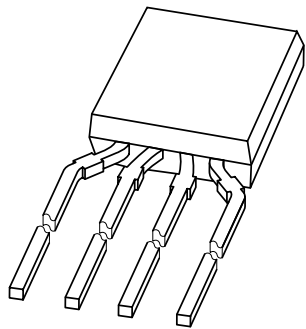


DATA SHEET



KMZ10C Magnetic field sensor

Product specification
Supersedes data of November 1994
File under Discrete Semiconductors, SC17

1998 Mar 24

Magnetic field sensor

KMZ10C

DESCRIPTION

The KMZ10C is a magnetic field sensor, employing the magnetoresistive effect of thin-film permalloy. Its properties enable this sensor to be used in a wide range of applications for current and field measurement, revolution counters, angular or linear position measurement and proximity detectors, etc.

PINNING

PIN	SYMBOL	DESCRIPTION
1	+V _O	output voltage
2	GND	ground
3	-V _O	output voltage
4	V _{CC}	supply voltage

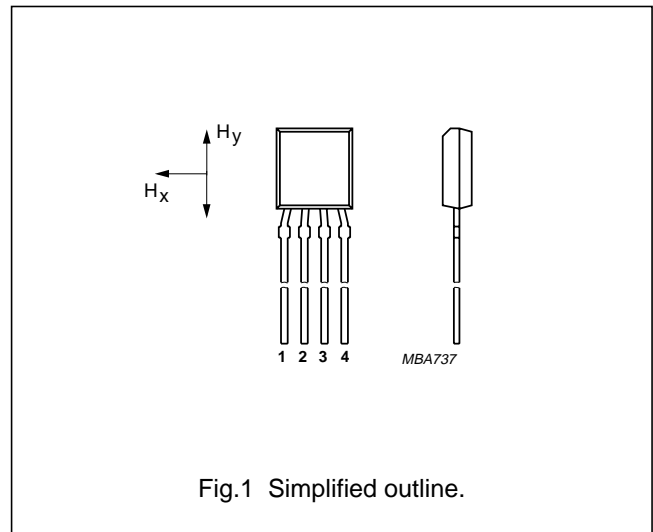


Fig.1 Simplified outline.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MIN.	TYP.	MAX.	UNIT
V _{CC}	DC supply voltage	-	5	-	V
T _{bridge}	bridge operating temperature	-40	-	+150	°C
H _y	magnetic field strength	-7.5	-	+7.5	kA/m
H _x	auxiliary field	-	3	-	kA/m
S	sensitivity	-	1.5	-	$\frac{mV/V}{kA/m}$
R _{bridge}	bridge resistance	1	-	1.8	kΩ
V _{offset}	offset voltage	-1.5	-	+1.5	mV/V

CIRCUIT DIAGRAM

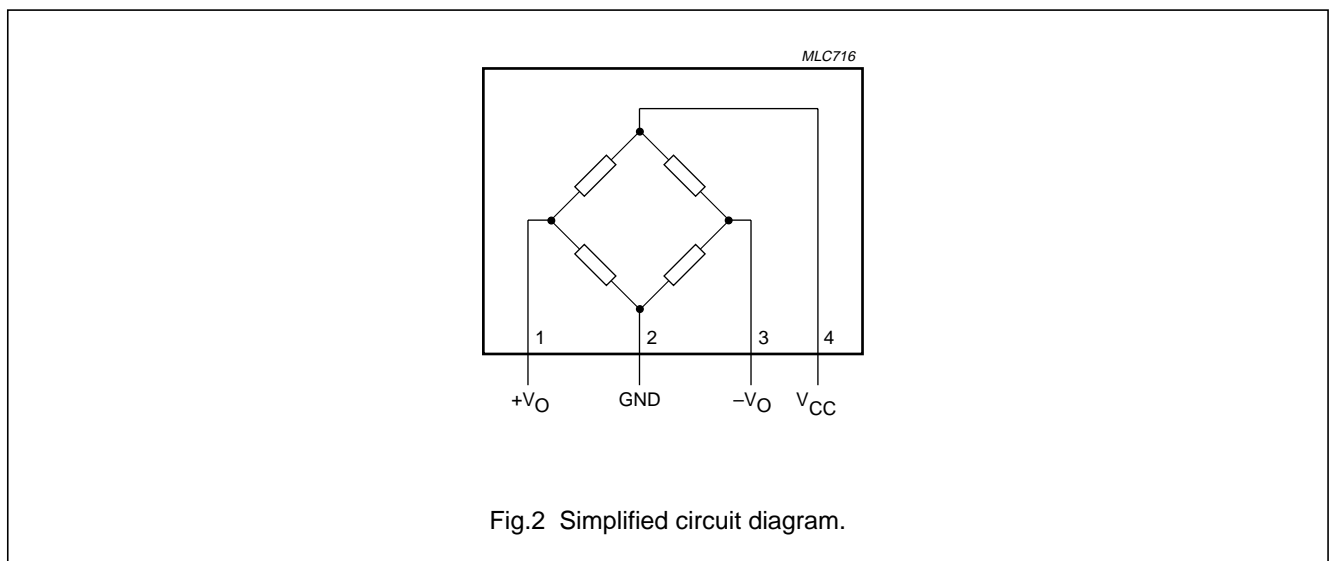


Fig.2 Simplified circuit diagram.

Magnetic field sensor

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LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V _{CC}	DC supply voltage		–	10	V
P _{tot}	total power dissipation	up to T _{amb} = 132 °C	–	100	mW
T _{stg}	storage temperature	note 1	–65	+150	°C
T _{bridge}	bridge operating temperature		–40	+150	°C

Note

1. Maximum operating temperature of the thin-film permalloy.

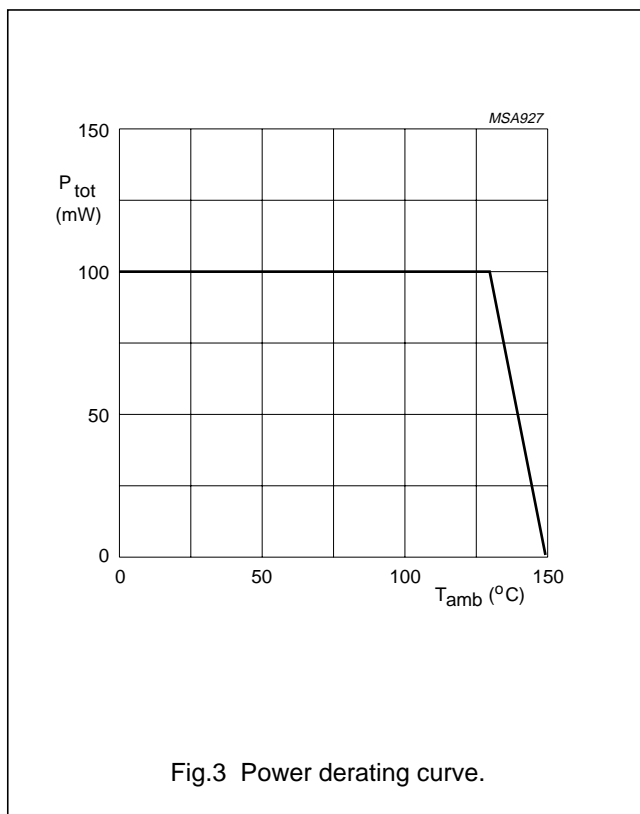


Fig.3 Power derating curve.

Magnetic field sensor

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THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	180	K/W

CHARACTERISTICS

$T_{amb} = 25\text{ °C}$; $H_x = 3\text{ kA/m}$; note 1; $V_{CC} = 5\text{ V}$ unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
H_y	magnetic field strength		-7.5	-	+7.5	kA/m
S	sensitivity	notes 1 and 2	1	-	2	$\frac{mV/V}{kA/m}$
TCV _O	temperature coefficient of output voltage	$V_{CC} = 5\text{ V}$; $T_{amb} = -25\text{ to }+125\text{ °C}$	-	-0.5	-	%/K
		$I_{CC} = 3\text{ mA}$; $T_{amb} = -25\text{ to }+125\text{ °C}$	-	-0.15	-	%/K
R_{bridge}	bridge resistance		1	-	1.8	k Ω
TCR _{bridge}	temperature coefficient of bridge resistance	$T_{bridge} = -25\text{ to }+125\text{ °C}$	-	0.35	-	%/K
V_{offset}	offset voltage		-1.5	-	+1.5	mV/V
TCV _{offset}	temperature coefficient of offset voltage	$T_{bridge} = -25\text{ to }+125\text{ °C}$	-2	-	+2	($\mu\text{V/V}$)/K
FL	linearity deviation of output voltage	$H_y = 0\text{ to } \pm 3.75\text{ kA/m}$	-	-	0.8	%-FS
		$H_y = 0\text{ to } \pm 6.0\text{ kA/m}$	-	-	2.4	%-FS
		$H_y = 0\text{ to } \pm 7.5\text{ kA/m}$	-	-	2.7	%-FS
FH	hysteresis of output voltage		-	-	0.5	%-FS
f	operating frequency		0	-	1	MHz

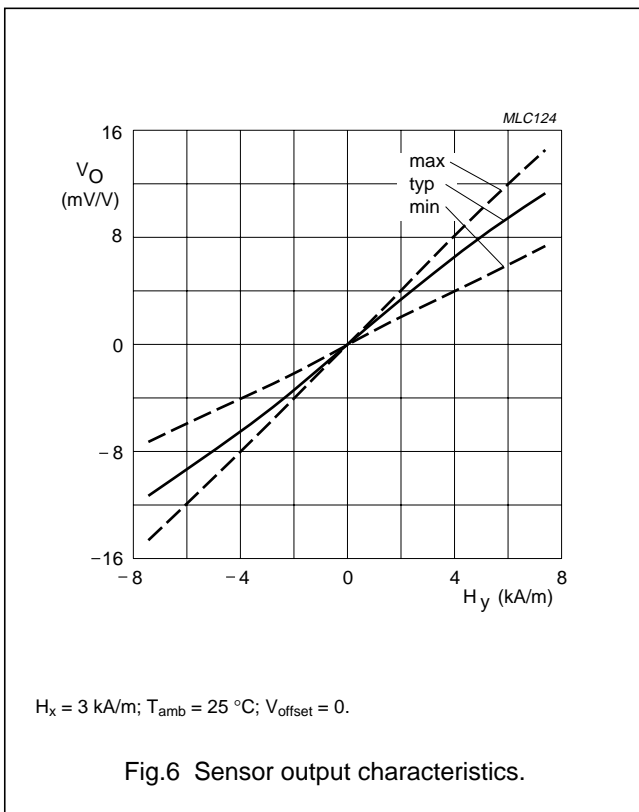
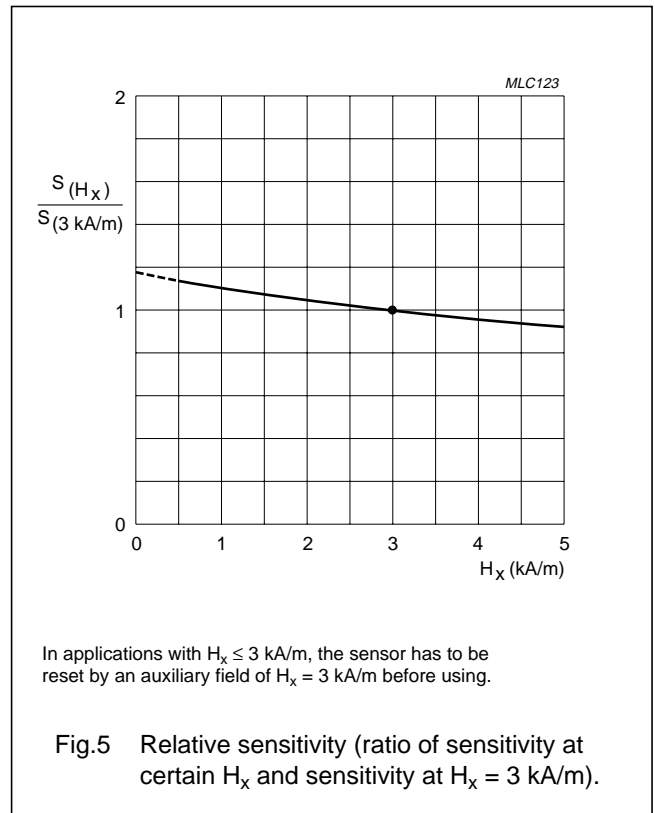
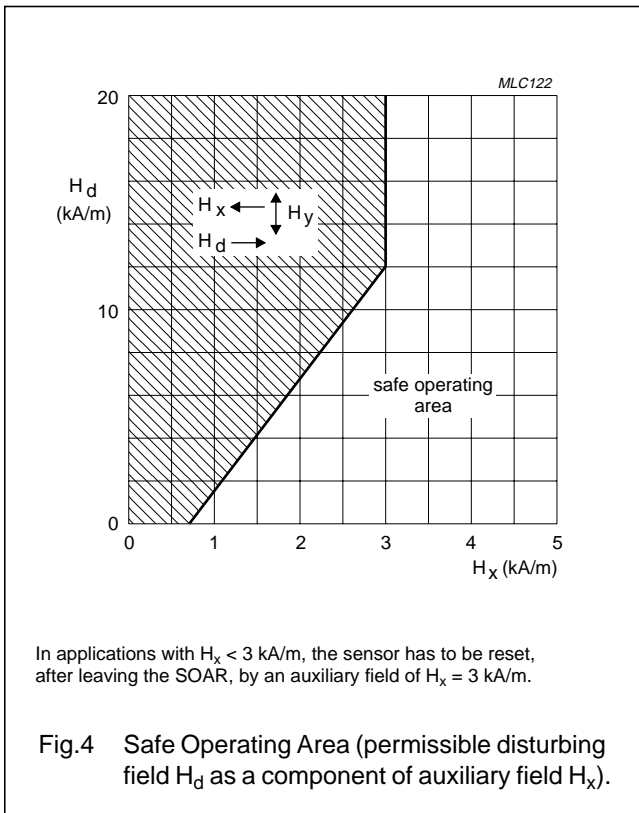
Notes

1. In applications with $H_x < 3\text{ kA/m}$ the sensor has to be reset before first operation by application of an auxiliary field $H_x = 3\text{ kA/m}$.

$$2. S = \frac{(V_O \text{ at } H_y = 6\text{ kA/m}) - (V_O \text{ at } H_y = 0)}{6 \times V_{CC}}$$

Magnetic field sensor

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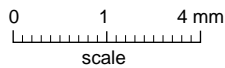
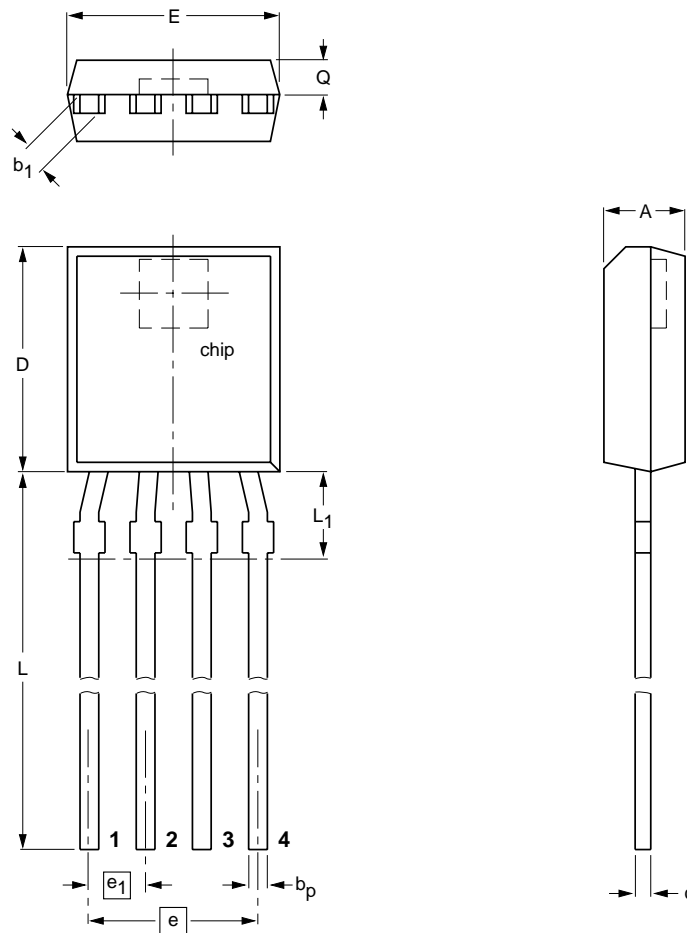
Magnetic field sensor

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PACKAGE OUTLINE

Plastic single-ended flat package; 4 in-line leads

SOT195



DIMENSIONS (mm are the original dimensions)

UNIT	A	b _p	b ₁	c	D	E	e	e ₁	L	L ₁ ⁽¹⁾ max.	Q
mm	1.8 1.6	0.48 0.40	0.7 0.5	0.45 0.39	5.2 5.0	4.8 4.4	3.75	1.25	14.5 12.7	2	0.8 0.7

Notes

1. Terminal dimensions within this zone are uncontrolled to allow for flow of plastic and terminal irregularities.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT195						97-06-02

Magnetic field sensor

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DEFINITIONS

Data Sheet Status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

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Printed in The Netherlands

115106/00/02/pp8

Date of release: 1998 Mar 24

Document order number: 9397 750 03599

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