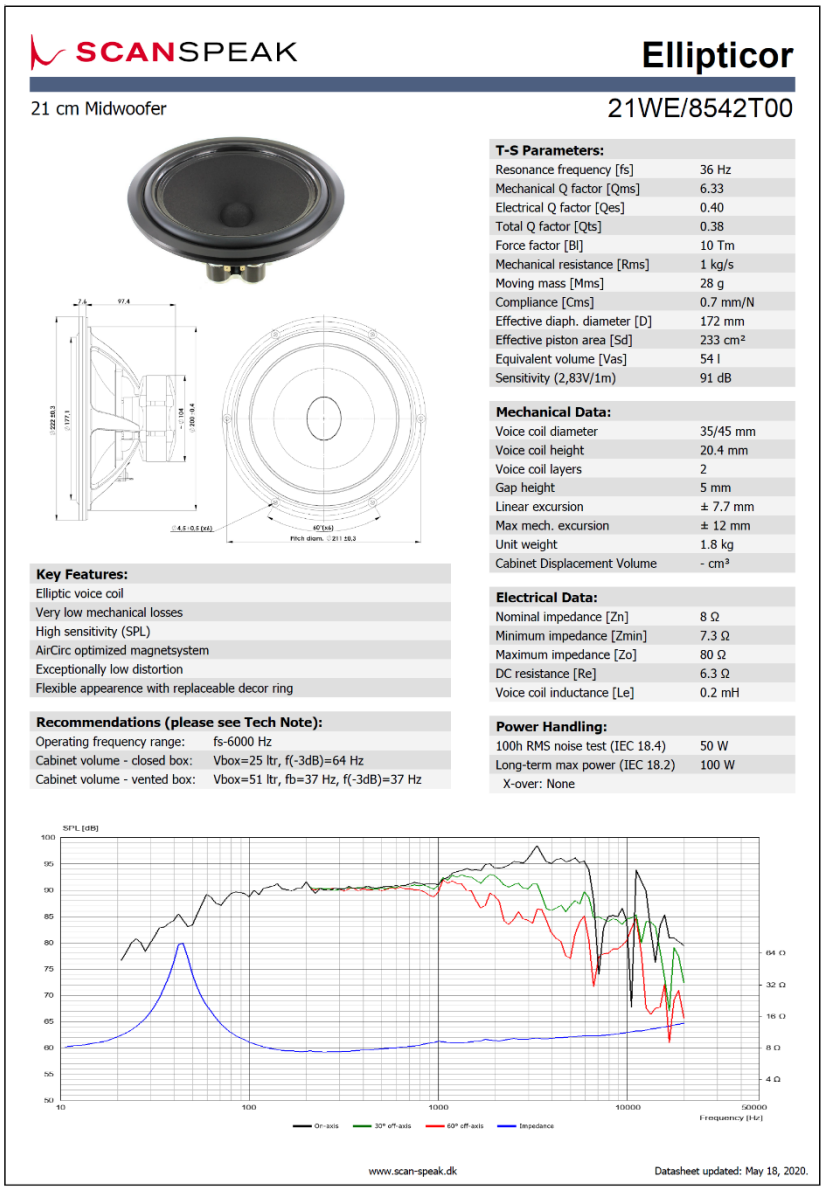
Scan-Speak datasheet content

Our datasheet is divided into paragraphs that each list quantities and parameters belonging to the specific driver.

Apart from the picture and the sketch with dimensions there are the following:

- Key features
- Recommendations
- T-S parameters
- Mechanical data
- Electrical data
- Power handling
- Acoustic/electric measurement results



SCANSPEAK

Ellipticor

21 cm Midwoofer

21WE/8542T00

T-S Parameters:	
Resonance frequency [fs]	36 Hz
Mechanical Q factor [Qms]	6.33
Electrical Q factor [Qes]	0.40
Total Q factor [Qts]	0.38
Force factor [Bl]	10 Tm
Mechanical resistance [Rms]	1 kg/s
Moving mass [Mms]	28 g
Compliance [Cms]	0.7 mm/N
Effective diaph. diameter [D]	172 mm
Effective piston area [Sd]	233 cm²
Equivalent volume [Vas]	54 l
Sensitivity (2,83V/1m)	91 dB

Mechanical Data:	
Voice coil diameter	35/45 mm
Voice coil height	20.4 mm
Voice coil layers	2
Gap height	5 mm
Linear excursion	± 7.7 mm
Max mech. excursion	± 12 mm
Unit weight	1.8 kg
Cabinet Displacement Volume	- cm³

Key Features:
Elliptic voice coil
Very low mechanical losses
High sensitivity (SPL)
AirCirc optimized magnetsystem
Exceptionally low distortion
Flexible appearence with replaceable decor ring

Electrical Data:	
Nominal impedance [Zn]	8 Ω
Minimum impedance [Zmin]	7.3 Ω
Maximum impedance [Zo]	80 Ω
DC resistance [Re]	6.3 Ω
Voice coil inductance [Le]	0.2 mH

Recommendations (please see Tech Note):	
Operating frequency range:	fs-6000 Hz
Cabinet volume - closed box:	Vbox=25 ltr, f(-3dB)=64 Hz
Cabinet volume - vented box:	Vbox=51 ltr, fb=37 Hz, f(-3dB)=37 Hz

Power Handling:	
100h RMS noise test (IEC 18.4)	50 W
Long-term max power (IEC 18.2)	100 W
X-over: None	

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Datasheet updated: May 18, 2020.

Key features

Normally shows the most important highlights of the driver.

Recommendations

For all non-enclosed drivers (a tweeter is considered enclosed) we have calculated possible volumes for both a closed box and a vented (reflex) box. The background and target responses are described in the Technical Note on box alignments.

The recommended frequency range is found by using the resonance frequency (fs) from the datasheet as the lower frequency for most woofers, and the f-3dB from the box calculation for others. For midranges and tweeters the max excursion and power handling capacity are considered. For the high frequency limit the on axis break up area and the 30 degrees off axis response respectively are used for an estimate.

T-S parameters

The Technical Note on measurement of Thiele/Small parameters describes in detail how the Thiele/Small parameters are established.

Mechanical data

This is basically a list of data leading to establishing the maximum mechanical displacement of the moving parts.

"Linear excursion" is for a normal overhung design voice coil winding height subtracted by the "gap height" and divided by two. The "Max mech. excursion" is found by analyzing the mechanical limits of each of the moving parts and is not just a simple calculation.

Final listing is the weight of the complete driver and the actual physical volume of the driver structure. The latter used to determine how much air volume the driver occupies in a cabinet. We have chosen to measure this volume from the mounting flange underside including a compressed gasket and a cabinet baffle infinitely thin.

Electrical data

This data is actually extracted partly during the Thiele/Small measurement procedure (Technical Note on T/S parameters) and partly by analyzing the impedance measurement shown in the response plot.

In the plot the impedance response is shown in dB with 60 dB corresponding to 8 Ohm. So going from the dB scale to an Ohmic value is done by:

$$\boldsymbol{R = (10^{\frac{dB\ value-60}{20}}) * 8\ \text{[Ohm]}}$$

Power handling

The process of finding this data is described in the Technical Note about power tests.

Response plot

In this plot we show the SPL responses on axis and 30 and 60 degrees horizontally off axis. The sound pressure level is shown with reference to 20 µPa.

Input voltage is 2,83 Vrms, microphone distance is 1 m and the drivers are always mounted in a 6 m by 7 m sized baffle corresponding to "true" 2π measurement conditions. A 320 liter closed cabinet loads the backside of the driver unless stated otherwise. This is, of course, of no importance to a tweeter, which has its own back chamber.