		DAEX13CT-4	DAEX19CT-4	DAEX25FHE-4	DAEX25VT-4	DAEX25SHF-4	XT25-4	DAEX30HESF	DAEX32EP-4	DAEX32QMB-4	XT32-4
parameter	unit	from datasheet									
Re	ohm	3,6		4,3	4,2		3,79	3,8			3,66
Le	mH	0,04		0,1	0,24	0,41	0,07 (Re2 2,87, Le2 0,05)	0,31	0,21	0,23	0,07 (Re2 2,38 Le2 0,05)
fs (fixed magnet)	Hz	650		224	230	365	306	300	240	680	312
fs (fixed coil)	Hz						44,4				40,5
Mms VC / magnet	g	0,26		1,61	1,75	1,3	1,58 / 75,2		5,4	3	2,21 / 131
Cms	mm/N	0,2		0,3	0,3	0,1	0,17		8	0.018	0,12
Rms VC / magnet	kg/s						0,85 / 0,09				0,85 / 0,09
BL	Tm	1,12		3,6			3,73				4,27
Weight	g						76,8				133
parameter	unit	measurements									
Re	ohm	4		4,5	3,6		3	3,8			3
Le	mH	0,028						0,1			
fs (fixed magnet)	Hz	860		250				281			
fs (fixed coil)	Hz			28,5							
Mms	g	0,2		1,3	1,6		1,7	2,34			2,2
Cms	mm/N	0,17		0,4	0,36		0,14	0,137			0,12
Rms	kg/s	0,126		0,07	0,18		0,14	0,424			0,2
BL	Tm	0,87	1,3	3,7	4		3,5	5,5	3,5		4,3
Weight	g										

Thiele-Small Parameters

Measurement method

Added mass

Free Air Measurement

4: 240628_imp 10

Added mass measurement

5: 240628_imp 11

Added mass (g): 17,220

Motional Impedance (Ritter 3PC)

R_0 (ohm):	84,81
C_{MES} (uF):	77,7
L_0 (mH):	4,097
β:	0,0169
ω_0:	2645,9

Blocked Impedance (T-F)

dR (ohm):	-0,013
L_{EB} (uH):	9,1
L_E (mH):	0,215
R_{SS} (ohm):	100000,00
K_E (S-H):	0,0389

Manually Entered Values

Voice Coil DC Resistance (ohm):	3,800
Effective Area (cm^2):	176,71
Air Temperature (Celsius):	20
Air Pressure (mbar):	1013,25

Calculate Parameters

Write Parameters to File

Simplified Model Parameters

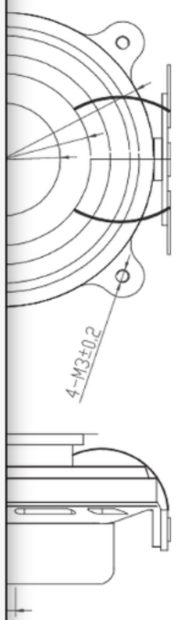
R_E	3,787 ohm	L_E	43,9 uH
R_{ES}	71,22 ohm	R_2	7,15 ohm
C_{MES}	77,7 uF	L_2	64,3 uH
L_{CES}	4,14 mH	R_3	1,08 ohm
		L_3	74,8 uH

R_E	3,787 ohm	f_S	280,7 Hz	M_{MS}	2,34 g
Z_{min}	4,032 ohm	Q_{MS}	9,757	C_{MS}	0,137 mm/N
f_{min}	1 231 Hz	Q_{ES}	0,519	R_{MS}	0,424 kg/s
f_3	4 169 Hz	Q_{TS}	0,493	V_{AS}	6,08 litres
L_E (f_3)	0,101 mH	F_{TS}	569,8 Hz	Bℓ	5,493 Tm
Dd	15,00 cm	L_P	106,19 dB (1W/1m)	Eta	25,28 %
Sd	176,7 cm^2	Added mass	17,220 g		

Secondary measurement: 240628_imp 11

Air temperature 20,0 C, pressure 1 013,25 mbar giving density 1,2041 kg/m^3, c 343,2 m/s

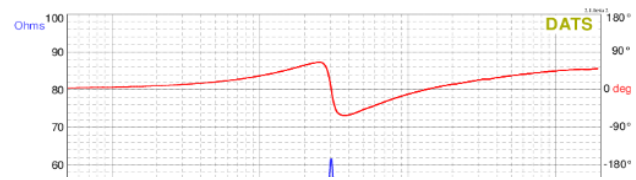
DAEX30HESF-4 High Efficiency Steered Flux Exciter with Shielding 30 mm Exciter 40W 4 Ohm



PARAMETERS

Impedance	4 ohms
Re	3.8 ohms
Le	0.31 mH
Fs	300 Hz
Qms	N/A
Qes	N/A
Qts	N/A
Mms	N/A
Cms	N/A
Sd	N/A
Vd	N/A
BL	N/A
Vas	N/A
Xmax	N/A
VC Diameter	30 mm
SPL	N/A
RMS Power Handling	40 watts
Usable Frequency Range (Hz)	N/A

IMPEDANCE/PHASE



S

) watts RMS

proprietary voice coil

ing holes

- Low inductance (only 0.3 mm motor for extended response

Thiele-Small Parameters

Measurement method

Added mass

Free Air Measurement

6: 240628_DAEX13CT

Added mass measurement

7: 240628_DAEX13CT_mass

Added mass (g): 4,100

Motional Impedance (Ritter 3PC)

R_0 (ohm):	8,01
C_{MES} (uF):	256,2
L_0 (mH):	0,131
β:	0,0300
ω_0:	8104,9

Blocked Impedance (T-F)

dR (ohm):	0,368
L_{EB} (uH):	21,7
L_E (mH):	0,018
R_{SS} (ohm):	1,22
K_E (S-H):	10,0000

Manually Entered Values

Voice Coil DC Resistance (ohm):	3,600
Effective Area (cm^2):	176,71
Air Temperature (Celsius):	20
Air Pressure (mbar):	1013,25

Calculate Parameters

Write Parameters to File

Simplified Model Parameters

R_E	3,968	ohm	L_E	21,7	uH
R_{ES}	6,06	ohm	R_2	1,25	ohm
C_{MES}	256,2	uF	L_2	16,4	uH
L_{CES}	0,13	mH	R_3	0,05	ohm
			L_3	2 835 315,7	uH

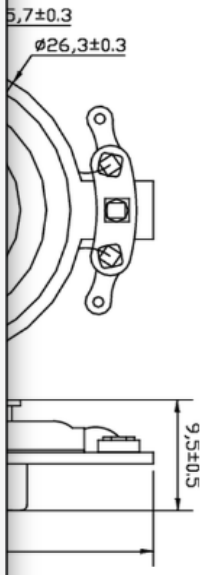
R_E	3,968	ohm	f_S	862,4	Hz	M_{MS}	0,20 g
Z_{min}	4,027	ohm	Q_{MS}	8,417		C_{MS}	0,174 mm/N
f_{min}	2 580	Hz	Q_{ES}	5,509		R_{MS}	0,126 kg/s
f_3	14 785	Hz	Q_{TS}	3,330		V_{AS}	7,71 litres
L_E (f_3)	0,028	mH	F_{TS}	259,0	Hz	Bℓ	0,874 Tm
Dd	15,00	cm	L_P	111,59	dB (1W/1m)	Eta	87,66 %
Sd	176,7	cm^2	Added mass	4,100	g		

Secondary measurement: 240628_DAEX13CT_mass

Air temperature 20.0 C, pressure 1 013.25 mbar giving density 1.2041 kg/m^3, c 343.2 m/s

DAEX13CT-4 Coin Type 13mm Exciter 3W 4 Ohm

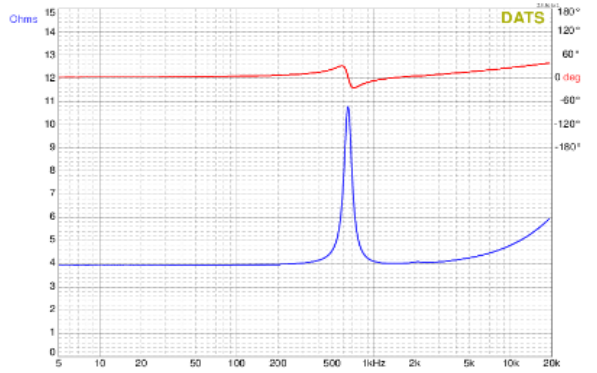
DAEX13CT-4



PARAMETERS

Impedance	4 ohms
Re	3.6 ohms
Le	0.04 mH @ 1 kHz
Fs	650 Hz
Qms	N/A
Qes	N/A
Qts	3.25
Mms	0.26 g
Cms	0.0002 mm/N
Sd	N/A
Vd	N/A
BL	1.12 Tm
Vas	N/A
Xmax	N/A
VC Diameter	13 mm
SPL	N/A
RMS Power Handling	3 watts
Usable Frequency Range (Hz)	N/A

IMPEDANCE/PHASE



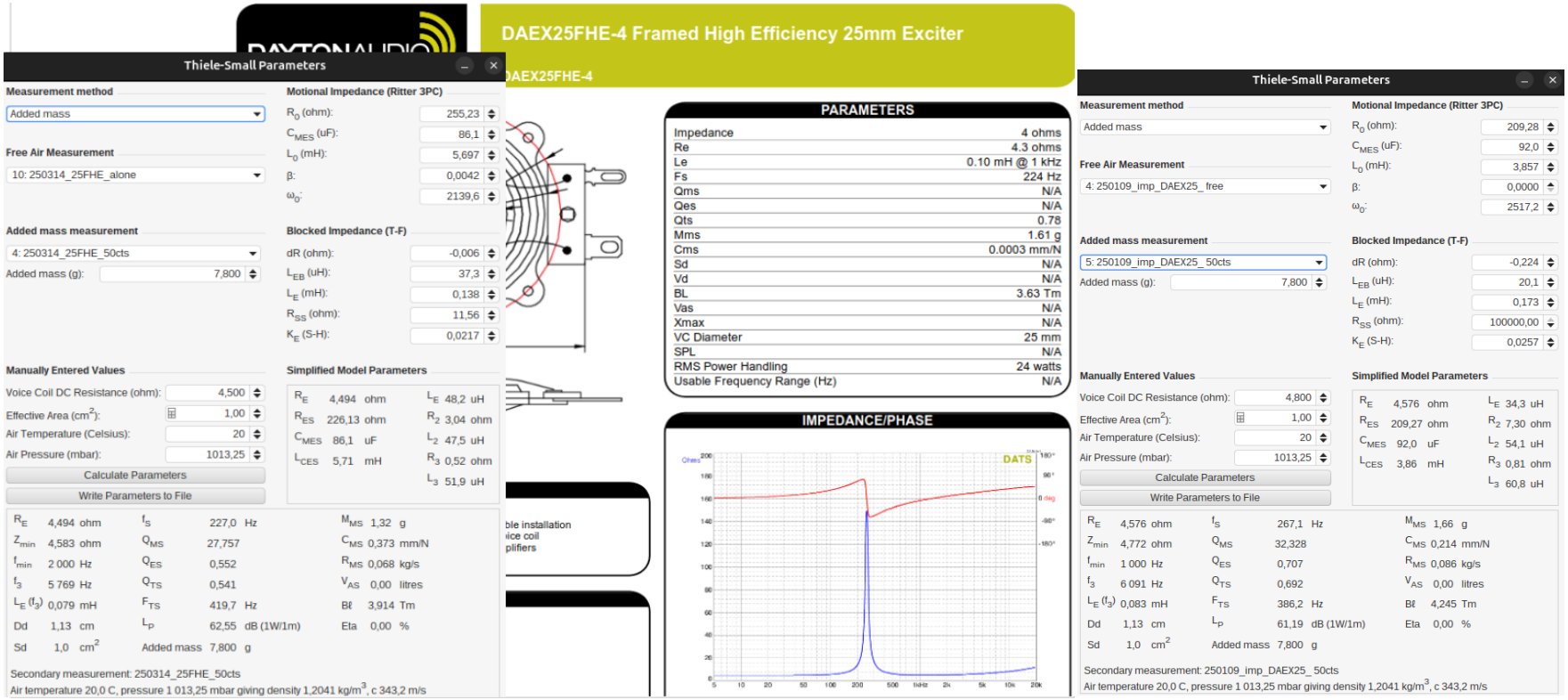
ES

meter, about 3/8" high
quick, secure installation

ass D amplifiers

IONS

udio


DAYTON AUDIO
DAEX25FHE-4 Framed High Efficiency 25mm Exciter
DAEX25FHE-4
Thiele-Small Parameters
Measurement method
Added mass
Free Air Measurement
10: 250314_25FHE_alone
Added mass measurement
4: 250314_25FHE_50cts
Added mass (g): 7,800
Manually Entered Values
Voice Coil DC Resistance (ohm): 4,500
Effective Area (cm2): 1,00
Air Temperature (Celsius): 20
Air Pressure (mbar): 1013,25
Calculate Parameters
Write Parameters to File
Motional Impedance (Ritter 3PC)
R0 (ohm): 255,23
CMES (uF): 86,1
L0 (mH): 5,697
β: 0,0042
ω0: 2139,6
Blocked Impedance (T-F)
dR (ohm): -0,006
LEB (uH): 37,3
LE (mH): 0,138
RSS (ohm): 11,56
KE (S-H): 0,0217
Simplified Model Parameters
RE 4,494 ohm
RES 226,13 ohm
CMES 86,1 uF
LCES 5,71 mH
LE 48,2 uH
R2 3,04 ohm
L2 47,5 uH
R3 0,52 ohm
L3 51,9 uH
RE 4,494 ohm
Zmin 4,583 ohm
fmin 2 000 Hz
f3 5 769 Hz
LE (f3) 0,079 mH
Dd 1,13 cm
Sd 1,0 cm2
fS 227,0 Hz
QMS 27,757
QES 0,552
QTS 0,541
FTS 419,7 Hz
LP 62,55 dB (1W/1m)
Added mass 7,800 g
MMS 1,32 g
CMS 0,373 mm/N
RMS 0,068 kg/s
VAS 0,00 litres
Bℓ 3,914 Tm
Eta 0,00 %
Secondary measurement: 250314_25FHE_50cts
Air temperature 20,0 C, pressure 1 013,25 mbar giving density 1,2041 kg/m3, c 343,2 m/s
PARAMETERS
Impedance 4 ohms
Re 4.3 ohms
Le 0.10 mH @ 1 kHz
Fs 224 Hz
Qms N/A
Qes N/A
Qts 0.78
Mms 1.61 g
Cms 0.0003 mm/N
Sd N/A
Vd N/A
BL 3.63 Tm
Vas N/A
Xmax N/A
VC Diameter 25 mm
SPL N/A
RMS Power Handling 24 watts
Usable Frequency Range (Hz) N/A
IMPEDANCE/PHASE
DATS
Thiele-Small Parameters
Measurement method
Added mass
Free Air Measurement
4: 250109_imp_DAEX25_ free
Added mass measurement
5: 250109_imp_DAEX25_ 50cts
Added mass (g): 7,800
Manually Entered Values
Voice Coil DC Resistance (ohm): 4,800
Effective Area (cm2): 1,00
Air Temperature (Celsius): 20
Air Pressure (mbar): 1013,25
Calculate Parameters
Write Parameters to File
Motional Impedance (Ritter 3PC)
R0 (ohm): 209,28
CMES (uF): 92,0
L0 (mH): 3,857
β: 0,0000
ω0: 2517,2
Blocked Impedance (T-F)
dR (ohm): -0,224
LEB (uH): 20,1
LE (mH): 0,173
RSS (ohm): 100000,00
KE (S-H): 0,0257
Simplified Model Parameters
RE 4,576 ohm
RES 209,27 ohm
CMES 92,0 uF
LCES 3,86 mH
LE 34,3 uH
R2 7,30 ohm
L2 54,1 uH
R3 0,81 ohm
L3 60,8 uH
RE 4,576 ohm
Zmin 4,772 ohm
fmin 1 000 Hz
f3 6 091 Hz
LE (f3) 0,083 mH
Dd 1,13 cm
Sd 1,0 cm2
fS 267,1 Hz
QMS 32,328
QES 0,707
QTS 0,692
FTS 386,2 Hz
LP 61,19 dB (1W/1m)
Added mass 7,800 g
MMS 1,66 g
CMS 0,214 mm/N
RMS 0,086 kg/s
VAS 0,00 litres
Bℓ 4,245 Tm
Eta 0,00 %
Secondary measurement: 250109_imp_DAEX25_ 50cts
Air temperature 20,0 C, pressure 1 013,25 mbar giving density 1,2041 kg/m3, c 343,2 m/s

DAYTON AUDIO

DAEX25VT-4 Vented 25mm Exciter 20W 4 Ohm

DAEX25VT-4

Thiele-Small Parameters

Measurement method

Added mass

Free Air Measurement

1: DAEX25VT-4 0.0 g

Added mass measurement

2: DAEX25VT-4 2.0 g

Added mass (g): 2,080

Motional Impedance (Ritter 3PC)

R_0 (ohm):	142,72
C_{MES} (uF):	99,6
L_0 (mH):	5,608
β:	0,0271
ω_0:	1978,7

Blocked Impedance (T-F)

dR (ohm):	0,211
L_{EB} (uH):	20,8
L_E (mH):	0,191
R_{SS} (ohm):	100000,00
K_E (S-H):	0,0232

Manually Entered Values

Voice Coil DC Resistance (ohm):	3,400
Effective Area (cm^2):	1,00
Air Temperature (Celsius):	20
Air Pressure (mbar):	1013,25

Calculate Parameters

Write Parameters to File

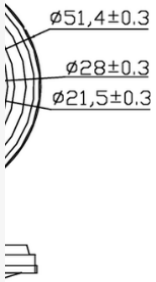
Simplified Model Parameters

R_E	3,611 ohm	L_E	29,2 uH
R_{ES}	95,62 ohm	R_2	7,99 ohm
C_{MES}	99,6 uF	L_2	55,9 uH
L_{CES}	5,70 mH	R_3	0,82 ohm
		L_3	63,0 uH

R_E	3,611 ohm	f_S	211,2 Hz	M_{MS}	1,56 g
Z_{min}	3,966 ohm	Q_{MS}	12,638	C_{MS}	0,364 mm/N
f_{min}	1 140 Hz	Q_{ES}	0,477	R_{MS}	0,164 kg/s
f_3	5 198 Hz	Q_{TS}	0,460	V_{AS}	0,00 litres
L_E (f_3)	0,083 mH	F_{TS}	459,4 Hz	Bℓ	3,959 Tm
Dd	1,13 cm	L_P	62,14 dB (1W/1m)	Eta	0,00 %
Sd	1,0 cm^2	Added mass	2,080 g		

Secondary measurement: DAEX25VT-4 2.0 g

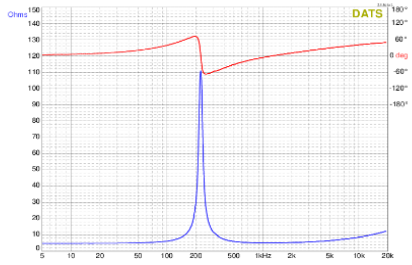
Air temperature 20,0 C, pressure 1 013,25 mbar giving density 1,2041 kg/m^3, c 343,2 m/s



PARAMETERS

Impedance	4 ohms
Re	4.2 ohms
Le	0.24 mH @ 1 kHz
Fs	230 Hz
Qms	N/A
Qes	N/A
Qts	0.83
Mms	1.75 g
Cms	0.0003 mm/N
Sd	N/A
Vd	N/A
BL	3.86 Tm
Vas	N/A
Xmax	N/A
VC Diameter	25 mm
SPL	N/A
RMS Power Handling	20 watts
Usable Frequency Range (Hz)	N/A

IMPEDANCE/PHASE



Measurement taken with transducer uncoupled facing upward.

Thiele-Small Parameters

Measurement method

Added mass

Free Air Measurement

1: VT25-4 #2 0.0 g

Added mass measurement

2: VT25-4 #2 1.0 g

Added mass (g): 1,020

Motional Impedance (Ritter 3PC)

R_0 (ohm):	1000000,00
C_{MES} (uF):	99,3
L_0 (mH):	5,445
β:	0,0915
ω_0:	1967,6

Blocked Impedance (T-F)

dR (ohm):	0,099
L_{EB} (uH):	25,6
L_E (mH):	0,237
R_{SS} (ohm):	100000,00
K_E (S-H):	0,0199

Manually Entered Values

Voice Coil DC Resistance (ohm):	3,400
Effective Area (cm^2):	1,00
Air Temperature (Celsius):	20
Air Pressure (mbar):	1013,25

Calculate Parameters

Write Parameters to File

Simplified Model Parameters

R_E	3,499 ohm	L_E	47,9 uH
R_{ES}	89,62 ohm	R_2	3,74 ohm
C_{MES}	99,3 uF	L_2	52,3 uH
L_{CES}	5,78 mH	R_3	0,64 ohm
		L_3	167,0 uH

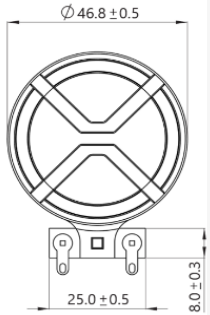
R_E	3,499 ohm	f_S	210,1 Hz	M_{MS}	1,61 g
Z_{min}	3,956 ohm	Q_{MS}	11,749	C_{MS}	0,357 mm/N
f_{min}	1 140 Hz	Q_{ES}	0,459	R_{MS}	0,181 kg/s
f_3	5 173 Hz	Q_{TS}	0,441	V_{AS}	0,00 litres
L_E (f_3)	0,084 mH	F_{TS}	475,9 Hz	Bℓ	4,023 Tm
Dd	1,13 cm	L_P	62,16 dB (1W/1m)	Eta	0,00 %
Sd	1,0 cm^2	Added mass	1,020 g		

Secondary measurement: VT25-4 #2 1.0 g

Air temperature 20,0 C, pressure 1 013,25 mbar giving density 1,2041 kg/m^3, c 343,2 m/s

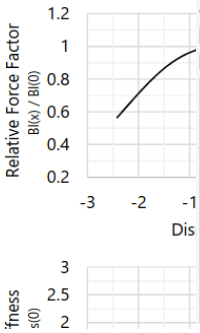
XT25-4 SPECIFICATIONS

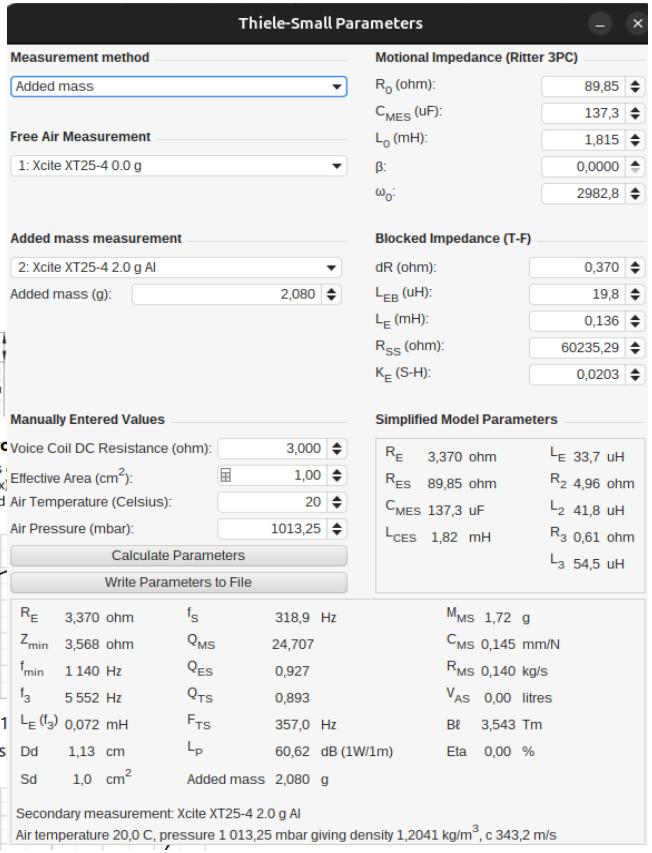
Electrical and Mechanical Properties			
Rms Noise Test [W]	15		
Long-term Max Power [W]	30		
Frequency Range [Hz] [1]	40Hz – 19kHz		
Nominal Impedance [Ohm]	4		
DC Resistance [Ohm]	3.79		
Le [mH] Re2 [Ohm] Le2 [mH]	0.07	2.87	0.05
Kms [N/mm]	6.05		
Cms [mm/N]	0.17		
Bl [N/A]	3.73		
Motor Efficiency Factor β [dB] [2]	5.65		
Linear Xmax - IEC 60268 [mm]	± 1.4		
Mechanical Xmax [mm]	± 3.0		
Position Related Properties [3]	**Magnet**	**Coil**	
Fs [Hz]	44.4	306	
Mms [g]	75.2	1.58	
Rms [Kg/s]	0.85	0.09	
Qts	4.63	0.88	
Qms	24.8	18.5	
Qes	5.7	0.93	
Physical Properties			
Total Weight [g]	76.8		
Outer Diameter [mm]	46.8		
Total Height [mm]	21.5		



Distortion Relevant Pro

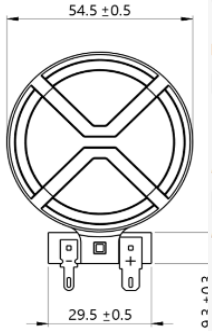
At higher amplitudes, exciters
primarily from Bl(x) and Kms(x)
to generate low harmonic and





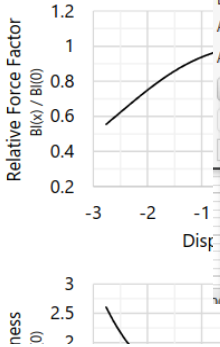
XT32-4 SPECIFICATIONS

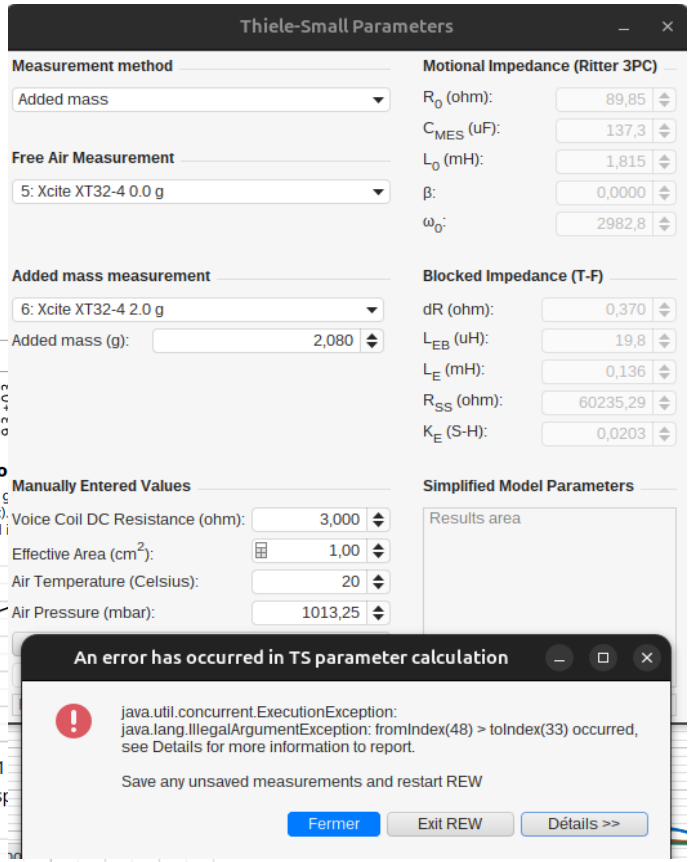
Electrical and Mechanical Properties			
Rms Noise Test [W]	20		
Long-term Max Power [W]	40		
Frequency Range [Hz] [1]	35Hz – 17kHz		
Nominal Impedance [Ohm]	4		
DC Resistance [Ohm]	3.66		
Le [mH] Re2 [Ohm] Le2 [mH]	0.07	2.38	0.05
Kms [N/mm]	8.47		
Cms [mm/N]	0.12		
Bl [N/A]	4.27		
Motor Efficiency Factor β [dB] [2]	6.97		
Linear Xmax - IEC 60268 [mm]	± 1.6		
Mechanical Xmax [mm]	± 3.5		
Position Related Properties [3]	**Magnet**	**Coil**	
Fs [Hz]	40.5	312	
Mms [g]	131	2.21	
Rms [Kg/s]	0.85	0.20	
Qts	4.78	0.87	
Qms	18.7	21.9	
Qes	6.42	0.91	
Physical Properties			
Total Weight [g]	133		
Outer Diameter [mm]	54.5		
Total Height [mm]	24.8		



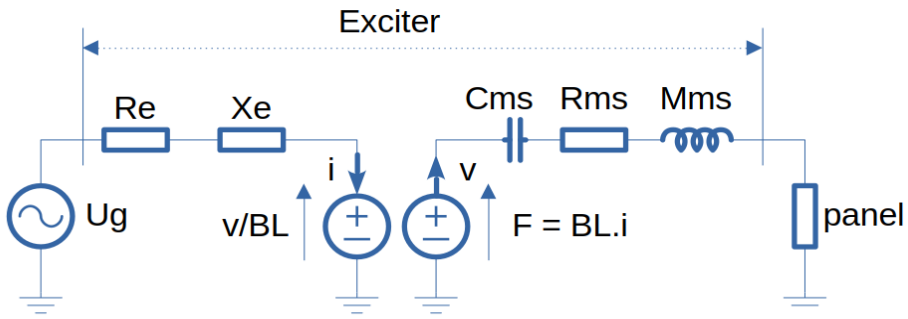
Distortion Relevant Pro

At higher amplitudes, exciters
primarily from Bl(x) and Kms(x)
to generate low harmonic and





Measurements									
Parameter	DAEX25FHE			DAEX25VT				XT25	XT32
	Sample A	Sample B	Sample C	Sample A	Sample B	Sample C	Sample D	Sample A	Sample A
Re	4,47		4,51	3,498	3,42	3,505	3,43	3,061	2,968
Xr	0,8895		0,8655	0,8527	0,8207	0,7942	0,8144	0,7614	0,8663
Xi	0,7933		0,8017	0,7647	0,7272	0,7129	0,7695	0,7368	0,7989
Kr	0,0001		0,000122	0,0001996	0,0002959	0,0003989	0,0003069	0,0004725	0,0001381
Ki	0,000714		0,00066	0,001013	0,001562	0,00184	0,0009604	0,001247	0,0006292
BL	3,67		3,63	4,094	4,382	4,172	4,075	3,797	4,053
Mms	1,235		1,273	1,543	1,738	1,529	1,542	1,719	2,207
Cms	0,4139		0,441	0,3553	0,3766	0,3771	0,3664	0,1445	0,1163
Rv	0,0408		0,0378	0,0936	0,1062	0,1194	0,07164	0,01	0,1278
fv	181		199	201	184,7	195	276	1702	360
nv	1		1	1	1	1	0,6	0,69	1,105



$$Xe = Kr \cdot \omega^{Xr} + j \cdot Ki \cdot \omega^{Xi}$$

$$\omega = 2 \cdot \pi \cdot f$$

$$Rms = Rv \cdot \left(1 + \left(\frac{2 \cdot \pi \cdot fv}{\omega}\right)^{nv+1}\right)$$

MODEL					
Parameter	**DAEX25FHE**	**DAEX25VT**	**XT25**	**XT32**	**unit**
Re	4,5	3,5	3	3	ohm
Xr	0,87	0,82	0,76	0,86	see model
Xi	0,8	0,74	0,74	0,8	see model
Kr	0,0001	0,0003	0,0005	0,0014	see model
Ki	0,0007	0,0013	0,0012	0,0006	see model
BL	3,65	4,2	3,8	4	Tm (=N/A)
Mms	1,3	1,6	1,7	2,2	g
Cms	0,43	0,37	0,14	0,12	mm/N
Rv	0,03	0,1	0,01	0,13	kg/s
fv	220	215	1700	360	Hz
nv	1,5	0,9	0,7	1,1	without