



# 3A LOW DROPOUT LINEAR REGULATOR

## DESCRIPTION

The UTC **LR8845** belonged to low quiescent current, low dropout linear regulators operated from 2.5V 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 **LR8845** is designed and optimized for battery-powered systems to work with low noise.

The UTC **LR8845** consumes less than 2 $\mu$ 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: 300 $\mu$ A (typ.)
- \* 2 $\mu$ 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

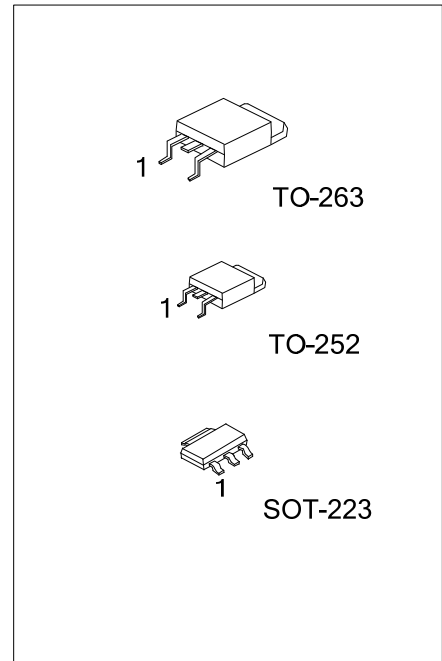
## ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
LR8845L-xx-AA3-D-R	LR8845G-xx-AA3-D-R	SOT-223	I	G	O	Tape Reel
LR8845L-xx-TN3-D-R	LR8845G-xx-TN3-D-R	TO-252	I	G	O	Tape Reel
LR8845L-xx-TN3-D-T	LR8845G-xx-TN3-D-T	TO-252	I	G	O	Tube
LR8845L-xx-TQ3-D-R	LR8845G-xx-TQ3-D-R	TO-263	I	G	O	Tape Reel
LR8845L-xx-TQ3-D-T	LR8845G-xx-TQ3-D-T	TO-263	I	G	O	Tube

Note: 1. Pin assignment: I: V<sub>IN</sub> O: V<sub>OUT</sub> G: GND

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

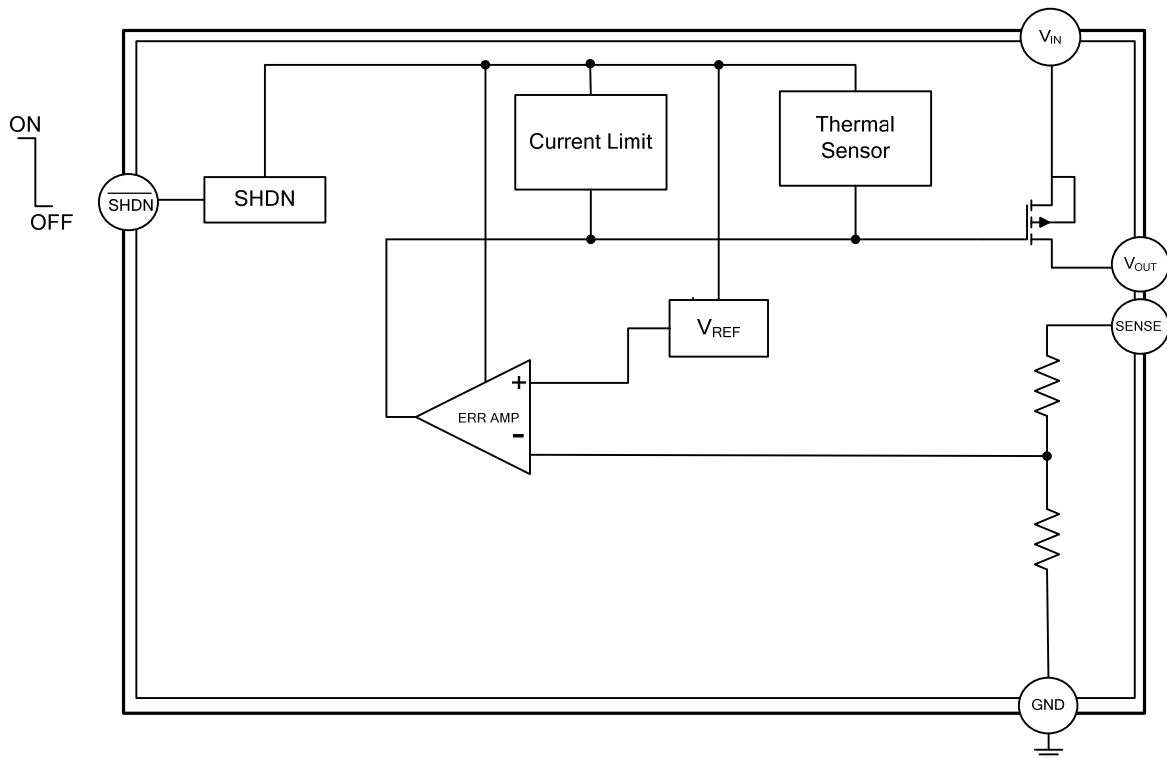
<p>LR8845L-xx-AA3-D-R</p>	<p>(1)Packing Type (2)Pin Assignment (3)Package Type (4)Output Voltage Code (5)Lead Free</p>	<p>(1) R: Tape Reel, T: Tube (2) refer to Pin Assignment (3) AA3: SOT-223, TN3: TO-252, TQ2: TO-263 (4) xx: refer to Marking Information (5) G: Halogen Free, L: Lead Free</p>
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### MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-223	25:2.5V	<p>LR8845</p> <p>Voltage Code ←</p> <p>1 2 3</p> <p>→ G: Halogen Free → L: Lead Free → Pin Code → Date Code</p>
TO-252 TO-263		<p>UTC LR8845</p> <p>Voltage Code ←</p> <p>1 2 3</p> <p>→ G: Halogen Free → L: Lead Free → Pin Code → Date Code</p>

### BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING (T<sub>A</sub>=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V <sub>IN</sub>	7	V
Power Dissipation	P <sub>D</sub>	Internally limited	mW
Junction Temperature	T <sub>J</sub>	+150	°C
Operation Temperature	T <sub>OPR</sub>	-40 ~ +85	°C
Storage Temperature	T <sub>STG</sub>	-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	TO-223	165	°C/W
	TO-252	108	
	TO-263	64	

■ ELECTRICAL CHARACTERISTICS

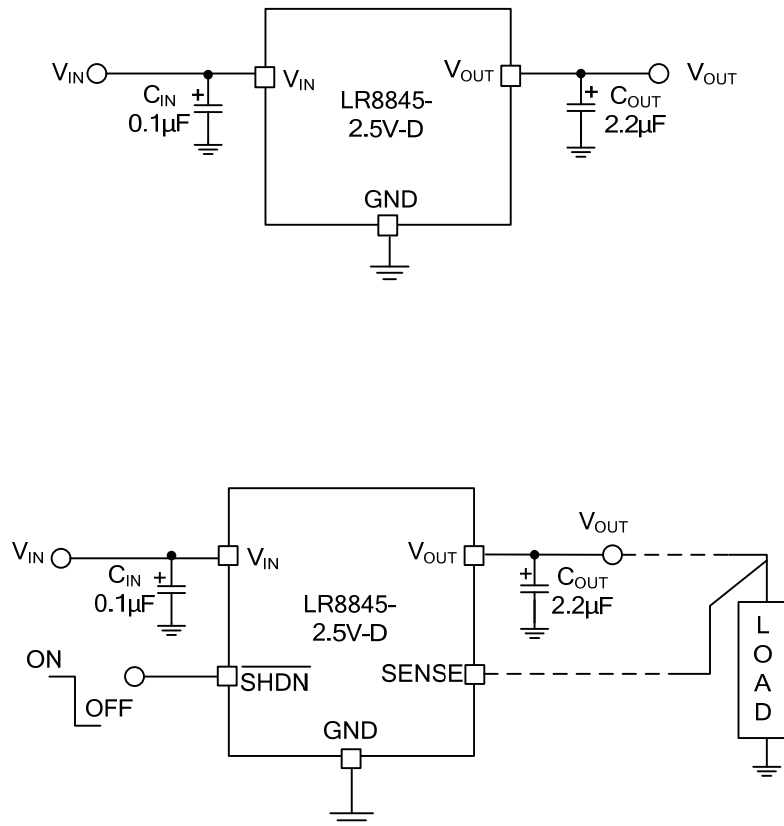
(V<sub>IN</sub> = V<sub>OUT</sub> + 1V whichever is greater, C<sub>IN</sub> = 0.1μF, C<sub>OUT</sub> = 2.2μF (Ceramic), T<sub>A</sub> = 25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage	V <sub>IN</sub>		Note1		6	V
Output Voltage Accuracy	V <sub>OUT</sub>	T <sub>A</sub> = 25°C, I <sub>OUT</sub> = 1mA ~ 3A	-2		2	%
		T <sub>A</sub> = 0~85°C, I <sub>OUT</sub> = 1mA~3A	-3		3	
Maximum Output Current	I <sub>OUT</sub>			3		A
Short-Circuit Current Limit	I <sub>LIMIT</sub>	V <sub>OUT</sub> > 1.2V		4.5		A
Short-Circuit Current	I <sub>SC</sub>	V <sub>OUT</sub> < 0.4V		1.7		A
Ground Pin Current	I <sub>GND</sub>	I <sub>OUT</sub> = 0mA		300	400	μA
		I <sub>OUT</sub> = 1mA to 3A		300		
Dropout Voltage (Note 2)	V <sub>D</sub>	I <sub>OUT</sub> = 3A	1.5V ≤ V <sub>OUT</sub> ≤ 1.8V		1000	mV
			1.8V < V <sub>OUT</sub> < 2.5V		700	
			2.5V ≤ V <sub>OUT</sub>	300	450	
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	V <sub>IN</sub> = V <sub>OUT</sub> + V <sub>D</sub> ~ 6V		0.1	0.2	%/V
Load Regulation	$\Delta V_{OUT}$	V <sub>IN</sub> = V <sub>OUT</sub> + 1V, I <sub>OUT</sub> = 10mA ~ 3A		0.2	1	%
Output Voltage Noise	e <sub>N</sub>	f = 10Hz to 100kHz, C <sub>OUT</sub> = 2.2μF		30		μV <sub>RMS</sub>
Shutdown Supply Current	I <sub>OFF</sub>	SHDN = GND		2	10	μA
Power Supply Rejection	PSRR	I <sub>OUT</sub> = 100mA C <sub>OUT</sub> = 10μF	f = 100Hz	70		dB
			f = 1kHz	60		
Shutdown Threshold	V <sub>IH</sub>		2			V
	V <sub>IL</sub>				0.4	
Thermal Shutdown Temperature	T <sub>SHDN</sub>			150		°C
Thermal Shutdown Hysteresis	DT <sub>SHDN</sub>			20		

Notes: 1. V<sub>IN(MIN)</sub> = V<sub>OUT</sub> + V<sub>DROPOUT</sub>

2. The dropout voltage is defined as V<sub>IN</sub> - V<sub>OUT</sub>, which is measured when V<sub>OUT</sub> is V<sub>OUT(NORMAL)</sub> × 98%

## ■ TYPICAL APPLICATION CIRCUIT



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