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**AH5773**

**SINGLE PHASE MOTOR DRIVER WITH  
INTERNAL HALL EFFECT LATCH SENSOR**

## Description

The AH5773 is a high performance, single chip solution for driving single-coil brushless direct current (BLDC) fans and motors. The integrated full-bridge driver output stage uses soft switching to minimize audible switching noise and electromagnetic interference (EMI) providing a low noise solution.

To simplify circuit design and minimize external components, the device integrates a stable high sensitivity Hall-effect sensor, voltage and temperature compensated internal references, amplifiers and the output H-bridge power switches with low  $R_{DS(on)}$ . For system flexibility, the motor speed can be controlled by changing the duty ratio of the PWM signal at the PWM pin or adjusting the supply voltage.

To help protect the motor coil, the AH5773 provides Rotor Lock Protection which shuts down the output drive if rotor lock is detected. The device automatically re-starts when the rotor lock is removed. In case of over-voltage, the device shuts down the output drive and enters standby mode to help prevent over-voltage stress on the coil. Over-temperature shutdown provides thermal protection for the device. The device enters standby mode when PWM pin is pulled low for longer than 65ms. In standby mode, AH5773 consumes less than 100µA.

A Tachometer output is provided by open-drain Frequency Generator (FG) Pin which allows external interface to monitor motor rotation or speed. The FG output is the magnetic change frequency.

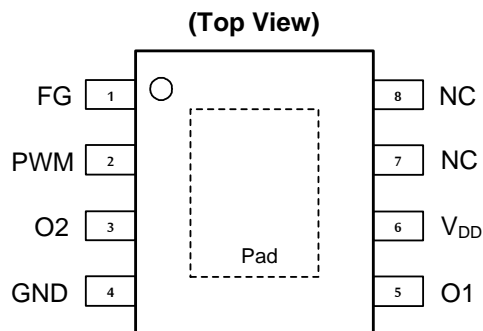
The AH5773 is available in space saving small low profile U-DFN2020-6 and MSOP-8EP packages.

## Features

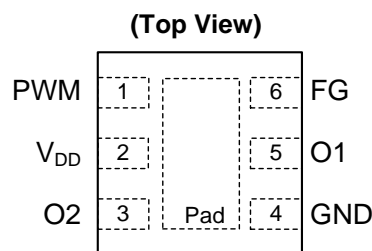
- Supports Single-Phase Full Wave BLDC Fan/Motor Drive
- Wide Operating Voltage Range: 2.4V to 18V
- Built-in High Sensitivity Hall Effect Sensor
- Built-in H-Bridge with Low  $R_{DS(on)}$  Resistance
- PWM Input for Speed Control
- Standby Feature with  $I_{DD} < 100\mu A$
- Soft Switching for Low Noise DC Fan Motor Applications
- Rotor Lock Protection with Automatic Re-Start
- $t_{OFF}$  Clear When PWM Is Low for Greater Than 65ms
- Over Voltage Shutdown
- Thermal Protection
- Tachometer (FG) Output
- Small Low-Profile Package: U-DFN2020-6 and MSOP-8EP with Exposed Pads for Power Handling Capability
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Notes: 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.  
2. See [http://www.diodes.com/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.  
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

## Pin Assignments



**MSOP-8EP**



**U-DFN2020-6**

## Applications

- 5V/ 9V/ 12V/ 15V Min. BLDC Cooling Fans and Motors
- Netbook/ Notebook and Desktop BLDC Fans
- Instruments Cooling Fans
- Medium Voltage/ Low Power BLDC Motors

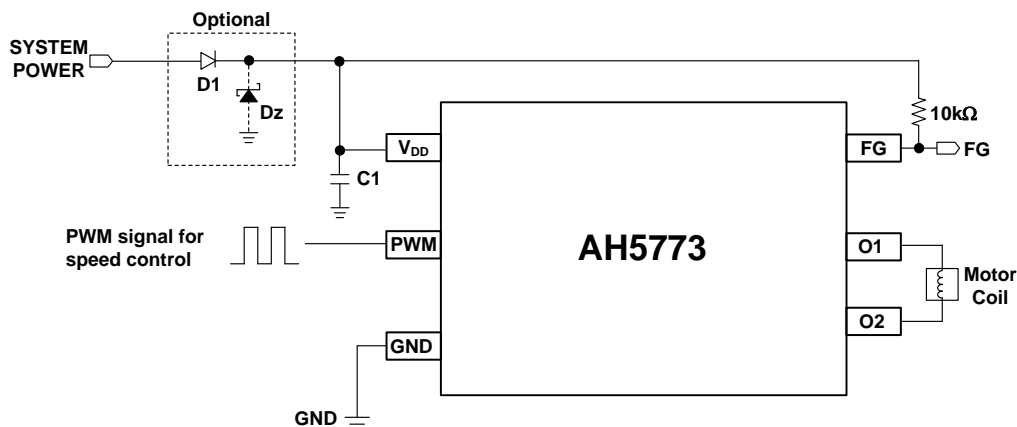
AH5773

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## Typical Applications Circuit



- Notes:
- C1 is for power stabilization and to strengthen the noise immunity; the recommended value is 2.2μF. The value of capacitor can be optimized depending on the operating mode, motor voltage and the motor current. For PWM speed control mode, with datasheet current capability, the recommended capacitor value is 2.2μF, for lower motor current 1μF and higher should be used. If PWM speed control function is not used (PWM pin tied high or not connected) the capacitor value can be reduced towards 0.1μF. The value of the C1 should be checked in the motor design in its operating conditions if it is reduced from the recommended value of 2.2μF.
  - The AH5773 has an open-drain tachometer FG output that follows the magnetic change frequency. Typically a pull-up resistor of 10kΩ is recommended from FG pin to the supply voltage.

## Pin Descriptions

### Package Type: MSOP-8EP

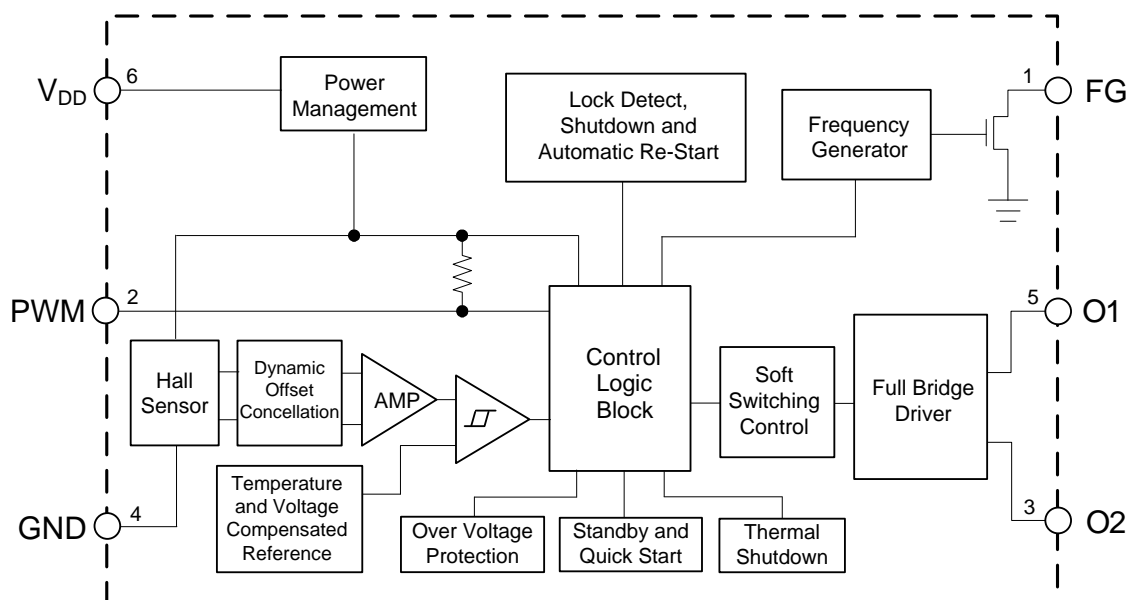
| Pin Number | Pin Name        | Description   |
|------------|-----------------|---|
| 1          | FG              | Frequency Generator (FG) - The FG output is the same as the magnetic change frequency |
| 2          | PWM             | PWM signal input pin for speed control  |
| 3          | O2              | Output drive sourcing & sinking pin   |
| 4          | GND             | Ground pin  |
| 5          | O1              | Output drive sourcing & sinking pin   |
| 6          | V <sub>DD</sub> | Power supply input pin  |
| 7          | NC              | No connection (Note 6)  |
| 8          | NC              | No connection (Note 6)  |
| Pad        | Pad             | Exposed pad for thermal dissipation. It can be connected to GND or left open circuit. |

Note: 6. NC is "No Connection" pin and is not connected internally. This pin can be left open or tied to ground.

### Package Type: U-DFN2020-6

| Pin Number | Pin Name        | Description   |
|------------|-----------------|---|
| 1          | PWM             | PWM signal input pin for speed control  |
| 2          | V <sub>DD</sub> | Power supply input pin  |
| 3          | O2              | Output drive sourcing & sinking pin   |
| 4          | GND             | Ground pin  |
| 5          | O1              | Output drive sourcing & sinking pin   |
| 6          | FG              | Frequency Generator (FG) - The FG output is the same as the magnetic change frequency |
| Pad        | Pad             | Exposed pad for thermal dissipation. It can be connected to GND or left open circuit. |

## Functional Block Diagram



## Absolute Maximum Ratings (Note 7) (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Symbol               | Characteristics                    | Rating  | Unit               |
|----------------------|------------------------------------|---|--------------------|
| V <sub>DD_MAX</sub>  | Maximum Supply Voltage (Note 8)    | 24  | V                  |
| V <sub>REVERSE</sub> | Reverse Supply Voltage on All Pins | -0.3  | V                  |
| V <sub>PWM_MAX</sub> | Maximum Voltage on Logic PWM Pin   | 6   | V                  |
| I <sub>O(PEAK)</sub> | Maximum Output Current (Peak)      | 1,000   | mA                 |
| B                    | Maximum Magnetic Flux Density      | Unlimited   | –                  |
| P <sub>D</sub>       | Power Dissipation (Note 9)         | MSOP-8EP<br>2,180 (Note 10)<br>U-DFN2020-6<br>1,230 (Note 11) | mW                 |
| T <sub>STG</sub>     | Storage Temperature Range          | -65 to +150   | °C                 |
| T <sub>J</sub>       | Maximum Junction Temperature       | +150  | °C                 |
| ESD HBM              | Human Body Model ESD Capability    | V <sub>DD</sub> , O1, O2, PWM and GND pins<br>FG pin          | 4<br>2<br>kV<br>kV |

- Notes:
- Stresses greater than the 'Absolute Maximum Ratings' specified above may cause permanent damage to the device. These are stress ratings only; functional operation of the device at these or any other conditions exceeding those indicated in this specification is not implied. Device reliability may be affected by exposure to absolute maximum rating conditions for extended periods of time.
  - The absolute maximum V<sub>DD</sub> of 24V is a transient stress rating and is not meant as a functional operating condition. It is not recommended to operate the device at the absolute maximum rated conditions for any period of time.
  - For thermal de-rating curves under different PCB size and layout conditions, see thermal performance section.
  - MSOP-8EP exposed pad soldered to minimum recommended landing pads (see Package Outline Dimension section) on 2in x 2in two-layer 2oz copper FR4 PCB (1.6mm thickness) with four thermal vias in exposed PADs to the copper flood on the bottom layer. See thermal performance section.
  - U-DFN2020-6 exposed pad soldered to minimum recommended landing pads (see Package Outline Dimension section) on 1in x 1in two-layer 2oz copper FR4 PCB (1.6mm thickness) with two thermal vias in exposed PADs to the copper flood on the bottom layer. See thermal performance section.

## Recommended Operating Conditions

| Symbol          | Characteristic              | Conditions | Min | Max  | Unit |
|-----------------|-----------------------------|------------|-----|------|------|
| V <sub>DD</sub> | Supply Voltage              | Operating  | 2.4 | 18   | V    |
| T <sub>A</sub>  | Operating Temperature Range | Operating  | -40 | +105 | °C   |

## Electrical Characteristics (Note 12) (@T<sub>A</sub> = +25°C, V<sub>DD</sub> = 12V, unless otherwise specified.)

| Symbol                 | Characteristics  | Conditions  | Min                   | Typ                   | Max  | Unit |
|------------------------|--|---|-----------------------|-----------------------|------|------|
| I <sub>DD</sub>        | Supply Current   | No Load, PWM switching or high  | –                     | 3.17                  | 4.5  | mA   |
| I <sub>DD_STNDBY</sub> | Standby Supply Current   | PWM pin = Logic Low (GND) for >65ms   | –                     | 100                   | –    | μA   |
| V <sub>OV_TH</sub>     | Over Voltage Protection Threshold for Shutdown to Standby Mode | Voltage increasing  | 19                    | 21                    | 23   | V    |
| V <sub>OV_RLTH</sub>   | Over Voltage Release Threshold                                 | Voltage decreasing  | 18                    | 20                    | 22   | V    |
| V <sub>OH</sub>        | Output Voltage High  | V <sub>DD</sub> = 12V, I <sub>OUT</sub> = 500mA                                     | V <sub>DD</sub> -0.6  | V <sub>DD</sub> -0.36 | –    | V    |
|                        |  | V <sub>DD</sub> = 12V, I <sub>OUT</sub> = 500mA<br>T <sub>A</sub> = -40°C to +105°C | V <sub>DD</sub> -0.7  | V <sub>DD</sub> -0.36 | –    | V    |
|                        |  | V <sub>DD</sub> = 3V, I <sub>OUT</sub> = 300mA                                      | V <sub>DD</sub> -0.32 | V <sub>DD</sub> -0.23 | –    | V    |
|                        |  | V <sub>DD</sub> = 3V, I <sub>OUT</sub> = 300mA<br>T <sub>A</sub> = -40°C to +105°C  | V <sub>DD</sub> -0.40 | V <sub>DD</sub> -0.23 | –    | V    |
| V <sub>OL</sub>        | Output Voltage Low   | V <sub>DD</sub> = 12V, I <sub>OUT</sub> = 500mA                                     | –                     | 0.27                  | 0.35 | V    |
|                        |  | V <sub>DD</sub> = 12V, I <sub>OUT</sub> = 500mA<br>T <sub>A</sub> = -40°C to +105°C | –                     | 0.27                  | 0.5  | V    |
|                        |  | V <sub>DD</sub> = 3V, I <sub>OUT</sub> = 300mA                                      | –                     | 0.18                  | 0.24 | V    |
|                        |  | V <sub>DD</sub> = 3V, I <sub>OUT</sub> = 300mA<br>T <sub>A</sub> = -40°C to +105°C  | –                     | 0.18                  | 0.32 | V    |

Note: 12. Typical data is measured at T<sub>A</sub> = +25°C, V<sub>DD</sub> = 12V. The maximum and minimum parameter values over operating temperature range are not tested in production, they are guaranteed by design, characterization and process control.

## Electrical Characteristics (continued) (Notes 13 & 14) (@T<sub>A</sub> = +25°C, V<sub>DD</sub> = 12V, unless otherwise specified.)

| Symbol                  | Characteristics  | Conditions  | Min  | Typ   | Max  | Unit |
|-------------------------|--|---|------|-------|------|------|
| R <sub>ON_TOTAL</sub>   | Combined NMOS and PMOS R <sub>DS(on)</sub><br>Including Bond Wire Resistance | V <sub>DD</sub> = 12V, I <sub>OUT</sub> = 500mA                                     | —    | 1.26  | 1.9  | Ω    |
|                         |  | V <sub>DD</sub> = 12V, I <sub>OUT</sub> = 500mA<br>T <sub>A</sub> = -40°C to +105°C | —    | 1.26  | 2.4  | Ω    |
|                         |  | V <sub>DD</sub> = 3V, I <sub>OUT</sub> = 300mA                                      | —    | 1.37  | 1.87 | Ω    |
|                         |  | V <sub>DD</sub> = 3V, I <sub>OUT</sub> = 300mA<br>T <sub>A</sub> = -40°C to +105°C  | —    | 1.37  | 2.4  | Ω    |
| t <sub>SW</sub>         | Output Soft Switch Time  | 17Ω load on out1/out2   | —    | 200   | —    | μs   |
| t <sub>ON</sub>         | On Time - Lock Detect Time   | —   | —    | 420   | —    | ms   |
| R <sub>DR</sub>         | Duty Ratio - Lock Detect to Shutdown Time                                    | t <sub>OFF</sub> / t <sub>ON</sub>  | —    | 10    | —    | —    |
| I <sub>LEAK</sub>       | FG Output Leakage Current  | —   | —    | 0.005 | 1    | μA   |
| V <sub>FGOL</sub>       | FG Output Voltage Low  | I <sub>FG</sub> = 5mA   | —    | —     | 0.4  | V    |
| V <sub>PWMH</sub>       | PWM Input H Level  | —   | 2.1  | —     | 5.5  | V    |
| V <sub>PWML</sub>       | PWM Input L Level  | —   | —    | —     | 0.8  | V    |
| I <sub>PWML</sub>       | PWM Pin Current  | PWM pin: V <sub>PWM</sub> = 0   | —    | 15    | —    | μA   |
| f <sub>PWM</sub>        | PWM Input Frequency Range  | —   | 0.05 | —     | 50   | kHz  |
| D <sub>PWM_MIN</sub>    | Output Duty Ratio Range  | Input PWM frequency of 25kHz,<br>no load (Note 14)                                  | 10   | —     | 100  | %    |
| T <sub>J_SDN_TH</sub>   | IC Junction Temperature Thermal<br>Shutdown Threshold                        | —   | —    | +170  | —    | °C   |
| T <sub>J_SDN_HYST</sub> | IC Junction Temperature Thermal<br>Shutdown Hysteresis                       | —   | —    | +25   | —    | °C   |

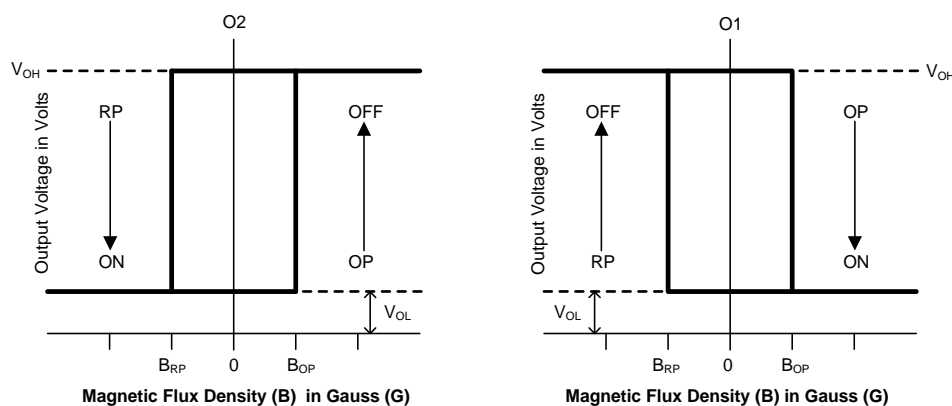
Notes: 13. Typical data is measured at T<sub>A</sub> = +25°C, V<sub>DD</sub> = 12V. The maximum and minimum parameter values over operating temperature range are not tested in production. They are guaranteed by design, characterization and process control.  
14. D<sub>PWM\_MIN</sub> is the device output PWM duty-range capability. The minimum PWM duty ratios need to start the motor turning or maintain the rotation of the motor, depending on the supply voltage to the motor and the electrical and mechanical design of the motor.

## Magnetic Characteristics (Notes 15, 16 & 17) (@T<sub>A</sub> = -40°C to +105°C, V<sub>DD</sub> = 2.4V to 18V, unless otherwise specified.)

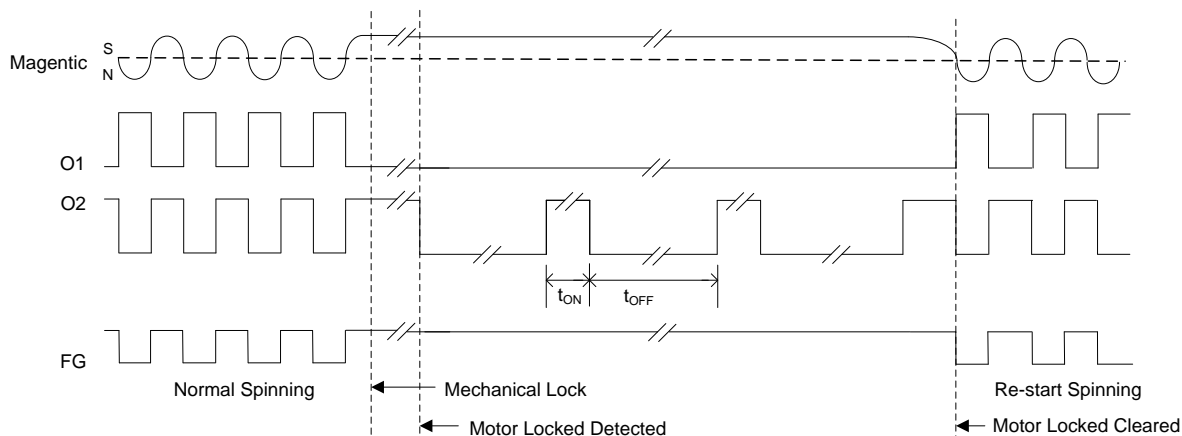
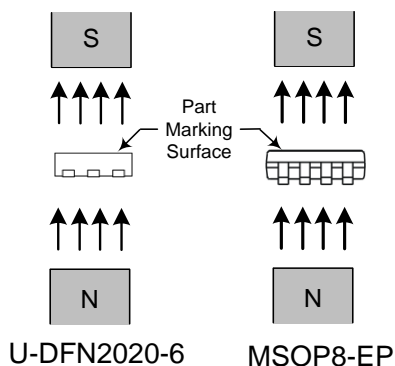
| Symbol  | Parameter     | Conditions      | Min | Typ | Max | Unit  |
|---|---------------|-----------------|-----|-----|-----|-------|
| B <sub>OP</sub> (south pole to part marking side)   | Operate Point | (Notes 15 & 17) | 5   | 20  | 35  | Gauss |
| B <sub>RP</sub> (north pole to part marking side)   | Release Point | (Notes 15 & 17) | -35 | -20 | -5  |       |
| B <sub>HY</sub> (B <sub>OP</sub> -B <sub>RP</sub> ) | Hysteresis    | —               | —   | 40  | —   |       |

Notes: 15. Typical data is measured at T<sub>A</sub> = +25°C, V<sub>DD</sub> = 12V. The maximum and minimum parameter values over operating temperature range are not tested in production. They are guaranteed by design, process control and characterization.  
16. Magnetic characteristics may vary with supply voltage, operating temperature and after soldering.  
17. The peak amplitude of the rotating-motor magnetic-flux density at the sensor location should be greater than +/-70G.

## Operating Characteristics



## Operating Characteristics (continued) (Notes 18, 19, 20 & 21)



**Truth Table**

| O1 | O2 | PWM         | FG          |
|----|----|-------------|-------------|
| H  | L  | H           | L           |
| L  | H  | H           | H           |
| L  | L  | L for >65ms | H (Note 21) |

- Notes:
- In "Normal Spinning", the FG changes its state at each edge of O1.
  - When the motor locks with South pole at the Hall element, O2 is kept on "L" and O1 is a clock with  $t_{ON}/t_{OFF}$  ratio. When motor locks with North pole at the Hall element, O1 is kept on "L", O2 is a clock with  $t_{ON}/t_{OFF}$  ratio.
  - When "Re-start spinning" occurs, the motor speed ramps up to the "Normal Spinning" speed from zero. Speed ramp-up profile depends on motor characteristics.
  - In standby mode FG switch is turned off to save system power.

## Application Note

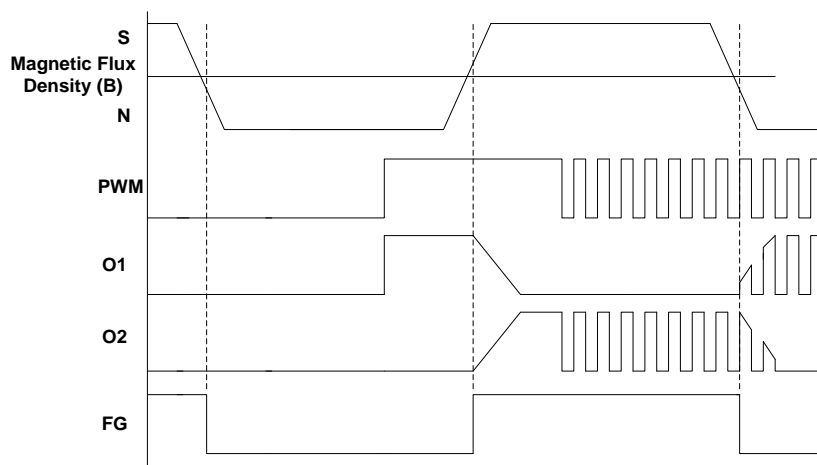
### DC Supply Voltage Speed Control

Motor speed can be controlled by varying the  $V_{DD}$  supply voltage while PWM pin is tied to  $V_{DD}$  pin.

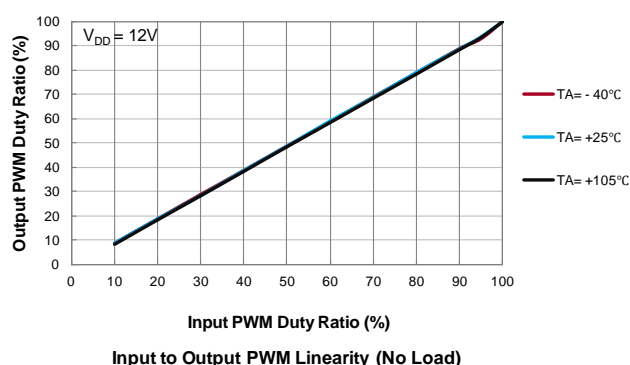
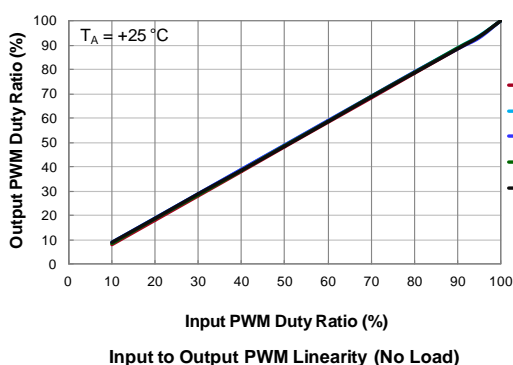
For example, with 12V nominal motor, changing supply voltage between 12V to 2.4V, speed can be reduced from 100% to 20% typically.

### PWM Speed Control

Motor speed can also be adjusted by applying a PWM speed control signal into the PWM pin while keeping the  $V_{DD}$  pin at nominal motor voltage. The motor speed is proportional to the PWM signal duty. For example, with 12V nominal motor,  $V_{DD}$  pin is maintained at 12V typical while varying the PWM control signal duty to adjust the motor speed linearly. The figure below shows the output O1 and O2 in relation to PWM speed control signal at PWM pin.



Frequency of PWM speed-control signal can be between 50Hz to 50kHz. Recommended typical PWM signal frequency is 25kHz to keep switching frequency away from audible band. AH5773 has a very good input to output PWM linearity over the operating range for no load conditions (i.e. no motor coils connected to the output). When the motor coil is connected, the nonlinearity of coils and permanent magnet profile will introduce non-linearity to the motor speed against input PWM duty ratio.



If PWM signal level at PWM pin stays low for longer than 65ms typical, the outputs are disabled.

Depending on the motor design and its inertia, at nominal voltage (i.e. 12V for 12V motor), minimum start-up PWM duty required can be typically between 20% - 45% while minimum running PWM duty can be down to 10% - 25% typical. If voltage at  $V_{DD}$  is lower than the nominal motor voltage, both start-up PWM duty and minimum running PWM duty required will be higher.



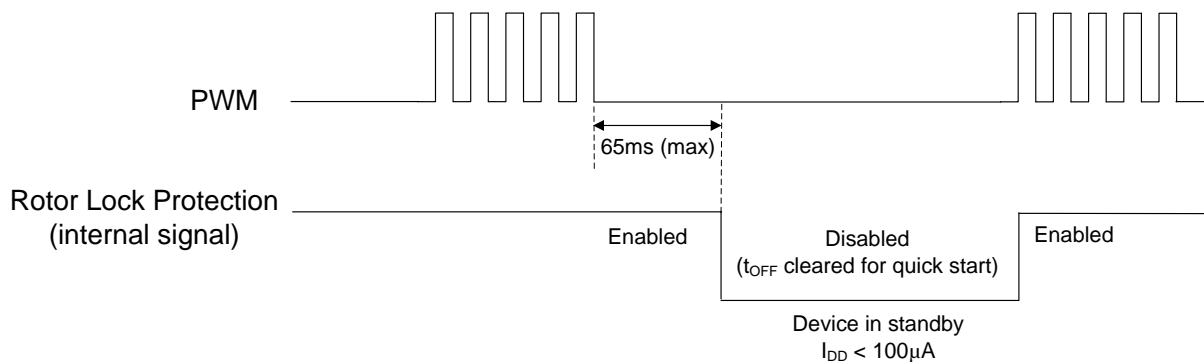


**AH5773**

## Application Note (continued)

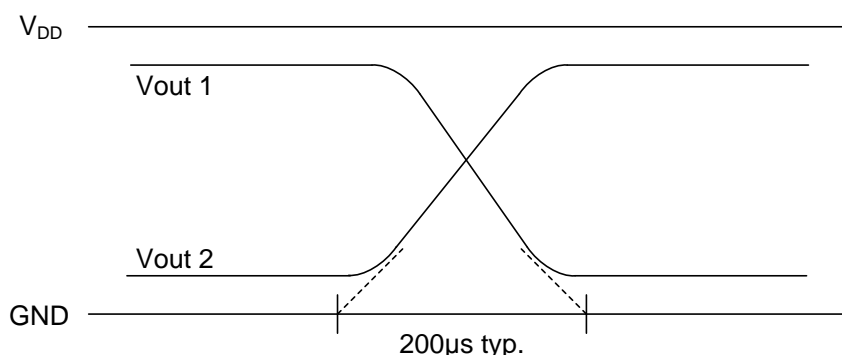
### Standby Mode and Quick Start

When PWM signal input at PWM pin is low for longer than 65ms, internal rotor lock protection  $t_{OFF}$  is cleared and the device enters standby mode. In standby mode typical supply current is less than 100 $\mu$ A. This allows the device to enter motor start  $t_{ON}$  time on the next PWM high signal providing a quick start. When the device is enabled again, the Hall sensors take 100 $\mu$ s to stabilize.



### Soft Switching

AH5773 uses soft switching of the motor coil current during commutation to minimize audible switching noise and electromagnetic interference (EMI) to provide a low noise solution.

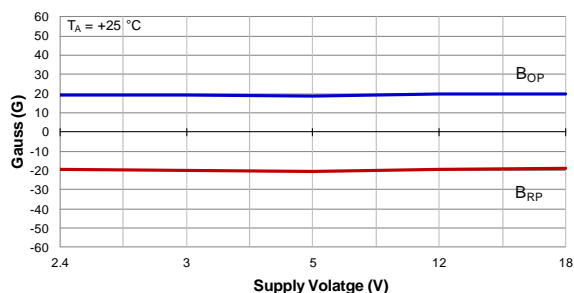


### Overvoltage Shutdown of Output Drive

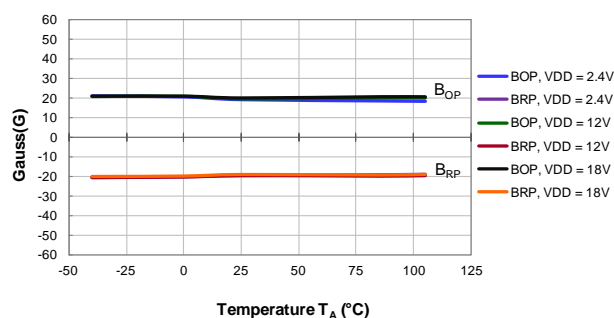
When the supply voltage reaches the over voltage shutdown threshold,  $V_{OV\_TH}$ , the AH5773 shuts down all the output drive switches and enters standby mode to help prevent over-voltage stress on the coil.

## Typical Operating Characteristics

### Typical Magnetic Operating Switch Points

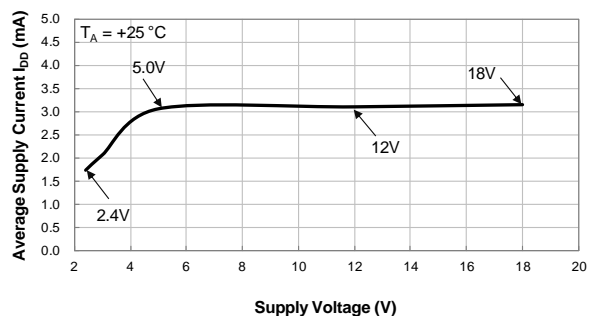


Magnetic Switch Points Bop & Brp vs. Supply Voltage

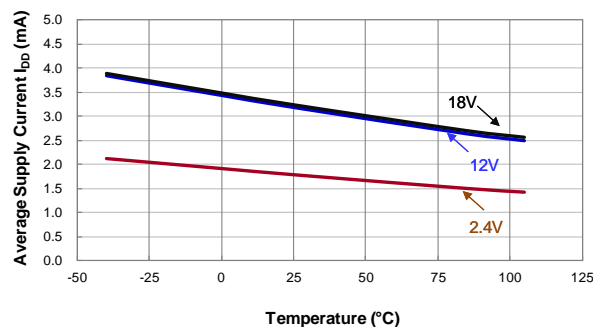


Magnetic Switch Points Bop & Brp vs. Temperature

### Average Supply Current

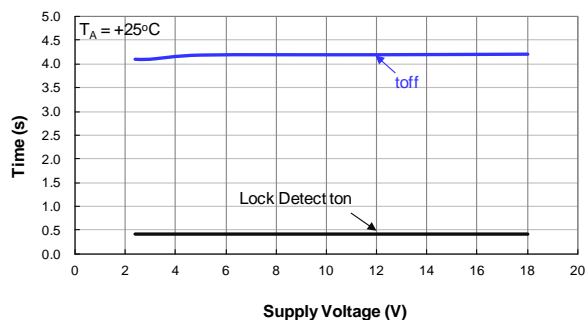


Average Supply Current vs. Supply Voltage

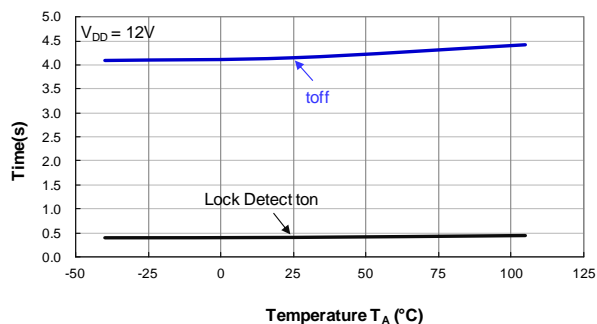


Average Supply Current vs. Temperature

### Lock Detect $t_{ON}$ and Shutdown $t_{OFF}$ Periods



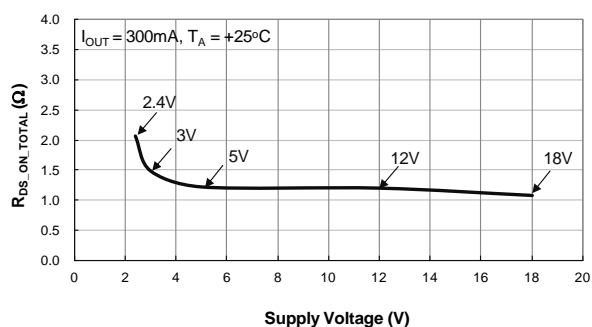
Lock Detect Ton and Toff vs. Supply Voltage



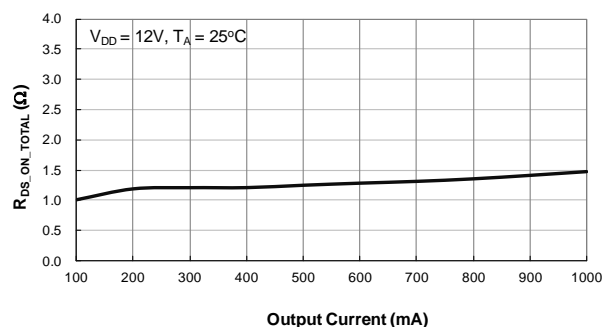
Lock Detect Ton and Toff vs. Temperature

## Typical Operating Characteristics (continued)

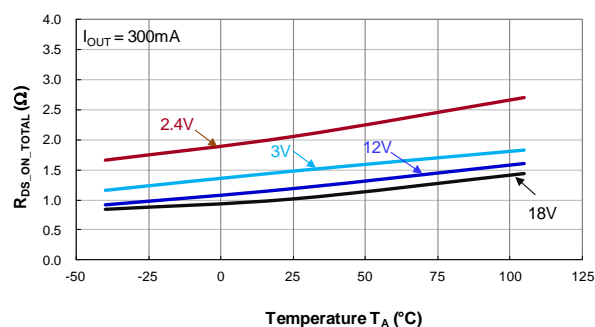
### Total H-Bridge Path Resistance – Total $R_{DS(on)}$ of High Side and Low Side Switches



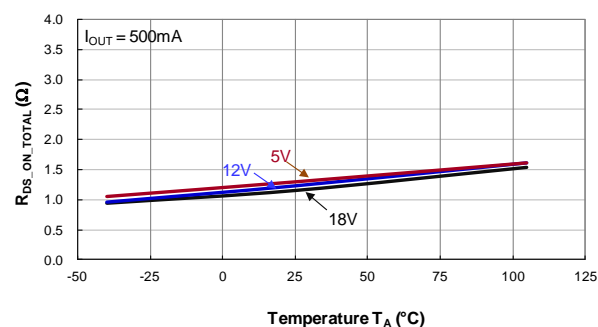
High+Low Side Resistance  $R_{DS(on)_TOTAL}$  vs. Supply Voltage



High+Low Side Resistance  $R_{DS(on)_TOTAL}$  vs. Current



High+Low Side Resistance  $R_{DS(on)_TOTAL}$  vs. Temperature

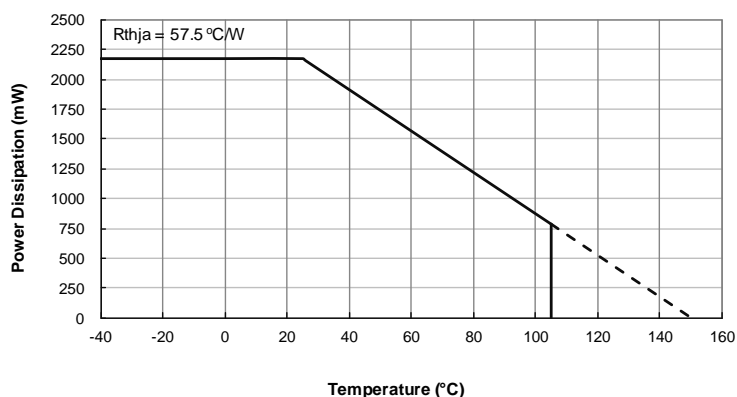


High+Low Side Resistance  $R_{DS(on)_TOTAL}$  vs. Temperature

## Thermal Performance

**MSOP-8EP Power Dissipation De-rating Curve 1 (Note 22)**

| T <sub>A</sub> (°C) | -40   | 0     | 25    | 50    | 60    | 70    | 80    | 85    | 90    | 95  | 100 | 105 | 110 | 120 | 125 | 130 | 140 | 150 |
|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| P <sub>D</sub> (mW) | 2,180 | 2,180 | 2,180 | 1,744 | 1,570 | 1,395 | 1,221 | 1,134 | 1,046 | 959 | 872 | 785 | 698 | 523 | 436 | 349 | 174 | 0   |

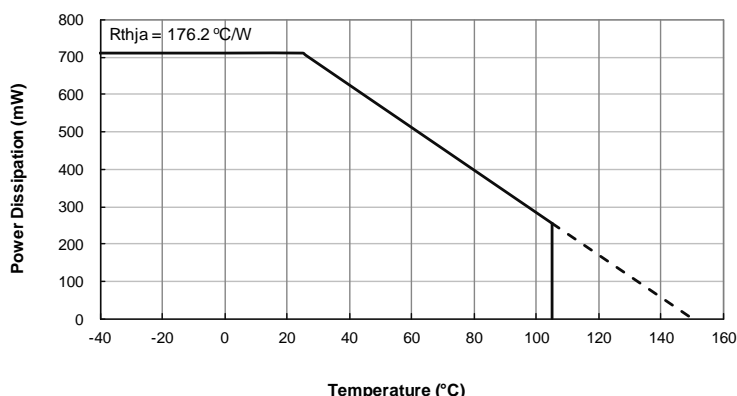


**MSOP-8EP Thermal Derating Curve**

Note 22: MSOP-8EP exposed pad soldered to minimum recommended landing pads (see Package Outline Dimension section) on a 2in x 2in two-layer 2oz copper FR4 PCB (1.6mm thickness) with four thermal vias in the exposed PAD to the copper flood on the bottom layer.

**MSOP-8EP Power Dissipation De-rating Curve 2 (Note 23)**

| T <sub>A</sub> (°C) | -40 | 0   | 25  | 50  | 60  | 70  | 80  | 85  | 90  | 95  | 100 | 105 | 110 | 120 | 125 | 130 | 140 | 150 |
|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| P <sub>D</sub> (mW) | 710 | 710 | 710 | 568 | 511 | 454 | 398 | 369 | 341 | 312 | 284 | 256 | 227 | 170 | 142 | 114 | 57  | 0   |



**MSOP-8EP Thermal Derating Curve**

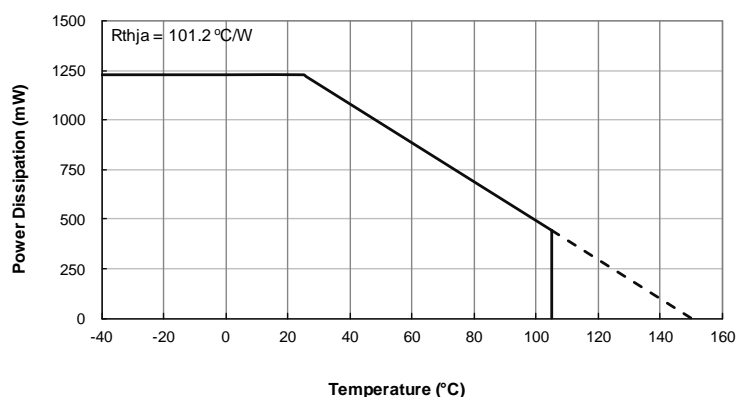
Note 23: MSOP-8EP exposed pad soldered to minimum recommended landing pads (see Package Outline Dimension section) on a 1in x1in 2oz copper FR4 PCB (1.6mm thickness) with no thermal vias in the exposed PAD or any copper flood connecting to the landing pattern or on the bottom layer.

## Thermal Performance (continued)

### (1) Package Type: U-DFN2020-6

#### U-DFN2020-6 Power Dissipation De-rating Curve 1 (Note 24)

| T <sub>A</sub> (°C) | -40  | 0    | 25   | 50  | 60  | 70  | 80  | 85  | 90  | 95  | 100 | 105 | 110 | 120 | 125 | 130 | 140 | 150 |
|---------------------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| P <sub>D</sub> (mW) | 1230 | 1230 | 1230 | 984 | 886 | 787 | 689 | 640 | 590 | 541 | 492 | 443 | 394 | 295 | 246 | 197 | 98  | 0   |

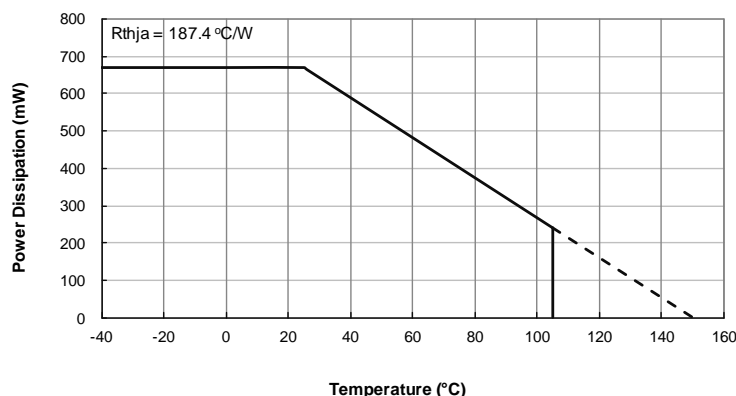


U-DFN2020-6 Thermal Derating Curve

Note 24: U-DFN2020-6 exposed pad soldered to minimum recommended landing pads (see Package Outline Dimension section) on a 1in x1in two-layer 2oz copper FR4 PCB (1.6mm thickness) with two thermal vias in the exposed PAD to the copper flood on the bottom layer.

#### U-DFN2020-6 Power Dissipation De-rating Curve 2 (Note 25)

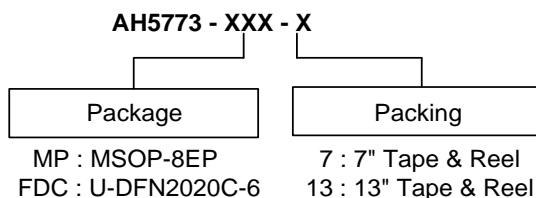
| T <sub>A</sub> (°C) | -40 | 0   | 25  | 50  | 60  | 70  | 80  | 85  | 90  | 95  | 100 | 105 | 110 | 120 | 125 | 130 | 140 | 150 |
|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| P <sub>D</sub> (mW) | 670 | 670 | 670 | 536 | 482 | 429 | 375 | 348 | 322 | 295 | 268 | 241 | 214 | 161 | 134 | 107 | 54  | 0   |



U-DFN2020-6 Thermal Derating Curve

Note 25: U-DFN2020-6 exposed pad soldered to minimum recommended landing pads (see Package Outline Dimension section) on a 1in x1in two-layer 2oz copper FR4 PCB (1.6mm thickness) with no thermal vias or any copper flood connecting to the landing pattern or the bottom layer.

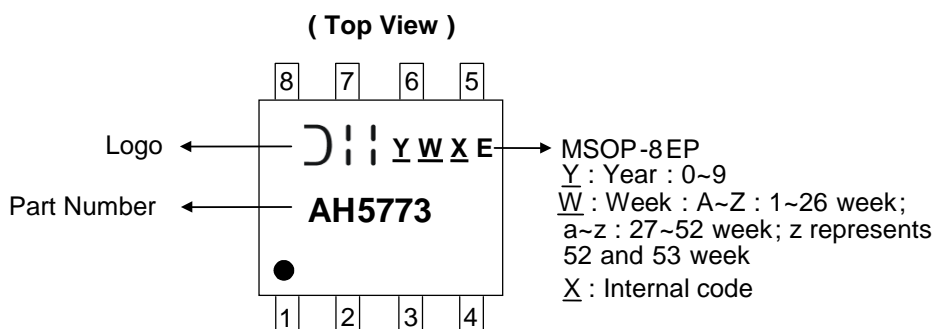
## Ordering Information



| Part Number  | Package Code | Packaging   | 13" Tape and Reel |                    |
|--------------|--------------|-------------|-------------------|--------------------|
|              |              |             | Quantity          | Part Number Suffix |
| AH5773-MP-13 | MP           | MSOP-8EP    | 2,500/Tape & Reel | -13                |
| AH5773-FDC-7 | FDC          | U-DFN2020-6 | 3,000/Tape & Reel | -7                 |

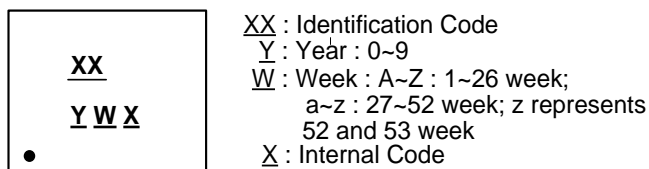
## Marking Information

### (1) Package Type: MSOP-8EP



### (2) Package Type: U-DFN2020-6

#### ( Top View )

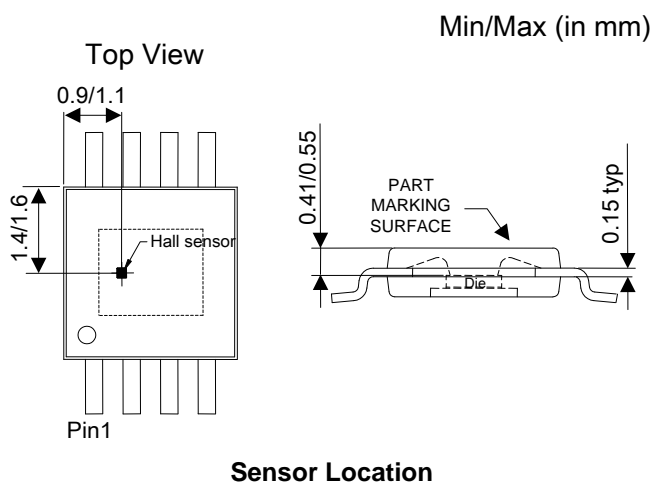
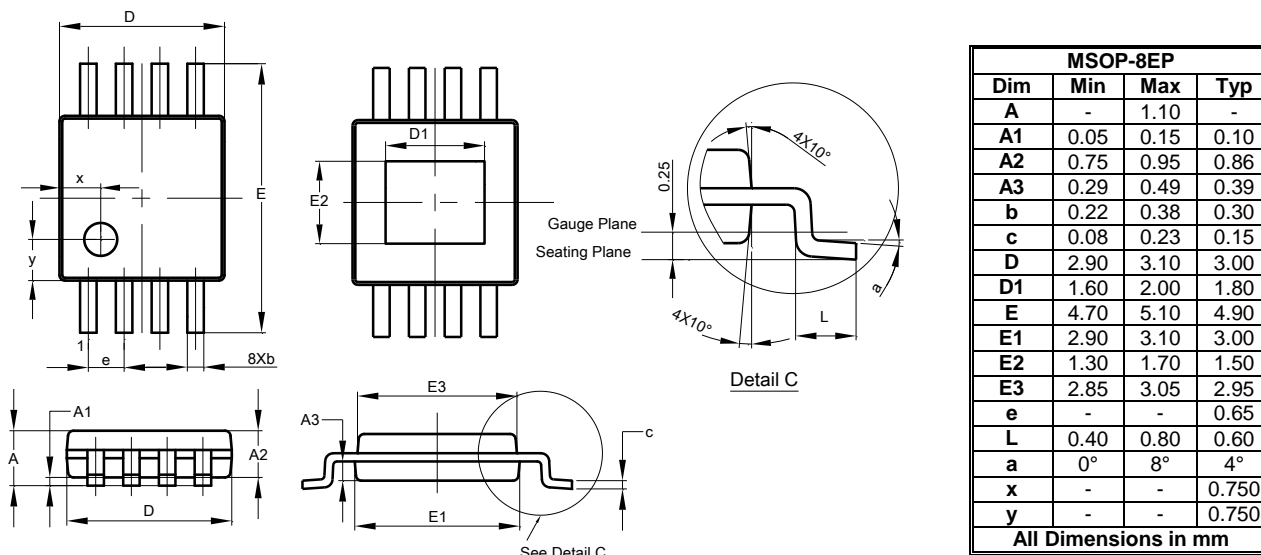


| Part Number  | Package     | Identification Code |
|--------------|-------------|---------------------|
| AH5773-FDC-7 | U-DFN2020-6 | KH                  |

## Package Outline Dimensions (All dimensions in mm.)

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.

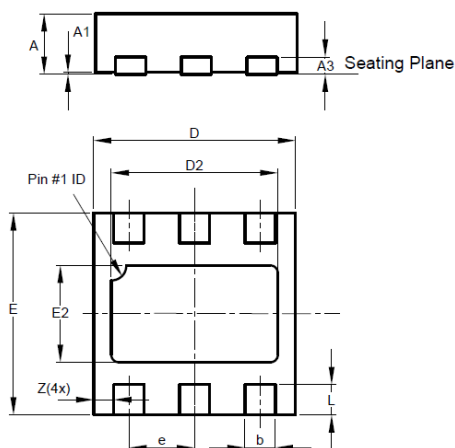
### (1) Package Type: MSOP-8EP



## Package Outline Dimensions (All dimensions in mm.)

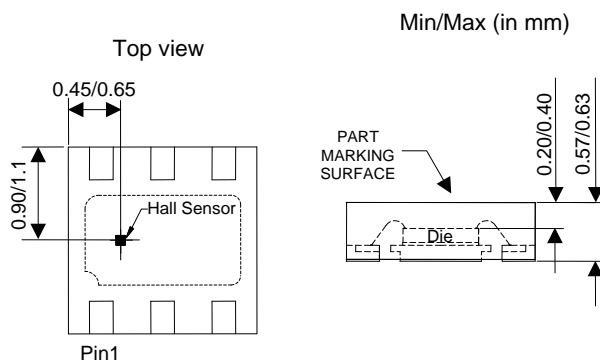
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.

### (2) Package Type: U-DFN2020-6 (Type C)



**Bottom View**

| U-DFN2020-6<br>(Type C) |      |       |      |
|-------------------------|------|-------|------|
| Dim                     | Min  | Max   | Typ  |
| A                       | 0.57 | 0.63  | 0.60 |
| A1                      | 0.00 | 0.05  | 0.02 |
| A3                      | -    | -     | 0.15 |
| b                       | 0.25 | 0.35  | 0.30 |
| D                       | 1.95 | 2.075 | 2.00 |
| D2                      | 1.55 | 1.75  | 1.65 |
| E                       | 1.95 | 2.075 | 2.00 |
| E2                      | 0.86 | 1.06  | 0.96 |
| e                       | -    | -     | 0.65 |
| L                       | 0.25 | 0.35  | 0.30 |
| Z                       | -    | -     | 0.20 |
| All Dimensions in mm    |      |       |      |



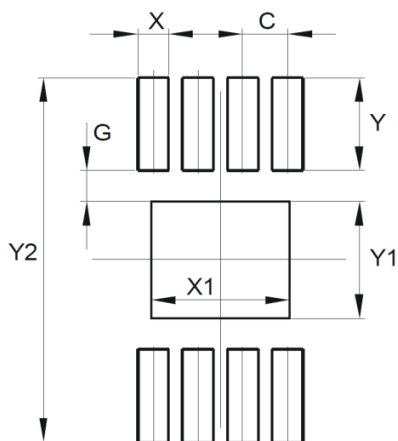
**Sensor Location**



## Suggested Pad Layout

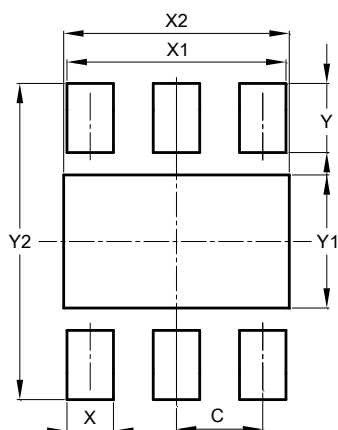
Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.

### (1) Package Type: MSOP-8EP



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 0.650         |
| G          | 0.450         |
| X          | 0.450         |
| X1         | 2.000         |
| Y          | 1.350         |
| Y1         | 1.700         |
| Y2         | 5.300         |

### (2) Package Type: U-DFN2020-6



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 0.650         |
| X          | 0.350         |
| X1         | 1.650         |
| X2         | 1.700         |
| Y          | 0.525         |
| Y1         | 1.010         |
| Y2         | 2.400         |



AH5773

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