

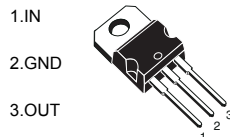
Features

- Thermal overload protection
- Short circuit protection
- Output transition SOA protection
- 2 % output voltage tolerance (A version)
- Guaranteed in extended temperature range (A version)

GK XXX
L78xx

LOGO GK XXX CODE

TO-220



Absolute Maximum Ratings (T_c=25°C)

Symbol	Parameter	Value	UNIT
V _I	Input Voltage	35	V
T _{OPR}	Operating Temperature Range	0 ~ +125	°C
T _{STG}	Storage Temperature Range	-65 ~+150	°C

Electrical Characteristics

(T_c=25°C) Of 7805 (refer to the test circuits, T_J = -55 to 150°C V_I = 10V I_O = 500 mA C_I = 0.33 μF, C_O = 0.1 μF unless otherwise specified)。

Parameter	Symbol	Test Condition	MIN	TYP	MAX	UNIT
Output Voltage	V _O	T _J = +25°C	4.8	5	5.2	V
		I _O = 5mA to 1A, P _O ≤ 15W V _I = 8V to 20V	4.75	5	5.25	
Line Regulation (Note1)	Δ V _O	T _J = +25°C			100	mV
					50	
Load Regulation (Note1)	Δ V _O	T _J = +25°C I _O = 5mA to 1.2A			100	mV
		T _J = +25°C I _O = 250mA to 750mA			50	
Quiescent Current	I _Q	T _J = +25°C			6	mA
Quiescent Current Change	Δ I _Q	I _O = 5mA to 1A			0.5	mA
		V _I = 8V to 25V			0.8	
Quiescent Current Change	Δ V _O /Δ T	I _O = 5mA		0.6		mV/°C
Short Circuit Current	I _{SC}	T _J = +25° C, V _I = 35V		0.75	1.2	A

Electrical Characteristics

($T_c=25^{\circ}\text{C}$) Of 7806(refer to the test circuits, $T_J = -55$ to 150°C $V_I = 11\text{V}$, $I_O = 500\text{mA}$, $C_I = 0.33\mu\text{F}$, $C_O = 0.1\mu\text{F}$ unless otherwise specified)。

Parameter	Symbol	Test Condition	MIN	TYP	MAX	UNIT
Output Voltage	V_O	$T_J = +25^{\circ}\text{C}$	5.75	6	6.25	V
		$I_O = 5\text{mA}$ to 1A , $P_O \leq 15\text{W}$ $V_I = 9\text{V}$ to 21V	5.65	6	6.35	
Line Regulation (Note1)	ΔV_O	$T_J = +25^{\circ}\text{C}$	$V_I = 8\text{V}$ to 25V		100	mV
			$V_I = 9\text{V}$ to 13V		50	
Load Regulation (Note1)	ΔV_O	$T_J = +25^{\circ}\text{C}$ $I_O = 5\text{mA}$ to 1.2A			100	mV
		$T_J = +25^{\circ}\text{C}$ $I_O = 250\text{mA}$ to 750mA			50	
Quiescent Current	I_Q	$T_J = +25^{\circ}\text{C}$			6	mA
Quiescent Current Change	ΔI_Q	$I_O = 5\text{mA}$ to 1A			0.5	mA
		$V_I = 9\text{V}$ to 25V			0.8	
Quiescent Current Change	$\Delta V_O/\Delta T$	$I_O = 5\text{mA}$		0.7		mV/ $^{\circ}\text{C}$
Short Circuit Current	ISC	$T_J = +25^{\circ}\text{C}$, $V_I = 35\text{V}$		0.75	1.2	A

($T_c=25^{\circ}\text{C}$) Of 7808(refer to the test circuits, $T_J = -55$ to 150°C $V_I = 14\text{V}$, $I_O = 500\text{mA}$, $C_I = 0.33\mu\text{F}$, $C_O = 0.1\mu\text{F}$ unless otherwise specified)。

Parameter	Symbol	Test Condition	MIN	TYP	MAX	UNIT
Output Voltage	V_O	$T_J = +25^{\circ}\text{C}$	7.7	8	8.3	V
		$I_O = 5\text{mA}$ to 1A , $P_O \leq 15\text{W}$ $V_I = 11.5\text{V}$ to 23V	7.6	8	8.4	
Line Regulation (Note1)	ΔV_O	$T_J = +25^{\circ}\text{C}$	$V_I = 10.5\text{V}$ to 25V		100	mV
			$V_I = 11\text{V}$ to 17V		50	
Load Regulation (Note1)	ΔV_O	$T_J = +25^{\circ}\text{C}$ $I_O = 5\text{mA}$ to 1.2A			100	mV
		$T_J = +25^{\circ}\text{C}$ $I_O = 250\text{mA}$ to 750mA			50	
Quiescent Current	I_Q	$T_J = +25^{\circ}\text{C}$			6	mA
Quiescent Current Change	ΔI_Q	$I_O = 5\text{mA}$ to 1A			0.5	mA
		$V_I = 11.5\text{V}$ to 25V			1	
Quiescent Current Change	$\Delta V_O/\Delta T$	$I_O = 5\text{mA}$		1		mV/ $^{\circ}\text{C}$
Short Circuit Current	ISC	$T_J = +25^{\circ}\text{C}$, $V_I = 35\text{V}$		0.75	1.2	A

Electrical Characteristics

($T_c=25^{\circ}\text{C}$) Of 7809 (refer to the test circuits, $T_J = -55$ to 150°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)。

Parameter	Symbol	Test Condition		MIN	TYP	MAX	UNIT
Output Voltage	V_O	$T_J = +25^{\circ}\text{C}$		8.64	9	9.36	V
		$I_O = 5\text{mA to } 1\text{A}$, $P_O \leq 15\text{W}$ $V_I = 11.5\text{V to } 26\text{V}$		8.55	9	9.45	
Line Regulation (Notel)	ΔV_O	$T_J = +25^{\circ}\text{C}$	$V_I = 11.5\text{V to } 26\text{V}$			100	mV
			$V_I = 12\text{V to } 18\text{V}$			50	
Load Regulation (Notel)	ΔV_O	$T_J = +25^{\circ}\text{C}$ $I_O = 5\text{mA to } 1.2\text{A}$				100	mV
		$T_J = +25^{\circ}\text{C}$ $I_O = 250\text{mA to } 750\text{mA}$				50	
Quiescent Current	I_Q	$T_J = +25^{\circ}\text{C}$				6	mA
Quiescent Current Change	ΔI_Q	$I_O = 5\text{mA to } 1\text{A}$				0.5	mA
		$V_I = 11.5\text{V to } 26\text{V}$				1	
Quiescent Current Change	$\Delta V_O/\Delta T$	$I_O = 5\text{mA}$			1		mV/ $^{\circ}\text{C}$
Short Circuit Current	ISC	$T_J = +25^{\circ}\text{C}$, $V_I = 35\text{V}$			0.75	1.2	A

($T_c=25^{\circ}\text{C}$) Of 7812 (refer to the test circuits, $T_J = -55$ to 150°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)。

Parameter	Symbol	Test Condition		MIN	TYP	MAX	UNIT
Output Voltage	V_O	$T_J = +25^{\circ}\text{C}$		11.5	12	12.5	V
		$I_O = 5\text{mA to } 1\text{A}$, $P_O \leq 15\text{W}$ $V_I = 15.5\text{V to } 27\text{V}$		11.4	12	12.6	
Line Regulation (Notel)	ΔV_O	$T_J = +25^{\circ}\text{C}$	$V_I = 14.5\text{V to } 30\text{V}$			100	mV
			$V_I = 16\text{V to } 22\text{V}$			50	
Load Regulation (Notel)	ΔV_O	$T_J = +25^{\circ}\text{C}$ $I_O = 5\text{mA to } 1.2\text{A}$				100	mV
		$T_J = +25^{\circ}\text{C}$ $I_O = 250\text{mA to } 750\text{mA}$				50	
Quiescent Current	I_Q	$T_J = +25^{\circ}\text{C}$				6	mA
Quiescent Current Change	ΔI_Q	$I_O = 5\text{mA to } 1\text{A}$				0.5	mA
		$V_I = 15\text{V to } 30\text{V}$				1	
Quiescent Current Change	$\Delta V_O/\Delta T$	$I_O = 5\text{mA}$			1.5		mV/ $^{\circ}\text{C}$
Short Circuit Current	ISC	$T_J = +25^{\circ}\text{C}$, $V_I = 35\text{V}$			0.75	1.2	A

Electrical Characteristics

($T_c = 25^\circ\text{C}$) Of 7815 (refer to the test circuits, $T_J = -40$ to 150°C $V_I = 19\text{V}$, $I_O = 500\text{mA}$,
 $C_I = 0.33\ \mu\text{F}$, $C_O = 0.1\ \mu\text{F}$ unless otherwise specified)。

Parameter	Symbol	Test Condition	MIN	TYP	MAX	UNIT
Output Voltage	V_O	$T_J = +25^\circ\text{C}$	14.4	15	15.6	V
		$I_O = 5\text{mA to } 1\text{A}$, $P_O \leq 15\text{W}$ $V_I = 15.5\text{V to } 27\text{V}$	14.25	15	15.75	
Line Regulation (Notel)	ΔV_O	$T_J = +25^\circ\text{C}$	$V_I = 14.5\text{V to } 30\text{V}$		300	mV
			$V_I = 16\text{V to } 22\text{V}$		150	
Load Regulation (Notel)	ΔV_O	$T_J = +25^\circ\text{C}$ $I_O = 5\text{mA to } 1.2\text{A}$			100	mV
		$T_J = +25^\circ\text{C}$ $I_O = 250\text{mA to } 750\text{mA}$			150	
Quiescent Current	I_Q	$T_J = +25^\circ\text{C}$			6	mA
Quiescent Current Change	ΔI_Q	$I_O = 5\text{mA to } 1\text{A}$			0.5	mA
		$V_I = 15\text{V to } 30\text{V}$			1	
Quiescent Current Change	$\Delta V_O / \Delta T$	$I_O = 5\text{mA}$		1.5		mV/ $^\circ\text{C}$
Short Circuit Current	ISC	$T_J = +25^\circ\text{C}$, $V_I = 35\text{V}$		0.23		A

RATING AND CHARACTERISTIC CURVES

Figure 1: Dropout Voltage vs Junction Temperature

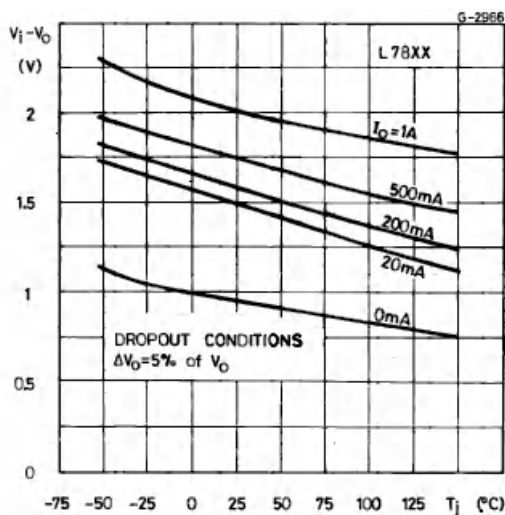


Figure 2: Peak Output Current vs Input/output Differential Voltage

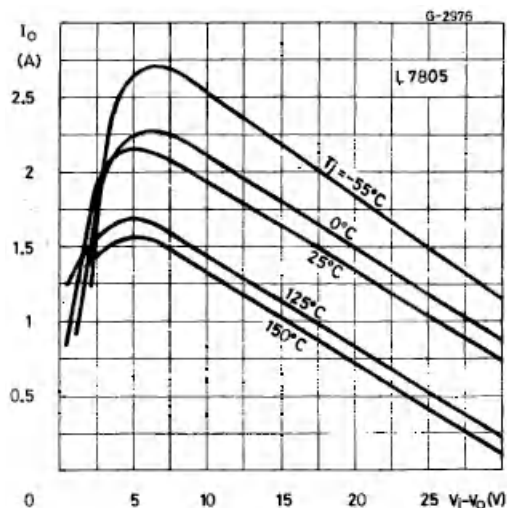


Figure 3: Supply Voltage Rejection vs Frequency

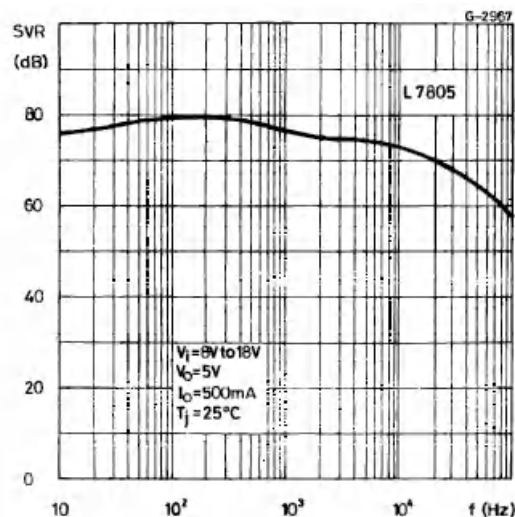


Figure 4: Quiescent Current vs Junction

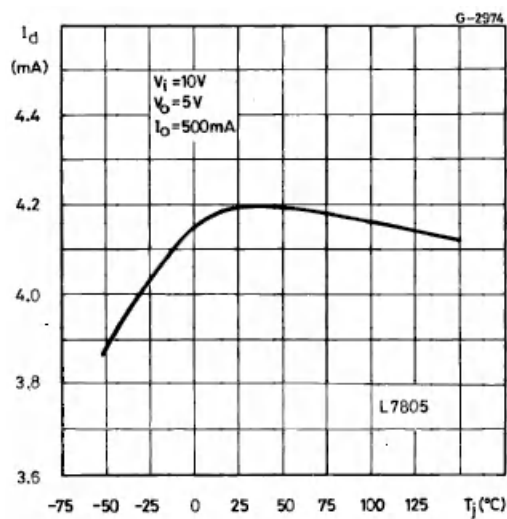


Figure 5: Output Voltage vs Junction Temperature

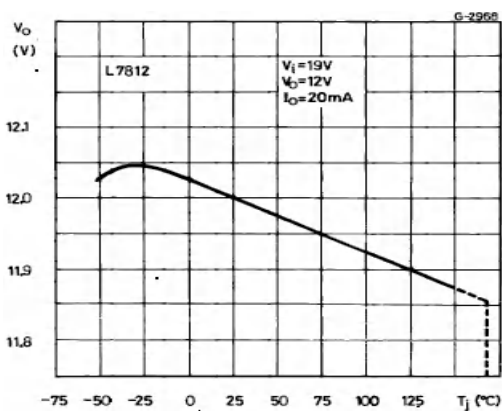
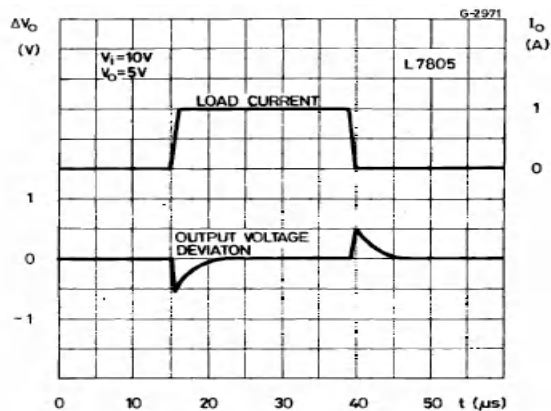


Figure 6: Load Transient Response



RATING AND CHARACTERISTIC CURVES

Figure 7: Output Impedance vs Frequency

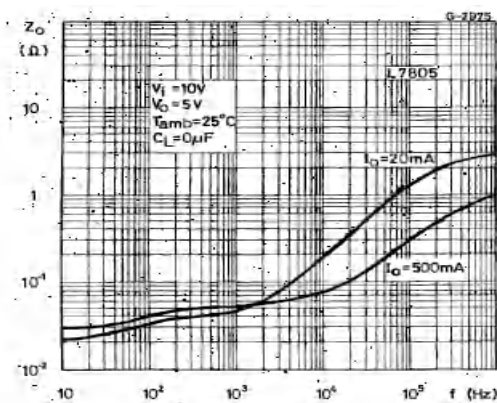


Figure 8: Line Transient Response

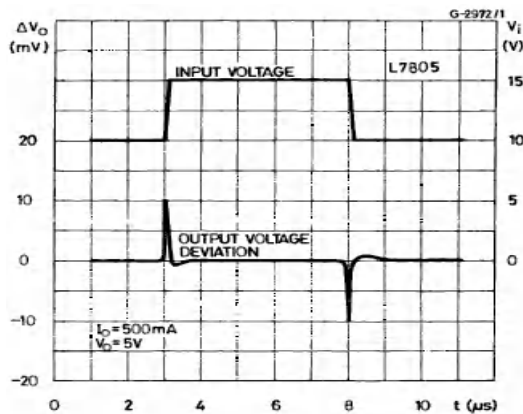
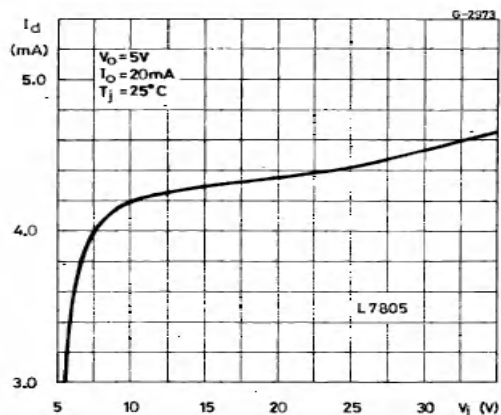
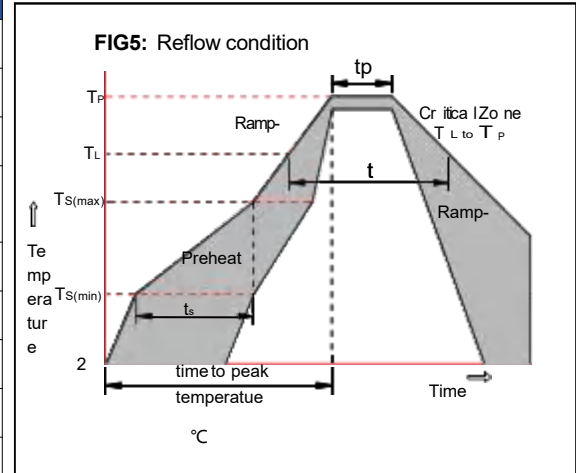


Figure 9: Quiescent Current vs Input Voltage



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

