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## CHT-LD-100

*Preliminary datasheet  
Version 0.0 (09/2004)*

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

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#### 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

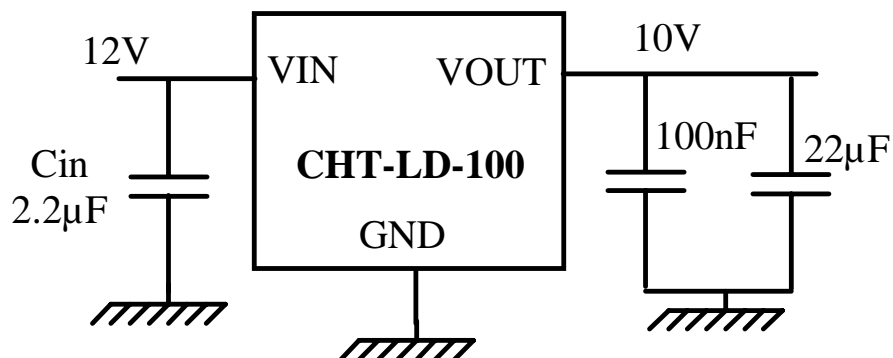
Power supplies for high-temperature electronic systems used in Well logging, Automotive, Aeronautics or Aerospace applications.

#### 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 $\mu$ 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

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#### Typical application



### Absolute Maximum Ratings

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

### Operating Conditions

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

### 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<br>-1 | 10   | 10.1<br>1  | V<br>%        |
| Output voltage accuracy                          | $I_L = 10mA$<br>$-30^\circ C < T_j < 225^\circ C$  | 9.8<br>-2 | 10   | 12.2<br>2  | V<br>%        |
| Output voltage line regulation                   | $V_{in} = V_{out} + 2V$ to $V_{out} + 15V$<br>$I_L = 60mA$ , $-30^\circ C < T_j < 225^\circ C$ | -1        |      | 1          | mV/V          |
| Output voltage load regulation (i.e. $R_{out}$ ) | $I_L = 10mA$ to 1A<br>$V_{in} = V_{out} + 2V$<br>$-30^\circ C < T_j < 225^\circ C$             |           | 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                     | $0 < I_L < 1A$<br>$T_j = -30^\circ C$<br>$T_j = 225^\circ C$                                   |           |      | 10<br>9.5  | mA            |
| Power supply rejection ratio                     | $f = 0Hz \dots 200Hz$<br>$I_{load} = 100mA$  | >60       |      |            | dB            |
| Foldback current                                 |  |           |      | tbd        | A             |
| Short-circuit current                            | $20^\circ C < T_j < 225^\circ C$<br>$T_j = -20^\circ C$  |           |      | tbd<br>tbd | mA            |
| Output noise                                     | 10Hz-10kHz<br>$I_L = 100mA$ , $-30^\circ C < T_j < 225^\circ C$                                |           | 200  |            | $\mu V_{RMS}$ |

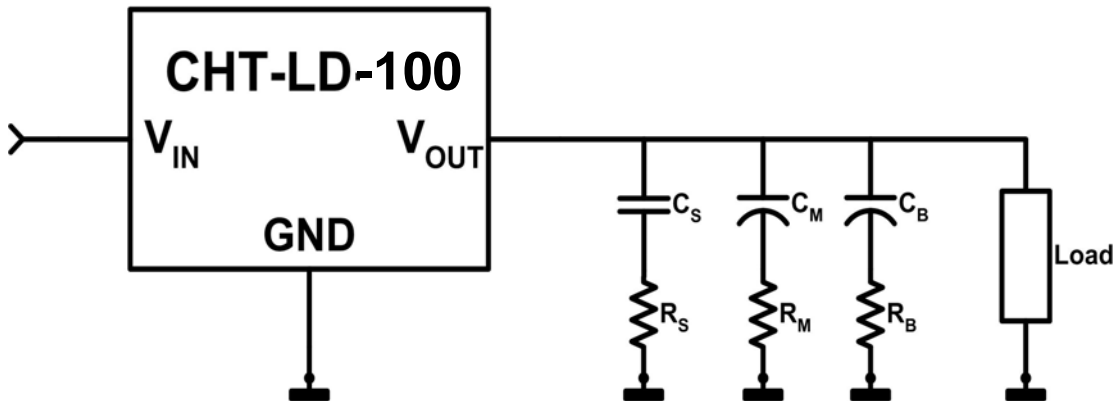
#### Notes:

(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  $5^\circ C/W$  ( $R_{th}$ ),  
 $P_{max} = (\text{Max junction temperature} - \text{Environment temperature}) / R_{th}$ .

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## 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  $1 \Omega$

For small Capacitors:

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

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

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## Fast load current transients

tbd

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## Contact & Ordering

CISSOID S.A.  
 Chemin du cyclotron, 6  
 1348 Louvain-la-Neuve  
 Belgium

Tel : +3210489210

Fax : +3210489219

[sales@cissoid.com](mailto:sales@cissoid.com)

<http://www.cissoid.com>

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