

# LB1938FA

## Allowable Operating Range at $T_a = 25^{\circ}\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage	$V_{CC}$		2.2 to 10	V
Input high-level voltage	$V_{IH}$		2.0 to 9.5	V
Input low-level voltage	$V_{IL}$		-0.3 to +0.3	V

## Electrical Characteristics at $T_a = 25^{\circ}\text{C}$ , $V_{CC} = 3\text{V}$

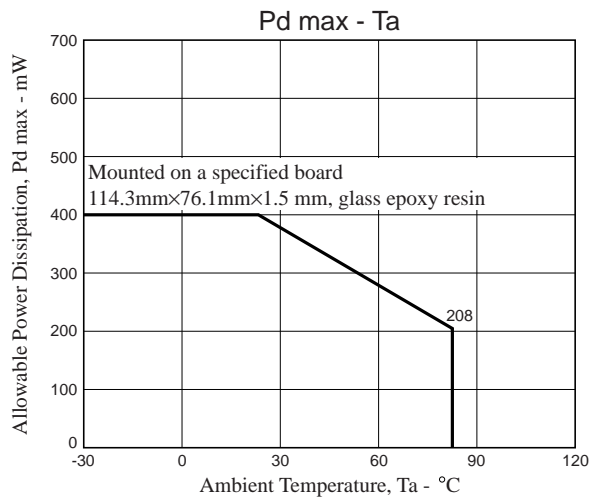
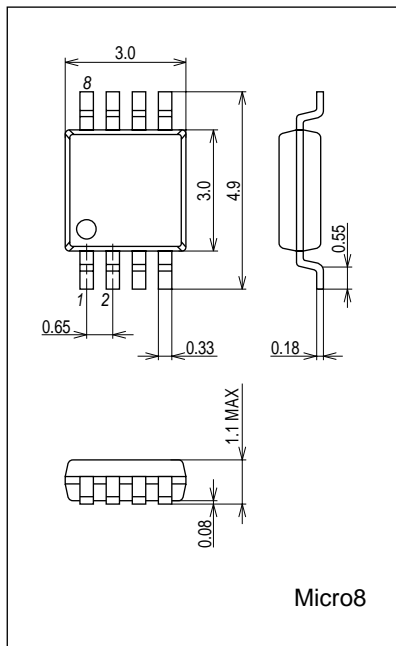
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Circuit current	$I_{CC1}$	Standby		0.1	5	$\mu\text{A}$
	$I_{CC2}$	Forward/reverse drive		14	19	mA
	$I_{CC3}$	Brake		20	29	mA
Output saturation voltage	$V_{Osat1}$	Upper+lower $I_O = 100\text{mA}$ for forward/reverse rotation		0.15	0.2	V
	$V_{Osat2}$	Upper+lower $I_O = 300\text{mA}$ for forward/reverse rotation		0.35	0.5	V
	$V_{Osat3}$	Upper $I_O = 100\text{mA}$ for braking		0.1	0.15	V
Spark killer diode forward voltage	$V_{SF}$	$I_O = 300\text{mA}$		0.9	1.7	V
Spark killer diode inverse current	$I_{RS}$	$V_{OUT} = 10\text{V}$		0.1	5	$\mu\text{A}$
Input current	$I_{IN}$	$V_{IN} = 5\text{V}$		75	98	$\mu\text{A}$
Thermal protection operating temperature	TSD	Design target value *		180		$^{\circ}\text{C}$

Note \*: Design target value: Measurement with a single unit not made.

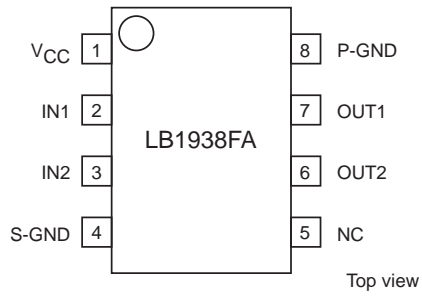
## Package Dimensions

unit : mm (typ)

3427



## Pin Assignment



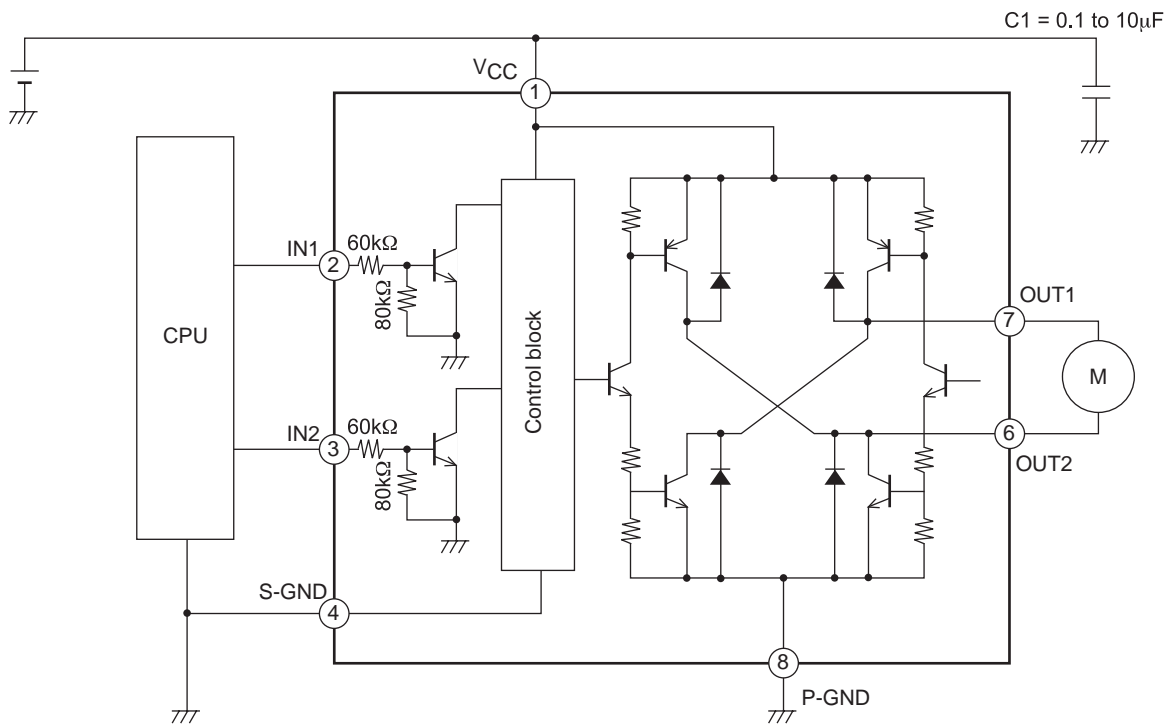
S-GND: GND for the control system

P-GND: GND for the power system

## Truth Table

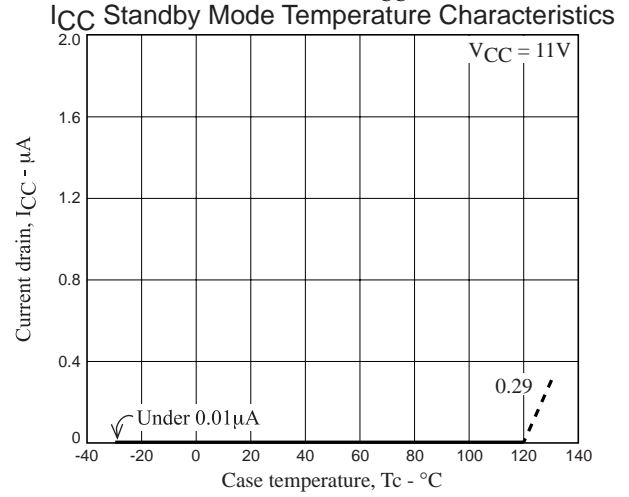
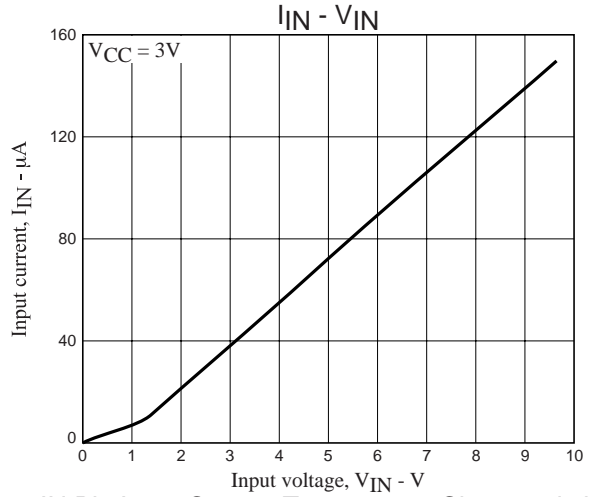
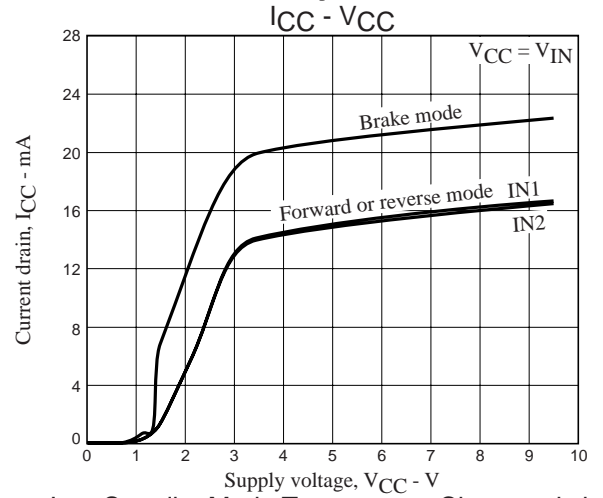
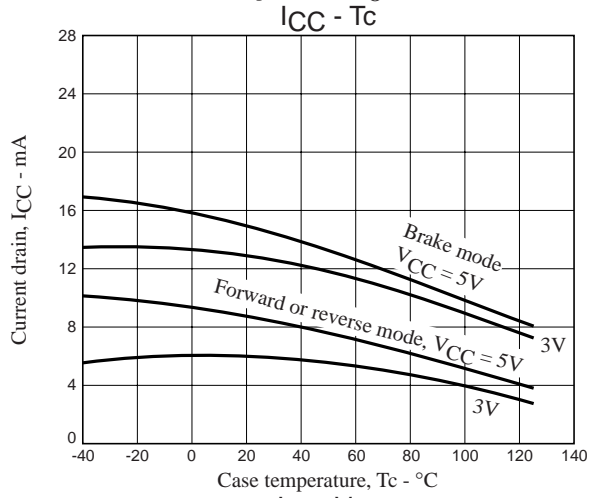
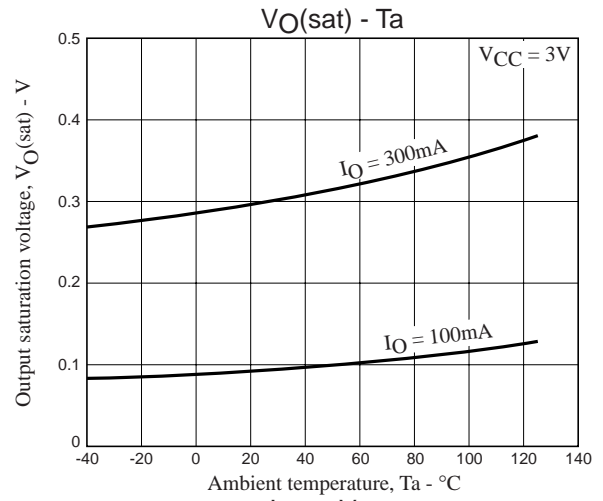
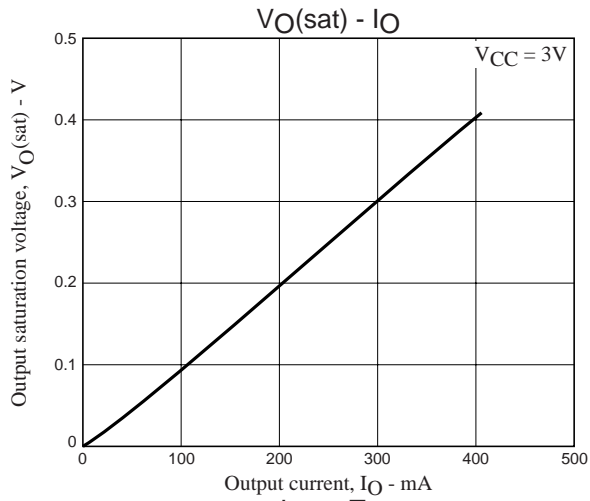
IN1	IN2	OUT1	OUT2	Mode
L	L	OFF	OFF	Standby
H	L	H	L	Forward rotation
L	H	L	H	Reverse rotation
H	H	H	H	Brake

## Sample Application Circuit

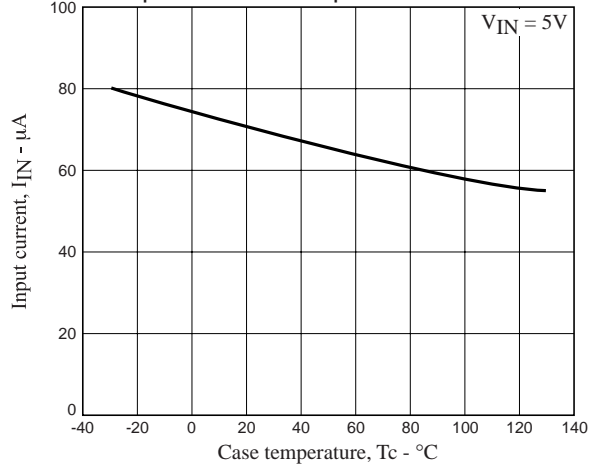


## Cautions:

- VCC and GND lines suffer substantial fluctuation in the current quantity, causing a problem of line oscillation in certain cases. In this case, take following points into account:
  - (1) Use a thick and short wiring to reduce the wiring inductance.
  - (2) Insert a capacitor with satisfactory frequency characteristics near IC.
  - (3) Connect S-GND to the control system GND on the CPU side and P-GND to the power system GND.



IN Pin Input Current Temperature Characteristics



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