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## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



# ZMZ20

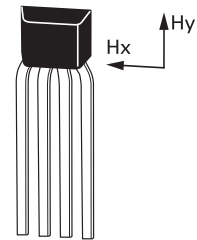
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## MAGNETIC FIELD SENSORS

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### 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.



**E-LINE**

### 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

### APPLICATIONS

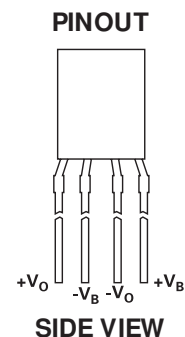
- Linear position sensors for process control, door interlocks, proximity detectors, machine tool sensing
- Scalar measurement for compassing
- Automotive - door switches, engine position and speed sensing
- Metering of fluids by sensing rotation of impeller
- Traffic counting and vehicle-type sensing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

### ORDERING INFORMATION

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

### DEVICE MARKING

- M20



# ZMZ20

## ABSOLUTE MAXIMUM RATINGS

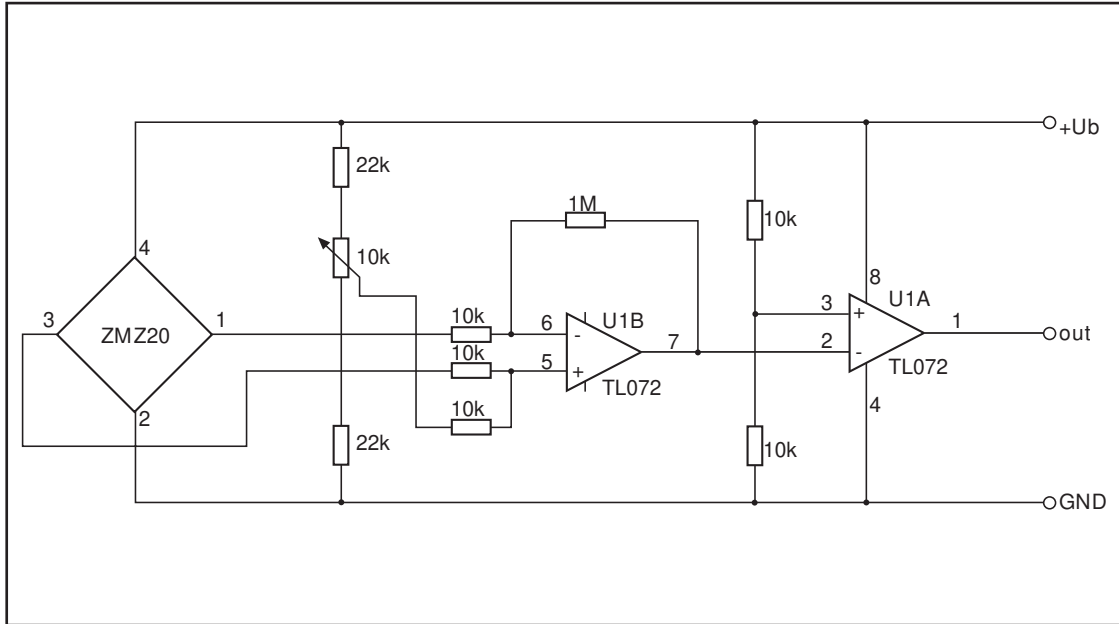
PARAMETER	SYMBOL	LIMIT	UNIT
Supply voltage	$V_B$	12	V
Total power dissipation	$P_{TOT}$	120	mW
Operating temperature range	$T_{amb}$	-40 to +150	°C

## ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^\circ\text{C}$ and $H_x=3\text{kA/m}$ unless otherwise stated)

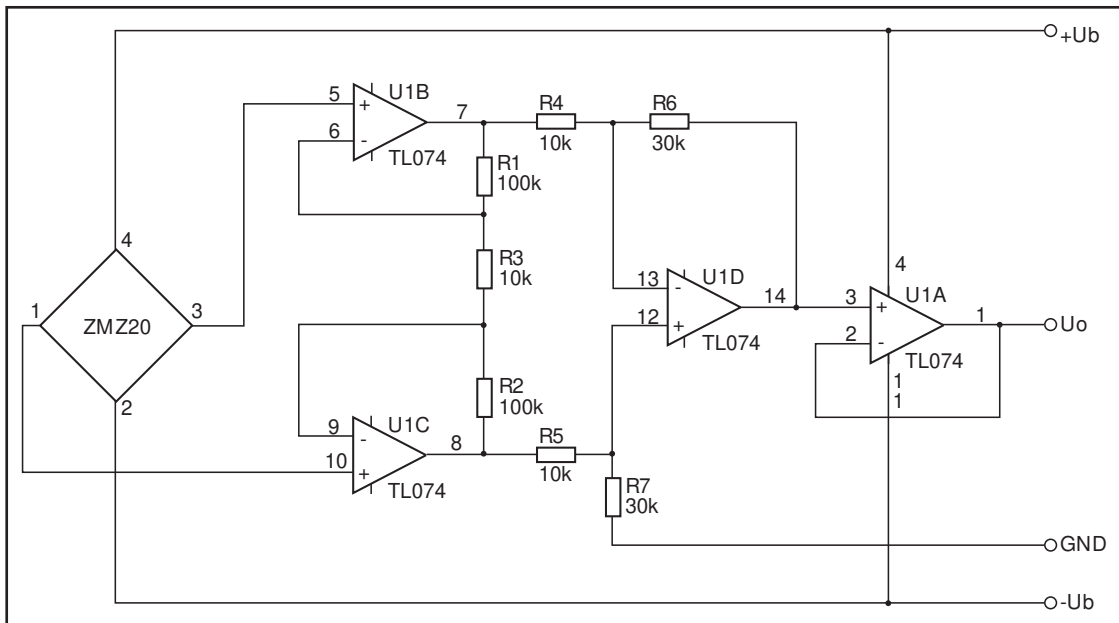
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Bridge resistance	$R_{br}$	1.2	1.7	2.2	$\text{k}\Omega$	
Output voltage range	$V_O/V_B$	16	20	24	mV/V	
Open circuit sensitivity	S	3.7	4.7	5.7	$(\text{mV/V})/(\text{kA/m})$	No disturbing field $H_d$ allowed
Hysteresis of output voltage	$V_{OH}/V_B$	-	-	50	$\mu\text{V/V}$	$H_y = 2\text{kA/m}$
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	$(\mu\text{V/V})/\text{K}$	$T_{amb} = -25$ 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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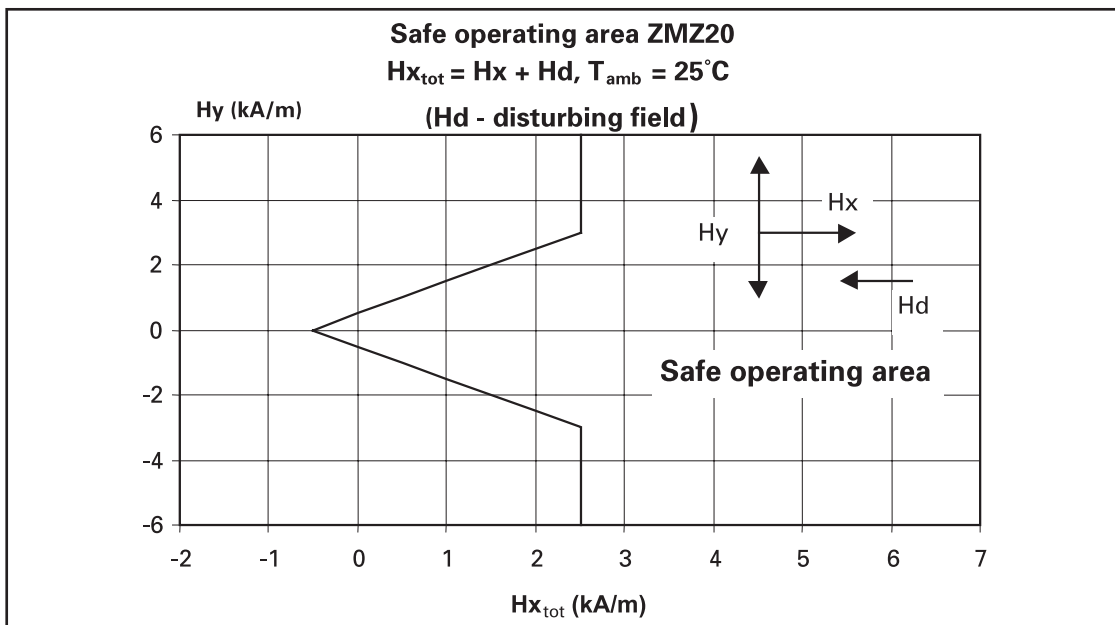
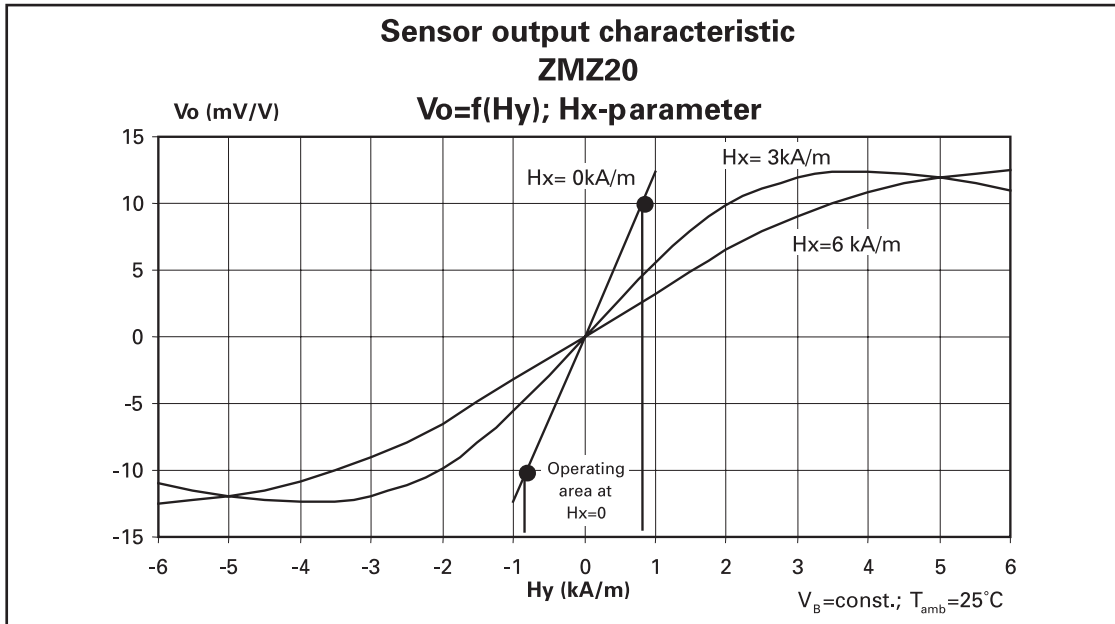
Application 1 (digital output)



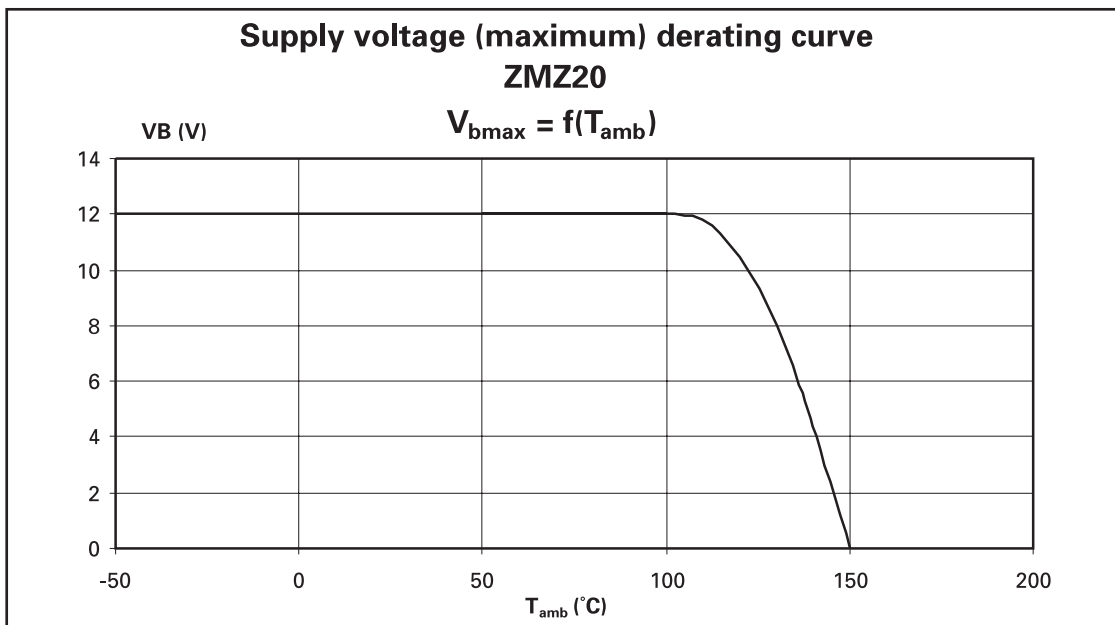
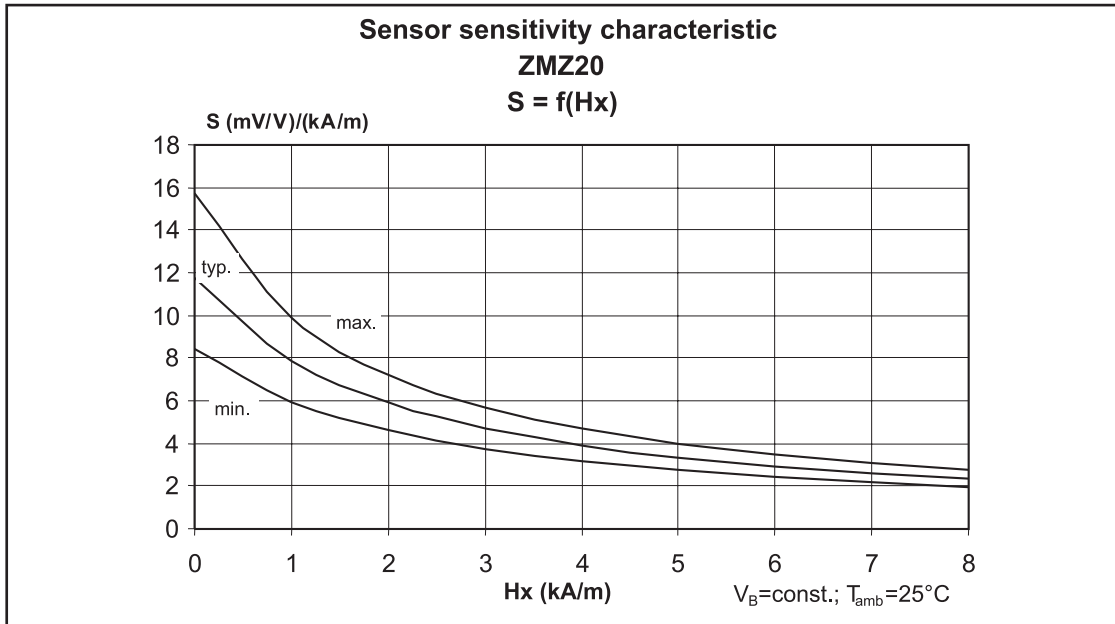
Application 2 (analog output)



# ZMZ20

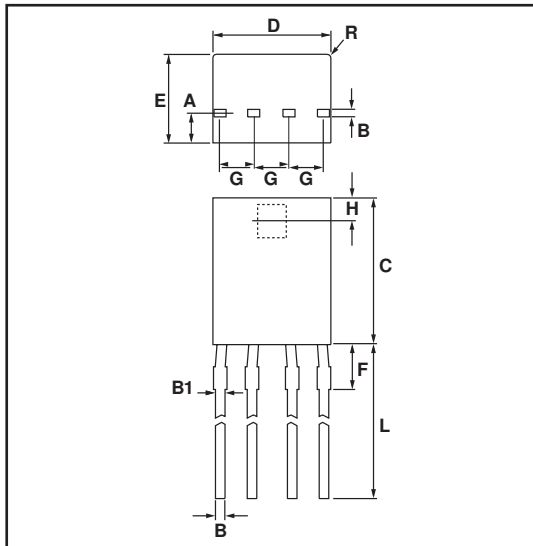


# ZMZ20



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## PACKAGE OUTLINE



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

## PACKAGE DIMENSIONS

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	-

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Europe	Americas	Asia Pacific	Corporate Headquarters
Zetex GmbH Streitfeldstraße 19 D-81673 München Germany	Zetex Inc 700 Veterans Memorial Hwy Hauppauge, NY 11788 USA	Zetex (Asia) Ltd 3701-04 Metroplaza Tower 1 Hing Fong Road, Kwai Fong Hong Kong	Zetex plc Fields New Road, Chadderton Oldham, OL9 8NP United Kingdom
Telefon: (49) 89 45 49 49 0 Fax: (49) 89 45 49 49 49 europe.sales@zetex.com	Telephone: (1) 631 360 2222 Fax: (1) 631 360 8222 usa.sales@zetex.com	Telephone: (852) 26100 611 Fax: (852) 24250 494 asia.sales@zetex.com	Telephone (44) 161 622 4444 Fax: (44) 161 622 4446 hq@zetex.com

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