CL9193
300mA High PSRR LDO

GENERAL DESCRIPTION

The CL9193 is a low-dropout voltage regulator designed for portable and wireless applications that require high PSRR, low quiescent current and excellent line and load transient response. The CL9193 is designed to work with small 1μF input and output ceramic capacitors. Its quiescent current is as low as 80uA. With its better than 70dB PSRR at 1kHz, the CL9193's performance is ideal for battery powered systems for delivering low dropout voltage and low quiescent current.

The device can be used for mobile phones and similar battery powered wireless applications. It provides up to 300mA, from a 2.0V to 6.0V input. The CL9193 consumes less than 0.1μA in shutdown mode. The CL9193 is available in 5 pin SOT235 packages. The output standards of 1.2V, 1.3V, 1.5V, 1.8V, 2.0V, 2.5V, 2.7V, 2.8V, 3.0V, and 3.3V are available.

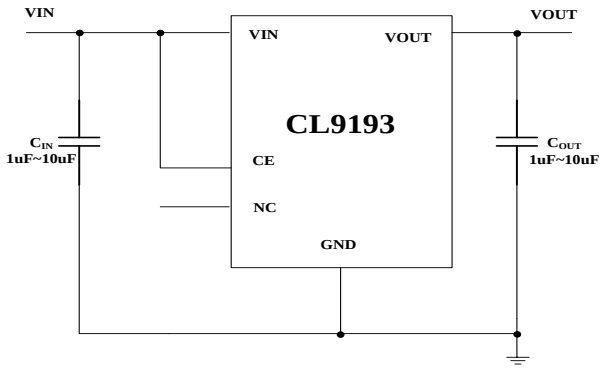
FEATURES

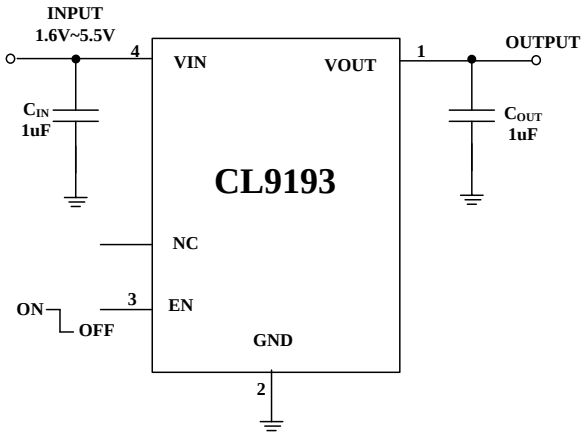
- 2.0V to 6.0V input range
- 300mA guaranteed output current
- High PSRR: 70dB at 1KHz
- Low quiescent current: 80uA (Typ.)
- < 1uA current at shutdown mode
- 180mV maximum low dropout voltage with 100mA load
- -40°C to +85°C junction temperature for operation

APPLICATIONS

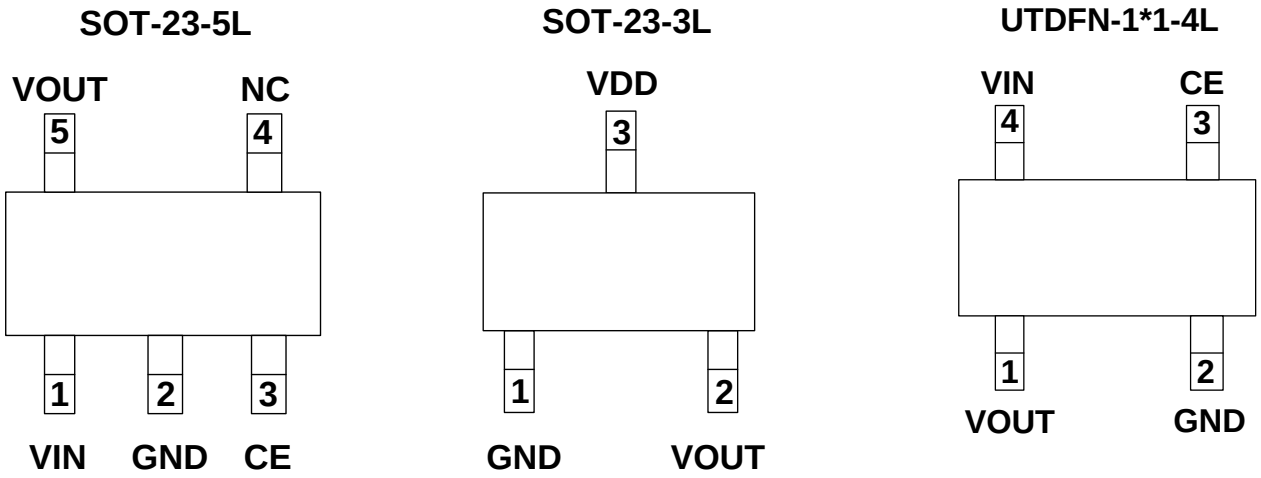
- CDMA/GSM mobile phone
- PDAs/MP3
- WLAN and bluetooth appliances
- Cordless telephones
- Battery powered portable devices

TYPICAL APPLICATION CIRCUIT





PIN ASSIGNMENT



丝印说明

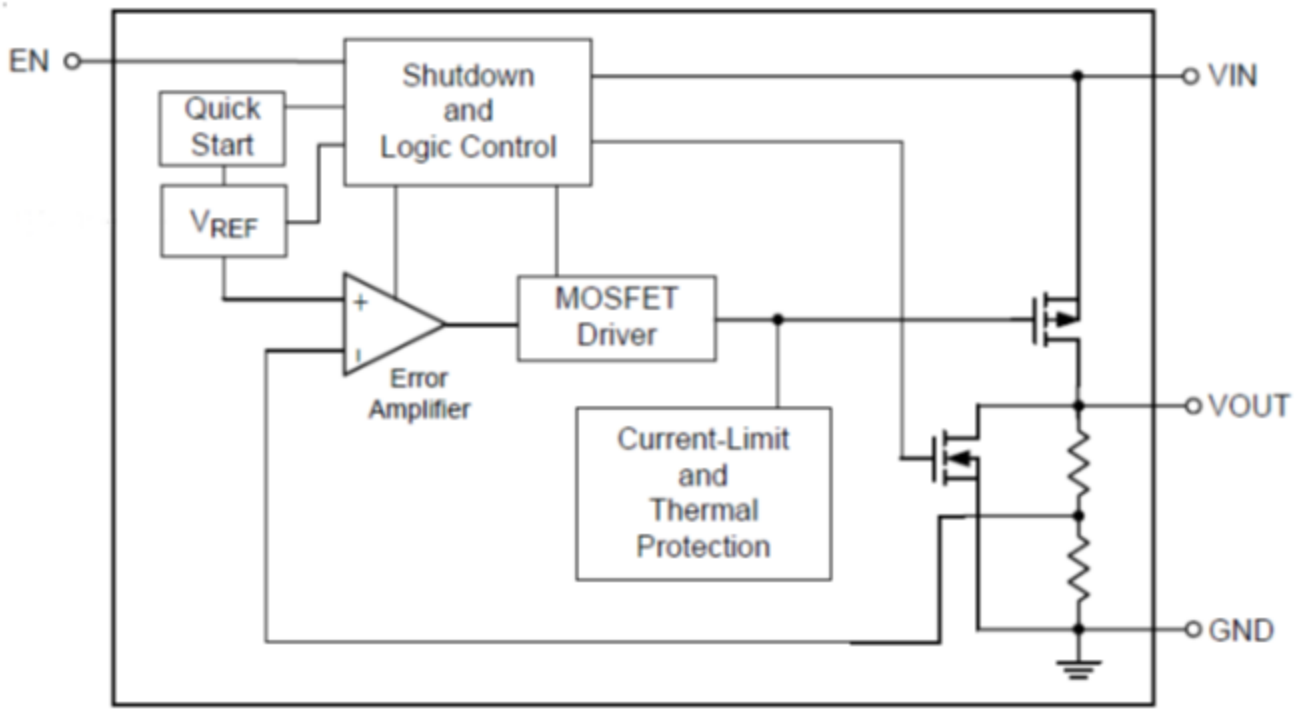
芯片型号	芯片封装	芯片丝印
CL9193A12L3M	SOT-23-3L	AF35
CL9193A12L5M	SOT-23-5L	DA=G3K
CL9193A15L5M	SOT-23-5L	DS=J2T
CL9193A18L5M	SOT-23-5L	DC=E2H
CL9193A25L5M	SOT-23-5L	DH-M6C
CL9193A27L5M	SOT-23-5L	DB=C3E
CL9193A28L5M	SOT-23-5L	DJ-N10
CL9193A29L5M	SOT-23-5L	DL=F5M
CL9193A30L5M	SOT-23-5L	DK-06L
CL9193A33L5M	SOT-23-5L	DE=A1D
CL9193A12F4M	UTDFN-1*1-4L	AC
CL9193A15F4M	UTDFN-1*1-4L	AE
CL9193A18F4M	UTDFN-1*1-4L	AG
CL9193A25F4M	UTDFN-1*1-4L	AH

CL9193A28F4M	UTDFN-1*1-4L	AM
CL9193A30F4M	UTDFN-1*1-4L	AP
CL9193A33F4M	UTDFN-1*1-4L	AT
CL9193A36F4M	UTDFN-1*1-4L	AQ

TERMINAL ASSIGNMENTS

PIN No.			PINNAMES	DESCRIPTION
UTDFN-1*1-4L	SOT-23-3L	SOT-23-5L		
4		1	VIN	
2	1	2	GND	Ground
3		3	CE	
		4	NC	Unconnected, Must Be Suspended
1	2	5	VOUT	
	3		VDD	Power Supply

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATING	UNITS
INPUT VOLTAGE	V_{IN}	6	V
OUTPUT CURRENT	I_{out}	450	mA
OUTPUT VOLTAGE	V_{out}	Vss-0.3 ~ Vout+0.3	V
OPERATING TEMP.	T_{Opr}	-40 ~ +85	℃
STORAGE TEMP.	T_{stg}	-55 ~ +125	℃
LEAD TEMP.	T_{solder}	260℃, 10s	

PACKAGE DISSIPATION RATING

Package	$R_{\theta JA}$ (℃/W)
SOT-23-5L	250
SOT-23-3L	300
UTDFN-1*1-4L	500

ELECTRICAL CHARACTERISTICS

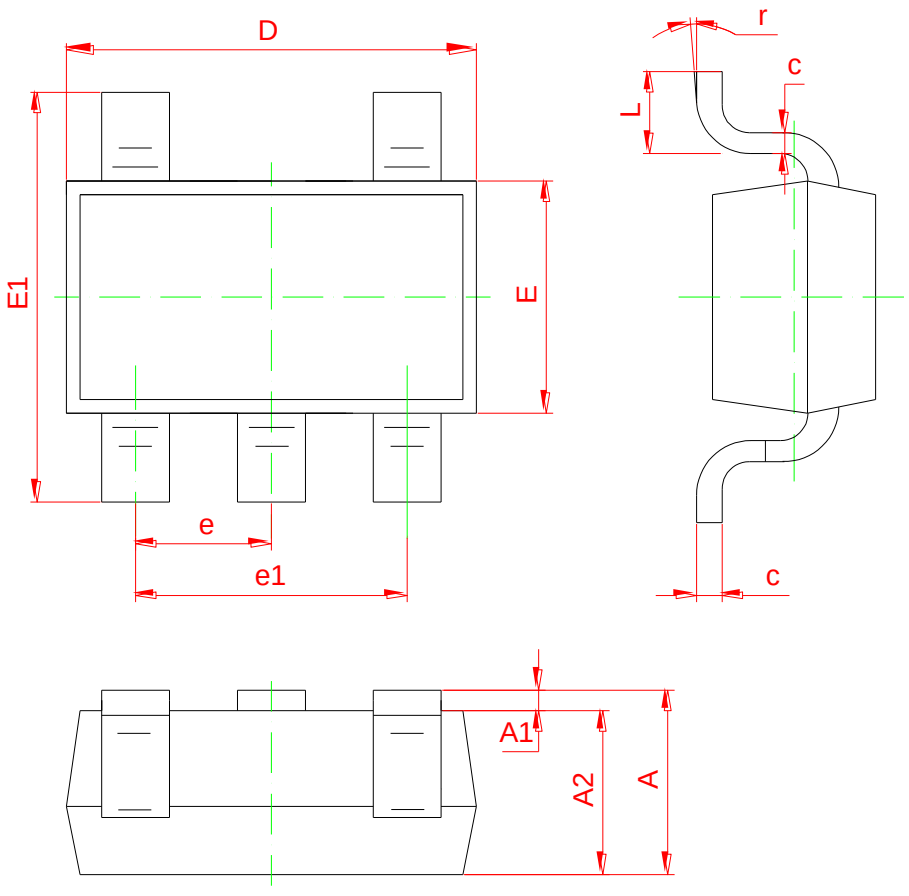
(Vin=Vout+1V,Cin=Cout=1u,Ta=25°C)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Output Voltage	V_{OUT}(E) (Note 2)	I_{OUT}=40mA, V_{IN}=Vout+1V	X 0.98	V_{OUT} (T) (Note 1)	X 1.02	V
Input Voltage	V_{IN}				6.0	V
Max. Output Current	I_{OUT}max	V_{IN}=Vout+1V		300		mA
Load Regulation	ΔV_{OUT}	V_{IN}=Vout+1V, 1mA≤I_{OUT}≤100mA		50		mV
Dropout Voltage (Note 3)	V_{dif1}	I_{OUT} =100mA		90		mV
	V_{dif2}	I_{OUT} =200mA		230		mV
Supply Current	I_{SS}	V_{IN}=Vout+1V		70		μ A
Standby Current	I_{CEL}	Vce＝0V		1		μ A
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \bullet V_{OUT}}$	I_{OUT} =40mA Vout+1V ≤V_{IN}≤8V		0.05		%/V
Output Noise	en	I_{OUT} =40mA， 300Hz~50kHz		50		uVrms
Ripple Rejection Rate	PSRR	Vin= [Vout+1]V +1Vp-pAC I_{OUT} =40mA,f=1kHz		70		dB

NOTE
(NOTE 1) VOUT(T)=Specified Output Voltage
(NOTE 2) VOUT(E)=Effective Output Voltage
(I.e. the output voltage when "VOUT(T)+1.0V" is provided at the VIN pin while maintaining a certain IOUT value).
(NOTE 3) Vdif={VIN1(NOTE5)-VOUT1(NOTE4)}
(NOTE 4) VOUT1=A voltage equal to 98% of the Output Voltage whenever an amply stabilized IOUT

{VOUT(T)+1.0V} is input.
(NOTE 5) VIN1=The Input Voltage when VOUT1 appears as Input Voltage is gradually decreased.
(NOTE 6) Unless otherwise stated, VIN=VOUT(T)+1.0V

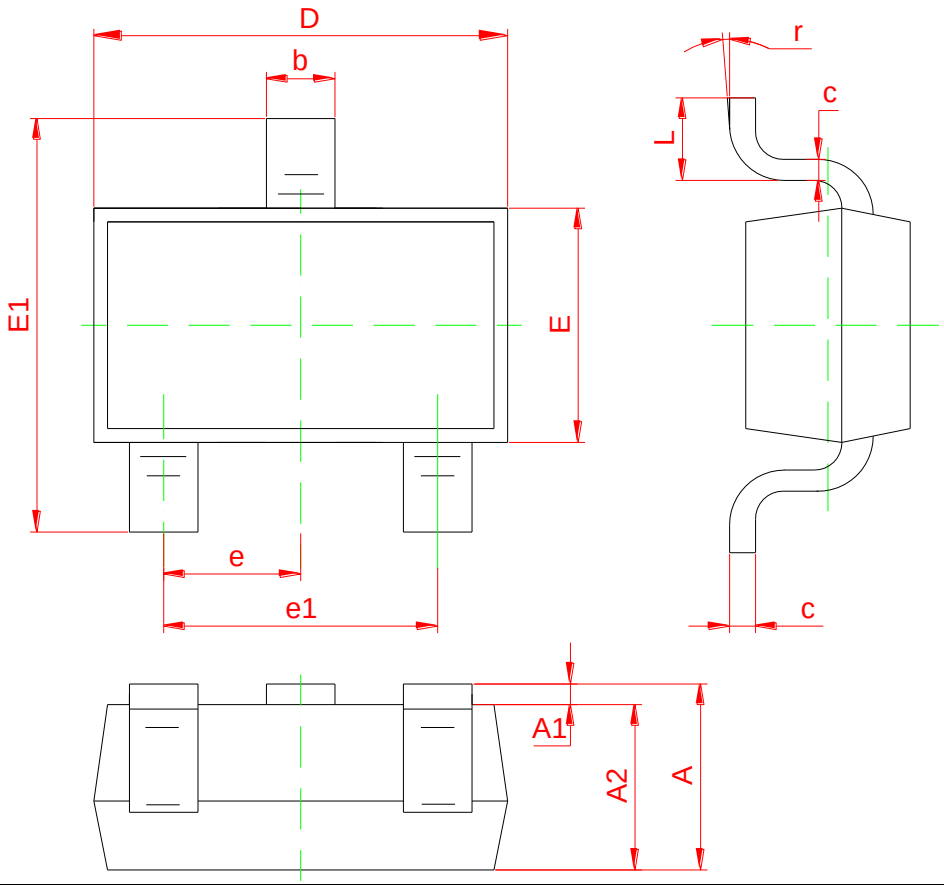
PACKAGE INFORMATION：SOT-23-5L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049

A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950 (BSC)		0.037 (BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
r	0°	8°	0°	8°

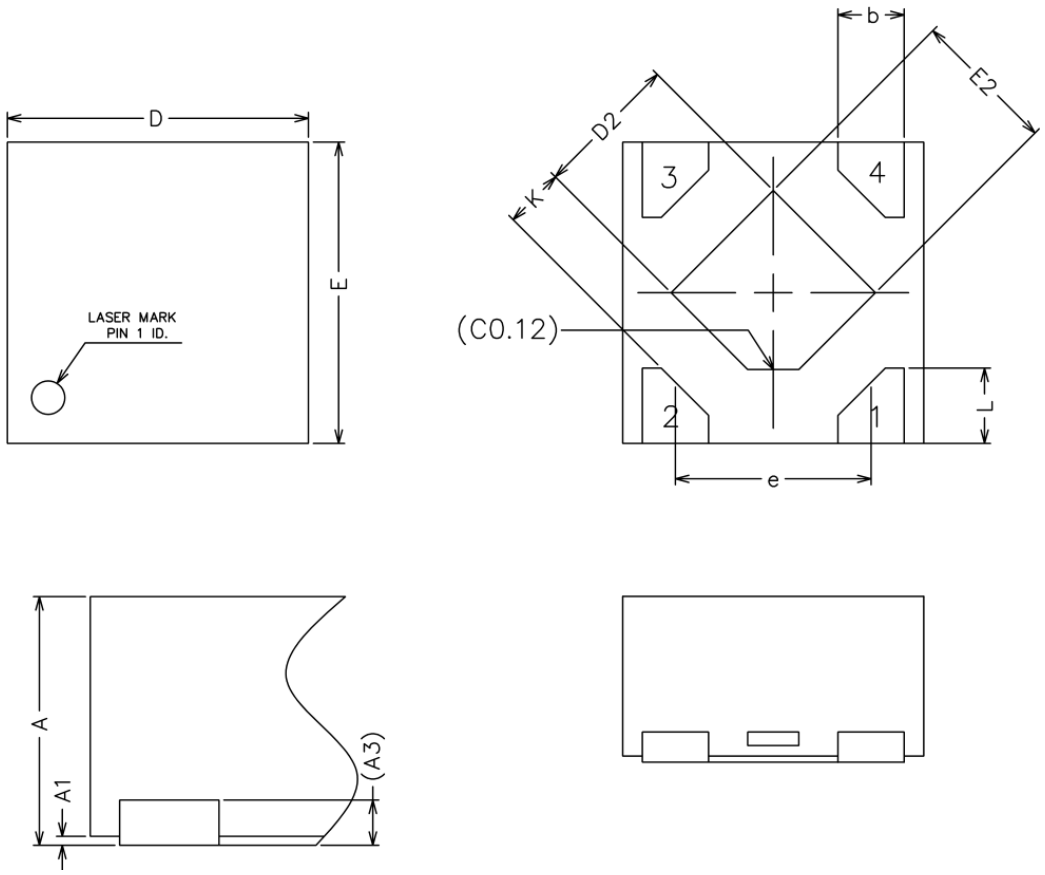
PACKAGE INFORMATION：SOT-23-3L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020

c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950 (BSC)		0.037 (BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
r	0°	8°	0°	8°

PACKAGE INFORMATION：UTDFN-1*1-4L



Symbol	Dimensions In Millimeters	
	Min	Max
A	0.34	0.40
A1	0.00	0.05
A3	0.100REF	

b	0.17	1.27
D	0.95	1.05
E	0.95	1.05
D2	0.43	0.53
E2	0.43	0.53
L	0.20	0.30
e	0.60	0.70
K	0.15	

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