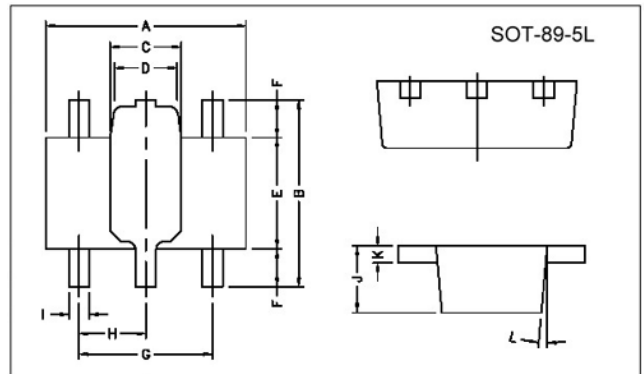


Description

The S5M1119 is a low dropout positive fixed-mode regulator with min. of 0.5A output current capability. The product is specifically designed to provide well-regulated supply for low voltage IC applications such as high-speed bus termination and low current 3.3V logic supply. S5M1119 is also well suited for other applications such as VGA cards. The product is guaranteed to have < 1.3V dropout at full load current making it ideal to provide well regulated outputs 1.5V to 12V with up to 18V input supply. The product offers a TTL-Logic compatible enable pin.



Features

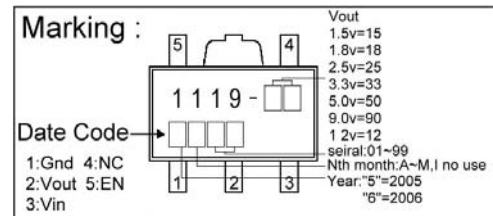
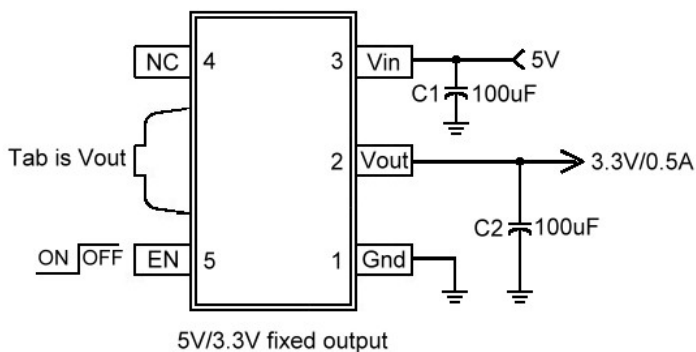
- * 1.3V Max. Dropout Voltage At Full Load Current
- * 5-Terminal Device With Fixed 1.5V, 1.8V, 2.5V, 3.3V, 5.0V, 9.0V, 12V, Output
- * Output Current Limiting
- * Good Noise Rejection
- * Fast Transient Response
- * Built-in Thermal Shutdown

REF.	Millimeter		REF.	Dimensions	
	Min.	Max.		Millimeter	
A	4.40	4.60	G	3.00 REF.	
B	4.05	4.25	H	1.50 REF.	
C	1.50	1.70	I	0.40	0.52
D	1.30	1.50	J	1.40	1.60
E	2.40	2.60	K	0.35	0.41
F	0.80	-	L	5 ° TYP.	

Applications

- * CDROM.
- * PC Peripheral
- * Communication

Typical Circuit



Pin Descriptions

Name	Pin#	Function
GND	1	Ground
V _{OUT}	2	The output pin of regulator. A min. of 10uF capacitor must be connected from this pin to ground to insure stability.
V _{IN}	3	The input pin of regulator. Typically a large storage capacitor is connected from this pin to ground to insure that the input voltage does not sag below the min. dropout voltage during the load transient response. This pin must always be 1.3V higher than V _{OUT} in order for the device to regulate properly.
EN	5	This input pin of regulator. TTL/CMOS compatible input Logic high= disable output, Logic low or open=output enable. (internal pull-down resistor~100K)

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
DC Supply Voltage	V_{IN}	-0.3 to 18	V
Power Dissipation	P_D	Internally Limited	
Storage Temperature Range	T_{ST}	-65~+150	°C
Operating Junction Temperature Range	T_{OP}	0~+150	°C

Electrical Characteristics (Under operating conditions)

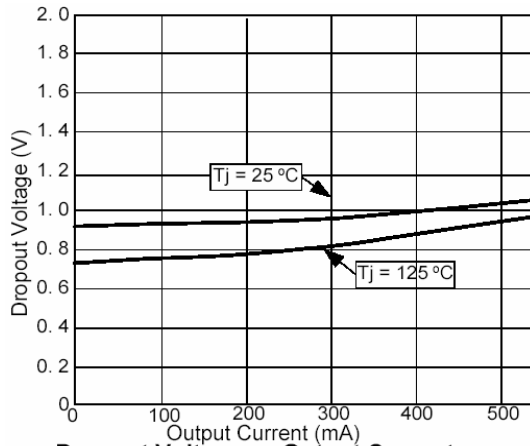
Parameter	Min.	Typ.	Max.	Unit	Condition
Output Voltage	1.470	1.500	1.530	V	S5M1119-1.5 $I_O=10mA, T_J=25^{\circ}C, 3.0V \leq V_{IN} \leq 12V$
	1.764	1.800	1.836		S5M1119-1.8 $I_O=10mA, T_J=25^{\circ}C, 3.3V \leq V_{IN} \leq 12V$
	2.450	2.500	2.550		S5M1119-2.5 $I_O=10mA, T_J=25^{\circ}C, 4.0V \leq V_{IN} \leq 12V$
	3.235	3.300	3.365		S5M1119-3.3 $I_O=10mA, T_J=25^{\circ}C, 4.8V \leq V_{IN} \leq 12V$
	4.900	5.000	5.100		S5M1119-5.0 $I_O=10mA, T_J=25^{\circ}C, 6.5V \leq V_{IN} \leq 12V$
	8.820	9.000	9.180		S5M1119-9.0 $I_O=10mA, T_J=25^{\circ}C, 10.5V \leq V_{IN} \leq 18V$
	11.760	12.000	12.240		S5M1119-12 $I_O=10mA, T_J=25^{\circ}C, 13.5V \leq V_{IN} \leq 18V$
Line Regulation	—	—	0.2	%	S5M1119-XXX $I_O=10mA, T_J=25^{\circ}C, V_{OUT}+1.5V < V_{IN} < 15V$
Load Regulation	—	12	15	mV	S5M1119-1.5 $V_{IN}=3.0V, 0mA < I_O < 0.5A, T_J=25^{\circ}C^{1,2}$
	—	15	18		S5M1119-1.8 $V_{IN}=3.3V, 0mA < I_O < 0.5A, T_J=25^{\circ}C^{1,2}$
	—	20	25		S5M1119-2.5 $V_{IN}=4.0V, 0mA < I_O < 0.5A, T_J=25^{\circ}C^{1,2}$
	—	26	33		S5M1119-3.3 $V_{IN}=5.0V, 0mA < I_O < 0.5A, T_J=25^{\circ}C^{1,2}$
	—	40	50		S5M1119-5.0 $V_{IN}=8.0V, 0mA < I_O < 0.5A, T_J=25^{\circ}C^{1,2}$
	—	70	90		S5M1119-9.0 $V_{IN}=12.0V, 0mA < I_O < 0.5A, T_J=25^{\circ}C^{1,2}$
	—	100	120		S5M1119-12 $V_{IN}=15.0V, 0mA < I_O < 0.5A, T_J=25^{\circ}C^{1,2}$
Dropout Voltage ($V_{IN}-V_{OUT}$)	—	1.1	1.4	V	S5M1119-XXX $I_O=0.5A, \Delta V_{OUT}=0.1\%V_{OUT}$
Current Limit	0.6	—	—	A	S5M1119-XXX ($V_{IN}-V_{OUT}$)=5V
Min. Load Current	—	—	10	mA	S5M1119-XXX $0^{\circ}C \leq T_J \leq 125^{\circ}C$
Enable Input Voltage V_{EN}	—	—	0.8	V	Logic Low (ON)
	2.0	—	—		Logic High (OFF)
Enable Input Current I_{EN}	—	—	10	uA	$V_{EN}=0.8V$
	—	—	30		$V_{EN}=2.0V$
Thermal Regulation	—	0.008	0.04	%/W	$T_A=25^{\circ}C, 30ms$ pulse
Ripple Rejection	—	60	70	dB	$F=120Hz, C_{OUT}=25\mu F, \text{Tantalum}, I_O=0.5A$
	—	—	—		S5M1119-XXX $V_{IN}=V_{OUT}+3V$
Temperature Stability	—	0.5	—	%	$I_O=10mA$
θ_{JA} Thermal Resistance Junction-to-Ambient (No heat sink; No air flow)	—	300	—	°C/W	
θ_{JC} Thermal Resistance Junction-to-Case	—	100	—	°C/W	Control Circuitry/Power Transistor

Note 1: See thermal regulations for changes in output voltage due to heating effects. Line and load regulation are measured at a constant junction temperature by low duty cycle pulse testing. Load regulation is measured at the output lead =1/8" from the package.

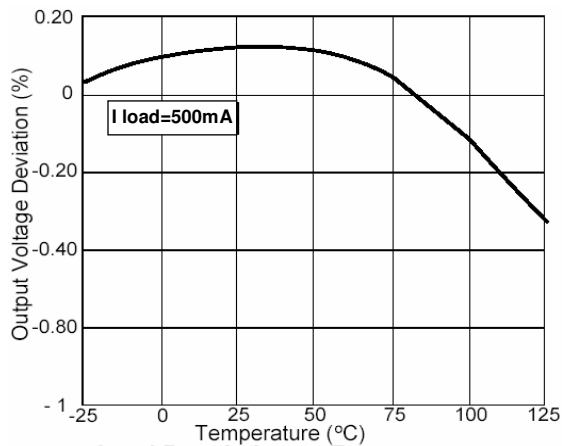
2: Line and load regulations are guaranteed up to the max. power dissipation of 5W. Power dissipation is determined by the input/output differential and the output current. Guaranteed max. power dissipation will not be available over the full input/output range.

3: Quiescent current is defined as the min. output current required to maintain regulation. At 12V input/output differential the device is guaranteed to regulate if the output current is greater than 10mA.

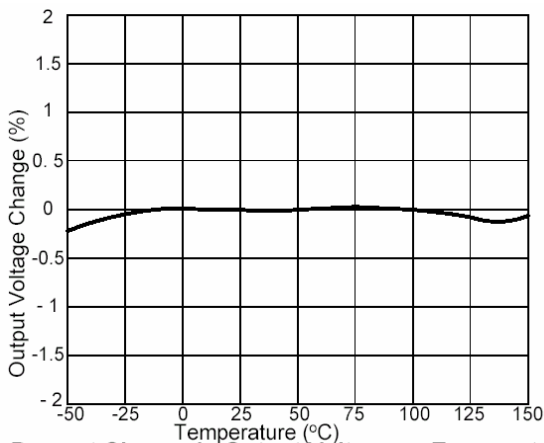
Characteristics Curve



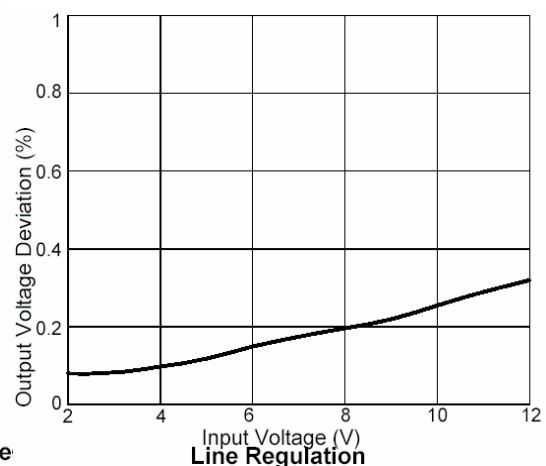
Dropout Voltage vs Output Current



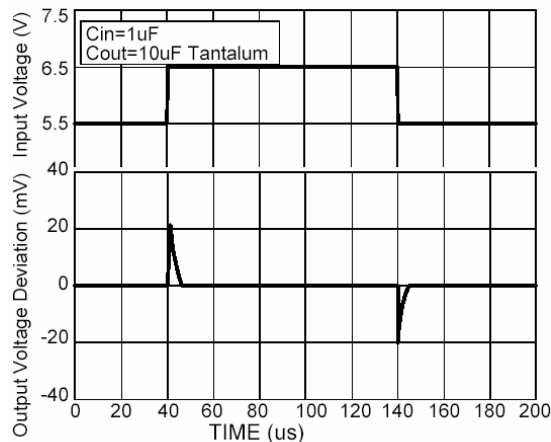
Load Regulation vs Temperature



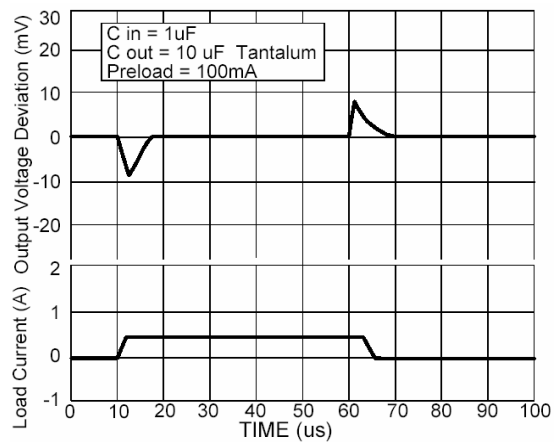
Percent Change in Output Voltage vs Temperature



Line Regulation



Line Transient Response



Load Transient Response