



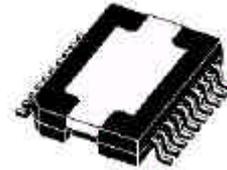
LHC7913-4

3 AMP NEGATIVE LOW DROP VOLTAGE REGULATOR

DRAFT DATA

FEATURES:

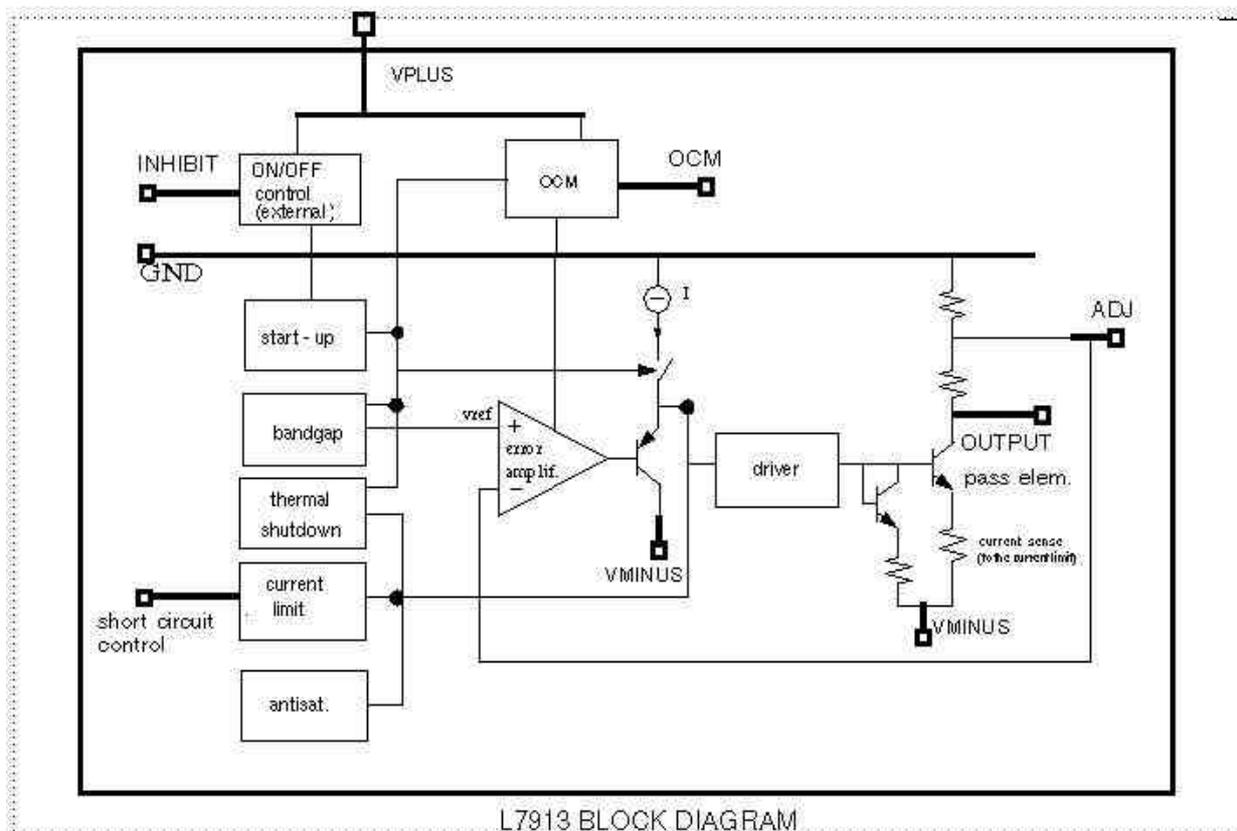
- x Low output capacitance: 1 μ F
- x Overtemperature protection
- x Overcurrent protection
- x Output short circuit monitoring, signalled by a TTL-compatible output
- x ON/OFF external control by means of TTL-compatible input.
- x Adjustable current limitation protects outputs from damaging shortcircuits.
- REMOTE SENSING OPERATION



GENERAL DESCRIPTION:

The LHC7913-4 is a negative Voltage Regulator family including both fixed and adjustable versions. Housed into Power SO-20 slug-up package. It is specifically intended for applications in rugged environments, such as Nuclear Physics, in which it has to withstand large amounts of radiation doses during its operating life.

Input voltage ranges from -3 to -9 volts.



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ABSOLUTE MAXIMUM RATINGS (NOTE 1)

Symbol	Parameter	Value	Unit
Vminus	DC input voltage	-10	V
Vplus	input voltage	5	V
Vinh	INHIBIT input voltage	Vplus+ 0.3	V
Io	Output current	Internally limited	A

OPERATING CONDITIONS (NOTE 2)

Symbol	Parameter	Value	Unit
Vminus	DC input voltage	-9	V

Note 1. Exceeding the absolute maximum rating may damage the device

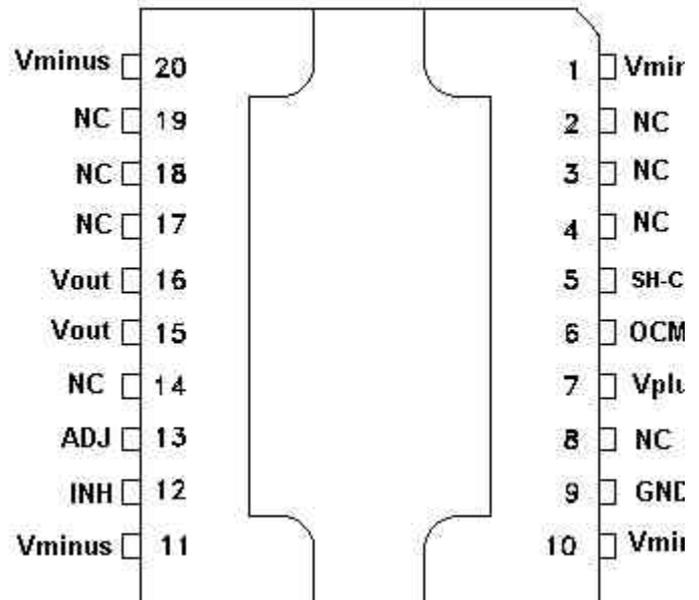
Note 2. The device is not guaranteed to function outside its operating rating.

THERMAL INFORMATIONS

R _{thj-a}	Thermal Resistance Junction-Ambient Power So-20 slug-up	2	°C/W
T _o	Operating junction temperature range	-40 to 150	°C
T _{STG}	Storage Temperature Range	-40 to 150	°C

PIN CONFIGURATION

Pin N° SO-20	Pin Name	Pin Function
1	Vminus	Vminus
2	NC	NOT CONNECTED
3	NC	NOT CONNECTED
4	NC	NOT CONNECTED
5	SH-CNTRL	SHORT CIRCUIT Control
6	OCM	OVER CURRENT MONITOR
7	V _{Plus}	Voltage input for Ocm & Inhibit state
8	NC	NOT CONNECTED
9	GND	COMMON GROUND
10	Vminus	Vminus
11	Vminus	Vminus
12	INH	INHIBIT
13	ADJ	ADJ (Adjustable version)
14	NC	NOT CONNECTED
15	V _{OUT}	OUTPUT
16	V _{OUT}	OUTPUT
17	NC	NOT CONNECTED
18	NC	NOT CONNECTED
19	NC	NOT CONNECTED
20	Vminus	Vminus



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ELECTRICAL CHARACTERISTICS:

Unless otherwise specified , $V_{in} = V_{out} - 2.5 V$, $V_{out} = -3V$, $V_{plus} = 3V$, $T_j = 25^\circ C$, $C_{in} = 1 \mu F$, $C_{out} = 1 \mu F$

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
V_{IN}	Operating input voltage	$I_{out} = 3A$ $T_j = -55^\circ$ to $125^\circ C$	-3		-9	V
V_{OUT}	Output voltage accuracy	$I_{out} = 5mA$ $T_j = -55^\circ$ to $125^\circ C$	-2		2	%
V_{OUT}	Operating output voltage	$I_{out} = 3A$ $T_j = -55^\circ$ to $125^\circ C$	-1.21		-7	V
I_{short}	Output current limit	Adjustable		4.5		A
$\Delta V_o/V_i$	Line regulation	$V_i = V_{out} - 2.5$ to $-12V$ $I_{out} = 5mA$		1		%
$\Delta V_o/V_{oL_o}$	Load regulation	$I_{out} = 5mA$ to $3A$		1		%
V_{plus} Quiescent current	Quiescent current I_q , Plus $T_j = -55^\circ$ to $125^\circ C$ $V_{plus} = 3V$	On mode Output shorted to GND, $I_{ocm} = 0mA$		200		μA
		On mode, Output shorted to GND, $I_{ocm} = 10mA$		500		
		On mode $I_{out} = 0$		170		
		Off mode, $V_{inh} = 3V$		200		
I_q (V_{minus})	Quiescent Current, $T_j = -55^\circ$ to $125^\circ C$	$V_i = V_{out} - 2.5$ to $-12V$, On mode $I_{out} = 5 mA$		3	4	mA
		$V_i = V_{out} - 2.5$ to $-12V$, On mode $I_{out} = 30 mA$		5	6	
		$V_i = V_{out} - 2.5$ to $-12V$, On mode $I_{out} = 300 mA$		20	35	
		$V_i = V_{out} - 2.5$ to $-12V$, On mode $I_{out} = 1 A$		40	75	
		$V_i = V_{out} - 2.5$ to $-12V$, On mode $I_{out} = 2 A$		80	140	
		$V_i = V_{out} - 2.5$ to $-12V$, On mode $I_{out} = 3 A$		150	240	
		OFF mode $V_{inh} = 3V$ $V_{plus} = 3V$		0.3		
V_d	Dropout voltage	$I_{out} = 400 mA$, $T_j = -55^\circ$ to $125^\circ C$		0.4	0.8	V
		$I_{out} = 1 A$, $T_j = -55^\circ$ to $125^\circ C$		0.6	1.2	
		$I_{out} = 2 A$, $T_j = -55^\circ$ to $125^\circ C$		0.95	2	
		$I_{out} = 3 A$, $T_j = -55^\circ$ to $125^\circ C$		1.3	2.6	
V_{INH} $V_{INH, Off}$ $V_{INH, On}$	Inhibit voltage turn, Off voltage turn-On voltage	$V_{plus} = 3V$ $T_j = -55^\circ$ to $125^\circ C$	2		0.8	V
SVR	Supply voltage rejection	$V_{in} = V_{out} - 2.5 \pm 0.5 V$ $I_{out} = 15mA$ $f = 120 Hz$ $f = 33 KHz$		70 30		dB
I_{INH}	Shutdown input current	$V_{plus} = 3V$ $V_{INH} = 3V$		15		μA
C_{out}	Output capacitance	$I_{out} = 0$ to $3A$		1		μF
ESR	Electrical series Resistance	$I_{out} = 0$ to $3A$	2		6	ohm
V_{OCML}	Overcurrent monitor voltage Low	$V_{plus} = 3V$ $I_{ocm} = 10 mA$ (sunked current)		0.6		V
V_{OCMH}	Overcurrent monitor voltage High	$I_{ocm} = -10\mu A$ (sourced current), $V_i = V_{out} - 2.5$ $V_{plus} = 3V$		V_{plus}		V
en/V_{out}	Output noise voltage	$10Hz < freq < 100 KHz$		400		$\mu V_{rms}/V$