





# LC898128DP

## PIN LAYOUT

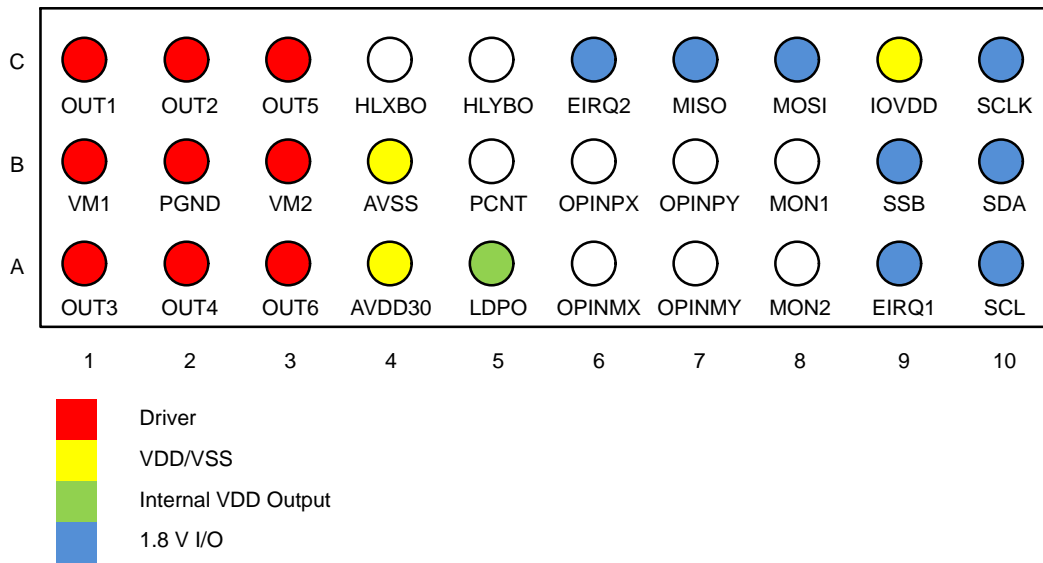


Figure 2. Pin Layout (Bottom View)

## PIN DESCRIPTION

### PIN DESCRIPTION

Pin	I/O	I/O Pwr	Primary Function	Sub Functions	Init
1	B	AVDD30	Servo Monitor Analog In/Out		

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## PIN DESCRIPTION (continued)

No.	Pin	I/O	I/O Pwr	Primary Function	Sub Functions	Init
12	PCNT	O	AVDD30	No use		Z
13	HLXBO	O	AVDD30	OIS Hall X Bias Output		Z
14	HLYBO	O	AVDD30	OIS Hall Y Bias Output		Z
15	OPINMX	I	AVDD30	OIS Hall X Opamp Input Minus		
16	OPINPX	I	AVDD30	OIS Hall X Opamp Input Plus		
17	OPINMY	I	AVDD30	OIS Hall Y Opamp Input Minus		
18	OPINPY	I	AVDD30	OIS Hall Y Opamp Input Plus		
19	OUT1	O	VM1	OIS Driver Output		Z
20	OUT2	O	VM1	OIS Driver Output		Z
21	OUT3	O	VM1	OIS Driver Output		Z
22	OUT4	O	VM1	OIS Driver Output		Z
23	OUT5	O	VM2	OP AF Driver Output		Z
24	OUT6	O	VM2			

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## ELECTRICAL CHARACTERISTICS

### ABSOLUTE MAXIMUM RATINGS (AVSS = 0 V, PGND = 0 V)

Parameter	Symbol	Conditions	Ratings	Unit
Power Supply Voltage	V <sub>AD30</sub> max	T <sub>A</sub> ≤ 25°C	0.3 to 4.6	V
	V <sub>M</sub> max	T <sub>A</sub> ≤ 25°C	0.3 to 4.6	V
	V <sub>IO</sub> max	T <sub>A</sub> ≤ 25°C	0.3 to 4.6	V
Input/Output Voltage	V <sub>AI30</sub> , V <sub>AO30</sub>	T <sub>A</sub> ≤ 25°C	0.3 to V <sub>AD30</sub> + 0.3	V
	V <sub>MI30</sub> , V <sub>MO30</sub>	T <sub>A</sub> ≤ 25°C	0.3 to V <sub>M30</sub> + 0.3	V
	V <sub>II</sub> , V <sub>IOO</sub>	T <sub>A</sub> ≤ 25°C	0.3 to V <sub>IO18</sub> + 0.3	V
Storage Temperature	T <sub>stg</sub>		55 to 125	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### ALLOWABLE OPERATING RATINGS (T<sub>A</sub> = 30 to 85°C, AVSS = 0 V, PGND = 0 V)

Parameter	Symbol	Min	Typ	Max	Unit
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#### 3.0 V POWER SUPPLY (AVDD30)

Power Supply Voltage	V <sub>AD30</sub>	2.7	2.8	3.3	V
Input Voltage Range	V <sub>INA</sub>	0		V <sub>AD30</sub>	V

#### 3.0 V POWER SUPPLY (VM1, VM2)

Power Supply Voltage	V <sub>M30</sub>	1.8 (Note 1)	2.8	the lower of 3.3 and AVDD30 + 0.5	V
Input Voltage Range	V <sub>INM</sub>	0		V <sub>M30</sub>	V

#### 1.8 V POWER SUPPLY (IOVDD)

Power Supply Voltage	V <sub>IO</sub>	1.7	1.8	3.3	V
Input Voltage Range	V <sub>INI</sub>	0		V <sub>IO</sub>	V

Functional operation above the stresses listed in the Recommended Operating Ranges is not implied. Extended exposure to stresses beyond the Recommended Operating Ranges limits may affect device reliability.

1. Constant current.

### DC CHARACTERISTICS: INPUT/OUTPUT

(T<sub>A</sub> = 30 to 85°C, AVSS = 0 V, PGND = 0 V, AVDD30 = 2.7 to 3.3 V, IOVDD = 1.7 to 3.3 V)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit	Applicable Pins
High level Input Voltage	V <sub>IH</sub>	CMOS Schmitt	0.7 IOVDD			V	SCL, SDA, SSB, SCLK, MOSI, MISO, EIRQ1, EIRQ2
Low level Input Voltage	V <sub>IL</sub>						
High level Input Voltage	V <sub>IH</sub>	CMOS Schmitt	0.7 AVDD30			V	MON1, MON2
Low level Input Voltage	V <sub>IL</sub>						
High level Output Voltage	V <sub>OH</sub>	I <sub>OH</sub> = -3 mA	IOVDD 0.2			V	SDA, SSB, SCLK, MOSI, MISO, EIRQ1, EIRQ2
Low level Output Voltage	V <sub>OL</sub>	I <sub>OL</sub> = 3 mA			0.2	V	SCL, SDA, SSB, SCLK, MOSI, MISO, EIRQ1, EIRQ2
High level Output Voltage	V <sub>OH</sub>	I <sub>OH</sub> = -2 mA	AVDD30 0.2			V	MON1, MON2
Low level Output Voltage	V <sub>OL</sub>	I <sub>OL</sub> = 2 mA			0.2	V	MON1, MON2

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## DC CHARACTERISTICS: INPUT/OUTPUT (continued)

(T<sub>A</sub> = 30 to 85°C, AVSS = 0 V, PGND = 0 V, AVDD30 = 2.7 to 3.3 V, IOVDD = 1.7 to 3.3 V)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit	Applicable Pins
Analog Input Voltage	V <sub>AI</sub>		AVSS		AVDD30	V	MON1, MON2, OPINPX, OPINMX, OPINPY, OPINMY
Pull Up Resistor	R <sub>up</sub>		20		250	kΩ	SSB, SCLK, MOSI, MISO, EIRQ1, EIRQ2, MON1, MON2
Pull Down Resistor	R <sub>dn</sub>		20		250	kΩ	

## DRIVER OUTPUT

(T<sub>A</sub> = 25°C, V<sub>SS</sub> = 0 V, PGND = 0 V, AVDD30 = VM1,2 = 2.8 V)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output Current, OUT1 OUT4	I <sub>full</sub>	Full code	190	200	210	mA
Output Current, OUT5, OUT6		Full code OP AF (bi direction)	123.5	130	136.5	mA

## NON-VOLATILE MEMORY CHARACTERISTICS

Parameter	Symbol	Conditions	Value	Unit
Operating Temperature	T <sub>opr1</sub>	Read for FLASH	30 to 85	°C
	T <sub>opr2</sub>	Program & Erase for FLASH	10 to 65 (Note 2)	°C

2. All drivers must be in the standby state.

Item	Symbol	Conditions	Min	Typ	Max	Unit	Applicable Circuit
Endurance	EN				1000	Cycles	Flash Memory
Data Retention	RT		10			Years	
Write Time	t <sub>WT</sub>						



## 2-wire Serial Interface Timing

The 2-wire serial interface timing definition and electric characteristics are shown below. The communication protocol is compatible with I<sup>2</sup>C. This circuit has clock stretch function.

Static Address: 7'b0100100

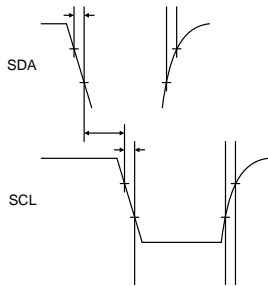
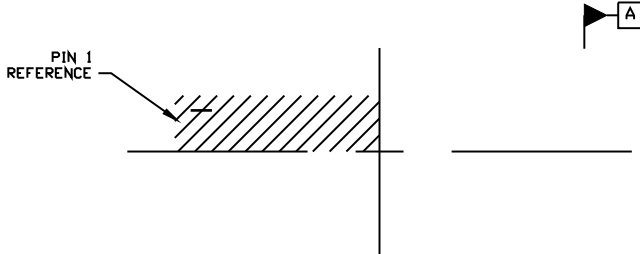


Figure 5. 2-wire Serial Interface Timing



WLCSP30 1.175x4.3X0.33  
CASE 567WE  
ISSUE O

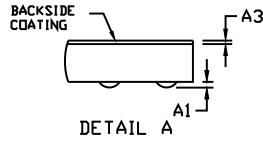
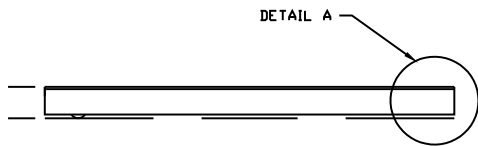
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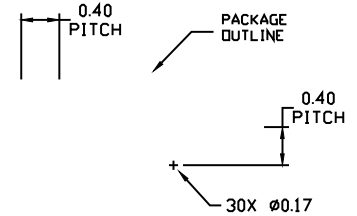
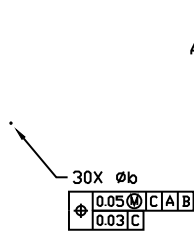
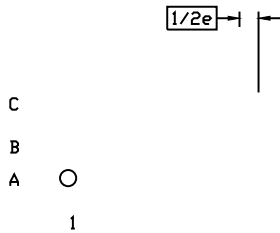
NOTES:

1. DIMENSIONING AND ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS

THE SPHERICAL CROWNS OF THE CONTACT BALLS.



DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.31	0.33	0.35
A1			
A3	0.025 REF		
b	0.15	0.17	0.19
D	1.15	1.175	1.20
E	4.275	4.30	4.325
e	0.40 BSC		



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