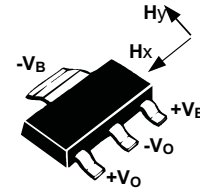


ZMY20

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

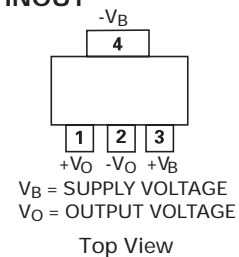
ORDERING INFORMATION

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

DEVICE MARKING

- ZMY20

PINOUT



ZMY20

ABSOLUTE MAXIMUM RATINGS

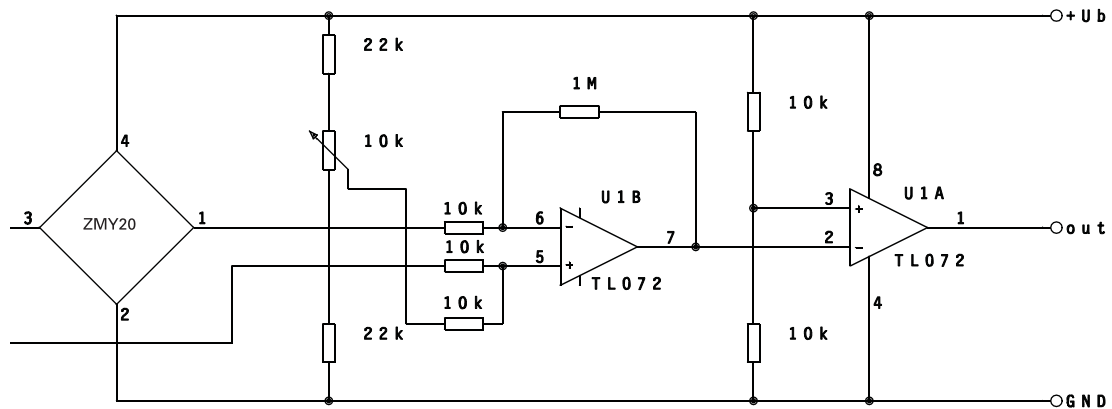
PARAMETER	SYMBOL	LIMIT	UNIT
Supply voltage	V_B	12	V
Total power dissipation	P_{TOT}	120	mW
Operating temperature range	T_{amb}	-40 to +150	°C
Storage temperature range	T_{stg}	-65 to +150	°C

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

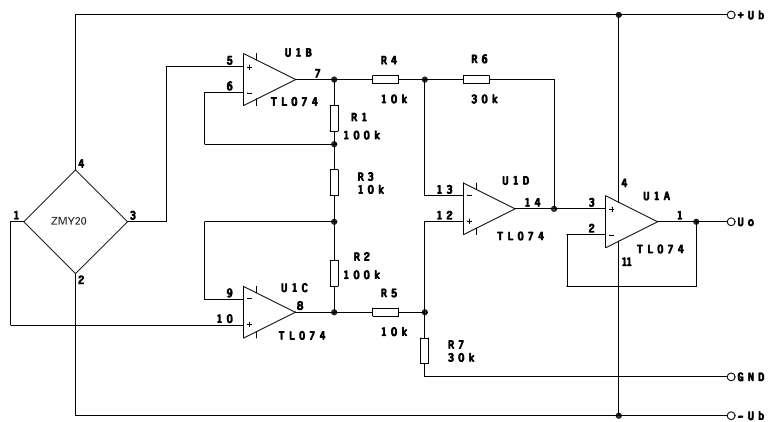
PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITIONS
Bridge resistance	R_{br}	1.2	1.7	2.2	$k\Omega$	
Output voltage range	V_O/V_B	16	20	24	mV/V	
Open circuit sensitivity	S	3.7	4.7	5.7	(mV/V)/(kA/m)	No disturbing field H_d allowed
Hysteresis of output voltage	V_{OH}/V_B	-	-	50	$\mu\text{V/V}$	$H_y \leq 2\text{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

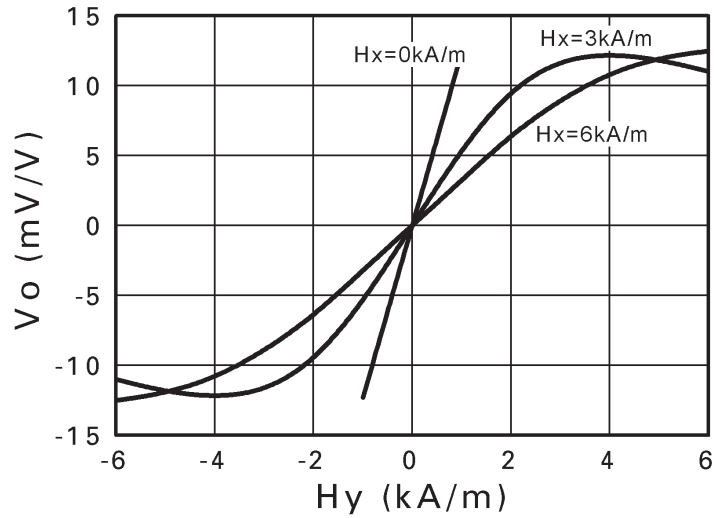


Application 2 (analog output)



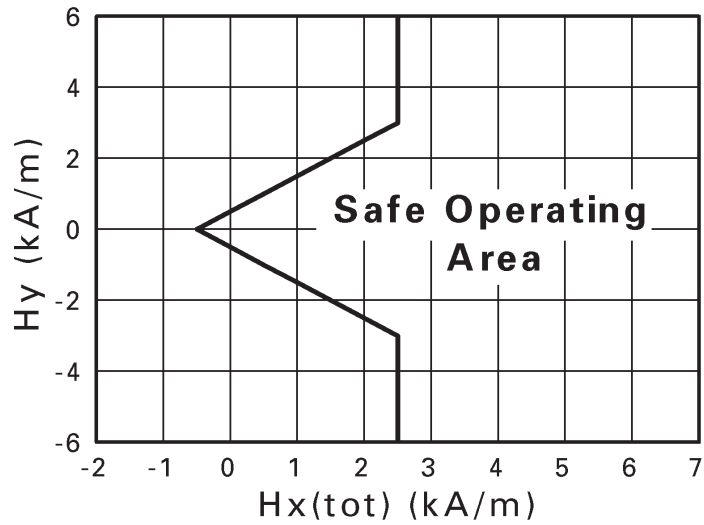
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Sensor output characteristic
 $V_o = f(H_y)$; H_x -parameter
 $V_b = \text{const}$; $T_{\text{amb}} = 25^\circ\text{C}$



Sensor Output Characteristic

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

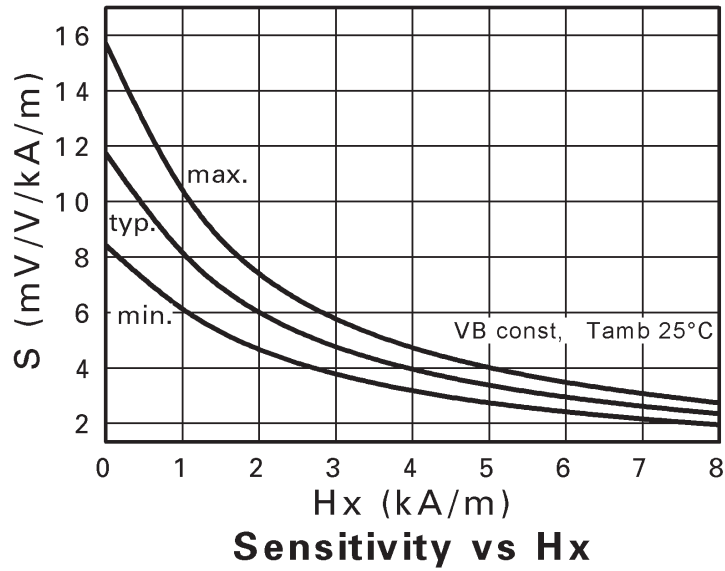


Safe Operating Area

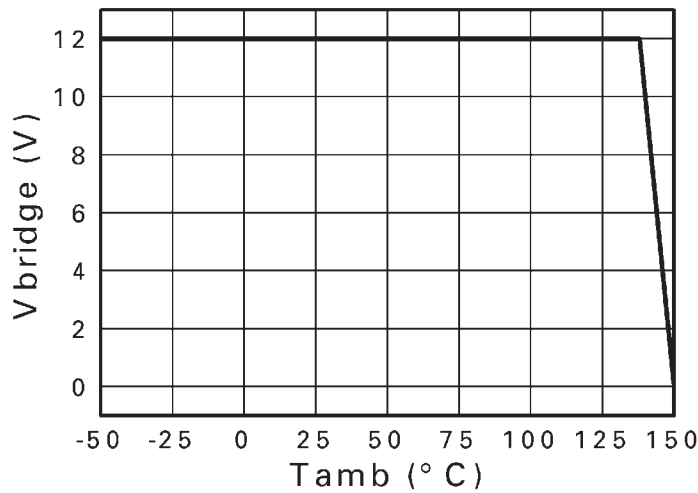
The sensor has to be reset after leaving the safe operating area by an auxiliary field of $H_x = 3 \text{ kA/m}$

ZMY20

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



Supply voltage (maximum) derating curve
 $V_{Bmax}=f(T_{amb})$

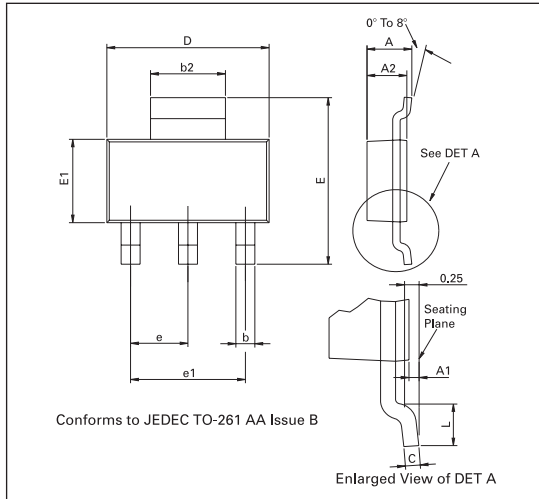


Supply Voltage (max) Derating Curve

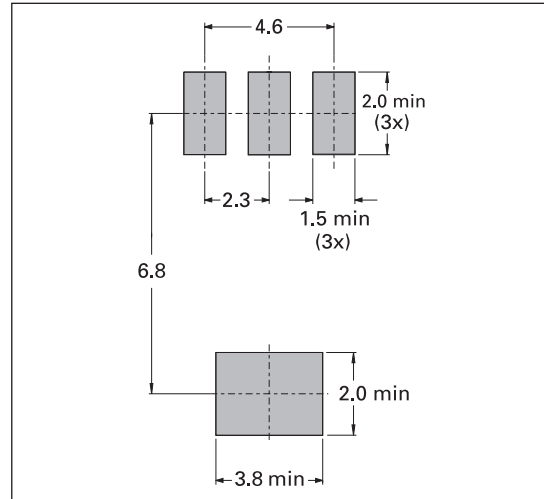
Device mounted on 40 x 40 mm² board (copper area 600mm²)

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	-

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