UNISONIC TECHNOLOGIES CO., LTD

LR1198

CMOS IC

300mA, ULTRA-LOW NOISE, ULTRA-FAST CMOS LDO REGULATOR

SOT-23-5
(JEDEC TO-236)

■ DESCRIPTION

The **LR1198** low-noise, low-dropout, linear regulator operates from a 2.5V to 5.5V input and is guaranteed to deliver 300mA. The **LR1198** is designed and optimized for battery-powered systems to work with low noise and low quiescent current. For further reduction of output noise, a noise bypass pin is available.

The **LR1198** also requires only 1µF (typ.) of output capacitance for stability with any load, reducing the amount of board space necessary for power applications, critical in hand-held wireless devices.

The **LR1198** consumes less than 0.01µA in shutdown mode. The other features include ultra low dropout voltage, current limiting protection, thermal shutdown protection and high ripple rejection ratio.
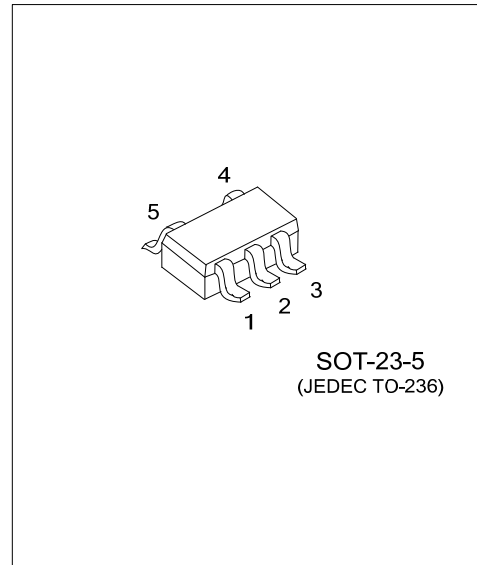
■ FEATURES

* 300mA Guaranteed Output Current
* 0.01µA Shutdown Current
* 550mV Dropout at 300mA Load
* Low Temperature Coefficient
* Current Limiting Protection
* Thermal Shutdown Protection
* Only 1µF Output Capacitor Required for Stability
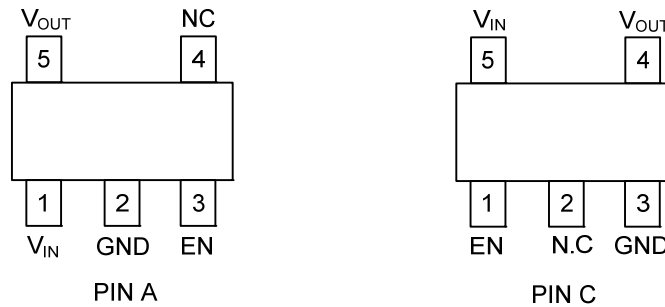* Excellent Line/Load Transient

■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
LR1198L-xx-AE5-A-R	LR1198G-xx-AE5-A-R	SOT-23-5	Tape Reel
LR1198L-xx-AE5-C-R	LR1198G-xx-AE5-C-R	SOT-23-5	Tape Reel

LR1198G-xx-AE5-A-R

- (1) Packing Type
- (2) Pin Code
- (3) Package Type
- (4) Output Voltage Code
- (5) Green Package

(1) R: Tape Reel
(2) refer to PIN CONFIGURATION
(3) AE5: SOT-23-5
(4) xx: Refer to Marking Information
(5) G: Halogen Free and Lead Free, K: Lead Free

■ **MARKING**

PACKAGE	VOLTAGE CODE	MARKING
SOT-23-5	15: 1.5V 28: 2.8V 30: 3.0V	SXXXX → Pin Code → Voltage Code

■ **PIN CONFIGURATION**

PIN A

| V$_{OUT}$ 5 | | NC 4 |
| 1 V$_{IN}$ | 2 GND | 3 EN |

PIN C

| V$_{IN}$ 5 | | V$_{OUT}$ 4 |
| 1 EN | 2 N.C | 3 GND |

■ **PIN DESCRIPTION**

PIN No.		PIN NAME	DESCRIPTION
A	C		
1	5	V$_{IN}$	Power Input Voltage
2	3	GND	Ground
3	1	EN	Chip Enable (Active High). EN is internally pulled up by a resistor.It can be floating for normal operate.
4	2	N.C	
5	4	V$_{OUT}$	Output Voltage

■ **BLOCK DIAGRAM**

LR1198
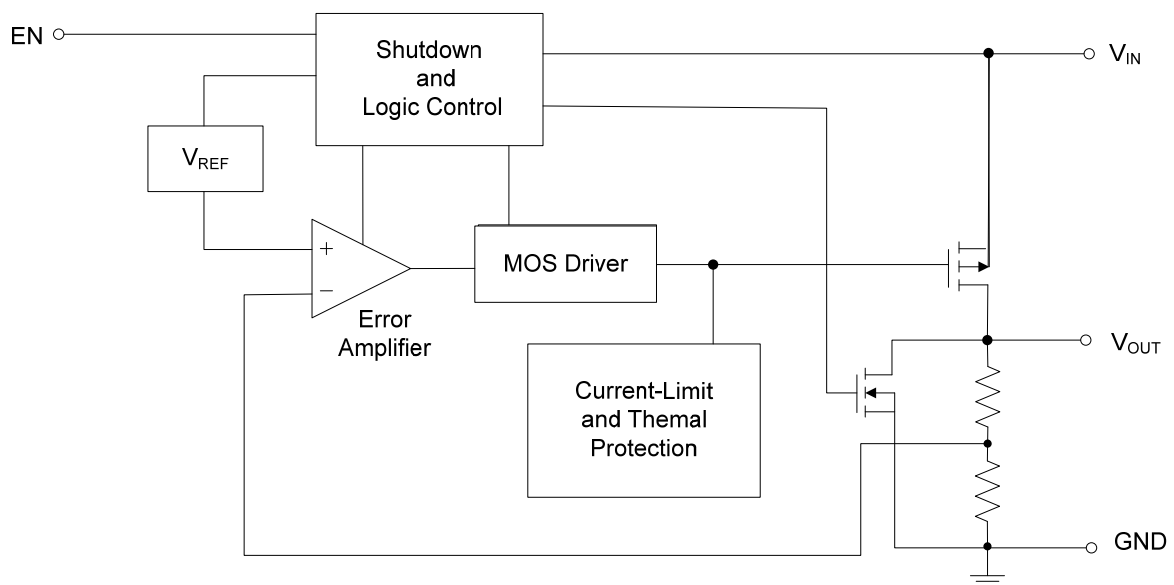
■ **ABSOLUTE MAXIMUM RATING (Note 1)**

| PARAMETER	SYMBOL	RATINGS	UNIT
Supply Input Voltage (Operating)	V_{IN}	2.5 ~ 5.5	V
Supply Input Voltage (Survival)		-0.3 ~ +6	
Junction Temperature	T_J	+125	°C
Operation Temperature Range	T_{OPR}	-40 ~ +85	°C
Storage Temperature Range	T_{STG}	-65 ~ +150	°C

■ **ELECTRICAL CHARACTERISTICS**

(V_{IN} = V_{OUT} + 1V, C_{IN} = C_{OUT} = 1uF, T_A= 25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage Accuracy	ΔV_{OUT}	I_{OUT} = 1mA	-2		+2	%
Current Limit	I_{LIM}		200	360		mA
Quiescent Current	I_Q	V_{EN}≥1.2V, I_{OUT} = 0mA		90	150	μA
Dropout Voltage (Note 3)	V_{DROP}	I_{OUT} = 200mA		500	600	mV
		I_{OUT} = 300mA		550	650	
Line Regulation	ΔV_{LINE}	V_{IN} = (V_{OUT} + 0.3V) to 5.5V I_{OUT} = 1mA			0.3	%
Load Regulation	ΔV_{LOAD}	1mA < I_{OUT} < 300mA			0.6	%
Standby Current	I_{STBY}	V_{EN} = GND, Shutdown		0.01	5	μA
EN Input Current	I_{ENH}	V_{EN} = V_{IN}		0.01	3	μA
	I_{ENL}	V_{EN} = GND		3	10	μA
EN Threshold	V_{IH}	V_{IN} = 3 ~ 5.5V, Start-Up	1.6			V
	V_{IL}	V_{IN} = 3 ~ 5.5V, Shutdown			0.4	
Power Supply Rejection Rate	PSRR	C_{OUT} = 1μF, I_{OUT} = 10mA, f=10kHz		50		dB
Thermal Shutdown Temperature	T_{SD}			165		°C
Thermal Shutdown Temperature Hysteresis	ΔT_{SD}			30		°C

Notes: 1. Limits beyond which damage to the device may occur is indicated by absolute maximum ratings. Conditions for which the device is intended to be functional is indicated by operating ratings, but specific performance limits isn't be guaranteed. Only for the test conditions listed the guaranteed specifications can be applied. When the device is not operated under the listed test conditions some performance characteristics may degrade.

2. Which discharged through a 1.5kΩ resistor into each pin is a 100pF capacitor in the human body model.

3. The dropout voltage is defined as V_{IN} -V_{OUT}, which is measured when V_{OUT} is $V_{OUT(NORMAL)}$ − 100mV.

■ **TYPICAL APPLICATION CIRCUIT**
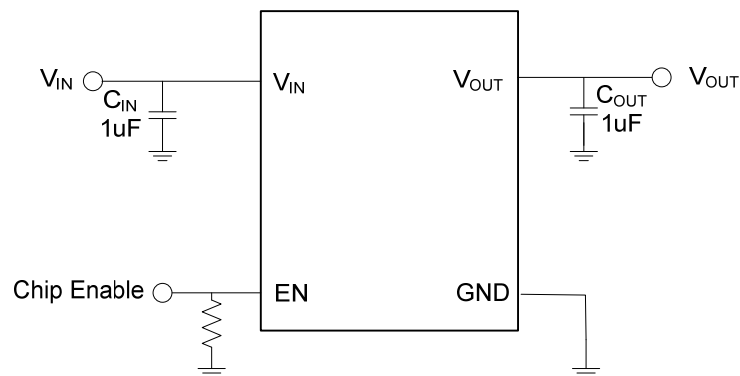
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