Integrated Current Sensor GXN_ANC (Version A) Industrial Only

I_{PM} From 10 to 100 A

Version A – Industrial Grade Only Description

The GXN_ANC Series by LEM is a high-performance, integrated current sensor designed for precise AC and DC current measurement in industrial (version A) and automotive (version Q) environments. Featuring advanced ambient field rejection and a temperature compensation algorithm, the GXN_ANC delivers reliable accuracy across a wide temperature range. Its low-resistance primary conductor (0.85 mΩ typical) ensures minimal power loss, supporting efficient system operation.Galvanic isolation between primary and secondary sides eliminates the need for additional insulation, reducing system footprint and cost. The GXN_ANC Series supports current measurement from 10 to 100 A, with robust insulation and surge protection for demanding applications.

Note on Version Q – Automotive Grade

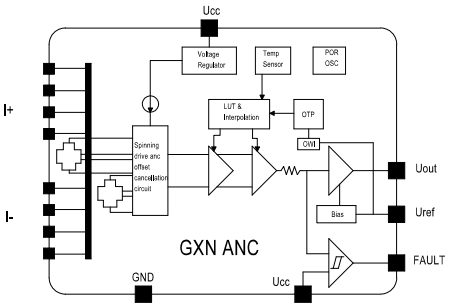
The Version Q of the GXN ANC Series will be dedicated to automotive applications, with AEC-Q100 qualification and specifications tailored to meet automotive sector requirements.

Key Features & Advantages

- Industry Grade Qualified (version A)
- Wide Current Range: Open-loop, multi-range sensing from 10 to 100 A
- Low Power Loss: Primary resistance of just 0.85 mΩ
- Flexible Supply Voltage: Dual options — 5 V or 3.3 V
- Fast Response: 1.5 µs typical response time; 320 kHz bandwidth
- Overcurrent Detection: Integrated fault output for system protection
- High Isolation: 8 mm clearance and creepage; 5000 V RMS test voltage (UL62638)
- High Surge Capability: Up to 13 kA surge current
- Robust Package: Wide-body SOIC16 for enhanced isolation and reliability
- RoHS Compliant.

Typical Applications

- Servo and Drive
- UPS
- HVAC Inverters
- Appliances
- DCDC
- Power distribution
- Solar Inverters.



Product MOQ

GXN-XXX: 1000pcs/Reel.



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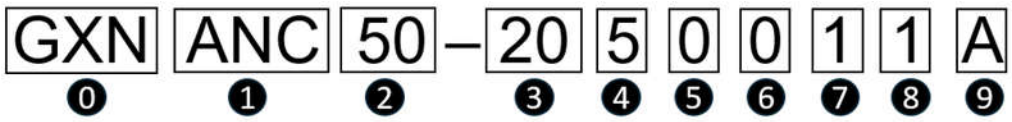
Main Order Information (Recommended the following device)

Part number	Full Scale Primary Current (A)	Nominal current (A)	Power Supply (V)	Sensitivity (mV/A)	Package
GXN ANC 10-4 30011A	10	4	3.3	132	SOIC 16L
GXN ANC 20-8 50011A	20	8	5	100	
GXN ANC 20-8 30011A	20	8	3.3	66	
GXN ANC 25-10 30011A	25	10	3.3	52.8	
GXN ANC 30-12 50011A	30	12	5	66.67	
GXN ANC 30-12 31011A	30	12	3.3	88	
GXN ANC 33-13 30011A	33	13	3.3	39.6	
GXN ANC 40-16 50011A	40	16	5	50	
GXN ANC 50-20 50011A	50	20	5	40	
GXN ANC 66-26 30011A	66	26	3.3	20	
GXN ANC 66-26 50011A	66	26	5	30.3	
GXN ANC 80-32 30011A	80	32	3.3	16.5	
GXN ANC 80-32 50011A	80	32	5	25	
GXN ANC 100-40 50011A	100	40	5	20	
GXN ANC 100-40 30011A	100	40	3.3	13.2	

For more information about LEM stock and lead time please contact us.

https://www.lem.com/en/form/contact-us?utm_source=lem&utm_medium=datasheet&utm_campaign=ds_…

Product Naming Rules



0 Integrated Current Sensor

1 ASIC Version

2 Full Scale Current (A)

3 Nominal Current (A)

4 Supply Voltage:
5 – VCC = 5 V; 3 – VCC = 3.3 V

5 Output Directionality:
0 – Bipolar output ; 1 – Unipolar output

6 Output mode:
0 – Fixed mode output; 1 – Ratiometric mode output

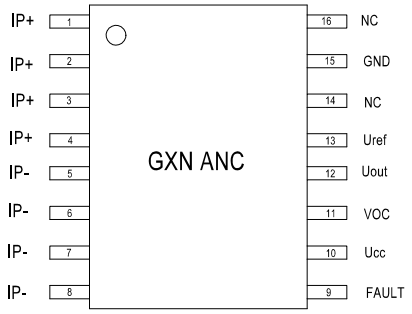
7 Trimming code

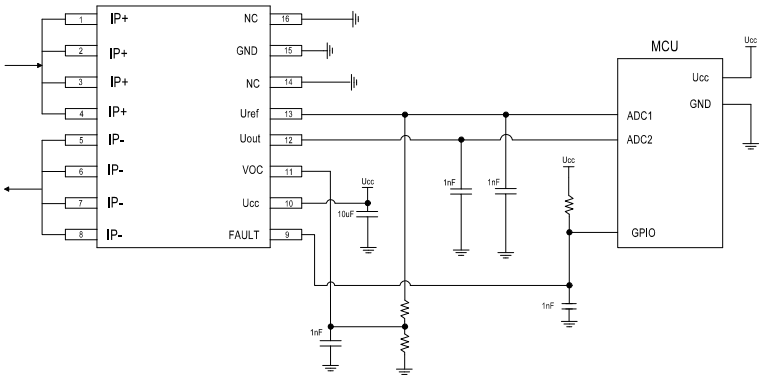
8 Operating Temperature Range:
0:-40~150 ℃; 1:-40~125 ℃

9 Product Version

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Pin Definitions





Pin #	Name	Function
1-4	I_P+	Input of the primary current
5-8	I_P−	Output of the primary current
9	FAULT	Over Current Detection
10	U_C	Supply voltage
11	U_{OC}	Set the output overcurrent protection point
12	U_{out}	Output voltage
13	U_{ref}	Reference voltage
14	NC	Not connected
15	GND	Ground
16	NC	Not connected

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Absolute maximum ratings

Parameter	Symbol	Unit	Value
Maximum supply voltage @ 25 °C	$U_{C\ max}$	V	6.5
Maximum junction temperature [1)]	$T_{J\ max}$	°C	150
Electrostatic discharge voltage (HBM - Human Body Model)	$U_{ESD\ HBM}$	kV	8
Electrostatic discharge voltage (CDM - Charged Device Model)	$U_{ESD\ CDM}$	kV	2
Source sink max current		mA	±25

Note: Absolute maximum ratings apply at 25 °C unless otherwise noted.

Stresses above these ratings may cause permanent damage.

Exposure to absolute maximum ratings for extended periods may degrade reliability.

Environmental and mechanical characteristics

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Ambient operating temperature	T_A	°C	−40		125	
Ambient storage temperature	$T_{A\ st}$	°C	−40		150	
Resistance of the primary @ T_A = 25 °C	R_P	mΩ		0.85		

Insulation coordination

Parameter	Symbol	Unit	Value	Comment
RMS voltage for AC insulation test, 50 Hz, 1 min	U_d	Vrms	5000	According to IEC 62368-1
Impulse withstand voltage 1.2/50 µs	U_{Surge}	kV	10	According to IEC 61000-4-5
Surge current	I_{Surge}	kA	13	According to IEC61000-4-5
Clearance (pri. - sec.)	d_{Cl}	mm	8	Shortest distance through air
Creepage distance (pri. - sec.)	d_{CP}	mm	8	Shortest path along device body
Comparative tracking index	CTI	V/ns	>=600	CTI I
Common-mode transient immunity	$CMTI$	V/ns	>100	
Application example System voltage RMS		Vrms	1131	Basic insulation according to IEC 62368-1
Application example System voltage DC		Vdc	1600	Basic insulation according to IEC 62368-1

Note: [1)] Done on LEM evaluation board PCB.

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GXN_ANC Common Characteries (T_A = −40 °C ... 125 °C, U_C = 5 V or 3.3 V, unless otherwise noted)

Parameter	Symbol	Unit	Min	Typ	Max	Comment
DC supply voltage	U_C	V	3	3.3	3.6	U_C = 3.3 V
			4.5	5	5.5	U_C = 5 V
DC current consumption	I_C	mA		12	15	No load, U_C = 5 V
Internal reference voltage @ I_P = 0 A	U_{ref}	V	2.49	2.5	2.51	U_C = 5 V, Bipolar&Fixed version
			1.64	1.65	1.66	U_C = 3.3 V, Bipolar&Fixed version
			0.49	0.5	0.51	U_C = 5 V, Unipolar&Fixed version
			0.32	0.33	0.34	U_C = 3.3 V, Unipolar&Fixed version
Output current		mA		1		
Load capacitance [1)]	C_L	nF			10	
Load resistance [1)]	R_L	kΩ	10			
Primary conductor resistance	R_P	mΩ		0.85		T_A = 25 °C
Internal output series resistance		Ohm		5		
Power On Time	t_{PO}	ms		1		T_A = 25 °C, C_L = 1 nF, U_C = 5 V
Linearity error 0 ... ± I_{PM}	ε_L	%	/	±0.2	/	Linearity error 0 ... ± I_{PM}
Output voltage range @ I_{PM}	U_{out}–U_{ref}	V	0.1		U_C – 0.1	T_A = 25 °C, C_L = 1 nF, R_L = 10 kΩ, to U_C or GND
Frequency bandwidth (−3 dB)	BW	kHz		320		T_A = 25 °C, U_C = 5 V
Noise density	N_d	uArms/√Hz		260		T_A = 25 °C, U_C = 5 V
				370		T_A = 25 °C, U_C = 3.3 V
Delay time @ 10 % of the final output value I_{PN} step	t_{D10}	µs		1.2		T_A = 25 °C, C_L = 1 nF, U_C = 5 V
Delay time @ 90 % of the final output value I_{PN} step	t_{D90}	µs		1.5	3	T_A = 25 °C, C_L = 1 nF, U_C = 5 V

Note: [1)] Guaranteed by design.

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Electrical data GXN ANC 10-4 30011A, (At T_A = −40 °C ... 125 °C, U_C = 3.3 V , unless otherwise noted)

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{PN}	A		4		
Primary current, measuring range	I_{PM}	A	−10		10	
Internal reference voltage @ I_P = 0 A	$U_{I\,ref}$	V		1.65		
Nominal sensitivity	S_N	mV/A		132		
Sensitivity error	ε_S	%	−2		2	T_A = 25 °C ... 125 °C
				±3.5		T_A = −40 °C ... 25 °C
Sum of sensitivity and linearity error @ T_A = 25 °C	$\varepsilon_{SL\,25}$	% of I_{PN}	/	2	/	
Electrical offset voltage referred to primary	U_{OE}	mV	−10		10	U_{out}−$U_{I\,ref}$ @ $U_{I\,ref}$ = 1.65 V
Electrical offset current referred to primary	I_{OE}	mA	−75.76		75.76	
Total output error [1)]	E_{total}	% of I_{PN}	−2		2	T_A = 25 °C ... 150 °C
				±3.5		T_A = −40 °C ... 25 °C
Total output error over lifetime drift	E_{total_drift}	%		±2 %		T_A = 25 °C

Note: [1)] In production, total output error and sensitivity error are measured and calculated at 30 A.

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Electrical data GXN ANC 20-8 50011A, (At T_A = −40 °C ... 125 °C, U_C = 5 V , unless otherwise noted)

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{PN}	A		8		
Primary current, measuring range	I_{PM}	A	−20		20	
Internal reference voltage @ I_P = 0 A	$U_{I\,ref}$	V		2.5		
Nominal sensitivity	S_N	mV/A		100		
Sensitivity error	ε_S	%	−2		2	T_A = 25 °C ... 125 °C
				±3.5		T_A = −40 °C ... 25 °C
Sum of sensitivity and linearity error @ T_A = 25 °C	ε_{SL25}	% of I_{PN}	/	2	/	
Electrical offset voltage referred to primary	U_{OE}	mV	−10		10	$U_{out}-U_{I\,ref}$ @ $U_{I\,ref}$ = 2.5 V
Electrical offset current referred to primary	I_{OE}	mA	−100		100	
Total output error	E_{total}	% of I_{PN}	−2		2	T_A = 25 °C ... 150 °C measured and calculated at 30 A
				±3.5		T_A = −40 °C ... 25 °C
Total output error over lifetime drift	E_{total_drift}	%		±2 %		T_A = 25 °C

Electrical data GXN ANC 20-8 30011A, (At T_A = −40 °C ... 125 °C, U_C = 3.3 V , unless otherwise noted)

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{PN}	A		8		
Primary current, measuring range	I_{PM}	A	−20		20	
Internal reference voltage @ I_P = 0 A	$U_{I\,ref}$	V		1.65		
Nominal sensitivity	S_N	mV/A		66		
Sensitivity error	ε_S	%	−2		2	T_A = 25 °C ... 125 °C
				±3.5		T_A = −40 °C ... 25 °C
Sum of sensitivity and linearity error @ T_A = 25 °C	ε_{SL25}	% of I_{PN}	/	2	/	
Electrical offset voltage referred to primary	U_{OE}	mV	−10		10	$U_{out}-U_{I\,ref}$ @ $U_{I\,ref}$ = 1.65 V
Electrical offset current referred to primary	I_{OE}	mA	−151.51		151.51	
Total output error	E_{total}	% of I_{PN}	−2		2	T_A = 25 °C ... 150 °C
				±3.5		T_A = −40 °C ... 25 °C
Total output error over lifetime drift	E_{total_drift}	%		±2 %		T_A = 25 °C

Electrical data GXN ANC 30-12 50011A, (At T_A = −40 °C ... 125 °C, U_C = 5 V , unless otherwise noted)

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{PN}	A		12		
Primary current, measuring range	I_{PM}	A	−30		30	
Internal reference voltage @ I_P = 0 A	$U_{I\,ref}$	V		2.5		
Nominal sensitivity	S_N	mV/A		66.67		
Sensitivity error	ε_S	%	−2		2	T_A = 25 °C ... 125 °C
				±3.5		T_A = −40 °C ... 25 °C
Sum of sensitivity and linearity error @ T_A = 25 °C	ε_{SL25}	% of I_{PN}	/	2	/	
Electrical offset voltage referred to primary	U_{OE}	mV	−10		10	$U_{out}-U_{I\,ref}$ @ $U_{I\,ref}$ = 2.5 V
Electrical offset current referred to primary	I_{OE}	mA	−149.99		149.99	
Total output error	E_{total}	% of I_{PN}	−2		2	T_A = 25 °C ... 150 °C
				±3.5		T_A = −40 °C ... 25 °C
Total output error over lifetime drift	E_{total_drift}	%		±2 %		T_A = 25 °C

Electrical data GXN ANC 30-12 31011A, (At T_A = −40 °C ... 125 °C, U_C = 3.3 V , unless otherwise noted)

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{PN}	A		12		
Primary current, measuring range	I_{PM}	A	−30		30	
Internal reference voltage @ I_P = 0 A	$U_{I\,ref}$	V		0.33		
Nominal sensitivity	S_N	mV/A		88		
Sensitivity error	ε_S	%	−2		2	T_A = 25 °C ... 125 °C
				±3.5		T_A = −40 °C ... 25 °C
Sum of sensitivity and linearity error @ T_A = 25 °C	ε_{SL25}	% of I_{PN}	/	2	/	
Electrical offset voltage referred to primary	U_{OE}	mV	−10		10	$U_{out}-U_{I\,ref}$ @ $U_{I\,ref}$ = 1.65 V
Electrical offset current referred to primary	I_{OE}	mA	−113.64		113.64	
Total output error	E_{total}	% of I_{PN}	−2		2	T_A = 25 °C ... 150 °C
				±3.5		T_A = −40 °C ... 25 °C
Total output error over lifetime drift	E_{total_drift}	%		±2 %		T_A = 25 °C

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Electrical data GXN ANC 33-13 30011A, (At T_A = −40 °C ... 125 °C, U_C = 3.3 V , unless otherwise noted)

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{PN}	A		13		
Primary current, measuring range	I_{PM}	A	−33		33	
Internal reference voltage @ I_P = 0 A	$U_{I\,ref}$	V		1.65		
Nominal sensitivity	S_N	mV/A		39.6		
Sensitivity error	ε_S	%	−2		2	T_A = 25 °C ... 125 °C
				±3.5		T_A = −40 °C ... 25 °C
Sum of sensitivity and linearity error @ T_A = 25 °C	ε_{SL25}	% of I_{PN}	/	2	/	
Electrical offset voltage referred to primary	U_{OE}	mV	−10		10	$U_{out}-U_{I\,ref}$ @ $U_{I\,ref}$ = 1.65 V
Electrical offset current referred to primary	I_{OE}	mA	−252.53		252.53	
Total output error	E_{total}	% of I_{PN}	−2		2	T_A = 25 °C ... 150 °C
				±3.5		T_A = −40 °C ... 25 °C
Total output error over lifetime drift	E_{total_drift}	%		±2 %		T_A = 25 °C

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Electrical data GXN ANC 40-16 30011A, (At T_A = −40 °C ... 125 °C, U_C = 3.3 V , unless otherwise noted)

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{PN}	A		16		
Primary current, measuring range	I_{PM}	A	−40		40	
Internal reference voltage @ I_P = 0 A	$U_{I\,ref}$	V		1.65		
Nominal sensitivity	S_N	mV/A		33		
Sensitivity error	ε_S	%	−2		2	T_A = 25 °C ... 125 °C
				±3.5		T_A = −40 °C ... 25 °C
Sum of sensitivity and linearity error @ T_A = 25 °C	ε_{SL25}	% of I_{PN}	/	2	/	
Electrical offset voltage referred to primary	U_{OE}	mV	−10		10	$U_{out}-U_{I\,ref}$ @ $U_{I\,ref}$ = 1.65 V
Electrical offset current referred to primary	I_{OE}	mA	−303.03		303.03	
Total output error	E_{total}	% of I_{PN}	−2		2	T_A = 25 °C ... 150 °C
				±3.5		T_A = −40 °C ... 25 °C
Total output error over lifetime drift	E_{total_drift}	%		±2 %		T_A = 25 °C

Electrical data GXN ANC 40-16 50011A, (At T_A = −40 °C ... 125 °C, U_C = 5 V , unless otherwise noted)

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{PN}	A		16		
Primary current, measuring range	I_{PM}	A	−40		40	
Internal reference voltage @ I_P = 0 A	$U_{I\,ref}$	V		2.5		
Nominal sensitivity	S_N	mV/A		50		
Sensitivity error	ε_S	%	−2		2	T_A = 25 °C ... 125 °C
				±3.5		T_A = −40 °C ... 25 °C
Sum of sensitivity and linearity error @ T_A = 25 °C	ε_{SL25}	% of I_{PN}	/	2	/	
Electrical offset voltage referred to primary	U_{OE}	mV	−10		10	$U_{out}-U_{I\,ref}$ @ $U_{I\,ref}$ = 2.5 V
Electrical offset current referred to primary	I_{OE}	mA	−200		200	
Total output error	E_{total}	% of I_{PN}	−2		2	T_A = 25 °C ... 150 °C
				±3.5		T_A = −40 °C ... 25 °C
Total output error over lifetime drift	E_{total_drift}	%		±2 %		T_A = 25 °C

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Electrical data GXN ANC 50-20 50011A, (At T_A = −40 °C ... 125 °C, U_C = 5 V , unless otherwise noted)

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{PN}	A		20		
Primary current, measuring range	I_{PM}	A	−50		50	
Internal reference voltage @ I_P = 0 A	$U_{I\,ref}$	V		2.5		
Nominal sensitivity	S_N	mV/A		40		
Sensitivity error	ε_S	%	−2		2	T_A = 25 °C ... 125 °C
				±3.5		T_A = −40 °C ... 25 °C
Sum of sensitivity and linearity error @ T_A = 25 °C	ε_{SL25}	% of I_{PN}	/	2	/	
Electrical offset voltage referred to primary	U_{OE}	mV	−10		10	$U_{out}-U_{I\,ref}$ @ $U_{I\,ref}$ = 2.5 V
Electrical offset current referred to primary	I_{OE}	mA	−250		250	
Total output error	E_{total}	% of I_{PN}	−2		2	T_A = 25 °C ... 150 °C
				±3.5		T_A = −40 °C ... 25 °C
Total output error over lifetime drift	E_{total_drift}	%		±2 %		T_A = 25 °C

Electrical data GXN ANC 50-20 30011A, (At T_A = −40 °C ... 125 °C, U_C = 3.3 V , unless otherwise noted)

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{PN}	A		20		
Primary current, measuring range	I_{PM}	A	−50		50	
Internal reference voltage @ I_P = 0 A	$U_{I\,ref}$	V		1.65		
Nominal sensitivity	S_N	mV/A		26.4		
Sensitivity error	ε_S	%	−2		2	T_A = 25 °C ... 125 °C
				±3.5		T_A = −40 °C ... 25 °C
Sum of sensitivity and linearity error @ T_A = 25 °C	ε_{SL25}	% of I_{PN}	/	2	/	
Electrical offset voltage referred to primary	U_{OE}	mV	−10		10	$U_{out}-U_{I\,ref}$ @ $U_{I\,ref}$ = 1.65 V
Electrical offset current referred to primary	I_{OE}	mA	−378.79		378.79	
Total output error	E_{total}	% of I_{PN}	−2		2	T_A = 25 °C ... 150 °C
				±3.5		T_A = −40 °C ... 25 °C
Total output error over lifetime drift	E_{total_drift}	%		±2 %		T_A = 25 °C

Electrical data GXN ANC 50-20 31011A, (At T_A = −40 °C ... 125 °C, U_C = 3.3 V , unless otherwise noted)

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{PN}	A		20		
Primary current, measuring range	I_{PM}	A	−50		50	
Internal reference voltage @ I_P = 0 A	$U_{I\,ref}$	V		0.33		
Nominal sensitivity	S_N	mV/A		52.8		
Sensitivity error	ε_S	%	−2		2	T_A = 25 °C ... 125 °C
				±3.5		T_A = −40 °C ... 25 °C
Sum of sensitivity and linearity error @ T_A = 25 °C	ε_{SL25}	% of I_{PN}	/	2	/	
Electrical offset voltage referred to primary	U_{OE}	mV	−10		10	$U_{out}-U_{I\,ref}$ @ $U_{I\,ref}$ = 1.65 V
Electrical offset current referred to primary	I_{OE}	mA	−189.39		189.39	
Total output error	E_{total}	% of I_{PN}	−2		2	T_A = 25 °C ... 150 °C
				±3.5		T_A = −40 °C ... 25 °C
Total output error over lifetime drift	E_{total_drift}	%		±2 %		T_A = 25 °C

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Electrical data GXN ANC 66-26 30011A, (At T_A = −40 °C ... 125 °C, U_C = 3.3 V , unless otherwise noted)

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{PN}	A		26		
Primary current, measuring range	I_{PM}	A	−66		66	
Internal reference voltage @ I_P = 0 A	$U_{I\,ref}$	V		1.65		
Nominal sensitivity	S_N	mV/A		20		
Sensitivity error	ε_S	%	−2		2	T_A = 25 °C ... 125 °C
				±3.5		T_A = −40 °C ... 25 °C
Sum of sensitivity and linearity error @ T_A = 25 °C	ε_{SL25}	% of I_{PN}	/	2	/	
Electrical offset voltage referred to primary	U_{OE}	mV	−10		10	$U_{out}-U_{I\,ref}$ @ $U_{I\,ref}$ = 1.65 V
Electrical offset current referred to primary	I_{OE}	mA	−500		500	
Total output error	E_{total}	% of I_{PN}	−2		2	T_A = 25 °C ... 150 °C
				±3.5		T_A = −40 °C ... 25 °C
Total output error over lifetime drift	E_{total_drift}	%		±2 %		T_A = 25 °C

Electrical data GXN ANC 66-26 50011A, (At T_A = −40 °C ... 125 °C, U_C = 5 V , unless otherwise noted)

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{PN}	A		26		
Primary current, measuring range	I_{PM}	A	−66		66	
Internal reference voltage @ I_P = 0 A	$U_{I\,ref}$	V		2.5		
Nominal sensitivity	S_N	mV/A		30.3		
Sensitivity error	ε_S	%	−2		2	T_A = 25 °C ... 125 °C
				±3.5		T_A = −40 °C ... 25 °C
Sum of sensitivity and linearity error @ T_A = 25 °C	ε_{SL25}	% of I_{PN}	/	2	/	
Electrical offset voltage referred to primary	U_{OE}	mV	−10		10	$U_{out}-U_{I\,ref}$ @ $U_{I\,ref}$ = 2.5 V
Electrical offset current referred to primary	I_{OE}	mA	−330.03		330.03	
Total output error	E_{total}	% of I_{PN}	−2		2	T_A = 25 °C ... 150 °C
				±3.5		T_A = −40 °C ... 25 °C
Total output error over lifetime drift	E_{total_drift}	%		±2 %		T_A = 25 °C

Electrical data GXN ANC 80-32 30011A, (At T_A = −40 °C ... 125 °C, U_C = 3.3 V , unless otherwise noted)

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{PN}	A		32		
Primary current, measuring range	I_{PM}	A	−80		80	
Internal reference voltage @ I_P = 0 A	$U_{I\,ref}$	V		1.65		
Nominal sensitivity	S_N	mV/A		16.5		
Sensitivity error	ε_S	%	−2		2	T_A = 25 °C ... 125 °C
				±3.5		T_A = −40 °C ... 25 °C
Sum of sensitivity and linearity error @ T_A = 25 °C	$\varepsilon_{SL\,25}$	% of I_{PN}	/	2	/	
Electrical offset voltage referred to primary	U_{OE}	mV	−10		10	$U_{out}-U_{I\,ref}$ @ $U_{I\,ref}$ = 1.65 V
Electrical offset current referred to primary	I_{OE}	mA	−606.06		606.06	
Total output error	E_{total}	% of I_{PN}	−2		2	T_A = 25 °C ... 150 °C
				±3.5		T_A = −40 °C ... 25 °C
Total output error over lifetime drift	E_{total_drift}	%		±2 %		T_A = 25 °C

Electrical data GXN ANC 80-32 50011A, (At T_A = −40 °C ... 125 °C, U_C = 5 V , unless otherwise noted)

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{PN}	A		32		
Primary current, measuring range	I_{PM}	A	−80		80	
Internal reference voltage @ I_P = 0 A	$U_{I\,ref}$	V		2.5		
Nominal sensitivity	S_N	mV/A		25		
Sensitivity error	ε_S	%	−2		2	T_A = 25 °C ... 125 °C
				±3.5		T_A = −40 °C ... 25 °C
Sum of sensitivity and linearity error @ T_A = 25 °C	$\varepsilon_{SL\,25}$	% of I_{PN}	/	2	/	
Electrical offset voltage referred to primary	U_{OE}	mV	−10		10	$U_{out}-U_{I\,ref}$ @ $U_{I\,ref}$ = 2.5 V
Electrical offset current referred to primary	I_{OE}	mA	−400		400	
Total output error	E_{total}	% of I_{PN}	−2		2	T_A = 25 °C ... 150 °C
				±3.5		T_A = −40 °C ... 25 °C
Total output error over lifetime drift	E_{total_drift}	%		±2 %		T_A = 25 °C

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Electrical data GXN ANC 100-40 50011A, (At T_A = −40 °C ... 125 °C, U_C = 5 V , unless otherwise noted)

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{PN}	A		40		
Primary current, measuring range	I_{PM}	A	−100		100	
Internal reference voltage @ I_P = 0 A	$U_{I\,ref}$	V		2.5		
Nominal sensitivity	S_N	mV/A		20		
Sensitivity error	ε_S	%	−2		2	T_A = 25 °C ... 125 °C
				±3.5		T_A = −40 °C ... 25 °C
Sum of sensitivity and linearity error @ T_A = 25 °C	ε_{SL25}	% of I_{PN}	/	2	/	
Electrical offset voltage referred to primary	U_{OE}	mV	−10		10	$U_{out}-U_{I\,ref}$ @ $U_{I\,ref}$ = 2.5 V
Electrical offset current referred to primary	I_{OE}	mA	−500		500	
Total output error	E_{total}	% of I_{PN}	−2		2	T_A = 25 °C ... 150 °C
				±3.5		T_A = −40 °C ... 25 °C
Total output error over lifetime drift	E_{total_drift}	%		±2 %		T_A = 25 °C

Electrical data GXN ANC 100-40 30011A, (At T_A = −40 °C ... 125 °C, U_C = 3.3 V , unless otherwise noted)

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{PN}	A		40		
Primary current, measuring range	I_{PM}	A	−100		100	
Internal reference voltage @ I_P = 0 A	$U_{I\,ref}$	V		1.65		
Nominal sensitivity	S_N	mV/A		13.2		
Sensitivity error	ε_S	%	−2		2	T_A = 25 °C ... 125 °C
				±3.5		T_A = −40 °C ... 25 °C
Sum of sensitivity and linearity error @ T_A = 25 °C	ε_{SL25}	% of I_{PN}	/	2	/	
Electrical offset voltage referred to primary	U_{OE}	mV	−10		10	$U_{out}-U_{I\,ref}$ @ $U_{I\,ref}$ = 1.65 V
Electrical offset current referred to primary	I_{OE}	mA	−757.58		757.58	
Total output error	E_{total}	% of I_{PN}	−2		2	T_A = 25 °C ... 150 °C
				±3.5		T_A = −40 °C ... 25 °C
Total output error over lifetime drift	E_{total_drift}	%		±2 %		T_A = 25 °C

Definition of typical, minimum and maximum values

Minimum and maximum values for specified limiting and safety conditions have to be understood as such as well as values shown in “typical” graphs.
On the other hand, measured values are part of a statistical distribution that can be specified by an interval with upper and lower limits and a probability for measured values to lie within this interval.
Unless otherwise stated (e.g. “100 % tested”), the LEM definition for such intervals designated with “min” and “max” is that the probability for values of samples to lie in this interval is 99.73 %.
For a normal (Gaussian) distribution, this corresponds to an interval between −3 sigma and +3 sigma. If “typical” values are not obviously mean or average values, those values are defined to delimit intervals with a probability of 68.27 %, corresponding to an interval between −sigma and +sigma for a normal distribution.
Typical, maximal and minimal values are determined during the initial characterization of the product.

Overcurrent Detection (OCD)

Overcurrent detection is a feature included on GXN_ANC product in order to detect high peaks of currents happening during operation. When the primary current exceeds the overcurrent threshold, the internal error comparator reverses, driving Open Drain Output to work, and the Fault pin is pulled down. The overcurrent threshold can be set by using Voc voltage through the external resistance on the Voc pin. This voltage can be set from the Vref source. The effective input voltage of Voc is between 0.33V and 2V. The corresponding relationship between the overcurrent threshold and Voc voltage is shown in the following table.

U_{OC} (U_{CC} = 3.3 V) (V)	U_{OC} (U_{CC} = 5 V) (V)	Bipolar Version	Unipolar Version
0.33...0.495	0.5~0.75	75 %	75 %
0.495...0.661	0.75~1	100 %	100 %
0.661...0.826	1~1.25	125 %	125 %
0.826...0.991	1.25~1.5	150 %	150 %
0.991...1.156	1.5~1.75	175 %	175 %
1.156...1.32	1.75~2	175 %	175 %

Overcurrent Detection is triggered when the primary current (positive or negative current) exceeds the overcurrent threshold set. Fault is cleared when the absolute value of the primary current is less than the current threshold set minus current hysteresis. Tfr is Fault Response time: the time from the primary current meets the overcurrent condition to Fault pin is pulled down. The timing of overcurrent protection is as follows:

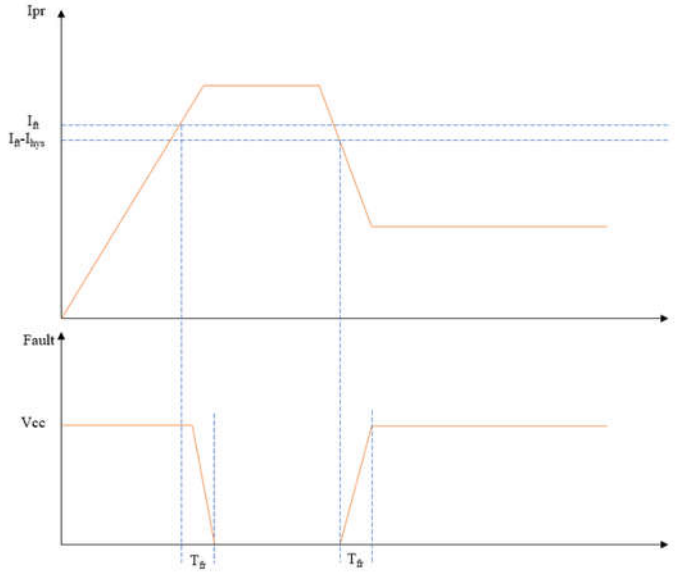
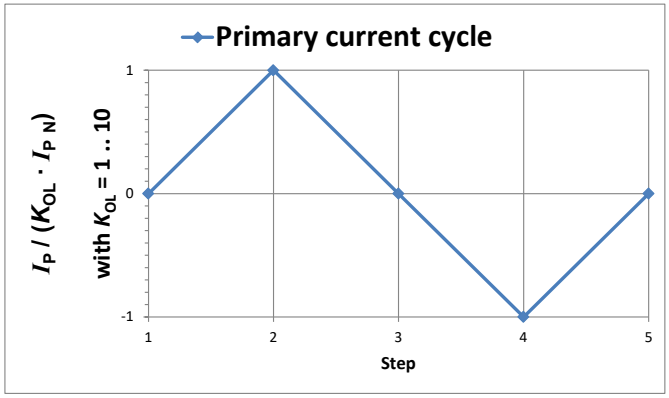


Figure 2: Overcurrent Performance

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Performance parameters definition



K_{OL}: Overload factor

Figure 1: Current cycle used to measure electrical offset (transducer supplied)

Electrical offset referred to primary

Using the current cycle shown in figure 1, the electrical offset voltage U_{OE} is the residual output referred to primary when the input current is zero.

$$U_{OE} = \frac{U_{P(3)} + U_{P(5)}}{2}$$

The temperature variation U_{OT} of the electrical offset voltage U_{OE} is the variation of the electrical offset from 25 °C to the considered temperature.

$$U_{OT}(T) = U_{OE}(T) - U_{OE}(25\ °C)$$

Delay times

The delay time t_{D10} @ 10 % and the delay time t_{D90} @ 90 % with respect to the primary are shown in the next figure.
Both slightly depend on the primary current di/dt.
They are measured at nominal current.

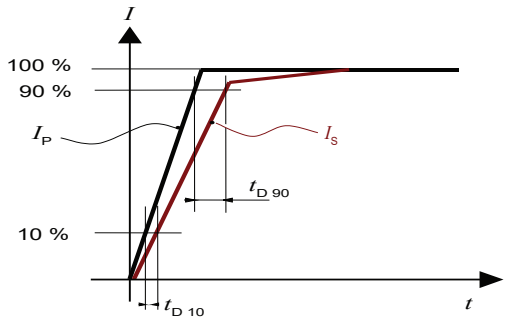


Figure 2: t_{D10} (delay time @ 10 %) and t_{D90} (delay time @ 90 %)

Total error referred to primary

The total error ε_{tot} is the error at $\pm I_{PN}$, relative to the rated value I_{PN}.
It includes all errors mentioned above

- the electrical offset I_{OE}
- the magnetic offset I_{OM}
- the sensitivity error ε_S
- the linearity error ε_L (to I_{PN}).

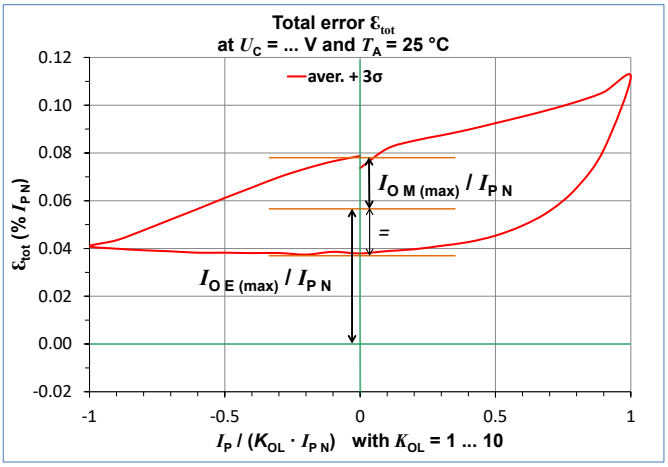
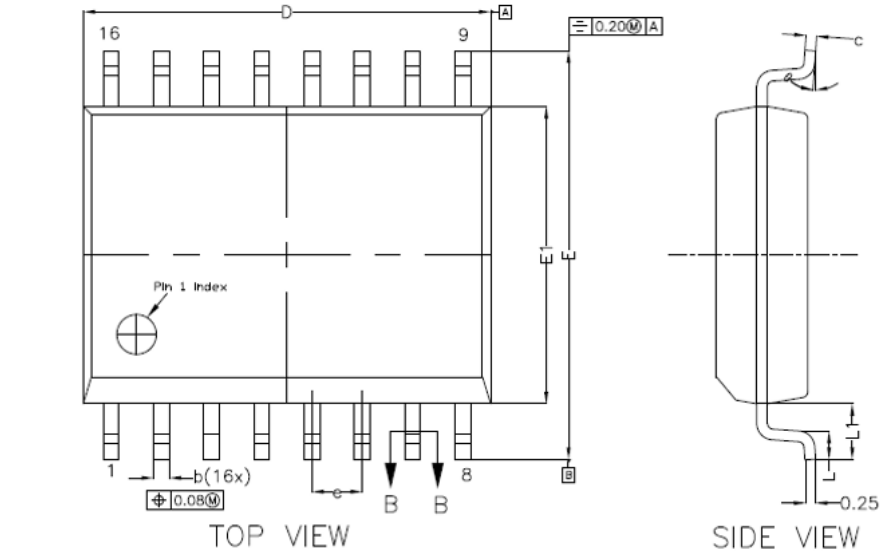
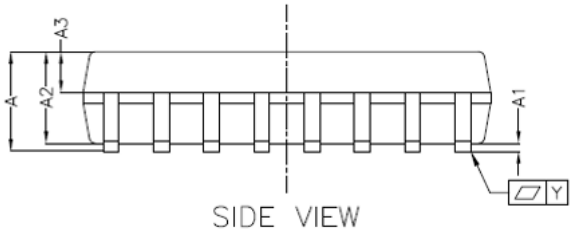


Figure 3: Total error ε_{tot}

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Dimensions (in mm)





* CONTROLLING DIMENSION : MM

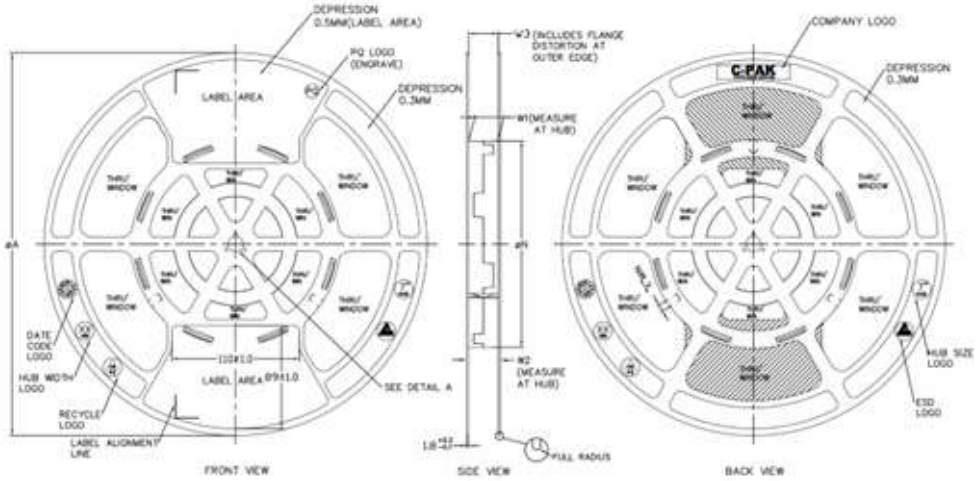
SYMBOL	MILLIMETER		
	MIN.	NOM.	MAX.
A	---	---	2.65
A1	0.10	---	030
A2	2.25	2.30	2.35
A3	0.97	1.02	1.07
b	0.35	---	0.43
c	0.23	---	0.32
D	10.20	10.30	10.40
E	10.10	10.30	10.50
E1	7.40	7.50	7.60
e	1.27 bsc		
L1	1.40 bsc		
L	0.55	---	0.85
Y	---	0.10	---
θ	0°	---	8°

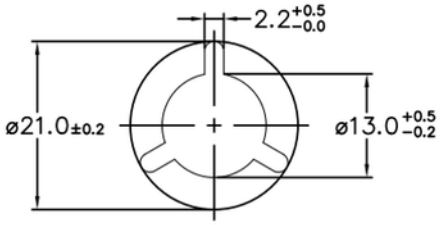
NOTES

1.0 COPLANARITY APPLIES TO LEADS, CORNER LEADS AND DIE ATTACH PAD.

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Tape and Reel (in mm)

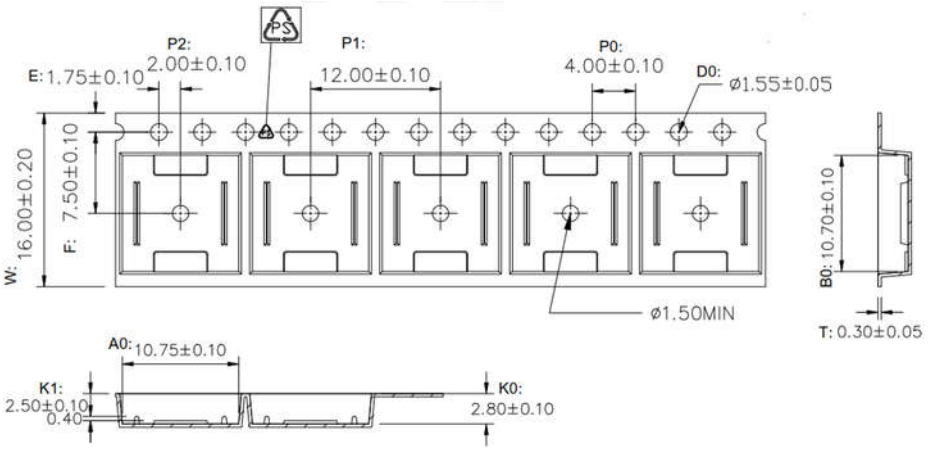


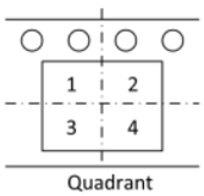


ARBOR HOLE
DETAIL A
SCALE : 3:1

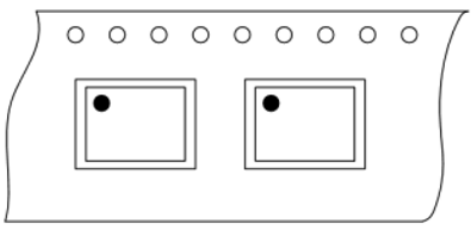
PRODUCT SPECIFICATION						
TAPE WIDTH	øA ±2.0	øN ±2.0	W1	W2 (MAX)	W3	E (MIN)
08MM	330	178	8.4 +1.5 −0.0	14.4	SHALL ACCOMMODATE TAPE WIDTH WITHOUT INTERFERENCE	5.5
12MM	330	178	12.4 +2.0 −0.0	18.4		5.5
16MM	330	178	16.4 +2.0 −0.0	22.4		5.5
24MM	330	178	24.4 +2.0 −0.0	30.4		5.5
32MM	330	178	32.4 +2.0 −0.0	38.4		5.5

SURFACE RESISTIVITY			
LEGEND	SR RANGE	TYPE	COLOUR
A	BELOW 10^{12}	ANTISTATIC	ALL TYPES
B	10^{6} TO 10^{11}	STATIC DISSIPATIVE	BLACK ONLY
C	10^{5} & BELOW 10^{6}	CONDUCTIVE (GENERIC)	BLACK ONLY
E	10^{9} TO 10^{11}	ANTISTATIC (COATED)	ALL TYPES





Quadrant
Designations



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Safety



Caution

If the device is used in a way that is not specified by the manufacturer, the protection provided by the device may be compromised.
Always inspect the electronics unit and connecting cable before using this product and do not use it if damaged.
Mounting assembly shall guarantee the maximum primary conductor temperature, fulfill clearance and creepage distance, minimize electric and magnetic coupling, and unless otherwise specified can be mounted in any orientation.



Caution, risk of electrical shock

This transducer must be used in limited-energy secondary circuits SELV according to IEC 61010-1, in electric/electronic equipment with respect to applicable standards and safety requirements in accordance with the manufacturer's operating specifications.

Use caution during installation and use of this product; certain parts of the module can carry hazardous voltages and high currents (e.g. power supply, primary conductor).
Ignoring this warning can lead to injury and or/or cause serious damage.

This transducer is a build-in device, whose hazardous live parts must be inaccessible after installation.
This transducer must be mounted in a suitable end-enclosure.
Besides make sure to have a distance of minimum 30 mm between the primary terminals of the transducer and other neighboring components.

This transducer is a built-in device, not intended to be cleaned with any product. Nevertheless if the user must implement cleaning or washing process, validation of the cleaning program has to be done by himself.



ESD susceptibility
The product is susceptible to be damaged from an ESD event and the personnel should be grounded when handling it.

Do not dispose of this product as unsorted municipal waste. Contact a qualified recycler for disposal.
Although LEM applies utmost care to facilitate compliance of end products with applicable regulations during LEM product design, use of this part may need additional measures on the application side for compliance with regulations regarding EMC and protection against electric shock. Therefore LEM cannot be held liable for any potential hazards, damages, injuries or loss of life resulting from the use of this product.



Underwriters Laboratory Inc. recognized component

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