Description

SE5318 is a positive, linear regulator featuring a low quiescent current (35uA typ.) with low dropout voltage, making it ideal for battery powered applications. The space- saving SOT-26 package are attractive for "Pocket" and "Hand Held" applications.

SE5318 has Over Temperature Protection (OTP), and Over Current Protection (OCP) to prevent possible device failures due to improper or worst case applications.

Additionally, SE5318 features a "Power Good" detector, which pulls low when the output is out of the desired regulation.

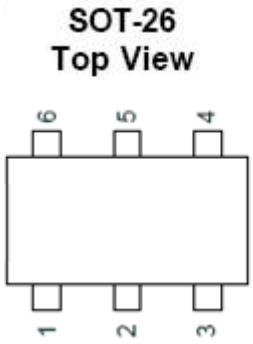
Features

- Very Low Dropout Voltage
- Guaranteed 300mA Output
- Typical accuracy within 2%
- 35uA Quiescent Current
- Over Temperature Protection (OTP)
- Over Current Protection (OCP)
- Power Good Detector
- Power-Saving Shutdown Mode
- Space-Saving SOT-26
- Adjustable Output Voltages
- Low Temperature Coefficient
- RoHS Compliant and 100% Lead (Pb)-Free

Applications

- Instrumentation
- Portable Electronics
- Wireless Devices
- Cordless Phones
- PC Peripherals
- Battery Powered Widgets
- Electronic Scales

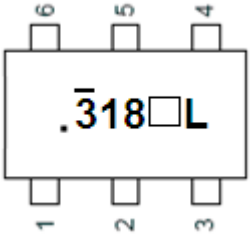
Pin Configuration



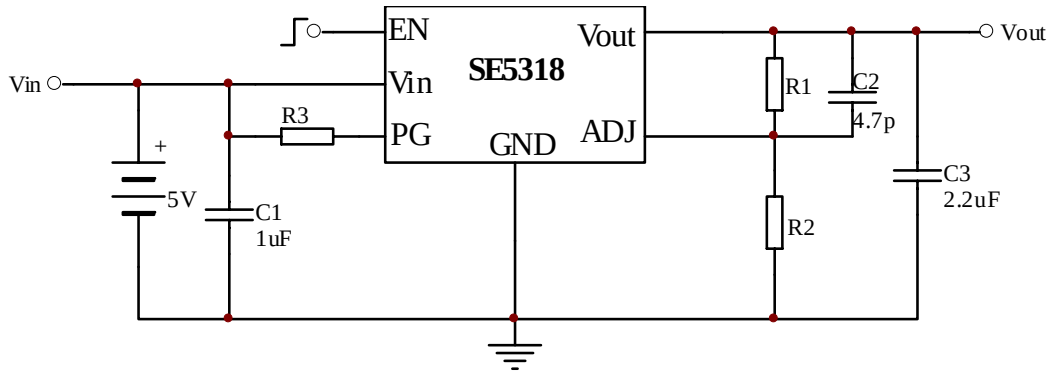
SE5318

1. V_{IN}
2. GND
3. EN
4. PG
5. ADJ
6. V_{OUT}

Ordering/Marking Information

Package	Ordering Information		Marking Information
	ADJ	SE5318-LF	Starting with 3, a bar on top of 3 is for production year 2011, and underlined 3 is for year 2012. The naming pattern continues with consecutive characters for later years. "□" is for the week code. (A-Z: 1-26, a-z: 27-52)The last character "L" is for Lead-free process. A dot on bottom left corner is for PIN1.

Typical Application



Vout= 1.2 (R1 +R2)/R2 ; C2 is option

Absolute Maximum Rating

Parameter	Symbol	Value	Units
Input Voltage	V_{IN}	7	V
Enable Voltage	V_{EN}	-0.3 to V_{IN}	V
Output Voltage	V_{OUT}	-0.3 to 4.6	V
Power Dissipation	P_D	Internally Limited	
Thermal Resistance, Junction-to-Ambient	Θ_{JA}	230	°C/W
Lead Temperature (Soldering, 5 sec.)		260	°C
Junction Temperature	T_J	-20 to +150	°C
Storage Temperature	T_S	-40 to +150	°C

Recommended Operating Conditions

Parameter	Symbol	Value	Units
Supply Input Voltage Range	V_{IN}	2.5~5.5	V
Junction Temperature Range	T_J	-20 to +125	°C

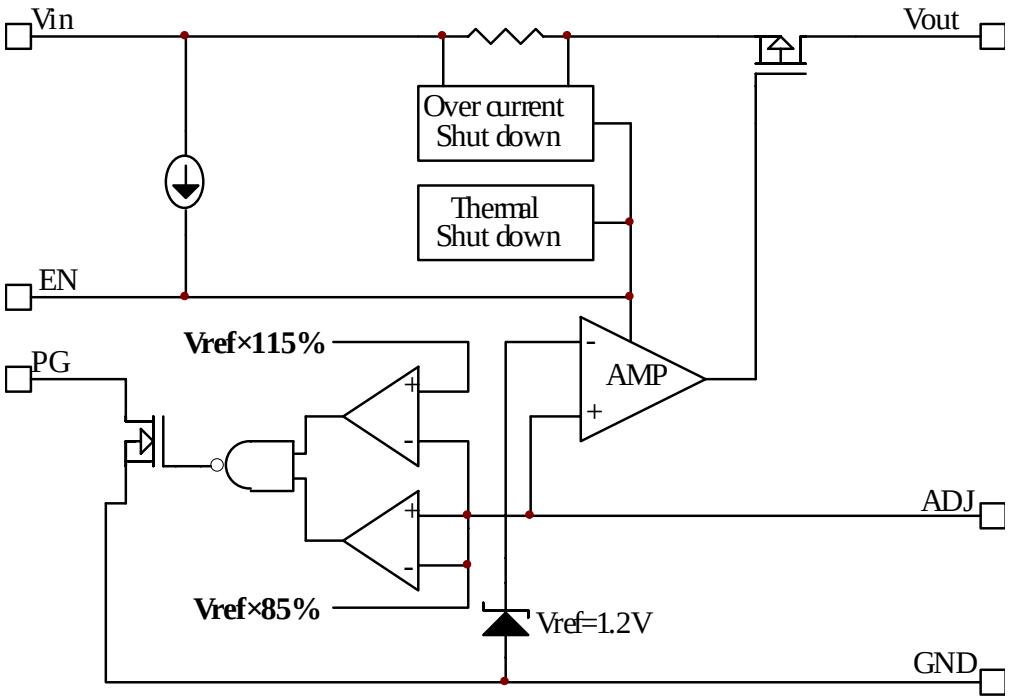
Electrical Characteristic

TA = 25℃, V_{IN}=5V unless otherwise noted

Parameter	Symbol	Test Condition		Min	Typ	Max	Units
Input Voltage Range	VIN			Note		6	V
Output Voltage	VO	IO=1mA		-2		2	%
Dropout Voltage	VDROPOUT	IO=300mA	2.0V<VO(NOM)<=2.8V		400		mV
		VO=VONOM -2.0%	2.8V<VO(NOM)<3.8V		300		
Output Current	IO	VO>1.2V		300			mA
Current Limit	ILIM	VO>1.2V			550		mA
Quiescent Current	IQ	IO=0mA			35	50	uA
Line Regulation	REGIIN	IO=5mA ; VIN=VO+1 to 5.5V			0.1		%/V
Load Regulation	REGLO	IO=1mA to 300mA			0.2		%
Over TemeratureShutdown	OTS				150		℃
Over Temerature Hysterisis	OTH				30		℃
VO Temperature	TC				30		ppm/℃
Power Supply Rejection	PSRR	IO=100mA	f=100Hz		60		dB
			f=1kHz		35		
Output Voltage Noise	eN	f=10Hz to 100kHz	Co=2.2mF		30		uVrms
ADJ Input Bias Current	IADJ				30		nA
ADJ Reference Voltage	VREF			-2%	1.21	+2%	V
EN Input Threshold	VEH	VIN=2.7V to 6V		2.0		Vin	V
	VEL	VIN=2.7V to 6V		0		0.4	V
EN Input Bias Current	IEN	VEN=VIN, VIN=2.7V to 6V				0.1	mA
Shutdown Supply Current	ISD	VIN=5V, VO=0V, VEN<VEL			0.5	1	uA
Shutdown Output Voltage	VO,SD	IO=35mA,VEN<VEL		0		0.1	V
Output Under Voltage	VUV					85	%VO(N
Output Over Voltage	VOV			115			%VO(N
PG Leakage Current	ILC	VPG=5.5V				1	mA
PG Voltage Rating	VPG	VO in regulation				5.5	V
PG Voltage Low	VOL	ISINK=0.4mA				0.4	V

Note1:Vin(min)=Vout+Vdropout

Block Diagram



Detailed Description

SE5318 is a CMOS regulator containing a PMOS pass transistor, voltage reference, error amplifier, over-current protection, thermal shutdown, and Power Good detection circuitry.

The P-channel pass transistor receives data from the error amplifier, over-current shutdown, and thermal protection circuits. During normal operation, the error amplifier compares the output voltage to an internal precision voltage reference. Over Temperature Protection (OTP) and Over Current Protection (OCP) circuits become active when the junction temperature exceeds 150℃, or the current exceeds 550mA, respectively. During OTP, the output voltage remains low. Normal operation is restored when the junction temperature drops below 120℃.

External Capacitors

SE5318 is stable with an output capacitor to ground of 1.0μF or greater. Ceramic capacitors have the lowest ESR, and will offer the best AC performance. Conversely, Aluminum Electrolytic capacitors exhibit the highest ESR, resulting in the poorest AC response. Unfortunately, large value ceramic capacitors are comparatively expensive. One option is to parallel a 0.1μF ceramic capacitor with a 10μF Aluminum Electrolytic. The benefit is low ESR, high capacitance, and low overall cost.

A second capacitor is recommended between the input and ground to stabilize Vin. The input capacitor should be at least 0.1μF to have a beneficial effect. All capacitors should be placed in close proximity to the pins. A "Quiet" ground termination is desirable. This can be achieved with a "Star" connection..

Enable

The EN Pin is an enable control Pin, When The Enable pin pulled High, IC is enabled; when pulled low, the PMOS pass transistor shuts off, and all internal circuits are powered down. In this state, the quiescent current is less than 1μA. This pin behaves much like an electronic switch.

Power Good

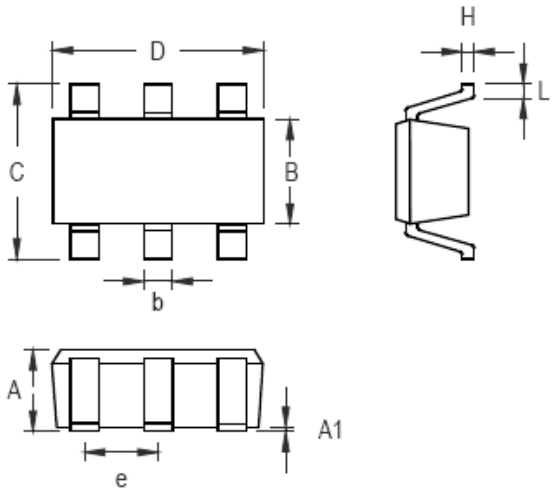
SE5318 includes the Power Good feature. Normally, Pin 4 is "Floating", however, when the output is not within ±10% of the specified voltage, it pulls low. This can occur under the following conditions:

1) Input Voltage too low.

2) During Over-Temperature Protection.

3) If output is pulled up.

OUTLINE DRAWING SOT-23-6L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.889	1.295	0.031	0.051
A1	0.000	0.152	0.000	0.006
B	1.397	1.803	0.055	0.071
b	0.250	0.560	0.010	0.022
C	2.591	2.997	0.102	0.118
D	2.692	3.099	0.106	0.122
e	0.838	1.041	0.033	0.041
H	0.080	0.254	0.003	0.010
L	0.300	0.610	0.012	0.024

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