Ordering number : ENN*7461

Preliminary

SANYO Semiconductors
DATA SHEET

LV8210W — Bi-CMOS IC
A Spindle + CD-ROM Actuator

Overview

The LV8210W is a DVD-ROM system motor driver.

Features

- Bi-CDMOS

  Spindle motor driver
  - PWM sensorless
  - Built-in short brake
  - V-type control amplifier
  - Actuator with anti reverse circuit

  Actuator
  - DWM BTL 3ch built-in

Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Power supply voltage	V_{CC} max		6	V
Output block power supply voltage	VS max		6	V
Predrive voltage (gate voltage)	VG max		10	V
Output current	I_O max		1.0	A
Allowable power dissipation	Pd max	Independent IC	0.45	W
Operating temperature	Topr		-30 to +85	°C
Storage temperature	Tstg		-55 to +150	°C

Recommended operating conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Power supply voltage	V_{CC}		4.5 to 5.5	V
Output block power supply voltage	VS		0 to V_{CC}	V
Predrive voltage (gate voltage)	VG		VS+3.5 to 9.8	V

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Electrical Characteristics at Ta = 25°C, V_{CC} = 5V

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Power supply current 1	$I_{CC}1$	S/S pin H MUTE pin L		4.5	6.0	mA
Power supply current 2	$I_{CC}2$	S/S pin H MUTE pin H		9.0	11.5	mA
Power supply current 3	$I_{CC}3$	S/S pin L (in standby mode)			20	μA
[Charge pump output]						
Output voltage	VCP			9.5	9.8	V
[Internal oscillation circuit]						
Internal oscillation frequency	fclk			3.2	4.0	MHz
[Overheat protection circuit]						
Thermal protection circuit operating temperature	TSD	*Design target	150	180		°C
Temperature hysteresis width	ΔTSD	*Design target		40		°C
Actuator block [Control]						
Output offset voltage	VOFS	VCREF = VCTL = 1.65V	-60		+60	mV
[Actuator input pin]						
Input voltage range	V_{IN}	VCREF = 1.65V	0		V_{CC}	V
[Current feedback output pin]						
SOURCE	ISO		45	50	65	μA
SINK	ISI		45	50	65	μA
[Output side]						
Focus output ON resistance	Ron1,2	I_O = 0.5A sum of upper and lower outputs		1.5	1.8	Ω
Sled output ON resistance	Ron3	I_O = 0.5A sum of upper and lower outputs		1.0	1.3	Ω
[Internal oscillation circuit (triangular wave)]						
Oscillation frequency	f	VCREF = 1.65V	200	240	270	kHz
Spindle motor driver [Output block]						
SOURCE1	Ron (H1)	I_O = 0.5A, VS = 5V, VG = 9.5V forward TR		0.25	0.40	Ω
SINK	Ron (L)	I_O = 0.5A, VS = 5V, VG = 9.5V		0.25	0.40	Ω
SOURCE+SINK	Ron (H+L)	I_O = 0.5A, VS = 5V, VG = 9.5V		0.5	0.80	Ω
Position detection comparator						
Input offset voltage 1	VOFS1-1	*Design target, V_{CC} = 5.0V, VCOM = 2.5V	-5		5	mV
[Control]						
VCREF input voltage range	VCREF		1.55	1.65	1.75	V
VCTL input voltage range	VCTL		0		V_{CC}	V
[Current control circuit]						
Forward rotation drive gain	GDF+		0.20	0.25	0.30	times
Reverse rotation drive gain	GDF-		-0.30	-0.25	-0.20	times
Dead zone width	VDZ		110	150	190	mV
Limiter voltage	VRf			0.20	0.30	V
[VCO pin]						
VCO "H" level voltage	VCOH		0.9	1.0	1.1	V
VCO "L" level voltage	VCOL		0.4	0.5	0.6	V
[S/S pin]						
"H" level input voltage range	VSSH	Start	2.7		V_{CC}	V
"L" level input voltage range	VSSL	Stop	0		0.6	V
[BRK SEL pin]						
"H" level input voltage range	VBRH	Short brake	2.7		V_{CC}	V
"L" level input voltage range	VBRL	Reverse torque brake	0		0.6	V
[FG1 output, FG3 output pin]						
"L" level output voltage	VFGL	I_O = 0.5mA	0		0.5	V

* Design target value and no measurement is performed.

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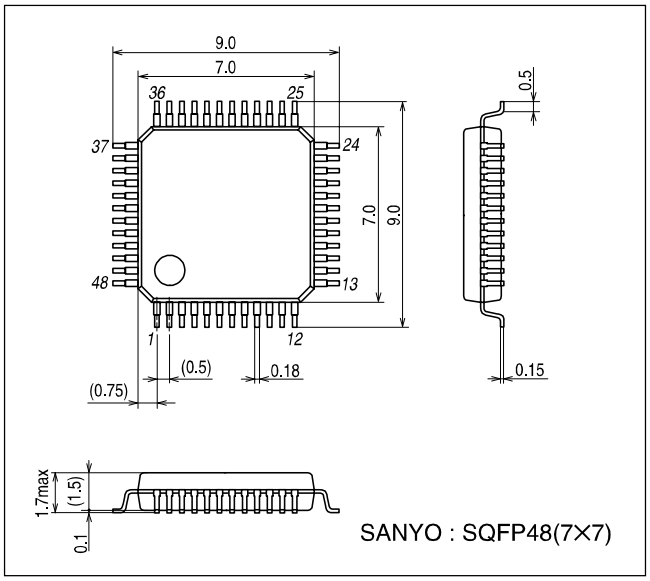
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[Amplifier block]						
Input offset voltage	VIOER		-10		10	mV
Input bias current	IBER		-1.0		1.0	μA
Common phase input voltage range	VERCM		0		V_{CC}-1.0	V
Output "H" level voltage	VEROH	IERO = -350μA	V_{CC}-0.5			V
Output "L" level voltage	VEROL	IERO = 350μA			0.5	V

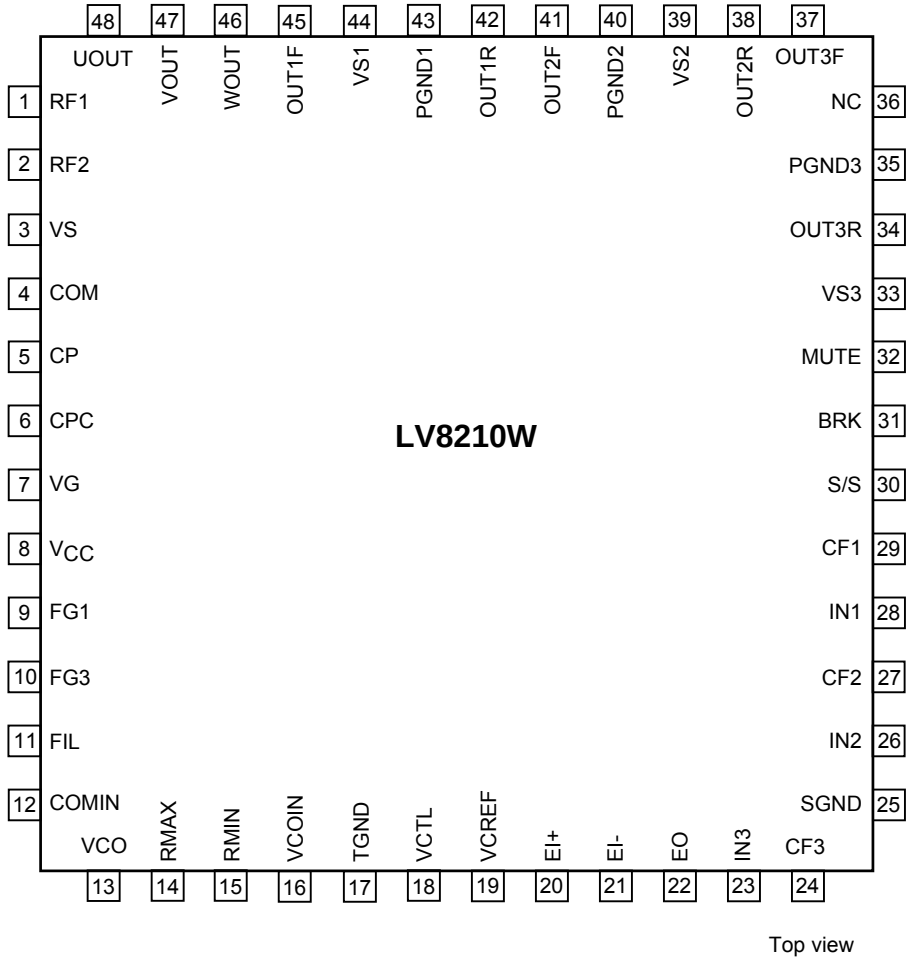
Package Dimensions

unit : mm

3163B



Pin Layout Diagram



Top view