

CS38-02P50-02-1

Rev. 1-2026
RoHS3 & REACH
Mobile Speakers



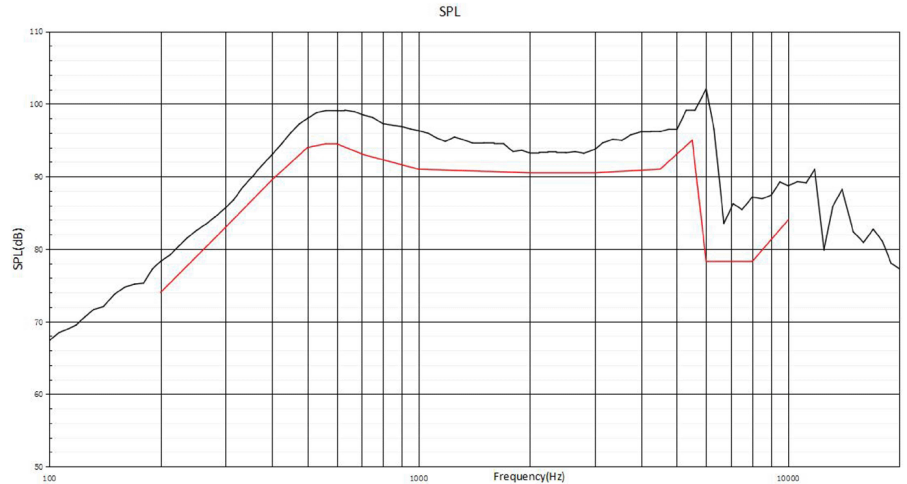
Operating Characteristics: 2.7cc Sealed Enclosure

ELECTRICAL

Rated Power	2 W
Short Term Max Power	3 W
Impedance	4.5 Ω ± 15 % 2000 Hz; 1.8 W

ACOUSTIC

f_o	500 Hz ± 15 % 2 W
Freq. Range	200 to 20000 Hz
Rated SPL	93 ± 3 dB 2000 Hz; AVG; 2 W; 10 cm
Distortion	See Page 2



Physical Characteristics

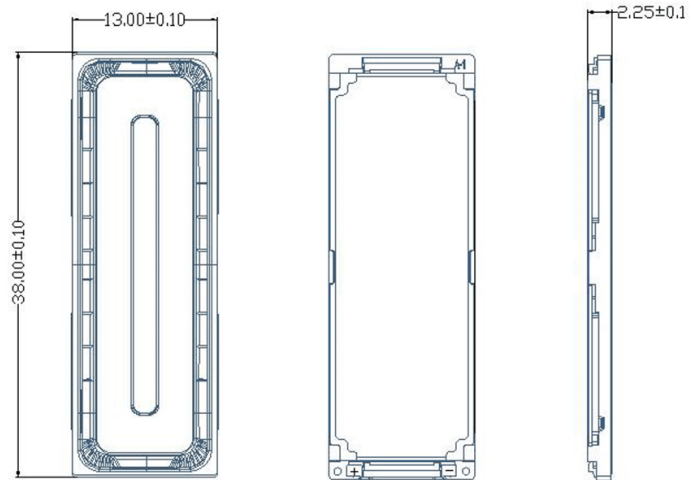
MATERIALS

Housing	PPA
Cone	TPEE
Magnet	NdFeB
Solder Pads	Tin Plated Stainless Steel

TEMPERATURE RANGES

Operating	-20 to +65 °C
Storage	-20 to +85 °C

Weight 4.3 g



General tolerance = ±0.2 mm and all measurements in mm unless otherwise noted.

Revision	Description	By	Date
0-2023	Original Specification.	SK	2023-11-15
1-2026	Updated the Rated Impedance from 4 Ω ± 15 % at 2W to 4.5 Ω ± 15 % at 1.8W. Updated to include the TS Parameters and XMAX value.	KG	2026-05-26

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.

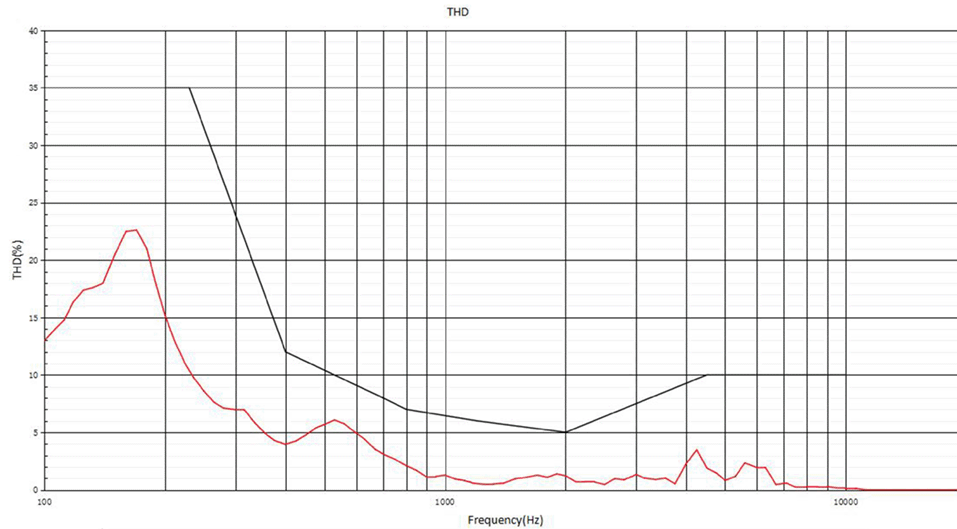
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Distortion (THD)



	200	230	400	700	800	1200	2000	4500	10000
THD_Limit	35	35	12	8	7	6	5	10	10

Thiele Small Parameters

Electrical Parameters	Value	Unit	Description
<i>Re</i>	4.16	Ohm	electrical voice coil resistance at DC
<i>Le</i>	0.046	mH	frequency independent part of voice coil inductance
<i>L2</i>	0.028	mH	para-inductance of voice coil
<i>R2</i>	1.68	Ohm	electrical resistance due to eddy current losses
<i>Cmes</i>	588.83	μF	electrical capacitance representing moving mass
<i>Lces</i>	0.16	mH	electrical inductance representing driver compliance
<i>Res</i>	2.66	Ohm	resistance due to mechanical losses
<i>fs</i>	544.6	Hz	driver resonance frequency
Mechanical Parameters	Value	Unit	Description
<i>Mms</i>	0.562	g	mechanical mass of driver diaphragm assembly including air load and voice coil
<i>Mmd (Sd)</i>	0.554	g	mechanical mass of voice coil and diaphragm without air load
<i>Rms</i>	0.359	kg/s	mechanical resistance of total-driver losses
<i>Cms</i>	0.152	mm/N	mechanical compliance of driver suspension
<i>Kms</i>	6.58	N/mm	mechanical stiffness of driver suspension
<i>Bl</i>	0.977	N/A	force factor (Bl product)
<i>Lambda s</i>	0.15	N/A	suspension creep factor
Loss Factors	Value	Unit	Description
<i>Qtp</i>	3.27	N/A	total Q-factor considering all losses
<i>Qms</i>	5.353	N/A	mechanical Q-factor of driver in free air considering Rms only
<i>Qes</i>	8.391	N/A	electrical Q-factor of driver in free air considering Re only
<i>Qts</i>	3.268	N/A	total Q-factor considering Re and Rms only
Other Parameters	Value	Unit	Description
<i>Vas</i>	0.0029	l	equivalent air volume of suspension
<i>η0</i>	0.005	%	reference efficiency (2 pi-radiation using Re)
<i>Lm</i>	69.47	dB	characteristic sound pressure level (SPL at 1m for 1W @ Re)
<i>Ln0m</i>	69.29	dB	nominal sensitivity (SPL at 1m for 1W @ Zn)
<i>rmse Z</i>	1.47	%	root-mean-square fitting error of driver impedance Z(f)
<i>rmse Hx</i>	4.65	%	root-mean-square fitting error of transfer function Hx (f)
<i>Series resistor</i>	0	Ohm	resistance of series resistor
<i>Sd</i>	3.66	cm ²	diaphragm area
<i>XMAX</i>	0.3	mm	maximum one-way linear excursion of a speaker cone before distortion increases

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