VACUUMSCHMELZE	Specification	Item no.: T60404-N4647-X761

K-No.: 26669	**25A 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: 12.09.2017

Customer: Standard type	Customers Part no:	Page 1 of 3

Description

- Closed loop (compensation) Current Sensor with magnetic 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
- Uninterruptable Power Supplies (UPS)

Electrical data - Ratings

I_{PN}	Primary nominal RMS current	25	A
V_{OUT}	Output voltage @ I_P	V_{REF} ± (0.625*I_P/I_{PN})	V
V_{OUT}	Output voltage @ I_P=0A, ϑ_A=25°C	V_{REF} ± 0.00135	V
V_{REF}	External Reference voltage range	0 … 4	V
	Internal Reference voltage	2.5 ± 0.005	V
K_N	Transformation ratio	1…4 : 2000	

Accuracy – Dynamic performance data

		min.	typ.	max.	Unit
$I_{P,max}$	Max. measuring range	±85			A
X	Accuracy @ I_{PN}, ϑ_A = 25°C			0.7	%
ε_L	Linearity			0.1	%
V_{OUT}-V_{REF}	Offset voltage @ I_P = 0A, ϑ_A = 25°C			±1.35	mV
$\Delta V_O/V_{REF}/\Delta T$	Temperature drift of V_{OUT} @ I_P=0A, V_{REF}=2.5V, ϑ_A		2	10	ppm/°C
t_r	Response time		0.3		µs
t_{ra}	Reaction time		0.2		µs
f_{BW}	Frequency bandwidth	DC..200			kHz

General data

ϑ_A	Ambient operation temperature	-40		85	°C
ϑ_S	Ambient storage temperature	-40		85	°C
m	Mass		12		g
V_C	Supply voltage	4.75	5	5.25	V
I_C	Supply current at I_P = 0A and RT		15		mA

[1)]s_{clear}	Clearance (component without solder pad)	9.6			mm
[1)]s_{creep}	Creepage (component without solder pad)	10.6			mm
[1)]U_{sys}	System voltage *determines impulse voltage acc. table 7			600	V_{RMS}
[1)]U_{AC}	Working voltage *acc. table 10			1000	V_{RMS}
[1)]U_{PD}	Rated discharge voltage *acc. table 24 with $U_{PD} = U_{AC} * \sqrt{2}$			1414	V_{PEAK}
	max. Potential Difference acc. to UL 508			600	V_{RMS}

1) Constructed and manufactured and tested in accordance with IEC 61800-5-1:2007 (primary to secondary)
Reinforced insulation, Insulation material group 1, Pollution degree 2, Overvoltage category III

The current sensor passed the EMI susceptibility tests (vertical and horizontal, one direction) according to the standard 61000-4-3:2010 at 20V/m, 80%AM@1kHz over the frequency range of 80MHz to 1000MHz, level a) with <2% variation of the Vout during the stress.

Date	Name	Issue	Amendment
12.09.2017	SB	81	Mechanical outline changed: Tolerances grid distance +/- 0.25mm added. CN-17-291

Hrg.: R&D-PD NPI editor	Bearb.: DJ designer		MC-PM: SN check			freig.: BEF released

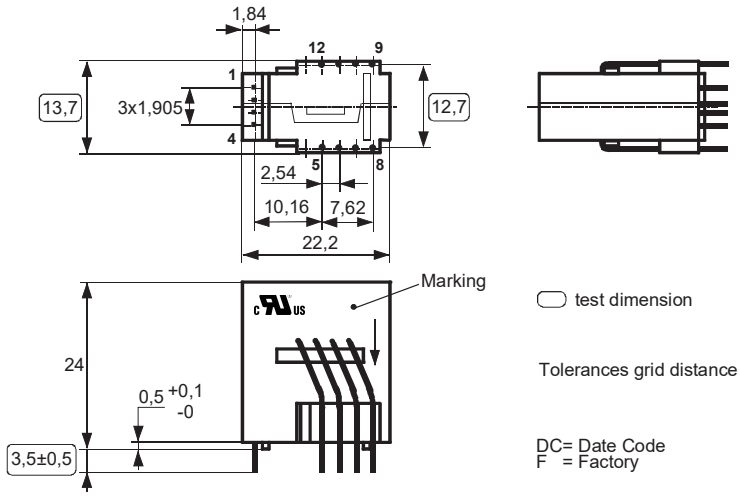
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Mechanical outline (mm): General tolerances DIN ISO 2768-c



test dimension

Tolerances grid distance ±0,25mm

DC= Date Code
F = Factory

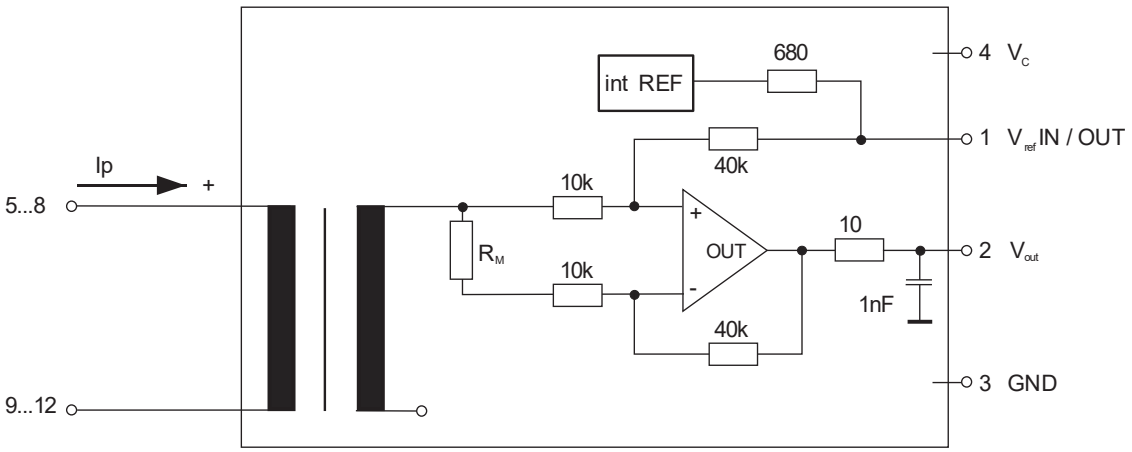
Connections:

Pin Nr. 5-12: Ø1mm
Pin Nr. 1-4: 0.46 x 0.46mm

Marking:
UL-sign 4647-X761
F DC

Date Code Format: YWW

Schematic diagram:



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Electrical data: (investigate by a type checking)			**min.**	**typ.**	**max.**	**Unit**
$V_{C,tot}$		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 per primary winding @ ϑ_A=25°C		1		mΩ
R_S		Secondary coil resistance @ ϑ_A = 85°C			67	Ω
$R_{i,REF}$		Internal resistance of Reference output		680		Ω
$R_{i,Vout}$		Output resistance of V_{OUT}		10		Ω
R_L		External recommended resistance of V_{OUT}	1			kΩ
C_L		External recommended capacitance of V_{OUT}			1	nF
X_{Ti} / ΔT		Temperature drift of X @ ϑ_A = -40°C ... 85°C			40	ppm/K
$\Delta V_O=\Delta(V_{OUT}-V_{REF})$		Sum of any offset drift including:		2	6	mV
	V_{Ot}	Long term drift of V_O		1		mV
	V_{OT}	Temperature drift of V_O @ ϑ_A = -40°C…85°C		1		mV
	V_{OH}	Hysteresis of V_{OUT} @ I_P = 0A (caused by I_P = 10 x I_{PN})			2	mV
	$\Delta V_O/\Delta V_C$	Supply voltage rejection ratio			1	mV/V
v_{OSS}		Offsetripple (with 1 MHz-Filter, first order)			25	mV_{PP}
v_{OSS}		Offsetripple (with 100 kHz-Filter, first order)		4	6	mV_{PP}
v_{OSS}		Offsetripple (with 20 kHz-Filter, first order)		2	4	mV_{PP}
C_k		Maximum possible coupling capacity (primary - secondary)			10	pF
		Mechanical stress according to M3209/3 Settings: 10-2000Hz, 1min/oct., 2 hours			30	g

Routine Tests: (Measurement after temperature balance of the samples at room temperature, SC=significant characteristic)

V_{OUT} (SC)	(100%) M3011/6:	Output voltage	625 ± 0.7%	mV
V_O	(100%) M3226:	Offset voltage	±1.35	mV
U_d	(100%) M3014:	Test voltage, 1s	1.8	kV_{RMS}
U_{PDE} U_{PDE}*1.875	(AQL 1/S4) M3024:	Partial discharge voltage (extinction)	1.5 1.875	kV_{RMS}

Type testing: (Precondition acc. to M3236)

$\hat{U}_W$	M3064	HV transient test 1,2µs / 50µs-Waveform	8	kV
U_d	M3014	Test voltage (5s)	3.6	kV_{RMS}
U_{PDE} U_{PDE}*1.875	M3024	Partial discharge voltage (extinction)	1.5 1.875	kV_{RMS}

Other instructions:

- Current direction: A positive output voltage vs. V_{REF} appears at point V_{OUT}, if primary current flows in direction of the arrow.
- Constructed, manufactured and tested in accordance with IEC 61800-5-1:2007.
- Temperature of the primary conductor should not exceed 105°C.
- Housing and bobbin material UL-listed: Flammability class 94V-0.

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