

## Description

The ZMZ20 is an extremely sensitive magnetic field sensor in a 4 pin E-Line package employing the magneto-resistive effects of thin film Permalloy. It allows the measurement of magnetic fields or the detection of metallic parts. The sensor consists of a chip covered with Permalloy stripes which form a Wheatstone bridge, whose output voltage is proportional to the magnetic field component  $H_y$ . A perpendicular field  $H_x$  is necessary to suppress the hysteresis and this can be provided by using a small permanent magnet.

## Features

- Output voltage proportional to magnetic field  $H_y$
- Adjustment of sensitivity and suppression of hysteresis by the auxiliary magnetic field  $H_x$
- Magnetic fields vertical to the chip level are not effective
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](mailto:info@diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

## Applications

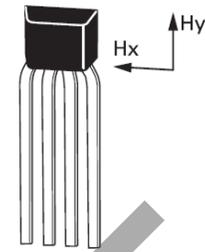
- Linear position sensors for process control, door interlocks, proximity detectors, machine tool sensing
- Scalar measurement for compassing
- Automotive - door switches, engine position and speed sensing
- Metering of fluids by sensing rotation of impeller
- Traffic counting and vehicle-type sensing
- Measurement of current in a conductor without connection

## Ordering Information

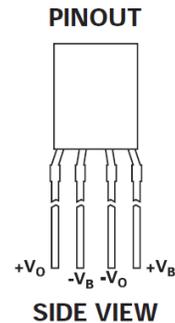
DEVICE	BOX
ZMZ20	Bulk in box (2,000 components per box)

## Marking Information

- M20



**E-LINE**



**SIDE VIEW**

### Absolute Maximum Ratings

PARAMETER	SYMBOL	LIMIT	UNIT
Supply voltage	$V_B$	12	V
Total power dissipation	$P_{TOT}$	120	mW
Operating temperature range	$T_{amb}$	-40 to +150	°C

### Electrical Characteristics (@ $T_A = +25^\circ\text{C}$ and $H_x=3\text{kA/m}$ , unless otherwise stated.)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Bridge resistance	$R_{br}$	1.2	1.7	2.2	k $\Omega$	
Output voltage range	$V_O/V_B$	16	20	24	mV/V	
Open circuit sensitivity	S	3.7	4.7	5.7	(mV/V)/(kA/m)	No disturbing field $H_d$ allowed
Hysteresis of output voltage	$V_{OH}/V_B$	-	-	50	$\mu\text{V/V}$	$H_y = 2\text{kA/m}$
Offset voltage	$V_{off}/V_B$	-1.0	-	+1.0	mV/V	
Operating frequency	$f_{max}$	0	-	1	MHz	
Temperature coefficient of offset voltages	$TCV_{off}$	-3	-	+3	( $\mu\text{V/V}$ )/K	$T_{amb} = -25$ to $+125^\circ\text{C}$
Temperature coefficient of bridge resistance	$TCR_{br}$	0.25	0.3	0.35	%/K	$T_{amb} = -25$ to $+125^\circ\text{C}$
Temperature coefficient of open circuit sensitivity $V_B = 5\text{V}$	$TCS_V$	-0.25	-0.3	-0.35	%/K	$T_{amb} = -25$ to $+125^\circ\text{C}$
Temperature coefficient of open circuit sensitivity $I_B = 3\text{mA}$	$TCS_I$	-	-0.1	-	%/K	$T_{amb} = -25$ to $+125^\circ\text{C}$

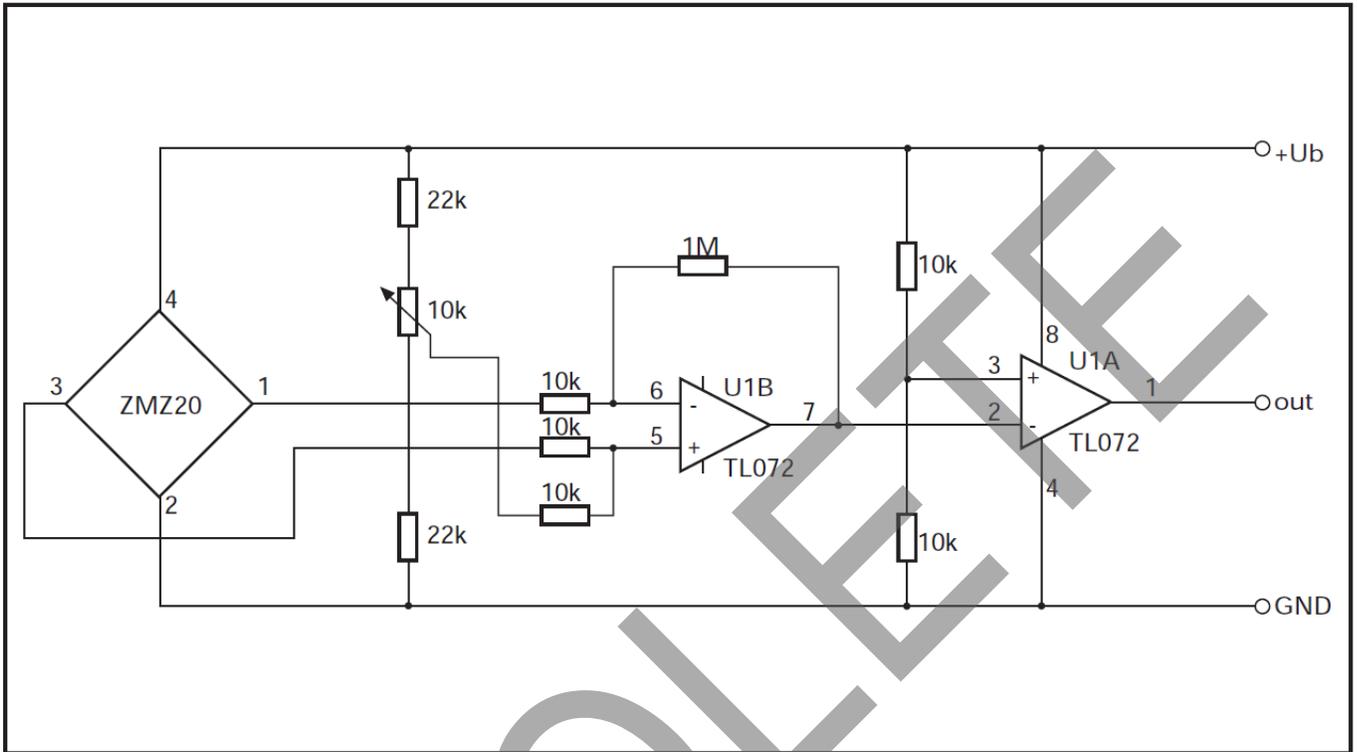
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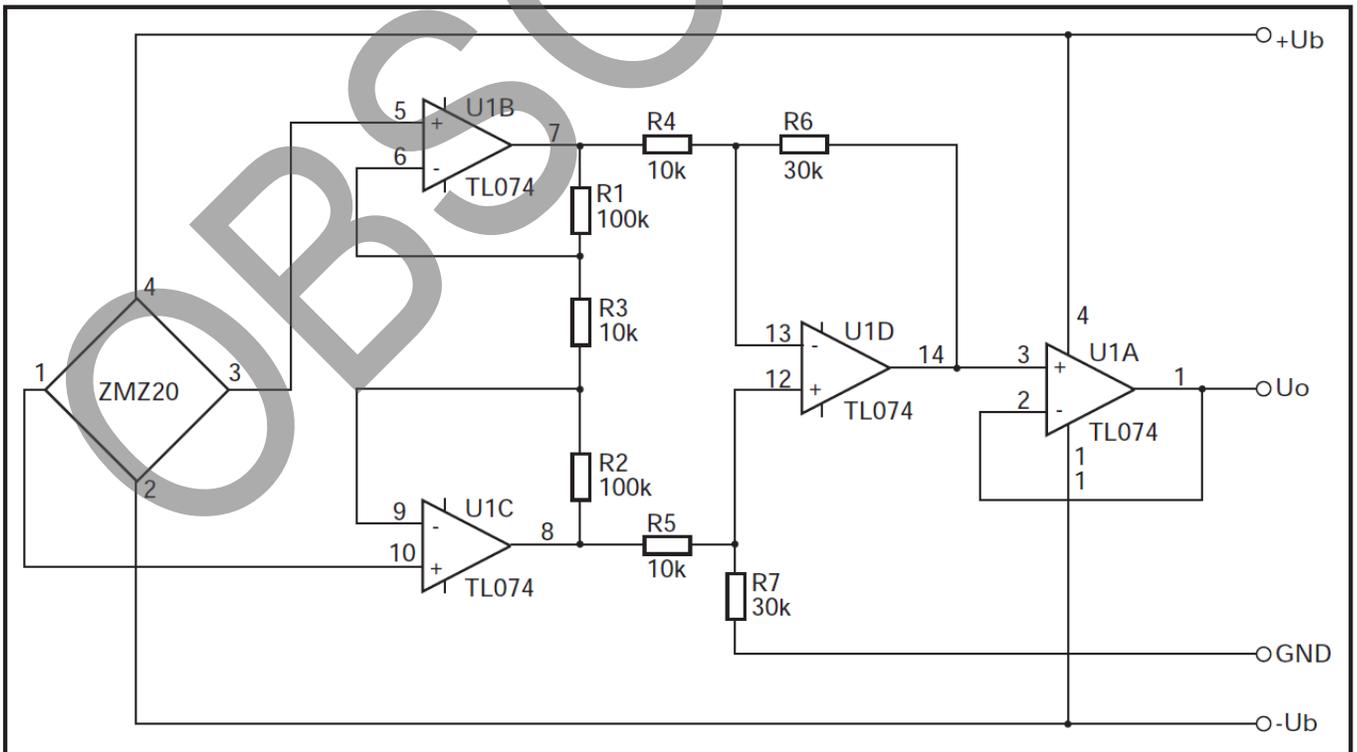
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**Typical Applications Circuit**

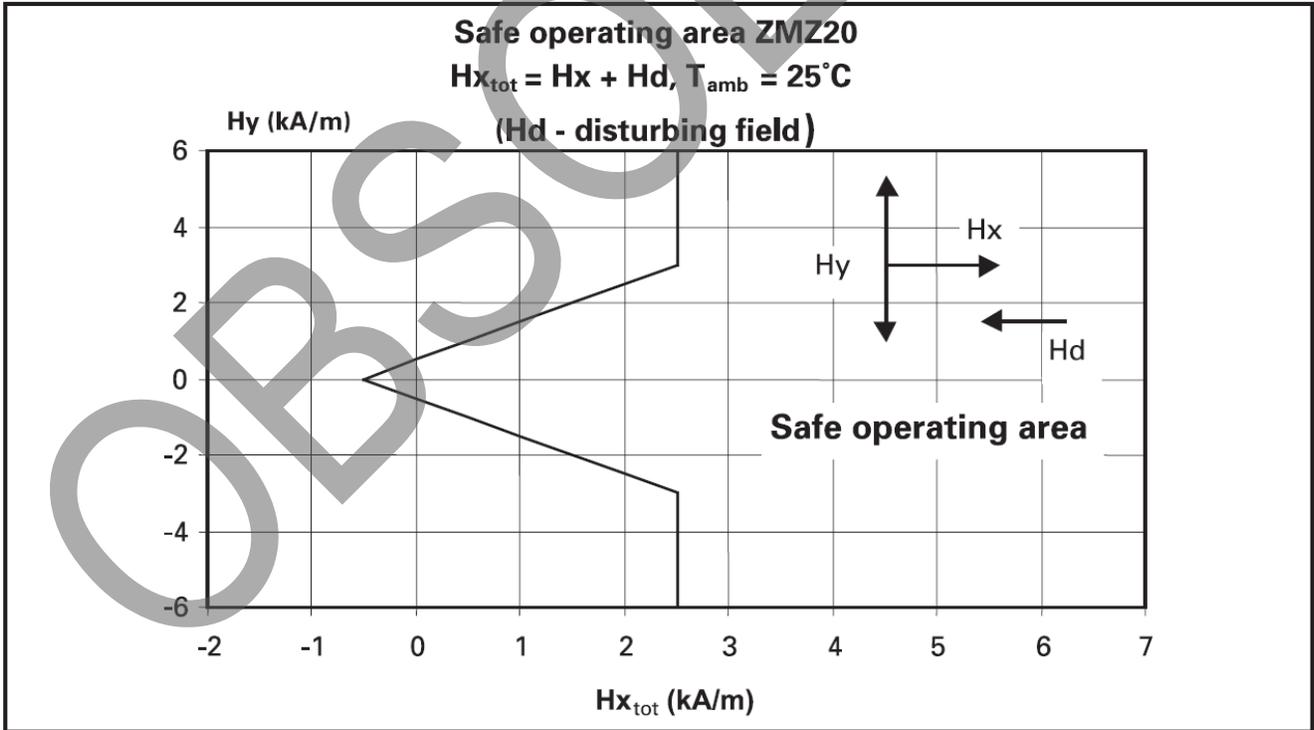
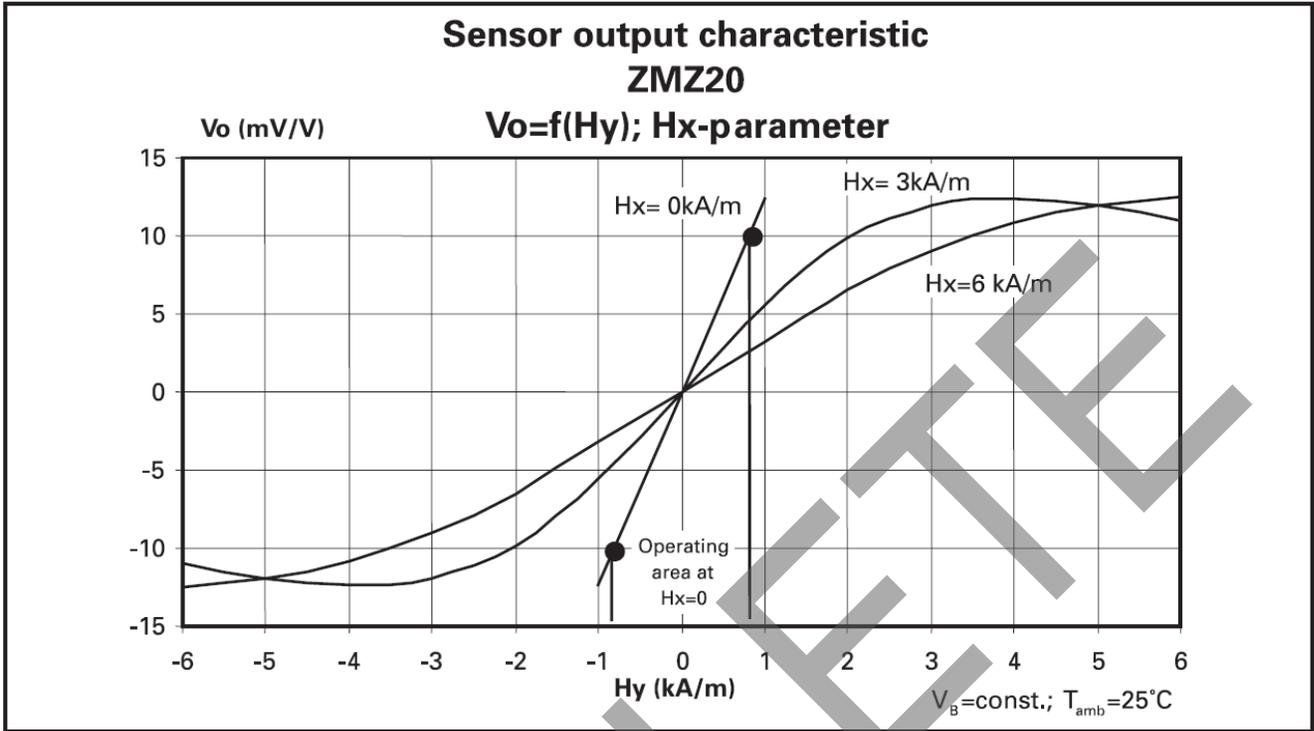
**Application 1 (digital output)**



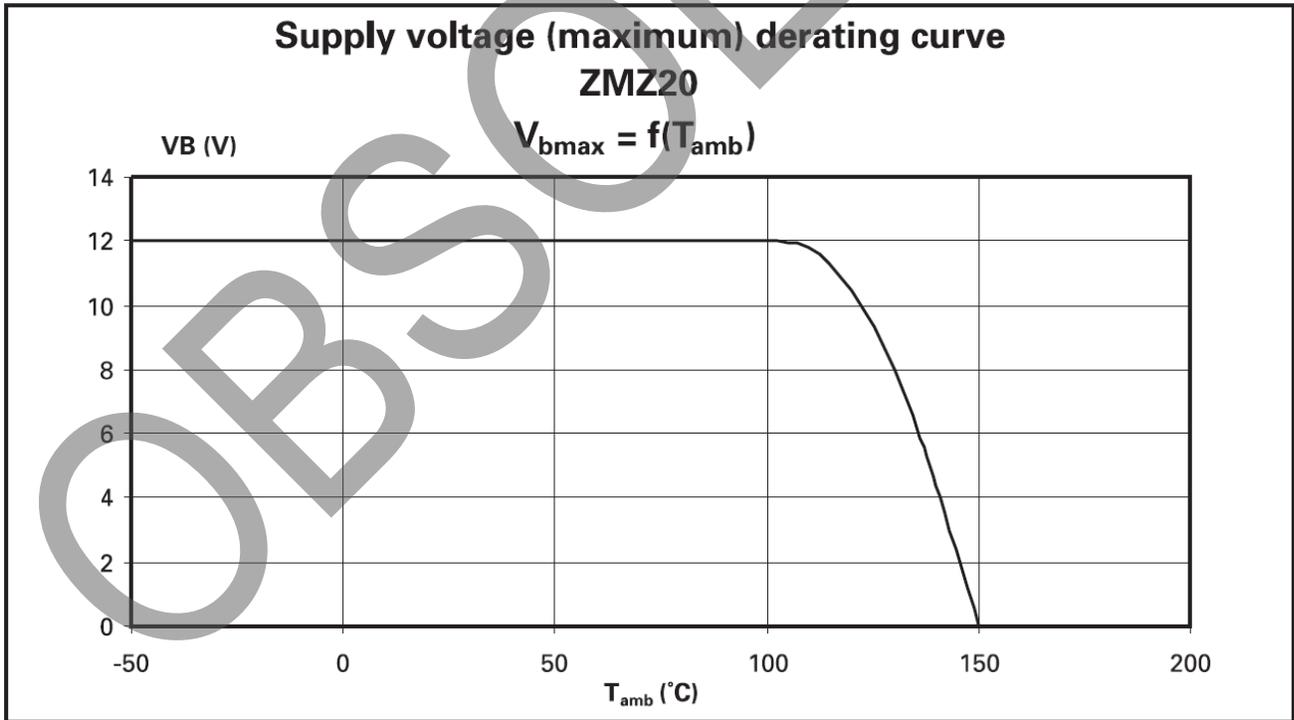
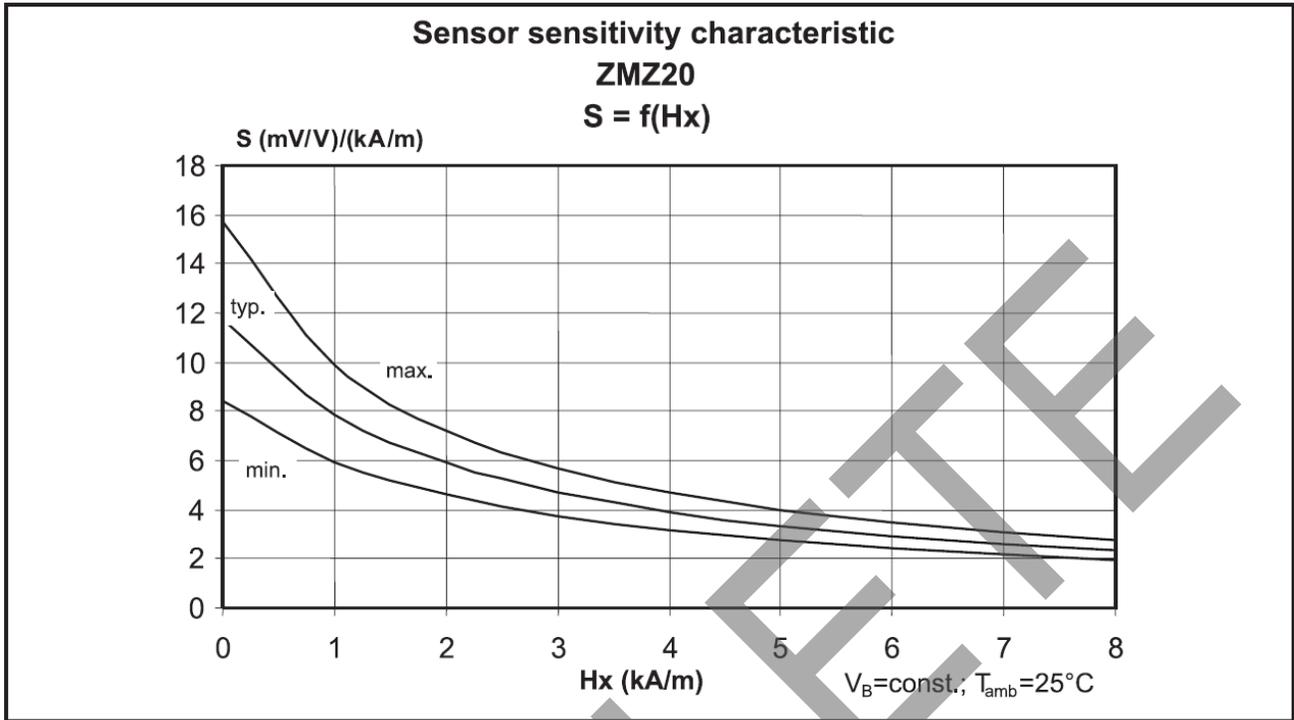
**Application 2 (analog output)**



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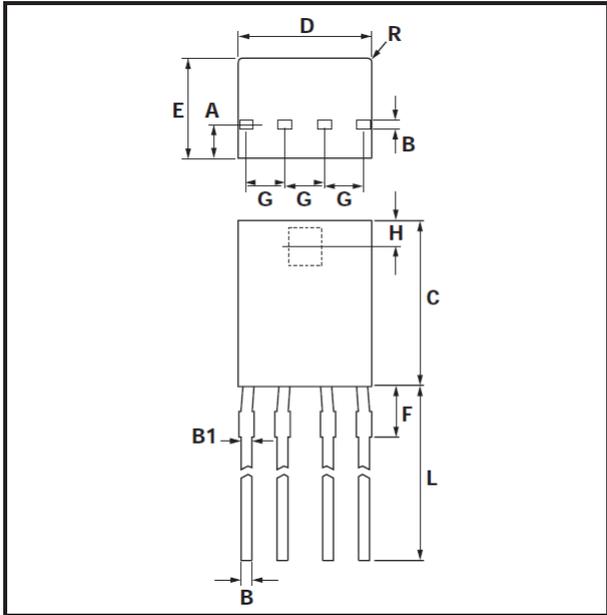


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**Package Outline Dimensions**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	0.8	1.0	0.032	0.039
B	0.35	0.48	0.014	0.019
B1	0.45	0.60	0.018	0.024
C	4.0	4.4	0.158	0.173
D	3.8	4.2	0.150	0.165
E	2.4	2.8	0.094	0.110
F	1.2	-	0.047	-
G	1.25	-	0.049	-

Controlling dimensions are in millimeters. Approximate conversions are given in inches

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