Ordering number : EN6505

SANYO Semiconductors
DATA SHEET

Monolithic Digital IC

LB1933M — Low-saturation Forward/Reverse Motor Drive

Overview

The 1933M is a forward/reverse motor driver that supports low voltage drive and features low-saturation outputs in a miniature package.

Features

- Low saturation output: $V_O$sat=0.3V typ (I_O=300mA)

Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC} max		-0.3 to +10.5	V
	V_S max		-0.3 to +10.5	V
Maximum Output applied voltage	V_{OUT}		V_S+V_{SF}	V
Maximum input applied voltage	V_{IN}		-0.3 to +10.0	V
Maximum output current	I_{GND}	Per channel	1.0	A
Allowable power dissipation	Pd max1	Independent IC	550	mW
	Pd max2	* Mounted on a specified board	800	mW
Operating temperature	Topr		-30 to +75	°C
Storage temperature	Tstg		-40 to +150	°C

Note *: Mounted on a specified board: 30mm×30mm×1.5mm, glass epoxy

SANYO Semiconductor Co., Ltd.
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

Allowable Operating Ranges at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Power supply voltage range	V_{CC}		2.2 to 7.5	V
	V_S		1.8 to 7.5	V
Input high-level voltage	V_{IH}		1.8 to 7.5	V
Input low-level voltage	V_{IL}		-0.3 to +0.7	V

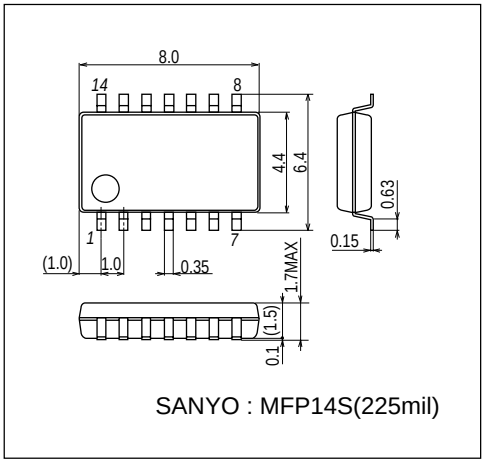
Electrical Characteristics at Ta = 25°C, $V_S1=V_S2=V_{CC}=3V$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Power current	I_{CCO}	TOTAL, ENA=0V, V_{IN}=0V		0.1	10	μA
	I_{CC}	V_{CC}, ENA=3V, V_{IN}=3V		5	7	mA
	I_S	V_S1+V_S2, ENA=3V, V_{IN}=3V		16	25	mA
Output saturation voltage	$V_O$sat1	ENA=3V, V_{IN}=3V or 0V, I_{OUT}=300mA		0.30	0.45	V
	$V_O$sat2	ENA=2.2V, V_{IN}=2.2V or 0V, V_{CC}=2.2V, V_S=2.0V, I_{OUT}=150mA			0.20	V
Input current	I_{IN}	V_{IN}=3V			80	μA
	I_{ENA}	V_{ENA}=3V			80	μA
Spark killer diode						
Reverse current	I_S (leak)	$V_{CC}=V_S$=7V			30	μA
Forward voltage	V_{SF}	I_{OUT}=400mA			1.7	V

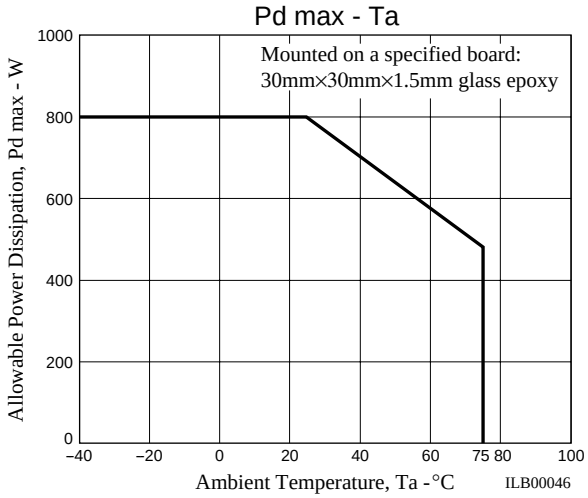
Package Dimensions

unit : mm (typ)

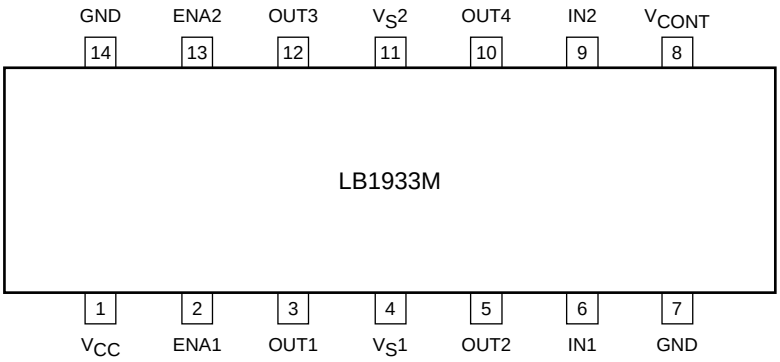
3111A



SANYO : MFP14S(225mil)



Pin Assignment



Top view

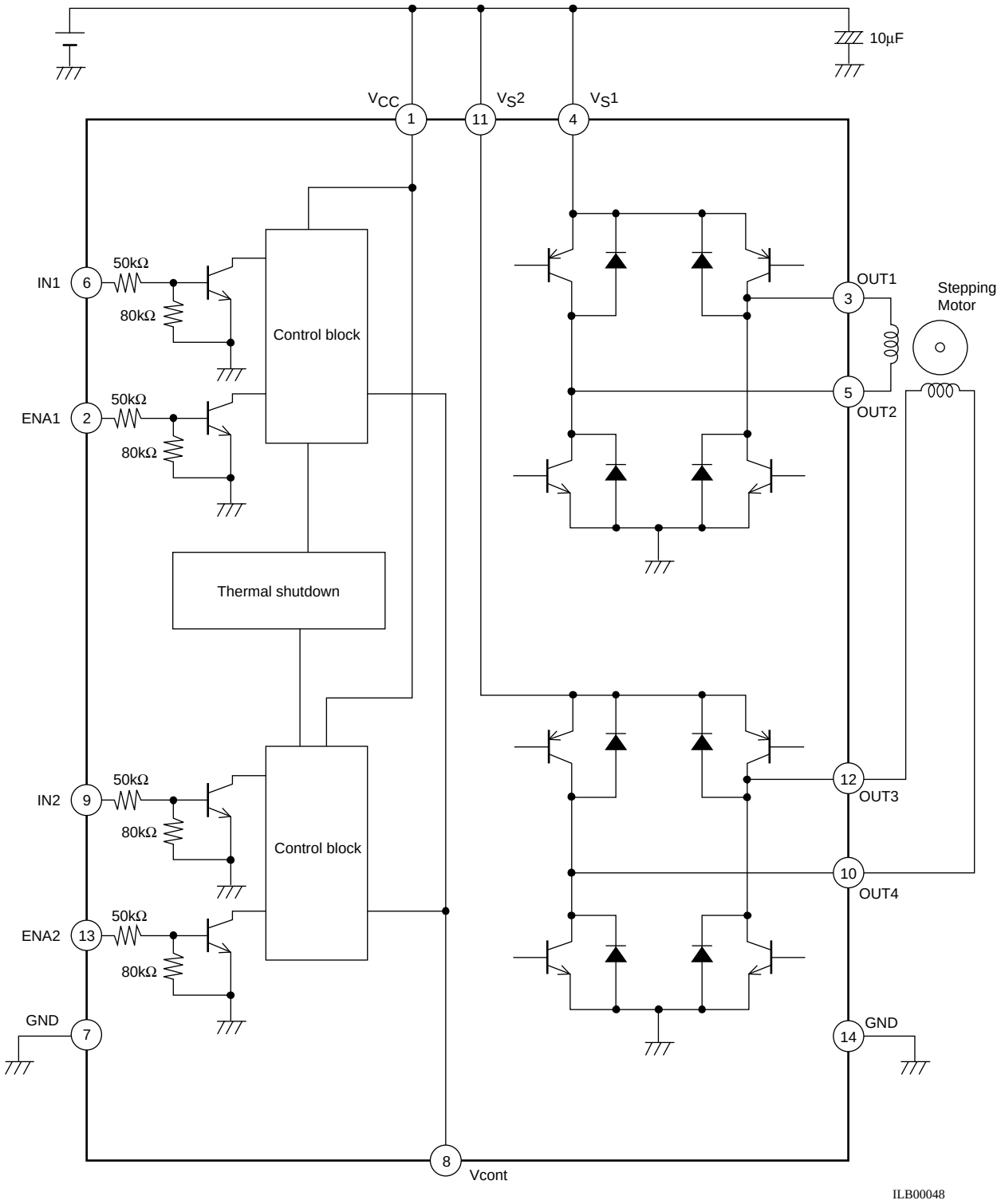
Note: Connect both ground pins.

ILB00047

Truth Table

IN 1/2	ENA 1/2	OUT 1/3	OUT 2/4	Mode
L	H	H	L	Forward
H	H	L	H	Reverse
L	L	OFF	OFF	Standby
H	L	OFF	OFF	Standby

Equivalent Circuit Block Diagram



* There are no constraints on the relationship between the applied voltage to V_{CC}, V_S1, V_S2, ENA1, ENA2, IN1, and IN2 within the absolute maximum ratings (For example, this IC can be used at V_{CC}=3V, V_S1=V_S2=2V, and ENA=IN=5V)