



2A LOW DROPOUT LINEAR REGULATOR

DESCRIPTION

The UTC **LR3865** belonged to low-dropout, linear regulators operate from 2.5V to 6V input and are guaranteed to deliver 2A. 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 **LR3865** is designed and optimized for battery-powered systems to work with low noise.

The UTC **LR3865** consumes less than 0.5 μ A in shutdown mode. Other features include ultra low dropout voltage, current limiting protection, thermal shutdown protection and high ripple rejection ratio.

FEATURES

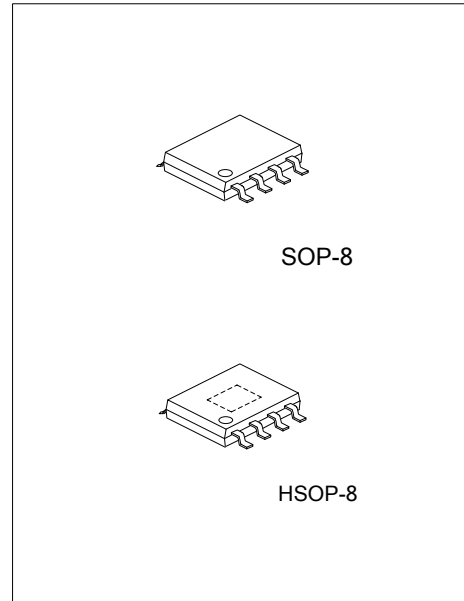
- * 2A Guaranteed Output Current
- * 0.5 μ A Shutdown Current
- * Current Limiting Protection
- * Thermal Shutdown Protection
- * Excellent Line/Load Transient

ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
LR3865L-xx-S08-X-R	LR3865G-xx-S08-X-R	SOP-8	Tape Reel
LR3865L-xx-SH2-R	LR3865G-xx-SH2-R	HSOP-8	Tape Reel

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

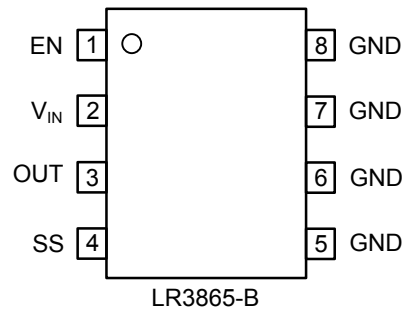
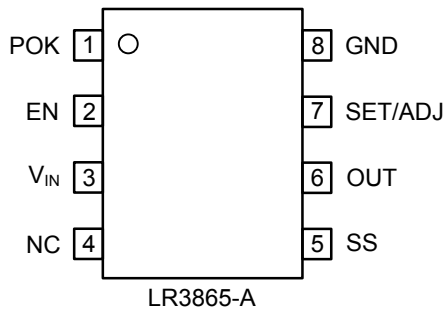
<p>LR3865G-xx-S08-X-R</p>	<p>(1) R: Tape Reel (2) refer to PIN CONFIGURATION (3) S08: SOP-8, SH2: HSOP-8 (4) xx: Refer to Marking Information (5) G: Halogen Free and Lead Free, L: Lead Free</p>
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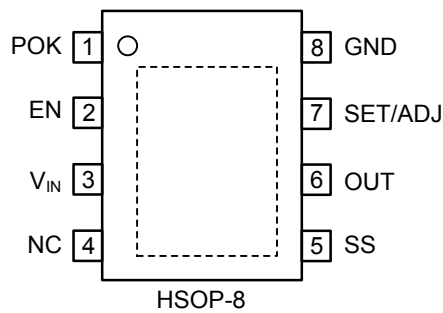
MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOP-8 HSOP-8	15: 1.5V 18: 1.8V 20: 2.0V 25: 2.5V 30: 3.0V 33: 3.3V 50: 5.0V AD: ADJ	

PIN CONFIGURATION



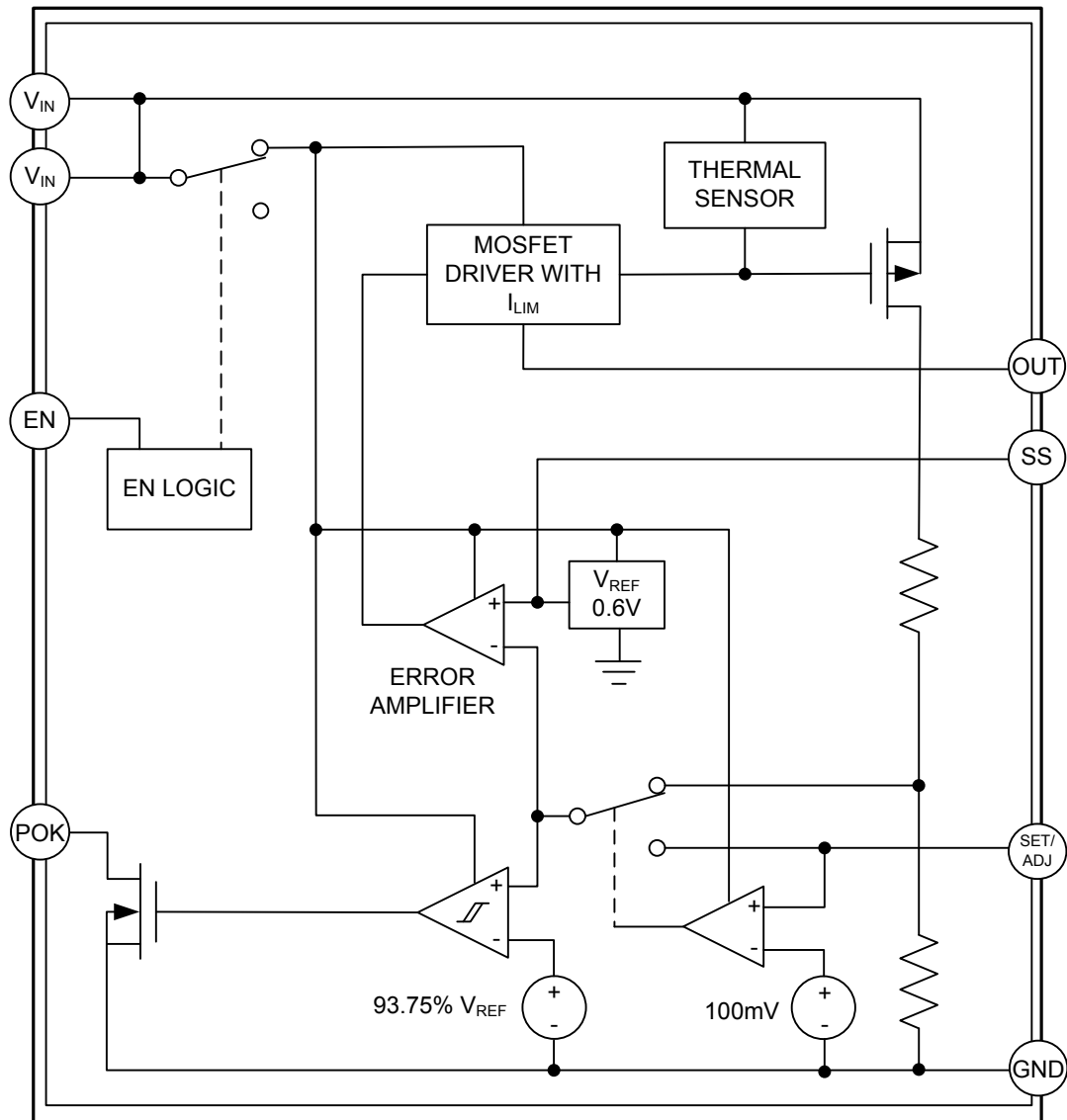
SOP-8



■ PIN DESCRIPTION

PIN No.			PIN NAME	DESCRIPTION
SOP-8		HSOP-8		
A	B			
2	1	2	EN	Active-High Enable Input. A logic low at EN reduces supply current to 0.5 μ A. In shutdown, the POK output is low. Connect $\overline{\text{EN}}$ to V_{IN} for normal operation.
3	2	3	V_{IN}	Power Input Voltage. Supply voltage can range from 2.5V to 6V. Bypass with a 10 μ F capacitor to GND.
6	3	6	OUT	Output
5	4	5	SS	Soft start time setting. For adjustable soft start time version, connect a capacitor from SS to gnd to set the soft start time.
8	5, 6, 7, 8	8	GND	Ground
1	-	1	POK	Open-Drain Power-ok Output. POK Remains low while the output voltage is below the POK threshold. Connect a 100 kohm Pullup resistor from POK to OUT
7	-	7	SET	Voltage-setting Input. Connect SET to GND for preset output. Connect an external resistive voltage-divider from OUT to SET to set the output voltage between 0.6V and 4.5V. The SET regulation voltage is 600mV
			ADJ	Voltage-adjust Input. Connect an external resistive voltage-divider from OUT to ADJ to set the output voltage between 0.6V and 4.5V. The ADJ regulation voltage is 600mV

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V _{IN}	6.5	V
Power Dissipation	P _D	606	mW
Junction Temperature	T _J	+125	°C
Operating 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.

■ THERMAL RESISTANCES CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ _{JA}	165	°C/W

■ ELECTRICAL CHARACTERISTICS

(T_A = 25°C, V_{IN} = OUT + 1V or V_{IN} = 2.5V whichever is greater, C_{IN} = 10μF+0.1μF, C_{OUT} = 10uF + (0.1uF + 0.1uF), unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage	V _{IN}		Note1		6	V
Output Voltage Accuracy (Preset Mode)	OUT	T _A =25°C, I _{OUT} = 1mA ~2A	-2		2	%
Maximum Output Current	I _{OUT}			3.8		A
Short-Circuit Current Limit	I _{LIMIT}	OUT=0V		3.8		A
Ground Pin Current	I _Q	I _{OUT} =1mA		200		μA
	I _{OFF}	EN=GND		0.5	5	
Dropout Voltage (Note 2)	V _D	I _{OUT} =2.0A			650	mV
Line Regulation (Note 3)	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	V _{IN} =OUT+1V~6V		0.08	0.55	%/V
Load Regulation (Note 3, 4)	ΔOUT	V _{IN} =OUT+1V, OUT=2.5V, I _{OUT} =10mA~2.0A		0.3	1.0	%
Power Supply Rejection Ratio	PSRR	F=1Khz		45		dB
Shutdown Threshold	V _{IH}		1.8			V
	V _{IL}				0.5	V
Thermal Shutdown Temperature	T _{SHDN}			165		°C
Thermal Shutdown Hysteresis	DT _{SHDN}			30		°C
ADJ Voltage	V _{ADJ}	Measured on SET/ADJ, I _{OUT} =10mA	0.588	0.6	0.612	V
ADJ Mode Threshold				100		mV
Adjustable Output Voltage			0.8		4.5	V
SoftStart Current	I _{SS}	V _{SS} =0		1.2		uA
Power-OK Threshold	V _{pokth}	Referred to OUT (nominal)		93.75		%
Power-OK Hysteresis	V _{pokhys}			6.25		%
Power-OK output Low Voltage	V _{pokL}	Sinking 1mA			0.4	V

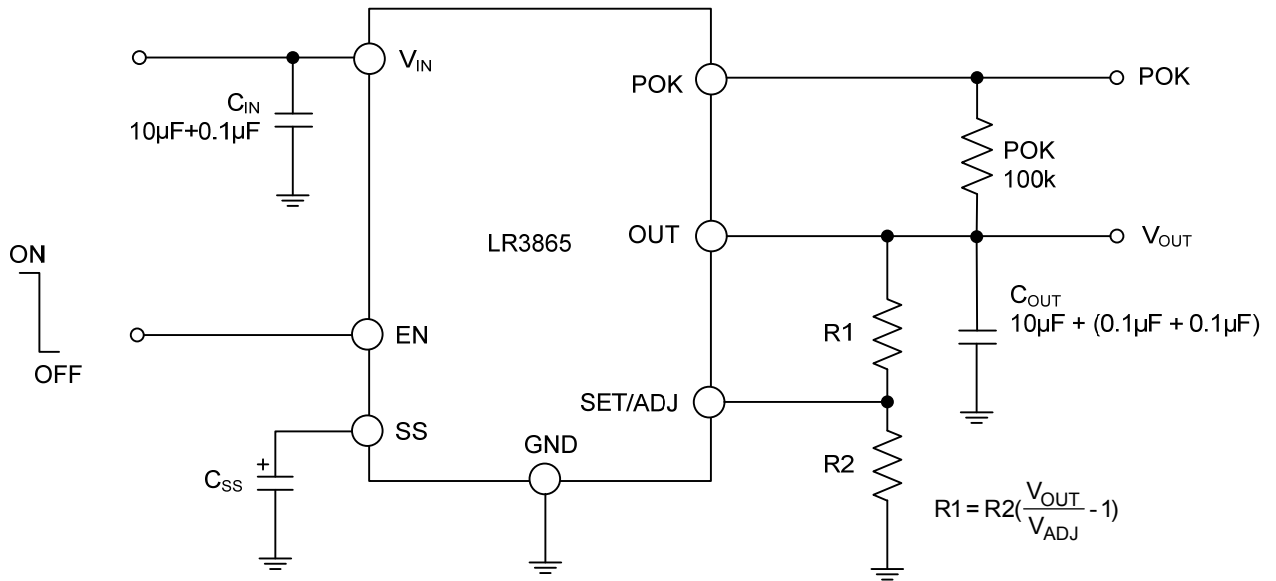
Notes: 1. The minimum operating value for V_{IN} is equal to either [OUT_(NOM)+V_D] or 2.5V, whichever is greater.

2. Dropout voltage is defined as the voltage from the input to output when output is 2% below the nominal value. Dropout voltage specification applies only to output voltage of 2.5V and above .

3. Output voltage line regulation is defined as the change in output voltage from the nominal value resulting from a change in the input line voltage. Output voltage load regulation is defined as the change in output voltage from the nominal value as the load current increases from no load to full load.

4. Regulation is measured at constant junction temperature by using a 10ms current pulse.

■ TYPICAL APPLICATION CIRCUIT



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