Current Transducer LTSR 6-NP

I_{PN} = 6 A

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).

Electrical data

I_{PN}	Primary nominal r.m.s. current	6	At
I_P	Primary current, measuring range	0 .. ± 19.2 [1]	At
$\hat{I}_{PDC}$	Overload capability	250	A
V_{OUT}	Analog output voltage @ I_P	2.5 ±(0.625·I_P/I_{PN})	V
	I_P = 0	2.5 [2]	V
V_{REF}	Voltage reference (internal reference), refout mode	2.5 [3]	V
	Voltage reference (external reference), refin mode	1.9 .. 2.7 [4]	V
N_S	Number of secondary turns (± 0.1 %)	2000	
R_L	Load resistance	≥ 2	kΩ
C_L	Max. capacitive loading	500	pF
R_{IM}	Internal measuring resistance (± 0.5 %)	208.33	Ω
TCR_{IM}	Thermal drift of R_{IM}	< 50	ppm/K
V_C	Supply voltage (± 5 %)	5	V
I_C	Current consumption @ V_C = 5 V Typ	28 + I_S [5] + (V_{OUT}/R_L)	mA
V_d	R.m.s. voltage for AC isolation test, 50/60 Hz, 1 mn	3	kV
V_e	R.m.s. voltage for partial discharge extinction @ 10 pC	> 1.5	kV
$\hat{V}_w$	Impulse withstand voltage 1.2/50 µs	> 8	kV

Accuracy - Dynamic performance data

X	Accuracy @ I_{PN} , T_A = 25°C	±0.2	%
	Accuracy with R_{IM} @ I_{PN} , T_A = 25°C	±0.7	%
ε_L	Linearity error	< 0.1	%
		Max	
TCV_{OUT}	Thermal drift of V_{OUT}/V_{REF} @ I_P = 0 - 40°C .. + 85°C	150	ppm/K
$TC\varepsilon_G$	Thermal drift of the gain - 40°C .. + 85°C	50 [6]	ppm/K
V_{OM}	Residual voltage @ I_P = 0, after an overload of 3 x I_{PN}	± 0.5	mV
	5 x I_{PN}	± 2.0	mV
	10 x I_{PN}	± 2.0	mV
TCV_{REF}	Thermal drift of internal V_{REF} @ I_P = 0 - 10°C .. + 85°C	50	ppm/K
	- 40°C .. - 10°C	100	ppm/K
t_{ra}	Reaction time @ 10 % of I_{PN}	< 100	ns
t_r	Response time @ 90 % of I_{PN}	< 400	ns
di/dt	di/dt accurately followed	> 15	A/µs
f	Frequency bandwidth (0 .. - 0.5 dB)	DC .. 100	kHz
	(- 0.5 .. 1 dB)	DC .. 200	kHz

General data

T_A	Ambient operating temperature	- 40 .. + 85	°C
T_S	Ambient storage temperature	- 40 .. + 100	°C
	Insulating material group	III a	
m	Mass	10	g
	Standards [7]	EN 50178 : 1997 CEI 60950-1 : 2001	

Notes : see overleaf.

Features

- Closed loop (compensated) multi-range current transducer using the Hall effect
- Unipolar voltage supply
- Insulated plastic case recognized according to UL 94-V0
- Compact design for PCB mounting
- Incorporated measuring resistance
- Extended measuring range
- Access to the internal voltage reference
- Possibility to feed the transducer reference from external supply.

Advantages

- Excellent accuracy
- Very good linearity
- Very low temperature drift
- Optimized response time
- Wide frequency bandwidth
- No insertion losses
- High immunity to external interference
- Current overload capability.

Applications

- AC variable speed drives and servo motor drives
- Static converters for DC motor drives
- Battery supplied applications
- Uninterruptible Power Supplies (UPS)
- Switched Mode Power Supplies (SMPS)
- Power supplies for welding applications.

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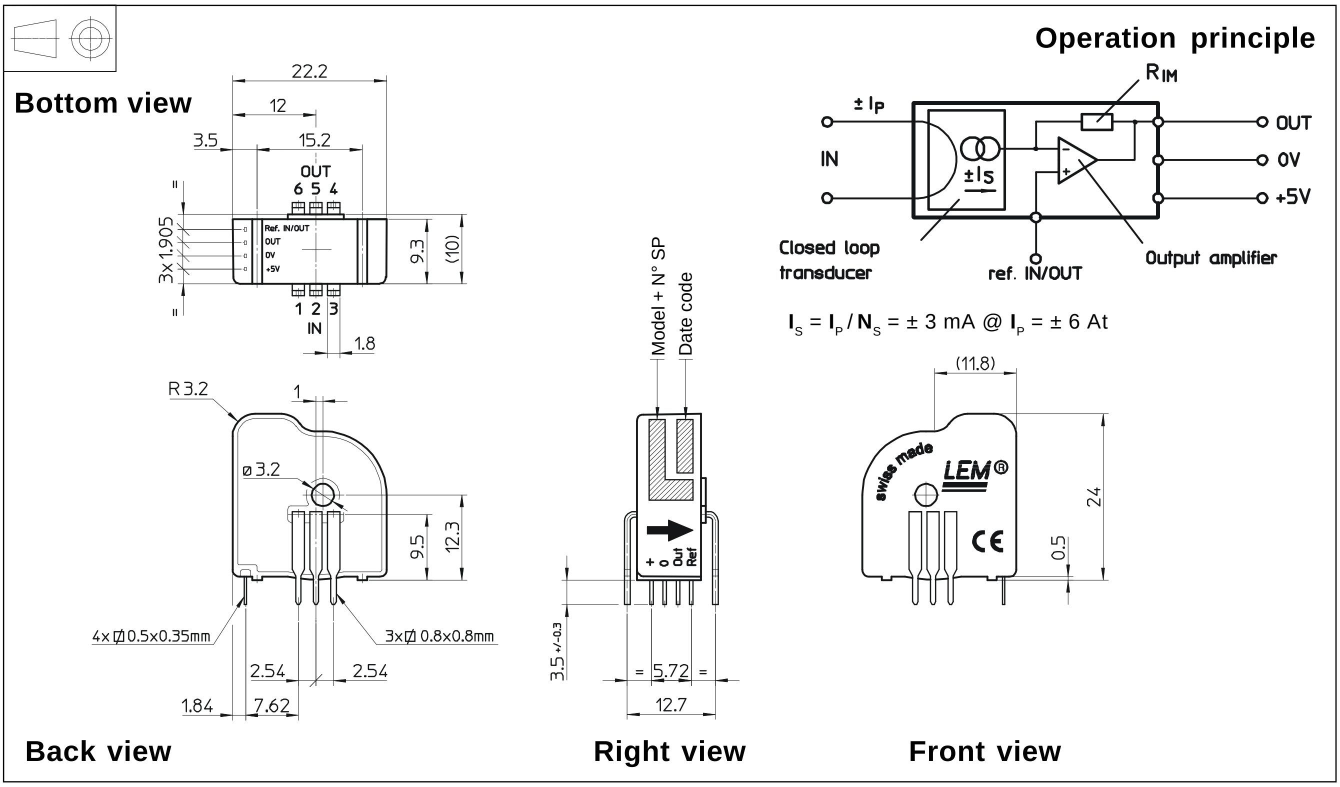
Dimensions LTSR 6-NP (in mm. 1 mm = 0.0394 inch)



Notes

[1] Only in refout mode or with external REF less than 2.525 V and greater than 2.475 V. For external REF out of these limits see leaflet.

[2] $\mathbf{V}_{OUT}$ is linked to $\mathbf{V}_{REF}$, by conception the difference between these two nodes for $\mathbf{I}_P = 0$ is maximum ± 25 mV, 2.475 V < $\mathbf{V}_{OUT}$ < 2.525 V.

[3] In Refout mode at $\mathbf{T}_A$ = 25°C, 2.475 V< $\mathbf{V}_{REF}$ < 2.525 V. The minimal impedance loading the ref pin should be > 220 kΩ.
Internal impedance = 600 Ω.
For most applications you need to buffer this output to feed it into an ADC for example.

[4] To overdrive the REF (1.9 V .. 2.7 V) max. ± 1 mA is needed.

[5] Please see the operation principle on the other side.

[6] Only due to $\mathbf{TCR}_{IM}$.

[7] Specification according to IEC 1000-4-8 not adhered to in DC, error according to two axes 1.5% instead of 1%.

Mechanical characteristics

• General tolerance	± 0.2 mm
• Fastening & connection of primary	6 pins 0.8 x 0.8 mm
Recommended PCB hole	1.3 mm
• Fastening & connection of secondary	4 pins 0.5 x 0.35 mm
Recommended PCB hole	0.8 mm
• Additional primary through-hole	∅ 3.2 mm

Remarks

- $\mathbf{V}_{OUT}$ is positive when $\mathbf{I}_P$ flows from terminals 1, 2, 3 to terminals 6, 5, 4
- For the EMC, the acceptance criteria are available on request.