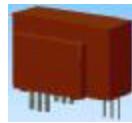


K-No.: 24618

50/100 A Current Sensor

For the electronic measurement of currents:
DC, AC, pulsed, mixed ..., with a galvanic
Isolation between the primary circuit
(high power) and the secondary circuit
(electronic circuit)



Date: 28.01.2008

Customer: Standard type

Customers Part no.:

Page 1 of 2

Description	Characteristics	Applications
<ul style="list-style-type: none"> Closed loop (compensation) Current Sensor with magnetic field probe Printed circuit board mounting Casing and materials UL-listed 	<ul style="list-style-type: none"> Excellent accuracy Very low offset current Very low temperature dependency and offset current drift Very low hysteresis of offset current Low response time Wide frequency bandwidth Compact design Reduced offset ripple 	Mainly used for stationary operation in industrial applications: <ul style="list-style-type: none"> AC variable speed drives and servo motor drives Static converters for DC motor drives Battery supplied applications Switched Mode Power Supplies (SMPS) Power Supplies for welding applications Uninterruptable Power Supplies (UPS)

Electrical data – Ratings¹⁾

I _{PN}	Primary nominal r.m.s. current @ V _C = ±15V, R _M ≥ 0 Ω @ V _C = ±12V, R _M ≥ 0 Ω or V _C = ±15V, R _M ≥ 16 Ω	50	A
R _M	Measuring resistance V _C =± 12V V _C =± 15V	0 ... 200	Ω
I _{SN}	Secondary nominal r.m.s. current	25/50	mA
K _N	Turns ratio	1...3 : 2000	

Accuracy – Dynamic performance data¹⁾

		min.	typ.	max.	Unit
I _{P,max}	Max. measuring range @ V _C = ±12V, R _M = 10 Ω (t _{max} = 10sec) @ V _C = ±15V, R _M = 16 Ω (t _{max} = 10sec)	±145			A
X	Accuracy @ I _{PN} , T _A = 25°C	±175			A
ε _L	Linearity	0.1	0.5		%
I ₀	Offset current @ I _P =0, T _A = 25°C	0.02	0.08		mA
t _r	Response time	500			ns
Δt (I _{P,max})	Delay time at di/dt = 100 A/μs	200			ns
f	Frequency bandwidth	DC...200			kHz

General data¹⁾

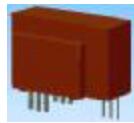
		min.	typ.	max.	Unit
T _A	Ambient operating temperature	-40	+85		°C
T _s	Ambient storage temperature	-40	+90		°C
m	Mass	13,5			g
V _C	Supply voltage	±11.4	±12 or ±15	±15.75	V
I _c	Current consumption	18.5			mA
Constructed and manufactured and tested in accordance with EN 61800-5-1 (Pin 1 - 6 to Pin 7 – 9) Reinforced insulation, Insulation material group 1, Pollution degree 2					
S _{clear}	clearance (component without solder pad)	10.2			mm
S _{creep}	creepage (component without solder pad)	10.2			mm
V _{sys}	System voltage overvoltage category 3	RMS	600		V
V _{work}	Working voltage (table 7 acc. to EN61800-5-1)	RMS	1020		V
U _{PD}	Rated discharge voltage	peak value	1400		V

Date	Name	Issue	Amendment
28.01.08	Le	81	Date changed. Insignificant
Hrsg.: KB-E editor	Bearb: SA designer	KB-E BE: Len. check	KB-PM IA: KRe. check
			freig.: Heu. released

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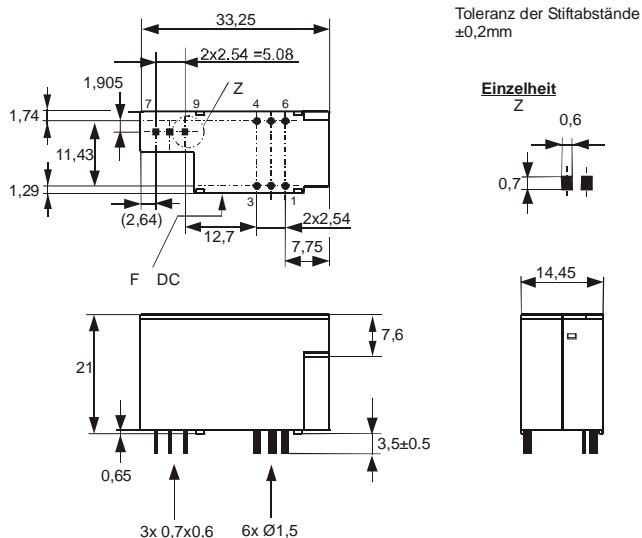

Date: 28.01.2008

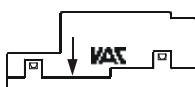
Customer: Standard type

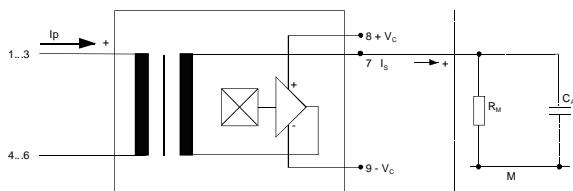
Customers Part no.:
Page 2 **of** 2

Mechanical outline (mm):

General tolerances DIN ISO 2768-c


Connections:
1...6: Ø 1,5 mm
7...9: 0,6x0,7 mm

Marking:

DC = Date Code
F = Factory

Schematic diagram

Possibilities of wiring for $V_C = \pm 15V$ ¹⁾ (@ $T_A = 85^\circ C$, $R_M = 25 \Omega$)

primary windings N_P	primary current RMS I_P [A]	primary current maximaL I_{P,max} [A]	output current RMS I_s(I_P) [mA]	turns ratio K_N	primary resistance R_P [mW]	wiring
1	100	175	50	1:2000	0.12	
2	35	82	35	2:2000	0.54	
3	25	58	37,5	3:2000	1.1	

¹⁾ preliminary data

Temperature of the primary conductor should not exceed 100°C.

Additional information is obtainable on request.

This specification is no declaration of warranty acc. BGB §443 dar.

Hrsg.: KB-E
editor

Bearb: SA
designer

KB-E BE: Len.
check

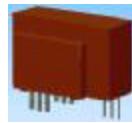
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Page 1 of 3

Electrical Data (investigate by a type checking)¹⁾

		min.	typ.	max.	Unit
V _{Ctot}	Maximum supply voltage (without function) ±15.75 bis ±18 V: for 1s per hour			±18	V
R _S	Secondary coil resistance @ T _A =85°C			145	Ω
R _P	Primary coil resistance per turn @ T _A =25°C			0.36	mΩ
X _{Ti}	Temperature drift of X @ T _A = -40 ... +85 °C			0.1	%
I _{0ges}	Offset current (including I ₀ , I _{0t} , I _{0T})			0.1	mA
I _{0t}	Long term drift Offset current I ₀		0.03		mA
I _{0T}	Offset current temperature drift I ₀ @ T _A = -40 ... +85°C		0.03		mA
I _{0H}	Hysteresis current @ I _P =0 (caused by primary current 3 x I _{PN})	0.02	0.05		mA
ΔI ₀ /ΔV _C	Supply voltage rejection ratio		0.01		mA/V
i _{loss}	Offset ripple* (with 1 MHz- filter first order)		0.15		mA
i _{loss}	Offset ripple* (with 100 kHz- filter first order)	0.017	0.025		mA
i _{loss}	Offset ripple* (with 20 kHz- filter first order)	0.005	0.007		mA
C _k	Maximum possible coupling capacity (primary – secondary)	5			pF

Mechanical Stress according to M3209/3

Settings: 10 – 2000 Hz, 1 min/Decade, 2 hours

An exceptionally high rate of on/off – switching of the supply voltage
accelerates the aging process of the sensor.

Inspection¹⁾ (Measurement after temperature balance of the samples at room temperature)

K _N (N ₁ /N ₂)	(V)	M3011/6	Transformation ratio (I _P =3*10A, 40-80 Hz)	1...3 : 2000 ± 0.5 %
I ₀	(V)	M3226	Offset current	< 0.05 mA
V _{P,eff}	(V)	M3014	Test voltage, rms, 1s Pin 1 - 6 to Pin 7 - 9	2.5 kV
V _e	(AQL 1/S4)		Partial discharge voltage acc. M3024 (RMS) with V _{vor} (RMS)	1500 V 1875 V

Type Testing (Pin 1 - 6 to Pin 7 – 9)

Designed according standard EN 61800 with insulation material group 1

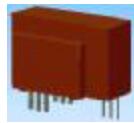
V _W	HV transient test according (to M3064) (1,2 µs / 50 µs-wave form)	8	kV
V _d	Testing voltage acc. M3014 (RMS)	(5 s)	5 kV
V _e	Partial discharge voltage acc. M3024 (RMS) with V _{vor} (RMS)	1500 V 1875 V	V

Datum	Name	Index	Änderung				
28.01.08	Le	81	Page 3: write error in X _{ges} (I _{PN}). changed. Insignificant				
Hrsg.: KB-E editor	Bearb: SA designer			KB-E BE: Len. check	KB-PM IA:KRe. check		freig.: Heu. released

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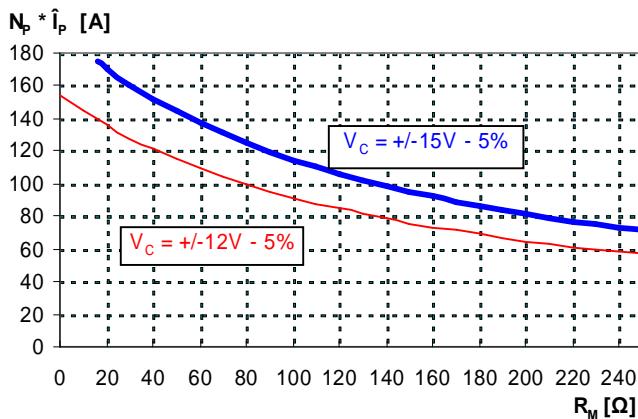


Date: 28.01.2008

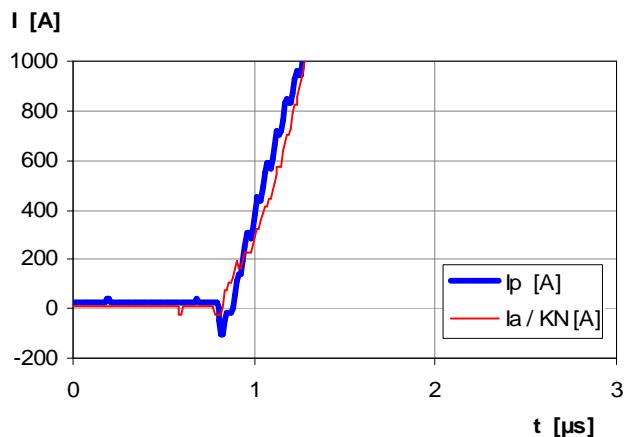
Customer:

Customers Part No.:

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Limit curve of measurable current $\hat{I}_P(R_M)$ ¹⁾@ ambient temperature $T_A \leq 85^\circ\text{C}$ **Maximum measuring range ($\mu\text{s-range}$)**¹⁾

Output current behaviour of a 3kA current pulse
@ $V_C = \pm 15\text{V}$ und $R_M = 25\Omega$



Fast increasing currents (higher than the specified $I_{p,\max}$), e.g. in case of a short circuit, can be transmitted because the currents are transformed directly.

The offset ripple can be reduced by an external low pass. Simplest solution is a passive low pass filter of 1st order with

$$f_g = \frac{1}{2p \cdot R_M \cdot C_a}$$

In this case the response time is enlarged.

It is calculated from:

$$t'_r \leq t_r + 2,5R_M C_a$$

Applicable documents

Current direction: A positive output current appears at point I_S , by primary current in direction of the arrow.

Constructed and manufactured and tested in accordance with EN 61800.

Housing and bobbin material UL-listed: Flammability class 94V-0.

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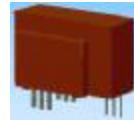
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I_{OH}: Zero variation of I_o after overloading with a DC of tenfold the rated value (R_M = R_{MN})I_{ot}: Long term drift of I_o after 100 temperature cycles in the range -40 bis 85 °C.t_r: Response time (describe the dynamic performance for the specified measurement range), measured as delay time at I_P = 0,9 · I_{Pmax} between a rectangular current and the output current.Δt (I_{Pmax}): Delay time (describe the dynamic performance for the rapid current pulse rate e.g short circuit current) measured between I_{Pmax} and the output current i_a with a primary current rise of di₁/dt = 100 A/μs.X_{ges}(I_{PN}): The sum of all possible errors over the temperature range by measuring a current I_{PN}:

$$X_{\text{ges}} = 100 \cdot \left| \frac{I_S(I_{\text{PN}})}{K_N \cdot I_{\text{PN}}} - 1 \right| \%$$

X: Permissible measurement error in the final inspection at RT, defined by

$$X = 100 \cdot \left| \frac{I_{\text{SB}}}{I_{\text{SN}}} - 1 \right| \%$$

where I_{SB} is the output DC value of an input DC current of the same magnitude as the (positive) rated current (I_o = 0)X_{Ti}: Temperature drift of the rated value orientated output term. I_{SN} (cf. Notes on F_i) in a specified temperature range, obtained by:

$$X_{\text{Ti}} = 100 \cdot \left| \frac{I_{\text{SB}}(T_{A2}) - I_{\text{SB}}(T_{A1})}{I_{\text{SN}}} \right| \%$$

ε_L: Linearity fault defined by $e_L = 100 \cdot \left| \frac{I_P}{I_{\text{PN}}} - \frac{I_{\text{Sx}}}{I_{\text{SN}}} \right| \%$ Where I_P is any input DC and I_{Sx} the corresponding output term. I_{SN}: see notes of F_i (I_o = 0).

This "Additional information" is no declaration of warranty according BGB §443.

Hrsg.: KB-E
editorBearb: SA
designerKB-E BE: Len.
checkKB-PM IA:KRe.
checkfreig.: Heu.
released

ООО "ЛайфЭлектроникс"

"LifeElectronics" LLC

ИНН 7805602321 КПП 780501001 Р/С 40702810122510004610 ФАКБ "АБСОЛЮТ БАНК" (ЗАО) в г.Санкт-Петербурге К/С 30101810900000000703 БИК 044030703

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибуторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибуторских договоров

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- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
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- Формирование склада под заказчика.
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- Входной контроль качества.
- Наличие сертификата ISO.

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- Изготовление тестовой платы монтаж и пусконаладочные работы.



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