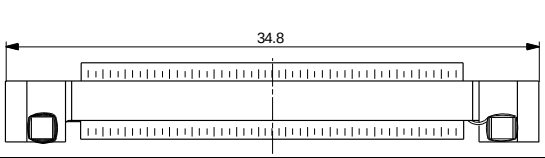
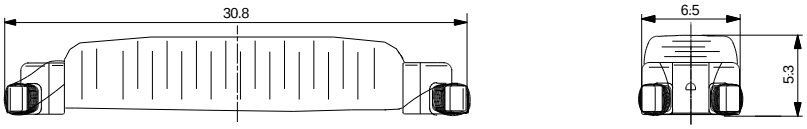
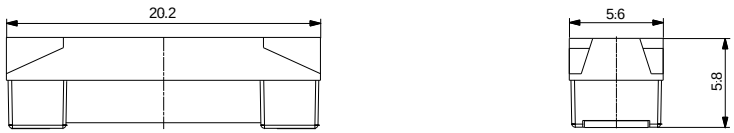
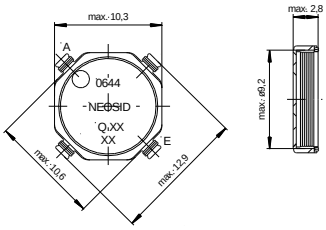
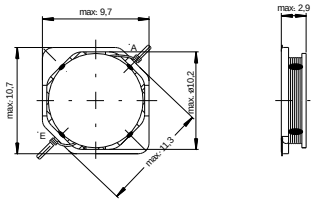
X/Y/Z-, 3D RFID transponder antennas for LF and HF bands

NEOSID offers a wide range of different transponder antennas. We differentiate between the various designs:

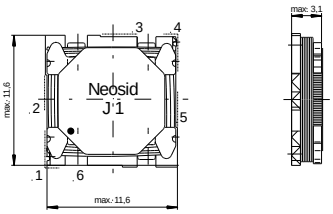
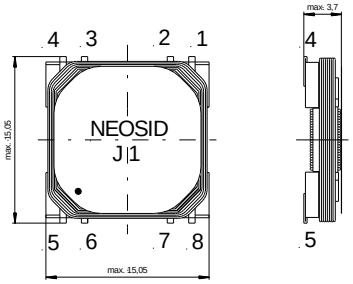
X-/Y-transponder antennas

Ms 62			
Ms 65			
Ms 5420			
Ms 32c			
Ms 32k			
Ms 32ka			
Ms 18k			
Ms 2074			
Ms 2046			
Ms 2780			
Ms 1851			

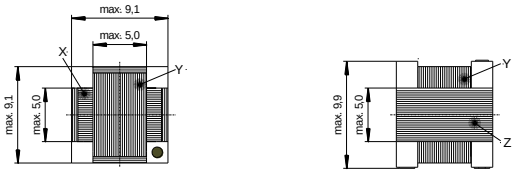
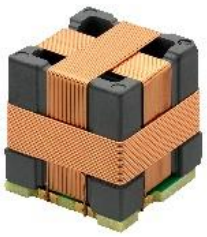
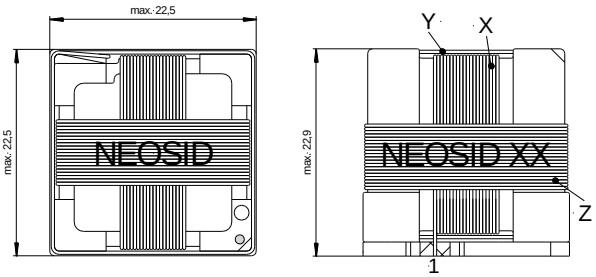
Z-transponder antennas

SM-W 902		
SM-W 903		

Low profile 3D-transponder antennas

3D11		
3D15		

Isotrope 3D-cube antennas

3D9		
3D22		

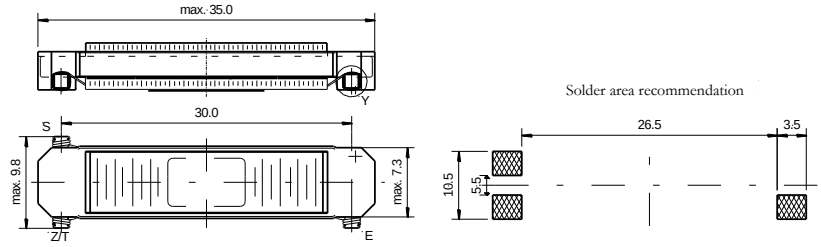
Model Ms 62

L [mH]	± %	Q ≥	$f_{L,Q}$ [kHz]	f_{res} ≥ [MHz]	R_{DC} ≤ [Ω]	I_{max} [mA]	S* [mV/A/m]	Part number
0.4	5	100	125	1.2	1.4	-	50	00 6169 02
0.715	5	170	125	1.2	1.3	-	60	00 6169 10
0.960	5	170	125	1.1	1.5	300	60	00 6169 03
2.66	5	55	125	0.4	2.3	-	140	00 6169 11
3	5	60	125	0.4	3.0	-	160	00 6169 12
3.58	5	50	5.5	0.35	2.5	-	-	00 6169 01
7.2	10	50	125	0.3	5.0	175	-	00 6169 04

Optional HSF for additional fixation on the PCB

*measured with a Helmholtz coil @ 125kHz

Applications:
Transponder antenna
Decoupling in RF and IF circuits
Use in selective circuits



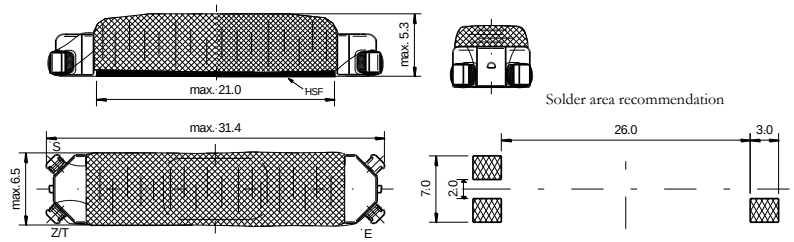
Model Ms 65

L [mH]	± %	Q ≥	$f_{L,Q}$ [kHz]	f_{res} ≥ [MHz]	R_{DC} ≤ [Ω]	I_{max} [mA]	S* [mV/A/m]	Part number
1	5	50	125	0.9	1.1	200	70	00 6169 53
2.2	5	40	125	0.5	1.7	120	130	00 6169 52
3	5	42	125	0.45	2.2	100	170	00 6169 54
3.74	5	27	5.5	0.4	2.7	100	-	00 6169 51
5	8	45	125	0.38	4	90	210	00 6169 55

Optional HSF for additional fixation on the PCB

*measured with a Helmholtz coil @ 125kHz

Applications:
Transponder antenna
Decoupling in RF and IF circuits
Use in selective circuits



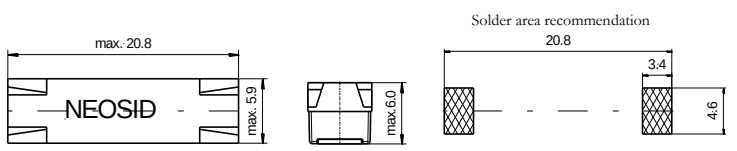
Model Ms 5420

L [mH]	± %	Q ≥	$f_{L,Q}$ [kHz]	f_{res} ≥ [MHz]	R_{DC} ≤ [Ω]	I_{max} [mA]	S* [mV/A/m]	Part number
0.19	5	65	125	2.0	0.9	850	15	00 6173 01
0.4	5	80	125	1.5	1.3	500	25	00 6173 02
0.9	5	80	125	0.8	2.5	350	40	00 6173 03
1.2	5	80	125	0.7	5.0	250	50	00 6173 04
2.38	5	65	125	0.4	9.5	200	80	00 6173 05
2.66	5	60	125	0.36	10.0	200	85	00 6173 06
4.5	5	70	125	0.35	9.5	160	130	00 6173 07
5.6	5	50	125	0.27	14.7	150	170	00 6173 08
7.2	10	30	125	0.25	16.2	100	280	00 6173 09

Optional HSF for additional fixation on the PCB

*measured with a Helmholtz coil @ 125kHz

Applications:
Transponder antenna
Decoupling in RF and IF circuits
Use in selective circuits



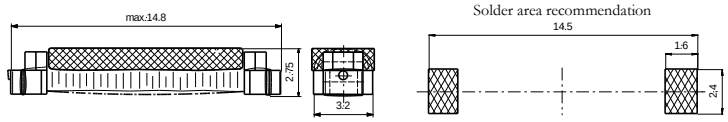
Model Ms 32c

L [mH]	± %	Q ≥	$f_{L,Q}$ [kHz]	f_{res} ≥ [MHz]	R_{DC} ≤ [Ω]	I_{max} [mA]	S [mV/A/m]	Part number
1.2	5	15	125	0.7	6.5	60	40*	00 6132 34
5.6	5	10	125	0.4	27	30	90*	00 6132 35
8.2	10	6	5	0.3	40	20	8*1	00 6132 60
9.5	10	8	19.2	0.3	48	18	10*1	00 6132 36
39	10	-	5	0.15	175	10	-	00 6132 70

Optional HSF for additional fixation on the PCB

measured with a Helmholtz coil @ 125kHz(*) 21.8kHz(*1)

Applications:
Transponder antenna and safety applications
Data transmission between 5-200 kHz



Model Ms 32k

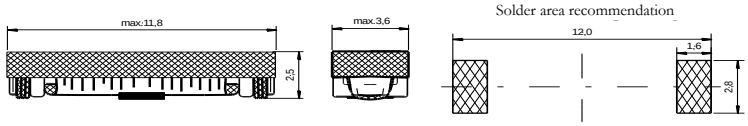
L [mH]	± %	Q ≥	$f_{L,Q}$ [kHz]	f_{res} ≥ [MHz]	R_{DC} ≤ [Ω]	I_{max} [mA]	S* [mV/A/m]	Part number
0.4	5	12	125	1.5	2.8	-	11	00 6172 83
1.6	5	10	125	0.9	11	75	18	00 6172 84
2.37	5	15	125	0.6	17	65	25	00 6172 85
4.7	5	15	125	0.5	40	-	40	00 6172 88
7.2	10	10	125	0.4	62	-	100	00 6172 86
26	5	4	5.5	0.23	153	15	-	00 6172 80

L [µH]	± %	Q ≥	f_L [MHz]	f_Q [MHz]	f_{res} ≥ [MHz]	R_{DC} ≤ [mΩ]		Part number
5.82	10	-	13.56	-	100	110	-	00 6172 91
6.82	8	30	13.56	10	50	150	-	00 6172 90

Optional HSF for additional fixation on the PCB

*measured with a Helmholtz coil @ 125kHz

Applications:
Transponder antenna
Decoupling in RF and IF circuits
Use in selective circuits



Model Ms 32ka

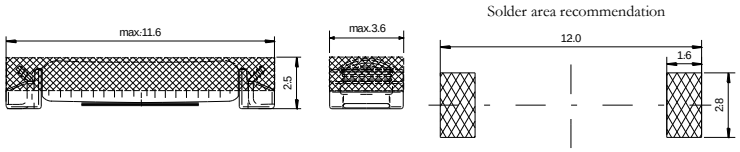
L [mH]	± %	Q ≥	$f_{L,Q}$ [kHz]	f_{res} ≥ [MHz]	R_{DC} ≤ [Ω]	I_{max} [mA]	S* [mV/A/m]	Part number
0.049	+2/-4	25	125	100	1.5	300	-	00 6172 76
0.0535	2	35	125	20	0.68	300	-	00 6172 77
0.190	5	35	125	2.6	3	200	7	00 6172 35
0.230	5	45	112	2.0	2.9	-	-	00 6172 46
1.33	5	40	125	0.75	12.6	75	-	00 6172 10
2.38	5	45	125	0.6	23	65	33	00 6172 40
2.66	5	55	125	0.6	26	60	35	00 6172 44
4.5	6	50	125	0.47	36	55	54	00 6172 48
7.2	10	40	125	0.35	56	35	65	00 6172 43
10.4	10	18	25	0.37	80	-	-	00 6172 37
26	5	-	5.5	0.2	200	-	-	00 6172 45

Applications:
Transponder antenna
Decoupling in RF and IF circuits
Use in selective circuits

L [µH]	± %	Q ≥	$f_{L,Q}$ [MHz]	f_{res} ≥ [MHz]	R_{DC} ≤ [mΩ]	I_{max} [mA]	Part number
2.0	5	55	1	100	130	1000	00 6172 60
3.0	5	50	13.56	60	180	1000	00 6172 62
5.82	10	35	13.56	100	110	1000	00 6172 61

Optional HSF for additional fixation on the PCB

*measured with a Helmholtz coil @ 125kHz



Model Ms 18k

L [mH]	± %	f_L [kHz]	f_{res} ≥ [MHz]	R_{DC} [Ω] ±10%	I_{max} [mA]	S* [mV/A/m]	Part number
1.3	10	10	1.4	11	45		00 6170 40
2.2	10	10	1.0	22	35		00 6170 43
2.4	10	10	1.2	16	30		00 6170 44
3.5	10	10	0.5	36	25		00 6170 41
4.7	10	125	0.45	38	-	40	00 6170 47
10	10	10	0.3	112	15		00 6170 46
14	10	10	0.25	144	10		00 6170 42
L [µH]	**± %**	**[MHz]**	**f_{res} ≥ [MHz]**	**R_{DC} [mΩ]**	**I_{max} [mA]**		**Part number**
1	15	13.56	100	80	-	-	00 6170 48
6.82	5	13.56	100	110	700	-	00 6170 50

*measured with a Helmholtz coil @ 125kHz

Applications:
Transponder antenna
Decoupling in RF and IF circuits
Use in selective circuits

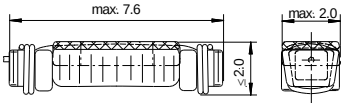
Solder area recommendation

Model Ms 2074

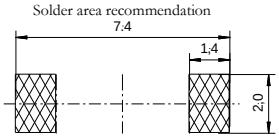
L [mH]	± %	f_L [kHz]	f_{res} ≥ [MHz]	R_{DC} [Ω] ±10%	I_{max} [mA]	Part number
0.625	10	10	2.45	11	70	00 6171 40
2.0	10	10	1.45	22	35	00 6171 41
3.2	10	10	1.1	36	30	00 6171 42
10.8	10	10	0.6	144	15	00 6171 43
1.1	10	10	1.3	16	45	00 6171 45

L [µH]	± %	f_L [MHz]	f_{res} ≥ [MHz]	R_{DC} [mΩ] ±10%		Part number
1.88	10	13.56	100	100	-	00 6171 19
5.82	10	13.56	80	230	-	00 6171 10

Applications:
Transponder antenna
Decoupling in RF and IF circuits
Use in selective circuits



Solder area recommendation



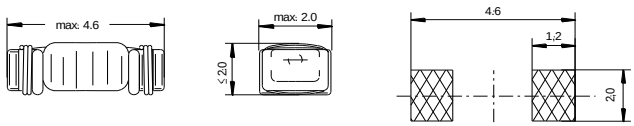
Model Ms 2046

L [mH]	± %	f_L [kHz]	f_{res} ≥ [MHz]	R_{DC} [Ω] ±10%	I_{max} [mA]	Part number
0.26	10	125	4.2	11	90	00 6171 72
0.46	10	125	3.0	22	75	00 6171 73
1.0	10	10	1.8	36	50	00 6171 71
3.5	10	10	1.0	85	25	00 6171 63

[µH]	± %	[MHz]	f_{res} ≥ [MHz]	R_{DC} [mΩ] ±10%		Part number
1.88	10	13.56	300	190	-	00 6171 78
5.82	10	13.56	30	270	-	00 6171 79

Applications:
Transponder antenna
Decoupling in RF and IF circuits
Use in hearing aids
Use in selective circuits

Solder area recommendation

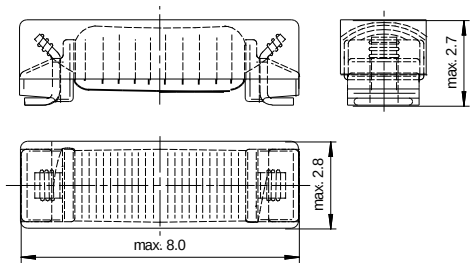


Model Ms 2780

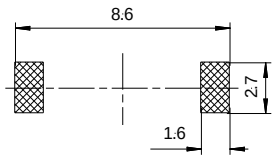
L [mH]	± %	Q ≥	f_{LQ} [kHz]	f_{res} ≥ [MHz]	R_{DC} [Ω] ±10%	I_{max} [mA]	S* [mV/A/m]	Part number
0.25	5	30	134.2	2.7	4.0	145	4.6	00 6173 40
0.35	5	30	134.2	2.0	5.7	120	6.0	00 6173 41
0.4	5	30	125	1.9	6.4	105	6.5	00 6173 42
0.44	5	30	134.2	1.85	6.6	100	6.6	00 6173 43
0.55	5	30	134.2	1.7	9.0	90	7.2	00 6173 44
0.9	5	38	125	1.2	10.1	75	11	00 6173 45
1.0	5	38	125	1.1	10.7	70	12	00 6173 46
2.38	5	38	125	0.75	22	46	18	00 6173 47
2.66	5	38	125	0.75	27	43	20	00 6173 48
4.7	5	38	125	0.5	45	30	40	00 6173 49
7.2	8	35	125	0.4	70	27	65	00 6173 50
18.52	3	27	125	0.32	163	17	80	00 6173 51

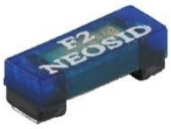
*measured with a Helmholtz coil @ 125kHz

Applications:
Transponder antenna
Decoupling in RF and IF circuits
Use in selective circuits



Solder area recommendation

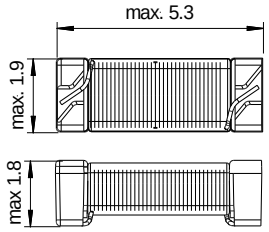




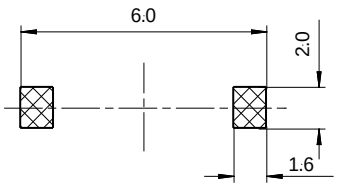
Model Ms 1851

L [µH]	± %	Q ≥	f_L [MHz]	f_{res} ≥ [MHz]	Part number
1.0	10	30	13.56	300	00 6134 31
1.88	10	35	13.56	250	00 6134 32
3.8	5	45	10	150	00 6134 33
4.5	5	40	10	150	00 6134 34
5.82	5	45	13.56	120	00 6134 35
30.5	5	45	10	30	00 6134 36

Applications:
Transponder antenna
Decoupling in RF and IF circuits
Use in hearing aids
Use in selective circuits



Solder area recommendation



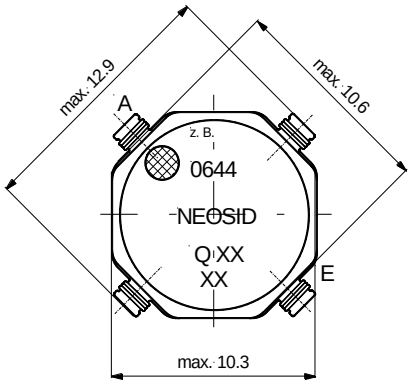
Z-antennas

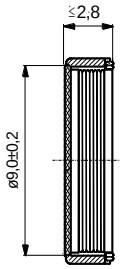
Model SM-W 902

L [mH]	± %	Q ≥	$f_{L,Q}$ [kHz]	f_{res} ≥ [MHz]	R_{DC} ≤ [Ω]	I_{max} [mA]	S [mV/A/m]	Part number
0.11	10	50	100	9	0.8	270	-	00 6161 31
1.2	10	55	125	1.5	5.8	60	8*	00 6161 20
2.2	6	80	125	1.2	10	45	17*	00 6161 21
7.2	10	60	125	0.9	35	25	50*	00 6161 23
52.3	10	15	19.2	0.4	190	10	-	00 6161 00
65	10	15	19.2	0.3	220	6	16*1	00 6161 10

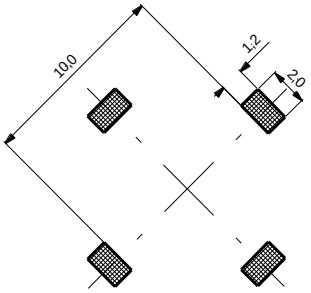
measured with a Helmholtz coil @ 125kHz(*), @ 21.8kHz(*1)

Applications:
Keyless entry systems
RFID safety systems





Solder area recommendation



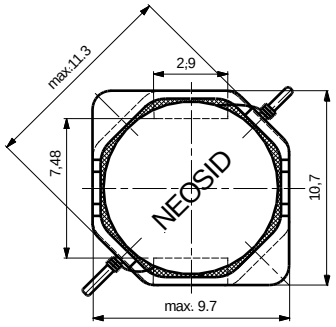
Model SM-W903

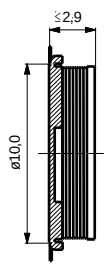
L [mH]	± %	Q ≥	$f_{L,Q}$ [kHz]	f_{res} ≥ [MHz]	R_{DC} ≤ [Ω]	I_{max} [mA]	S [mV/A/m]	Part number
3.9	10	80	125	1.0	13.5	270	-	00 6161 57
2.37	6	80	125	1.1	11	40	17*	00 6161 56
1.2	10	55	125	1.5	5.8	60	8*	00 6161 50
2.2	6	80	125	1.2	11	45	17*	00 6161 51
3.45	3	75	125	-	15.5	30	-	00 6161 55
7.2	6	60	125	0.9	35	25	50*	00 6161 54
52.3	10	15	21.8	0.4	190	10	-	00 6161 52
65	10	15	21.8	0.3	230	6	16*1	00 6161 53

measured with a Helmholtz coil @ 125kHz(*), @ 21.8kHz(*1)

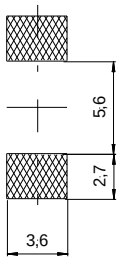
Applications:
Keyless entry systems
RFID safety systems

L [µH]	± %	Q ≥	$f_{L,Q}$ [MHz]	f_{res} ≥ [MHz]	R_{DC} ≤ [mΩ]	I_{max} [mA]	Part number
1.2	10	50	13.56	100	44		00 6161 62
1.88	15	55	13.56	80	24		00 6161 63
2.7	10	55	13.56	60	54		00 6161 64
4.7	10	50	13.56	55	67		00 6161 65
5.82	10	60	13.56	50	79		00 6161 66





Solder area recommendation



Low profile 3D-antennas

The small 3D LF/ HF antennas are available with a reduced height of up to 2.8 mm.

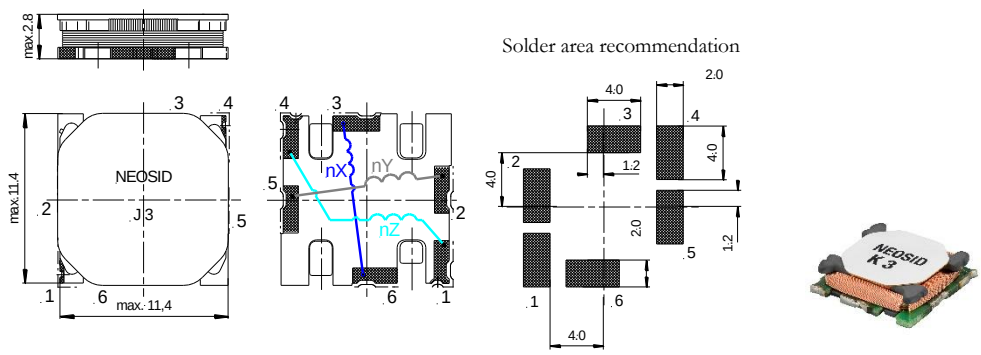
Model 3D11

L_X [mH]	Q_X ≥	$R_{DC\,X}$ [Ω] ≤	L_Y [mH]	Q_Y ≥	$R_{DC\,Y}$ [Ω] ≤	L_Z [mH]	Q_Z ≥	$R_{DC\,Z}$ [Ω] ≤	3xS [mV/A/m]	$f_{L.Q}$ [kHz]	Part number
11.5	5	260	11.5	5	260	15.5	5	440	9*[1]	21.8	00 6112 90
4.82	20	120	4.82	20	120	5.87	18	150	75*	125	00 6112 91
2.38	15	80	2.38	15	80	3.45	15	110	40*	125	00 6112 92
2.47	24	65	2.47	23	65	2.47	18	85	40*	125	00 6112 93
4.7	23	100	4.7	23	105	4.7	22	145	58*	125	00 6112 94
7.1	20	150	7.1	20	155	9.0	24	215	90*	125	00 6112 95

Lx-z -Tolerance ±5 % — measured with a Helmholtz coil @ 125kHz(*), 21.8kHz(*1)

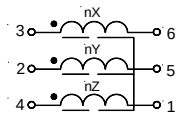
L_X [µH]	Q_X ≥		L_Y [µH]	Q_Y ≥		L_Z [µH]	Q_Z ≥		Lp [µH]	$f_{L.Q}$ [MHz]	Part number
17.58	-	-	17.58	-	-	17.58	-	-	5.86*[2]	13.56	00 6112 96

Lx-z -Tolerance ±15 % — *2 x, y and z connected in parallel



Applications:
Keyless entry systems
RFID safety systems

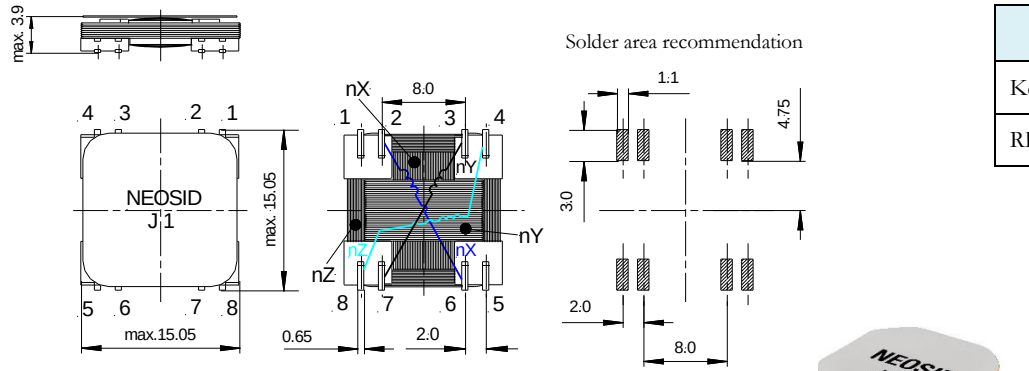
Circuit



Model 3D15

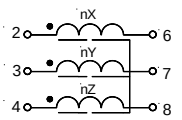
L_X [mH]	Q_X ≥	$R_{DC\,X}$ [Ω] ≤	L_Y [mH]	Q_Y ≥	$R_{DC\,Y}$ [Ω] ≤	L_Z [mH]	Q_Z ≥	$R_{DC\,Z}$ [Ω] ≤	3xS* [mV/A/m]	$f_{L.Q}$ [kHz]	Part number
4.7	16	140	4.7	16	140	4.7	29	115	120	125	00 6114 90
4.5	25	90	4.5	25	90	5.0	25	130	115	125	00 6114 91
2.38	17	80	2.38	17	80	3.45	26	80	62	125	00 6114 92
2.47	23	45	2.47	23	45	2.47	25	70	62	125	00 6114 93
2.47	30	45	2.47	30	45	2.8	26	72	62	125	00 6114 94
7.1	20	200	7.1	20	200	9.0	25	210		125	00 6114 95
20	10	400	20	10	400	28	10	780		44	00 6114 97

Lx-z -Tolerance ±15% — *measured with a Helmholtz coil @ 125kHz



Applications:
Keyless entry systems
RFID safety systems

Circuit



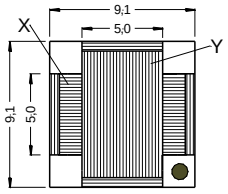
3D-cube antennas

Model 3D9

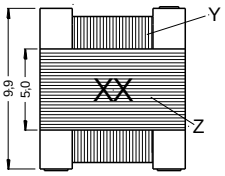
L_X [mH]	Q_X typ.	$R_{DC\,X}$ [Ω] typ.	L_Y [mH]	Q_Y typ.	$R_{DC\,Y}$ [Ω] typ.	L_Z [mH]	Q_Z typ.	$R_{DC\,Z}$ [Ω] typ.	SRF [kHz]	$f_{L,Q}$ [kHz]	Part number
1	13	11.5	1	12	13	1	11	14	870/840/710	25	00 6118 10
3	13	32	3	12	36	3	11	40	520/405/400	25	00 6118 11
7	16.5	62	7	14.5	70	7	12.5	80	280/260/230	25	00 6118 12
13	14	130	13	13	150	13	11.5	170	210/205/185	25	00 6118 13
19	11	250	19	10	280	19	9	310	145/135/125	25	00 6118 14
25	12	280	25	11	310	25	10	360	130/120/110	25	00 6118 15
31	13	310	31	12	350	31	11	400	115/110/105	25	00 6118 16

$L_{X,Y,Z}$-Tolerance ±3.5 %

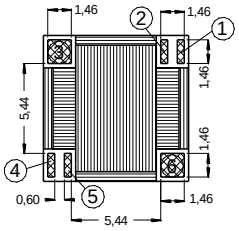
Top view



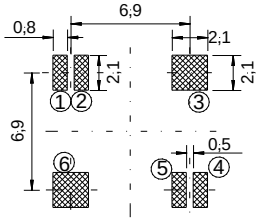
Side view



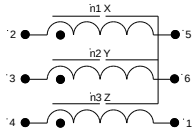
Bottom view



Solder area recommendation



Circuit

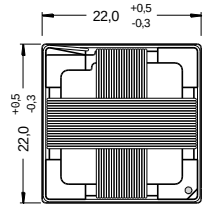


Applications:
Keyless entry systems
Elektromagnetic localisation systems for AR/VR/Mixed Reality
Sensors for detection 6 degrees of freedom(6DoF), e.g. robotics
3-dimensional magnetic field measuring systems
Wearables
3-dimensional RFID systems

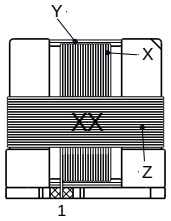
Model 3D22

L_X [µH]	Q_X typ.	$R_{DC\,X}$ [Ω] typ.	L_Y [µH]	Q_Y typ.	$R_{DC\,Y}$ [Ω] typ.	L_Z [µH]	Q_Z typ.	$R_{DC\,Z}$ [Ω] typ.	SRF [MHz]	$f_{L,Q}$ [kHz]	Part number
30	22	0.2	30	21	0.21	30	20	0.22	13/12.6/13	25	00 6117 10
60	17	0.55	59	16	0.57	58	15	0.62	9.8/9.7/9.6	25	00 6117 11
75	14	1.0	75	13.5	1.05	75	13	1.1	8.7/8.6/8.4	25	00 6117 12
108	11.5	1.6	107	11	1.65	105	10.5	1.7	7.5/7.4/7.2	25	00 6117 14
130	10	2.05	129	9.9	2.15	127	9.5	2.25	6.7/6.6/6.4	25	00 6117 16
170	9.2	2.05	169	8.9	2.15	167	8.6	3.25	5.8/5.7/5.6	25	00 6117 18
187	8.5	3.55	185	8.3	3.65	183	8.2	3.75	5.5/5.4/5.3	25	00 6117 20

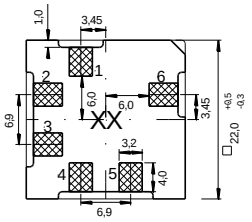
Top view



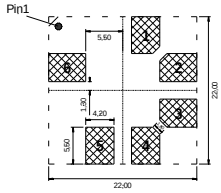
Side view



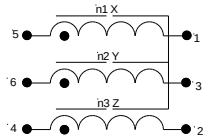
Bottom view



Solder area recommendation



Circuit



Applications:
Keyless entry systems
Elektromagnetic localisation systems for AR/VR/Mixed Reality
Sensors for detection 6 degrees of freedom(6DoF), e.g. robotics
3-dimensional magnetic field measuring systems
Wearables
3-dimensional RFID systems

Transponder antennas. e.g. for RFID

We manufacture complex ferrites using a special injection moulding process and therefore have far greater options when it comes to shaping our soft magnetic ferrite cores. This enables us to design transponder antennas that are precisely tailored to the application, the field of application and the overall design. With customised transponder antennas we enable our customers to maximise the efficiency of their electronic circuits.

Special features

- ✓ Compact size
- ✓ Optimised ferrite geometry
- ✓ Over 15 different ferrite materials for a wide range of applications
- ✓ High electrical Q factor
- ✓ Customised designs
- ✓ For automated pick-and-place (delivered in blister pack)
- ✓ Suitable for reflow soldering
- ✓ For optimised fixing on the PCB with glue dot (HSF) on request
- ✓ Operating temperature range -40°C to +125°C

Applications

- ✓ Transponder, identification and security systems (e.g. automotive)
- ✓ Keyless entry systems
- ✓ RFID security systems
- ✓ NFC antennas
- ✓ Antennas for medical applications, e.g. hearing aid devices
- ✓ Applications for 6 degree of freedom(6DoF), e.g. in robotics