



## AH9485 and AH9486 - Single Phase, All-In-One, Low Noise Smart Motor Driver Family

AH9485/86 are single-chip motor-driver ICs with an integrated H-Bridge switch and high-sensitivity Hall sensors for driving of small low-profile, single-coil, brushless DC motors and cooling fans. The output stage “soft switching” minimizes acoustic switching noise and electromagnetic interference (EMI) providing a low noise solution.

For system flexibility the family offers versatile DC Voltage- and PWM speed control options.

AH9485/86 feature rotor lock detect, shutdown and automatic restart.

AH9485 features an open-drain Frequency Generator tachometer (FG) output, while AH9486 has a Rotation Detect alarm (RD) output, both to interface externally to monitor speed and rotation status.

AH9485/86 are packaged in the flat-pin TSOT26F package to help place the device in a PCB cut-out to minimize overall component height.



### The Diodes' Advantage

AH9485/86 provides highly integrated, high performance, yet simple solutions for a wide range of cooling fans and motor drive applications.

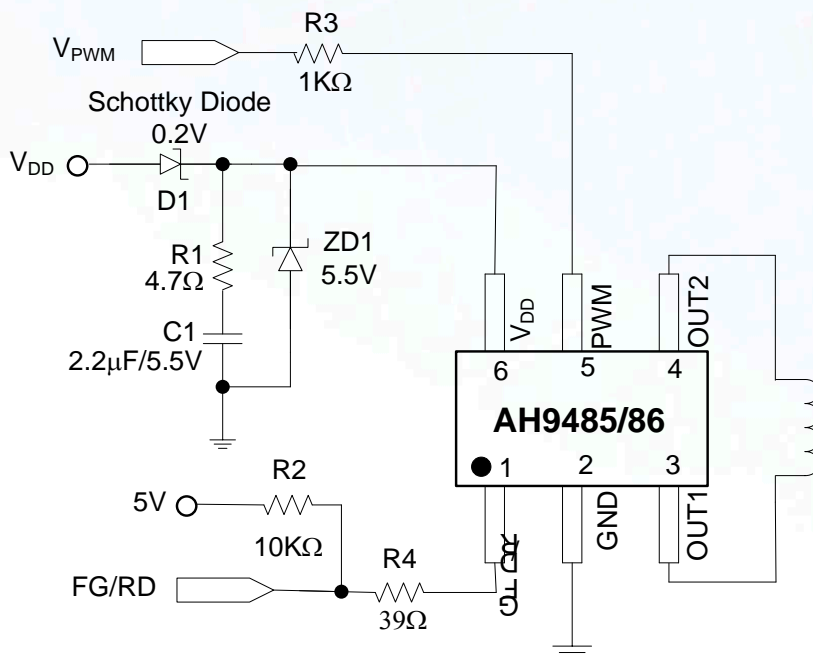
- **Built-in Hall sensor, amplifier, voltage reference and H-Bridge switch**
  - Highly integrated solution significantly reduces external components, PCB area and placement costs
  - Low temperature coefficient of hall sensor provides stable solution
  - Low  $R_{DS(ON)}$  H-Bridge switches is capable of 500mA peak currents
- **Speed control by DC Voltage or PWM input signal**
  - Flexible speed control by an external PWM signal, by adjusting the DC signal voltage on the PWM pin or the supply voltage
- **Lock detect, shutdown and automatic restart with tachometer FG output or Rotor Lock Alarm RD Option**
  - Helps protect coil from over-heating or burning during rotor lock.
  - AH9485 features FG pin; AH9486 features RD pin to allow external interface to monitor motor speed and rotation status
- **Thermal shutdown**
  - Helps to protect the coil and the device - Safe, reliable and robust operation
- **Operating temperature range -40°C to +105°C**
  - Suitable for thermally demanding, enclosed cooling fan applications.

### Applications

- 5V BLDC cooling fans, motors, extractors and pumps
- Notebook and desktop PCs cooling fans and blowers
- Instrumentation and equipment power supply cooling fans



## Typical Applications Circuit



## Electrical Characteristics

Part	Operating Voltage (V)	Supply Current (No Load) (mA)	Average Output Drive Current (mA)	Peak Motor Current (mA)	Operating Point Bop (Gauss)			Release Point Brp (Gauss)			Soft-Switch	Speed Control	Lock Detect, Shutdown and Auto-Restart	FG / RD	Temp Range (°C)
					Min	Typ	Max	Min	Typ	Max					
					AH9485	2 to 6.5	1.8	300	500	-					
AH9486	2 to 6.5	1.8	300	500	-	25	50	-50	-25	-	Yes	PWM, VDD	Yes	RD	-40 to +105

## Ordering Information

Device	Packaging	Reel Size or Bulk	Tape Width	Quantity
AH9485-WUF-7	TSOT26F	7"	8mm	3k
AH9486-WUF-7	TSOT26F	7"	8mm	3k



**Product portfolio (Notes 2, 3, 4, 5 & 6)**

Part	Operating Voltage (V)	Supply Current (No Load) (mA)	Avg. Output Drive Current (mA)	Peak Motor Current (mA)	Grade	Max Operating Point Bop (Gauss)			Min Release Point Brp (Gauss)			Soft-Switch	Speed Control	Lock Detect, Shutdown and Auto-Restart	FG / RD	Standby	Temp Range (°C)	Package
						Min	Typ	Max	Min	Typ	Max							
AH5794	1.8 to 6.0	2.2	350 500	1,000	--	10	25	50	-50	-25	-10	Yes	VDD	Yes	FG	--	-40 to +105	TSOT23-6 U-DFN2020-6
AH5795	1.8 to 6.0	2.2	350 500	1,000	--	10	25	50	-50	-25	-10	Yes	PWM, VDD	Yes	FG	Yes	-40 to +105	TSOT23-6 U-DFN2020-6
AH9485	2 to 6.5	1.8	300	500	--	--	25	50	-50	-25	--	Yes	PWM, VDD	Yes	FG	--	-40 to +105	TSOT23-6F
AH9486	2 to 6.5	1.8	300	500	--	--	25	50	-50	-25	--	Yes	PWM, VDD	Yes	RD	--	-40 to +105	TSOT23-6F
AH5798	1.8 to 5.5	5	250 300	800	--	10	25	50	-50	-25	-10	Yes	VDD	Yes	FG	--	-40 to +105	TSOT23-5 SOT89-5
AH5771	2.5 to 15	3.5	200	400	--	10	30	50	-50	-30	-10	--	VDD	Yes	--	--	-40 to +100	SIP-4
AH9479	2.5 to 16	4.3	300	500	--	0	20	50	-50	-20	0	Yes	VDD	Yes	--	--	-40 to +85	TO94
AH9480	2.5 to 16	4.3	300	500	--	0	20	50	-50	-20	0	Yes	VDD	Yes	FG	--	-40 to +85	MSOP8-EP
AH9481	2.5 to 16	4.3	300	500	--	0	20	50	-50	-20	0	Yes	VDD	Yes	RD	--	-40 to +85	MSOP8-EP
AH477A	3.5 to 18	13.5	250	600	A B	5 --	-- --	70 100	-70 -100	-- --	-5 --	--	VDD	Yes	--	--	-20 to +85	TO94
AH5772	2.4 to 18	3	450	1,000	--	5	20	35	-35	-20	-5	Yes	VDD	Yes	--	--	-40 to +105	TO94
AH5773	2.4 to 18	3	500	1,000	--	5	20	35	-35	-20	-5	Yes	PWM, VDD	Yes	FG	Yes	-40 to +105	MSOP8-EP U-DFN2020-6

TS: Thermal Shutdown

OCL: Overcurrent Limit

OVP: Overvoltage

- (2) For two phase All-In-One BLDC fans and motor drivers please refer to the motor drive portfolio [http://www.diodes.com/catalog/Two\\_Phase\\_156](http://www.diodes.com/catalog/Two_Phase_156)
- (3) For single BLDC fans and motor drivers please refer to the motor drive portfolio [http://www.diodes.com/catalog/BLDC\\_Smart\\_Motor\\_Drivers\\_152](http://www.diodes.com/catalog/BLDC_Smart_Motor_Drivers_152)
- (4) For single or two phase BLDC fans and motor control pre-drivers please refer to the motor drive portfolio page on [http://www.diodes.com/catalog/BLDC\\_Motor\\_Pre-Drivers\\_153](http://www.diodes.com/catalog/BLDC_Motor_Pre-Drivers_153)

**Further Information:**

All In One Driver Portfolio page: [http://www.diodes.com/catalog/BLDC\\_All-In-One\\_Motor\\_Drivers\\_151](http://www.diodes.com/catalog/BLDC_All-In-One_Motor_Drivers_151)  
 Datasheet: AH9485 [http://www.diodes.com/datasheets/AH\\_9485.pdf](http://www.diodes.com/datasheets/AH_9485.pdf)  
 Datasheet: AH9486 [http://www.diodes.com/datasheets/AH\\_9486.pdf](http://www.diodes.com/datasheets/AH_9486.pdf)