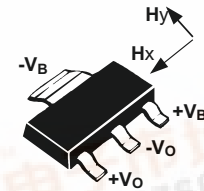


ZMY20

MAGNETIC FIELD SENSOR

DESCRIPTION

The ZMY20 is an extremely sensitive magnetic sensor employing the magneto-resistive effect of thin film permalloy. It allows the measurement of magnetic fields or the detection of magnetic parts. The highly sensitive and small size magnetoresistive sensors consist of a chip covered with thin film permalloy stripes. These stripes form a Wheatstone bridge, whose output voltage is proportional to the magnetic field component H_y . A perpendicular field H_x is necessary to stabilize sensor operation. This can be done by using a small permanent magnet.



SOT223S

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

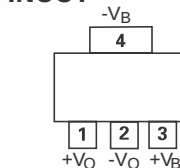
APPLICATIONS

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

ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZMY20TA	7"	12mm	1000 units
ZMY20TC	13"	12mm	4000 units

PINOUT



V_B = SUPPLY VOLTAGE
 V_O = OUTPUT VOLTAGE

Top View

DEVICE MARKING

- ZMY20

ZMY20

ABSOLUTE MAXIMUM RATINGS

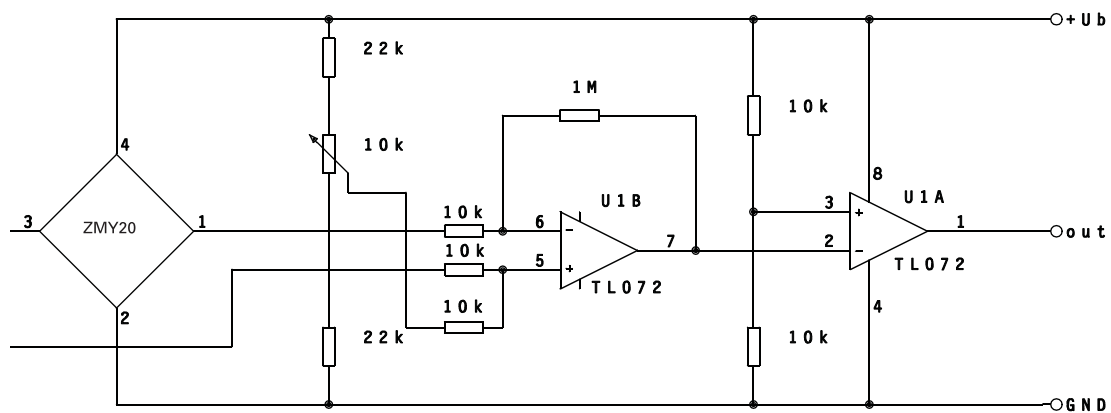
PARAMETER	SYMBOL	LIMIT	UNIT
Supply voltage	V_B	12	V
Total power dissipation	P_{TOT}	120	mW
Operating temperature range	T_{amb}	-40 to +150	°C
Storage temperature range	T_{stg}	-65 to +150	°C

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

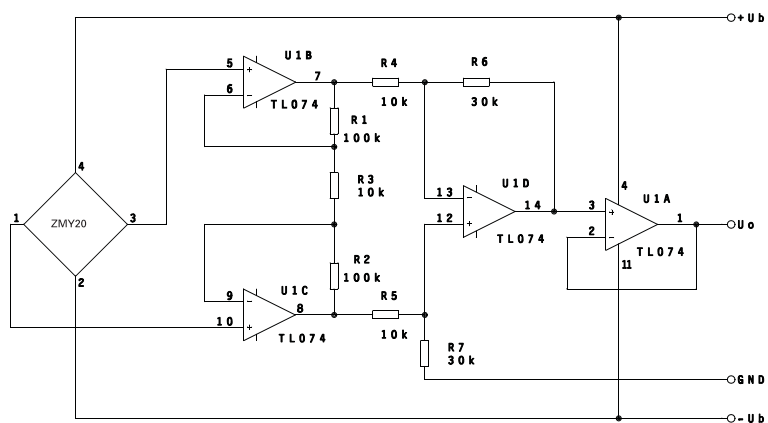
PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITIONS
Bridge resistance	R_{br}	1.2	1.7	2.2	$k\Omega$	
Output voltage range	V_O/V_B	16	20	24	mV/V	
Open circuit sensitivity	S	3.7	4.7	5.7	(mV/V)/(kA/m)	No disturbing field H_d allowed
Hysteresis of output voltage	V_{OH}/V_B	-	-	50	$\mu\text{V/V}$	$H_y \leq 2\text{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

ZMY20

Application 1 (digital output)

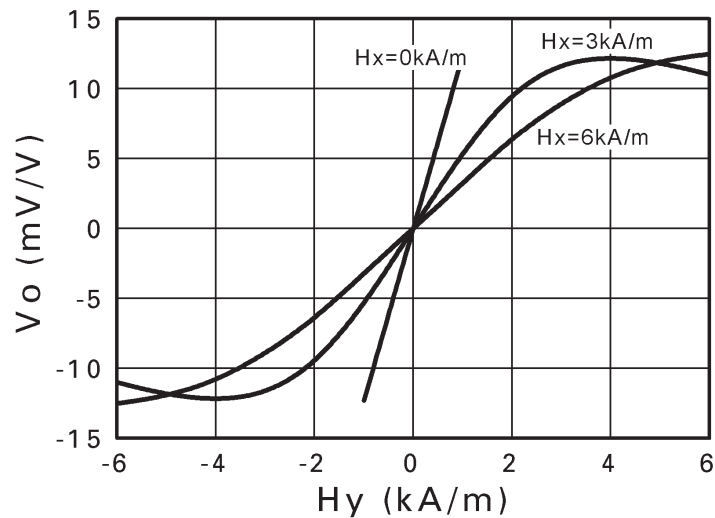


Application 2 (analog output)



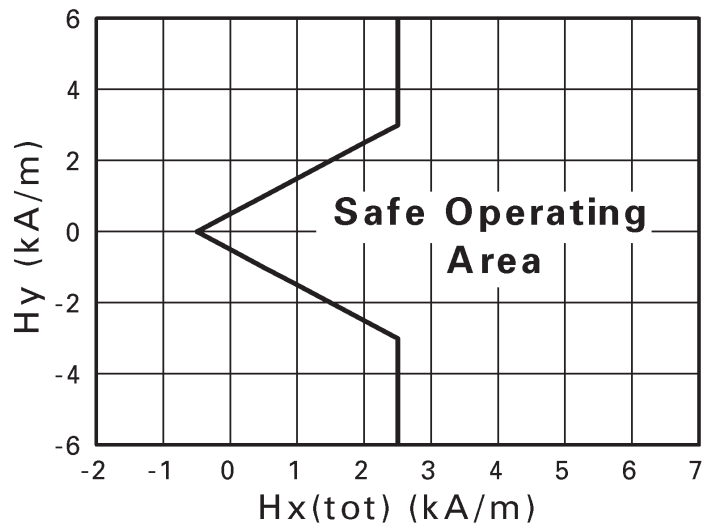
ZMY20

Sensor output characteristic
 $V_o = f(H_y)$; H_x -parameter
 $V_b = \text{const}$; $T_{\text{amb}} = 25^\circ\text{C}$



Sensor Output Characteristic

Safe operating area
 $H_{\text{xtot}} = H_x + H_d$; $T_{\text{amb}} = 25^\circ\text{C}$; (H_d =disturbing field)

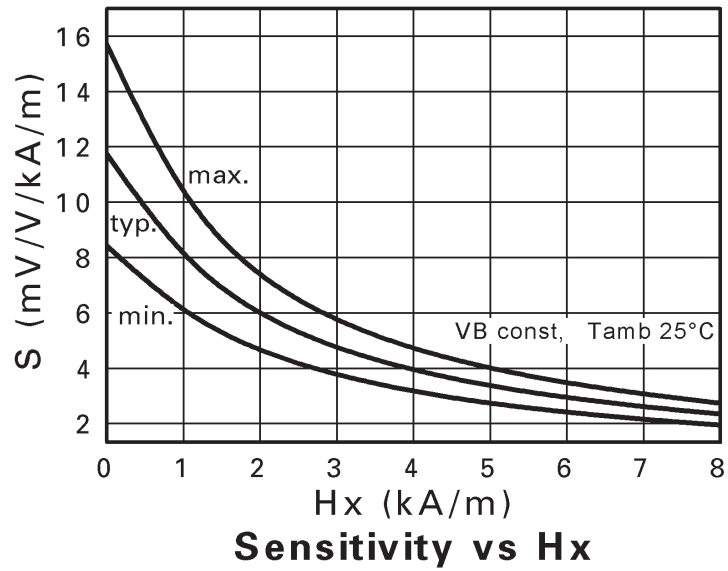


Safe Operating Area

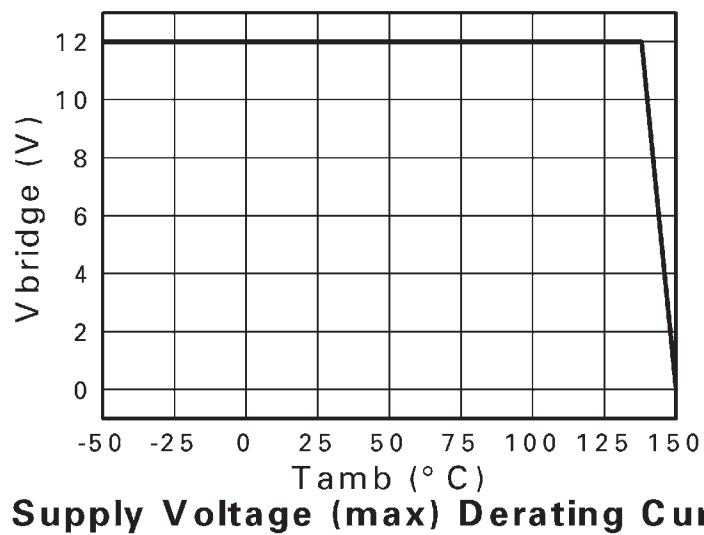
The sensor has to be reset after leaving the safe operating area by an auxiliary field of $H_x = 3 \text{ kA/m}$

ZMY20

Sensor sensitivity characteristic
 $S=f(H_x)$
 $V_b=\text{const}; T_{\text{amb}}=25^\circ\text{C}$



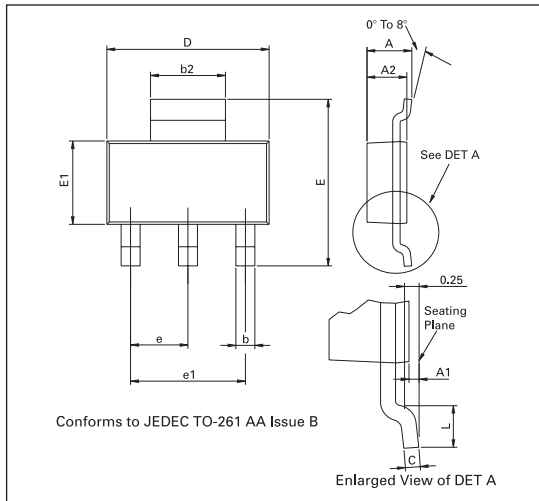
Supply voltage (maximum) derating curve
 $V_{B\text{max}}=f(T_{\text{amb}})$



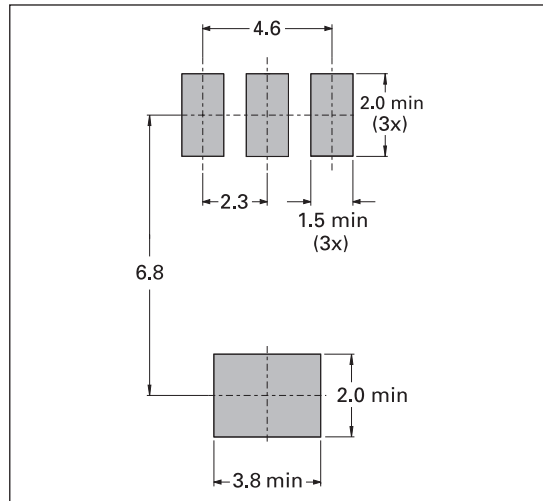
Device mounted on 40 x 40 mm² board (copper area 600mm²)

ZMY20

PACKAGE OUTLINE



PAD LAYOUT



CONTROLLING DIMENSIONS IN MILLIMETERS APPROX CONVERSIONS INCHES

PACKAGE DIMENSIONS

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min	Max	Min	Max		Min	Max	Min	Max
A	-	1.80	-	0.071	e	2.30 BSC		0.0905 BSC	
A1	0.02	0.10	0.0008	0.004	e1	4.60 BSC		0.181 BSC	
b	0.66	0.84	0.026	0.033	E	6.70	7.30	0.264	0.287
b2	2.90	3.10	0.114	0.122	E1	3.30	3.70	0.130	0.146
C	0.23	0.33	0.009	0.013	L	0.90	-	0.355	-

© Zetex plc 2002

Europe	Americas	Asia Pacific
Zetex plc Fields New Road Chadderton Oldham, OL9 8NP United Kingdom Telephone (44) 161 622 4422 Fax: (44) 161 622 4420 uk.sales@zetex.com	Zetex Inc 700 Veterans Memorial Hwy Hauppauge, NY11788 USA Telephone: (631) 360 2222 Fax: (631) 360 8222 usa.sales@zetex.com	Zetex (Asia) Ltd 3701-04 Metroplaza, Tower 1 Hing Fong Road Kwai Fong Hong Kong Telephone: (852) 26100 611 Fax: (852) 24250 494 asia.sales@zetex.com

These offices are supported by agents and distributors in major countries world-wide.

This publication is issued to provide outline information only which (unless agreed by the Company in writing) may not be used, applied or reproduced for any purpose or form part of any order or contract or be regarded as a representation relating to the products or services concerned. The Company reserves the right to alter without notice the specification, design, price or conditions of supply of any product or service.

For the latest product information, log on to www.zetex.com