Element Analysis (FEA) software in order to ensure optimization.

**Specifications**

- **Nominal diameter**: 380 (15) mm (in)
- **Nominal impedance**: 8 Ω
- **Minimum impedance @ 160 Hz**: 7.2 Ω

**Power Handling**

- **Musical Program**: 800 W
- **AES**: 400 W

**Sensitivity**

| Sensitivity (2.83V@1m) | from 100 to 3,000 Hz | 97 dB SPL |

**Power Compression**

<table>
<thead>
<tr>
<th>@ -10 dB (nom. power)</th>
<th>1.42 dB</th>
</tr>
</thead>
<tbody>
<tr>
<td>@ -3 dB (nom. power)</td>
<td>2.21 dB</td>
</tr>
</tbody>
</table>

**Frequency Response**

- @ -10 dB: 60 to 4,000 Hz

**Additional Information**

- **Product without Selenium logo printed on the dust cap.**
- **400 W**
- **Musical Program**: 800 W
- **Professional 15” woofer designed to meet a variety of PA needs for small and medium-sized rooms, with excellent performance in the mid and low frequency ranges.**

**Connections**

- **Push on terminals (+) terminal gives forward cone motion**

**Mounting Information**

- **Number of bolt-holes**: 8
- **Bolt-hole diameter**: 5.5 (0.22) mm (in)
- **Bolt-circle diameter**: 367 (14.45) mm (in)
- **Baffle cutout diameter (front mount)**: 352 (13.86) mm (in)
- **Baffle cutout diameter (rear mount)**: 348 (13.70) mm (in)
- **Connectors**: Push on terminals
- **Polarity**: Positive voltage applied to the positive

**Carton Dimensions**

- **(W x D x H)**: 40 x 40 x 20 (15.8 x 15.8 x 7.9) cm (in)

**Thiele-Small Parameters**

- **F s**: 37 Hz
- **Vas**: 202 (7.13) t (ft)
- **Qes**: 0.417
- **Qms**: 17.35
- **yo (half space)**: 2.15 %
- **Sd**: 0.08605 (133.4)
- **Vd (SD x Xmax)**: 387.0 (23.61)
- **Xmax (max. excursion (peak) + 10% distortion)**: 4.5 (0.18) mm (in)
- **Xlim (max. excursion (peak) before physical damage)**: 21.0 (0.82) mm (in)

**Atmospheric conditions at TS parameter measurements:**

- **Temperature**: 25 (77) °C (°F)
- **Atmospheric pressure**: 1,016 mb
- **Humidity**: 51 %

**ADDITIONAL PARAMETERS**

- **Tm**: 17.0 Tm
- **Re**: 6.4 Ω
- **Rms**: 83 (0.162) g (lb)
- **Cms**: 220.0 μm/N
- **Rms**: 1.12

**NON-LINEAR PARAMETERS**

- **Le @ Fs (voice coil inductance @ Fs)**: 3.193 mH
- **Le @ 1 kHz (voice coil inductance @ 1kHz)**: 1.577 mH
- **Le @ 20 kHz (voice coil inductance @ 20 kHz)**: 0.816 mH
- **Red @ Fs**: 0.25 Ω
- **Red @ 1 kHz**: 4.45 Ω
- **Red @ 20 kHz**: 66.02 Ω
- **Krm**: 2.5 mΩ
- **Kxm**: 12.80 mH
- **Erm**: 0.84 g (lb)
- **Exm**: 0.76 g (lb)

**ADDITIONAL INFORMATION**

- **Magnetic material**: Barium ferrite
- **Magnet weight**: 2,480 (87.5) g (oz)
- **Magnet diameter x depth**: 200 x 19 (7.87 x 0.75) mm (in)
- **Magnetic assembly weight**: 6,360 (14.02) g (lb)
- **Frame material**: Steel
- **Frame finish**: Black epoxy
- **Magnetic assembly steel finish**: Zinc-plated
- **Voice coil material**: Copper
- **Voice coil former material**: Polyimide (Kapton®)
- **Cone material**: Long fiber pulp
- **Volume displaced by woofer**: 4.3 (0.152) m (ft)
- **Net weight**: 7,240 (15.96) g (lb)
- **Gross weight**: 8,220 (18.12) g (lb)
- **Carton dimensions (W x D x H)**: 40 x 40 x 20 (15.8 x 15.8 x 7.9) cm (in)

**Dimensions in mm.**
The power amplifier must be able to supply twice the RMS driver power. This 3 dB headroom is necessary to handle the peaks that are common to musical programs. When the amplifier clips those peaks, high distortion arises and this may damage the transducer due to excessive heat. The use of compressors is a good practice to reduce music dynamics to safe levels.

HOW TO CHOOSE THE RIGHT AMPLIFIER

FINDING VOICE COIL TEMPERATURE

It is very important to avoid maximum voice coil temperature. Since moving coil resistance ($R_v$) varies with temperature according to a well-known law, we can calculate the temperature inside the voice coil by measuring the voice coil DC resistance:

$$T_v = T_{amb} + \left( \frac{R_{V30}}{R_v} - 1 \right) \left( T_{amb} - 25 + \frac{1}{\alpha_{v,w}} \right)$$

$T_{amb}$, $T_v$ = voice coil temperatures in °C.

$R_{V30}$, $R_v$ = voice coil resistances at temperatures $T_{amb}$ and $T_v$, respectively.

$\alpha_{v,w}$ = voice coil wire temperature coefficient at 25°C.

POWER COMPRESSION

Voice coil resistance rises with temperature, which leads to efficiency reduction. Therefore, if after doubling the applied electric power to the driver we get a 2 dB rise in SPL instead of the expected 3 dB, we can say that power compression equals 1 dB. An efficient cooling system to dissipate voice coil heat is very important to reduce power compression.

NON-LINEAR VOICE COIL PARAMETERS

Due to its close coupling with the magnetic assembly, the voice coil in electrodynamic loudspeakers is a very non-linear circuit. Using the non-linear modeling parameters $K_{RM}$, $K_{XM}$, $E_{RM}$, $E_{XM}$ from an empirical model, we can calculate voice coil impedance with good accuracy.

SUGGESTED PROJECTS

For additional project suggestions, please access our web site.