



## LR1198

CMOS IC

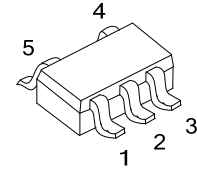
### 300mA, ULTRA-LOW NOISE, ULTRA-FAST CMOS LDO REGULATOR

#### ■ 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 1 $\mu$ F (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 0.01 $\mu$ A in shutdown mode. The other features include ultra low dropout voltage, current limiting protection, thermal shutdown protection and high ripple rejection ratio.



SOT-23-5  
(JEDEC TO-236)

#### ■ FEATURES

- \* 300mA Guaranteed Output Current
- \* 0.01 $\mu$ A Shutdown Current
- \* 550mV Dropout at 300mA Load
- \* Low Temperature Coefficient
- \* Current Limiting Protection
- \* Thermal Shutdown Protection
- \* Only 1 $\mu$ F Output Capacitor Required for Stability
- \* Excellent Line/Load Transient

#### ■ ORDERING INFORMATION

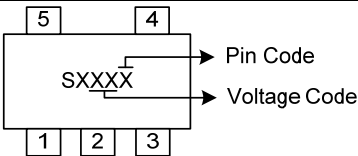
Ordering Number		Package	Packing
Lead Free	Halogen Free		
LR1198L-xx-AE5-A-R	LR1198G-xx-AE5-A-R	SOT-23-5	Tape Reel
LR1198L-xx-AE5-C-R	LR1198G-xx-AE5-C-R	SOT-23-5	Tape Reel

LR1198G-xx-AE5-A-R

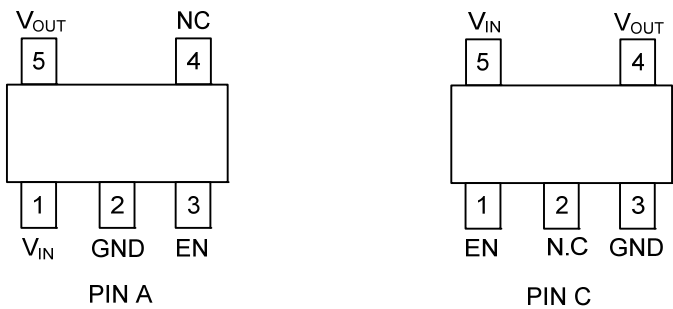
- (1) Packing Type
- (2) Pin Code
- (3) Package Type
- (4) Output Voltage Code
- (5) Green Package

- (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	

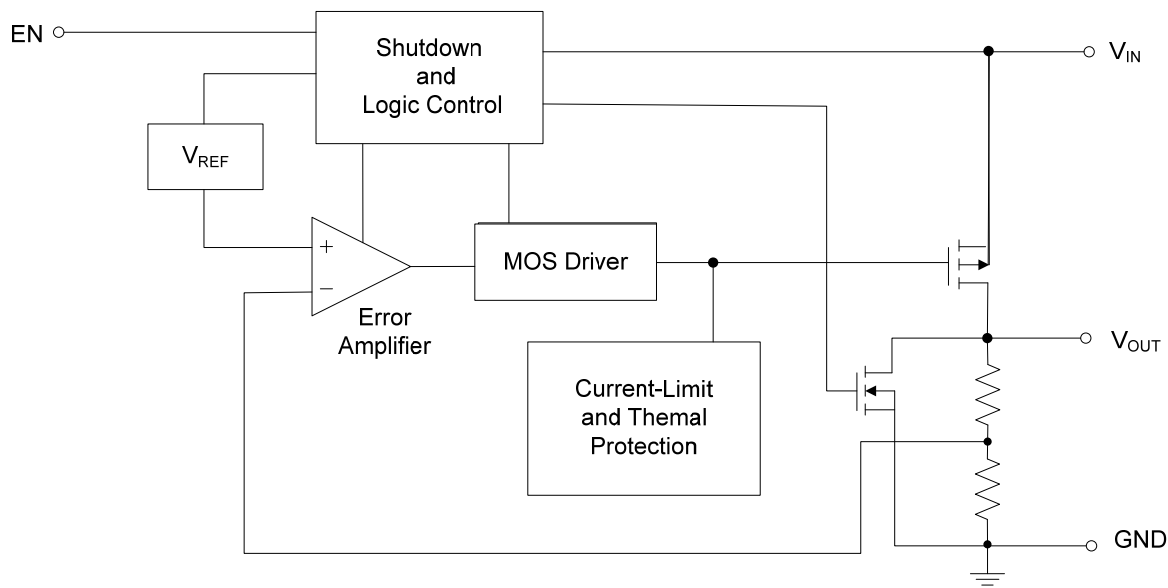
PIN CONFIGURATION



PIN DESCRIPTION

PIN No.		PIN NAME	DESCRIPTION
A	C		
1	5	V <sub>IN</sub>	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 <sub>OUT</sub>	Output Voltage

BLOCK DIAGRAM



# ■ 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

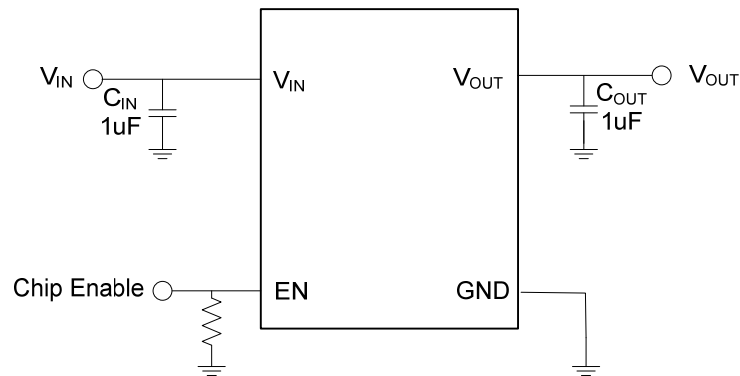
# ■ ELECTRICAL CHARACTERISTICS

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage Accuracy	$\Delta V_{OUT}$	$I_{OUT} = 1mA$	-2		+2	%
Current Limit	$I_{LIM}$		200	360		mA
Quiescent Current	$I_Q$	$V_{EN} \geq 1.2V$ , $I_{OUT} = 0mA$		90	150	$\mu A$
Dropout Voltage (Note 3)	$V_{DROP}$	$I_{OUT} = 200mA$		500	600	mV
		$I_{OUT} = 300mA$		550	650	
Line Regulation	$\Delta V_{LINE}$	$V_{IN} = (V_{OUT} + 0.3V)$ to 5.5V $I_{OUT} = 1mA$			0.3	%
Load Regulation	$\Delta V_{LOAD}$	$1mA < I_{OUT} < 300mA$			0.6	%
Standby Current	$I_{STBY}$	$V_{EN} = GND$ , Shutdown		0.01	5	$\mu A$
EN Input Current	$I_{ENH}$	$V_{EN} = V_{IN}$		0.01	3	$\mu A$
	$I_{ENL}$	$V_{EN} = GND$		3	10	$\mu A$
EN Threshold	$V_{IH}$	$V_{IN} = 3 \sim 5.5V$ , Start-Up	1.6			V
	$V_{IL}$	$V_{IN} = 3 \sim 5.5V$ , Shutdown			0.4	
Power Supply Rejection Rate	PSRR	$C_{OUT} = 1\mu F$ , $I_{OUT} = 10mA$ , $f=10kHz$		50		dB
Thermal Shutdown Temperature	$T_{SD}$			165		°C
Thermal Shutdown Temperature Hysteresis	$\Delta T_{SD}$			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 1.5k $\Omega$  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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