

## ■ Introduction

The AL888 is a half-bridge motor driver for driving reversible motors and it is widely used in smart meters and smart breakers.

The AL888 can drive one DC motor, a stepper motor, or other loads. The power supply voltage is from 4V to 24V and it can supply an output current of up to 1.5A with 3A current limiting according to the logic control.

The AL888 is controlled by two input pins. When the two inputs are both at a low level the AL888 enters standby(coast) mode and very low standby circuit current can be achieved .

The AL888 is available with SOP-8 package.

## ■ APPLICATIONS

- Smart Breaker
- Smart Meter

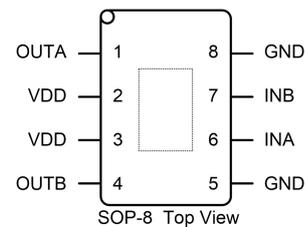
## ■ Order Information

Part No.	Package	Tape/Reel	Mark*
AL888S	SOP-8	4000/Reel	AL888S/YYWW

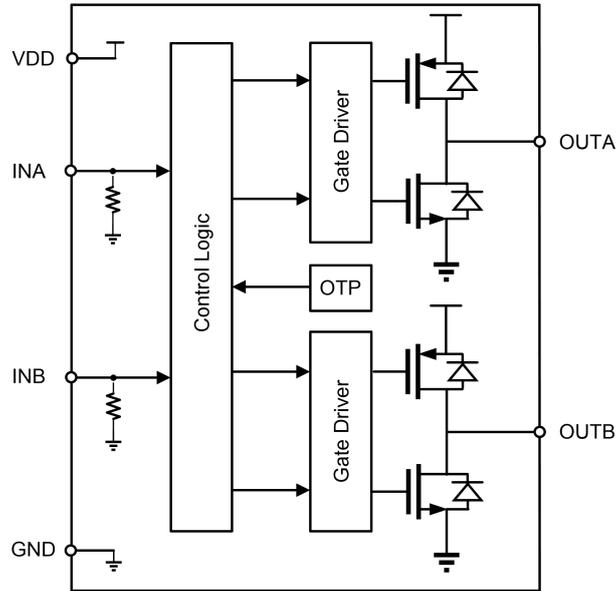
Note: YY=Year WW=Week.

## ■ Features

- Wide Power Range: 4V to 24V
- 1.5A Maximum Continuous Output
- Above 3A peak current ability
- Low MOSFET On Resistance:  $R_{hs}=0.4\Omega$ ,  $R_{ls}=0.2\Omega$
- Forward, Reverse, Coast, or Brake Output Modes
- Suitable for wide range MCU control logic
- Input logic hysteresis
- Thermal Shutdown



## ■ Simplified Block Diagram



## ■ Pin Description

SOP-8	Symbol	Description
1	OUTA	Output, Connect this pin to the motor winding.
2,3	VDD	Supply voltage. A decouple capacitor is required to prevent large voltage spikes.
4	OUTB	Output, Connect this pin to the motor winding.
5,8	GND	Thermal PAD is also GND.
6	INA	Logic input, with a large internal pull-down resistor.
7	INB	Logic input, with a large internal pull-down resistor.

## ■ Input Logic Truth Table

INA	INB	OUTA	OUTB	Function (DC Motor)
L	L	Hi-Z	Hi-Z	Coast or Standby
L	H	L	H	Reverse
H	L	H	L	Forward
H	H	L	L	Brake

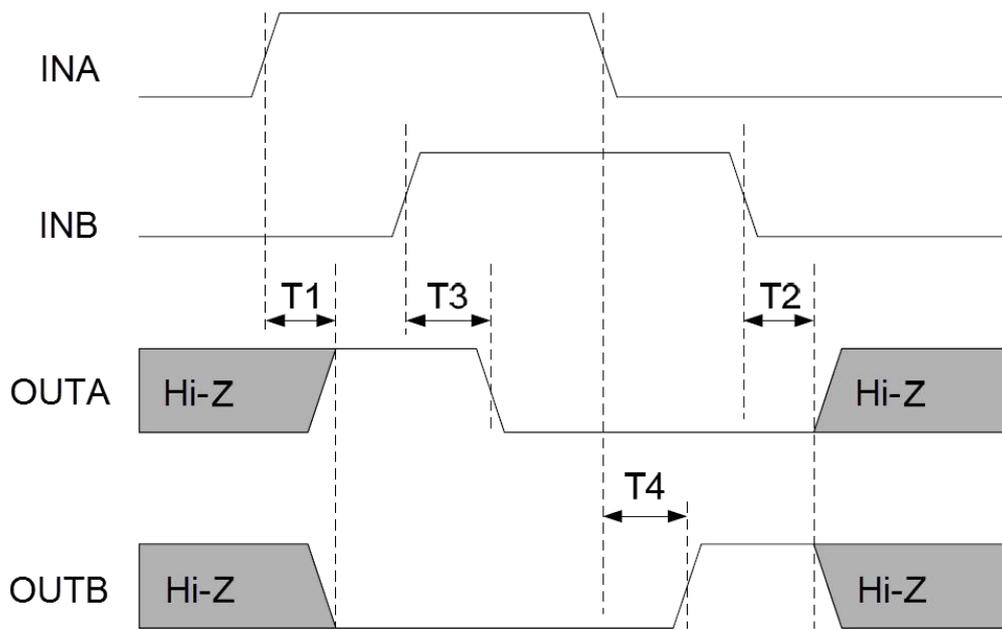
## ■ Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V <sub>VDD</sub>	VDD Supply Voltage Range	-0.4 ~ +25	V
V <sub>OUTX</sub>	Output Pins Voltage Range	V <sub>VDD</sub>	
V <sub>INX</sub>	Input Pins Voltage Range	GND-0.4 ~ 5.5	V
T <sub>J</sub>	Maximum Junction Temperature	150	°C
T <sub>STG</sub>	Storage Temperature Range	-45~150	°C
θ <sub>JA</sub>	Package Thermal Resistance (Ambient to Junction)	SOP-8   160	°C/W
V <sub>ESD (HBM)</sub>	Electrostatic Discharge Voltage (HBM)	4000	V

## ■ Electrical Characteristics

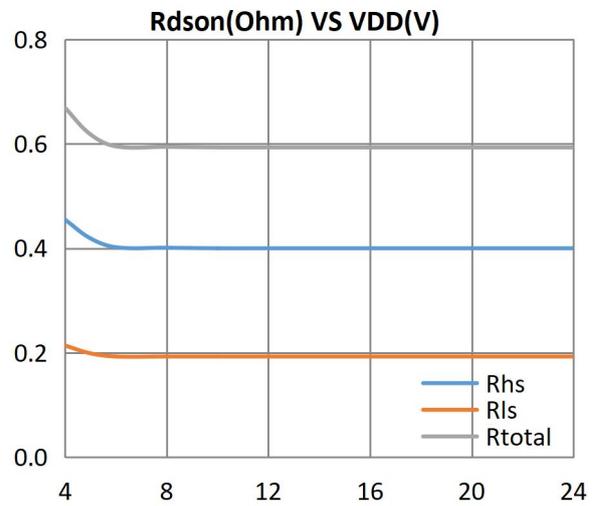
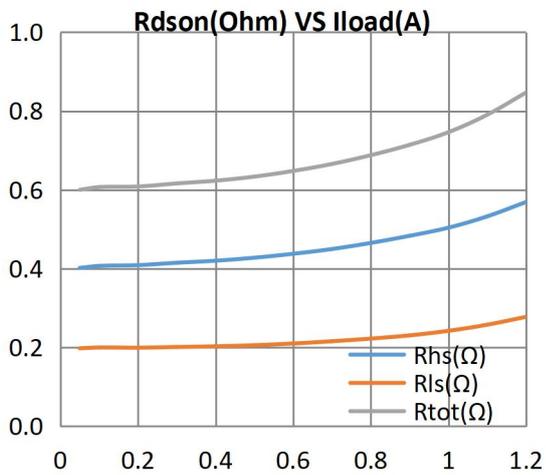
Test conditions: TA = 25°C, VDD=12V

Parameters	Symbol	Condition	Min	Typ.	Max	Units
Operating supply voltage	VDD		4		24	V
Standby mode supply current	Iq0	INA=INB=0V		3		μA
Operating supply current	Iq1			85		μA
UVLO threshold rising				4.0	4.4	V
UVLO hysteresis				0.15		V
Input high voltage	VIH		1.7			V
Input low voltage	VIL				0.8	V
Input high current	IIH	VIN=3.3V		3.5		μA
Input pull-down resistance	RIN			1.2		MΩ
HS switch on resistance	Rhs	ILOAD=300mA	0.4	0.45	0.6	Ω
LS switch on resistance	Rls	ILOAD=300mA	0.2	0.25	0.4	Ω
Output enable time	T1			1000		ns
Delay time	T3	INx high to OUTx high		200		ns
	T4	INx low to OUTx low		300		ns
Dead time				200		ns
Thermal shutdown threshold				155		°C
Thermal shutdown hysteresis				25		°C
current limit				3		A

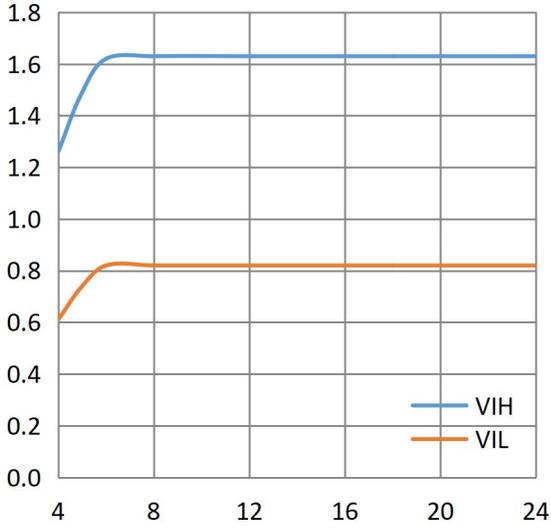


## ■ Typical Characteristics

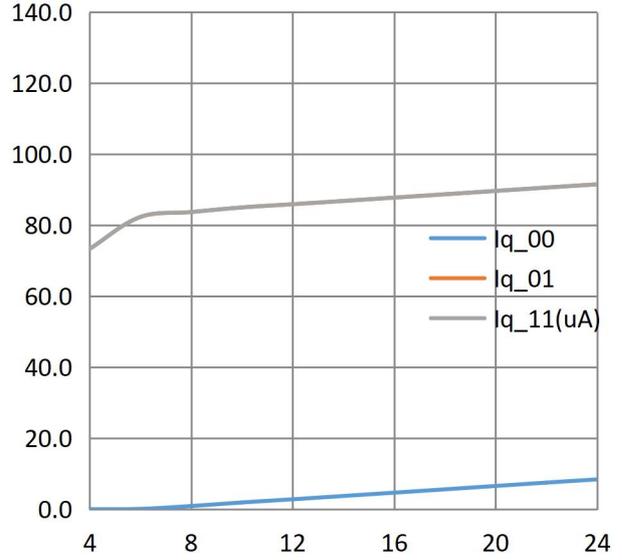
Test conditions: VDD=12V, TA=25°C, Iload=0mA



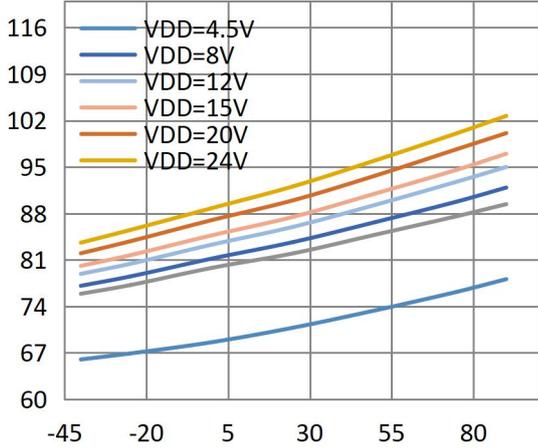
Input threshold(V) VS VDD(V)



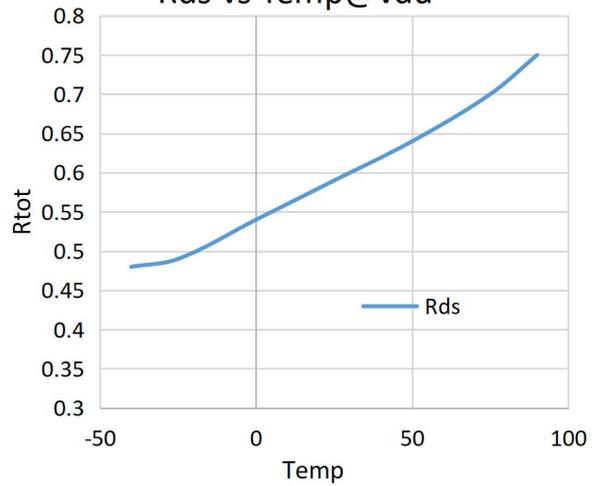
Iq(uA) VS VDD(V)



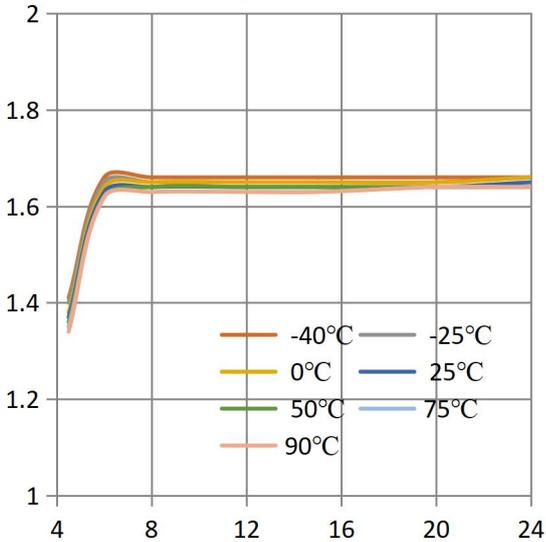
Iq1(uA) VS. Temp(°C)



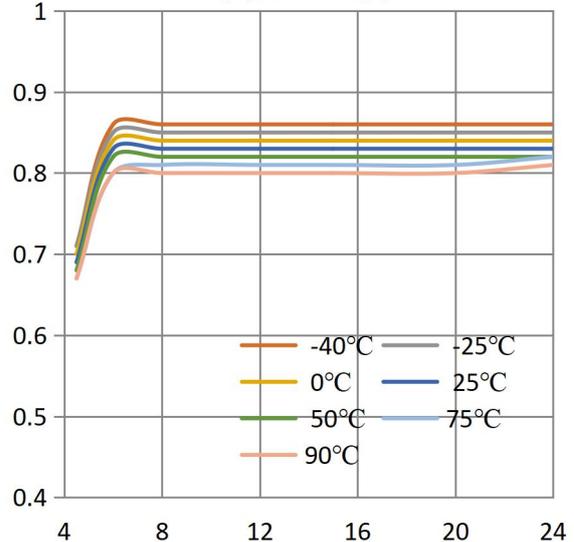
Rds vs Temp@vdd



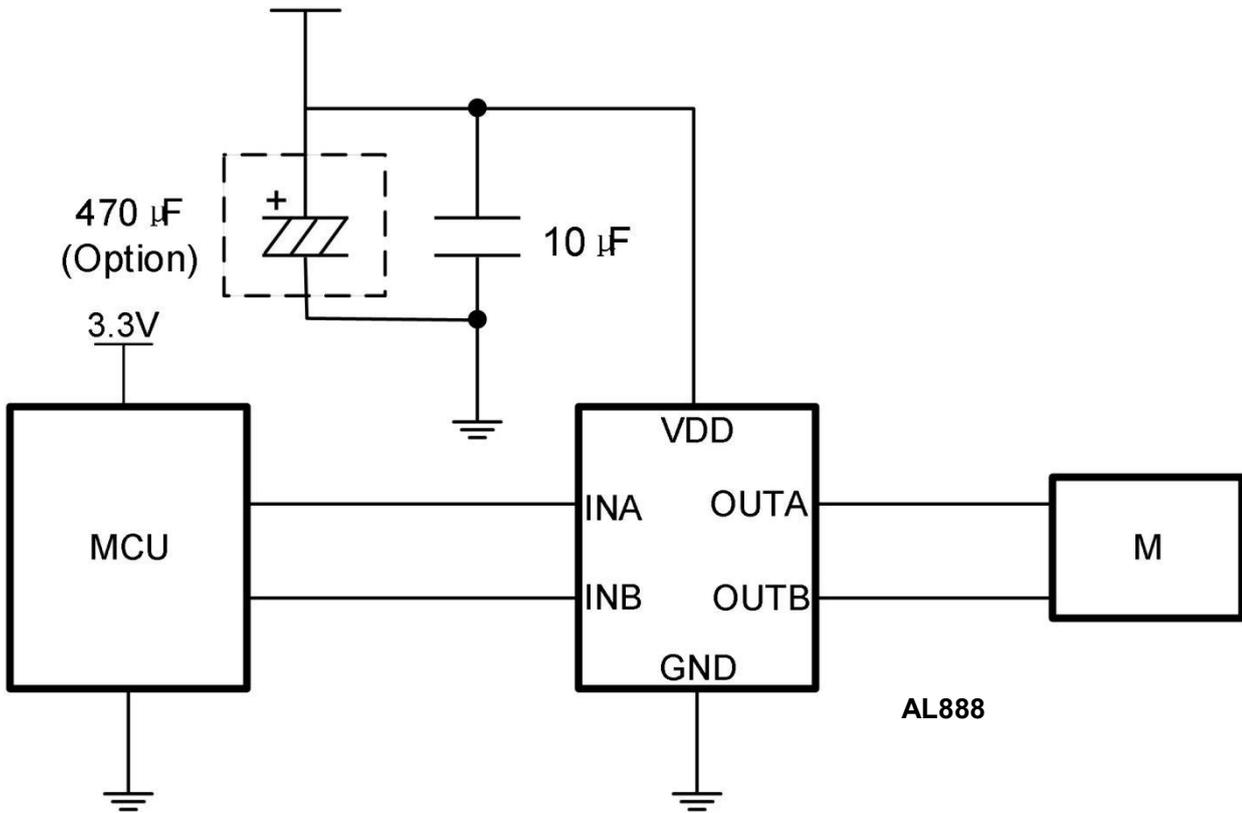
VIH(V) VS. VDD(V)



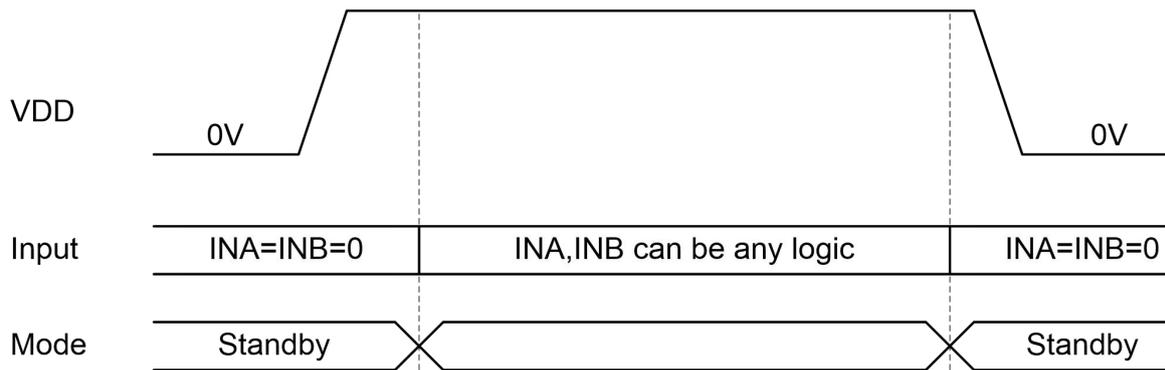
VIL(V) VS. VDD(V)



■ Typical Application

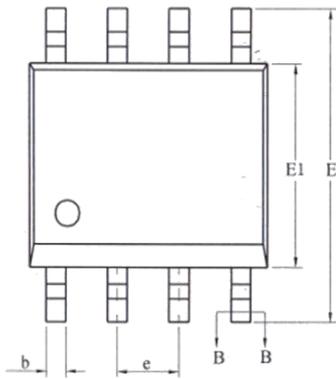
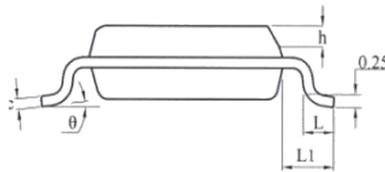
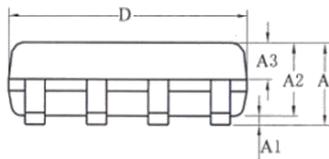
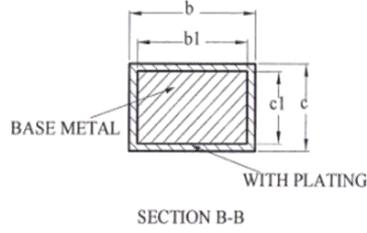
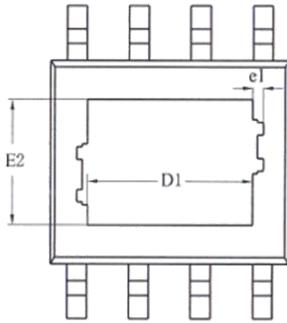


Please make sure that the input pins INA and INB remain low during power-up and power-down.



■ Package Outline

SOP-8



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	—	—	1.65
A1	0.05	—	0.15
A2	1.30	1.40	1.50
A3	0.60	0.65	0.70
b	0.39	—	0.47
b1	0.38	0.41	0.44
c	0.20	—	0.24
c1	0.19	0.20	0.21
D	4.80	4.90	5.00
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e	1.27BSC		
h	0.25	—	0.50
L	0.50	0.60	0.80
L1	1.05REF		
θ	0	—	8°

Size (mm) L/F Size (mil)	D1	E2	e1
90*90	2.09REF	2.09REF	0.16REF
95*130	3.10REF	2.21REF	0.10REF