



L11831A/B

Preliminary

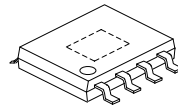
CMOS IC

MAXIMUM 3A, ULTRA LOW DROPOUT REGULATOR WITH ENABLE

DESCRIPTION

The UTC **L11831A/B** is a positive voltage regulator with high performance. It has low dropout voltage and low input voltage, besides its output voltage can be fixed at 1V, 1.05V, 1.2V, 1.5V, 1.8V, or 2.5V depending on internal feedback resistors or ADJ (not connected to the ground) with external feedback resistors. The input voltage of UTC **L11831A/B** can be low to 1.4V. There are two additional pin in the UTC **L11831A/B**. One is EN pin and the other is POK pin.

The UTC **L11831A/B** is specially made for applications with low input voltage, low dropout voltage, and low output voltage which is almost the same as the input voltage. Typical applications include motherboards, notebooks, set top boxes, network cards and peripheral cards.



HSOP-8

FEATURES

- * V_{IN} as low as 1.4V and V_{DD} voltage 5V
- * Maximum 3A low-dropout voltage regulator
- * High accuracy output voltage $\pm 1.5\%$
- * When disable V_O pull low resistance
- * Internal over current and over temperature protection

ORDERING INFORMATION

Ordering Number	Package	Packing
L11831AG-xx-SH2-R	HSOP-8	Tape Reel
L11831BG-xx-SH2-R	HSOP-8	Tape Reel

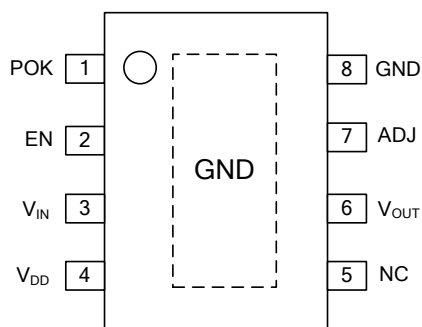
Note: xx: Output Voltage, refer to Marking Information.

<p>L11831AG-xx-SH2-R</p>	<ul style="list-style-type: none"> (1) Packing Type (2) Package Type (3) Output Voltage Code (4) Green Package (5) V_{DD} Shutdown Current 	<ul style="list-style-type: none"> (1) R: Tape Reel (2) SH2: HSOP-8 (3) xx: Refer to Marking Information (4) G: Halogen Free and Lead Free (5) A : Internal Pull High, B : Internal Pull Low
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MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
HSOP-8	12: 1.2v 15 : 1.5V 18: 1.8V 25: 2.5V	<p>A : Internal Pull High B : Internal Pull Low Voltage Code</p> <p>UTC → Date Code L11831XG → Lot Code</p>

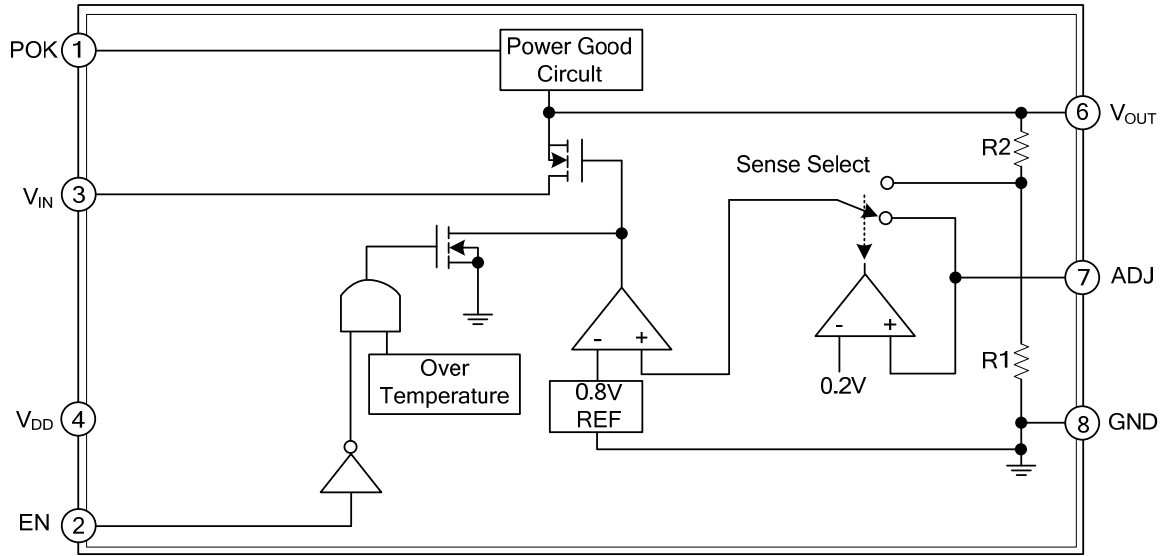
PIN CONFIGURATION



PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	POK	This pin will indicate high under this situation: V_O reaches 90% of its rating voltage. Open-drain output.
2	EN	Chip enable (active-high) / (active-low)
3	V_{IN}	The pin of input voltage.
4	V_{DD}	This pin is for input voltage to control circuit.
5	NC	No internal connection
6	V_{OUT}	Output voltage
7	ADJ	When this pin connected to the ground, V_{OUT} will be set by the internal feedback resistors. Otherwise, if using external feedback resistors to decide the V_{OUT} , $V_{OUT} = 0.8(R1+R2)/R2$ Volts.
8	GND	Ground.

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V_{DD}, V_{IN}	6	V
Power Dissipation	P_D	Internally limited	
Junction Temperature	T_J	150	°C
Operation Temperature	T_{OPR}	-40~+85	°C
Storage Temperature	T_{STG}	-65~+150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ RECOMMENDED OPERATING CONDITIONS (Note 1)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{IN}	1.4~5.5	V
Control Voltage ($V_{DD} \geq V_{OUT} + 1.5V$)	V_{DD}	3~5.5	V
Junction Temperature Range	T_J	-40~125	°C
Ambient Temperature Range	T_A	-40~85	°C

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	143	°C/W
Junction to Case	θ_{JC}	14	°C/W

■ ELECTRICAL CHARACTERISTICS

($V_{IN}=V_{OUT}+500\text{mV}$, $V_{EN}=V_{DD}=5\text{V}$, $C_{IN}=C_{OUT}=10\mu\text{F}$, $T_A=T_J=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
POR Threshold			2.4	2.7	3	V	
POR Hysteresis				0.2		V	
Adjustable Pin Threshold	V_{TH_ADJ}	$I_{OUT}=1\text{mA}$		0.2	0.4	V	
Reference Voltage (ADJ Pin Voltage)	V_{ADJ}	$I_{OUT}=1\text{mA}$	0.788	0.8	0.812	V	
Fixed Output Voltage Range	ΔV_{OUT}		-1.5	0	1.5	%	
Line Regulation (V_{IN})	ΔV_{LINE_IN}	$V_{IN}=V_{OUT}+0.5\text{V}$ to 5V , $I_{OUT}=1\text{mA}$		0.2	0.6	%	
Load Regulation (Note 2)	ΔV_{LOAD}	$V_{IN}=V_{OUT}+1\text{V}$, $I_{OUT}=1\text{mA}\sim 3\text{A}$		0.4	1	%	
Dropout Voltage (Note 3)	V_{DROP}	$I_{OUT}=2\text{A}$		200	250	mV	
		$I_{OUT}=3\text{A}$		300	350	mV	
Quiescent Current (Note 4)	I_Q	$V_{DD}=5.5\text{V}$		0.9		mA	
Current Limit	I_{LIM}		3.2	5.5		A	
Short Circuit Current		$V_{OUT}<0.2\text{V}$	0.5	1.8		A	
V_{OUT} Pull Low Resistance		$V_{EN}=0\text{V}$		100		Ω	
Chip Enable							
EN Input Bias Current	I_{EN}	$V_{EN}=0\text{V}$		12		μA	
V_{DD} Shutdown Current	L11831A	I_{SHDN}	$V_{EN}=0\text{V}$		10	20	μA
	L11831B					1	μA
EN Threshold Voltage	Logic-High	V_{ENH}	$V_{DD}=5\text{V}$	1.2			V
	Logic-Low	V_{ENL}	$V_{DD}=5\text{V}$			0.7	V
Power Good							
POK Rising Threshold				90	93	%	
POK Hysteresis			3	10		%	
POK Sink Capability		$I_{POK}=10\text{mA}$		0.2	0.4	V	
POK Delay			0.5	1.5	5	ms	
Thermal Protection							
Thermal Shutdown Temperature	T_{SD}			160		$^\circ\text{C}$	
Thermal Shutdown Hysteresis	ΔT_{SD}			30		$^\circ\text{C}$	

Notes: 1. The device is not guaranteed to function outside its operating conditions.

2. Regulation is measured at constant junction temperature by using a 2ms current pulse. Devices are tested for load regulation in the load range from 1mA to 3A.

3. The dropout voltage is defined as $V_{IN}-V_{OUT}$, which is measured when V_{OUT} is $V_{OUT(NORMAL)}-100\text{mV}$.

4. Quiescent, or ground current, is the difference between input and output currents. It is defined by $I_Q=I_{IN}-I_{OUT}$ under no load condition ($I_{OUT}=0\text{mA}$). The total current drawn from the supply is the sum of the load current plus the ground pin current.

■ TYPICAL APPLICATION CIRCUIT

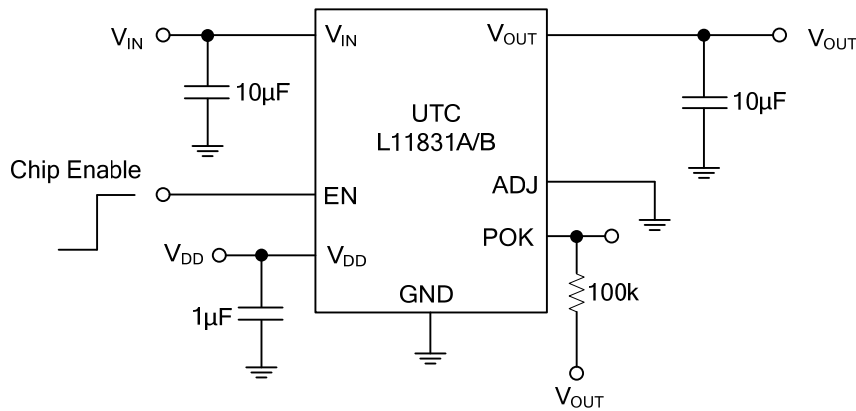


Figure 1. Fixed Voltage Regulator

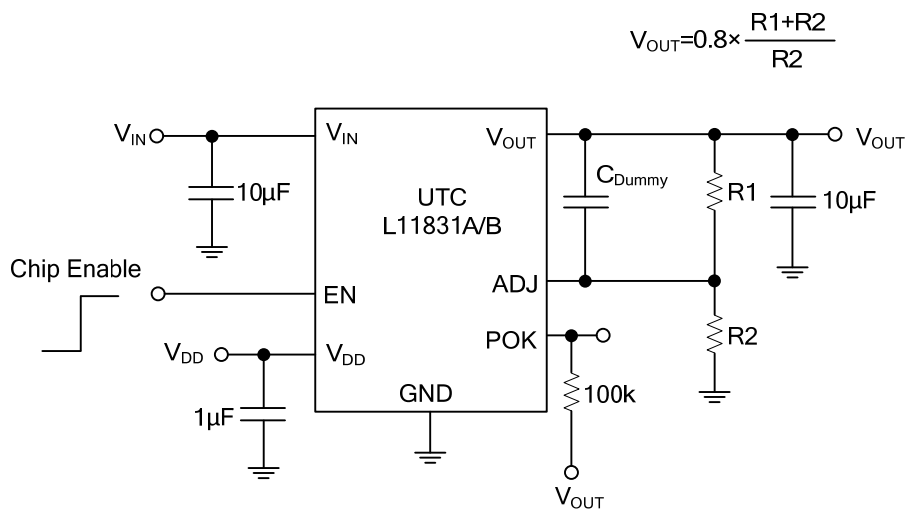


Figure 2. Adjustable Voltage Regulator

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