

LB1973JA

Electrical Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC} = 1.9\text{V}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Source current	I_{CCO1}	$V_{CC} = 1.9\text{V}$, IN1 to IN4 = Low level		0.01	1	μA
	I_{CCO2}	$V_{CC} = 3\text{V}$, IN1 to IN4 = Low level		0.01	1	μA
	I_{CC1}	IN1 = High level, IN2 to IN4 = Low level		18	25	mA
	I_{CC2}	IN1 = High level, IN2 to IN4 = Low level, $V_{CC} = 3\text{V}$		19	27.5	mA
Output saturation voltage1 (single connection)	V_{OUT11}	$I_{OUT} = 270\text{mA}$, $V_{CC} = 1.9\text{V}$ to 3.6V , $T_a = -20$ to 85°C V_{OUT} = Upper Tr and Under Tr IN1 = High level, IN2 to IN4 = Low level Supplementation: Standard similar as for IN2 to IN4 = High level		0.2	0.3	V
	V_{OUT12}	$I_{OUT} = 350\text{mA}$, $V_{CC} = 1.9\text{V}$ to 3.6V , $T_a = -20$ to 85°C V_{OUT} = Upper Tr and Under Tr IN1 = High level, IN2 to IN4 = Low level Supplementation: Standard similar as for IN2 to IN4 = High level		0.25	0.4	V
Output saturation voltage2 (parallel connection)	V_{OUT21}	$I_{OUT} = 270\text{mA}$, $V_{CC} = 1.9\text{V}$ to 3.6V , $T_a = -20$ to 85°C V_{OUT} = Upper Tr and Under Tr OUT1-3, OUT2-4 short. IN1 and IN3 = High level, IN2 and IN4 = Low level Supplementation: Standard similar as for IN2 and IN4 = High level		0.12	0.2	V
	V_{OUT22}	$I_{OUT} = 500\text{mA}$, $V_{CC} = 1.9\text{V}$ to 3.6V , $T_a = -20$ to 85°C V_{OUT} = Upper Tr and Under Tr OUT1-3, OUT2-4 short. IN1 and IN3 = High level, IN2 and IN4 = Low level Supplementation: Standard similar as for IN2 and IN4 = High level		0.2	0.35	V
Output electric current with the parasitic element	I_{PA}	$V_{IN} = 1.9$ to 3.6V , $T_a = -20$ to 85°C *1			9	mA
Input current	I_{IN}	$V_{IN} = 1.9\text{V}$		32	70	μA
Thermal shutdown operation temperature	T_{tsd}	*2: Design guarantee		140		$^\circ\text{C}$
Temperature hysteresis width	ΔT	*2: Design guarantee		20		$^\circ\text{C}$
Spark killer Diode						
Reverse current	$I_S(\text{leak})$	$V_{CC-OUT} = 8\text{V}$, $V_{IN} = \text{Low level}$			10	μA
Forward voltage	V_{SF}	$I_{SF} = 400\text{mA}$, $V_{IN} = \text{Low level}$			1.7	V

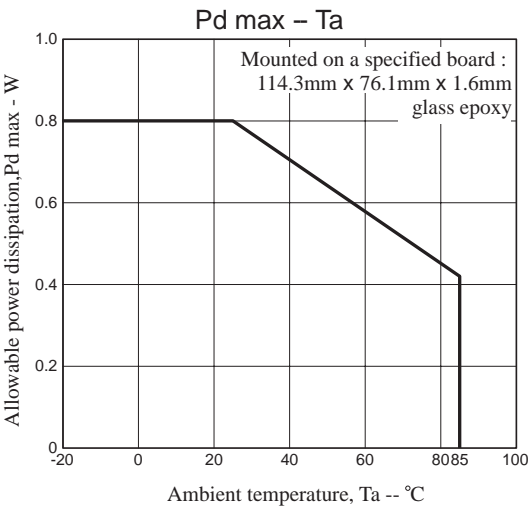
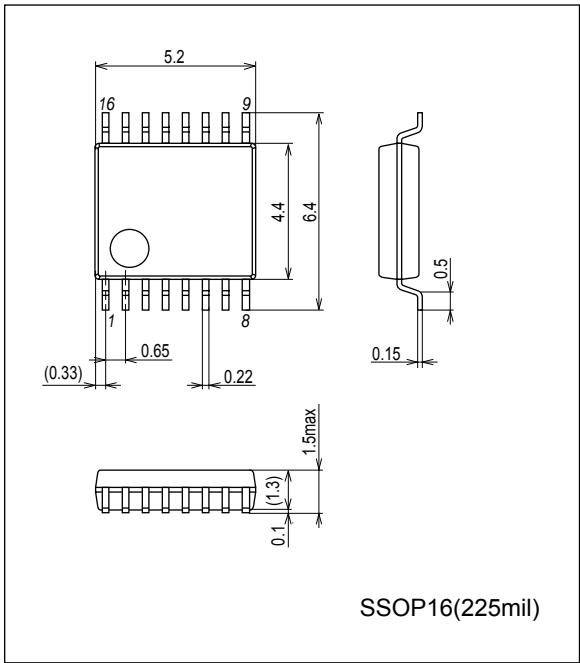
*1: Output electric current with the parasitic element I_{PA} : The current value that the off ch(-free) output is pulled at the time of one side ch drive by a parasitic element

*2: Design guarantee value and does not measure

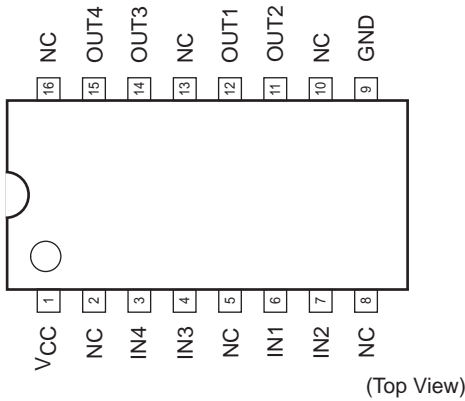
* V_{SF} : The current order direction voltage true in a time

Package Dimensions

unit : mm (typ)
3178B



Pin Assignment

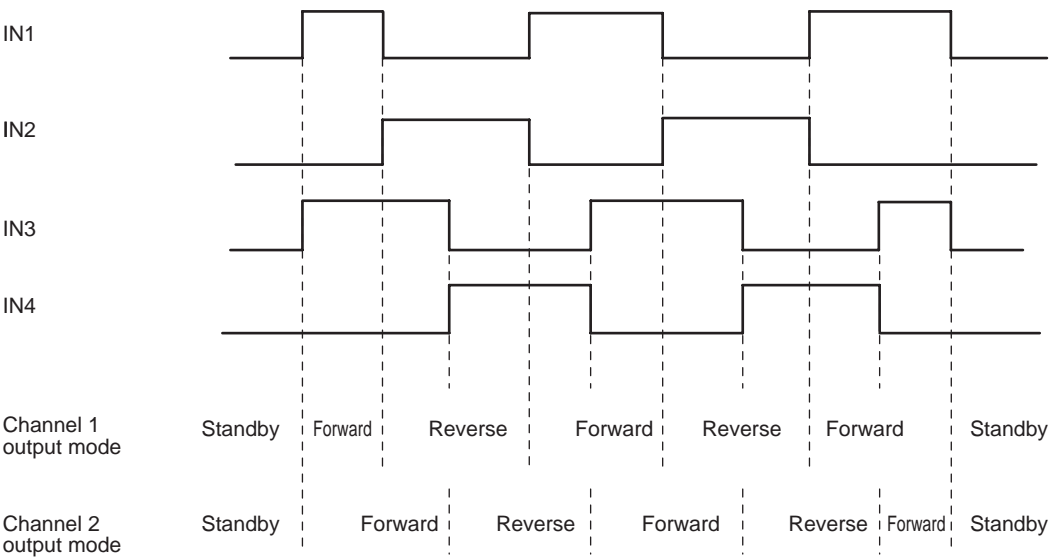


Truth Table

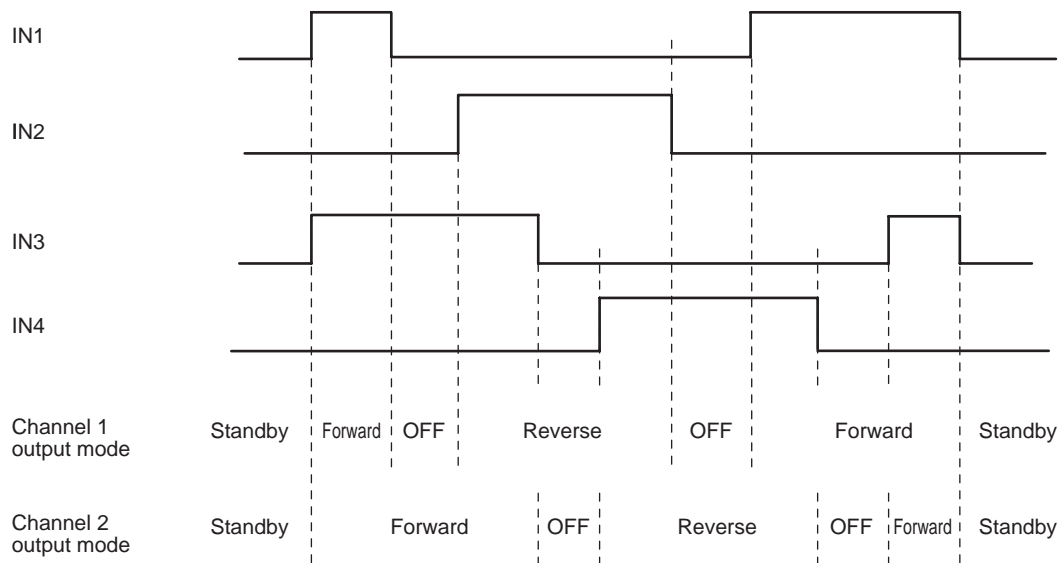
Input				Output				Mode
IN1	IN2	IN3	IN4	OUT1	OUT2	OUT3	OUT4	
Low	Low	Low	Low	Off	Off	Off	Off	Standby mode
High	Low	-	-	High	Low	-	-	Channel 1, forward
Low	High			Low	High			Channel 1, reverse
-	-	High	Low	-	-	High	Low	Channel 2, forward
		Low	High			Low	High	Channel 2, reverse
High	High	-	-	The logic output for the first high-level input is produced.				
-	-	High	High					

Stepping motor control example

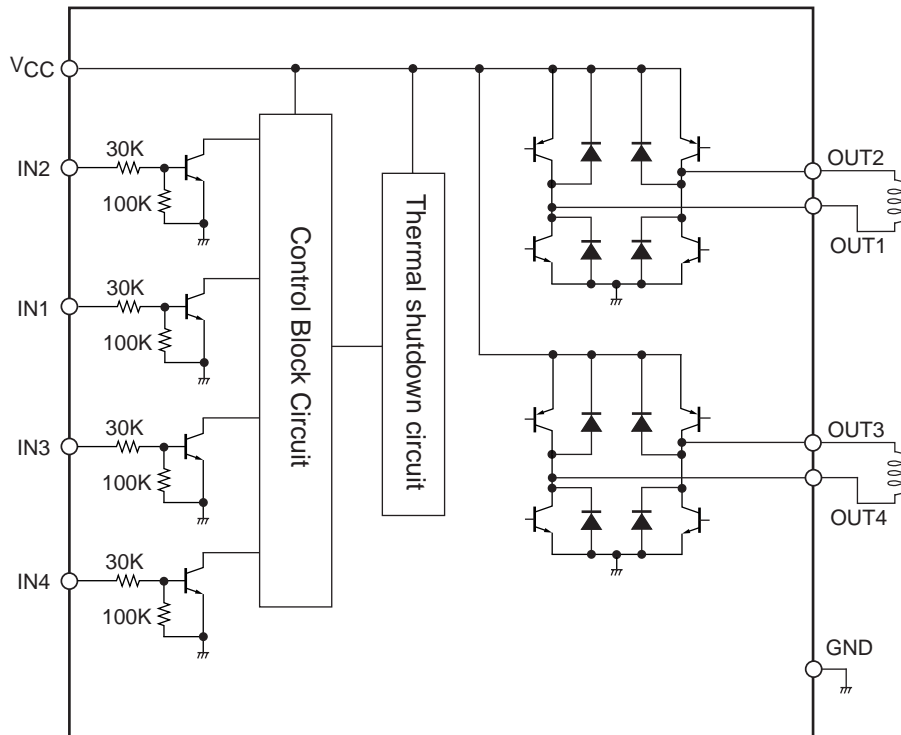
(1) Timing chart for 2-phase drive



(2) Timing chart for 1-2 phase drive



Block Diagram



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