Honeywell

VF526DT Bipolar Latch, Dual Hall-effect Digital Position Sensor with Speed and Direction Outputs

DESCRIPTION

The VF526DT Bipolar Latch, Dual Hall-effect Digital Position Sensor has two distinct Hall sensing elements precisely located 1,4 mm [0.055 in] apart on a single integrated circuit chip. The elements are encapsulated in a thermoset molding material.

The two active Hall latches provide speed and direction indication of a magnetic gradient (such as a rotating ring magnet) across the face of the package.

The miniature, 4-pin SOT-89B package surface mounts on PC (Printed Circuit) boards and flexible circuits.

FEATURES AND BENEFITS

- Temperature-compensated magnetics and ultra-low offset drift with temperature provides a stable output over a full temperature range of -40 °C to 125 °C [-40 °F to 257 °F].
- Single, miniature 4-pin SOT-89B plastic package supplied on tape and reel for automated assembly, allowing potential savings in PC board space and labor cost.
- Two separate built-in Hall sensors and their associated logic circuitry provide a frequency signal for speed output and a logic level (high or low) signal for direction output, potentially replacing multiple sensors and electronic components.
- Wide operating voltage range of 3.4 Vdc to 24 Vdc increases application flexibility.
- Tested to moisture sensitivity similar to JEDEC J-STD-020B, MSL Level 1, allowing the VF526DT to be used in environments where humidity may be a problem.
- RoHS-compliant materials meet Directive 2002/95/EC.

POTENTIAL APPLICATIONS

compensation circuitry.

Transportation

combination.

- Anti-pinch electric motor control systems for:
 - power windows
 - power seats (headrest)
 - power sliding doors
 - sunroofs
- Magnetic encoding for electronic steering systems

Industrial

- Motion control systems for pulleys and belts
- Garage door openers and sliding doors
- Position and velocity detection in industrial equipment
- Linear displacement sensing (using a magnetic strip of alternating poles)



The VF526DT's built-in temperature compensation is designed

A unique, regulator circuit provides extremely stable operation

interface with many electronic components without buffering or

with supply voltages from 3.4 Vdc to 24 Vdc. It can directly

to match the temperature coefficient of low-cost magnets,

allowing for a reliable, yet cost-effective, sensor-magnet

VF526DT

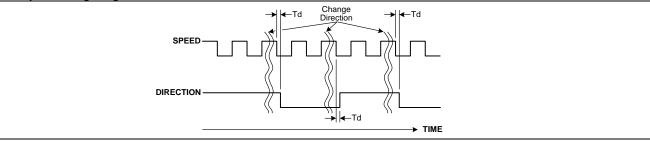
Table 1. Absolute Maximum Ratings¹

Characteristic	Sym.	Min.	Max.	Unit	Note 1: Absolute maximum ratings are the		
				Unit			
Supply voltage	Vcc	-0.5	30	V	extreme limits that the device will withstand		
Output voltage (OFF)	Vout	-0.5	30	V	without damage to the device. However, the		
Output ON current	lout	-	10	mA	electrical and mechanical characteristics are not		
Storage temperature	Ts	-65 [-85]	160 [320]	°C [°F]	guaranteed as the maximum limits (above		
Operating temperature	Т	-40 [-40]	150 [302]	°C [°F]	recommended operating conditions) are		
ESD:					approached, nor will the device necessarily		
IEC 801-2, Lev 1	ESD	2	_	KV	operate at absolute maximum ratings.		
MIL-STD-883, Method 3015.7		4	-				
Magnetic flux		no limit		-	SENSITIVE DEVICES DO NOTOFEN OR RANDLE		
0					EXCEPT AT A STATIC FREE WORKSTATION		
					ESD SENSITIVITY:		
					CLASS 3		

Table 2. Specifications

Characteristic	Sym.	Condition	Min.	Тур.	Max.	Unit
Magnetic actuation type	bipolar latch					
Output type	dual open collector, sinking (speed and direction)					
Supply voltage	Vcc	-	3.4	-	24	Vdc
Operating temperature	Temp	Vcc = 3.4 V to 24 V	-40 [-40]	_	125 [257]	°C [°F]
Supply current (OFF)	loff	Vcc = 24 V, -40 °C < T < 125 °C, Vout = 24 V, B <min rel<="" td=""><td>_</td><td>_</td><td>12</td><td>mA</td></min>	_	_	12	mA
Supply current (ON)	lon	Vcc = 24 V, -40 °C < T < 125 °C, Isink = 5 mA, B <max op<="" td=""><td>-</td><td>_</td><td>14</td><td>mA</td></max>	-	_	14	mA
Load current	lsink	Vcc = 24 V, -40 °C < T < 125 °C, Isink = 5 mA, B <max op<="" td=""><td>-</td><td>_</td><td>5</td><td>mA</td></max>	-	_	5	mA
Output saturation	Vsat	Vcc = 24 V, -40 °C < T < 125 °C, Isink = 5 mA, B <max op<="" td=""><td>-</td><td>-</td><td>0.4</td><td>V</td></max>	-	-	0.4	V
Circuit speed to direct delay	Td	Vcc = 12 V, RL = 1.6 kOhm, CL = 20 pF	-	-	5	μs
Rise time	Tr	Vcc = 12 V, RL = 1.6 kOhm, CL = 20 pF	_	_	1.5	μs
Fall time	Tf	Vcc = 12 V, RL = 1.6 kOhm, CL = 20 pF	_	_	1.5	μs
Frequency	Тор	Vcc = 12 V, RL = 1.6 kOhm, CL = 20 pF	<1	_	>1000	Hz
Operate point	Вор	T = 25 °C -40 °C < T < 125 °C	_ 60	130 _	200	Gaus s
Release point	Brel	T = 25 °C -40 °C < T < 125 °C	- -60	-130 _	-200	Gaus s
Differential (OP-REL)	Diff	T = 25 °C -40 °C < T < 125 °C	_ 200	260 _	_ 320	Gaus s
Symmetry ([OP +REL]/2)	Sym	T = 25 °C -40 °C < T < 125 °C	- -65	0 _	- 65	Gaus s
Package style	SOT-89B					
Moisture sensitivity test	similar to JEDEC J-STD-020B, MSL Level 1					
Package quantity	available in 1000/tape and reel					

Figure 1. Output Timing Diagram



Bipolar Latch, Dual Hall-effect Digital Position Sensor with Speed and Direction Outputs

Figure 2. Sensor Function Diagram with Customer-Supplied Magnet

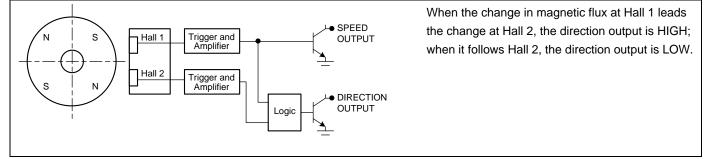


Figure 3. Mounting Dimensions (For reference only. mm/[in].)

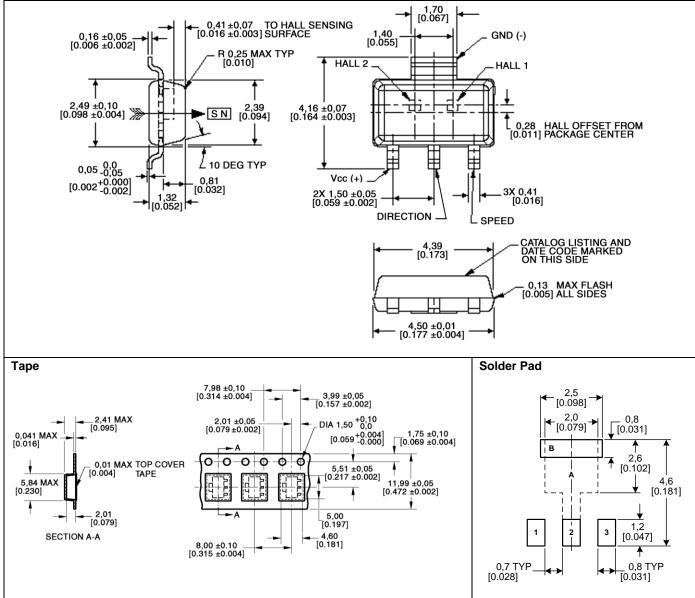
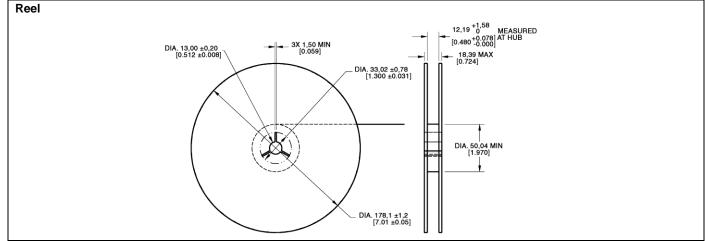


Figure 3. Mounting Dimensions (continued)



Order Guide

Catalog Listing	Description
VF526DT	Bipolar latch, dual hall-effect digital position sensor with speed and direction outputs, on tape and reel
	(1000 pcs per reel)

🛦 WARNING

MISUSE OF DOCUMENTATION

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.

WARRANTY/REMEDY

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.

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Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

A WARNING

PERSONAL INJURY

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

SALES AND SERVICE

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