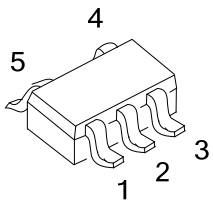
600mA LOW DROPOUT LINEAR REGULATOR



SOT-25

■ DESCRIPTION

The UTC **LR1148** belonged to low-noise, low-dropout, linear regulators operate from 2.3V to 6V input and are guaranteed to deliver 600mA. 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 **LR1148** is designed and optimized for battery-powered systems to work with low noise.

The UTC **LR1148** consumes less than 0.01 μA in shutdown mode. Other features include ultra low dropout voltage, current limiting protection, thermal shutdown protection and high ripple rejection ratio.

■ FEATURES

* 600mA Guaranteed Output Current
* 0.01μA Shutdown Current
* Ultra Low Dropout Voltage
* Low Temperature Coefficient
* Current Limiting Protection
* Thermal Shutdown Protection
* Excellent Line/Load Transient

■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment					Packing
Lead Free	Halogen Free		1	2	3	4	5	
LR1148L-xx-AF5-R	LR1148G-xx-AF5-R	SOT-25	I	G	S	A	O	Tape Reel

Note: Pin Assignment: I:V_{IN} O:V_{OUT} G:GND S:EN A: ADJ

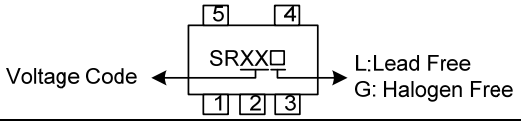
LR1148L-xx-AF5-R

(1)Packing Type
(2)Package Type
(3)Output Voltage Code
(4)Lead Free

(1) R: Tape Reel
(2) AF5: SOT-25
(3) xx: refer to Marking Information
(4) L: Lead Free, G: Halogen Free

■ MARKING INFORMATION

PACKAGE VOLTAGE CODE	MARKING
SOT-25	AD :ADJ



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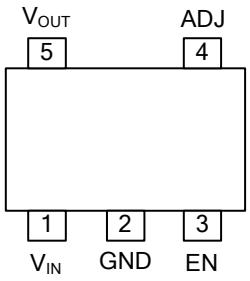
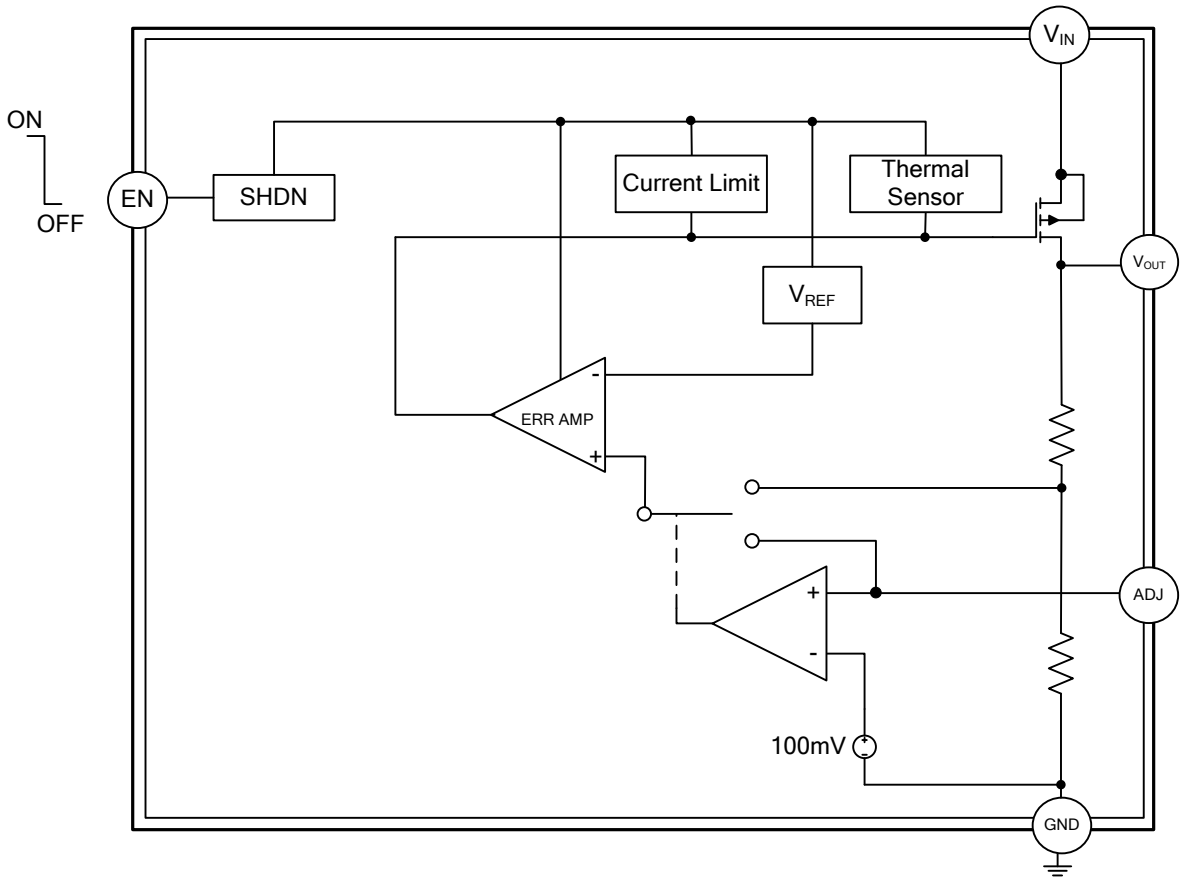
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NAME	DESCRIPTION
V_{IN}	Power Input Voltage. Supply voltage can range from 2.3V to 6V. Bypass with a 1μF capacitor to GND.
GND	Ground
EN	Active-Low Shutdown Input. A logic low at EN reduces supply current to 0.01μA. Connect EN to V_{IN} for normal operation.
V_{OUT}	Output Voltage
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 5V.

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING (T_A=25°C)

PARAMETER SYMBOL		RATINGS	UNIT
Supply Voltage	V_{IN} 6.5		V
Power Dissipation	P_D 360		mW
Junction Temperature	T_J +	125	°C
Ambient 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 DATA

PARAMETER SYMBOL		RATINGS	UNIT
Junction to Ambient	θ_{JA}	260	°C/W
Junction to Case	θ_{JC}	81	°C/W

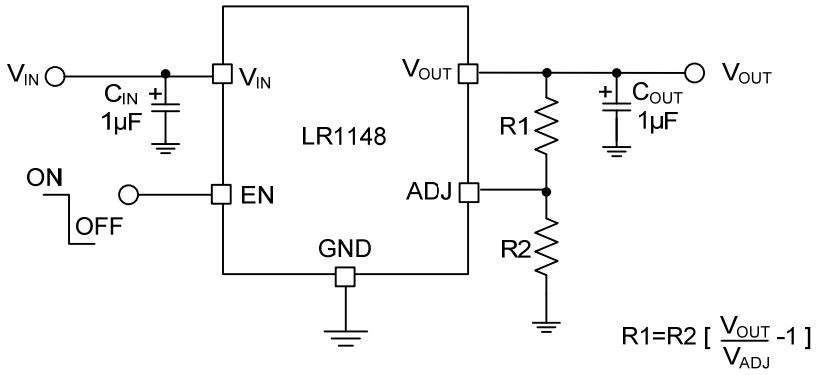
■ ELECTRICAL CHARACTERISTICS

(C_{IN} = 1μF, C_{OUT} =1μF, T_A= 25°C, unless otherwise specified)(Note 1)

PARAMETER SYMBOL		TEST CONDITIONS		MIN	TYP	MAX	UNIT
Input Voltage(Note 2)	V_{IN}			2.3		6	V
Output Voltage Accuracy (Preset Mode)	V_{OUT}	T_A=25°C , I_{OUT}= 1mA ~0.6A		-2		2	%
		T_A=0~85°C, I_{OUT}= 1mA~0.6A		-3		3	%
Maximum Output Current	I_{OUT}				600		mA
Short-Circuit Current Limit	I_{LIMIT}	V_{OUT}=0V			1		A
Ground Pin Current	I_{GND}	I_{OUT} = 0mA			70		μA
		I_{OUT}= 1mA to 600mA			80		μA
Dropout Voltage (Note3)	V_D	I_{OUT}=600mA	$V_{OUT(NOM)}$<=1.8V	500		1200	mV
			1.8V<$V_{OUT(NOM)}$		200	450	
Line Regulation (Note4)	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	V_{IN}=V_{OUT}+V_D~6V			0.08	0.55	%/V
Load Regulation(Note4,5)	ΔV_{OUT}	V_{IN}=V_{OUT}+V_D, I_{OUT}=10mA~600mA		0.25		1.0	%
Output Voltage Noise	eN	f=10Hz to100kHz, C_{BP}=0.1nF			24		μV_{RMS}
Shutdown Supply Current	I_{OFF} EN=	GND			0.01	5	μA
Shutdown Threshold	V_{IH}			2			V
	V_{IL}					0.4	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					100		mV
Adjustable Output Voltage				0.8		5	V

Note: 1. Specifications are production tested at T_A=25°C. Pecifications over the -40°C to 85°C operating temperature range are assured by design, characterization and correlation with Statistical Quality Controls(SQC).
2. The minimum operating value for V_{IN} is equal to either [$V_{OUT(NOM)}$+V_D] or 2.3V,whichever is greater
3. Dropout voltage is defined as the voltage from the input to output when output is 2% below the nominal value.
4. 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.
5. Regulation is measured at constant junction temperature by using a 20ms current pulse. Devices are tested for load regulation in the load range from 10mA to 600mA

■ TYPICAL APPLICATION CIRCUIT



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