

## CS45-04D20-28-1

Rev. 4-2026  
RoHS3 & REACH  
Square Speakers



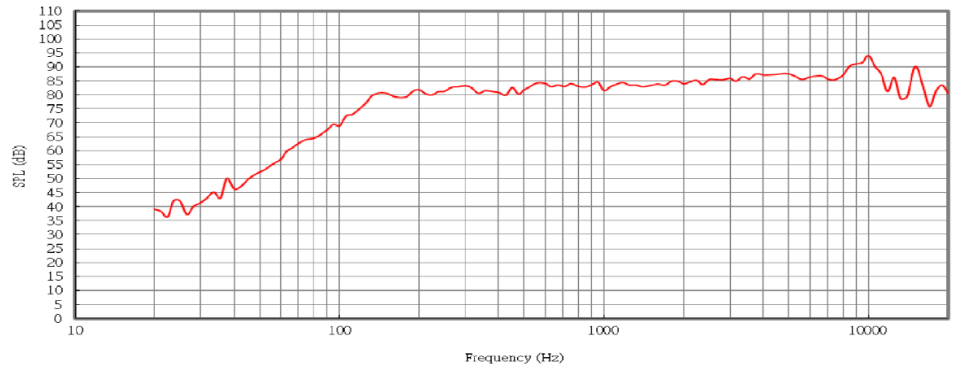
### Operating Characteristics

#### ELECTRICAL

Rated Power	4 W
Short Term Max Power	6 W
Impedance	4 Ω ± 20 % 2,000 Hz; 1 W

#### ACOUSTIC: Baffle Board

$f_o$	200 Hz ± 20 % 1 W
Freq. Range	160 to 20,000 Hz
Rated SPL	84 ± 3 1,000, 2,000, 3,000, 4,000 Hz; AVG; 1 W; 100 cm
Distortion	Max 5 % 1,000 Hz; 1 W



### Physical Characteristics

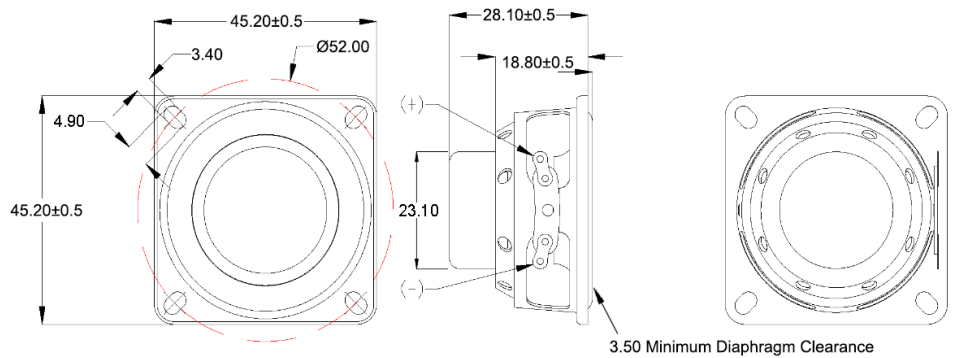
#### MATERIALS

Housing	SPCC
Cone	PU + Paper
Magnet	NdFeB
Solder Tab	Iron

#### TEMPERATURE RANGES

Operating	-20 to +60 °C
Storage	-30 to +70 °C

Weight 36 g



General tolerance = ±0.5 mm and all measurements in mm unless otherwise noted.

Revision	Description	By	Date
3-2026	Updated the Rated Input Power from 5W to 4W. Updated the diaphragm material from Foam to PU + Paper.	KG	2026-01-07
4-2026	Updated to include TS Parameters and XMAX graph.	KG	2026-06-01

Warranty: For a period of one (1) year from date of shipping under normal operations conditions. This warranty does not apply to products damaged through misuse, abuse, improper installation, alteration, rework, or attempt to repair.

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### Thiele Small Parameters

Electrical Parameters	Value	Unit	Description
<i>Re</i>	3.66	Ohm	electrical voice coil resistance at DC
<i>Le</i>	0.101	mH	frequency independent part of voice coil inductance
<i>L2</i>	0.051	mH	para-inductance of voice coil
<i>R2</i>	2.36	Ohm	electrical resistance due to eddy current losses
<i>Cmes</i>	149.24	μF	electrical capacitance representing moving mass
<i>Lces</i>	3.7	mH	electrical inductance representing driver compliance
<i>Res</i>	26.53	Ohm	resistance due to mechanical losses
<i>fs</i>	214.3	Hz	driver resonance frequency
Mechanical Parameters	Value	Unit	Description
<i>Mms</i>	0.967	g	mechanical mass of driver diaphragm assembly including air load and voice coil
<i>Mmd (Sd)</i>	0.933	g	mechanical mass of voice coil and diaphragm without air load
<i>Rms</i>	0.244	kg/s	mechanical resistance of total-driver losses
<i>Cms</i>	0.57	mm/N	mechanical compliance of driver suspension
<i>Kms</i>	1.75	N/mm	mechanical stiffness of driver suspension
<i>Bl</i>	2.546	N/A	force factor (Bl product)
<i>Lambda s</i>	0.107	N/A	suspension creep factor
Loss Factors	Value	Unit	Description
<i>Qtp</i>	0.646	N/A	total Q-factor considering all losses
<i>Qms</i>	5.331	N/A	mechanical Q-factor of driver in free air considering Rms only
<i>Qes</i>	0.735	N/A	electrical Q-factor of driver in free air considering Re only
<i>Qts</i>	0.646	N/A	total Q-factor considering Re and Rms only
Other Parameters	Value	Unit	Description
<i>Vas</i>	0.0747	l	equivalent air volume of suspension
<i>n0</i>	0.096	%	reference efficiency (2 pi-radiation using Re)
<i>Lm</i>	82.03	dB	characteristic sound pressure level (SPL at 1m for 1W @ Re)
<i>Lnom</i>	82.42	dB	nominal sensitivity (SPL at 1m for 1W @ Zn)
<i>rmse Z</i>	3.64	%	root-mean-square fitting error of driver impedance Z(f)
<i>rmse Hx</i>	2.03	%	root-mean-square fitting error of transfer function Hx (f)
<i>Series resistor</i>	0	Ohm	resistance of series resistor
<i>Sd</i>	9.62	cm <sup>2</sup>	diaphragm area

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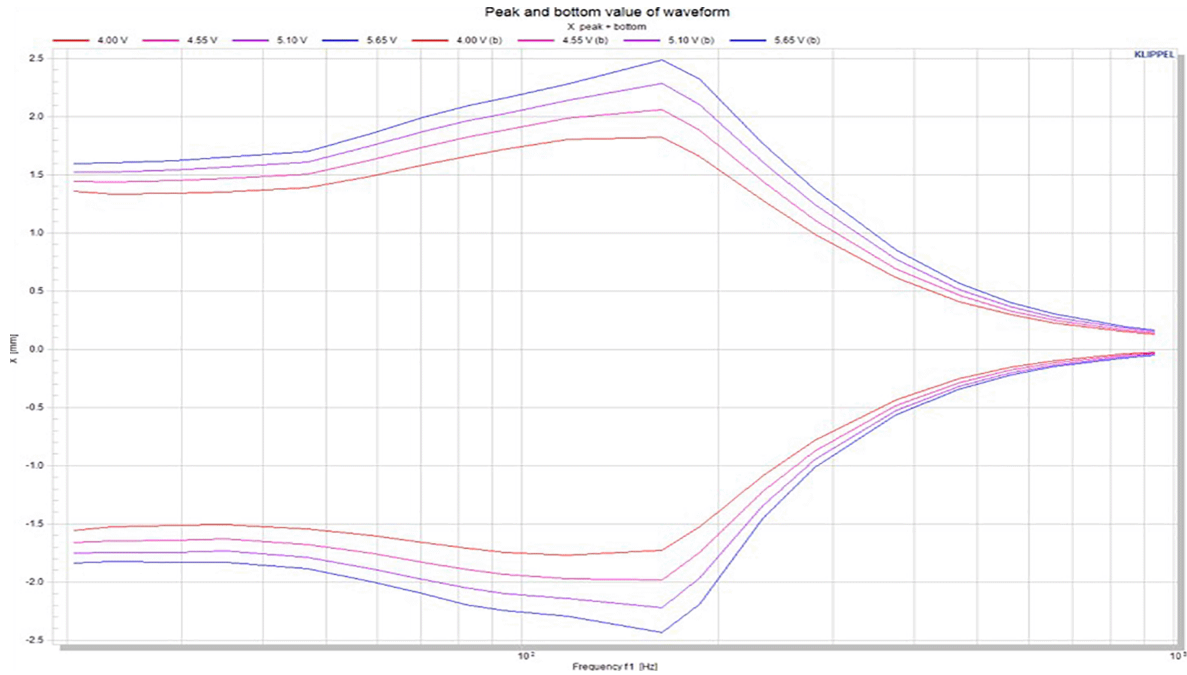
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## XMAX



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