



CISSOID The SOI design Specialists

CHT-LD-100

*Preliminary datasheet
Version 0.0 (09/2004)*

High-Temperature, 10V, 1A, Low-Dropout SOI-CMOS Voltage Regulator.

General Description

The CHT-LD-100 is a 1A, low-dropout linear voltage regulator compatible with high-temperature environments. Typical operation temperature range extends from -30°C to 225°C.

The circuit is stable throughout the whole temperature range and with a large choice of capacitive loads.

The minimum dropout voltage is 2V with a 1A load and 1V for load currents lower than 100mA. The input voltage may span from 11 Volts to 25 Volts.

The circuit is a one-die solution.

CHT-LD-100 is available in die and packages (currently TO-3 and TO-220) on demand.

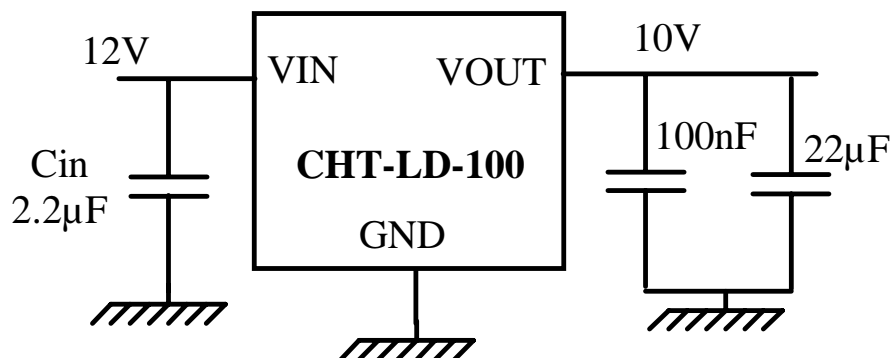
Applications

Power supplies for high-temperature electronic systems used in Well logging, Automotive, Aeronautics or Aerospace applications.

Features

- 11V to 25V input Voltage @100mA
- 12V to 25V input Voltage @1A
- Max 1A output current @ 225°C
- 60dB input ripple rejection (0-100Hz)
- C_{load} from 100nF to 1000 μ F, large ESR range
- Available on die or in custom package on demand. (3-pins compatible)
- Stand-by mode available. (4-pins)
- Tungsten interconnects for long-term reliability
- The start-up is operative over the whole temperature range
- Latch-up free

Typical application



Absolute Maximum Ratings

Supply Voltage V_{in} 40V
 Junction Temperature⁽¹⁾ (T_j) 315°C
 Power dissipation⁽²⁾

Operating Conditions

Supply Voltage 11V to 25V
 Junction temperature -30°C to 225°C
 Power Dissipation⁽²⁾

ESD Rating (expected)

Human Body Model >1kV

Electrical Characteristics

$V_{in} = V_{out} + 2V$, $T = 25^\circ C$ (unless otherwise stated)

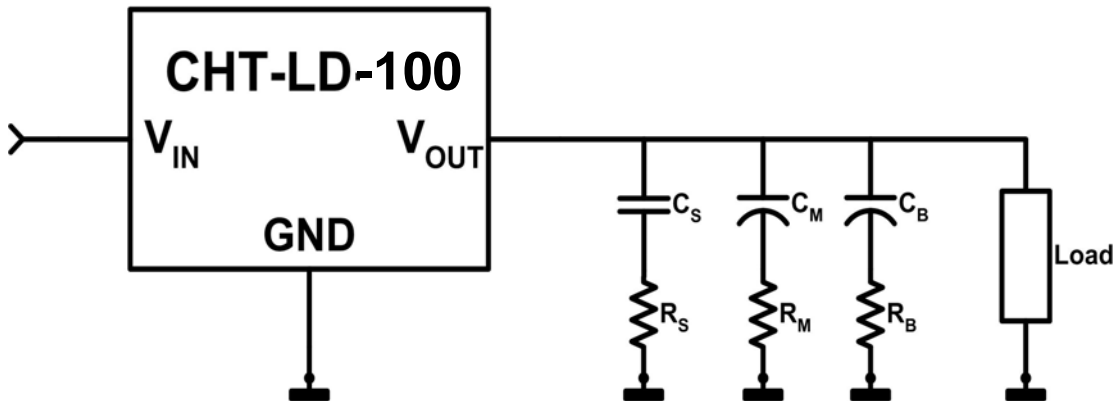
Parameter	Condition	Min	Typ	Max	Units
Output voltage accuracy	$I_L = 10mA$	9.9 -1	10	10.1 1	V %
Output voltage accuracy	$I_L = 10mA$ $-30^\circ C < T_j < 225^\circ C$	9.8 -2	10	12.2 2	V %
Output voltage line regulation	$V_{in} = V_{out} + 2V$ to $V_{out} + 15V$ $I_L = 60mA$, $-30^\circ C < T_j < 225^\circ C$	-1		1	mV/V
Output voltage load regulation (i.e. R_{out})	$I_L = 10mA$ to 1A $V_{in} = V_{out} + 2V$ $-30^\circ C < T_j < 225^\circ C$		0.05	0.1	V/A
(Vin-Vout) (drouput)	$I_L = 100mA$, $-30^\circ C < T_j < 225^\circ C$	1			V
	$I_L = 1A$, $-30^\circ C < T_j < 225^\circ C$	2			V
Quiescent Ground Pin current	$0 < I_L < 1A$ $T_j = -30^\circ C$ $T_j = 225^\circ C$			10 9.5	mA
Power supply rejection ratio	$f = 0Hz \dots 200Hz$ $I_{load} = 100mA$	>60			dB
Foldback current				tbd	A
Short-circuit current	$20^\circ C < T_j < 225^\circ C$ $T_j = -20^\circ C$			tbd tbd	mA
Output noise	10Hz-10kHz $I_L = 100mA$, $-30^\circ C < T_j < 225^\circ C$		200		μV_{RMS}

Notes:

(1) Above 225°C, a minimum load current of few mA (<10 mA) could be required.

(2) Power dissipation depends on packaging. For a package with 5°C/W (R_{th}),
 $P_{max} = (\text{Max junction temperature} - \text{Environment temperature}) / R_{th}$.

Output Load, recommended specifications



Resistances in series with capacitors represent the internal ESR of these capacitors.

For large capacitors:

$C_B = 0$ to $1000\mu\text{F}$

$R_B = 0.2$ to $\infty \Omega$

For medium capacitors:

$C_M = 0$ to $6\mu\text{F}$

$R_M = 0.1$ to 1Ω

For small Capacitors:

$C_S = 100\text{n}$ to 220nF

$R_S = 10\text{m}$ to $50\text{m} \Omega$

Fast load current transients

tbd

Contact & Ordering

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