

General Description

The LSP9807(A) is a low dropout linear regulator with 600mA output current. It is suitable with both low ESR ceramic and electrolytic capacitors, and stable with of 4.7uF ceramic capacitors or higher value. The LSP9807(A) provide several protections, such as over current protection (OCP), short circuit protection (SCP) and over temperature protection (OTP) to prevent any combination application conditions. The output voltage accuracy is within 2%. LSP9807(A) is available in SOT89-3L package.

Features

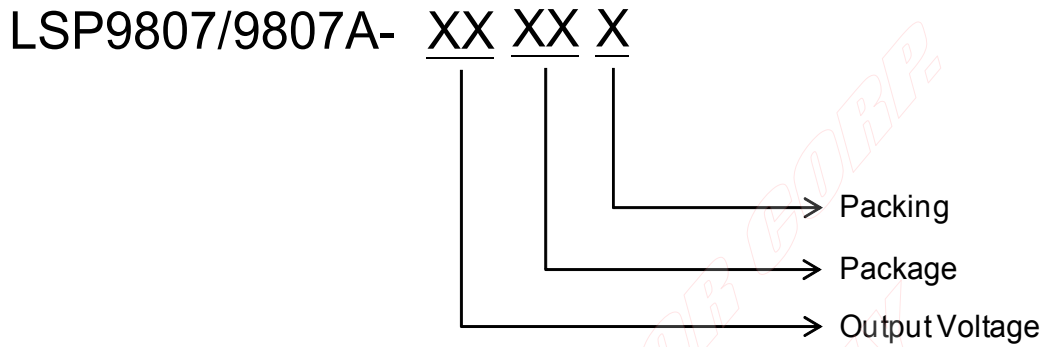
- Maximum Operating Input Voltage : 6.5V
- Fixed 1.2V,1.8V,2.5V,3.3V Output Voltage
- High PSRR : Up to 65dB
- Fast Load Transient Response
- Built-in Over Current Protection
- Built-in Short Circuit Protection
- Built-in Over Temperature Protection
- Stable with Ceramic Capacitors of 4.7uF
- Package : SOT89-3L

Applications

- LCD TV / Monitor
- Set-Top Box
- Portable DVD player
- VOIP
- Telecom Equipment
- PC / Mother Board
- NIC / Switch
- Graphic Card

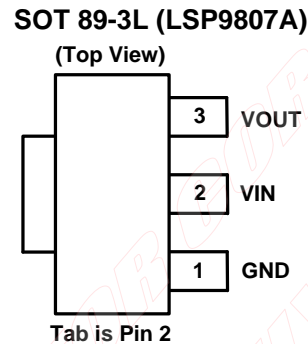
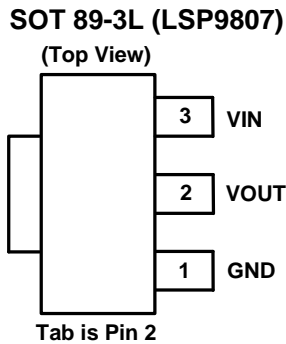
Please be aware that an **Important Notice** concerning availability, disclaimers, and use in critical applications of LSC products is at the end of this document.

Ordering Information



Output Voltage	Package	Packing
12 : 1.2V 18 : 1.8V 25 : 2.5V 33 : 3.3V	Y3 : SOT89-3L	A : Tape & Reel

Pin Assignment



Pin Descriptions

Pin Number		Name	Description
LSP9807	LSP9807A		
1	1	GND	Ground Pin
2	3	VOUT	Voltage Output
3	2	VIN	Voltage Input

Absolute Maximum Ratings(at $T_A=25^{\circ}\text{C}$)

Characteristics	Symbol	Rating	Unit
VCC Pin Voltage	V_{CC}	-0.3 to 8	V
Feedback Pin Voltage	V_{FB}	-0.3 to VCC	mV
Storage Temperature	T_{STG}	-65 to +150	$^{\circ}\text{C}$
Junction Temperature	T_{JC}	150	$^{\circ}\text{C}$
SOP89-3L Thermal Resistance (Junction to Case)	θ_{jc}	46	$^{\circ}\text{C}/\text{W}$
SOP89-3L Thermal Resistance (Junction to Ambient)	θ_{ja}	180	$^{\circ}\text{C}/\text{W}$
SOP89-3L Power dissipation	P_D	550	mW
Moisture Sensitivity	MSL	Please refer the MSL label on the IC package bag/carton for detail	

Note1: Ratings apply to ambient temperature at 25°C

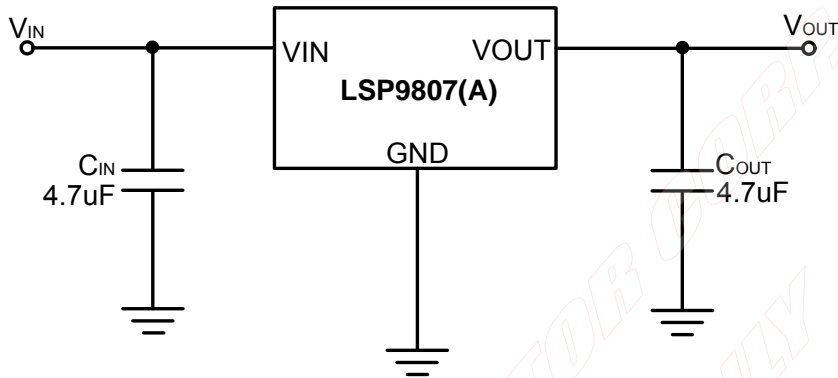
Electrical Characteristics

($V_{IN} = 5V, T_A = 25^{\circ}C$, unless otherwise specified)

Characteristics	Conditions		Min	Typ	Max	Unit
Output Voltage (V_{OUT})	LSP9807/A-1.2V	$I_O = 10mA, T_A = 25^{\circ}C$	1.176	1.200	1.224	V
	LSP9807/A-1.8V	$I_O = 10mA, T_A = 25^{\circ}C$	1.764	1.800	1.836	
	LSP9807/A-2.5V	$I_O = 10mA, T_A = 25^{\circ}C$	2.450	2.500	2.550	
	LSP9807/A-3.3V	$I_O = 10mA, T_A = 25^{\circ}C$	3.235	3.300	3.365	
Line Regulation	$I_O = 10mA, V_{OUT} + 1.5V < V_{IN} < 6.5V, T_A = 25^{\circ}C$				0.3	%
Load Regulation	LSP9807/A-1.2V	$V_{IN} = 3.3V, T_A = 25^{\circ}C$			1	%
	LSP9807/A-1.8V	$V_{IN} = 3.3V, T_A = 25^{\circ}C$			1	%
	LSP9807/A-2.5V	$V_{IN} = 5.0V, T_A = 25^{\circ}C$			1	%
	LSP9807/A-3.3V	$V_{IN} = 5.0V, T_A = 25^{\circ}C$			1	%
Dropout Voltage ($V_{IN} - V_{OUT}$)	$I_{OUT} = 1A, \Delta V_{OUT} = 1\% V_{OUT}$				1.4	V
Current Limit	$(V_{IN} - V_{OUT}) = 5V$		1.1			A
Thermal Regulation	$T_A = 25^{\circ}C, 30ms$ pulse			0.008	0.04	%/W
Ripple Rejection	$F = 120Hz, C_{OUT} = 25\mu F, I_{OUT} = 600mA$			65		dB
Quiescent Current (*for $V_{OUT} = 1.8V/2.5V/3.3V$ Version)					3	mA
Minimum Load Current (*for $V_{OUT} = 1.2V$ Version)					3	mA
Temperature Stability	$I_O = 10mA$			0.5		%
Thermal Shutdown	Junction temperature			145		$^{\circ}C$
Thermal Shutdown Hysteresis				25		$^{\circ}C$

Note : These specifications are guaranteed by designed and are not tested when in mass-production.

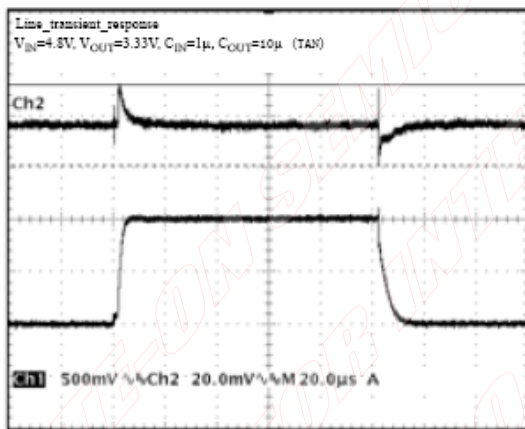
Application Circuit



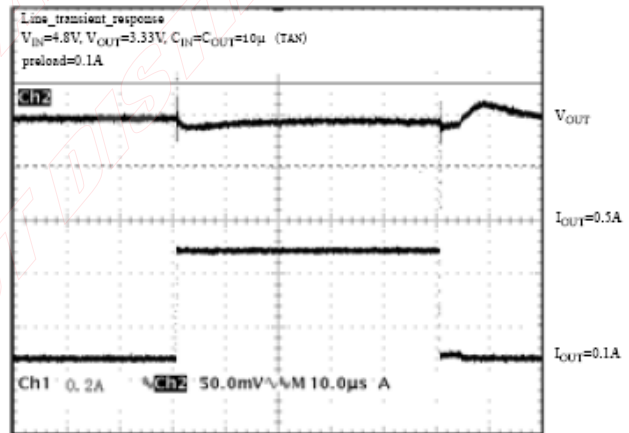
The LSP9808 fixed 1.2V version needs a dummy load current as the quiescent current to stabilize the output voltage when the normal output load current is smaller than 3mA. Other voltage versions do not need the dummy load current.

Typical Characteristics

Load Transient Response

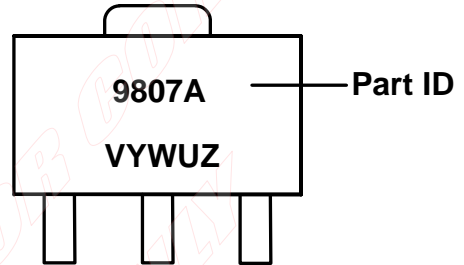
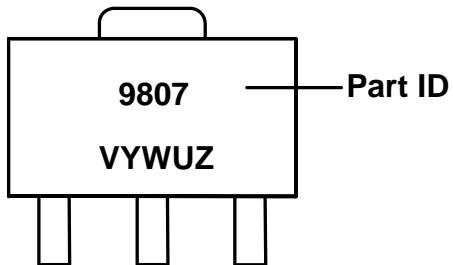


Load Transient Response



Marking Information

(1) SOT89-3L



V YW UZ

Internal Code

Date Code

Y : Year(9=2009,0=2010,1=2011,2=2012...)
W : Week

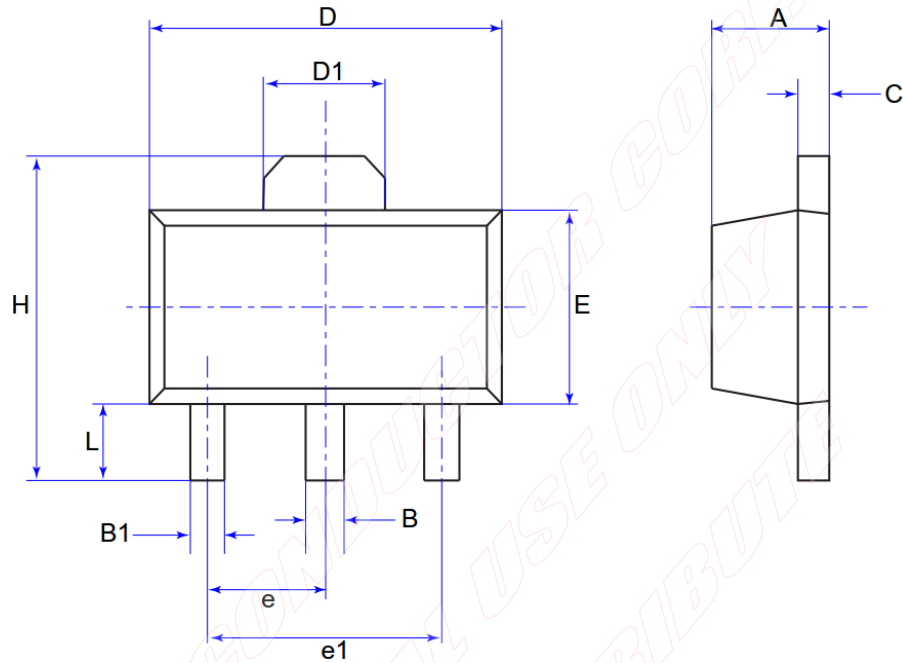
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Code#	1	2	3	4	5	6	7	8	9	A	B	C	D
Week	14	15	16	17	18	19	20	21	22	23	24	25	26
Code#	E	F	G	H	J	K	L	M	N	P	Q	R	S
Week	27	28	29	30	31	32	33	34	35	36	37	38	39
Code#	T	U	V	W	X	Y	Z	a	b	c	d	e	f
Week	40	41	42	43	44	45	46	47	48	49	50	51	52/53
Code#	g	h	l	m	n	p	q	s	t	u	v	w	x

Output Voltage

P=1.2V
C=1.8V
D=2.5V
J=3.3V

Mechanical Information

(1) Package type: SOT89-3L



Unit: mm

Symbol	Min	Max
A	1.40	1.60
B	0.35	0.58
B1	0.32	0.58
C	0.35	0.46
D	4.30	4.70
D1	1.60 REF	
E	2.30	2.70
e	1.50 TYP	
e1	3.00 TYP	
H	3.94	4.70
L	0.80	1.20

MSL (Moisture Sensitive Level) Information

IPC/JEDEC J-STD-020D.1 Moisture Sensitivity Levels Table

LEVEL	FLOOR LIFE		SOAK REQUIREMENTS				CONDITION
			Standard		Accelerated Equivalent ¹		
	TIME	CONDITION			TIME (hours)	CONDITION	
1	Unlimited	≤30 °C /85% RH	168 +5/-0	85 °C /85% RH	NA	NA	NA
2	1 year	≤30 °C /60% RH	168 +5/-0	85 °C /60% RH	NA	NA	NA
2a	4 weeks	≤30 °C /60% RH	696 ² +5/-0	30 °C /60% RH	120 -1/+0	168 -1/+0	60 °C/ 60% RH
3	168 hours	≤30 °C /60% RH	192 ² +5/-0	30 °C /60% RH	40 -1/+0	52 -1/+0	60 °C/ 60% RH
4	72 hours	≤30 °C /60% RH	96 ² +2/-0	30 °C /60% RH	20 +0.5/-0	24 +0.5/-0	60 °C/ 60% RH
5	48 hours	≤30 °C /60% RH	72 ² +2/-0	30 °C /60% RH	15 +0.5/-0	20 +0.5/-0	60 °C/ 60% RH
a	24 hours	≤30 °C /60% RH	48 ² +2/-0	30 °C /60% RH	10 +0.5/-0	13 +0.5/-0	60 °C/ 60% RH
6	Time on Label (TOL)	≤30 °C /60% RH	TOL	30 °C /60% RH	NA	NA	NA

Note 1: CAUTION - To use the "accelerated equivalent" soak conditions, correlation of damage response (including electrical, after soak and reflow), should be established with the "standard" soak conditions. Alternatively, if the known activation energy for moisture diffusion of the package materials is in the range of 0.40 - 0.48 eV or 0.30 - 0.39 eV, the "accelerated equivalent" may be used. Accelerated soak times may vary due to material properties (e.g .mold compound, encapsulant, etc.). JEDEC document JESD22-A120 provides a method for determining the diffusion coefficient.

Note 2: The standard soak time includes a default value of 24 hours for semiconductor manufacturer's exposure time (MET) between bake and bag and includes the maximum time allowed out of the bag at the distributor's facility. If the actual MET is less than 24 hours the soak time may be reduced. For soak conditions of 30 °C/60% RH, the soak time is reduced by 1 hour for each hour the MET is less than 24 hours. For soak conditions of 60 °C/60% RH, the soak time is reduced by 1 hour for each 5 hours the MET is less than 24 hours. If the actual MET is greater than 24 hours the soak time must be increased. If soak conditions are 30 °C/60% RH, the soak time is increased 1 hour for each hour that the actual MET exceeds 24 hours. If soak conditions are 60 °C/60% RH, the soak time is increased 1 hour for each 5 hours that the actual MET exceeds 24 hours.

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