

Current Sensor

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FEATURES

- Package : mod. DIL-14 (12 pin)
- Double magnetic sensor chip (employing the magnetoresistive effect of thin film permalloy) measures the magnetic field generated by an internal current-carrying conductor
- measurable direct or alternating current I_M up to 10A
- supply voltage 12 V
- no auxiliary field H_X required
- it's possible to overload the conductor (between pin's 8,9,10 and 11,12,13) with 300A for 10 ms at $T_{amb} = 25$ °C

ZMC 10D

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol		Unit
Supply voltage	V _{br}	12	V
Supply current	Ibr	20	mA
Measurable current at DC: absolute value at AC: peak value	Im	10	А
Operating temperature range	T _{amb}	-25 to +100	°C
Storage temperature range	T _{stg}	-25 to +125	°C

ELECTRICAL CHARACTERISTICS (at T_{amb} = 25 °C unless otherwise stated)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Test conditions
Input-Output-Insulation (pin 7, 8, 9, 10, 11, 12 shorted together and pin 1, 2, 3, 4, 5, 6 shorted together)	I _{i-o}	-	-	5	nA	test voltage: 2000V DC test time: 1s
Bridge resistance	R _{br}	600	800	1300	Ω	
Temperature coefficient of bridge resistance	T _{crbr}	-	+0.3	-	%/K	$T_{amb} = -25+100^{\circ}C$
Bridge supply current (con- stant current source)	I _{br}	-	13	-	mA	$T_{amb} = -25+100^{\circ}C$
Offset coefficient of V _{outoff1} (current supply rejection ratio)	CSRR	-	±1.5	±2.5	mV/mA	
Offset voltage (static, con- stant)	V _{outoff1}	-	±19	æ32	mV	$I_{br} = 13mA$ and $R_{br} = 0.8k\Omega$
Offset voltage (dynamic, nonlinear)	Voutoff2	-	-	±2	mV	in dependence on I_m and T_{amb}
Temperature coefficient of Voutoff1	T _{cvoff1}	-35	-	+35	μV/K	$I_{br} = 13mA$ and $R_{br} = 0.8k\Omega$
Open circuit sensitivity (absolute V _{out} /I _m , with off- set compensation, no dis- turbing field allowed)	Sa	2.7	3.9	5.1	mV/A	$I_{br} = 13mA \text{ and} \\ R_{br} = 0.8k\Omega$
Resistance of the conductor	R	-	0.7	-	mΩ	$I_m \le 10A$
Operating frequency	f _{max}	0	-	100	kHz	

ELECTRICAL CHARACTERISTICS (at T_{amb} = 25 °C unless otherwise stated)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Test conditions
Temparature coefficient of S _a	T _{csi}	-	-	-0.12	%/K	$I_{br} = 13mA \text{ and} \\ R_{br} = 0.8k\Omega$
Output voltage range	V _{out}	-	_	<æ10 0	mV	$I_{br} = 13mA \text{ and} \\ R_{br} = 0.8k\Omega$
Nonlinearity error of Sa	NLE	-	6	_	%	$I_{m1} = 1A; I_{m2} = 2A$
Disturbance signal influence on disturbing field H _d (V _{out} =I _m *S _a + V _{outhd})	Vouthd	-	±0.5	-	mV	$I_{br} = 13m; R_{br} = 0.8k\Omega$ and $H_d = 10A/m$ in 50mm distance to sensor

Equations of condition:

$V_{outoff1} [mV] = CSRR [mV/mA] * I_{br} [mA]$	
CSRR $[mV/mA] = (R_{34} + R_{12} - R_{24} - R_{13}) [\Omega]$	* 0.5 (at $I_m = 0$)
pinning of magnetoresistive resistors:	R ₃₄ : between pin 3 and pin 4
	R_{12} : between pin 1 and pin 2
	R ₂₄ : between pin 2 and pin 4
	R ₁₃ : between pin 1 and pin 3
external connections:	pin 2 shorted to pin 5
	pin 1 shorted to pin 6

Circuit connections:

condition: pin4: +Ibr and pin 1,6: -Ibr

Devices are identified by type on the body of the device:

ZMC10D ZMC10D

Ordering information:

ZMC10D..... in boxes

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