

# ZMY20M

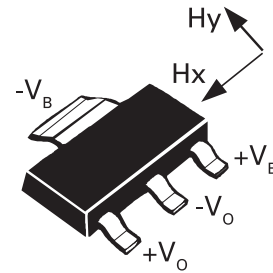
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## MAGNETIC FIELD SENSOR WITH INTERNAL MAGNET

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### DESCRIPTION

The ZMY20M 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 chip covered with thin film permalloy stripes. These stripes form a Wheatstone bridge, whose output voltage is proportional to the magnetic field component  $H_y$ . The required perpendicular field  $H_x$  which is necessary to stabilize sensor operation, is created by an internal permanent magnet.



### FEATURES

- Package: SOT223
- Supply voltage 12V
- Internal magnet for creation of auxiliary field  $H_x$
- Available on 12mm tape

### APPLICATIONS

- Linear position measurement
- Angular position measurement
- Navigation (electronic compass)
- Revolution measurement

### ORDERING INFORMATION

| DEVICE   | REEL SIZE | TAPE WIDTH | QUANTITY PER REEL |
|----------|-----------|------------|-------------------|
| ZMY20MTA | 7"        | 12mm       | 1,000             |
| ZMY20MTC | 13"       | 12mm       | 4,000             |

### DEVICE MARKING

- ZMY20M

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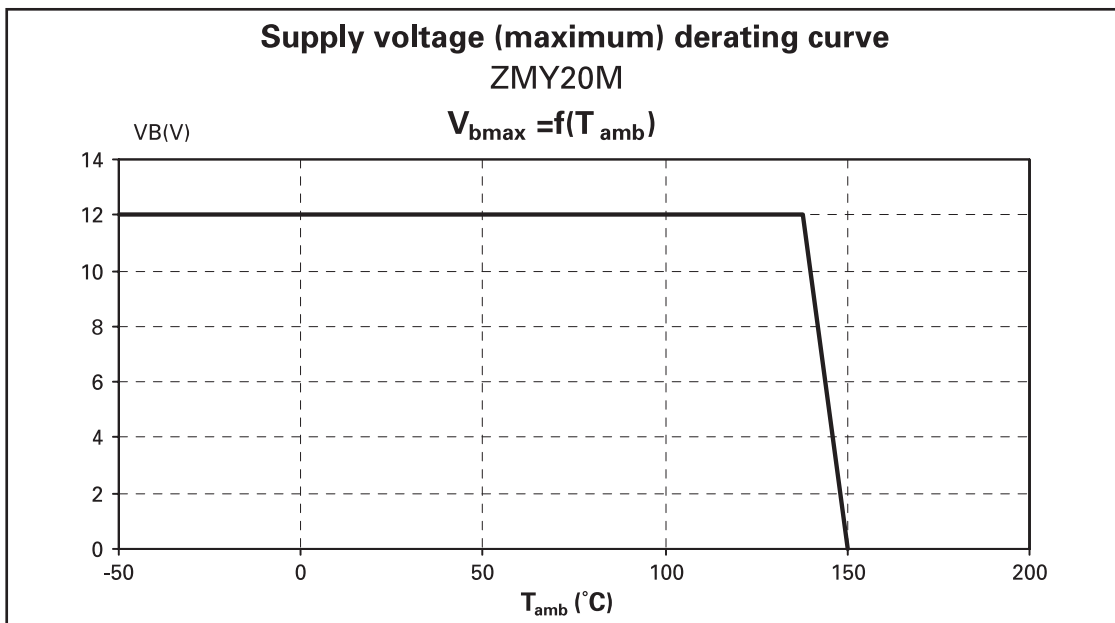
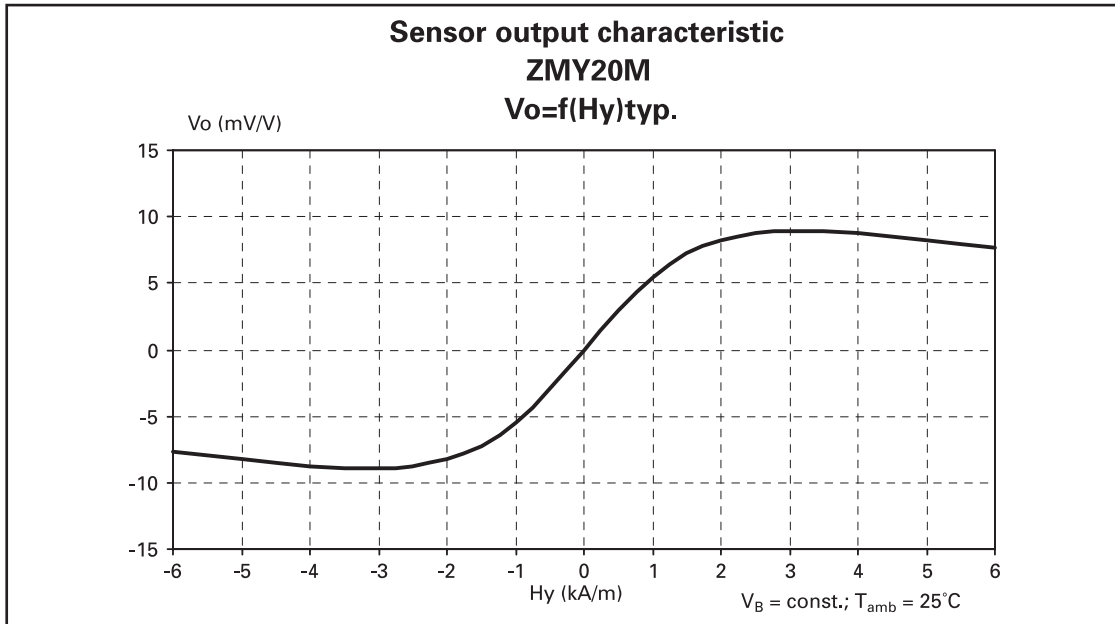
## ABSOLUTE MAXIMUM RATINGS

| PARAMETER                   | SYMBOL    | LIMIT       | UNIT |
|-----------------------------|-----------|-------------|------|
| Supply voltage              | $V_B$     | 12          | V    |
| Total power dissipation     | $P_{TOT}$ | 120         | mW   |
| Operating temperature range | $T_{amb}$ | -25 to +125 | °C   |
| Storage temperature range   | $T_{stg}$ | -25 to +125 | °C   |

## ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^\circ\text{C}$ unless otherwise stated)

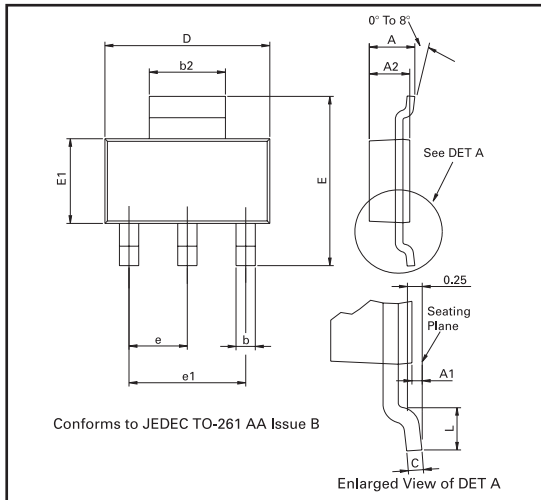
| PARAMETER   | SYMBOL        | MIN.  | TYP. | MAX.  | UNIT                  | CONDITIONS  |
|---|---------------|-------|------|-------|-----------------------|---|
| Bridge resistance   | $R_{br}$      | 1.2   | 1.7  | 2.2   | $k\Omega$             |   |
| Output voltage range  | $V_O/V_B$     | 12    | 18   | 24    | mV/V                  |   |
| Auxiliary field   | $H_x$         | -     | 2    | -     | kA/m                  |   |
| Disturbing field  | $H_d$         | -     | -    | 30    | kA/m                  |   |
| Open circuit sensitivity  | $S$           | 3.0   | 5.5  | 7.0   | (mV/V)/(kA/m)         | No disturbing field<br>$H_d$ allowed<br>$V_B = \text{const.}$ |
| Hysteresis of output voltage  | $V_{OH}/V_B$  | -     | -    | 50    | $\mu\text{V/V}$       | $H_y \leq 2\text{kA/m}$                                       |
| Offset voltage  | $V_{off}/V_B$ | -1.5  | -    | +1.5  | mV/V                  |   |
| Operating frequency   | $f_{max}$     | 0     | -    | 1     | MHz                   |   |
| Temperature coefficient of offset voltages                                | $TCV_{off}$   | -3    | -    | +3    | ( $\mu\text{V/V}$ )/K | $T_{amb} = -25 \text{ to } +125^\circ\text{C}$                |
| Temperature coefficient of bridge resistance                              | $TCR_{br}$    | 0.25  | 0.3  | 0.35  | %/K                   | $T_{amb} = -25 \text{ to } +125^\circ\text{C}$                |
| Temperature coefficient of open circuit sensitivity<br>$V_B = 5\text{V}$  | $TCS_V$       | -0.25 | -0.3 | -0.35 | %/K                   | $T_{amb} = -25 \text{ to } +125^\circ\text{C}$                |
| Temperature coefficient of open circuit sensitivity<br>$I_B = 3\text{mA}$ | $TCS_I$       | -     | 0.05 | -     | %/K                   | $T_{amb} = -25 \text{ to } +125^\circ\text{C}$                |

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## PACKAGE OUTLINE



Controlling dimensions are in millimeters. Approximate conversions are given in 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      | -     |
| D   | 6.30        | 6.70 | 0.248  | 0.264 | -   | -           | -    | -          | -     |

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