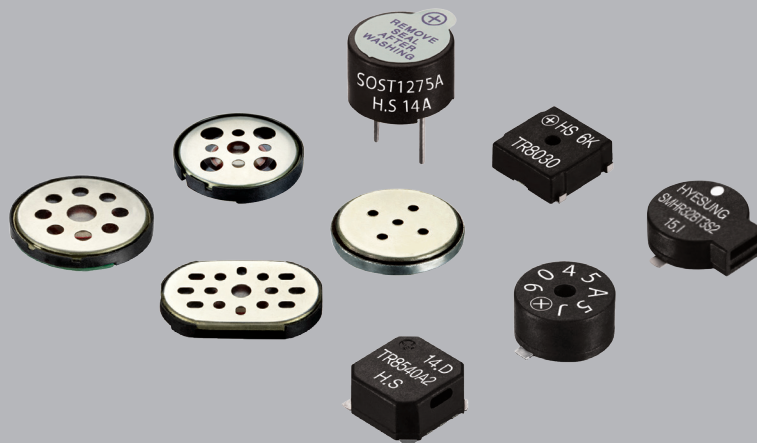


HS TechVIC

A leading Manufacture of Acoustic Components



MAGNETIC SOUND TRANSDUCER / BUZZER
DYNAMIC SPEAKER / RECEIVER



HS TechVIC
since 1987



HS TechVIC



PRINCIPAL QUALITY MANAGEMENT

Timely delivery and
continuous quality control for the
customer satisfaction.

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Buzzer

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Measurement

Company History

- 1987 Jan · Established HYE SUNG INDUSTRIAL CO., in Goijong-dong, Saha-ku, Busan, Korea(South)
- 1989 May · Joined to KITA
- 1993 Nov · Won the Prize of USD one million export-monument awarded
- 1995 Nov · ISO-9001/'94, KSA 9001/'95 and EN 29001/'94 Certified by SMICC
- 1996 Feb · Registered factory to Philippine Economic Zone Authority in the Philippines
- 1999 Dec · Won the Grand Prize of Excellent Export product awarded by Busan Metropolitan City
- 2000 Jul · Won the Grand Prize of Excellent Venture Entrepreneur awarded by Busan Metropolitan City
- 2001 Mar · Won the Prize of Excellent Enterprise awarded by MOCIE
- 2001 Nov · Selected as INNO BIZ(Innovation Business) Enterprise by SMBA
- 2002 Feb · TL-9000 Certified as Buzzers, Speakers, Receivers Maker for the first time in the world.
- 2004 Sep · Winning the prize of the 9th Electronic Components Technology Awarded
- 2006 Dec · Received Great Prize of Excellent for export by Busan Metropolitan City
- 2006 Dec · Selected as a leading company of acoustic parts by Busan Metropolitan City
- 2008 May · The development of ultra slim Microspeaker for mobile device by MEMS
- 2014 Feb · ISO-9001 Certified by CERMET
- 2016 Jan · ISO-14001 Certified by CERMET



MANAGEMENT PHILOSOPHY AND CAPABILITY OF PRODUCTION

“ Our vision is to be a premier company that provides innovative products and services to delight our customers in the rapidly changing consumers-solution industries and factory of us has a production capacity of 50M piece annual ”

Quality Assurance Certificate

· KOREA(SOUTH)



ISO-9001



ISO-14001

· PHILIPPINES

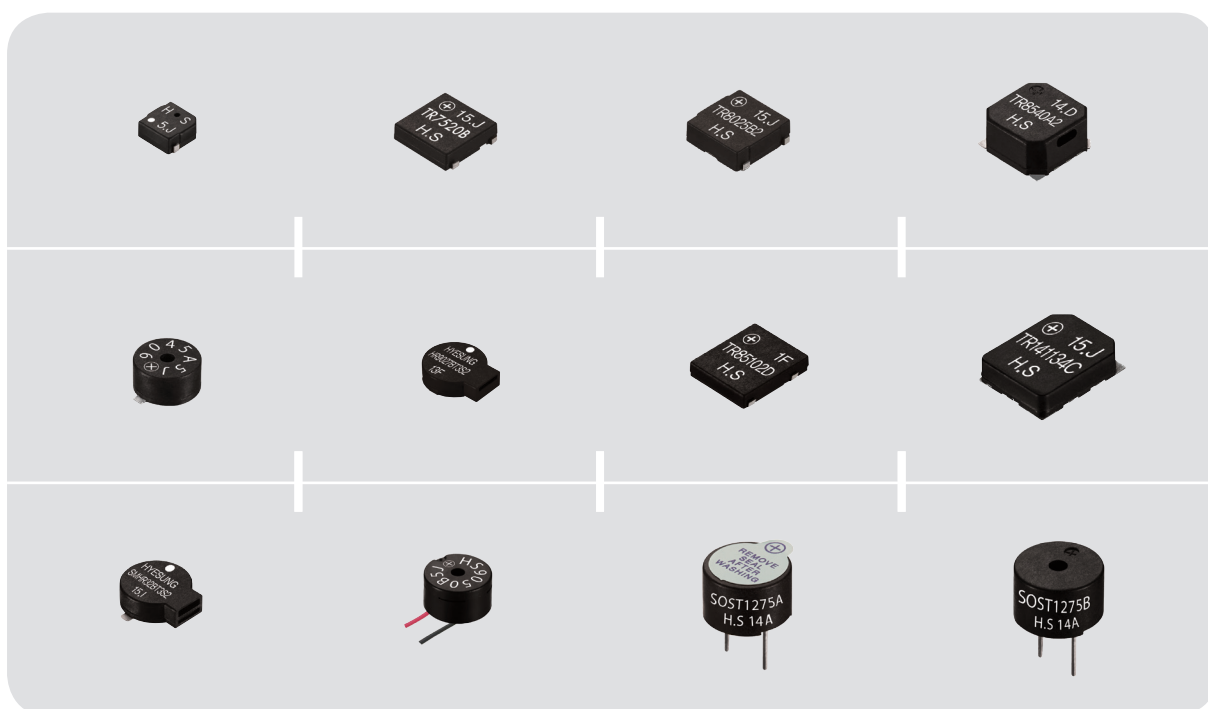
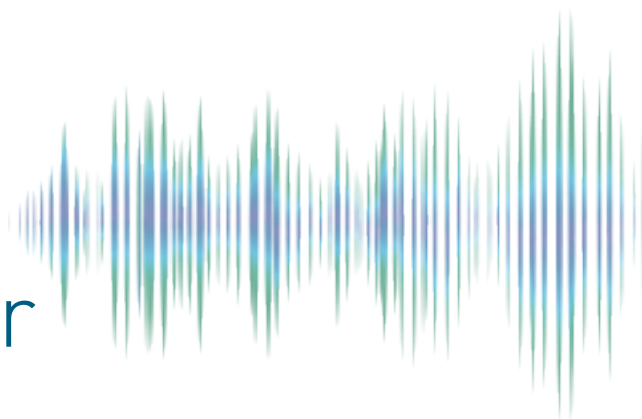


ISO-9001



ISO-14001

Magnetic Sound Transducer | Buzzer



Magnetic Sound Transducer / Buzzer

Model	size [mm]	Height [mm]	Rated Voltage [V]	Coil Resistance [Ω]	Min. Sound Output [dB/10cm]	Frequency [Hz]	Page No.
TR-5020	5 X 5	2.0	3.0	12 $\pm$ 2.0	78.0	4000	06
TR-5030	5 X 5	3.0	3.0	12 $\pm$ 2.0	78.0	4000	06
TR-7520	7.5 X 7.5	2.0	3.6	12 $\pm$ 2.0	85.0	2731	07
TR-8025	8 X 8	2.5	3.6	16 $\pm$ 2.4	88.0	2731	07
TR-8030(A)	8 X 8	3.0	3.6	16 $\pm$ 2.4	88.0	2731	08
TR-8030(B)	8 X 8	3.0	3.6	16 $\pm$ 2.4	88.0	2731	08
TR-8530(A)	8.5 X 8.5	3.0	3.6	16 $\pm$ 2.4	90.0	2731	09
TR-8530(B)	8.5 X 8.5	3.0	3.6	16 $\pm$ 2.4	90.0	2731	09
TR-8540(A)	8.5 X 8.5	4.0	3.6	16 $\pm$ 2.4	90.0	2731	10
TR-8540(B)	8.5 X 8.5	4.0	3.6	16 $\pm$ 2.4	90.0	2731	10
TR-1035(A)	10 X 10	3.5	3.6	16 $\pm$ 2.4	90.0	2731	11
TR-1035(B)	10 X 10	3.5	3.6	16 $\pm$ 2.4	90.0	2731	11
TR-85102	10 X 8.5	2.0	3.6	16 $\pm$ 2.4	88.0	2670	12
TR-141134	14 X 11	3.4	3.6	16 $\pm$ 2.4	88.0	3200	12
HR-9027	Ø9.0	2.7	3.6	16 $\pm$ 2.4	90.0	2731	13
HR-9035	Ø9.0	3.5	3.6	16 $\pm$ 2.4	90.0	2731	13
HR-9040	Ø9.0	4.0	3.6	16 $\pm$ 2.4	90.0	2731	14
SMR-9045	Ø9.0	4.5	3.6	16 $\pm$ 2.4	90.0	2731	14
SMHR-25	Ø9.6	2.5	3.6	16 $\pm$ 2.4	87.0	2731	15
SMHR-32	Ø9.6	3.2	3.6	16 $\pm$ 2.4	92.0	2731	15
SMT-9050	Ø9.0	5.0	3.6	25 $\pm$ 3.8	90.0	2731	16
SMT-9050[L/W]	Ø9.0	5.0	3.6	25 $\pm$ 3.8	90.0	2731	16
SOST-1275A	Ø12.0	7.5	5.0	Avg 25mA	80.0	3100 $\pm$ 800	17
SOST-1275B	Ø12.0	7.5	12.0	Avg 15mA	75.0	3200 $\pm$ 800	17

Magnetic Buzzer

TR-5020 ➤➤



TR-5020

Item		Specifications
Rated voltage	[V]	3.0
Operation voltage	[V]	2.0 ~ 4.0
Test Input Signal	[Vp-p]	Min. 5.0
Rated frequency	[Hz]	4000
Sound pressure level	[dB]	Min. 78.0
Current	[mA]	MAX. 100.0
Coil resistance	[Ω]	12 ± 2.0
Weight	[g]	0.25

Magnetic Buzzer

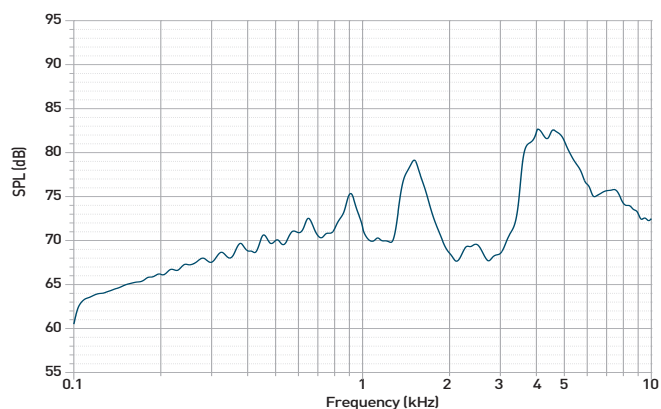
TR-5030 ➤➤



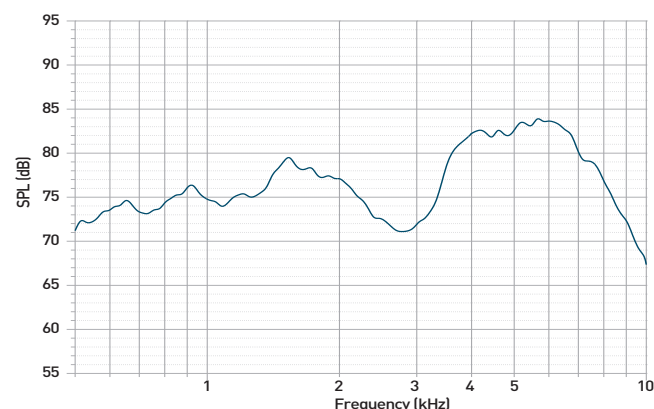
TR-5030

Item		Specifications
Rated voltage	[V]	3.0
Operation voltage	[V]	2.0 ~ 4.0
Test Input Signal	[Vp-p]	Min. 5.0
Rated frequency	[Hz]	4000
Sound pressure level	[dB]	Min. 78.0
Current	[mA]	MAX. 100.0
Coil resistance	[Ω]	12 ± 2.0
Weight	[g]	0.3

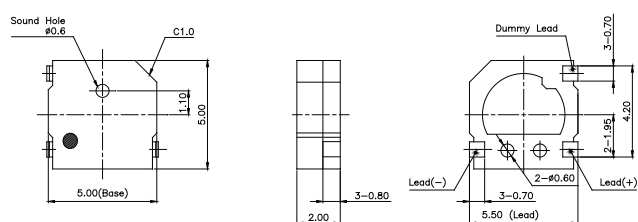
➤➤ Frequency Response



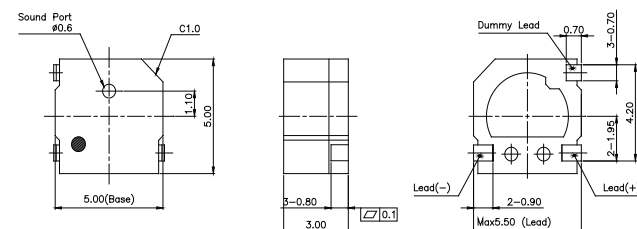
➤➤ Frequency Response



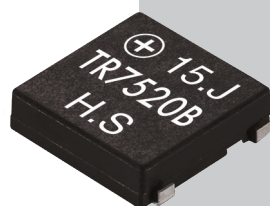
➤➤ Dimension



➤➤ Dimension



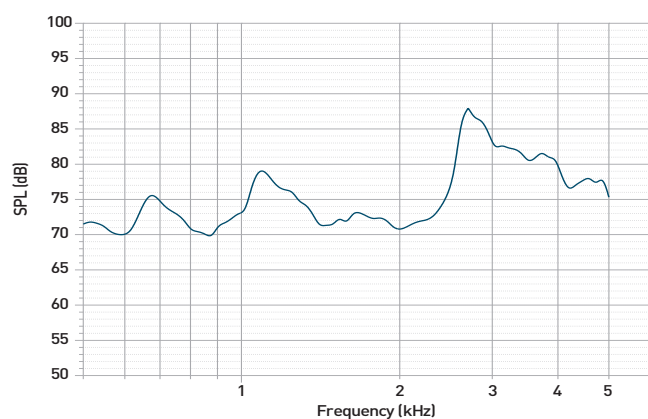
Magnetic Buzzer TR-7520 ➤➤



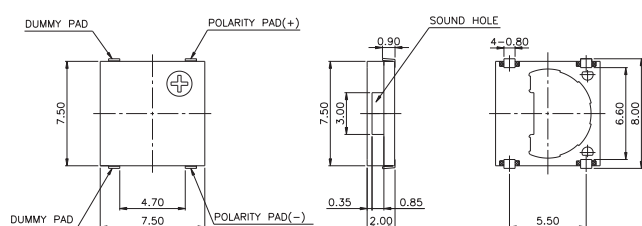
TR-7520

Item		Specifications
Rated voltage	[V]	3.6
Operation voltage	[V]	2.5 ~ 4.5
Test Input Signal	[Vp-p]	Min. 5.0
Rated frequency	[Hz]	2731
Sound pressure level	[dB]	Min. 85.0
Current	[mA]	MAX. 120.0
Coil resistance	[Ω]	12 ± 2.0
Weight	[g]	0.3

➤➤ Frequency Response



➤➤ Dimension



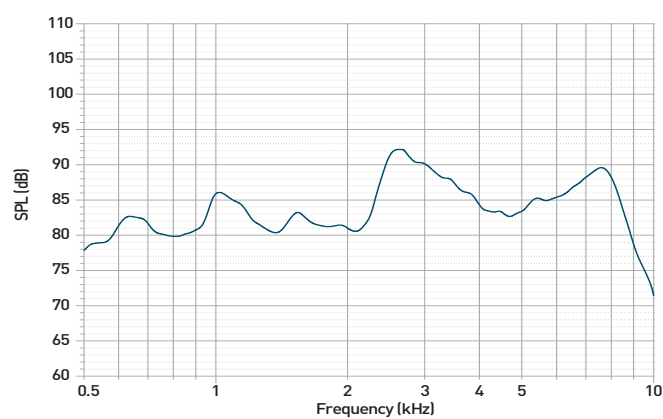
Magnetic Buzzer TR-8025 ➤➤



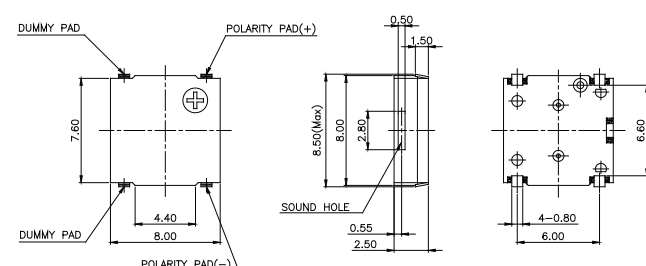
TR-8025

Item		Specifications
Rated voltage	[V]	3.6
Operation voltage	[V]	2.5 ~ 4.5
Test Input Signal	[Vp-p]	Min. 5.0
Rated frequency	[Hz]	2731
Sound pressure level	[dB]	Min. 88.0
Current	[mA]	MAX. 90.0
Coil resistance	[Ω]	16 ± 2.4
Weight	[g]	0.35

➤➤ Frequency Response



➤➤ Dimension



Magnetic Buzzer

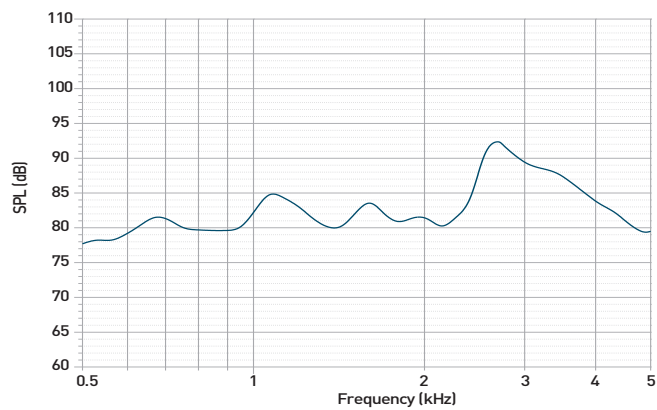
TR-8030(A) >>



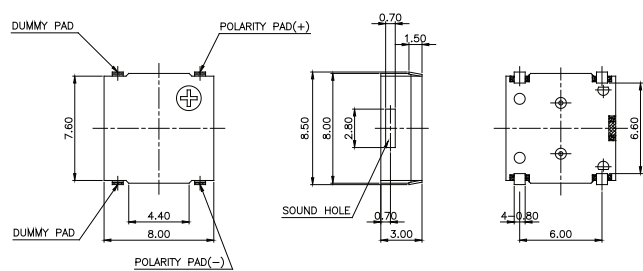
TR-8030(A)

Item		Specifications
Rated voltage	[V]	3.6
Operation voltage	[V]	2.5 ~ 4.5
Test Input Signal	[Vp-p]	Min. 5.0
Rated frequency	[Hz]	2731
Sound pressure level	[dB]	Min. 88.0
Current	[mA]	MAX. 90.0
Coil resistance	[Ω]	16 ± 2.4
Weight	[g]	0.40

Frequency Response



Dimension



Magnetic Buzzer

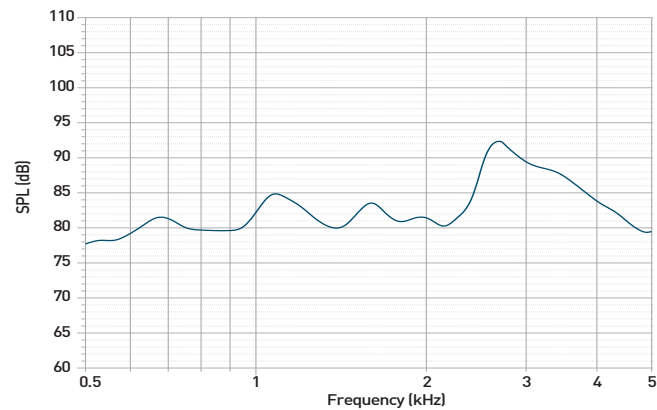
TR-8030(B) >>



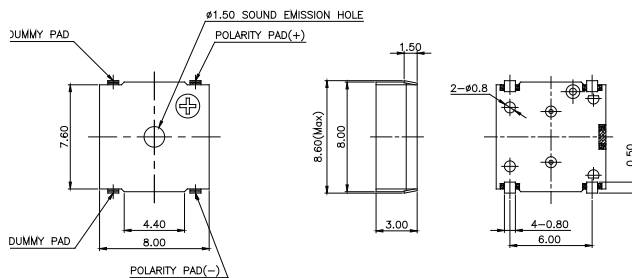
TR-8030(B)

Item		Specifications
Rated voltage	[V]	3.6
Operation voltage	[V]	2.5 ~ 4.5
Test Input Signal	[Vp-p]	Min. 5.0
Rated frequency	[Hz]	2731
Sound pressure level	[dB]	Min. 88.0
Current	[mA]	MAX. 90.0
Coil resistance	[Ω]	16 ± 2.4
Weight	[g]	0.40

Frequency Response



Dimension



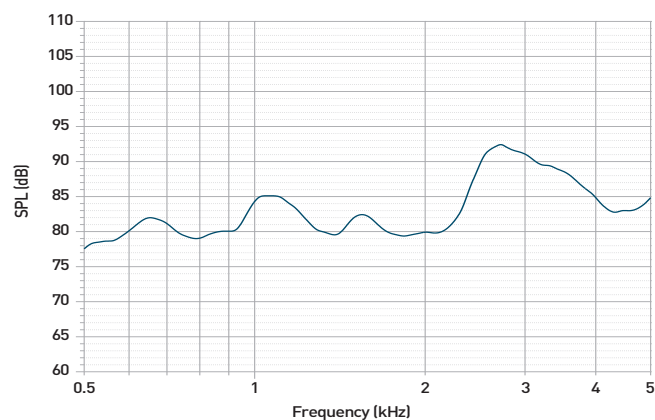
Magnetic Buzzer TR-8530(A) ➡➡



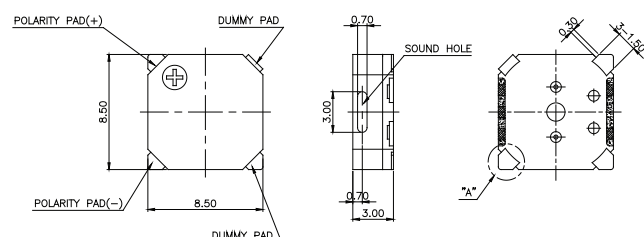
TR-8530(A)

Item		Specifications
Rated voltage	[V]	3.6
Operation voltage	[V]	2.5 ~ 4.5
Test Input Signal	[Vp-p]	Min. 5.0
Rated frequency	[Hz]	2731
Sound pressure level	[dB]	Min. 90.0
Current	[mA]	MAX. 90.0
Coil resistance	[Ω]	16 ± 2.4
Weight	[g]	0.40

➡➡ Frequency Response



➡➡ Dimension



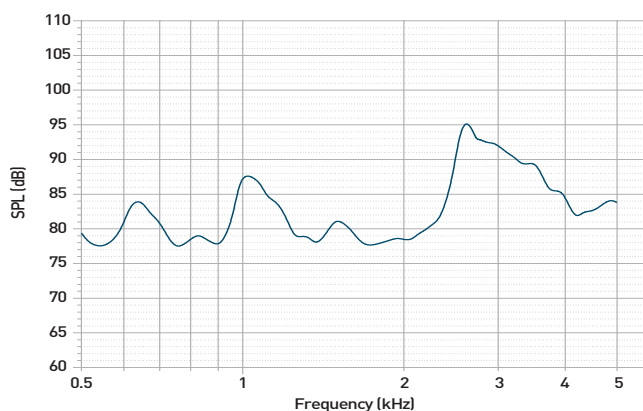
Magnetic Buzzer TR-8530(B) ➡➡



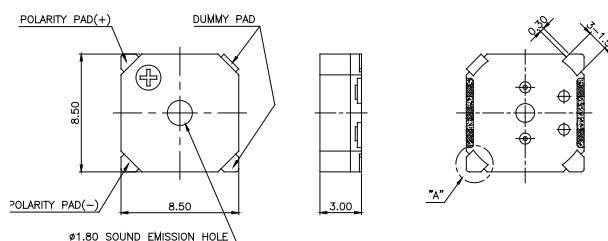
TR-8530(B)

Item		Specifications
Rated voltage	[V]	3.6
Operation voltage	[V]	2.5 ~ 4.5
Test Input Signal	[Vp-p]	Min. 5.0
Rated frequency	[Hz]	2731
Sound pressure level	[dB]	Min. 90.0
Current	[mA]	MAX. 90.0
Coil resistance	[Ω]	16 ± 2.4
Weight	[g]	0.40

➡➡ Frequency Response



➡➡ Dimension



Magnetic Buzzer TR-8540(A) ➡➡



TR-8540(A)

Item		Specifications
Rated voltage	[V]	3.6
Operation voltage	[V]	2.5 ~ 4.5
Test Input Signal	[Vp-p]	Min. 5.0
Rated frequency	[Hz]	2731
Sound pressure level	[dB]	Min. 90.0
Current	[mA]	MAX. 90.0
Coil resistance	[Ω]	16 ± 2.4
Weight	[g]	0.45

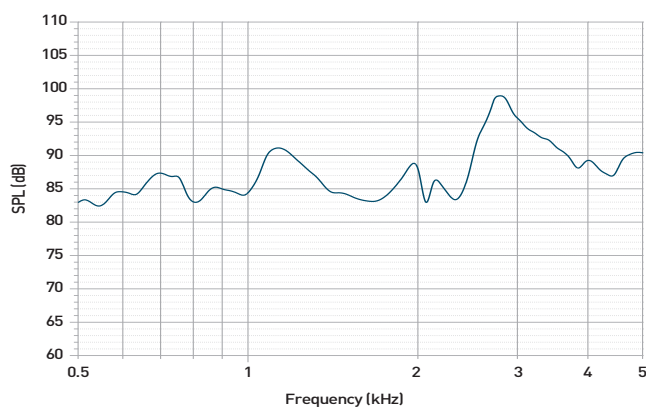
Magnetic Buzzer TR-8540(B) ➡➡



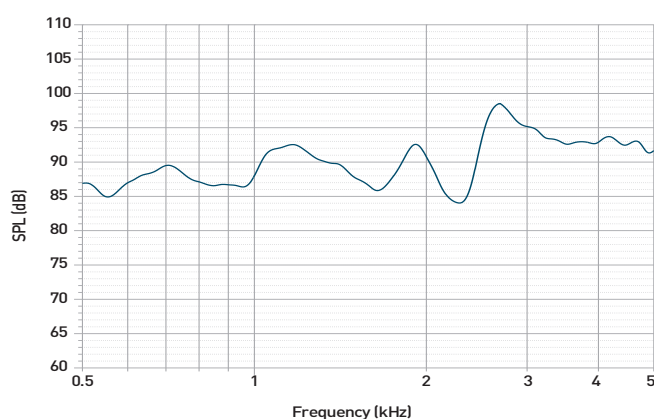
TR-8540(B)

Item		Specifications
Rated voltage	[V]	3.6
Operation voltage	[V]	2.5 ~ 4.5
Test Input Signal	[Vp-p]	Min. 5.0
Rated frequency	[Hz]	2731
Sound pressure level	[dB]	Min. 90.0
Current	[mA]	MAX. 90.0
Coil resistance	[Ω]	16 ± 2.4
Weight	[g]	0.45

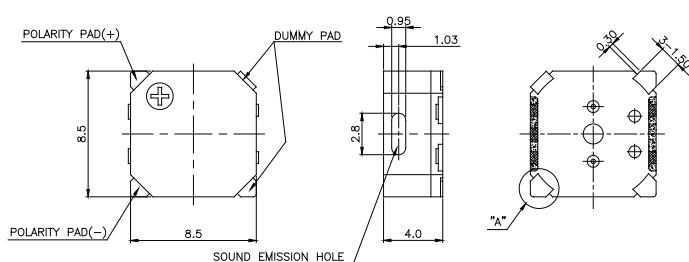
➡➡ Frequency Response



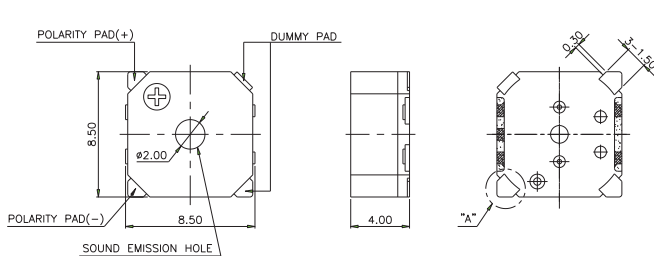
➡➡ Frequency Response



➡➡ Dimension



➡➡ Dimension



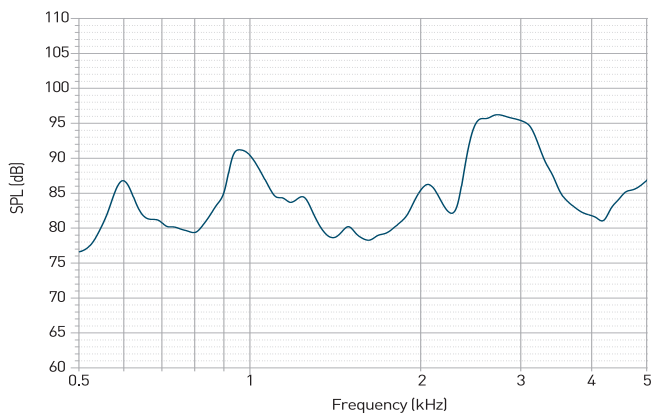
TR-1035(A) >>



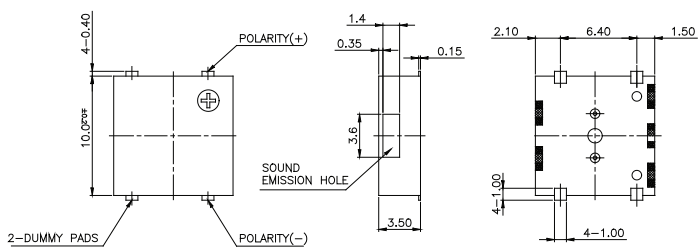
TR-1035(A)

Item		Specifications
Rated voltage	[V]	3.6
Operation voltage	[V]	2.5 ~ 4.5
Test Input Signal	[Vp-p]	Min. 5.0
Rated frequency	[Hz]	2731
Sound pressure level	[dB]	Min. 90.0
Current	[mA]	MAX. 100.0
Coil resistance	[Ω]	16 ± 2.4
Weight	[g]	0.9

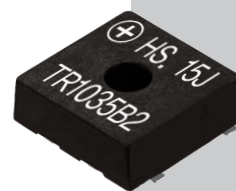
Frequency Response



Dimension



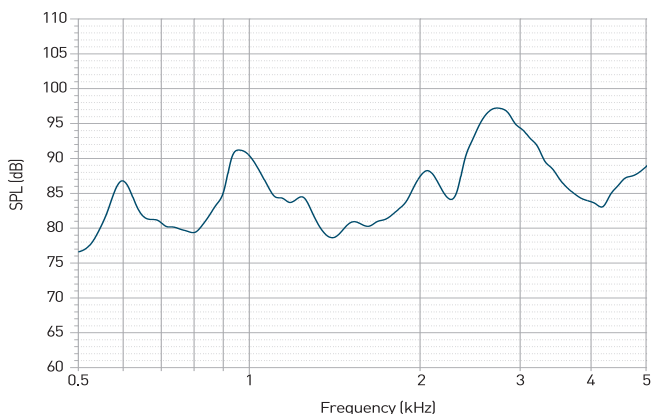
TR-1035(B) >>



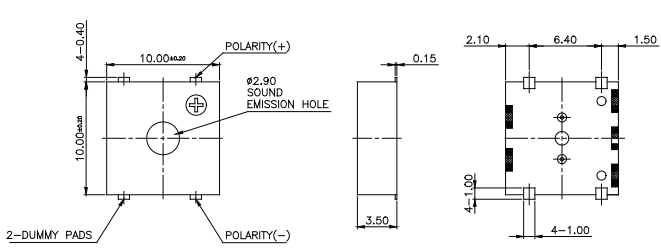
TR-1035(B)

Item		Specifications
Rated voltage	[V]	3.6
Operation voltage	[V]	2.5 ~ 4.5
Test Input Signal	[Vp-p]	Min. 5.0
Rated frequency	[Hz]	2731
Sound pressure level	[dB]	Min. 90.0
Current	[mA]	MAX. 100.0
Coil resistance	[Ω]	16 ± 2.4
Weight	[g]	0.9

➤➤ Frequency Response

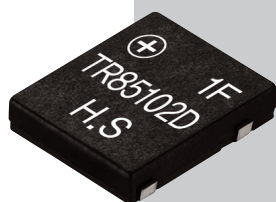


Dimension



Magnetic Buzzer

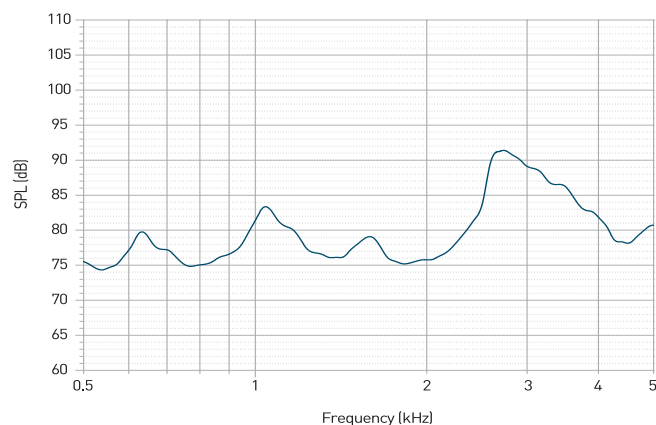
TR-85102 ➤➤



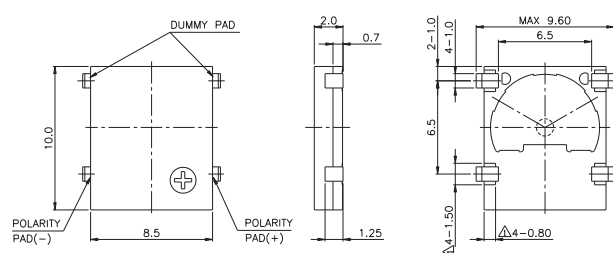
TR-85102

Item		Specifications
Rated voltage	[V]	3.6
Operation voltage	[V]	2.5 ~ 4.5
Test Input Signal	[Vp-p]	Min. 5.0
Rated frequency	[Hz]	2670
Sound pressure level	[dB]	Min. 88.0
Current	[mA]	MAX. 100.0
Coil resistance	[Ω]	16 ± 2.4
Weight	[g]	0.4

➤➤ Frequency Response



➤➤ Dimension



Magnetic Buzzer

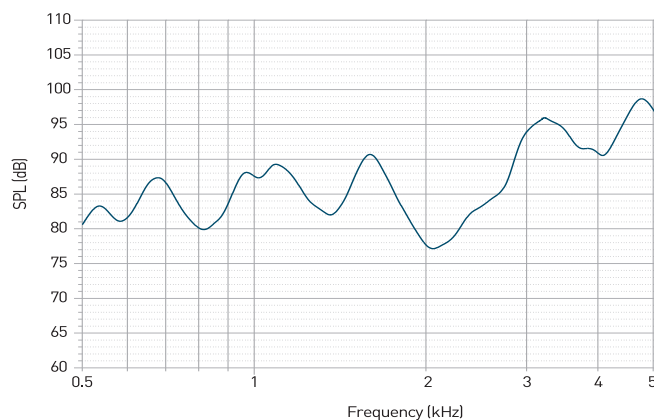
TR-141134 ➤➤



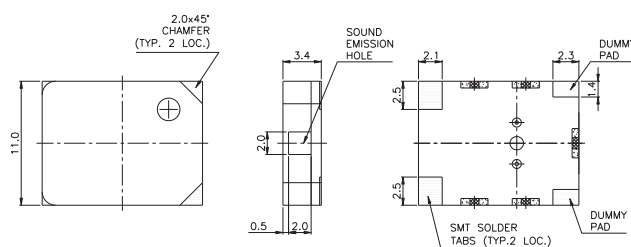
TR-141134

Item		Specifications
Rated voltage	[V]	3.6
Operation voltage	[V]	2.5 ~ 4.5
Test Input Signal	[Vp-p]	Min. 5.0
Rated frequency	[Hz]	3200
Sound pressure level	[dB]	Min. 88.0
Current	[mA]	MAX. 90.0
Coil resistance	[Ω]	16 ± 2.4
Weight	[g]	0.7

➤➤ Frequency Response



➤➤ Dimension



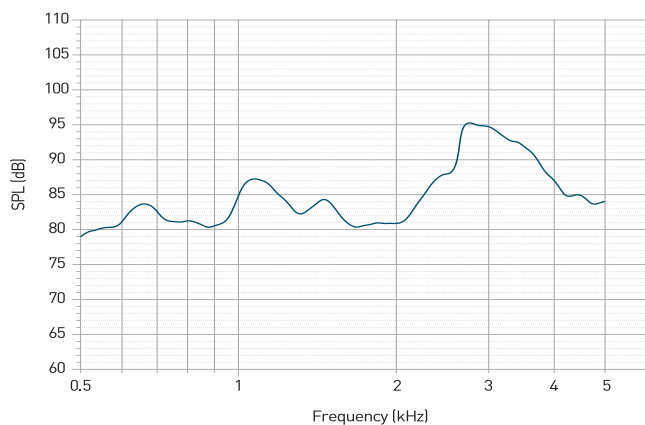
Magnetic Buzzer HR-9027 >>



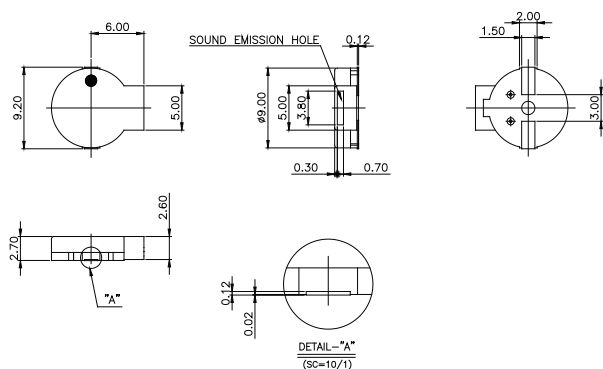
HR-9027

Item		Specifications
Rated voltage	[V]	3.6
Operation voltage	[V]	2.5 ~ 4.5
Test Input Signal	[Vp-p]	Min. 5.0
Rated frequency	[Hz]	2731
Sound pressure level	[dB]	Min. 90.0
Current	[mA]	MAX. 90.0
Coil resistance	[Ω]	16 ± 2.4
Weight	[g]	0.4

>> Frequency Response



>> Dimension



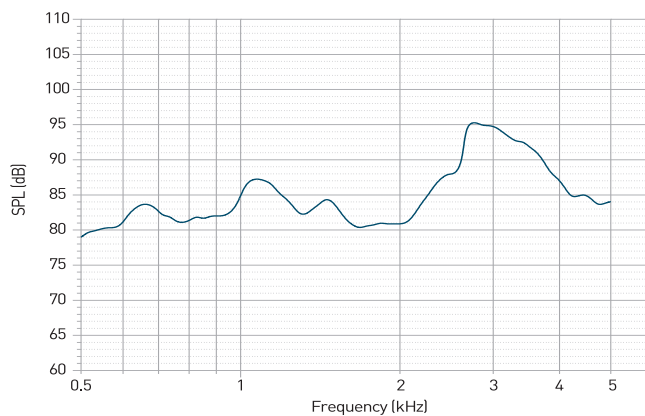
Magnetic Buzzer HR-9035 >>



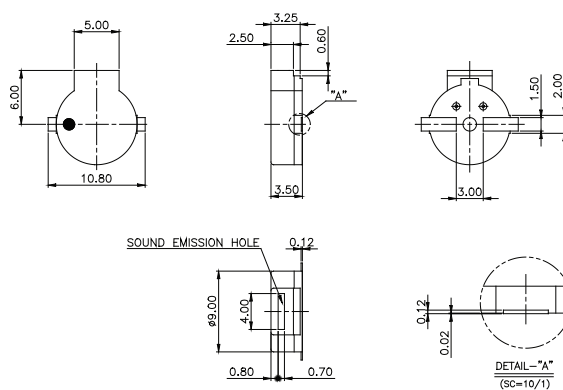
HR-9035

Item		Specifications
Rated voltage	[V]	3.6
Operation voltage	[V]	2.5 ~ 4.5
Test Input Signal	[Vp-p]	Min. 5.0
Rated frequency	[Hz]	2731
Sound pressure level	[dB]	Min. 90.0
Current	[mA]	MAX. 90.0
Coil resistance	[Ω]	16 ± 2.4
Weight	[g]	0.45

>> Frequency Response



>> Dimension



Magnetic Buzzer

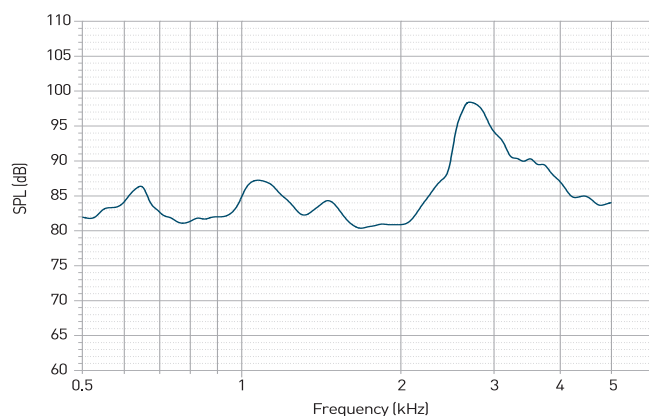
HR-9040 >>



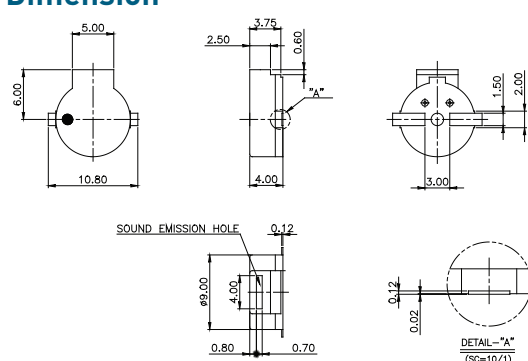
HR-9040

Item		Specifications
Rated voltage	[V]	3.6
Operation voltage	[V]	2.5 ~ 4.5
Test Input Signal	[Vp-p]	Min. 5.0
Rated frequency	[Hz]	2731
Sound pressure level	[dB]	Min. 90.0
Current	[mA]	MAX.90.0
Coil resistance	[Ω]	16 ± 2.4
Weight	[g]	0.5

>> Frequency Response



>> Dimension



Magnetic Buzzer

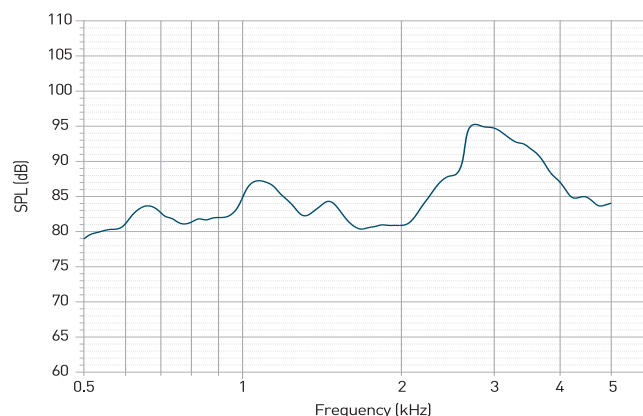
SMR-9045 >>



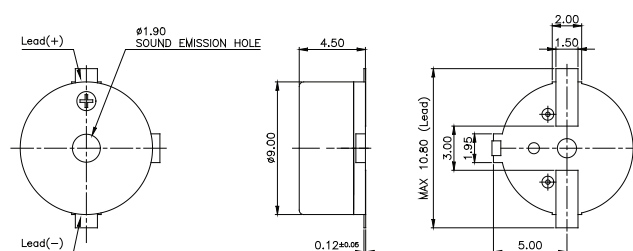
SMR-9045

Item		Specifications
Rated voltage	[V]	3.6
Operation voltage	[V]	2.5 ~ 4.5
Test Input Signal	[Vp-p]	Min. 5.0
Rated frequency	[Hz]	2731
Sound pressure level	[dB]	Min. 90.0
Current	[mA]	MAX. 90.0
Coil resistance	[Ω]	16 ± 2.4
Weight	[g]	0.45

>> Frequency Response



>> Dimension



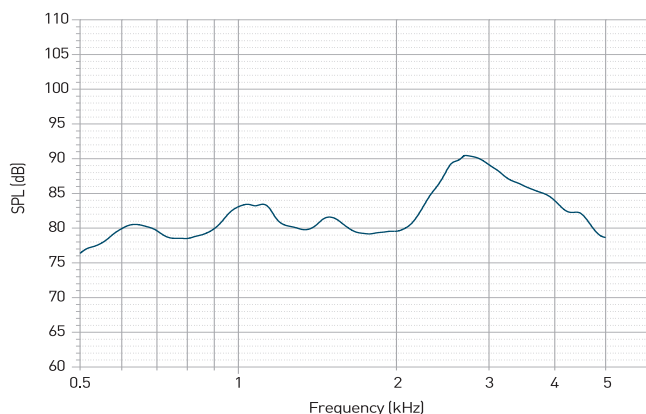
Magnetic Buzzer SMHR-25 >>



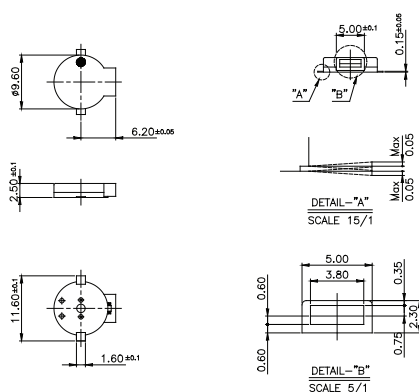
SMHR-25

Item		Specifications
Rated voltage	[V]	3.6
Operation voltage	[V]	2.5 ~ 4.5
Test Input Signal	[Vp-p]	Min. 5.0
Rated frequency	[Hz]	2731
Sound pressure level	[dB]	Min. 87.0
Current	[mA]	MAX. 90.0
Coil resistance	[Ω]	16 ± 2.4
Weight	[g]	0.4

>> Frequency Response



>> Dimension



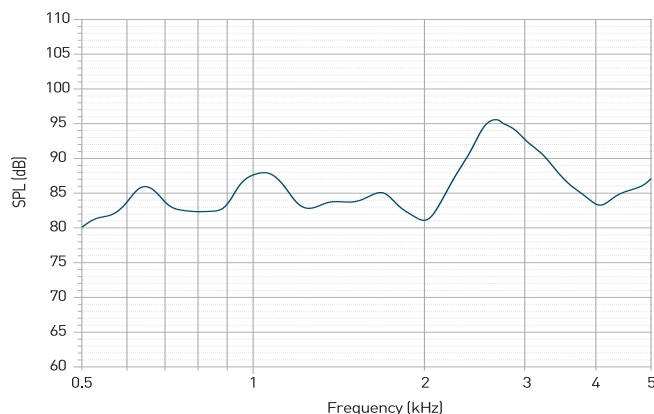
Magnetic Buzzer SMHR-32 >>



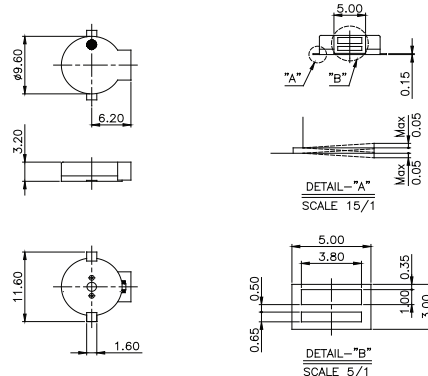
SMHR-32

Item		Specifications
Rated voltage	[V]	3.6
Operation voltage	[V]	2.5 ~ 4.5
Test Input Signal	[Vp-p]	Min. 5.0
Rated frequency	[Hz]	2731
Sound pressure level	[dB]	Min. 92.0
Current	[mA]	MAX. 90.0
Coil resistance	[Ω]	16 ± 2.4
Weight	[g]	0.45

>> Frequency Response



>> Dimension



Magnetic Buzzer

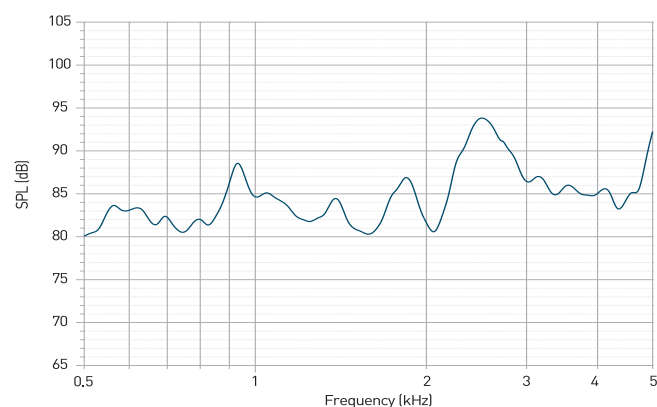
SMT-9050



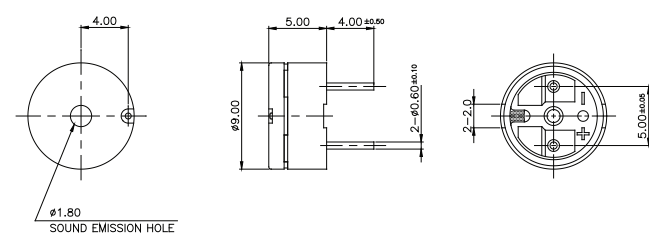
SMT-9050

Item		Specifications
Rated voltage	[V]	3.6
Operation voltage	[V]	2.5 ~ 4.5
Test Input Signal	[Vp-p]	Min. 5.0
Rated frequency	[Hz]	2731
Sound pressure level	[dB]	Min. 90.0
Current	[mA]	MAX. 70.0
Coil resistance	[Ω]	25 ± 3.8
Weight	[g]	0.5

Frequency Response



Dimension



Magnetic Buzzer

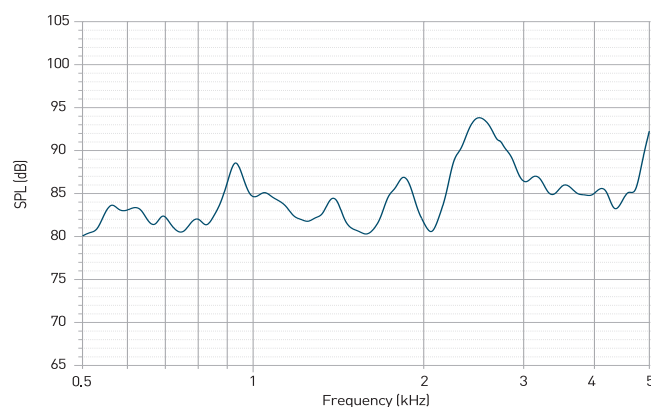
SMT-9050[L/W]



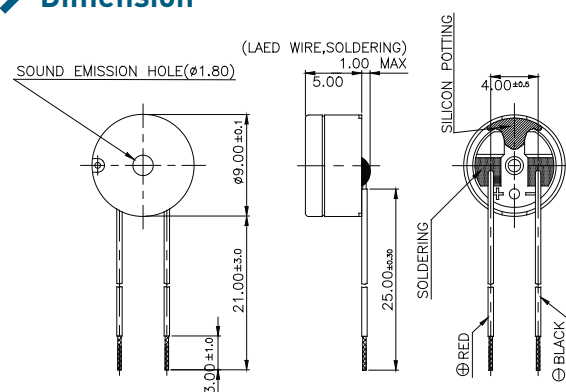
SMT-9050[L/W]

Item		Specifications
Rated voltage	[V]	3.6
Operation voltage	[V]	2.5 ~ 4.5
Test Input Signal	[Vp-p]	Min. 5.0
Rated frequency	[Hz]	2731
Sound pressure level	[dB]	Min. 90.0
Current	[mA]	MAX. 70.0
Coil resistance	[Ω]	25 ± 3.8
Weight	[g]	0.5

Frequency Response



Dimension



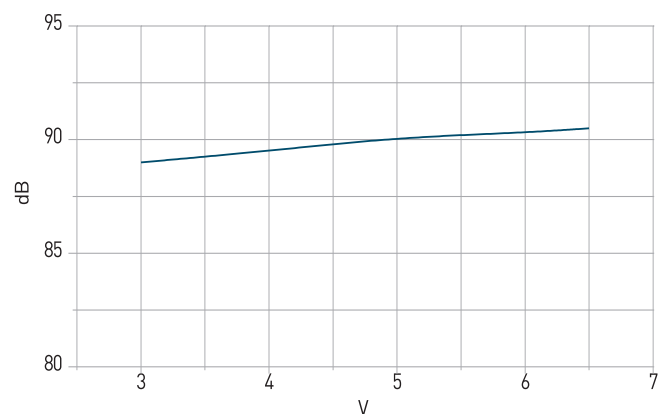
Magnetic Buzzer
SOST-1275A ➤➤



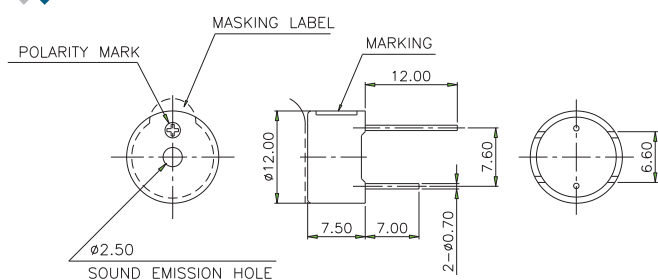
SOST-1275A

Item		Specifications
Rated voltage	[V]	5.0
Operation voltage	[V]	3.0 ~ 6.0
Test Input Signal	[Vp-p]	3100 ± 800
Rated frequency	[Hz]	Single
Sound pressure level	[dB]	Min. 80.0
Current	[mA]	75.0
Avg Current	[mA]	25.0
Weight	[g]	1.8

➤➤ **Frequency Response**



➤➤ **Dimension**



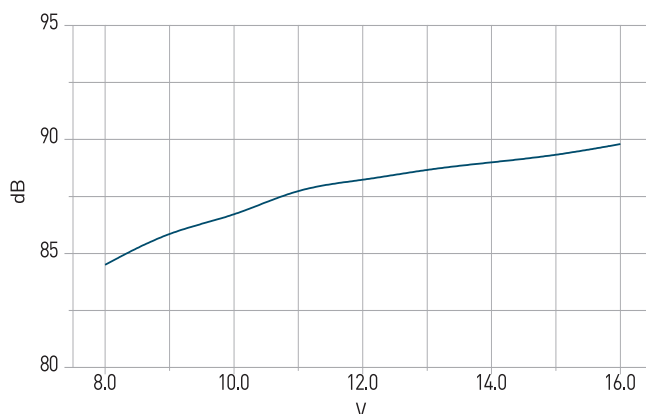
Magnetic Buzzer
SOST-1275B ➤➤



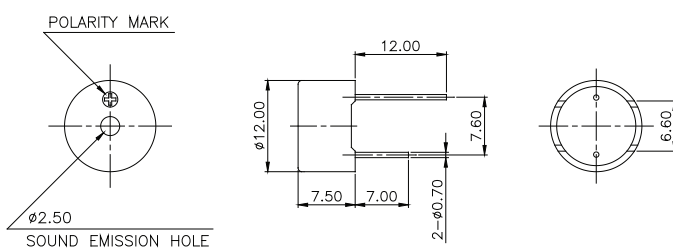
SOST-1275B

Item		Specifications
Rated voltage	[V]	12.0
Operation voltage	[V]	8.0 ~ 16.0
Test Input Signal	[Vp-p]	3200 ± 800
Rated frequency	[Hz]	Single
Sound pressure level	[dB]	Min. 75.0
Current	[mA]	40.0
Avg Current	[mA]	15.0
Weight	[g]	1.8

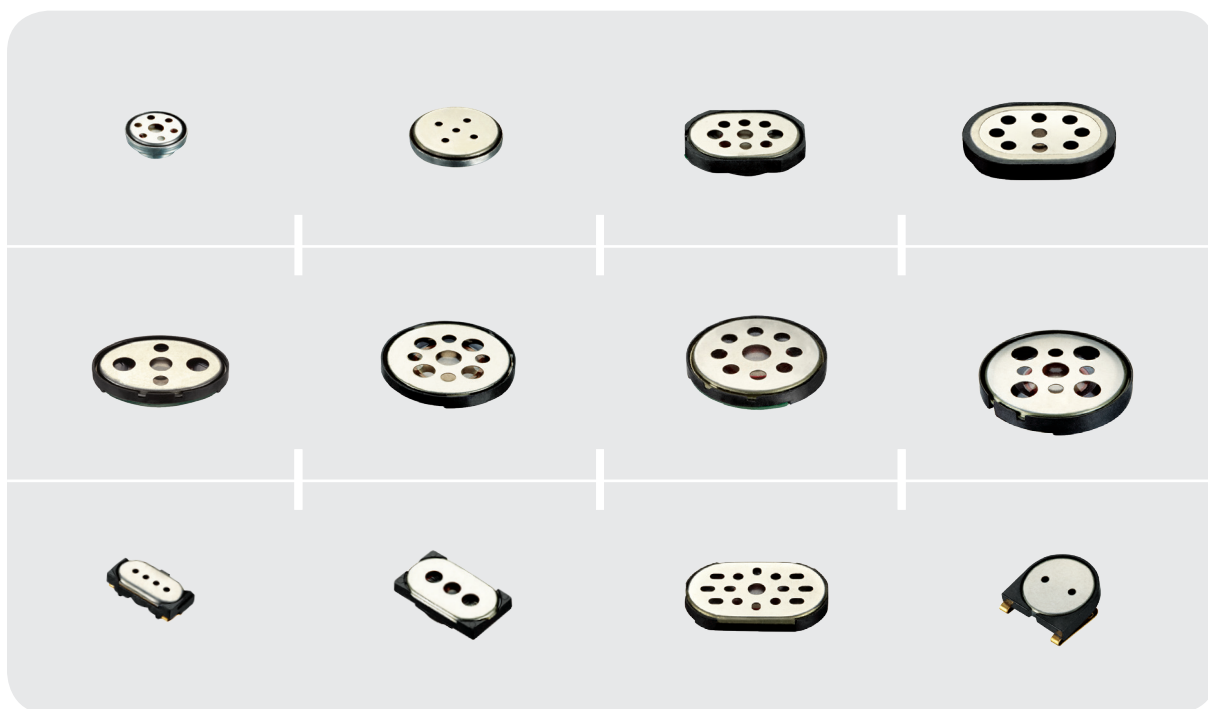
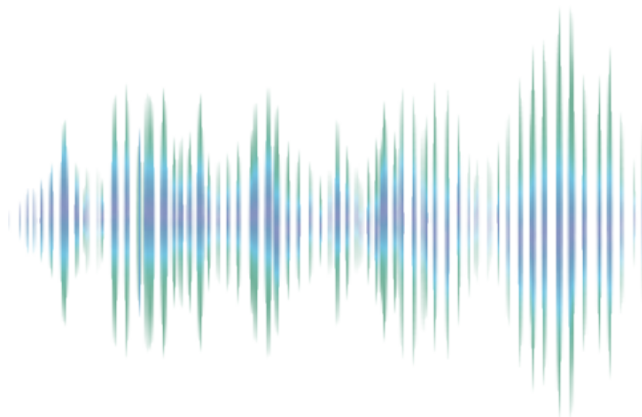
➤➤ **Frequency Response**



➤➤ **Dimension**



Dynamic Speaker | Receiver



Speaker & Receiver

Model	Size [mm]	Height [mm]	Rated/Max Power [W]	Impedance [Ω]	Sound Pressure Level [dB]	Resonant Frequency(F0) [Hz]	Distortion (THD)	Page No.
HS-08	$\Phi 8.0$	2.7	0.2/0.4	$7.2 \pm 15\%$	79 ± 3.0	$1,800 \pm 20\%$	Max 5%(5kHz)	20
HS-1025	$\Phi 10.0$	2.5	0.3/0.5	$8.0 \pm 15\%$	80 ± 3.0	$1,250 \pm 20\%$	Max 5%(2kHz)	20
HS-1230	$\Phi 12.0$	3.0	0.3/0.6	$8.0 \pm 15\%$	85 ± 3.0	$1,200 \pm 20\%$	Max 5%(2kHz)	21
HS-1325	$\Phi 13.0$	2.5	0.4/0.6	$8.0 \pm 15\%$	88 ± 3.0	$900 \pm 20\%$	Max 5%(1kHz)	21
HS-15	$\Phi 15.0$	3.7	0.8/1.0	$8.0 \pm 15\%$	87 ± 3.0	$750 \pm 20\%$	Max 5%(1kHz)	22
HS-15KSI	$\Phi 15.0$	3.0	0.3/0.8	$8.0 \pm 15\%$	88 ± 3.0	$850 \pm 20\%$	Max 5%(1kHz)	22
HS-1511	15 X 11	3.0	0.8/1.0	$8.0 \pm 15\%$	84 ± 3.0	$850 \pm 20\%$	Max 5%(2kHz)	23
HS-17	$\Phi 17.0$	3.7	0.8/1.0	$8.0 \pm 15\%$	88 ± 3.0	$800 \pm 20\%$	Max 5%(1kHz)	23
HS-18	$\Phi 18.0$	2.7	0.5/0.8	$8.0 \pm 15\%$	88 ± 3.0	$700 \pm 20\%$	Max 5%(1kHz)	24
HSO-1810	18 X 10	2.5	0.5/0.8	$8.0 \pm 15\%$	87 ± 3.0	$1,000 \pm 20\%$	Max 5%(2kHz)	24
HSO-1813	18 X 13	3.5	0.8/1.0	$8.0 \pm 15\%$	89 ± 3.0	$850 \pm 20\%$	Max 5%(2kHz)	25
HS-20	$\Phi 20.0$	4.2	0.8/1.0	$8.0 \pm 15\%$	88 ± 3.0	$700 \pm 20\%$	Max 5%(2kHz)	25
HSO-2014	20 X 14	3.0	0.5/0.8	$8.0 \pm 15\%$	90 ± 3.0	$800 \pm 20\%$	Max 5%(2kHz)	26
HSO-2415	24 X 15	4.0	1.0/1.2	$8.0 \pm 15\%$	87 ± 3.0	$700 \pm 20\%$	Max 5%(2kHz)	26
HES-2415	52 X 24.2	6.3	0.8/1.2	$8.0 \pm 15\%$	91 ± 3.0	$1,100 \pm 20\%$	Max 5%(2kHz)	27
DS-28	$\Phi 28.0$	5.0	1.0/1.2	$8.0 \pm 15\%$	92 ± 3.0	$450 \pm 20\%$	Max 5%(1kHz)	27
DS-32	$\Phi 32.0$	7.5	1.0/1.5	$8.0 \pm 15\%$	94 ± 3.0	$730 \pm 20\%$	Max 5%(1kHz)	28
DS-36	$\Phi 36.0$	6.5	1.5/2.0	$8.0 \pm 15\%$	93 ± 3.0	$600 \pm 20\%$	Max 5%(1kHz)	28
DR-1005AS	10 X 5	3.2	0.005/0.02	$32.0 \pm 15\%$	109 ± 3.0	-	Max 5%(1kHz)	29
DR-1024A	$\Phi 10.0$	2.4	0.01/0.03	$32.0 \pm 15\%$	109 ± 3.0	-	Max 5%(1kHz)	29
DR-1024C	$\Phi 10.0$	2.4	0.01/0.03	$32.0 \pm 15\%$	107 ± 3.0	-	Max 5%(1kHz)	30
HDR-1207D	12 X 7	2.4	0.003/0.005	$32.0 \pm 15\%$	108 ± 3.0	-	Max 5%(1kHz)	30
HDR-16	$\Phi 16.0$	3.7	0.02/0.04	$32.0 \pm 15\%$	114 ± 3.0	-	Max 5%(1kHz)	31
HDR-1506	15 X 6	2.5	0.01/0.025	$32.0 \pm 15\%$	107 ± 3.0	-	Max 5%(1kHz)	31

Dynamic Speaker

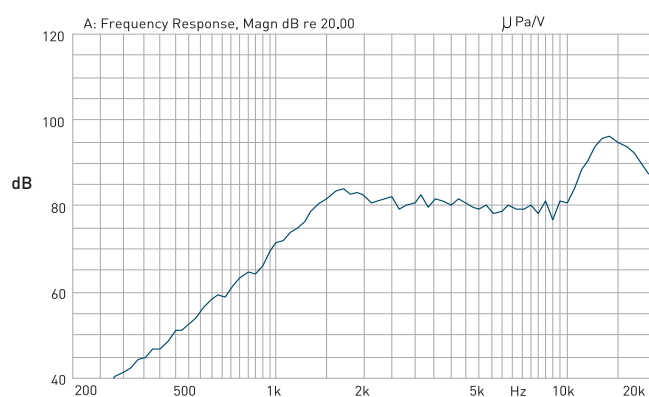
HS-08 >>



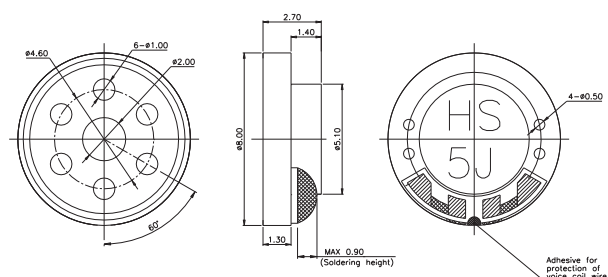
HS-08

Item		Specifications
Rated(Max.)	(W)	0.2 / 0.4
Resonant Frequency	(F0)	1,800 ± 20%Ω
Sound Pressure Level	(dB)	79 ± 3.0
Impedance	(Ω)	7.2 ± 15%Ω
Distortion	(THD)	Max 5%(5KHz)
Weight	(g)	0.5 ± 0.2g

>> Frequency Response



>> Dimension



Dynamic Speaker

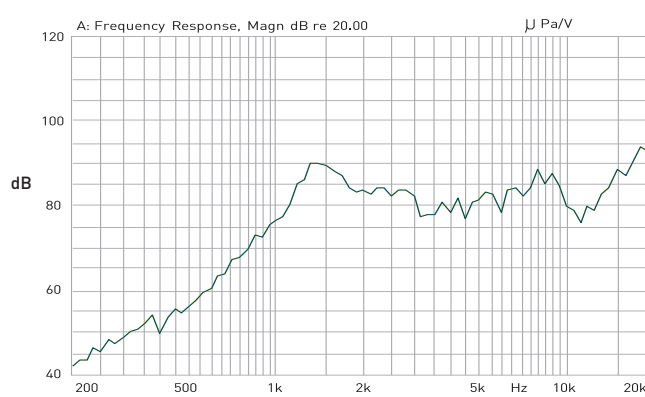
HS-1025 >>



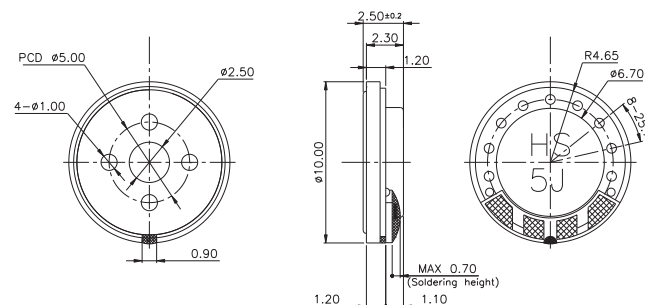
HS-1025

Item		Specifications
Rated(Max.)	(W)	0.3 / 0.5
Resonant Frequency	(F0)	1,250 ± 20%Ω
Sound Pressure Level	(dB)	80 ± 3.0
Impedance	(Ω)	8.0 ± 15%Ω
Distortion	(THD)	Max 5%(2KHz)
Weight	(g)	0.6 ± 0.1g

>> Frequency Response



>> Dimension



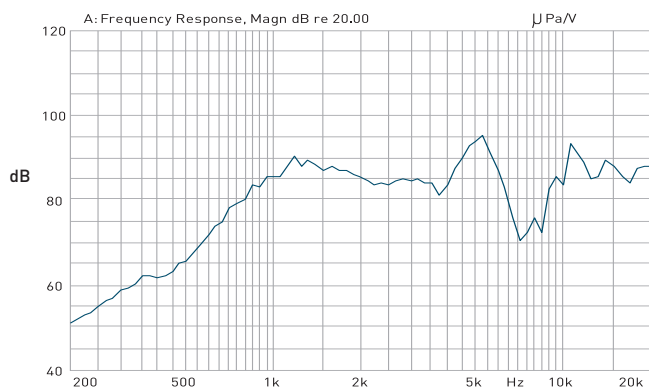
Dynamic Speaker HS-1230 >>



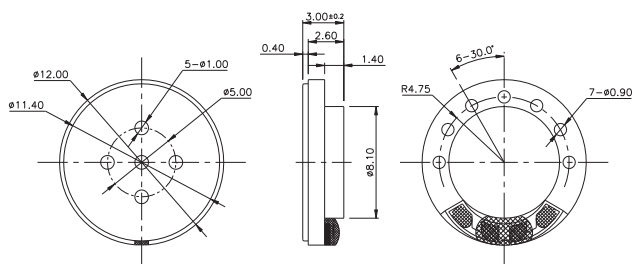
HS-1230

Item	Specifications
Rated(Max.) (W)	0.3 / 0.6
Resonant Frequency (F0)	1,200 ± 20%Ω
Sound Pressure Level (dB)	85 ± 3.0
Impedance (Ω)	8.0 ± 15%Ω
Distortion (THD)	Max 5%(2KHz)
Weight (g)	1.0 ± 0.1g

>> Frequency Response



>> Dimension



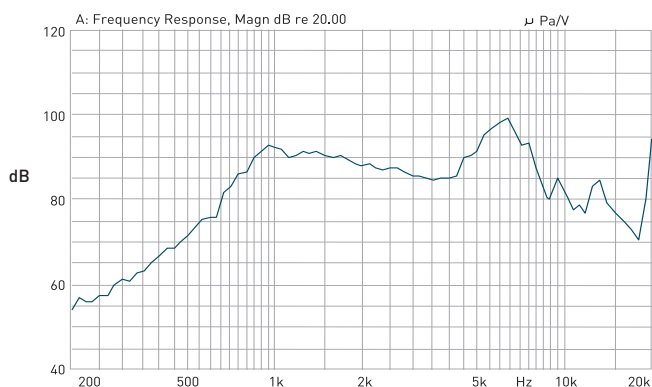
Dynamic Speaker HS-1325 >>



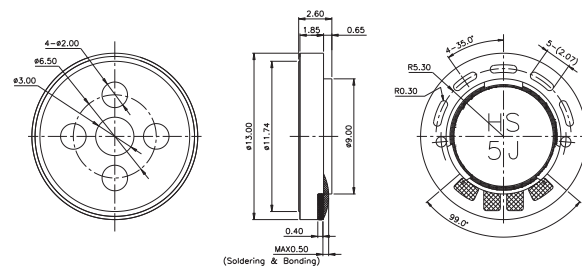
HS-1325

Item	Specifications
Rated(Max.) (W)	0.4 / 0.6
Resonant Frequency (F0)	900 ± 20%Ω
Sound Pressure Level (dB)	88 ± 3.0
Impedance (Ω)	8.0 ± 15%Ω
Distortion (THD)	Max 5%(1KHz)
Weight (g)	0.7 ± 0.2g

>> Frequency Response



>> Dimension

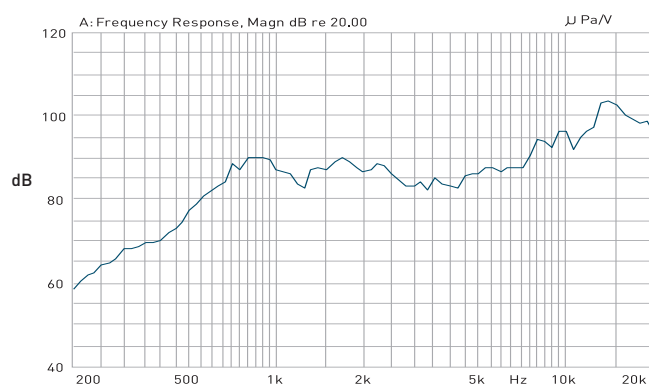


HS-15 >>

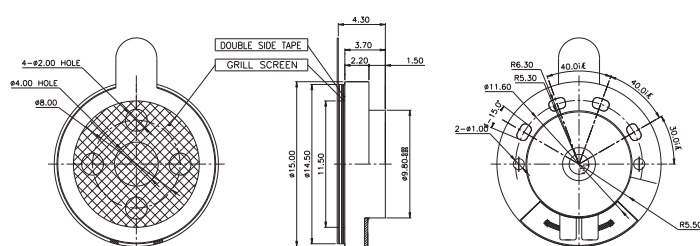


Item		Specifications
Rated(Max.)	(W)	0.8 / 1.0
Resonant Frequency	(F0)	750 ± 20%Ω
Sound Pressure Level	(dB)	87 ± 3.0
Impedance	(Ω)	8.0 ± 15%Ω
Distortion	(THD)	Max 5%(1KHz)
Weight	(g)	1.4 ± 0.2g

Frequency Response



Dimension



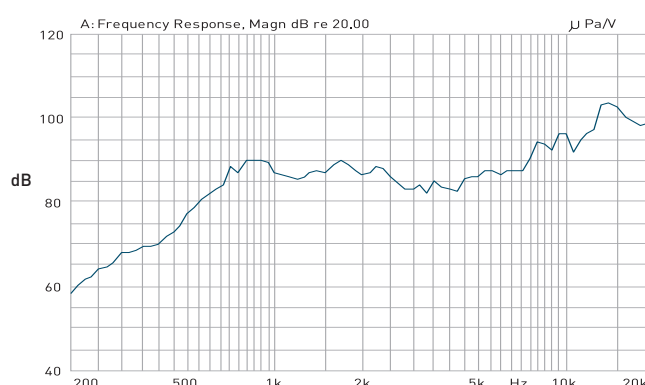
HS-15KSI



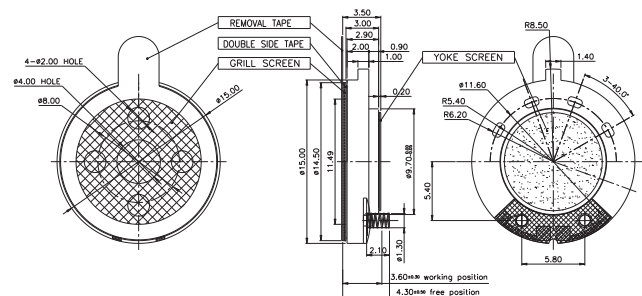
HS-15KSI

Item		Specifications
Rated(Max.)	(W)	0.3 / 0.8
Resonant Frequency	(F0)	850 ± 20%Ω
Sound Pressure Level	(dB)	88 ± 3.0
Impedance	(Ω)	8.0 ± 15%Ω
Distortion	(THD)	Max 5%(1KHz)
Weight	(g)	1.4 ± 0.2g

Frequency Response



Dimension

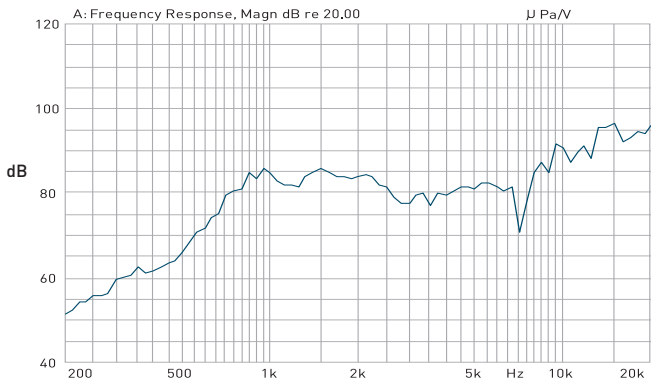


HSO-1511 >>

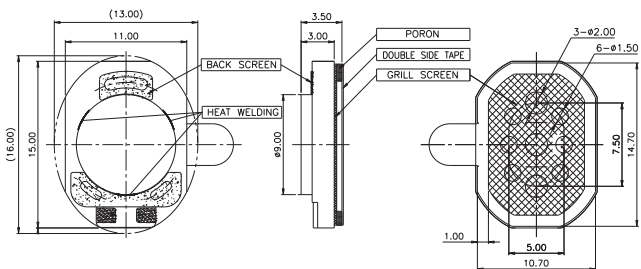


Item		Specifications
Rated(Max.)	(W)	0.8 / 1.0
Resonant Frequency	(F0)	850 ± 20%Ω
Sound Pressure Level	(dB)	84 ± 3.0
Impedance	(Ω)	8.0 ± 15%Ω
Distortion	(THD)	Max 5%(2KHz)
Weight	(g)	1.0 ± 0.1g

➤ Frequency Response



Dimension

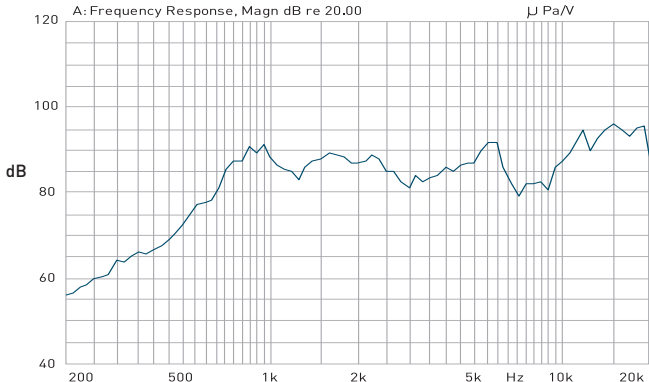


HS-17 ➡➡

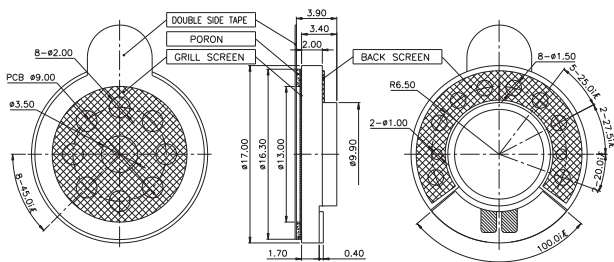


Item		Specifications
Rated(Max.)	(W)	0.8 / 1.0
Resonant Frequency	(F0)	800 ± 20%Ω
Sound Pressure Level	(dB)	88 ± 3.0
Impedance	(Ω)	8.0 ± 15%Ω
Distortion	(THD)	Max 5%(1KHz)
Weight	(g)	1.5 ± 0.2g

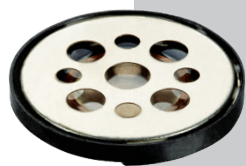
➤➤ Frequency Response



Dimension



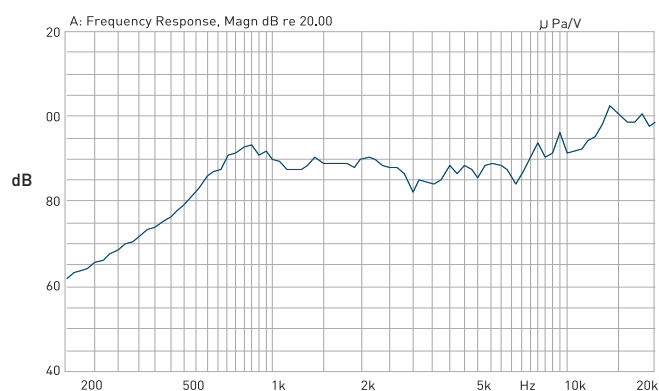
Dynamic Speaker HS-18 >>



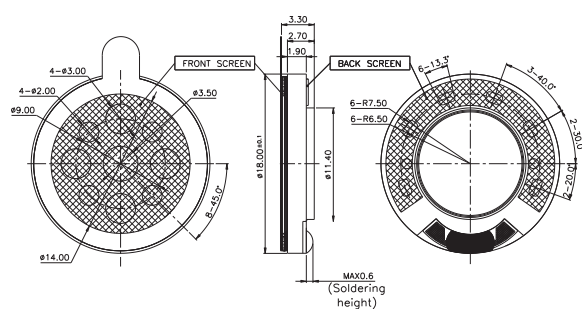
HS-18

Item		Specifications
Rated(Max.)	(W)	0.5 / 0.8
Resonant Frequency	(F0)	700 ± 20%Ω
Sound Pressure Level	(dB)	88 ± 3.0
Impedance	(Ω)	8.0 ± 15%Ω
Distortion	(THD)	Max 5%(1KHz)
Weight	(g)	1.25 ± 0.1g

>> Frequency Response



>> Dimension



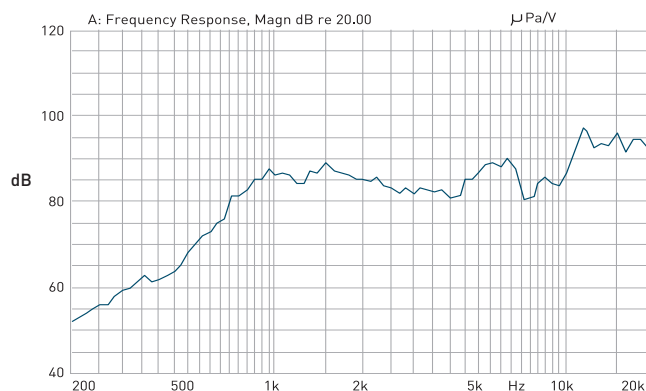
Dynamic Speaker HSO-1810 >>



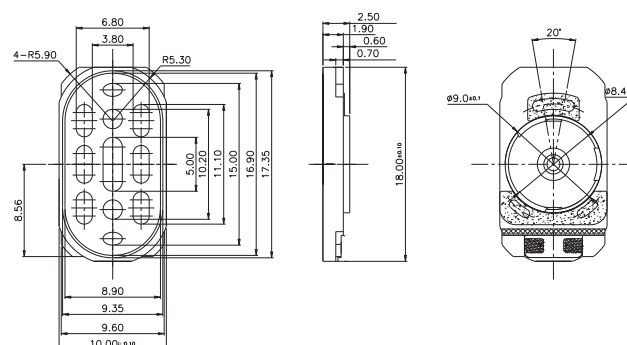
HSO-1810

Item		Specifications
Rated(Max.)	(W)	0.5 / 0.8
Resonant Frequency	(F0)	1,000 ± 20%Ω
Sound Pressure Level	(dB)	87 ± 3.0
Impedance	(Ω)	8.0 ± 15%Ω
Distortion	(THD)	Max 5%(2KHz)
Weight	(g)	0.9 ± 0.1g

>> Frequency Response



>> Dimension

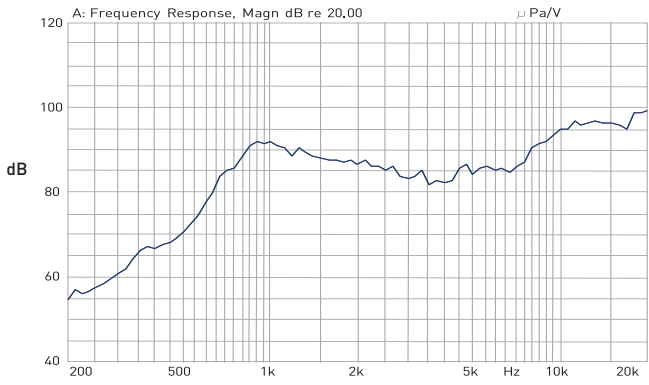


HSO-1813 >>

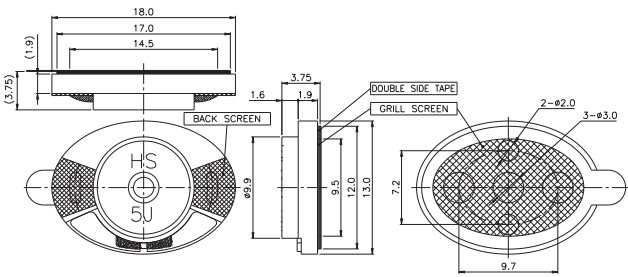


Item		Specifications
Rated(Max.)	(W)	0.8 / 1.0
Resonant Frequency	(F0)	850 ± 20%Ω
Sound Pressure Level	[dB]	89 ± 3.0
Impedance	(Ω)	8.0 ± 15%Ω
Distortion	(THD)	Max 5%[2KHz]
Weight	(g)	1.3 ± 0.2g

➤ Frequency Response



Dimension

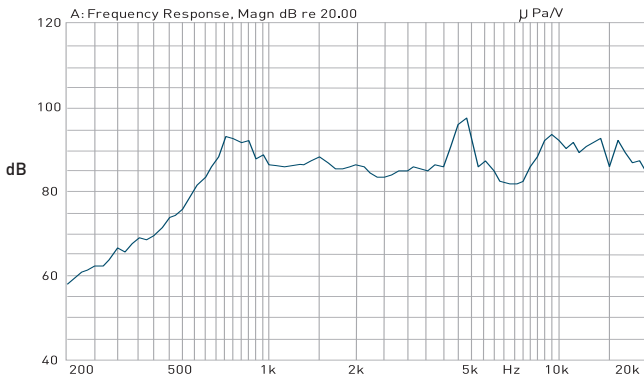


HS-20 >>

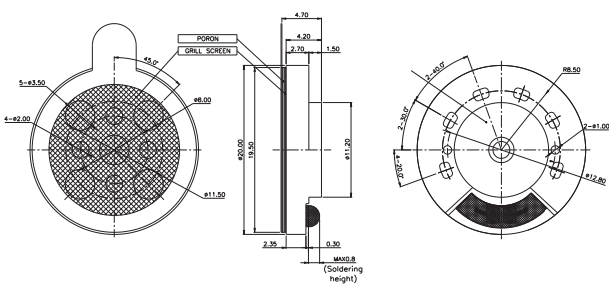


Item		Specifications
Rated(Max.)	(W)	0.8 / 1.0
Resonant Frequency	(F0)	700 ± 20%Ω
Sound Pressure Level	(dB)	88 ± 3.0
Impedance	(Ω)	8.0 ± 15%Ω
Distortion	(THD)	Max 5%(2KHz)
Weight	(g)	1.8± 0.3g

➤➤ Frequency Response



Dimension



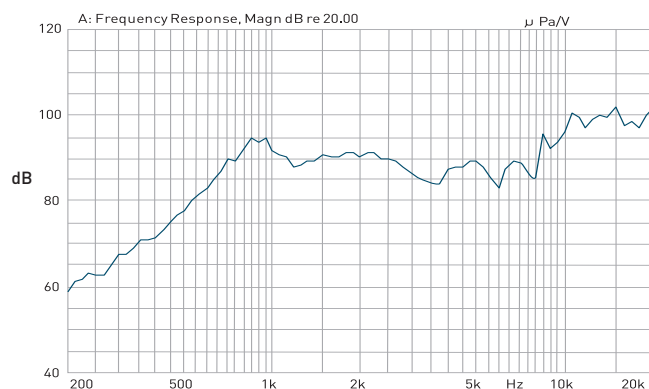
Dynamic Speaker HSO-2014 >>



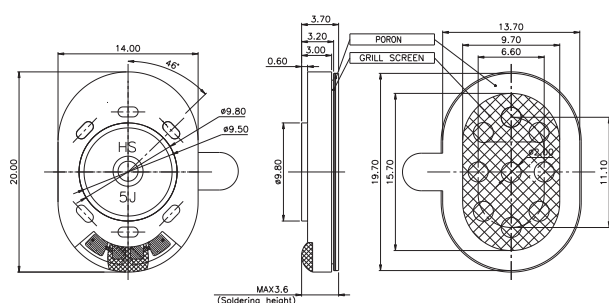
HSO-2014

Item		Specifications
Rated(Max.)	(W)	0.5 / 0.8
Resonant Frequency	(F0)	800 ± 20%Ω
Sound Pressure Level	(dB)	90 ± 3.0
Impedance	(Ω)	8.0 ± 15%Ω
Distortion	(THD)	Max 5%(2KHz)
Weight	(g)	1.5 ± 0.2g

>> Frequency Response



>> Dimension



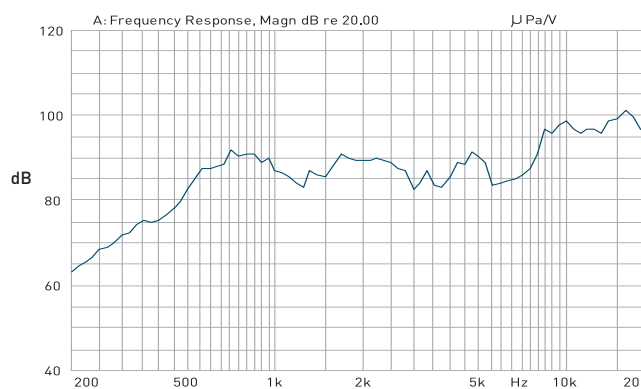
Dynamic Speaker HSO-2415 >>



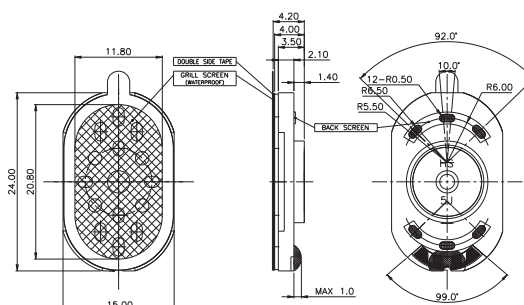
HSO-2415

Item		Specifications
Rated(Max.)	(W)	1.0 / 1.2
Resonant Frequency	(F0)	700 ± 20%Ω
Sound Pressure Level	(dB)	87 ± 3.0
Impedance	(Ω)	8.0 ± 15%Ω
Distortion	(THD)	Max 5%(2KHz)
Weight	(g)	1.9 ± 0.2g

>> Frequency Response



>> Dimension

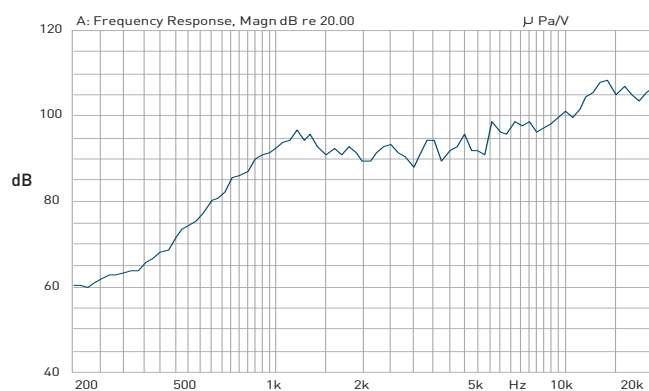


Enclosure

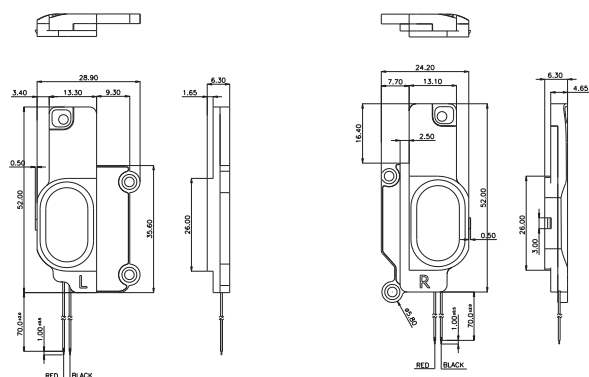
HES-2415

Item		Specifications
Rated(Max.)	(W)	0.8 / 1.2
Resonant Frequency	(F0)	1,100 ± 20%Ω
Sound Pressure Level	(dB)	91 ± 3.0
Impedance	(Ω)	8.0 ± 15%Ω
Distortion	(THD)	Max 5%(2KHz)
Weight	(g)	3.7 ± 0.2g

Frequency Response



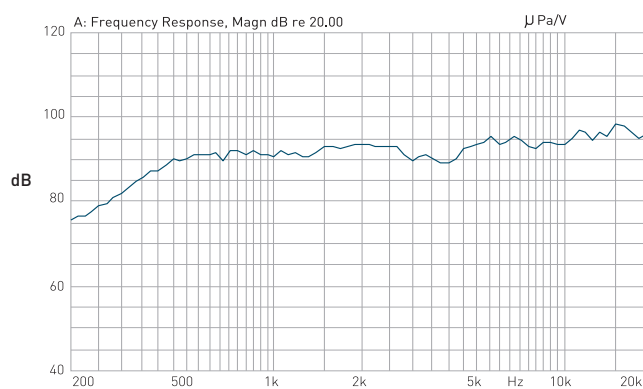
Dimension



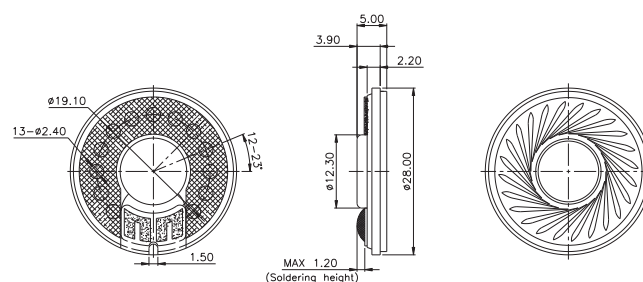
DS-28

Item		Specifications
Rated(Max.)	(W)	1.0 / 1.2
Resonant Frequency	(F0)	450 ± 20%Ω
Sound Pressure Level	(dB)	92 ± 3.0
Impedance	(Ω)	8.0 ± 15%Ω
Distortion	(THD)	Max 5%(1KHz)
Weight	(g)	5.5 ± 0.3g

Frequency Response

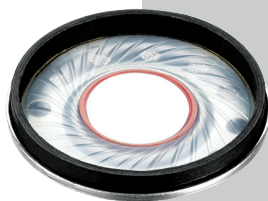


Dimension



Dynamic Speaker

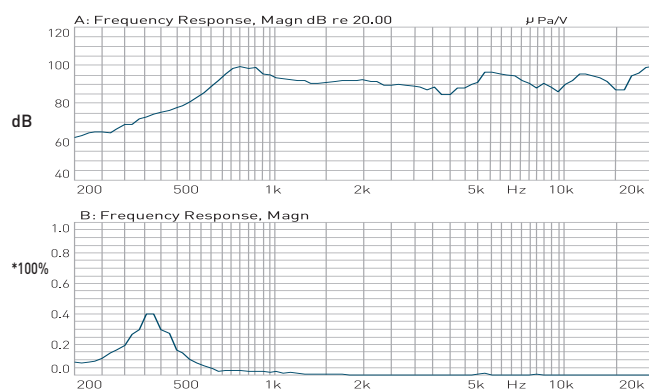
DS-32 >>



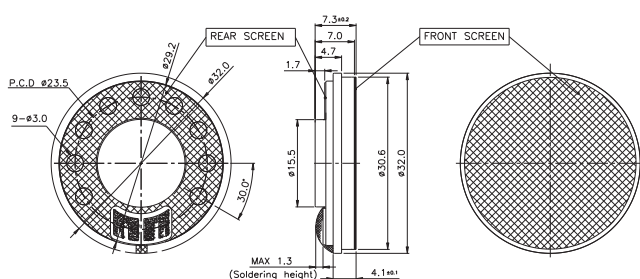
DS-32

Item	Specifications
Rated(Max.) (W)	1.0 / 1.5
Resonant Frequency (F0)	730 ± 20%Ω
Sound Pressure Level (dB)	94 ± 3.0
Impedance (Ω)	8.0 ± 15%Ω
Distortion (THD)	Max 5%(1KHz)
Weight (g)	8.7 ± 0.3g

>> Frequency Response

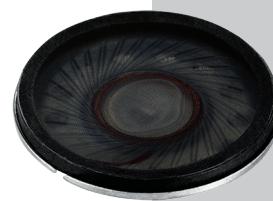


>> Dimension



Dynamic Speaker

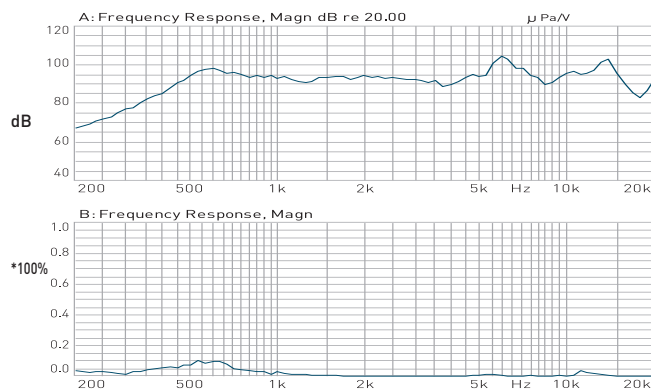
DS-36 >>



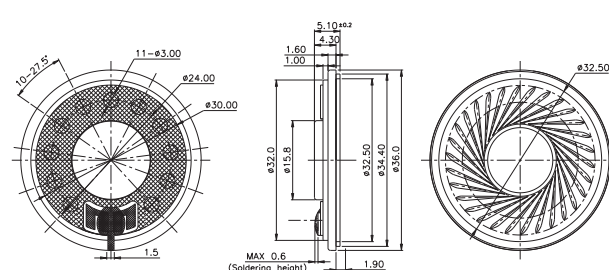
DS-36

Item	Specifications
Rated(Max.) (W)	1.5 / 2.0
Resonant Frequency (F0)	600 ± 20%Ω
Sound Pressure Level (dB)	93 ± 3.0
Impedance (Ω)	8.0 ± 15%Ω
Distortion (THD)	Max 5%(1KHz)
Weight (g)	9.7 ± 0.3g

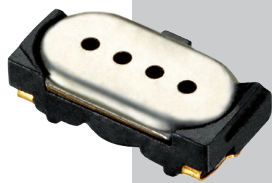
>> Frequency Response



>> Dimension



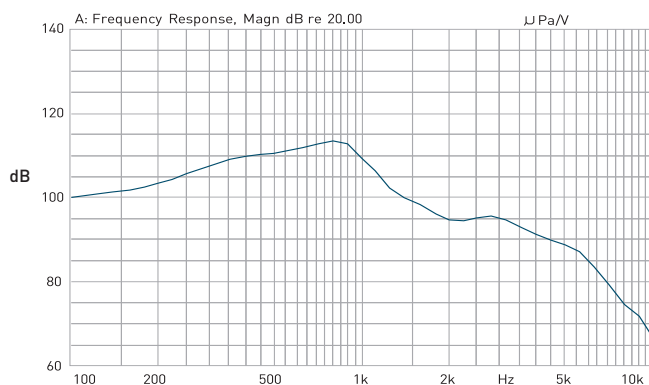
Dynamic Receiver DR-1005AS ➤➤



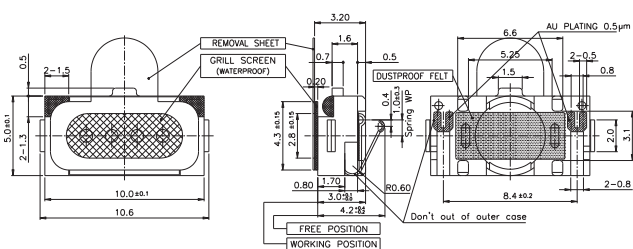
DR-1005AS

Item		Specifications
Rated(Max.)	(W)	0.005 / 0.02
Resonant Frequency	(F0)	-
Sound Pressure Level	(dB)	109 ± 3.0
Impedance	(Ω)	32 ± 15%Ω
Distortion	(THD)	Max 5%(1KHz)
Weight	(g)	0.4 ± 0.05g

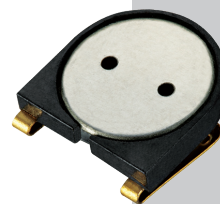
➤➤ Frequency Response



➤➤ Dimension



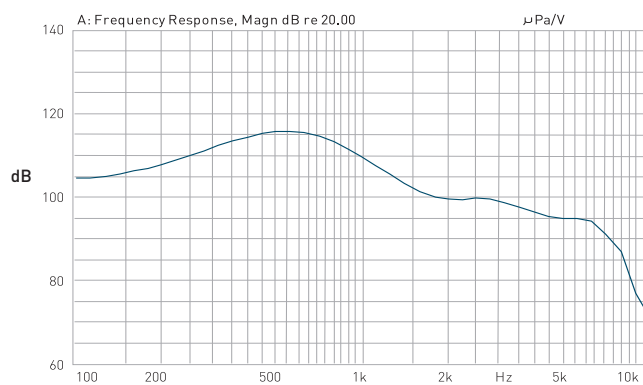
Dynamic Receiver DR-1024A ➤➤



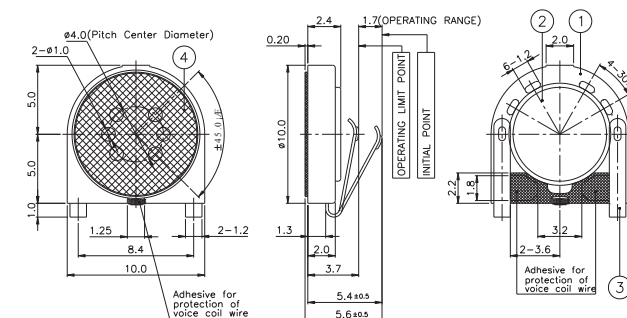
DR-1024A

Item		Specifications
Rated(Max.)	(W)	0.01 / 0.03
Resonant Frequency	(F0)	-
Sound Pressure Level	(dB)	109 ± 3.0
Impedance	(Ω)	32 ± 15%Ω
Distortion	(THD)	Max 5%(1KHz)
Weight	(g)	0.7 ± 0.1g

➤➤ Frequency Response



➤➤ Dimension



Dynamic Receiver

DR-1024C >>

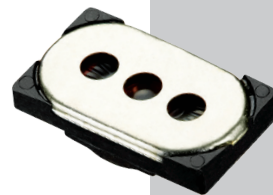


DR-1024C

Item		Specifications
Rated(Max.)	(W)	0.01 / 0.03
Resonant Frequency	(F0)	-
Sound Pressure Level	(dB)	107 ± 3.0
Impedance	(Ω)	32 ± 15%Ω
Distortion	(THD)	Max 5%(1KHz)
Weight	(g)	0.7 ± 0.1g

Dynamic Receiver

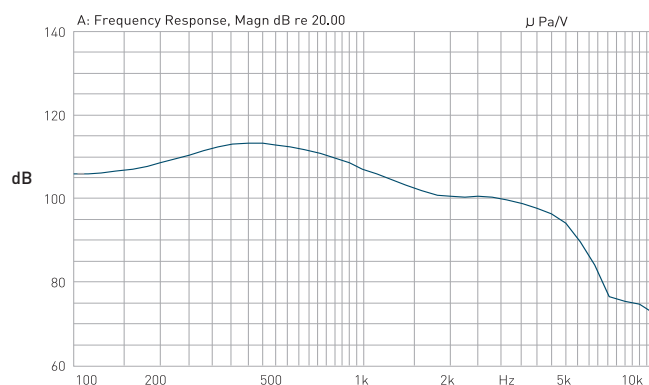
HDR-1207D >>



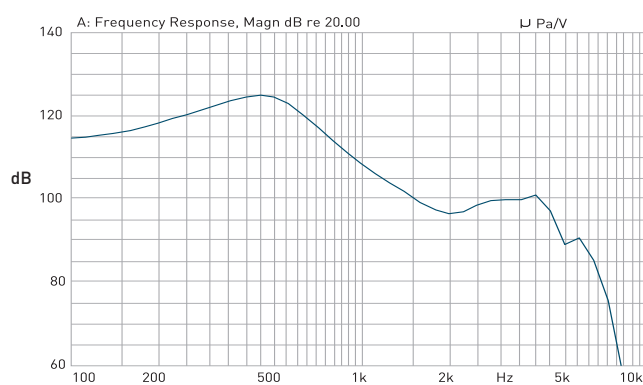
HDR-1207D

Item		Specifications
Rated(Max.)	(W)	0.003 / 0.005
Resonant Frequency	(F0)	-
Sound Pressure Level	(dB)	108 ± 3.0
Impedance	(Ω)	32 ± 15%Ω
Distortion	(THD)	Max 5%(1KHz)
Weight	(g)	0.6 ± 0.1g

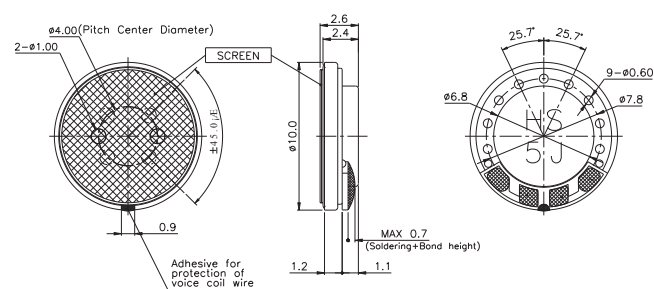
>> Frequency Response



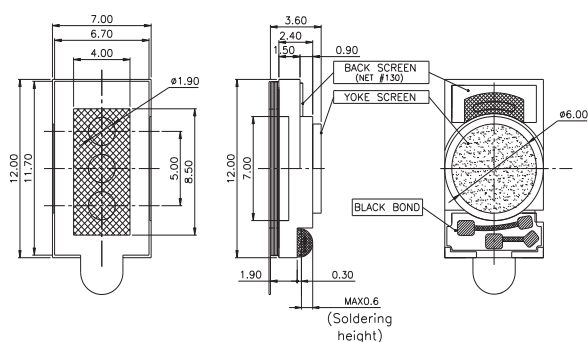
>> Frequency Response



>> Dimension



>> Dimension



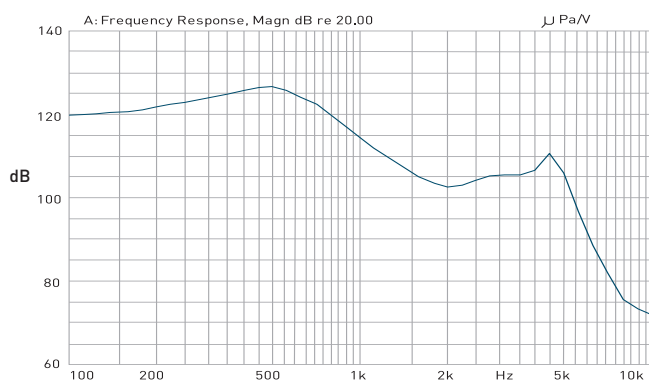
Dynamic Receiver HDR-16 >>



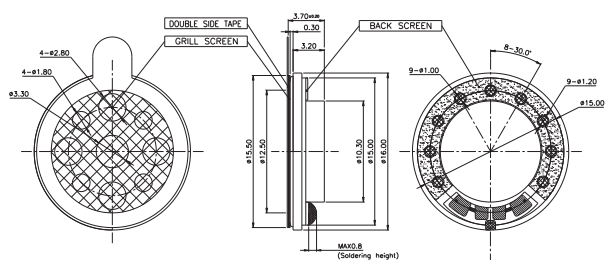
HDR-16

Item		Specifications
Rated(Max.)	(W)	0.02 / 0.04
Resonant Frequency	(F0)	-
Sound Pressure Level	(dB)	114 ± 3.0
Impedance	(Ω)	32 ± 15%Ω
Distortion	(THD)	Max 5%(1KHz)
Weight	(g)	2.0 ± 0.2g

>> Frequency Response



>> Dimension



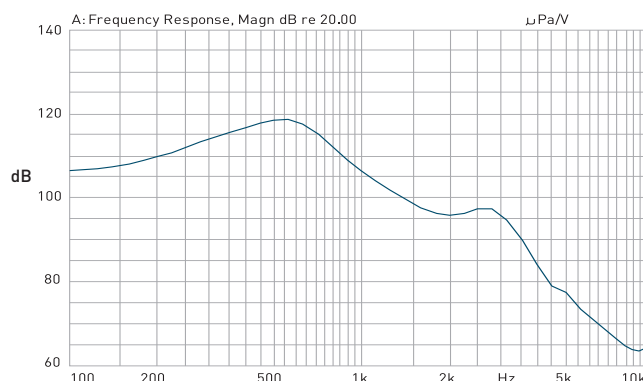
Dynamic Receiver HDR-1506 >>



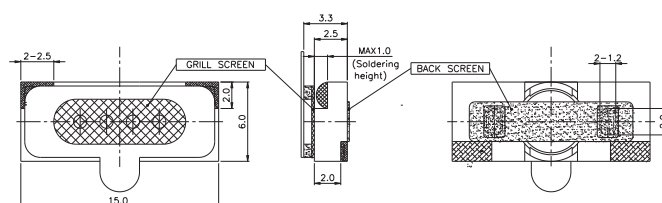
HDR-1506

Item		Specifications
Rated(Max.)	(W)	0.01 / 0.025
Resonant Frequency	(F0)	-
Sound Pressure Level	(dB)	107 ± 3.0
Impedance	(Ω)	32 ± 15%Ω
Distortion	(THD)	Max 5%(1KHz)
Weight	(g)	0.7 ± 0.1g

>> Frequency Response



>> Dimension



Transducer / Buzzer Measurement

• Sound Pressure and Distance

As there are differences in the measuring distances when manufacturers make the measurement of sound pressure, the following formula is recommended for calculation upon occasion when a buzzer is tested or compared with a planned final product.

However, as far as the calculated value is concerned, it is a theoretical one and therefore subject to change, depending on circumstances and conditions.

The formula is : $B = A + 20\text{Log}(L_a/L_b)$

A : sound pressure level at distance L_a

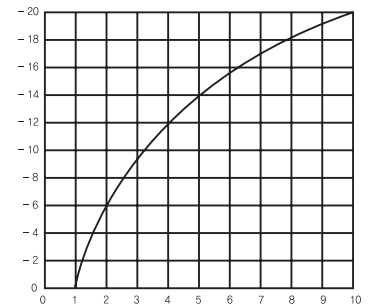
B : sound pressure level at distance L_b

For example, when the distance is doubled,

$$B = A + 20\text{Log}(L_a/L_b) = A + 20\text{Log}(1/2) = A - 6.02$$

That is, the sound pressure is inclined to be reduced by 6.02dB. The table below is to show relations between the measuring distance and sound pressure variation for the reference

Measuring distance variation	Sound pressure variation(dB)
2 times	-6.02
3 times	-9.54
4 times	-13.56
6 times	-15.56
7 times	-16.90
8 times	-18.06
9 times	-19.08
10times	-20.00



• Design Method of Device Resonator Housing

The following formula is basic analysis, Helmholtz resonator to increase sound pressure.

$$f_v = \frac{CD}{4} \sqrt{\frac{1}{\pi V(L + 0.75D)}}$$

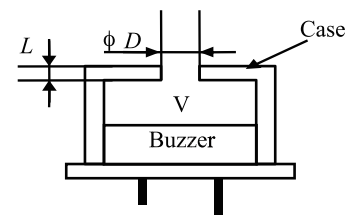
f_v : Resonator's resonant frequency(Hz)

C : 344,000[mm/sec]

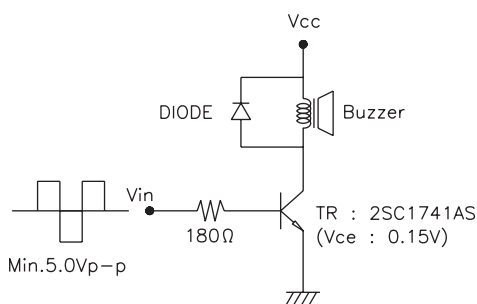
D : Inside diameter of sound emission hole[mm]

L : Thickness of sound emission hole side[mm]

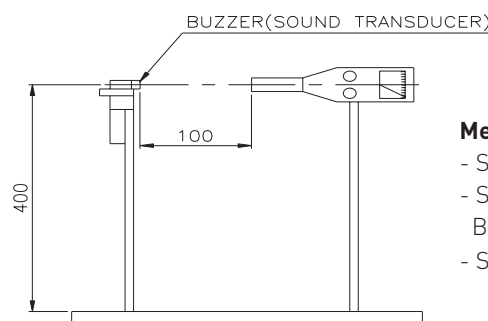
V : Resonator housing volume[sq. mm]



• Standard Driver Circuit



• Standard Test Fixture



Measurement Parts

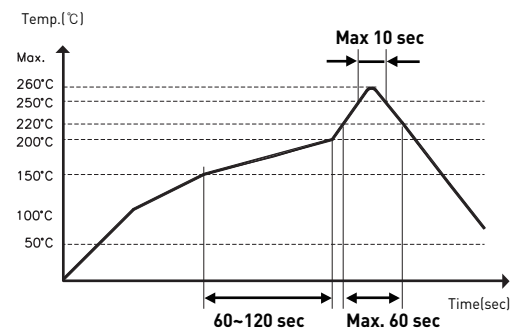
- Set 400 mm height
- Set 100 mm between Buzzer and SPL Meter
- Set weight : "Fast" / "A"

• Soldering Condition

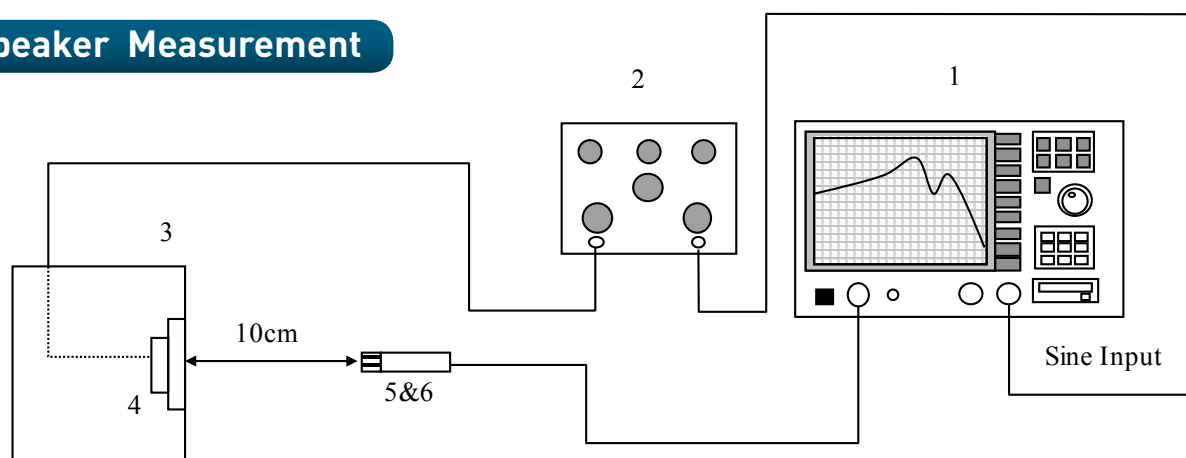
- Recommendable reflow soldering condition is as follows.

Note 1; It is requested that reflow soldering should be executed after heat of product goes down to normal temperature.

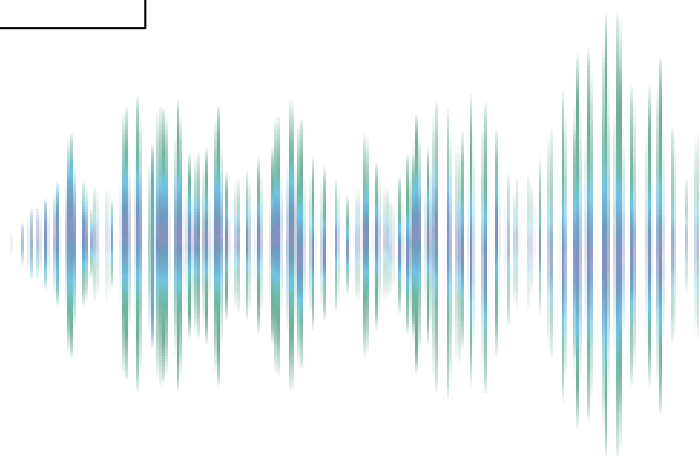
Note 2; Peak reflow temperature of 260°C, with a maximum duration of 60 sec. between 220°C and 260°C



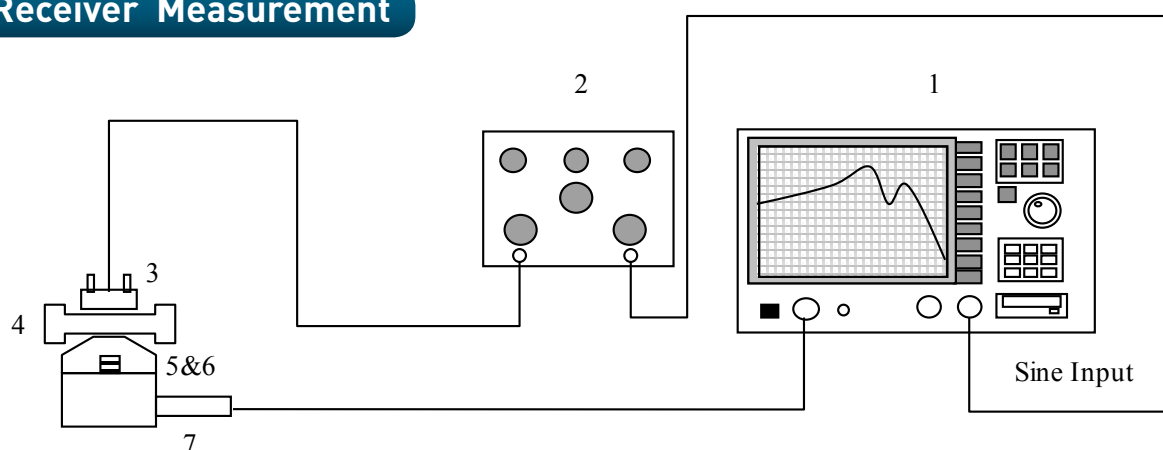
Speaker Measurement



NO	EQUIPMENT	REMARKS
1	Audio Analyzer	B&K 2012
2	Preamplifier	LAM 300 2716-A
3	Baffle Box	HS Standard (1000m ³)
4	Dynamic Speaker	SPEAKER
5	MIC.	B&K 4192
6	MIC. PRE-AMP	B&K 2669



Receiver Measurement



NO	EQUIPMENT	REMARKS
1	AUDIO ANALYZER	B&K 2012
2	PREAMPLIFIER	LAM 300 2716-A
3	DYNAMIC RECEIVER	RECEIVER
4	EARPIECE	HS STANDARD
5	COUPLER	B&K 4185
6	MIC.	B&K 4192
7	MIC. PRE-AMP	B&K 2669

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