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Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

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Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



5 V and 8 V voltage regulator

Features

- Output currents up to 1 A
- Fixed precision output 1 voltage $5\text{ V} \pm 2\%$
- Fixed precision output 2 voltage $8\text{ V} \pm 2\%$
- Output 1 with disable by TTL input
- Output 2 with disable by TTL input
- Short circuit protection at both outputs
- Thermal protection
- Low drop output voltage

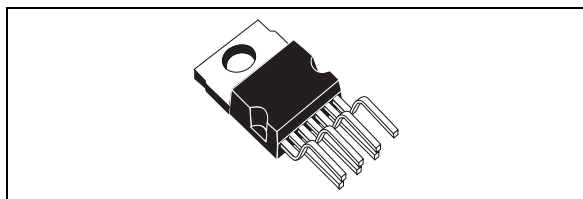


Table 1. Device summary

Order code	Packaging
STV8131	Tray

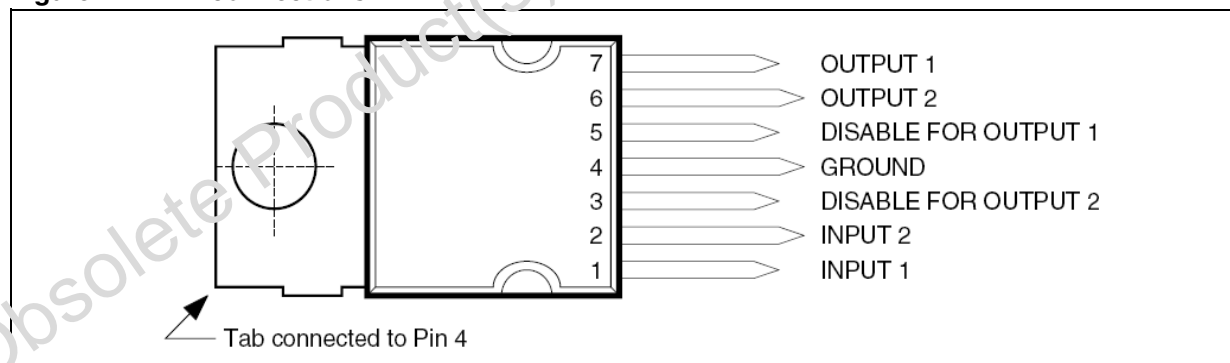
Description

The STV8131 is a monolithic dual positive voltage regulator designed to provide fixed precision output voltages of 5 V and 8 V at currents up to 1A.

Each output can be disabled separately by a TTL input.

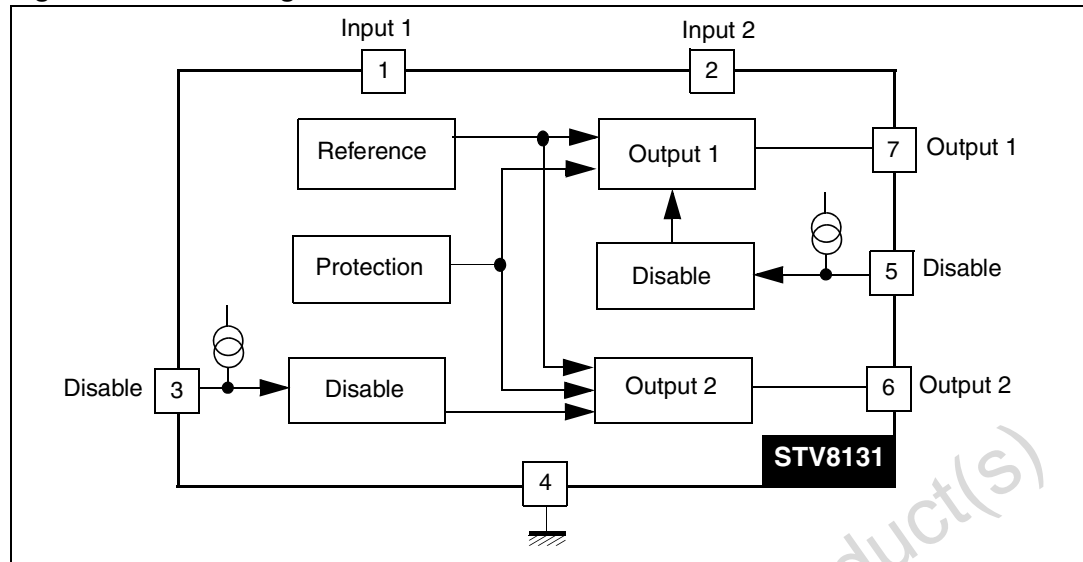
Short circuit and thermal protections are included.

Figure 1. Pin connections



1 Block diagram

Figure 2. Block diagram



2 Circuit description

The STV8131 is a dual voltage regulator with separate disable for each output.

The two regulation parts are supplied from one voltage reference circuit trimmed by zener zap during EWS test.

Since the supply voltage of this last is connected at Pin 1 (V_{IN1}), the regulator 2 will not work if Pin 1 is not supplied.

The outputs stage have been realized in a Darlington configuration with a drop typical 1.2V.

For each output a disable circuit switches-off this output if a voltage lower than 0.8V is applied at corresponding Pin (Pin 3 for output 2, Pin 5 for output 1).

3 Absolute maximum ratings

Table 2. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{IN}	DC input voltage Pin 1	20	V
V_{DIS}	Disable Input voltage Pin 3-5	20	V
$I_{O1,2}$	Output currents	Internally limited	
P_t	Power dissipation	Internally limited	
T_{STG}	Storage temperature	- 65 to + 150	°C
T_J	Junction temperature	0 to + 150	°C

4 Thermal data

Table 3. Thermal data

Symbol	Parameter	Value	Unit
$R_{TH(j-c)}$	Thermal resistance junction-case	Max 3	°C/W
T_J	Recommended junction temperature	Max	°C

5 Electrical characteristics

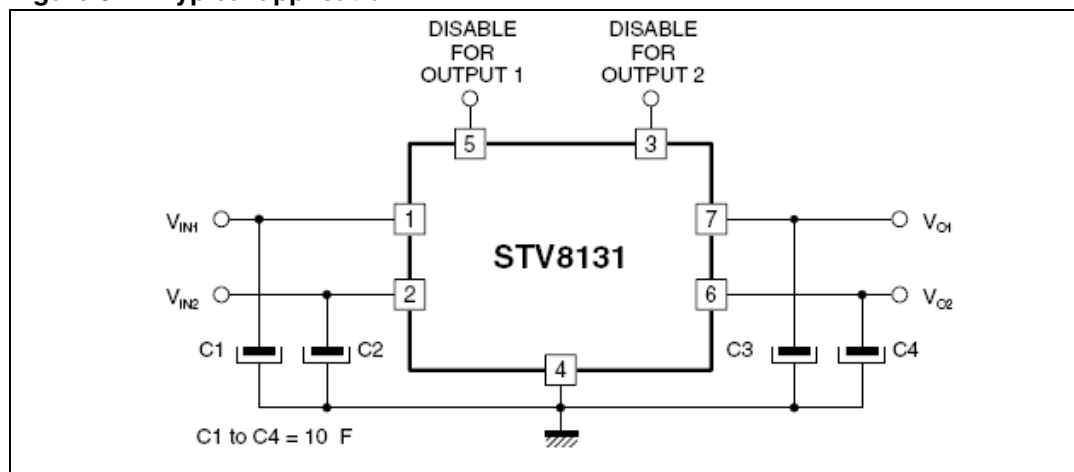
$V_{IN1} = 7\text{ V}$, $V_{IN2} = 10\text{ V}$, $T_J = 25\text{ °C}$ unless otherwise specified.

Table 4. Electrical characteristics

Symbol	Parameter	Test conditions	Min	Typical	Max	Unit
V_{O1}	Output voltage	$I_{O1} = 10\text{ mA}$	4.9	5	5.1	V
V_{O2}	Output voltage	$I_{O2} = 10\text{ mA}$	7.84	8	8.16	V
V_{O1} V_{O2}	Output voltage	$5\text{ mA} < I_{O1,2} < 750\text{ mA}$ $7\text{ V} < V_{IN1} < 14\text{ V}$ $10\text{ V} < V_{IN2} < 14\text{ V}$	4.8 7.7		5.2 8.3	V V
$V_{IO1,2}$	Dropout voltage	$I_{O1,2} = 750\text{ mA}$ $I_{O1,2} = 1\text{ A}$			1.4 2	V V
$V_{O1,2LI}$	Line regulation	$7\text{ V} < V_{IN1} < 14\text{ V}$ $10\text{ V} < V_{IN2} < 14\text{ V}$ $I_{O1,2} = 200\text{ mA}$			50 80	mV mV
$V_{O1,2LO}$	Load regulation	$5\text{ mA} < I_{O1} < 0.6\text{ A}$ $5\text{ mA} < I_{O2} < 0.6\text{ A}$			100 160	mV mV
I_Q	Quiescent current	$I_{O1} = 10\text{ mA}$ Output 2 disabled			2	mA
$K_{O1,2}$	Output voltage thermal drift	$K_0 = \frac{\Delta V_0 \cdot 10^6}{\Delta T \cdot V_0}$ $T_J = 0\text{ to } +125\text{ °C}$		100		ppm/°C
$I_{O1,2SC}$	Short circuit output current	$V_{IN1} = 7\text{ V}$, $V_{IN2} = 10\text{ V}$ $V_{IN2} = 16\text{ V}^{(1)}$			1.6 1	A A
V_{DISH}	Disable voltage high (corresponding out active)		2			V
V_{DISL}	Disable voltage low (corresponding out disabled)				0.8	V
I_{DIS}	Disable bias current	$0\text{ V} < V_{DIS} < 7\text{ V}$	-30		2	μA
T_{jsd}	Junction temperature for thermal shut down			145		°C

1. Safe permanent short-circuit is only guaranteed for input voltages up to 16 V.

Figure 3. Typical application



6 Package mechanical data

Figure 4. 9-pin package

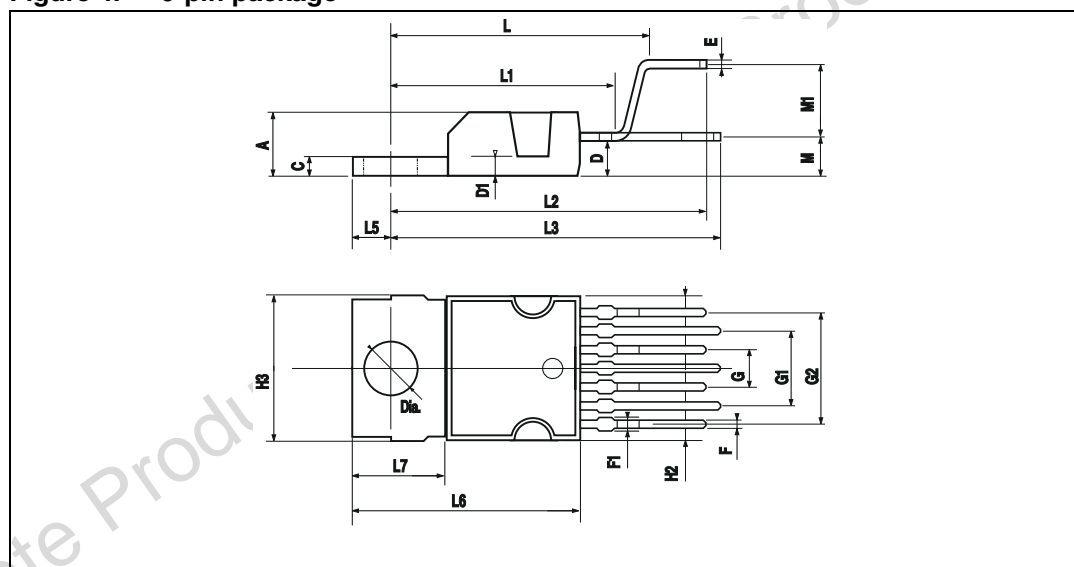


Table 5. JEDEC standard package dimensions

Dimensions	Millimeters			Inches		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
A			4.8			0.189
C			1.37			0.054
D	2.4		2.8	0.094		0.110
D1	1.2		1.35	0.047		0.053
E	0.35		0.55	0.014		0.022
F	0.6		0.8	0.024		0.031
F1			0.9			0.035
G	2.41	2.54	2.67	0.095	0.100	0.105
G1	4.91	5.08	5.21	0.193	0.200	0.205
G2	7.49	7.62	7.80	0.295	0.300	0.307
H2			10.4			0.409
H3	10.05		10.40	0.396		0.409
L		16.97			0.668	
L1		14.92			0.587	
L2		21.54			0.848	
L3		22.62			0.891	
L5	2.6		3.0	0.102		0.118
L6	15.10		15.80	0.594		0.622
L7	6.0		6.6	0.236		0.260
M		2.8			0.110	
M1		5.08			0.200	
Dia.	3.65		3.85	0.144		0.152

6.1 Environmentally-friendly packages

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance.

ECOPACK specifications, grade definitions and product status are available at: www.st.com. ECOPACK is an ST trademark.

7 Revision history

Table 6. Document revision history

Date	Revision	Changes
September 2003	1	Initial release
23-Feb-2009	2	Preliminary banner removed, template updated and Section 6.1 added

Obsolete Product(s) - Obsolete Product(s)

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