



# BCT2910

## 300mA, Ultra Low Noise and High PSRR LDO Regulators for RF and Analog circuits

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### BCT2910

### Ultra Low Noise and High PSRR Linear Regulators

#### GENERAL DESCRIPTION

The BCT2910 series is a high PSRR Linear regulators capable of supplying 300mA output current. Designed to meet the requirements of RF and analog circuits, the BCT2910 provides ultra low noise, high PSRR, low quiescent current and very good load/line transients. The device is designed to work with a 1 $\mu$ F input and a 1 $\mu$ F output ceramic capacitors.

These devices feature a shutdown function and are offered in active low with auto discharge.

The BCT2910 is available in Green WLCSP-4L packages. It operates over an ambient temperature range of -40°C to +85°C.

#### FEATURES

- Operating Input Voltage Range: 1.8V to 5.5V
- Accuracy  $\pm 2\%$
- Ultra Low Quiescent Current: 14 $\mu$ A
- Shutdown Current: 0.1 $\mu$ A
- Low Dropout Voltage
- Output current limit: 530mA
- Output short to GND Protection: 220mA
- Over Temperature Protection: +160°C
- Fixed Outputs of 1.2V, 1.5V, 1.8V, 2.5V, 2.8V, 3.0V, 3.3V, 4.2V, 5.0V
- Stable with a 1 $\mu$ F Small Case Size Ceramic Capacitor
- -40°C to 85°C Operating Temperature Range
- Available in Green WLCSP-4L and Packages.

#### APPLICATIONS

Battery-Powered Equipment  
Wireless LAN Devices  
DVR and Set Top Box  
Smartphones and Tablets  
Cameras ,Camcorders,



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### ORDERING INFORMATION

Order Number	V <sub>OUT</sub> (V)	Package Type	Temperature Range	Marking	QTY/Reel
BCT2910EWS12-TR	1.2	WLCSP-4L	-40°C to +85°C	y2X	10000
BCT2910EWS15-TR	1.5	WLCSP-4L	-40°C to +85°C	y5X	10000
BCT2910EWS18-TR	1.8	WLCSP-4L	-40°C to +85°C	y8X	10000
BCT2910EWS25-TR	2.5	WLCSP-4L	-40°C to +85°C	y5X	10000
BCT2910EWS28-TR	2.8	WLCSP-4L	-40°C to +85°C	y8X	10000
BCT2910EWS30-TR	3.0	WLCSP-4L	-40°C to +85°C	y0X	10000
BCT2910EWS33-TR	3.3	WLCSP-4L	-40°C to +85°C	y3X	10000
BCT2910EWS42-TR	4.2	WLCSP-4L	-40°C to +85°C	y2X	10000
BCT2910EWS50-TR	5.0	WLCSP-4L	-40°C to +85°C	y0X	10000

#### Note:

"y" in Marking is product short code for BCT2910

"X" in Marking will be appeared as the batch code.



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### ABSOLUTE MAXIMUM RATINGS

IN to GND.....	-0.3V to 6.0V
EN to GND.....	-0.3V to 6.0V
OUT to GND.....	-0.3V to $V_{in}+0.3V$ , max 6.0V
Output Short-Circuit Duration.....	Infinite
Power Dissipation, $P_D$ @ $T_A=25^{\circ}C$	
WLCSP-4L.....	0.5W
Package Thermal Resistance	
WLCSP-4L, $\theta_{JA}$ .....	$250^{\circ}C/W$
Junction Temperature.....	$150^{\circ}C$
Storage Temperature Range.....	$-65^{\circ}C$ to $150^{\circ}C$
Lead Temperature (Soldering, 10 sec).....	$260^{\circ}C$
ESD Susceptibility	
HBM.....	4000V

### RECOMMENDED OPERATING CONDITIONS

Operating Voltage Range.....	1.8V to 5.5V
Operating Temperature Range .....	$-40^{\circ}C$ to $+85^{\circ}C$

### OVERSTRESS CAUTION

Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

### ESD SENSITIVITY CAUTION

This integrated circuit can be damaged by ESD if you don't pay attention to ESD protection. Broadchip recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage. ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

### DISCLAIMER

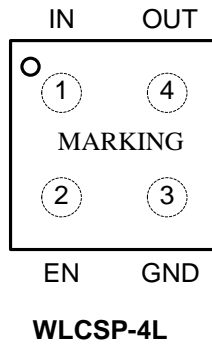
Broadchip reserves the right to make any change in circuit design, specification or other related things if necessary without notice at any time. Please contact Broadchip sales office to get the latest datasheet.



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### PIN CONFIGURATION (TOP VIEW)



### PIN DESCRIPTION

PIN	NAME	FUNCTION
WLCSP-4L		
1	IN	Regulator Input. Supply voltage can range from 2.5V to 5.5V. Bypass with a 1uF capacitor to GND.
2	EN	Shutdown Input. A logic low reduces the supply current to 0.1uA. Connect to IN for normal operation.
3	GND	Ground.
4	OUT	Regulator Output.

### ELECTRICAL CHARACTERISTICS

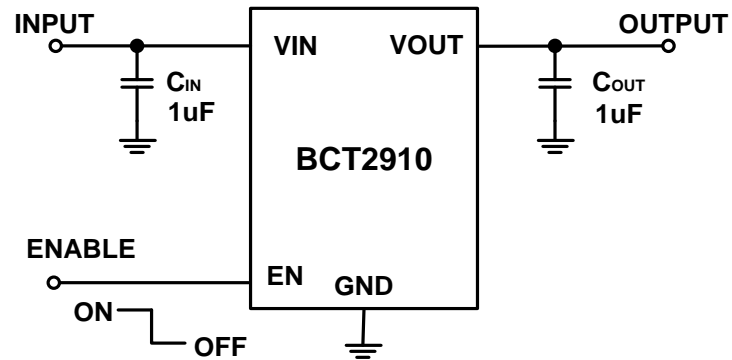
( $V_{IN} = V_{OUT(NOMINAL)} + 1V$ ,  $I_{OUT} = 1mA$ ,  $C_{IN} = C_{OUT} = 1\mu F$ ,  $T_A = -40^\circ C$  to  $+85^\circ C$ , typical values are at  $T_A = +25^\circ C$ , unless otherwise specified.)

PARAMETER	SYM	CONDITIONS	MIN	TYP	MAX	UNITS
Input Voltage	$V_{IN}$		1.8		5.5	V
Output Voltage Accuracy			-2.0		2.0	%
Line Regulation	$\Delta V_{LNR}$	$V_{OUT} + 1V \leq V_{IN} \leq 5.5V$		0.02		%/V
Load Regulation	$\Delta V_{LDR}$	$I_{OUT} = 1mA$ to $300mA$ ,		15		mV
Dropout Voltage <sup>(1)</sup>	$V_{DROP}$	$I_{OUT} = 300mA$		210		mV
		$V_{out} = 1.8V$		140		mV
		$V_{out} = 2.8V$		130		mV
Current Limit	$I_{LIM}$	$V_{OUT} = 90\% V_{OUT(NOM)}$		530		mA
Short-Circuit Current	$I_{SHORT}$	$V_{OUT} = 0V$		220		mA
Quiescent Current	$I_Q$	No load		14		uA
Power Supply Rejection Ratio	PSRR	$I_{OUT} = 20mA$	$f = 100Hz$	84		dB
			$f = 1kHz$	94		
			$f = 10kHz$	73		
			$f = 100kHz$	33		
Output Voltage Noise	$e_n$	$f = 10Hz$ to $100kHz$	$I_{OUT} = 1mA$	26		$\mu V_{RMS}$
			$I_{OUT} = 300mA$	20		
Output Discharge Resistance	$R_{DISCH}$	$V_{EN} = 0V$ , $V_{IN} = 5V$ , $V_{out} = 1.8V$		220		$\Omega$
<b>SHUTDWON</b>						
EN Input Threshold	$V_{IH}$	$V_{IN} = V_{OUT(NOMINAL)} + 1V$ to $5.5V$ ,	1.7			V
	$V_{IL}$				0.3	
EN Pull-Down Current	$I_{EN}$	$EN = 5.5V$		0.2		uA
Shutdown Current	$I_{SHDN}$	$V_{EN} = 0V$ , $V_{IN} = 5.5V$		0.1		uA
Turn-On Time	$t_{ON}$	From assertion of $V_{EN}$ to $V_{OUT} = 90\% V_{OUT(NOM)}$		170		us
<b>THERMAL PROTECTION</b>						
Thermal Shutdown Temperature	$T_{SHDN}$			160		$^\circ C$
Thermal Shutdown Hysteresis	$\Delta T_{SHDN}$			20		$^\circ C$

NOTES:

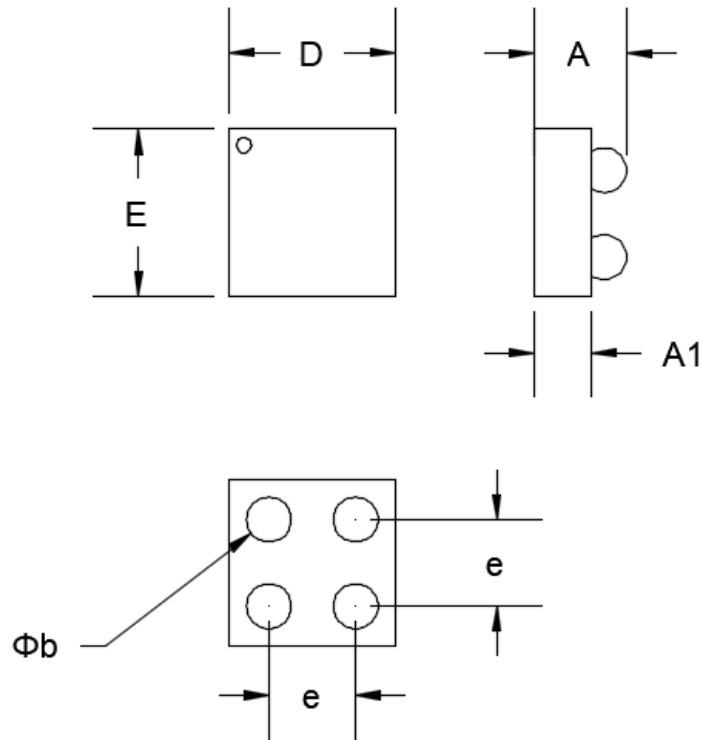
1. The dropout voltage is defined as  $V_{IN} - V_{OUT}$ , when  $V_{OUT}$  is 100mV below the value of nominal  $V_{OUT}$

**TYPICAL APPLICATION CIRCUIT**



## PACKAGE OUTLINE DIMENSIONS

### WLCSP-4L

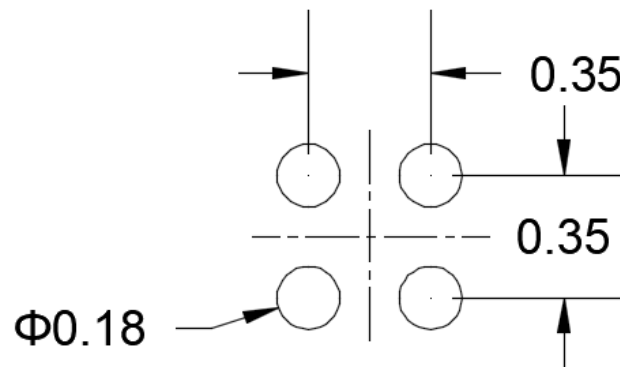


Symbol	Dimensions In Millimeters (mm)		
	Min	Nom	Max
A	0.340	0.370	0.400
A1	0.212	0.230	0.248
D	0.655	0.675	0.695
E	0.655	0.675	0.695
e	0.35 (BSC)		
$\Phi_b$	0.160	0.180	0.200

WLCSP-4L Surface Mount Package

## LAND PATTERN DATA

WLCSP-4L



RECOMMENDED PCB LAYOUT PATTERN (Unit: mm)