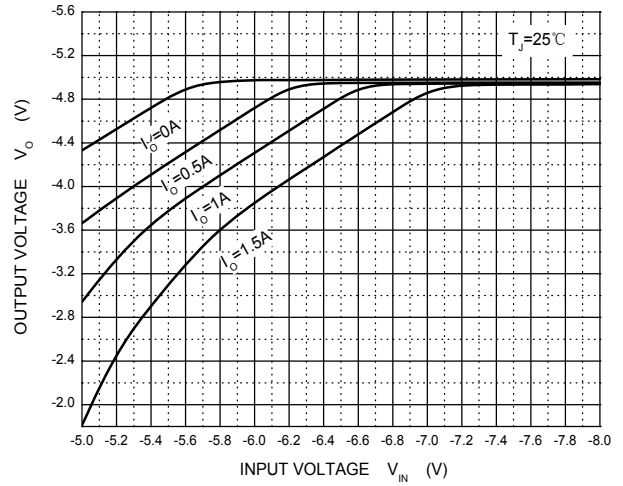
1. Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty cycle is used.

RATING AND CHARACTERISTIC CURVES

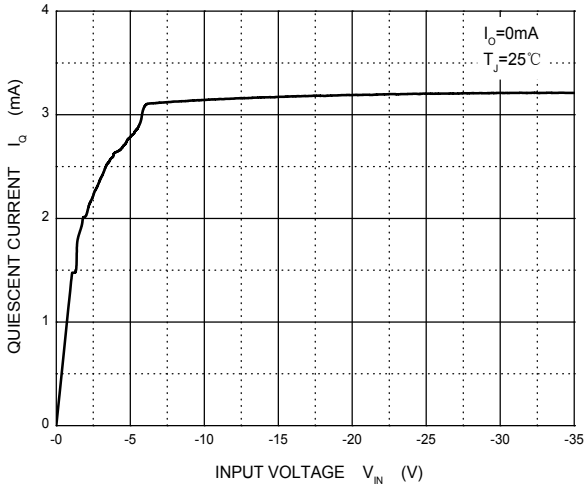
Output Characteristics



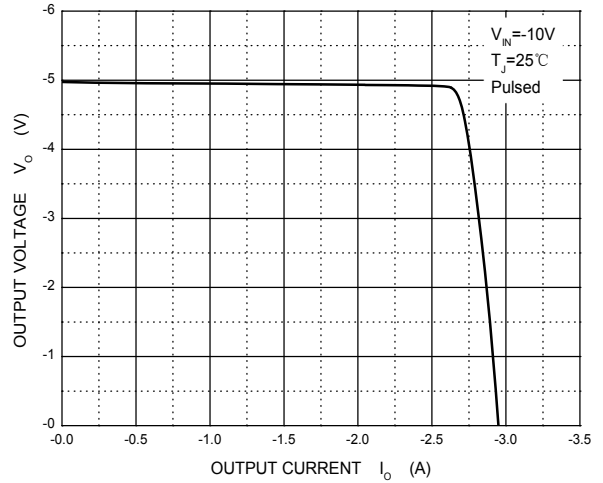
Dropout Characteristics



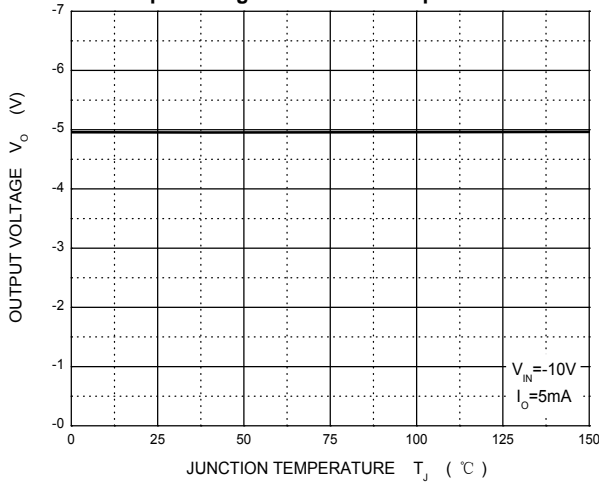
Quiescent Current



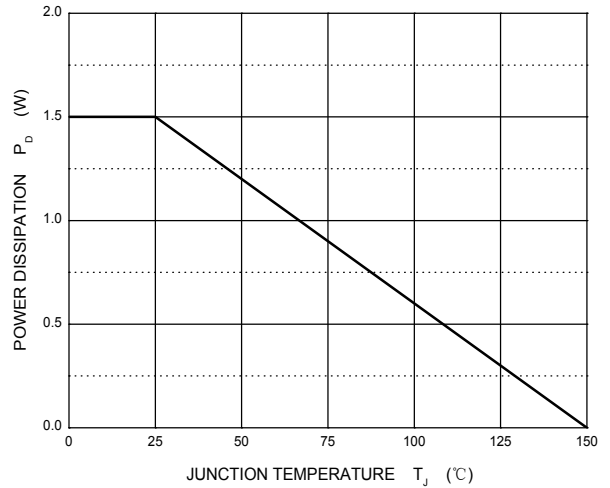
Current Cut-off Grid Voltage



Output Voltage vs Junction Temperature



Power Derating Curve



Soldering parameters

Reflow Condition		Pb-Free assembly (see as below)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150 °C
	-Temperature Max ($T_{s(max)}$)	+200 °C
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3 °C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3 °C/sec. Max
Reflow	-Temperature (T_L) (Liquid us)	+217 °C
	-Temperature (t_L)	60-150 secs.
Peak Temp (T_P)		+260(+0/-5) °C
Time within 5 °C of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6 °C/sec. Max
Time 25 °C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260 °C



Package Dimensions & Suggested Pad Layout

