



LR9284

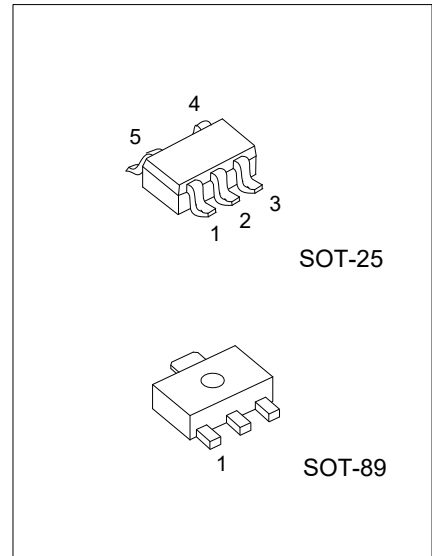
CMOS IC

ULTRALOW QUIESCENT CURRENT, 500mA, CMOS LINEAR REGULATOR

DESCRIPTION

The UTC **LR9284** is a typical LDO (linear regulator) with the features of high output voltage accuracy, ultralow supply current, low ON-resistance. Internally, there're many functions of UTC **LR9284** which can be seen in the block figure. There are a voltage reference unit, an error amplifier, resistor-net for voltage setting, a current limit circuit, and a chip enable circuit in each UTC **LR9284**.

The output voltage of these ICs is fixed with high accuracy.



FEATURES

- * Supply current (TYP=0.3μA)
- * Output voltage accuracy (±1.5%)
- * Input voltage range (2V~7V)
- * Dropout voltage (TYP=220mV @ 200mA, V_{OUT}=3.3V)
- * Line regulation (TYP=0.1%/V)
- * Built-in fold-back protection circuit (TYP=90mA)
(Current at short mode)

ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
LR9284L-xx-AB3-C-R	LR9284G-xx-AB3-C-R	SOT-89	Tape Reel
LR9284L-xx-AF5-K-R	LR9284G-xx-AF5-K-R	SOT-25	Tape Reel

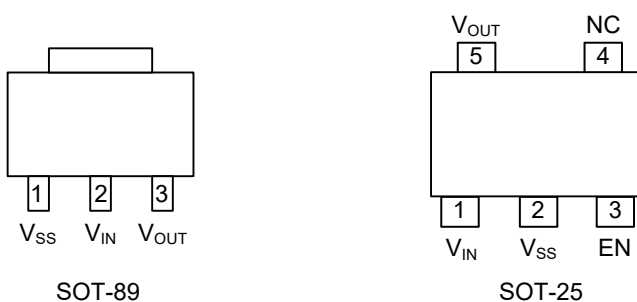
Note: xx: Output Voltage, refer to Marking Information.

<p>LR9284G-xx-AB3-C-R</p> <ul style="list-style-type: none"> (1) Packing Type (2) Pin Code (3) Package Type (4) Output Voltage Code (5) Green Package 	<ul style="list-style-type: none"> (1) R: Tape Reel (2) refer to PIN CONFIGURATION (3) AB3: SOT-89, AF5: SOT-25 (4) xx: Refer to Marking Information (5) G: Halogen Free and Lead Free, L: Lead Free
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MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-89	15: 1.5V 18: 1.8V 20: 2.0V 22: 2.2V 28: 2.8V	<p>Date Code ←</p> <p>LR9284</p> <p>Pin Code →</p> <p>Voltage Code →</p> <p>L: Lead Free</p> <p>G: Halogen Free</p>
SOT-25	30: 3.0V 33: 3.3V 36: 3.6V 40: 4.0V	<p>Pin Code →</p> <p>Voltage Code →</p>

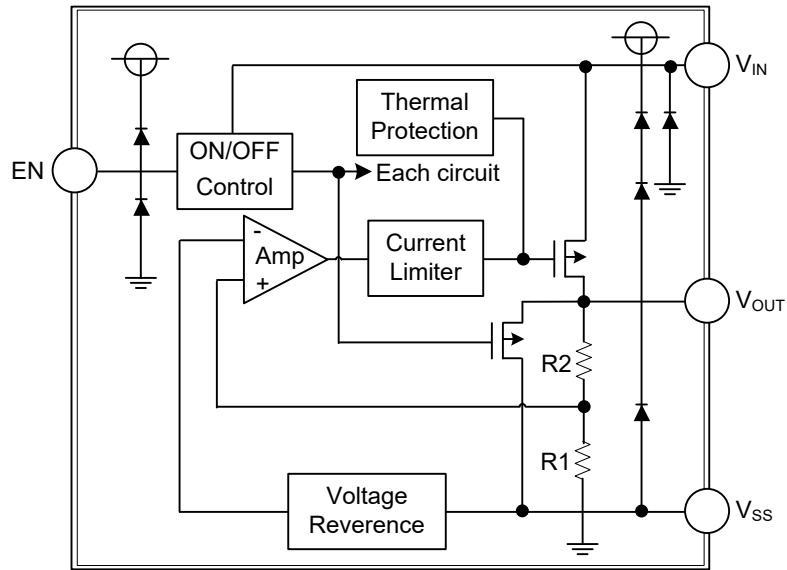
PIN CONFIGURATION



PIN DESCRIPTION

PIN NO		PIN NAME	DESCRIPTION
SOT-89	SOT-25		
2	1	V_{IN}	Positive power supply input voltage.
1	2	V_{SS}	Ground
-	3	EN	Chip Enable
-	4	NC	No Connection
3	5	V_{OUT}	Regulated output voltage.

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Input Voltage		V_{IN}	9	V
Output Current		I_{OUT}	600	mA
Power Dissipation	SOT-89	P_D	500	mW
	SOT-25		300	mW
Operating Temperature		T_{OPT}	-40 ~ +125	$^{\circ}\text{C}$
Storage Temperature		T_{STG}	-40 ~ +150	$^{\circ}\text{C}$

Notes: 1. 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.
2. Device mounted on PCB.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOT-89	θ_{JA}	200	$^{\circ}\text{C/W}$
	SOT-25		333	$^{\circ}\text{C/W}$
Junction to Case	SOT-89	θ_{JC}	50	$^{\circ}\text{C/W}$
	SOT-25		90	$^{\circ}\text{C/W}$

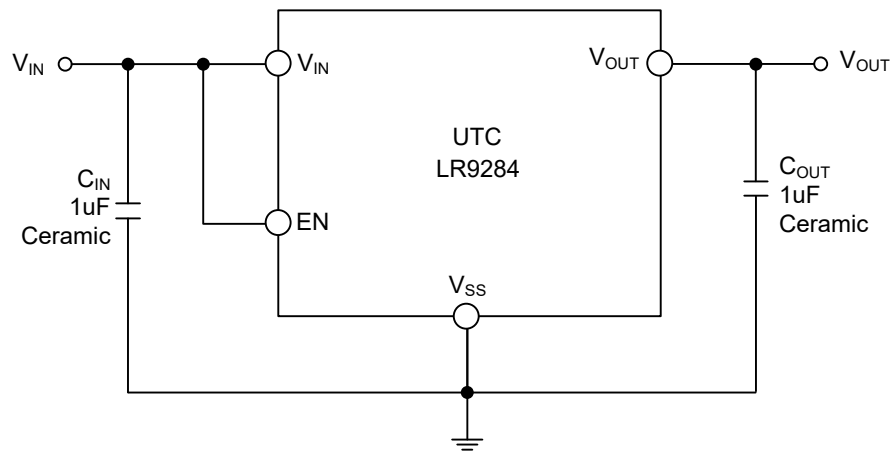
Note: Device mounted on PCB.

■ ELECTRICAL CHARACTERISTICS

($V_{IN}=V_{OUT}+1\text{V}$, $C_{IN}=C_{OUT}=1\mu\text{F}$, $T_A=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage	V_{in}		2		7	V
DC Output Accuracy	A_{CC}	$I_{OUT}=1\text{mA}$	-1.5		1.5	%
Dropout Voltage	V_{DIF}	$I_{OUT}=200\text{mA}$, $V_{OUT}=3.3\text{V}$		220	250	mV
Supply Current	I_{SS}	$I_{OUT}=0\text{mA}$		0.3	0.7	μA
Shutdown current	I_{SHDN}	$V_{EN}=0\text{V}$			0.1	μA
Load Regulation	ΔV_{OUT}	$1\text{mA} \leq I_{OUT} \leq 100\text{mA}$		10		mV
Line Regulation	$\frac{\Delta V_{OUT}}{V_{OUT} \cdot \Delta V_{IN}}$	$I_{OUT}=1\text{mA}$ $V_{OUT}+0.5\text{V} \leq V_{IN} \leq 7\text{V}$		0.1	0.15	%/V
Output Current Limit	I_{LIM}			550		mA
Short Current	I_{SC}	$V_{OUT}=0\text{V}$		90		mA
EN "High" Voltage	$V_{EN} \text{ "H"}$		1.2		V_{IN}	V
EN "Low" Voltage	$V_{EN} \text{ "L"}$				0.4	V
Power Supply Rejection Ratio	PSRR	$I_{OUT}=100\text{mA}$	$f=200\text{Hz}$	-72		dB
			$f=1\text{kHz}$	-70		dB
			$f=10\text{Hz}$	-65		dB
Thermal shutdown temperature	T_{SD}			160		$^{\circ}\text{C}$
Thermal shutdown hysteresis	HYS_{TSD}			20		$^{\circ}\text{C}$

■ TYPICAL APPLICATION CIRCUIT



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