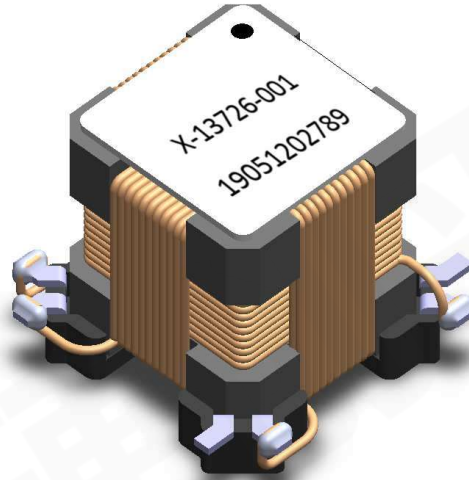
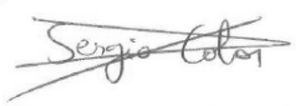
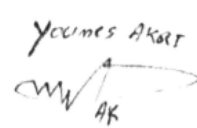


	Customer	Customer (P/N)	Description TX-COIL 9x9x9mm L<40uH 50kHz		
	Premo (P/N) X-13726-001	Prototype Ref. SIR_X-13726-001 20 pcs 020620	Date 2020.09.29	Edition 4	Page 1/9



TX-COIL 9x9x9mm L<40uH 50kHz

Made by: S. Cobos	Checked by: Younes A	Approved by: J. Muñoz
Date: 2020.09.29	Date: 30/09/2020	Date: 01/10/2020
Signature: 	Signature: 	Signature: 

	Customer	Customer (P/N)	Description TX-COIL 9x9x9mm L<40uH 50kHz		
	Premo (P/N) X-13726-001	Prototype Ref. SIR_X-13726-001 20 pcs 020620	Date 2020.09.29	Edition 4	Page 2/9

	Customer	Customer (P/N)	Description TX-COIL 9x9x9mm L<40uH 50kHz		
	Premo (P/N) X-13726-001	Prototype Ref. SIR_X-13726-001 20 pcs 020620	Date 2020.09.29	Edition 4	Page 3/9

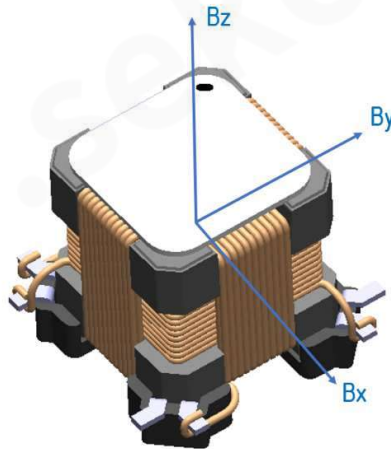
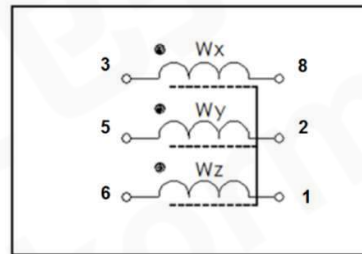
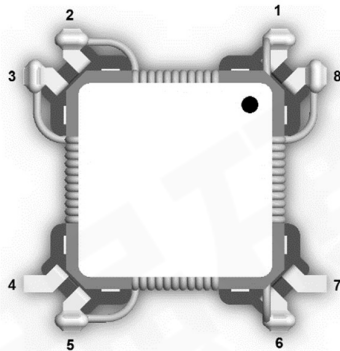
1. Features

- Passive inductive transponder
- 3D Magnetic field sensitive
- Working frequency: 50 kHz
- Typ. weight: 3.5 g; max. weight: 4.00 g.
- Operating temperature: -40 °C to +85 °C
- Storage temperature: -40 °C to +85 °C

2. Applications

- 3D magnetic field receiver antenna
- 3D motion tracking receiver antenna

3. Electrical diagram and field direction



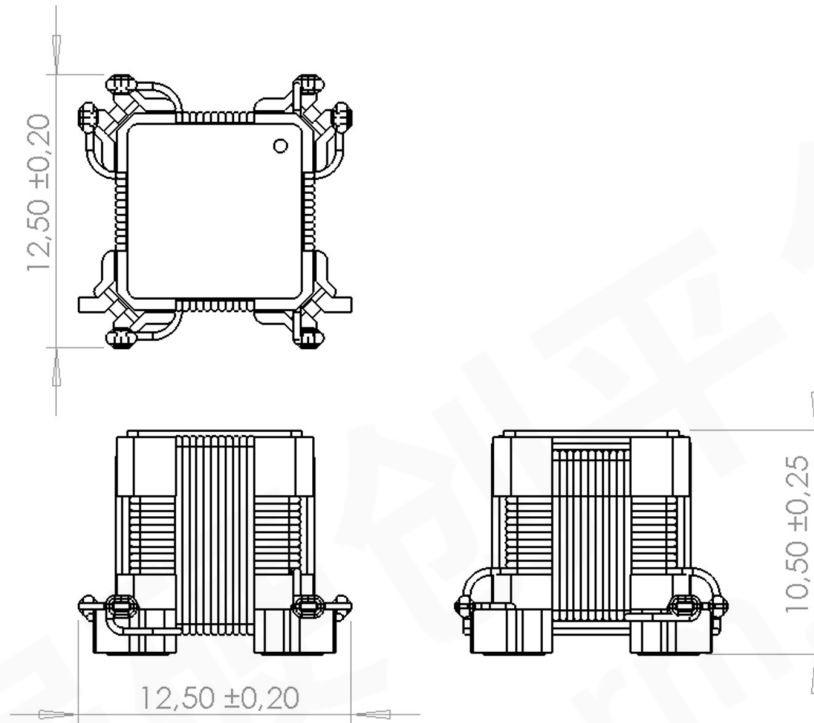
Dimensions: mm

(*) Critical characteristics

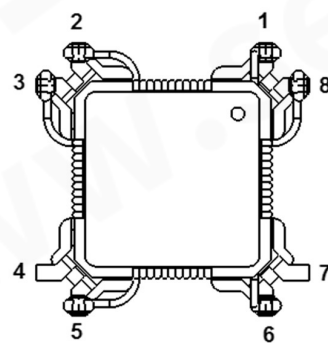


	Customer	Customer (P/N)	Description TX-COIL 9x9x9mm L<40uH 50kHz		
	Premo (P/N) X-13726-001	Prototype Ref. SIR_X-13726-001 20 pcs 020620	Date 2020.09.29	Edition 4	Page 4/9

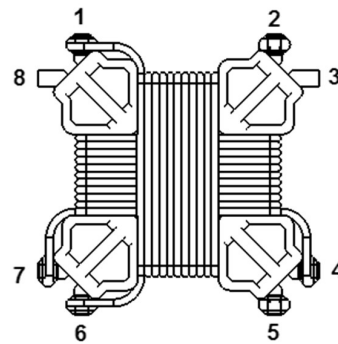
4. Mechanical dimensions and pin layout



All dimensions in mm
Coplanarity requirement: 0.15 mm MAX



Upper view



Bottom view

Notes:

General tolerances according ISO 2768 — 1 m if not define

Dimensions: mm

(*) Critical characteristics



	Customer	Customer (P/N)	Description TX-COIL 9x9x9mm L<40uH 50kHz		
	Premo (P/N) X-13726-001	Prototype Ref. SIR_X-13726-001 20 pcs 020620	Date 2020.09.29	Edition 4	Page 5/9

5. Electrical parameters

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS	REMARKS
Lx	Winding X inductance	50kHz, 1Vac	22.50	23.2	23.90	uH	(*)
Ly	Winding Y inductance	50kHz, 1Vac	20.85	21.5	22.15	uH	(*)
Lz	Winding Z inductance	50kHz, 1Vac	24.06	24.8	25.55	uH	(*)
Qx	Winding X Quality factor	50kHz, 1Vac	23.5	26.0	28.6	-	(*)
Qy	Winding Y Quality factor	50kHz, 1Vac	21.1	23.5	25.9	-	(*)
Qz	Winding Z Quality factor	50kHz, 1Vac	27.0	30.0	33.0	-	(*)
Nx	Winding X Number Of Turns	-	-	22	-	Turns	
Ny	Winding Y Number Of Turns	-	-	22	-	Turns	
Nz	Winding Z Number Of Turns	-	-	22	-	Turns	
DCRx	Winding X DC resistance	-	207	230	253	mOhms	(*)
DCRy	Winding Y DC resistance	-	198	220	242	mOhms	(*)
DCRz	Winding Z DC resistance	-	162	180	198	mOhms	(*)
SRFx	Winding X Self Resonance Frequency	1Vac	500	-	-	kHz	
SRFy	Winding Y Self Resonance Frequency	1Vac	500	-	-	kHz	
SRFz	Winding Z Self Resonance Frequency	1Vac	500	-	-	kHz	
Sx	Winding X Sensitivity	50 kHz, 10 Vpp _{sin}	2.34	2.60	2.86	mV/A/m	(*)
Sy	Winding Y Sensitivity	50 kHz, 10 Vpp _{sin}	2.34	2.60	2.86	mV/A/m	(*)
Sz	Winding Z Sensitivity	50 kHz, 10 Vpp _{sin}	2.34	2.60	2.86	mV/A/m	(*)

Notes:

Measures at 25 ° C +/- 2 °C

Dimensions: mm

(*) Critical characteristics



	Customer	Customer (P/N)	Description TX-COIL 9x9x9mm L<40uH 50kHz		
	Premo (P/N) X-13726-001	Prototype Ref. SIR_X-13726-001 20 pcs 020620	Date 2020.09.29	Edition 4	Page 6/9

6. Functional performances

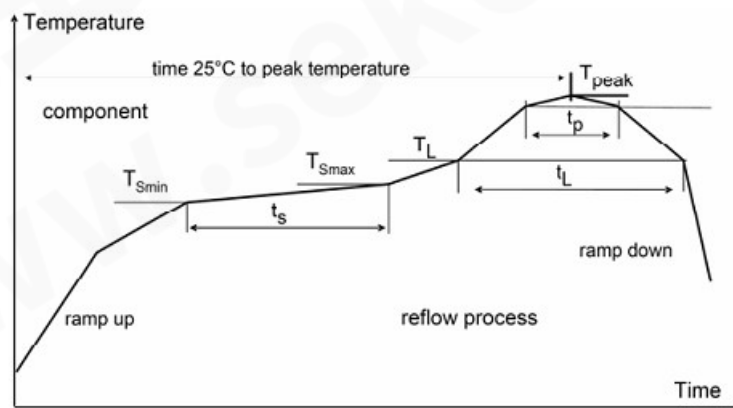
SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Twork	Operating temperature	$I < I_{max}$	-40	-	85	°C
Tstorage	Storage temperature	-	-40	-	85	°C
I _{max}	Max Current per winding	25°C	-	-	400	mA

7. Raw materials

CORE		NiZn Ferrite, $\mu_i 850 \pm 20\%$ (at 25 °C, <10 kHz), $T_c > 125^\circ\text{C}$
WIRES	Winding X	0.28 mm P180 G1, norms IEC 317-20, MW79
	Winding Y	0.28 mm P180 G1, norms IEC 317-20, MW79
	Winding Z	0.28 mm P180 G1, norms IEC 317-20, MW79
LABEL		Polymide film printable (0,075mm) + Acrylic foam tape (0,250mm). Total label thickness: 0,325mm typical.
ADHESIVE		Epoxy adhesive
BASE		Plastic material: LCP E4008 Black. Tinned terminals: 0.30 mm total thickness. Base material CuSn6 (Phosphor Bronze), 1-3 μm Ni 2-3,7 μm Sn100 (finish layer).

8. Soldering specifications and pad layout

According to IPC/JEDEC-J-STD-020 a reflow profile that PREMO recommends for its inductive components is described in figure 1.



ramp up to 150 °C	T _{Smin}	t _s	T _{S max}	T _L	t _L	T _{peak} *	t _p **	time 25°C to peak	ramp down
≥3°C/s	190 ±5 °C	≥110 s	200±5°C	217±5°C	≥90s	245±5°C	≥30s	≥300s	≥6°C/s

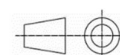
Minimum requirements for Pb-free soldering

*peak temperature is measured on the center top of the component package

**t_p measured @ T_{peak}-5°C

Dimensions: mm

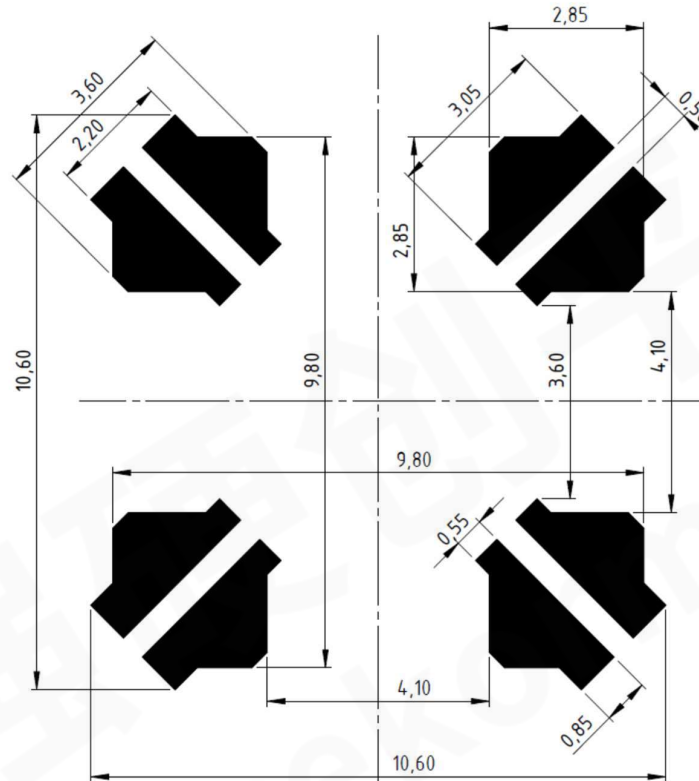
(*) Critical characteristics



	Customer	Customer (P/N)	Description TX-COIL 9x9x9mm L<40uH 50kHz		
	Premo (P/N) X-13726-001	Prototype Ref. SIR_X-13726-001 20 pcs 020620	Date 2020.09.29	Edition 4	Page 7/9

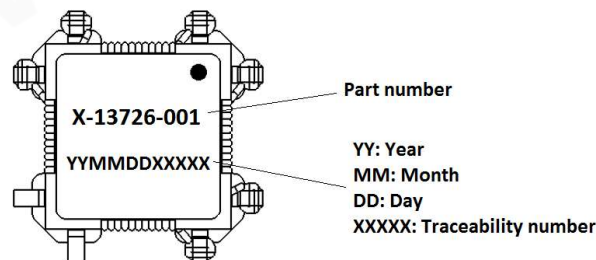
The reflow condition recommended above is according to the machine used by our company. Big differences will arise as a result of the type of machine, reflow conditions, method, etc used.

The reflow profile stated is a non-binding recommendation with just main parameters and time periods. For detailed specification and remarks regarding reflow soldering requirements, please refer to PREMO document: PREMO_reflow_recommendations specification file in its latest version update.



Preliminary recommended pad layout (Dimensions in mm). To be defined after tests.

9. Marking



Dot marks pin 1

Dimensions: mm

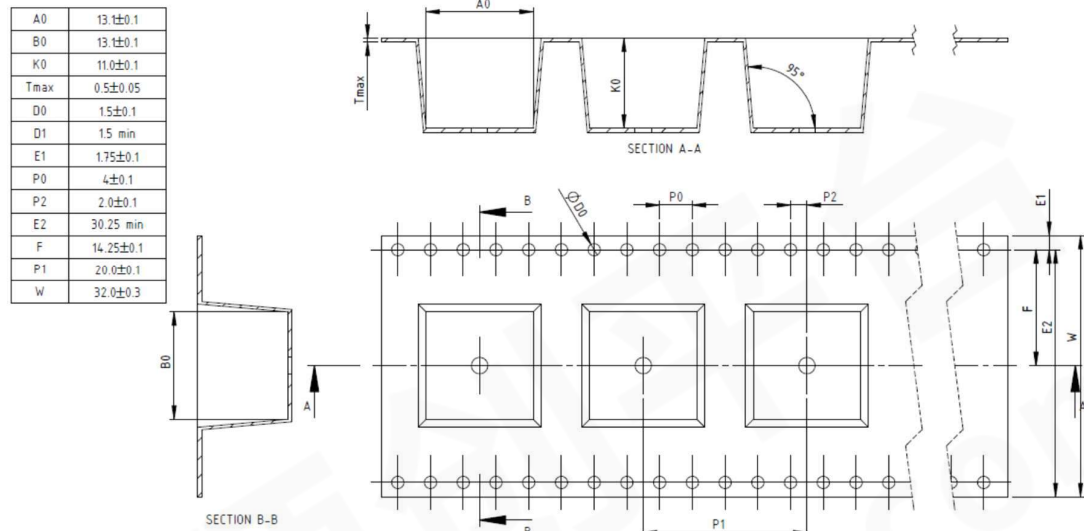
(*) Critical characteristics



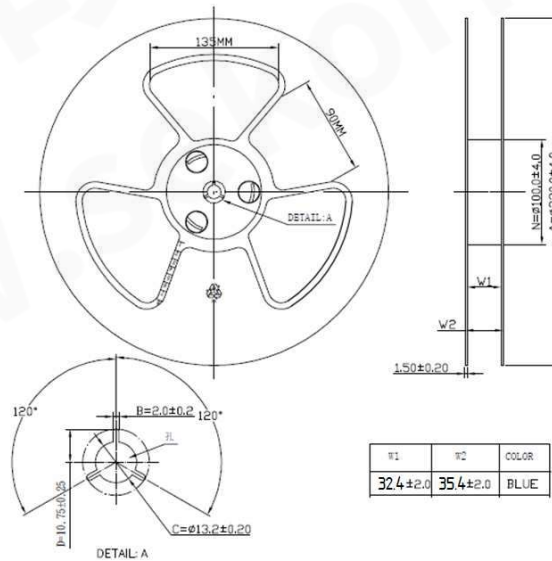
	Customer	Customer (P/N)	Description TX-COIL 9x9x9mm L<40uH 50kHz		
	Premo (P/N) X-13726-001	Prototype Ref. SIR_X-13726-001 20 pcs 020620	Date 2020.09.29	Edition 4	Page 8/9

10. Packaging

10.1 Tape

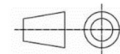


10.2 Reel



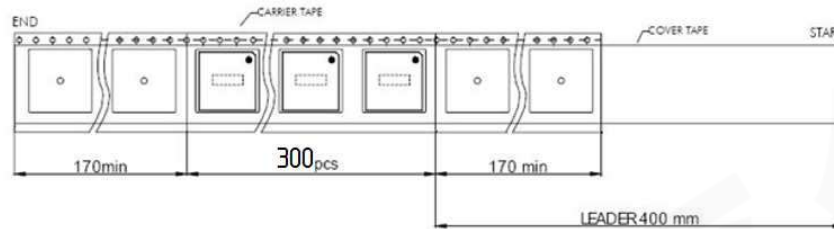
Dimensions: mm

(*) Critical characteristics



	Customer	Customer (P/N)	Description TX-COIL 9x9x9mm L<40uH 50kHz		
	Premo (P/N) X-13726-001	Prototype Ref. SIR_X-13726-001 20 pcs 020620	Date 2020.09.29	Edition 4	Page 9/9

10.3 Taping/packaging



11. Edition Control

ED	CHANGE BY	DATE	CHANGE DESCRIPTION
1	S. Cobos	2019.08.02	First edition. Based in E_X-13346-010_0.4
2	S. Cobos	2019.08.27	Updated coplanarity to 0.15mm MAX in section 4. Updated start/end winding pins in diagram of section 3. Updated field directions diagram in section 3.
3	S. Cobos	2020.06.19	Updated carrier dimensions and drawing in section 10.1
4	S. Cobos	2020.09.29	Updated Lx,Ly,Lz to 23.2, 21.5 and 26 mH. Updated Qx,Qy,Qz to 26.0, 23.5 and 30.0. Updated DCRx,DCRy,DCRz to 230, 240 and 200 Ω (According mass production SIR 020620).

Dimensions: mm

(*) Critical characteristics

