VACUUMSCHMELZE	**SPECIFICATION**	**Item no.:**	**T60404-N4646-X661**

K-no.: 24511	**25 A Current Sensor for 5V- Supply Voltage** For electronic current measurement: DC, AC, pulsed, mixed ..., with a galvanic isolation between primary circuit (high power) and secondary circuit (electronic circuit)	Date: 02.02.2017
Customer: Standard type	Customers Part no.:	Page 1 von 4

Description
- Closed loop (compensation) Current Sensor with magnetic field probe
- Printed circuit board mounting
- Casing and materials UL-listed

Characteristics
- Excellent accuracy
- Very low offset current
- Very low temperature dependency and offset current drift
- Very low hysteresis of offset current
- Short response time
- Wide frequency bandwidth
- Compact design
- Reduced offset ripple

Applications

Mainly used for stationary operation in industrial applications:
- 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
- Uninterruptible Power Supplies (UPS)

Electrical data – Ratings

I_{PN}	Primary nominal r.m.s. current	25	A
V_{out}	Output voltage @ I_P	$V_{Ref} \pm (0.625*I_P/I_{PN})$	V
V_{out}	Output voltage @ I_P=0, T_A=25°C	$V_{Ref} \pm 0.00135$	V
V_{Ref}	External Reference voltage range	0…4	V
	Internal Reference voltage	2.5 ±0.005	V
K_N	Turns ratio	1…3 : 2000	

Accuracy – Dynamic performance data

		min.	typ.	max.	Unit
$I_{P,max}$	Max. measuring range	±85			
X	Accuracy @ I_{PN}, T_A= 25°C			0.7	%
ε_L	Linearity			0.1	%
V_{out} - V_{Ref}	Offset voltage @ I_P=0, T_A= 25°C			±1.35	mV
ΔV_o / V_{Ref} / ΔT	Temperature drift of V_{out} @ I_P=0, V_{Ref} =2,5V, T_A= -40…85°C		1.4	10	ppm/°C
t_r	Response time @ 90% von I_{PN}		300		ns
Δt ($I_{P,max}$)	Delay time at di/dt = 100 A/µs		200		ns
f	Frequency bandwidth	DC…200			kHz

General data

		min.	typ.	max.	Unit
T_A	Ambient operating temperature	-40		+85	°C
T_S	Ambient storage temperature	-40		+85	°C
m	Mass		12		g
V_C	Supply voltage	4.75	5	5.25	V
I_C	Current consumption		15		mA

Constructed and manufactored and tested in accordance with EN 61800-5-1 (Pin 1 - 6 to Pin 7 – 10)
Reinforced insulation, Insulation material group 1, Pollution degree 2

S_{clear}	Clearance (component without solder pad)		7.4		mm
S_{creep}	Creepage (component without solder pad)		8.0		mm
V_{sys}	System voltage	overvoltage category 3	RMS	300	V
V_{work}	Working voltage	(tabel 7 acc. to EN61800-5-1) overvoltage category 2	RMS	650	V
U_{PD}	Rated discharge voltage		peak value	1320	V

Note: "According UL 508: Max. potential difference = 600 V_{AC}

Date	Name	Issue	Amendment
02.02.17	DJ	83	Page A1, M-sheet M3101 added (storage temperature). Minor change
11.08.14	KRe	83	Marking changed from 4646X661-83 ➔ 4646-X661-83. Electrical data: Vout changed. CN-14-074

Hrsg.: MC-PD editor	Bearb: DJ designer		MC-PM: Sn. check			freig.: BEF released

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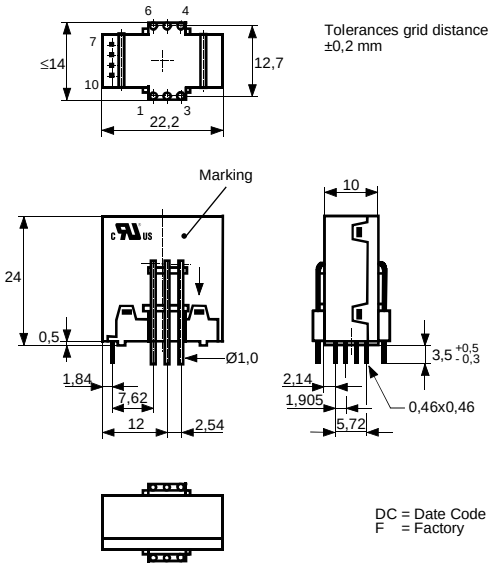
Mechanical outline (mm): General tolerances DIN ISO 2768-c



Connections:

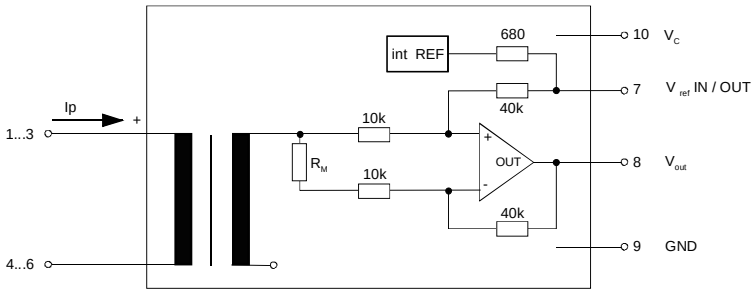
1...6: ∅ 1 mm
7...10: 0,46*0,46 mm

Marking:

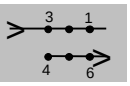
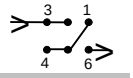
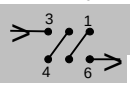
UL-sign
4646-X661-83
DC
F

Explanation:
DC = Date Code [Format YWW]

Schematic diagram



Possibilities of wiring (@ T_A = 85°C)

primary windings	primary current RMS maximal		output voltage RMS	turns ratio	primary resistance	wiring
N_P	**I_P [A]**	**$\hat{I}_{P,max}$ [A]**	**$V_{out}(I_P)$ [V]**	**K_N**	**R_P [mΩ]**	
1	25	±85	2.5±0.625	1:2000	0.33	
2	12	±42	2.5±0.600	2:2000	1.5	
3	8	±28	2.5±0.600	3:2000	3	

Hrsg.: MC-PD editor	Bearb: DJ designer		MC-PM: Sn. check			freig.: BEF released

Electrical Data

		min.	typ.	max.	Unit
V_{Ctot}	Maximum supply voltage (without function)			7	V
I_C	Supply Current with primary current		15mA +I_p*K_N+V_{out}/R_L		mA
$I_{out,SC}$	Short circuit output current		±20		mA
R_P	Resistance / primary winding @ T_A=25°C		1		mΩ
R_S	Secondary coil resistance @ T_A=85°C			67	Ω
$R_{i,Ref}$	Internal resistance of Reference input		670		Ω
R_i,(V_{out})	Output resistance of V_{out}			1	Ω
R_L	External recommended resistance of V_{out}	1			kΩ
C_L	External recommended capacitance of V_{out}			500	pF
$\Delta X_{Ti} / \Delta T$	Temperature drift of X @ T_A = -40 ... +85 °C			40	ppm/K
$\Delta V_0 = \Delta(V_{out} - V_{Ref})$	Sum of any offset drift including:		2	6	mV
V_{0t}	Longtermdrift of V_0		1		mV
V_{0T}	Temperature drift von V_0 @ T_A = -40 ...+85°C		1		mV
V_{0H}	Hysteresis of V_{out} @ I_P=0 (after an overload of 10 x I_{PN})			2	mV
$\Delta V_0/\Delta V_C$	Supply voltage rejection ratio			1	mV/V
v_{oss}	Offsetripple (with 1 MHz- filter first order)			30	mV
v_{oss}	Offsetripple (with 100 kHz- filter firdt order)		3	6	mV
v_{oss}	Offsetripple (with 20 kHz- filter first order)		0.8	1.5	mV
C_k	Maximum possible coupling capacity (primary – secondary)		5	10	pF
	Mechanical stress according to M3209/3 Settings: 10 – 2000 Hz, 1 min/Octave, 2 hours			30g	

Inspection (Measurement after temperature balance of the samples at room temperature) SC = significant characteristic

V_{out} (SC)	(V)	M3011/6:	Output voltage vs. external reference (I_P=25A, 40-80Hz)	625±0,7%	mV
V_{out}–V_{Ref} (I_P=0)	(V)	M3226:	Offset voltage	± 1.35	mV
V_d	(V)	M3014:	Test voltage, rms, 1 s pin 1 – 6 vs. pin 7 – 10	1.5	kV
V_e	(AQL 1/S4)		Partial discharge voltage acc.M3024 (RMS)	1400	V
			with V_{vor} (RMS)	1750	V

Type Testing (Pin 1 - 6 to Pin 7 - 10)

V_W	HV transient test according to M3064 (1,2 µs / 50 µs-wave form)		8	kV
V_d	Testing voltage to M3014	(5 s)	3	kV
V_e	Partial discharge voltage acc.M3024 (RMS)		1400	V
	with V_{vor} (RMS)		1750	V

Applicable documents

Temperature of the primary conductor should not exceed 110°C
Current direction: A positive output current appears at point I_S, by primary current in direction of the arrow.
Housing and bobbin material UL-listed: Flammability class 94V-0.

Enclosures according to IEC529: IP50.
Further standards UL 508 file E317483, category NMTR2 / NMTR8