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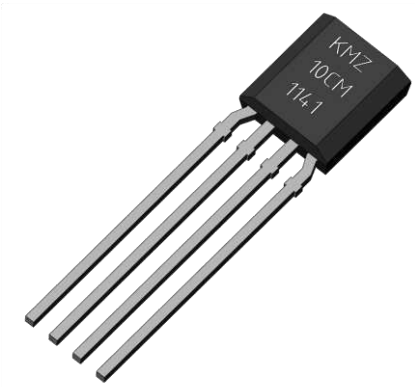


RoHS

KMZ10CM

Linear Magnetic Field Sensor

SPECIFICATIONS

- **Magneto resistive sensor technology**
- **Linear signal output**
- **Over increased field range**
- **Very low hysteresis**
- **High sensitivity**
- **Substitutes KMZ10C / NXP**

Due to its featured properties - high sensitivity and almost no hysteresis – the **KMZ10CM** sensor is used in a wide range of applications, like magnetic field measurement, revolution counters, proximity detection and position measurement

FEATURES

- Wheatstone bridge
- Passive output signal
- Linear signal output proportional to magnetic field strength
- 4 lead package for measurement of z direction

APPLICATIONS

Detection of small magnetic fields, as in:

- Contactless switch
- Contactless displacement measurement
- Current measurement
- Polarity detection of small magnetic fields

PERFORMANCE SPECIFICATIONS

Parameter	Symbol	Condition	Min	Typ	Max	Unit
A. Operating Limits 1)						
max. supply voltage	$V_{CC,max}$				10	V
operating temperature	T_{op}		-40		+150	➡C
storage temperature	T_{st}		-65		+165	➡C
B. Sensor Specifications (T = 25 °C ; H_X = 3 kA/m)						
supply voltage	V_{CC}			**5**	10	V
bridge resistance	R_b		1000	**1400**	1800	
offset voltage	V_{OFF}/V_{CC}	H_x=0	-1.5	**0**	+1.5	mV/V
sensitivity	S	note 2	1	**1.2**	2	(mV/V)/(kA/m)
hysteresis	V_{HYST}	note 3	-	**-**	100	µV/V
linearity deviation	FL	note 4	-	**-**	6.5	%
C. Sensor Specifications (T_{low} = 30 °C ; T_{high} = 80 °C ; H_X = 3 kA/m ; V_{CC} = 5 V)						
TC of sensitivity	TCS	note 5	-	**- 0.35**	-	%/K
TC of resistance	TCBR	note 6	-	**+ 0.45**	-	%/K
TC of offset	TCV_{off}	note 7,8, H_x=0	-4	**0**	+4	µV/V/K

1) Stress above one or more of the limiting values may cause permanent damage to the device. Exposure to limiting values for extended periods may affect device reliability.

2) The sensitivity is defined as the average slope of characteristic between Hy=0 and 6 kA/m and Hx=3kA/m:

$$S = \frac{V_0(H_y = 6kA/m) - V_0(H_y = 0)}{6 * V_{CC}}$$

3) Hysteresis is defined as the difference between offset voltages measured without Hy-field after premagnetization by negative and positive Hy=±6 kA/m field:

$$V_{HYST} = V_0(H_1 \to H_0) - V_0(-H_1 \to H_0); H_0 = 0; H_1 = 6\frac{kA}{m}; H_X = 3\frac{kA}{m}; V_{CC} = 5V$$

4) The linearity error is the deviation of output voltage measured at Hy=3 kA/m from the average of Hy=0 and 6 kA/m- output voltages, expressed as percentage of the output voltage difference measured between 0 and 6 kA/m:

$$FL = \left| \frac{1}{2} - \frac{V_0(H_y = 3kA/m) - V_0(H_y = 0)}{V_0(H_y = 6kA/m) - V_0(H_y = 0)} \right| * 100\%$$

5) The temperature coefficient of sensitivity is defined as the percentage change of the sensitivity per K referred to the value at T_1 = -25 °C; T_2= operating temperature:

$$TCS = \frac{1}{(T_2 - T_1)} * \frac{S(T_2) - S(T_1)}{S(T_1)} * 100\%$$

6) The temperature coefficient of resistance is defined as the percentage change of the resistance per K referred to the value at T_1 = -25 °C; T_2= operating temperature:

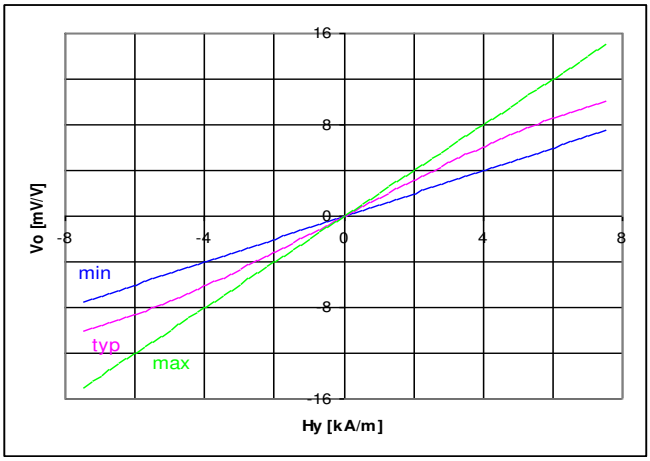
$$TCBR = \frac{1}{(T_2 - T_1)} * \frac{R(T_2) - R(T_1)}{R(T_1)} * 100\,\%$$

7) Temperature coefficient of offset voltage is defined as the voltage change per K expressed in µV/V:

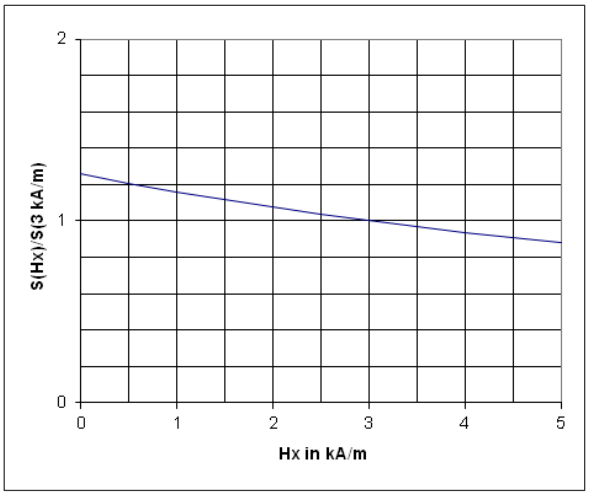
$$TCV_{off} = \frac{V_{off}(T_2) - V_{off}(T_1)}{(T_2 - T_1)}$$

8) Linear behaviour assumed

TYPICAL PERFORMANCE CURVES



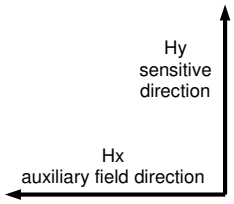
Typical output characteristic



Sensitivity as a function of auxiliary field strength

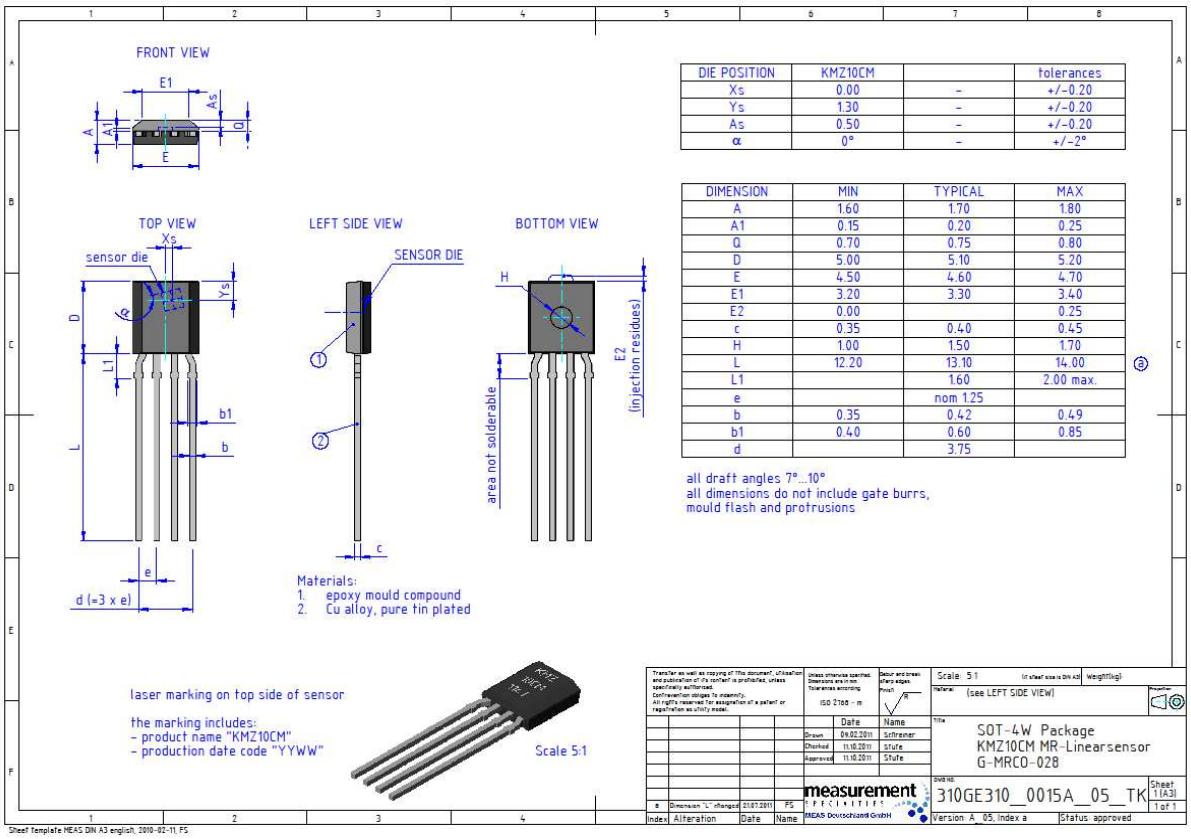
FUNCTION

TERMINAL CONNECTIONS



Pin	Symbol	Function
1	+Vo	positive output voltage
2	GND	negative supply voltage
3	-Vo	negative output voltage
4	+Vcc	positive supply voltage

BLOCK DIAGRAM



DIE POSITION	KMZ10CM		tolerances
Xs	0.00	-	+/-0.20
Ys	1.30	-	+/-0.20
As	0.50	-	+/-0.20
α	0°	-	+/-2°

DIMENSION	MIN	TYPICAL	MAX
A	1.60	1.70	1.80
A1	0.15	0.20	0.25
Q	0.70	0.75	0.80
D	5.00	5.10	5.20
E	4.50	4.60	4.70
E1	3.20	3.30	3.40
E2	0.00		0.25
c	0.35	0.40	0.45
H	1.00	1.50	1.70
L	12.20	13.10	14.00
L1		1.60	2.00 max.
e		nom 1.25	
b	0.35	0.42	0.49
b1	0.40	0.60	0.85
d		3.75	

ORDERING CODE

Product	Description	Part number
KMZ10CM	KMZ10 CM Linear Field Sensor	G-MRCO-028

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