

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 1000µF, 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

Operating Conditions

Supply Voltage Junction temperature

Power Dissipation (2)

Supply Voltage Vin	40V			
Junction Temperature ⁽¹⁾ (Tj)	315°C			
Power dissipation ⁽²⁾				
ESD Rating (expected)				
Human Body Model	>1kV			

11V to 25V -30°C to 225°C

Electrical Characteristics

Parameter	Condition	Min	Тур	Max	Units
Output voltage accuracy	I _L =10mA	9.9	10	10.1	V
		-1		1	%
Output voltage accuracy	I∟=10mA	9.8	10	12.2	V
	-30°C <tj <225°c<="" td=""><td>-2</td><td></td><td>2</td><td>%</td></tj>	-2		2	%
Output voltage line	Vin=Vout+2V to Vout + 15V	-1		1	mV/V
regulation	I _L =60mA, -30°C <tj <225°c<="" td=""><td></td><td></td><td></td><td></td></tj>				
Output voltage load	$I_L=10mA$ to 1A		0.05	0.1	V/A
regulation	Vin=Vout+2V				
(i.e. R _{out})	-30°C <1j <225°C				
(Vin-Vout)	I∟=100mA, -30°C <tj <225°c<="" td=""><td>1</td><td></td><td></td><td>V</td></tj>	1			V
(droupout)	I _L =1A, -30°C <tj <225°c<="" td=""><td>2</td><td></td><td></td><td>V</td></tj>	2			V
Quiescent Ground Pin	0 < I _L <1A				mA
current	$T_j = -30^{\circ}C$			10	
	T _j = 225°C			9.5	
Power supply rejection	f=0Hz200Hz	>60			dB
ratio	I _{load} =100mA				
Foldback current				tbd	A
Short-circuit current	20°C <tj <225°c<="" td=""><td></td><td></td><td>tbd</td><td>mA</td></tj>			tbd	mA
	Tj =-20°C			tbd	
Output noise	10Hz-10kHz		200		μV _{RMS}
	I _L =100mA, −30°C <tj <225°c<="" td=""><td></td><td></td><td></td><td></td></tj>				

Vin= Vout+2V, T=25°C (unless otherwise stated)

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}),

- Pmax=(Max junction temperature Environment temperature)/R_{th}.



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

$$\label{eq:capacitors} \begin{split} \hline For large capacitors: \\ C_{\text{B}} = 0 \text{ to } 1000 \mu\text{F} \\ R_{\text{B}} = 0.2 \text{ to } \infty \ \Omega \\ \hline For medium capacitors: \\ C_{\text{M}} = 0 \text{ to } 6 \mu\text{F} \\ R_{\text{M}} = 0.1 \text{ to } 1 \ \Omega \end{split}$$

 $\label{eq:constraint} \begin{array}{l} \hline For small Capacitors: \\ C_s = 100n \ to \ 220nF \\ R_s = 10m \ to \ 50m \ \Omega \end{array}$

Fast load current transients

tbd

Contact & Ordering

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