

### 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 1uF input and output ceramic capacitors.

The CL9193 consumes less than 0.1uA in shutdown mode. The CL9193 is available in 5 pin SOT23-5L 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

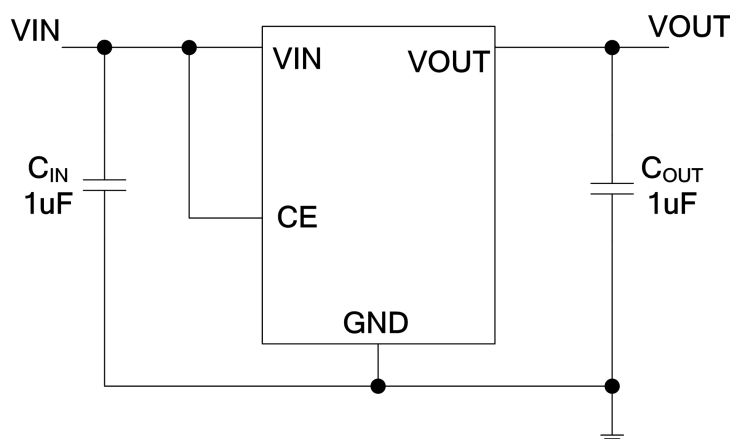
- ◆ Input Range : 2.0V ~ 6.0V
- ◆ Maximum Output Current : 300mA
- ◆ High PSRR : 70dB @ 1KHz
- ◆ Low Quiescent Current : 40uA (Typ.)
- ◆ Shutdown Mode Current : < 0.1uA
- ◆ Dropout Voltage : 150mV @ 100mA
- ◆ Operation Ambient Temperature : -40 ~ +85°C
- ◆ Protection : Current Limit & Short Protect

### APPLICATIONS

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

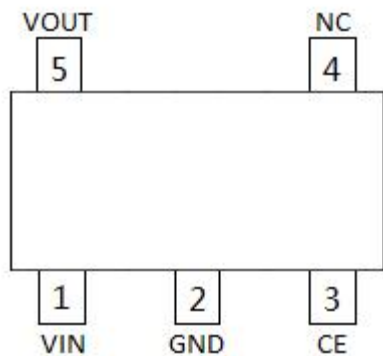
SOT23-5L Package Available

### TYPICAL APPLICATIONS



### PIN CONFIGURATION

#### SOT23-5L



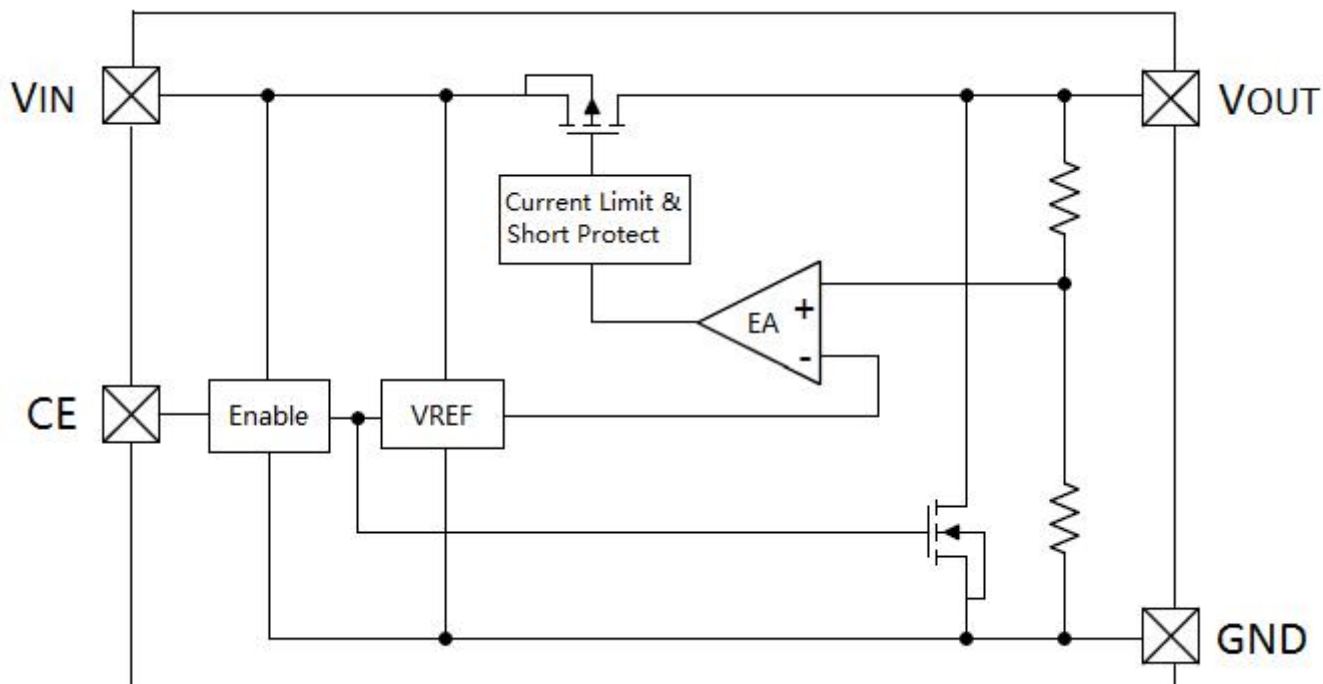
### PIN FUNCTIONS

SOT23-5	PIN NAME	FUNCTIONS
1	VIN	Power Input
2	GND	Ground
3	CE	Chip Enable
4	NC	No Connection
5	VOUT	Output

### ESD & Latch-up Level

HBM ESD	4000V
MM ESD	400 V
Latch-up	400mA

### BLOCK DIAGRAM



### ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATING	UNITS
INPUT VOLTAGE	V <sub>IN</sub>	6	V
OUTPUT CURRENT	I <sub>OUT</sub>	500	mA
OUTPUT VOLTAGE	V <sub>OUT</sub>	GND-0.3 ~ V <sub>IN</sub> +0.3	V
POWER DISSIPATION (SOT23-5L)	P <sub>d</sub>	400	mW
OPERATING TEMP.	T <sub>opr</sub>	-25 ~ +85	°C
STORAGE TEMP.	T <sub>stg</sub>	-40 ~ +125	°C
LEAD TEMP.	T <sub>solder</sub>	260°C, 10s	

### ELECTRICAL CHARACTERISTICS

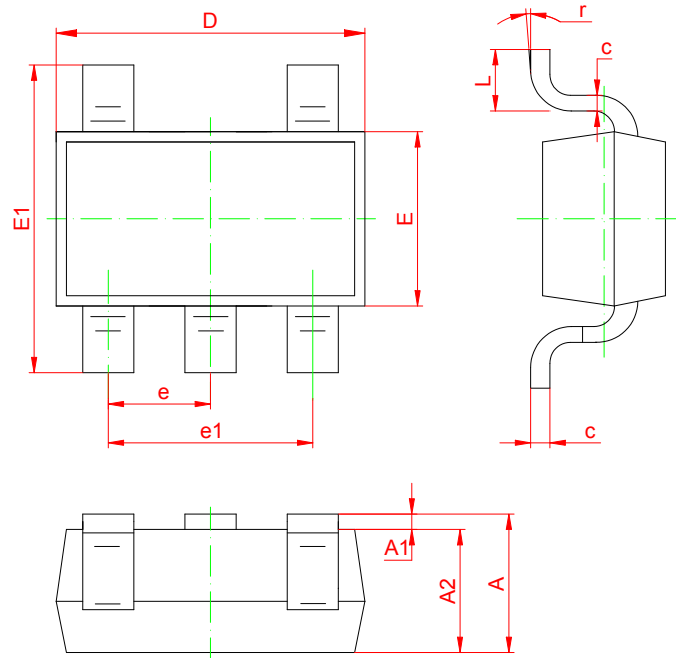
(VIN = VOUT +1V, CIN=COUT=1uF, Ta=25°C, unless otherwise stated)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Input Voltage	VIN				6.0	V
Output Voltage	VOUT	IOUT=40mA, VOUT<1.5V	X 0.97	VOUT(T) <sup>Note1</sup>	X 1.03	V
		IOUT=40mA, VOUT≥1.5V	X 0.98	VOUT(T) <sup>Note1</sup>	X 1.02	V
Max. Output Current	IOUT(max)	VIN=VOUT+1V	300			mA
Load Regulation	ΔVOUT	VIN=VOUT+1V 1mA≤IOUT≤100mA	VOUT=1.2V	20		mV
			VOUT=2.5V	25		
			VOUT=3.3V	30		
Dropout Voltage	Vdif	IOUT =100mA	VOUT=1.2V	600		mV
			VOUT=2.5V	200		mV
			VOUT=3.3V	150		
Supply Current	IQ	VIN= VOUT +1V		40		uA
Standby Current	ISTDBY	VCE=0V		<0.1		uA
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} * V_{OUT}}$	IOUT =40mA VOUT+1V≤VIN≤ 7V		0.05		%/V
CE “H” Threshold	VCEH	VIN=5V	1.4			
CE “L” Threshold	VCEL	VIN=5V			0.4	
Ripple Rejection Rate	PSRR	VIN= [VOUT +1]V +1Vp-pAC IOUT =40mA,f=1kHz		70		dB

NOTE:

- VOUT(T)=Specified Output Voltage

### 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°

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