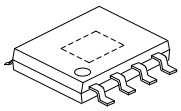
2A LOW DROPOUT LINEAR REGULATOR



HSOP-8

■ DESCRIPTION

The UTC **LR3965A** belonged to low-noise, low-dropout, linear regulators operate from 2.25V 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 **LR3965A** is designed and optimized for battery-powered systems to work with low noise.

The UTC **LR3965A** consumes less than 0.01μA 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
* 0.01μA Shutdown Current
* 40mV Dropout at 150mA Load
* Low Temperature Coefficient
* Current Limiting Protection
* Thermal Shutdown Protection
* Excellent Line/Load Transient

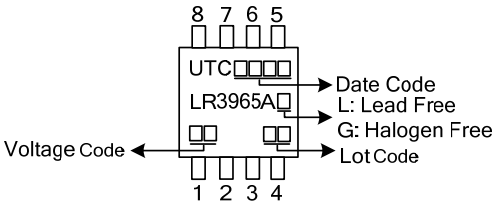
■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
LR3965AL-xx-SH2-R	LR3965AG-xx-SH2-R	HSOP-8	Tape Reel

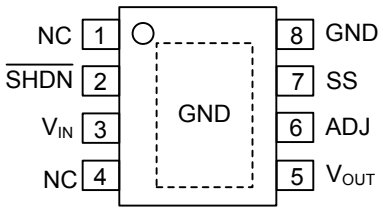
Note: xx: Output Voltage, refer to Marking Information.

LR3965AG-xx-SH2-R (1)Packing Type (2)Package Type (3)Output Voltage Code (4)Green Package	(1) R: Tape Reel (2) SH2: HSOP-8 (3) xx: Refer to Marking Information (4) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
HSOP-8	AD :ADJ	

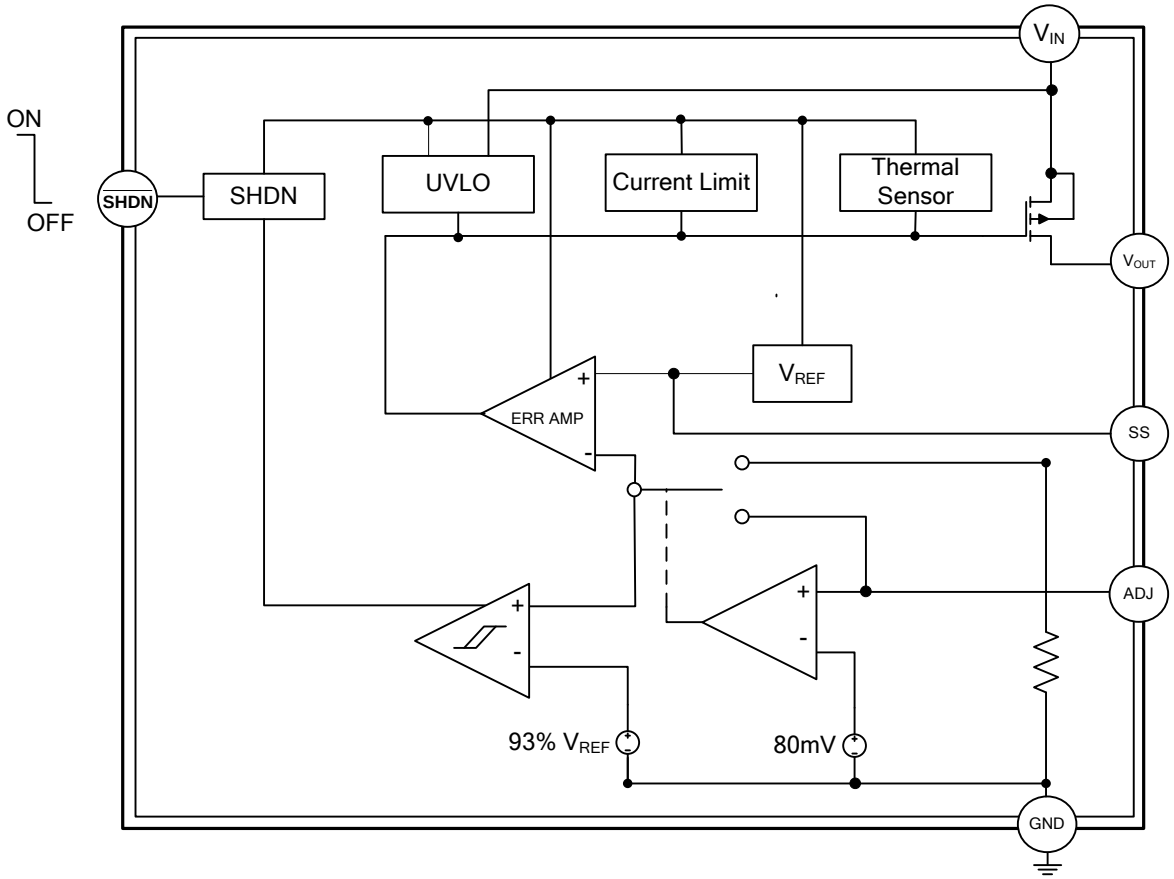
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN No.	PIN NAME	DESCRIPTION
2	$\overline{SHDN}$	Active-Low Shutdown Input. A logic low at $\overline{SHDN}$ reduces supply current to 0.01μA. In shutdown, the POK output is low. Connect $\overline{SHDN}$ to V_{IN} for normal operation.
3	V_{IN}	Power Input Voltage. Supply voltage can range from 2.25V to 6V. Bypass with a 68μF capacitor to GND.
5	V_{OUT}	Output Voltage
6	ADJ	Voltage-adjust Input. Connect ADJ to GND for preset output. Connect an external resistive voltage-divider from V_{OUT} to ADJ to set the output voltage between 0.8V and 6V. The ADJ regulation voltage is 800mV
7	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	GND	Ground
Exposed Pad	GND	Connect exposed pad to GND.

■ 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} = V_{OUT} + 1V or V_{IN} =2.25V whichever is greater, C_{IN} = 68μF, C_{OUT} =33μF, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage	V_{IN}		Note1		6	V
Output Voltage Accuracy (Preset Mode)	V_{OUT}	T_A=25°C , I_{OUT}= 1mA ~2A	-2		2	%
Maximum Output Current	I_{OUT}			2.0		A
Short-Circuit Current Limit	I_{LIMIT}	V_{OUT}=0V		2.5		A
Ground Pin Current	I_{GND}	I_{OUT} = 0mA		200		μA
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}=V_{OUT}+V_D~6V		0.08	0.55	%/V
Load Regulation (Note 3, 4)	ΔV_{OUT}	V_{IN}=V_{OUT}+1V, V_{OUT}=2.5V, I_{OUT}=10mA~2.0A		0.25	0.8	%
Output Voltage Noise	e_N	f=10Hz to1MHz, C_{OUT}=33μF		300		μV_{RMS}
Power Supply Rejection Ratio	PSRR	F=1Khz		45		dB
Shutdown Supply Current	I_{OFF}	$\overline{SHDN}$ = GND		0.01	5	μA
Shutdown Threshold	V_{IH}		1.7			V
	V_{IL}				0.6	V
Thermal Shutdown Temperature	T_{SHDN}			170		°C
Thermal Shutdown Hysteresis	DT_{SHDN}			20		°C
ADJ Voltage	V_{REF}	Measured on ADJ, I_{OUT} =10mA	0.774	0.8	0.826	V
ADJ Mode Threshold				80		mV
Adjustable Output Voltage			0.8		5	V

Notes: 1. The minimum operating value for V_{IN} is equal to either [$V_{OUT(NOM)}$+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