

**L11830**

Preliminary

CMOS IC**3A LOW DROPOUT LINEAR
REGULATOR****■ DESCRIPTION**

The UTC **L11830** belonged to low quiescent current, low dropout, linear regulators operated from 2.25V to 6V input and are guaranteed to deliver 3A. Wide range of preset output voltage options are available. Built-in low on-resistance transistor provides low dropout voltage and large output current. The UTC **L11830** is designed and optimized for battery-powered systems to work with low noise.

The UTC **L11830** consumes less than 2 μ A in shutdown mode. Other features include ultra low dropout voltage, current limiting protection, thermal shutdown protection and high ripple rejection ratio.

■ FEATURES

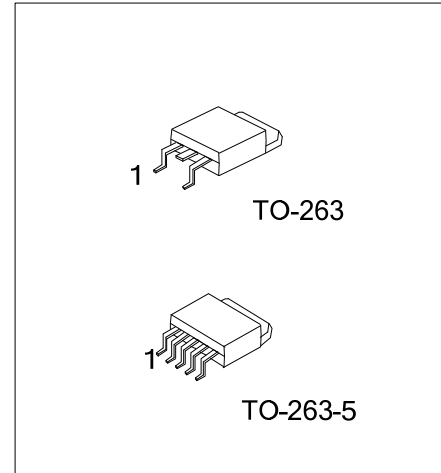
- * 3A Guaranteed Output Current
- * low quiescent current: 60 μ A (typ.)
- * 2 μ A Shutdown Current
- * Short Circuit Current Fold-back
- * Low Temperature Coefficient
- * Current Limiting Protection
- * Thermal Shutdown Protection
- * Excellent Line/Load Transient
- * SENSE Option Improves Load Regulation

■ ORDERING INFORMATION

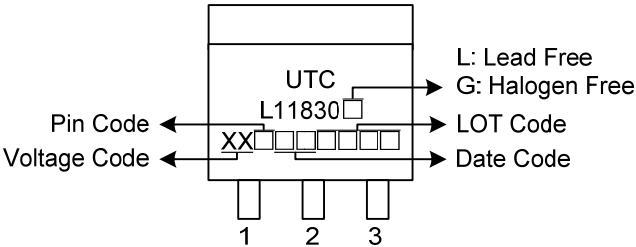
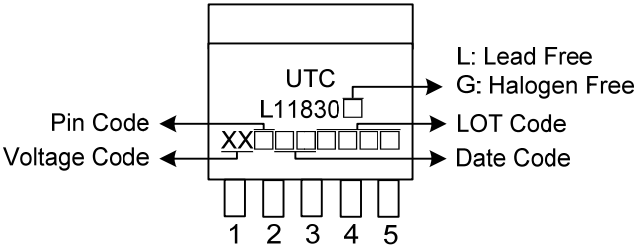
Ordering Number		Package	Pin Assignment					Packing
Lead Free	Halogen Free		1	2	3	4	5	
L11830L-xx-TQ2-D-R	L11830G-xx-TQ2-D-R	TO-263	I	G	O	-	-	Tape Reel
L11830L-xx-TQ2-D-T	L11830G-xx-TQ2-D-T	TO-263	I	G	O	-	-	Tube
L11830L-xx-TQ3-A-R	L11830G-xx-TQ3-A-R	TO-263	G	O	I	-	-	Tape Reel
L11830L-xx-TQ3-A-T	L11830G-xx-TQ3-A-T	TO-263	G	O	I	-	-	Tube
L11830L-xx-TQ5-R	L11830G-xx-TQ5-R	TO-263-5	I	S	G	A	O	Tape Reel
L11830L-xx-TQ5-T	L11830G-xx-TQ5-T	TO-263-5	I	S	G	A	O	Tube

Note: Pin Assignment: I:V_{IN} O:V_{OUT} G:GND S: SHDN A: SENSE

L11830L-xx-AA3-x-R (1) Packing Type (2) Pin Assignment (3) Package Type (4) Output Voltage Code (5) Lead Plating	(1) R: Tape Reel, T: Tube (2) refer to Pin Assignment (3) TQ2: TO-263, TQ3: TO-263, TQ5: TO-263-5 (4) xx: refer to Marking Information (5) G: Halogen Free, L: Lead Free
--	---

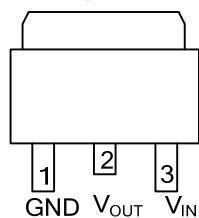


■ MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
TO-263	15 :1.5V 18 :1.8V 25 :2.5V 33 :3.3V 50 :5.0V	 The diagram shows a TO-263 package with three pins labeled 1, 2, and 3. The marking area contains the text 'UTC', 'L11830', and 'XX'. Arrows point from the marking area to the following information: 'Pin Code' points to the 'XX', 'Voltage Code' points to the 'L11830', 'L: Lead Free' points to the 'UTC', 'G: Halogen Free' points to the 'UTC', 'LOT Code' points to the 'L11830', and 'Date Code' points to the 'L11830'.
TO-263-5	15 :1.5V 18 :1.8V 25 :2.5V 33 :3.3V 50 :5.0V	 The diagram shows a TO-263-5 package with five pins labeled 1, 2, 3, 4, and 5. The marking area contains the text 'UTC', 'L11830', and 'XX'. Arrows point from the marking area to the following information: 'Pin Code' points to the 'XX', 'Voltage Code' points to the 'L11830', 'L: Lead Free' points to the 'UTC', 'G: Halogen Free' points to the 'UTC', 'LOT Code' points to the 'L11830', and 'Date Code' points to the 'L11830'.

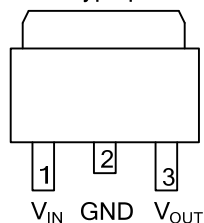
■ PIN CONFIGURATION

For A-type pinout

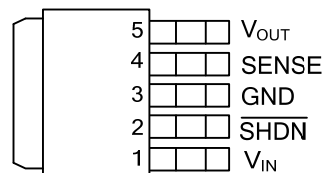


TO-263

For D-type pinout



TO-263

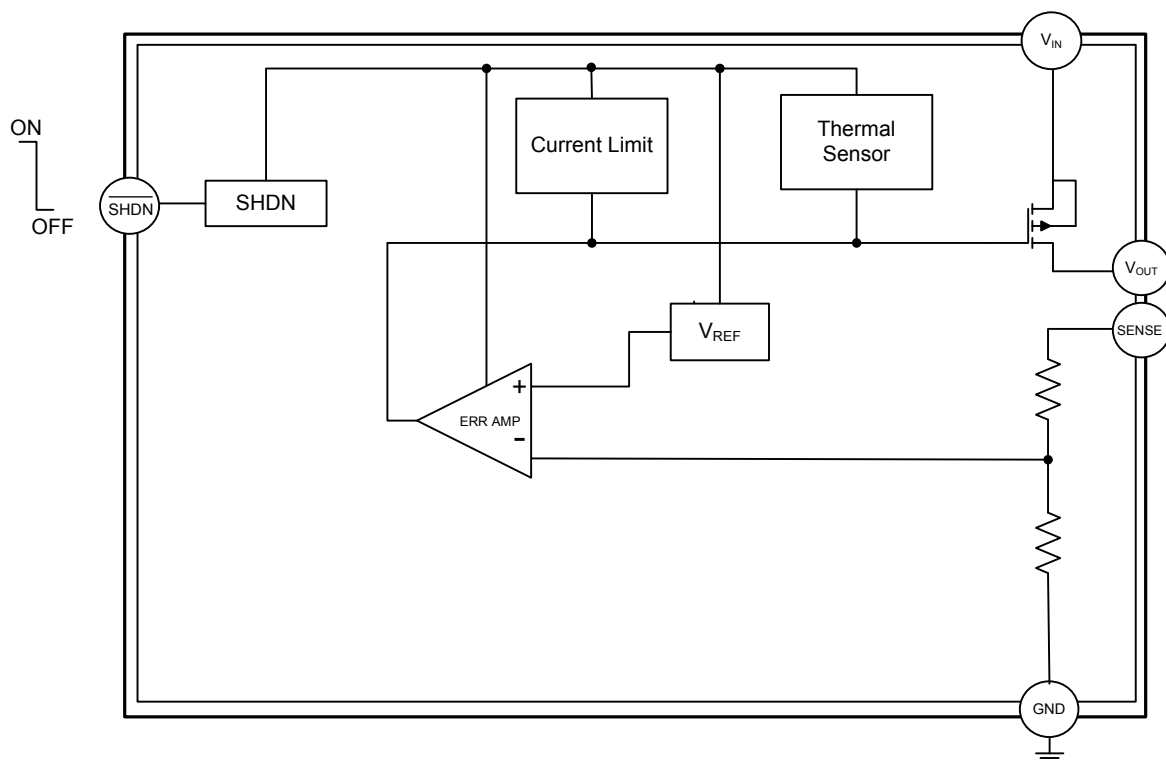


TO-263-5

■ PIN DESCRIPTION

PIN NAME	DESCRIPTION
V _{IN}	Power Input Voltage. Supply voltage can range from 2.25V to 6V. Bypass with a 0.1μF capacitor to GND.
GND	Ground
$\overline{\text{SHDN}}$	Active-Low Shutdown Input. A logic low at $\overline{\text{SHDN}}$ reduces supply current to 0.01μA. Connect $\overline{\text{SHDN}}$ to V _{IN} for normal operation.
V _{OUT}	Output Voltage
SENSE	Remote sense pin.

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING (T_A=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V _{IN}	7	V
Power Dissipation	P _D	Internally limited	mW
Junction Temperature	T _J	+150	°C
Operation Temperature	T _{OPR}	-40 ~ +125	°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.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ _{JA}	64	°C/W
Junction to Case	θ _{JC}	4	°C/W

■ ELECTRICAL CHARACTERISTICS

(V_{IN} = V_{OUT} + 1V whichever is greater, C_{IN} = 0.1μF, C_{OUT} = 2.2μF (Ceramic), T_A = 25°C, unless otherwise specified)

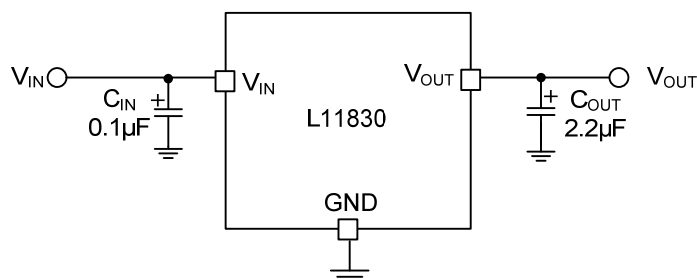
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage	V _{IN}		Note1		6	V
Output Voltage Accuracy	V _{OUT}	T _A = 25°C, I _{OUT} = 1mA ~ 3A	-2		2	%
		T _A = 0~85°C, I _{OUT} = 1mA~3A	-3		3	
Maximum Output Current	I _{OUT}			3		A
Short-Circuit Current Limit	I _{LIMIT}	V _{OUT} > 1.2V		4.5		A
Short-Circuit Current	I _{SC}	V _{OUT} < 0.4V		1		A
Ground Pin Current	I _{GND}	I _{OUT} = 0mA		60	350	μA
		I _{OUT} = 1mA to 3A		60		
Dropout Voltage (Note 2)	V _D	I _{OUT} = 3A, 1.5V ≤ V _{OUT} ≤ 1.8V			1000	mV
		I _{OUT} = 3A, 1.8V < V _{OUT} < 2.5V			700	
		I _{OUT} = 3A, 2.5V ≤ V _{OUT}			600	
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	V _{IN} = V _{OUT} + V _D ~ 6V		0.08	0.18	%/V
Load Regulation	$\frac{\Delta V_{OUT}}{I_{OUT}}$	V _{IN} = V _{OUT} + 1V, I _{OUT} = 10mA ~ 3A		0.25	1	%
Output Voltage Noise	e _N	f = 10Hz to 100kHz, C _{OUT} = 2.2μF		30		μV _{RMS}
Shutdown Supply Current	I _{OFF}	SHDN = GND		2	10	μA
Power Supply Rejection	PSRR	I _{OUT} = 100mA, f = 100Hz		60		dB
		C _{OUT} = 10μF, f = 1kHz		45		
Shutdown Threshold	V _{IH}		2			V
	V _{IL}				0.4	
Thermal Shutdown Temperature	T _{SHDN}			160		°C
Thermal Shutdown Hysteresis	DT _{SHDN}			50		

Note: 1. V_{IN(MIN)} = V_{OUT} + V_{DROPOUT}

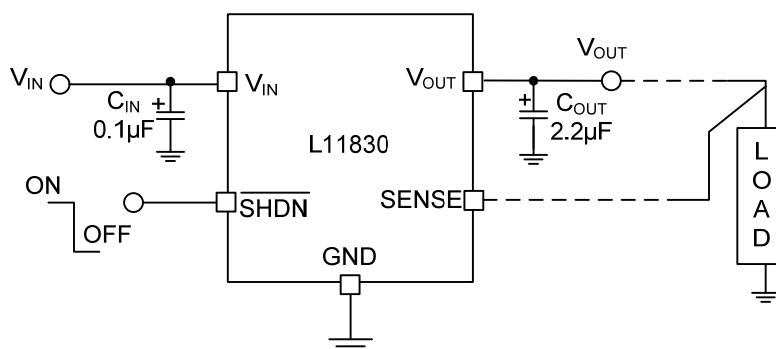
2. The dropout voltage is defined as V_{IN} - V_{OUT}, which is measured when V_{OUT} is V_{OUT(NORMAL)} × 98%

■ TYPICAL APPLICATION CIRCUIT

For To-263



For TO-263-5



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.