

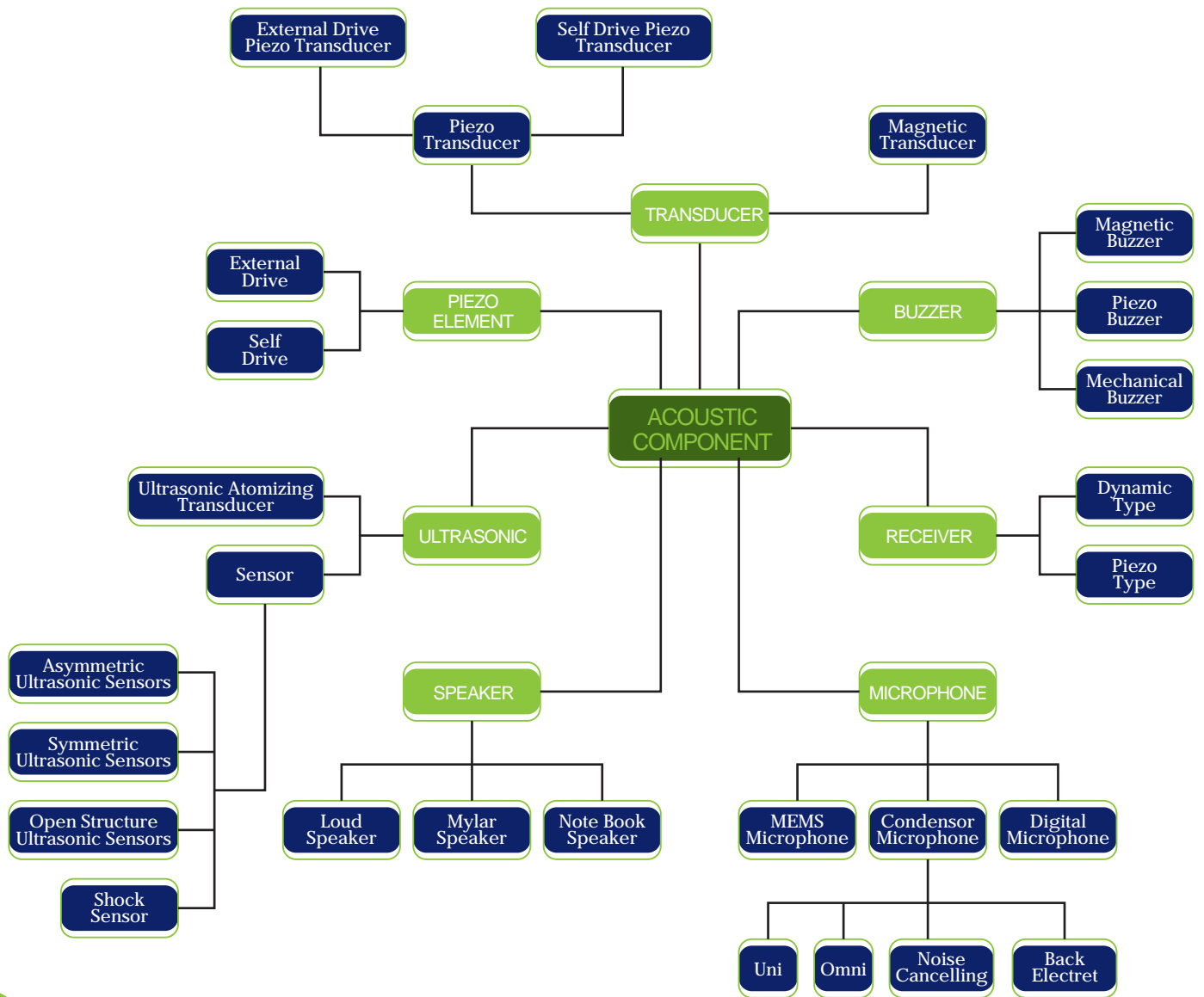
High-Tech Buzzers



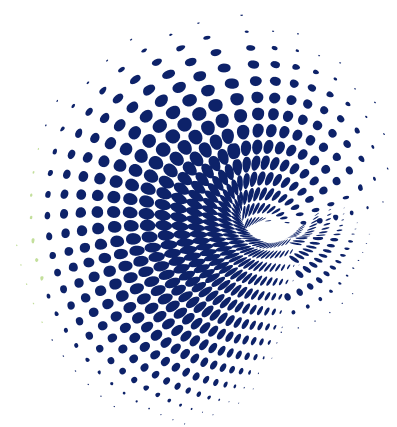
Making waves **with sound**

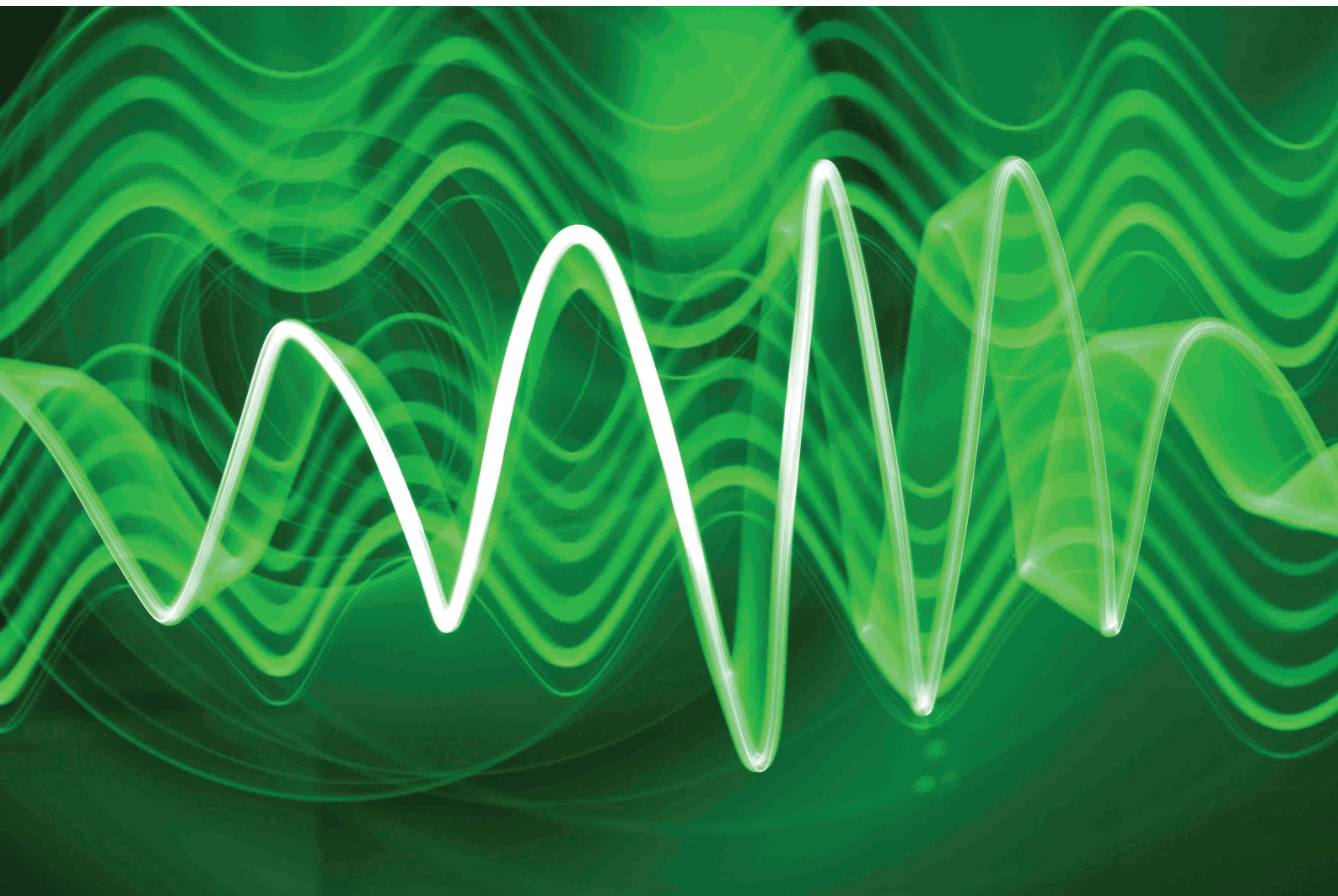


<< Acoustic Family



	Transducer	
003	- Magnetic Transducer	01.
020	- External Drive Piezo Transducer	02.
046	- Self Drive Piezo Transducer	03.
	Buzzer	
054	- Magnetic Buzzer	04.
062	- Mechanical Buzzer	05.
070	- Piezo Buzzer	06.
087	Piezo Element	07.
	- External Drive Piezo Element	
	- Self Drive Piezo Element	
091	Microphone	08.
	- MEMS Microphone	
	- Back Electret Condenser Microphone	
	- Omnidirectional Electret Condenser Microphone	
	- Unidirectional Electret Condenser Microphone	
	- Noise Cancelling Electret Condenser Microphone	
102	Speaker	09.
	Mylar Speaker	
	- Loud Speaker	
	- Notebook Speaker	
112	Receiver	10.
	- Dynamic Receiver	
118	Ultrasonic	11.
	- Asymmetric Ultrasonic Sensor	
	- Symmetric Ultrasonic Sensor	
	- Open Structure Ultrasonic Sensor	
	- Shock Sensor	
	- Ultrasonic Atomizing Transducer	





01. **Transducer**
- Magnetic Transducer

Transducer

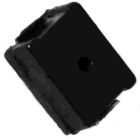
- selection guide



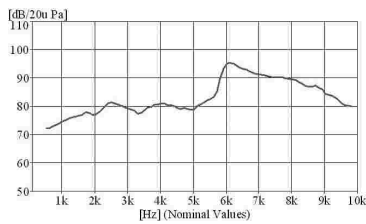
Magnetic Transducer

IMO Series	Model	Diameter (Ømm)	Height (mm)	Rated Voltage (V)	Coil Resistance (Ω)	Min. Sound Output (dB)	Frequency (Hz)	Page No.
RDT042	RDT0423A	4 x 3	2	3	10 ± 2	68 at 5cm	1100	005
UDT052	UDT0523D	5 x 5	2	3	12 ± 2	78 at 10cm	4000	005
UDT053	UDT0533D	5 x 5	3	3	12 ± 3	78 at 10cm	4000	005
DB110	DB110	6.7	3.6	1.5	8 ± 1	70 at 10cm	2730	006
UDT072	UDT0723B	7.5 x 7.5	2	3.6	12 ± 2	85 at 10cm	2700	006
UDT082	UDT0823A	8 x 8	2.5	3.6	16 ± 2.4	88 at 10cm	2670	006
UDT083	UDT0833A	8.5 x 8.5	3	3.6	16 ± 2.4	90 at 10cm	2670	007
SDT083A	SDT083A3B	8.5 x 8.5	3.2	3.6	16 ± 3	85 at 10cm	2730	007
SDT084A	SDT084A5A	8.5 x 8.5	4	5	30 ± 3	87 at 10cm	2350	007
CDX094A	CDX094A3B	9	4	3	16 ± 3	85 at 10cm	2730	008
CDT094A	CDT094A3C	9	4	3.6	16 ± 3	87 at 10cm	3100	008
DB109	DB109	9	4	3	20 ± 3	82 at 10cm	2731	008
UDX	UDX05B	9	5.5	5	40 ± 7.5	85 at 10cm	2731	009
CDT092	CDT0927B	9	2.5	3	16 ± 3	85 at 10cm	2731	009
UDT094	UDT0943A	9 x 9	4	3.6	16 ± 3	85 at 10cm	2670	009
CDT093A	CDT093A3A	9.6	3.2	3.6	16 ± 2.4	90 at 10cm	2670	010
WDX	WDX05B	9.6	5	5	40 ± 7.5	85 at 10cm	2731	010
MDX	MDX01C	9.5	7	1.5	5.5 ± 1	80 at 10cm	3100	010
RDT102	RDT1023A	10 x 8.5	2	3.6	16 ± 2.4	88 at 10cm	2670	011
DB107	DB107	12	4	1.5	16 ± 4	75 at 10cm	2400	011
DB105	DB105	12	5.4	1.5	50 ± 7.5	70 at 10cm	2048	011
DB102	DB102G	12	5.6	1.5	15 ± 7.5	75 at 10cm	2048	012
DB106	DB106C	12	5.4	3.6	42 ± 5	70 at 10cm	1980	012
PDX07	PDX07B	12	6	1.5	5 ± 1	85 at 10cm	2700	012
PDX04	PDX04A	12	7.5	1.5	6.5 ± 1	85 at 10cm	2048	013
DB111	DB111	12	8.5	1.5	42 ± 5	80 at 10cm	2048	013
DBX	DBX05	12	9	5	47 ± 5	85 at 10cm	2400	013
DBX	DBX12	12	9	12	140 ± 14	85 at 10cm	2400	013
ZDX	ZDX06	12	9.5	6	50 ± 5	85 at 10cm	2200	014
HDX	HDX05	12	10	5	40 ± 5	85 at 10cm	2400	014
DB113	DB113	12	13	1.5	16 ± 4.5	80 at 10cm	2048	014
SCDX	SCDX05A	12.8	7.1	5	47 ± 5	87 at 10cm	2048	015
SCDX	SCDX12	12.8	7.1	12	140 ± 14	87 at 10cm	2400	015
SDBX	SDBX05	12.8	10	5	47 ± 5	85 at 10cm	2400	015
SDBX	SDBX12	12.8	10	12	140 ± 14	85 at 10cm	2400	015
DB108	DB108	14	5	3	15 ± 6	85 at 10cm	2000	015
RDT143A	RDT143A5B	14 x 11	3	5	43 ± 3	87 at 10cm	2730	016
GDX	GDX05	16	12	5	28 ± 3	85 at 10cm	2048	016
GDX	GDX12	16	12	12	135 ± 20	85 at 10cm	2048	016
DB	DB06	16	14	6	50 ± 5	85 at 10cm	2048	016
DB	DB12	16	14	12	115 ± 12	85 at 10cm	2048	016
RDX	RDX06	16	14.5	6	45 ± 7	85 at 10cm	2048	017
RDX	RDX12	16	14.5	12	115 ± 17	85 at 10cm	2048	017
SDX	SDX06	18 x 14	10.5	6	60 ± 9	90 at 10cm	2048	017
SDX	SDX12	18 x 14	10.5	12	120 ± 18	85 at 10cm	2048	017
TDX	TDX06	25	12.5	5	27 ± 4	85 at 10cm	730	017

- RDT042 Magnetic Transducer



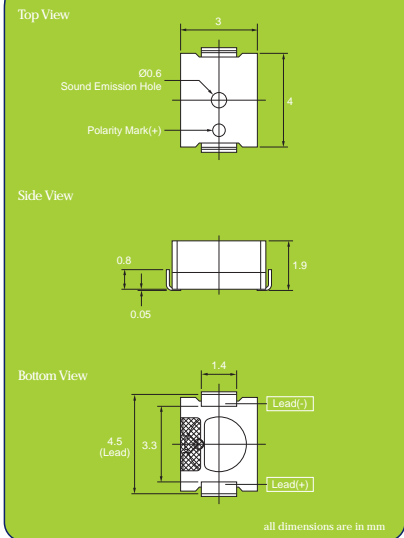
- Frequency Response



- electrical specifications

Model	RDT0423A	
Operating Voltage	(V)	2 ~ 4
Rated Voltage	(V)	3
Max. Rated Current	(mA)	120
Coil Resistance	(Ω)	10 \pm 2
Min. Sound Output	(dBA)	68 at 5cm
Frequency	(Hz)	1100
Operating Temperature	($^{\circ}$ C)	-30 ~ +70
Weight	(g)	0.05

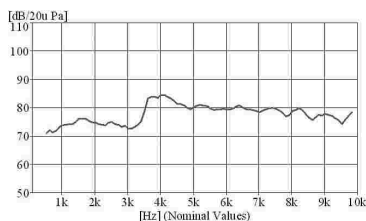
- dimensions



- UDT052 Magnetic Transducer



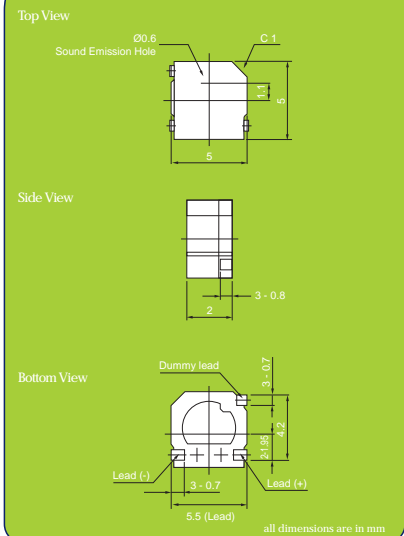
- Frequency Response



- electrical specifications

Model	UDT0523D	
Operating Voltage	(V)	2 ~ 4
Rated Voltage	(V)	3
Max. Rated Current	(mA)	100
Coil Resistance	(Ω)	12 \pm 2
Min. Sound Output	(dBA)	78 at 10cm
Frequency	(Hz)	4000
Operating Temperature	($^{\circ}$ C)	-30 ~ +70
Weight	(g)	0.12

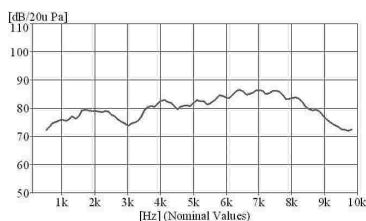
- dimensions



- UDT053 Magnetic Transducer



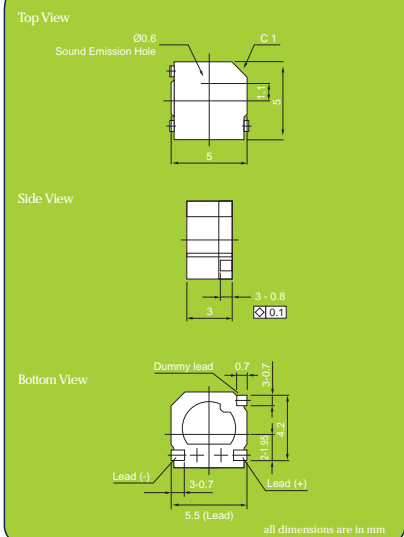
- Frequency Response



- electrical specifications

Model	UDT0533D	
Operating Voltage	(V)	2 ~ 4
Rated Voltage	(V)	3
Max. Rated Current	(mA)	100
Coil Resistance	(Ω)	12 \pm 3
Min. Sound Output	(dBA)	78 at 10cm
Frequency	(Hz)	4000
Operating Temperature	($^{\circ}$ C)	-30 ~ +70
Weight	(g)	0.16

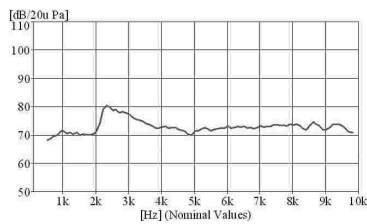
- dimensions



- DB110 Magnetic Transducer



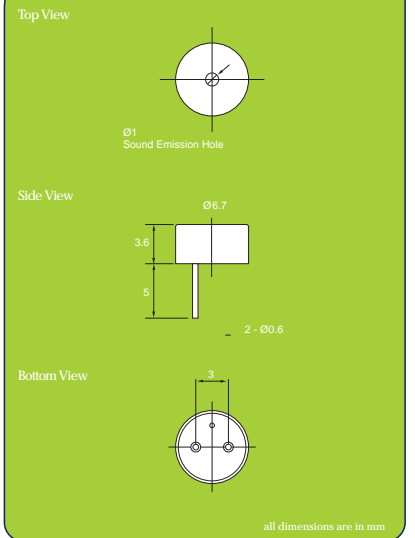
- Frequency Response



- electrical specifications

Model	DB110	
Operating Voltage	(V)	1 - 3
Rated Voltage	(V)	1.5
Max. Rated Current	(mA)	80
Coil Resistance	(Ω)	8 ± 1
Min. Sound Output	(dBA)	70 at 10cm
Frequency	(Hz)	2730
Operating Temperature	($^{\circ}$ C)	-20 ~ +80
Weight	(g)	1

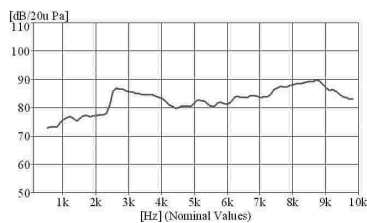
- dimensions



- UDT072 Magnetic Transducer



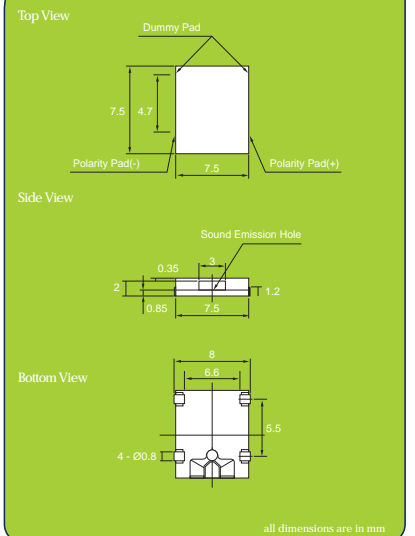
- Frequency Response



- electrical specifications

Model	UDT0723B	
Operating Voltage	(V)	2.5 - 4.5
Rated Voltage	(V)	3.6
Max. Rated Current	(mA)	100
Coil Resistance	(Ω)	12 ± 2
Min. Sound Output	(dBA)	85 at 10cm
Frequency	(Hz)	2700
Operating Temperature	($^{\circ}$ C)	-30 ~ +70
Weight	(g)	0.33

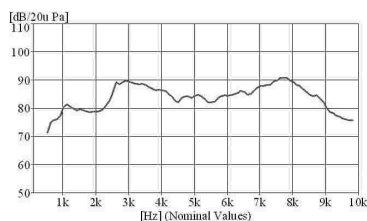
- dimensions



- UDT082 Magnetic Transducer



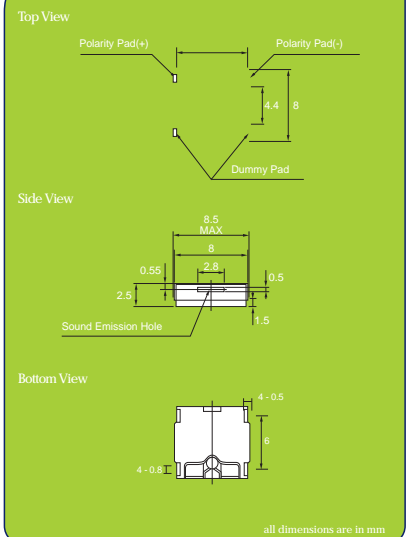
- Frequency Response



- electrical specifications

Model	UDT0823A	
Operating Voltage	(V)	2 - 5
Rated Voltage	(V)	3.6
Max. Rated Current	(mA)	90
Coil Resistance	(Ω)	16 ± 2.4
Min. Sound Output	(dBA)	88 at 10cm
Frequency	(Hz)	2670
Operating Temperature	($^{\circ}$ C)	-20 ~ +70
Weight	(g)	0.37

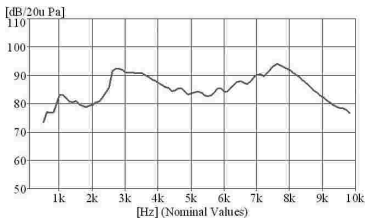
- dimensions



- UDT083 Magnetic Transducer



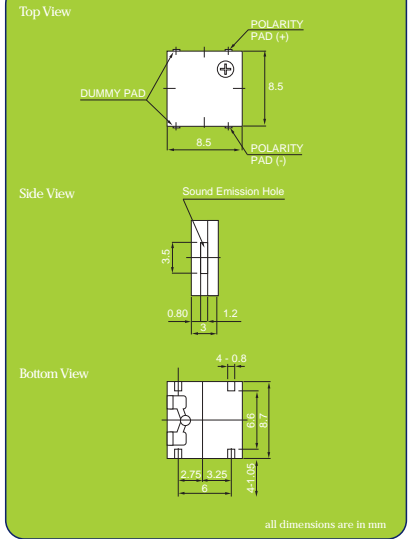
- Frequency Response



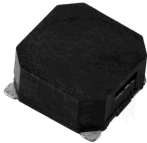
- electrical specifications

Model	UDT0833A	
Operating Voltage	(V)	2 ~ 5
Rated Voltage	(V)	3.6
Max. Rated Current	(mA)	90
Coil Resistance	(Ω)	16 \pm 2.4
Min. Sound Output	(dBA)	90 at 10cm
Frequency	(Hz)	2670
Operating Temperature	($^{\circ}$ C)	-30 ~ +70
Weight	(g)	0.4

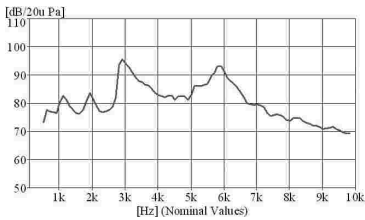
- dimensions



- SDT083A Magnetic Transducer



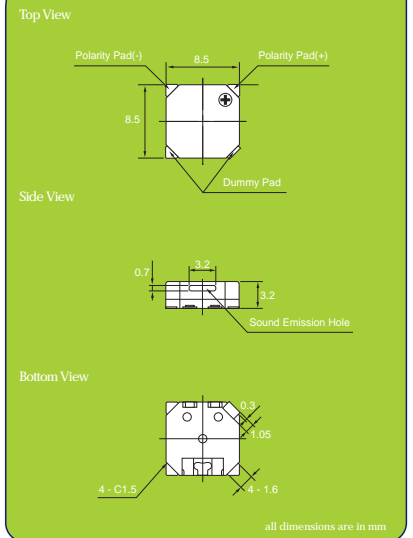
- Frequency Response



- electrical specifications

Model	SDT083A3B	
Operating Voltage	(V)	2.5 ~ 4.5
Rated Voltage	(V)	3.6
Max. Rated Current	(mA)	100
Coil Resistance	(Ω)	16 \pm 3
Min. Sound Output	(dBA)	85 at 10cm
Frequency	(Hz)	2730
Operating Temperature	($^{\circ}$ C)	-40 ~ +105
Weight	(g)	0.5

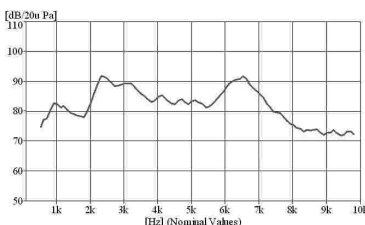
- dimensions



- SDT084 Magnetic Transducer



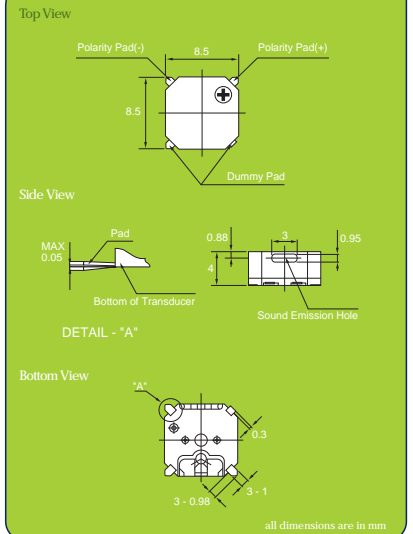
- Frequency Response



- electrical specifications

Model	SDT0845A	
Operating Voltage	(V)	3 ~ 7
Rated Voltage	(V)	5
Max. Rated Current	(mA)	90
Coil Resistance	(Ω)	30 \pm 3
Min. Sound Output	(dBA)	87 at 10cm
Frequency	(Hz)	2350
Operating Temperature	($^{\circ}$ C)	-30 ~ +70
Weight	(g)	0.6

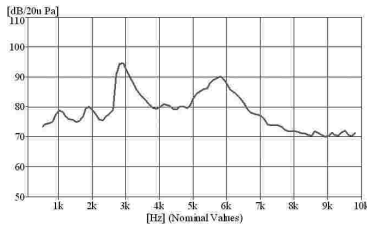
- dimensions



- CDX094A Magnetic Transducer



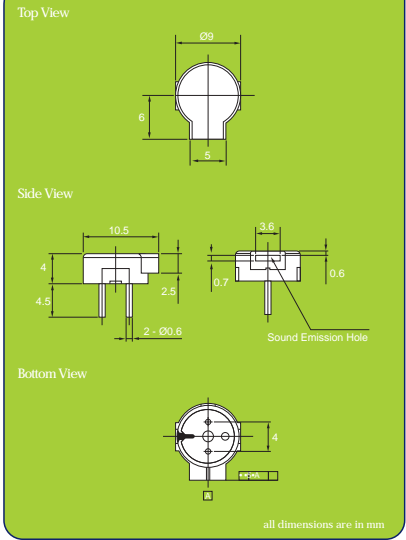
- Frequency Response



- electrical specifications

Model	CDX094A3B	
Operating Voltage	(V)	2 - 4
Rated Voltage	(V)	3
Max. Rated Current	(mA)	70
Coil Resistance	(Ω)	16 \pm 3
Min. Sound Output	(dBA)	85 at 10cm
Frequency	(Hz)	2730
Operating Temperature	($^{\circ}$ C)	-20 - +60
Weight	(g)	0.7

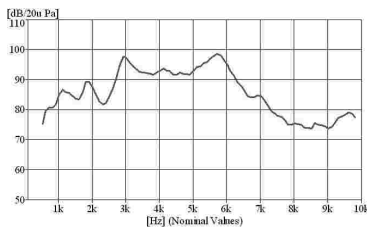
- dimensions



- CDT094A Magnetic Transducer



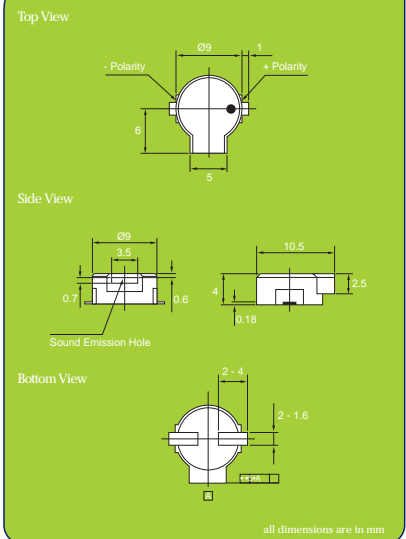
- Frequency Response



- electrical specifications

Model	CDT094A3C	
Operating Voltage	(V)	2.5 - 4.5
Rated Voltage	(V)	3.6
Max. Rated Current	(mA)	90
Coil Resistance	(Ω)	16 \pm 3
Min. Sound Output	(dBA)	87 at 10cm
Frequency	(Hz)	3100
Operating Temperature	($^{\circ}$ C)	-20 - +60
Weight	(g)	0.7

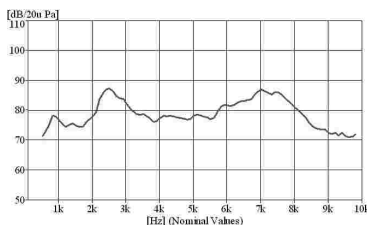
- dimensions



- DB109 Magnetic Transducer



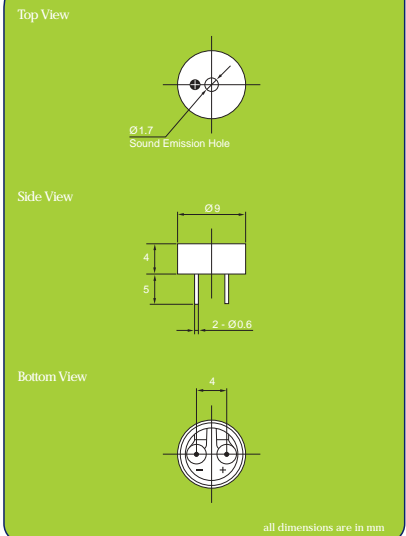
- Frequency Response



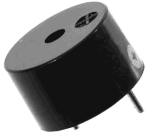
- electrical specifications

Model	DB109	
Operating Voltage	(V)	2 - 5
Rated Voltage	(V)	3
Max. Rated Current	(mA)	70
Coil Resistance	(Ω)	20 \pm 3
Min. Sound Output	(dBA)	82 at 10cm
Frequency	(Hz)	2731
Operating Temperature	($^{\circ}$ C)	-20 - +70
Weight	(g)	0.6

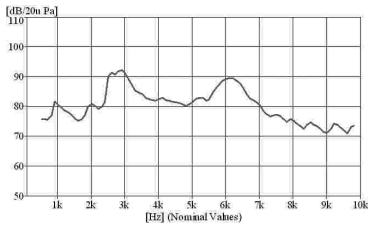
- dimensions



- UDX Magnetic Transducer



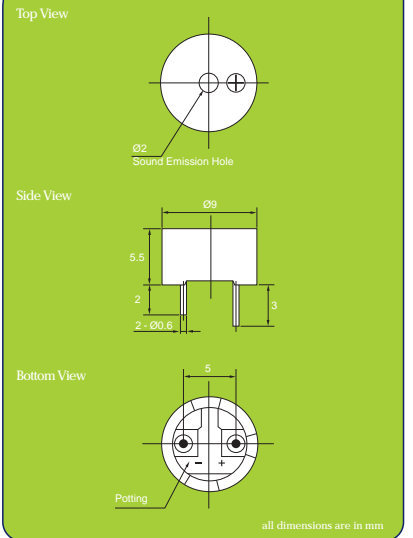
- Frequency Response



- electrical specifications

Model	UDX05B	
Operating Voltage	(V)	4 ~ 8
Rated Voltage	(V)	5
Max. Rated Current	(mA)	100
Coil Resistance	(Ω)	40 \pm 7.5
Min. Sound Output	(dBA)	85 at 10cm
Frequency	(Hz)	2731
Operating Temperature	($^{\circ}$ C)	-20 ~ +60
Weight	(g)	1

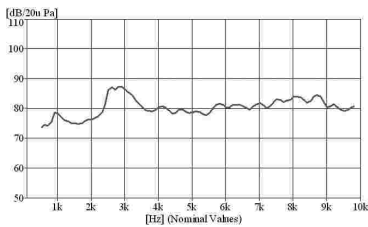
- dimensions



- CDT092 Magnetic Transducer



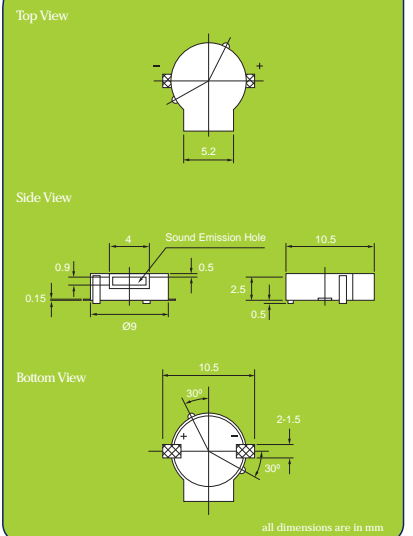
- Frequency Response



- electrical specifications

Model	CDT0927B	
Operating Voltage	(V)	2 ~ 4
Rated Voltage	(V)	3
Max. Rated Current	(mA)	85
Coil Resistance	(Ω)	16 \pm 3
Min. Sound Output	(dBA)	85 at 10cm
Frequency	(Hz)	2731
Operating Temperature	($^{\circ}$ C)	-20 ~ +60
Weight	(g)	0.6

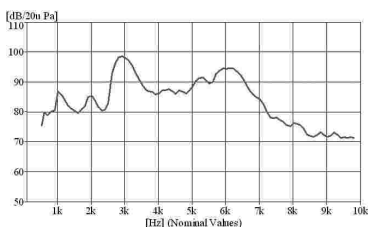
- dimensions



- UDT094 Magnetic Transducer



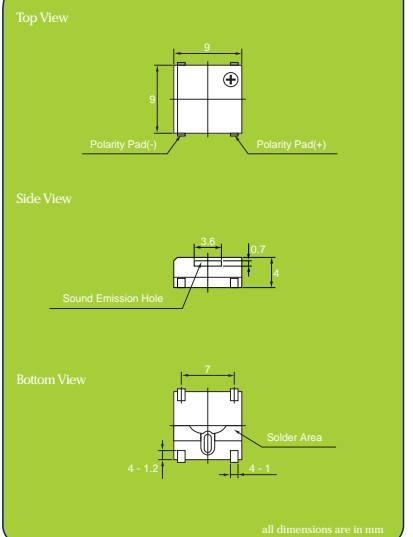
- Frequency Response



- electrical specifications

Model	UDT0943A	
Operating Voltage	(V)	2.5 ~ 4.5
Rated Voltage	(V)	3.6
Max. Rated Current	(mA)	100
Coil Resistance	(Ω)	16 \pm 3
Min. Sound Output	(dBA)	85 at 10cm
Frequency	(Hz)	2670
Operating Temperature	($^{\circ}$ C)	-30 ~ +70
Weight	(g)	1

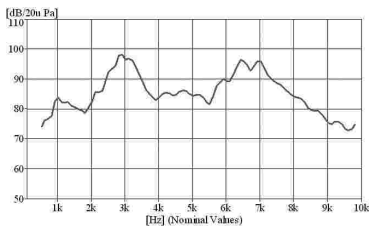
- dimensions



- CDT093A Magnetic Transducer



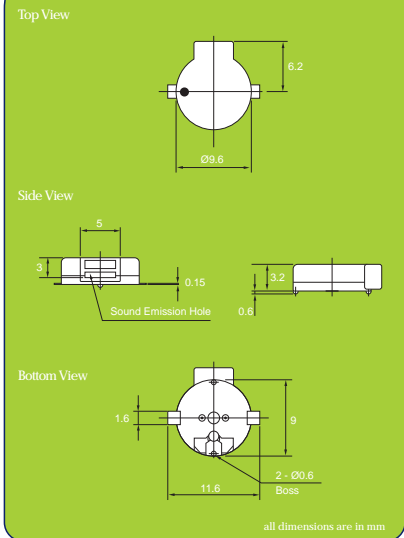
- Frequency Response



- electrical specifications

Model	CDT093A3A	
Operating Voltage	(V)	2 ~ 5
Rated Voltage	(V)	3.6
Max. Rated Current	(mA)	80
Coil Resistance	(Ω)	16 \pm 2.4
Min. Sound Output	(dBA)	90 at 10cm
Frequency	(Hz)	2670
Operating Temperature	($^{\circ}$ C)	-30 ~ +70
Weight	(g)	0.5

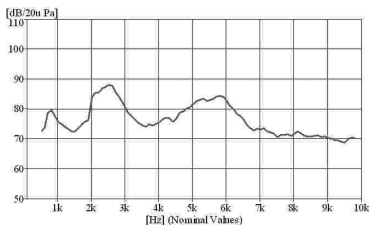
- dimensions



- WDX Magnetic Transducer



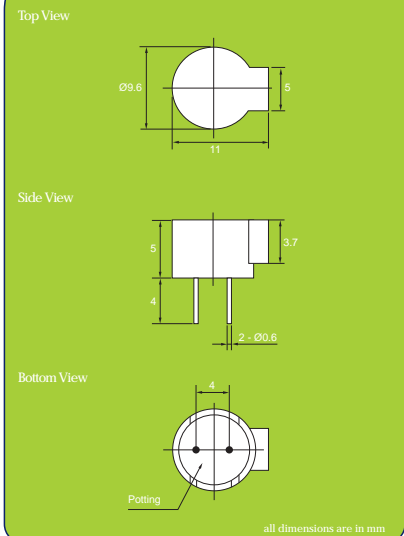
- Frequency Response



- electrical specifications

Model	WDX05B	
Operating Voltage	(V)	4 ~ 8
Rated Voltage	(V)	5
Max. Rated Current	(mA)	100
Coil Resistance	(Ω)	40 \pm 7.5
Min. Sound Output	(dBA)	85 at 10cm
Frequency	(Hz)	2731
Operating Temperature	($^{\circ}$ C)	-20 ~ +60
Weight	(g)	1

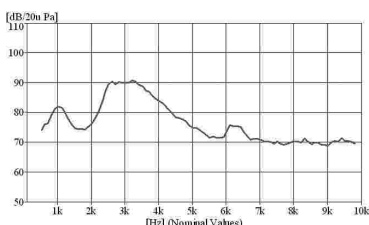
- dimensions



- MDX Magnetic Transducer



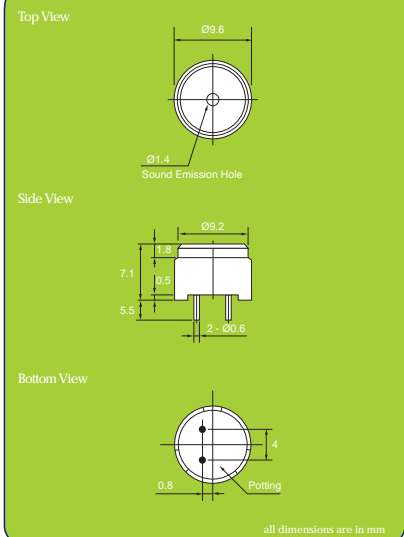
- Frequency Response



- electrical specifications

Model	MDX01C	
Operating Voltage	(V)	1 ~ 2
Rated Voltage	(V)	1.5
Max. Rated Current	(mA)	80
Coil Resistance	(Ω)	5.5 \pm 1
Min. Sound Output	(dBA)	80 at 10cm
Frequency	(Hz)	3100
Operating Temperature	($^{\circ}$ C)	-20 ~ +60
Weight	(g)	1

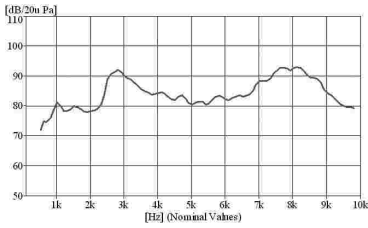
- dimensions



- RDT102 Magnetic Transducer



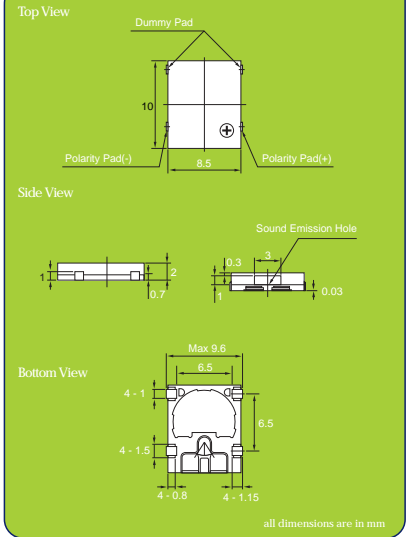
- Frequency Response



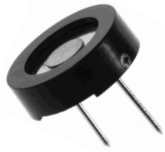
- electrical specifications

Model	RDT1023A	
Operating Voltage	(V)	2 ~ 5
Rated Voltage	(V)	3.6
Max. Rated Current	(mA)	100
Coil Resistance	(Ω)	16 \pm 2.4
Min. Sound Output	(dBA)	88 at 10cm
Frequency	(Hz)	2670
Operating Temperature	($^{\circ}$ C)	-30 ~ +70
Weight	(g)	0.38

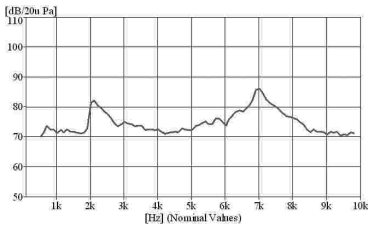
- dimensions



- DB107 Magnetic Transducer



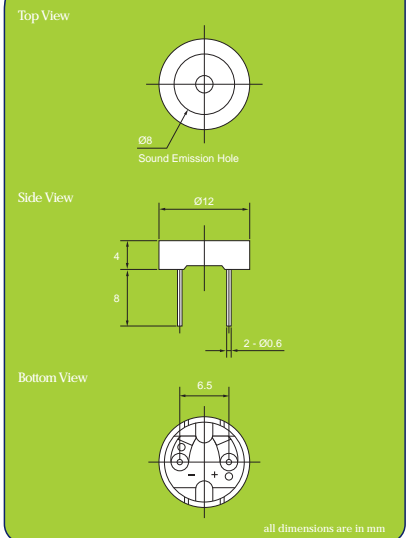
- Frequency Response



- electrical specifications

Model	DB107	
Operating Voltage	(V)	1 ~ 2
Rated Voltage	(V)	1.5
Max. Rated Current	(mA)	30
Coil Resistance	(Ω)	16 \pm 4
Min. Sound Output	(dBA)	75 at 10cm
Frequency	(Hz)	2400
Operating Temperature	($^{\circ}$ C)	-20 ~ +60
Weight	(g)	2

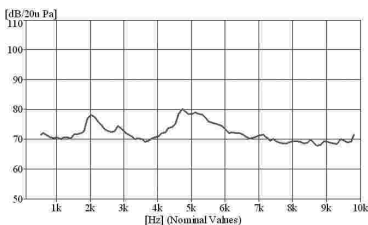
- dimensions



- DB105 Magnetic Transducer



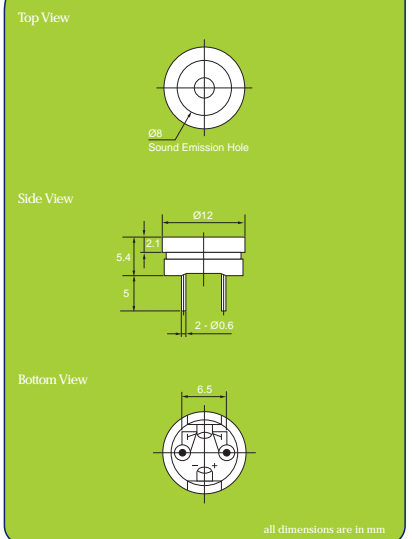
- Frequency Response



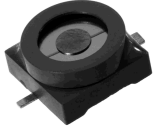
- electrical specifications

Model	DB105	
Operating Voltage	(V)	1 ~ 2
Rated Voltage	(V)	1.5
Max. Rated Current	(mA)	10
Coil Resistance	(Ω)	50 \pm 7.5
Min. Sound Output	(dBA)	70 at 10cm
Frequency	(Hz)	2048
Operating Temperature	($^{\circ}$ C)	-20 ~ +60
Weight	(g)	2

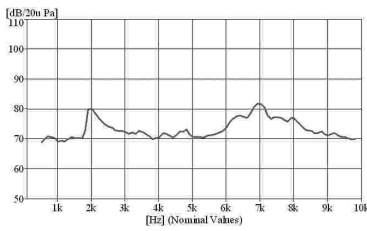
- dimensions



- DB102 Magnetic Transducer



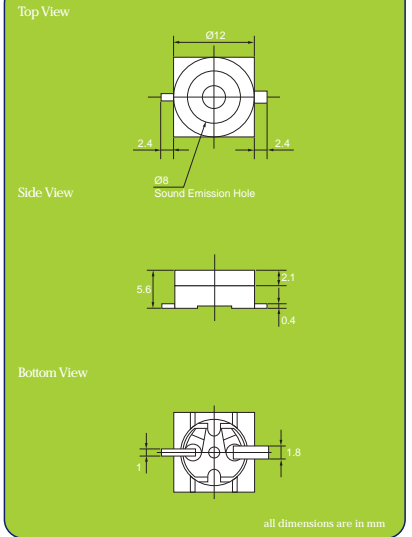
- Frequency Response



- electrical specifications

Model	DB102G	
Operating Voltage	(V)	1 - 2
Rated Voltage	(V)	1.5
Max. Rated Current	(mA)	30
Coil Resistance	(Ω)	15 \pm 7.5
Min. Sound Output	(dBA)	75 at 10cm
Frequency	(Hz)	2048
Operating Temperature	($^{\circ}$ C)	-20 ~ +70
Weight	(g)	2

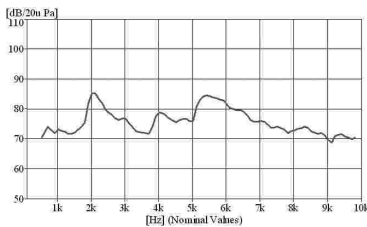
- dimensions



- DB106 Magnetic Transducer



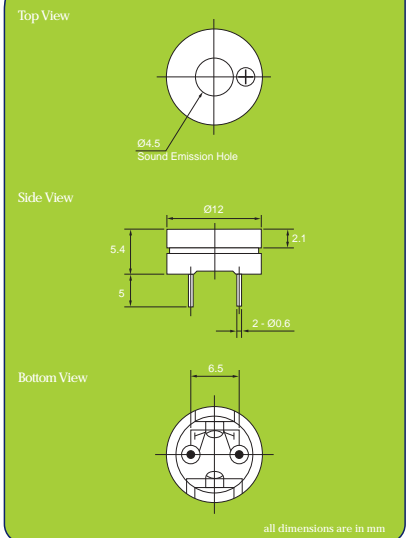
- Frequency Response



- electrical specifications

Model	DB106C	
Operating Voltage	(V)	1 - 4
Rated Voltage	(V)	3.6
Max. Rated Current	(mA)	40
Coil Resistance	(Ω)	42 \pm 5
Min. Sound Output	(dBA)	70 at 10cm
Frequency	(Hz)	1980
Operating Temperature	($^{\circ}$ C)	-20 ~ +60
Weight	(g)	2

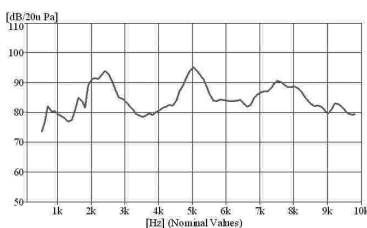
- dimensions



- PDX07 Magnetic Transducer



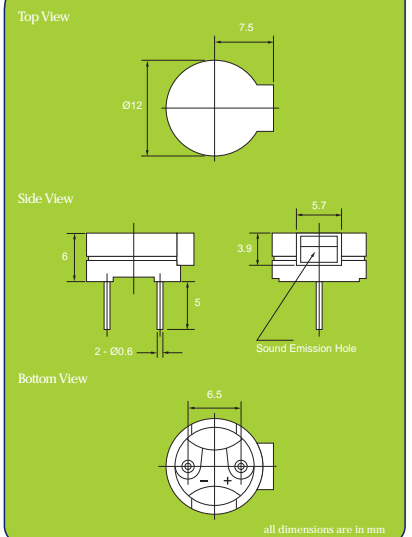
- Frequency Response



- electrical specifications

Model	PDX07B	
Operating Voltage	(V)	1 - 2
Rated Voltage	(V)	1.5
Max. Rated Current	(mA)	70
Coil Resistance	(Ω)	5 \pm 1
Min. Sound Output	(dBA)	85 at 10cm
Frequency	(Hz)	2700
Operating Temperature	($^{\circ}$ C)	-25 ~ +70
Weight	(g)	2

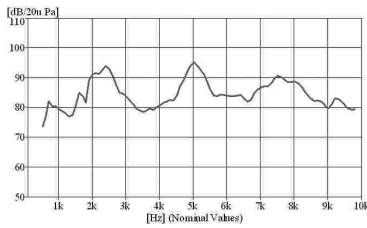
- dimensions



- PDX04 Magnetic Transducer



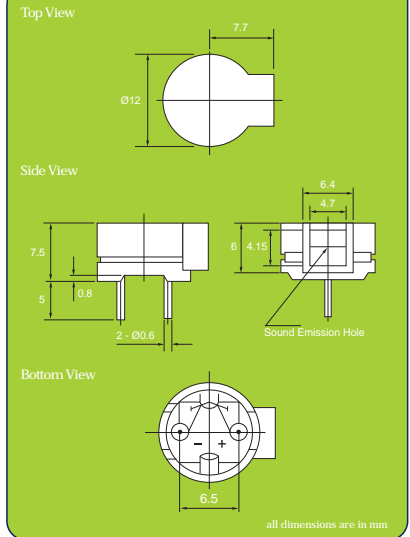
- Frequency Response



- electrical specifications

Model	PDX04A	
Operating Voltage	(V)	1 ~ 3
Rated Voltage	(V)	1.5
Max. Rated Current	(mA)	80
Coil Resistance	(Ω)	6.5 ± 1
Min. Sound Output	(dBA)	85 at 10cm
Frequency	(Hz)	2048
Operating Temperature	($^{\circ}$ C)	-20 ~ +60
Weight	(g)	2

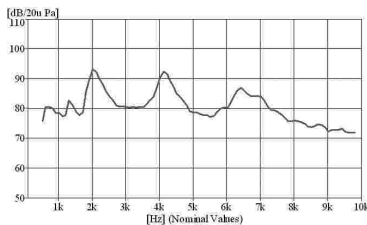
- dimensions



- DB111 Magnetic Transducer



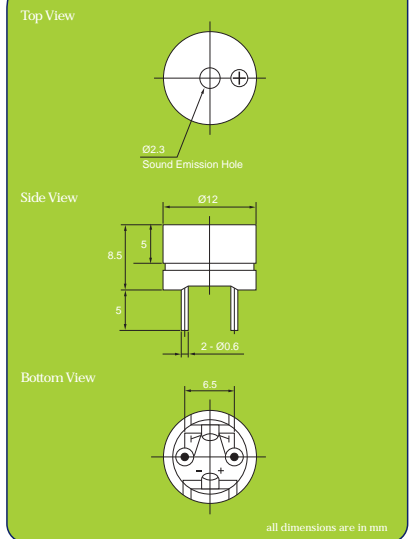
- Frequency Response



- electrical specifications

Model	DB111	
Operating Voltage	(V)	1 ~ 5
Rated Voltage	(V)	1.5
Max. Rated Current	(mA)	15
Coil Resistance	(Ω)	42 ± 5
Min. Sound Output	(dBA)	80 at 10cm
Frequency	(Hz)	2048
Operating Temperature	($^{\circ}$ C)	-20 ~ +60
Weight	(g)	2

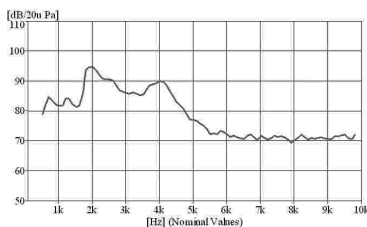
- dimensions



- DBX Magnetic Transducer



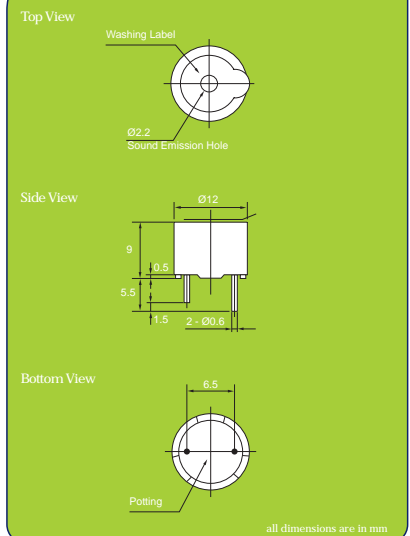
- Frequency Response



- electrical specifications

Model	DBX05	DBX12	
Operating Voltage	(V)	3 ~ 8	6 ~ 15
Rated Voltage	(V)	5	12
Max. Rated Current	(mA)	40	40
Coil Resistance	(Ω)	47 ± 5	140 ± 14
Min. Sound Output	(dBA)	85 at 10cm	85 at 10cm
Frequency	(Hz)	2400	2400
Operating Temperature	($^{\circ}$ C)	-40 ~ +85	-20 ~ +70
Weight	(g)	2	2

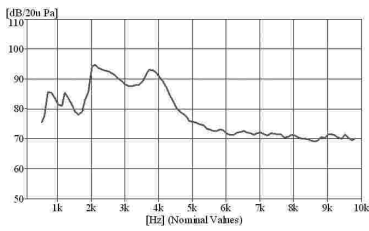
- dimensions



- ZDX Magnetic Transducer



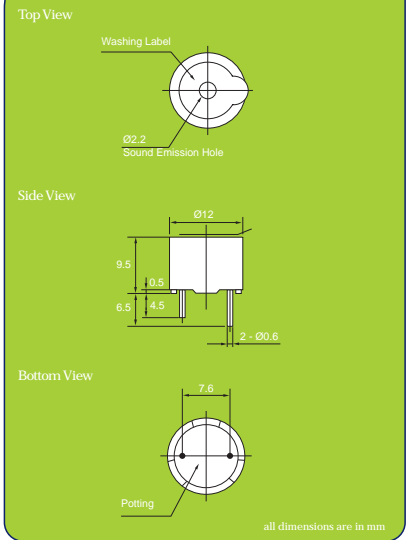
- Frequency Response



- electrical specifications

Model	ZDX06	
Operating Voltage	(V)	4 – 8
Rated Voltage	(V)	6
Max. Rated Current	(mA)	40
Coil Resistance	(Ω)	50 \pm 5
Min. Sound Output	(dBA)	85 at 10cm
Frequency	(Hz)	2200
Operating Temperature	($^{\circ}$ C)	-40 ~ +85
Weight	(g)	2

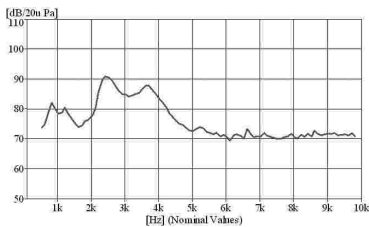
- dimensions



- HDX Magnetic Transducer



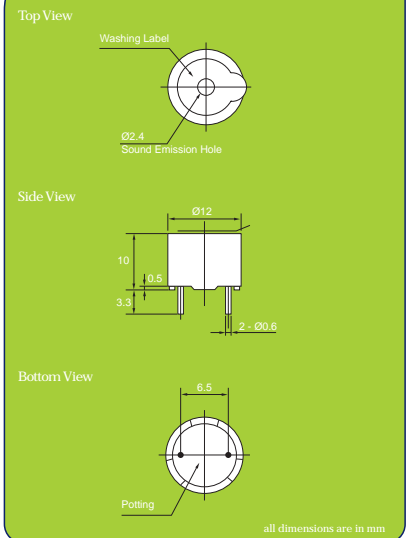
- Frequency Response



- electrical specifications

Model	HDX05	
Operating Voltage	(V)	3 – 8
Rated Voltage	(V)	5
Max. Rated Current	(mA)	50
Coil Resistance	(Ω)	40 \pm 5
Min. Sound Output	(dBA)	85 at 10cm
Frequency	(Hz)	2400
Operating Temperature	($^{\circ}$ C)	-40 ~ +85
Weight	(g)	2

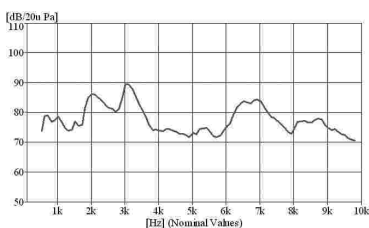
- dimensions



- DB113 Magnetic Transducer



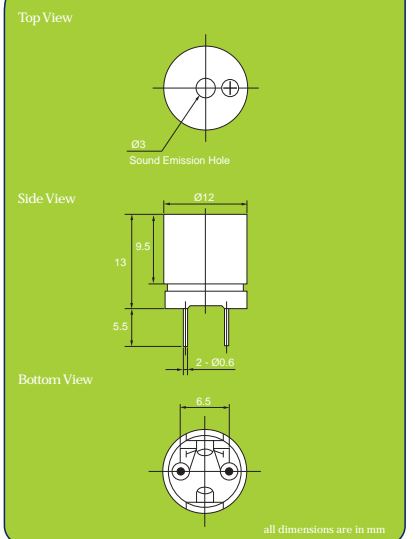
- Frequency Response



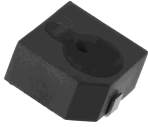
- electrical specifications

Model	DB113	
Operating Voltage	(V)	1 – 2
Rated Voltage	(V)	1.5
Max. Rated Current	(mA)	30
Coil Resistance	(Ω)	16 \pm 4.5
Min. Sound Output	(dBA)	80 at 10cm
Frequency	(Hz)	2048
Operating Temperature	($^{\circ}$ C)	-20 ~ +60
Weight	(g)	2

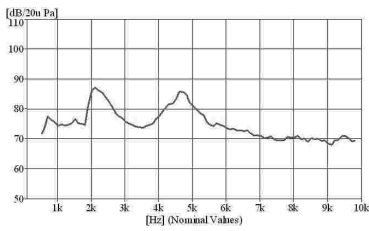
- dimensions



- SCDX Magnetic Transducer



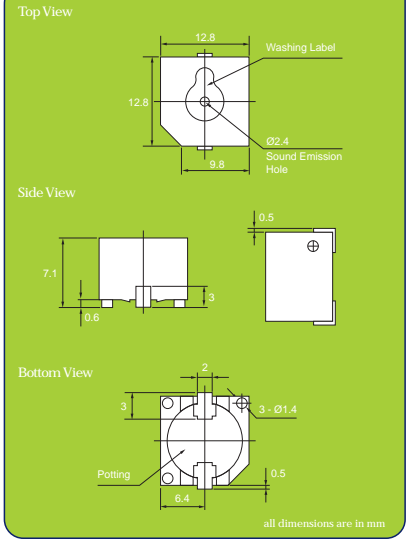
- Frequency Response



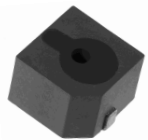
- electrical specifications

Model		SCDX05A	SCDX12
Operating Voltage	(V)	4 ~ 8	8 ~ 16
Rated Voltage	(V)	5	12
Max. Rated Current	(mA)	40	45
Coil Resistance	(Ω)	47 \pm 5	140 \pm 14
Min. Sound Output	(dBA)	87 at 10cm	87 at 10cm
Frequency	(Hz)	2048	2400
Operating Temperature	($^{\circ}$ C)	-30 ~ +70	-30 ~ +70
Weight	(g)	2	2

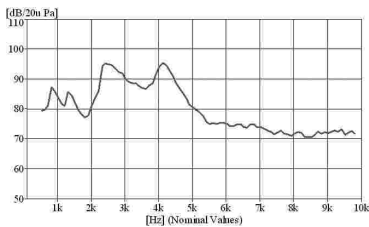
- dimensions



- SDBX Magnetic Transducer



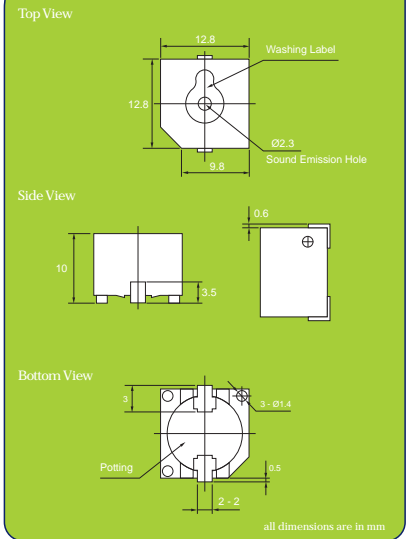
- Frequency Response



- electrical specifications

Model		SDBX05	SDBX12
Operating Voltage	(V)	4 ~ 8	8 ~ 16
Rated Voltage	(V)	5	12
Max. Rated Current	(mA)	40	40
Coil Resistance	(Ω)	47 \pm 5	140 \pm 14
Min. Sound Output	(dBA)	85 at 10cm	85 at 10cm
Frequency	(Hz)	2400	2400
Operating Temperature	($^{\circ}$ C)	-40 ~ +85	-40 ~ +85
Weight	(g)	2	2

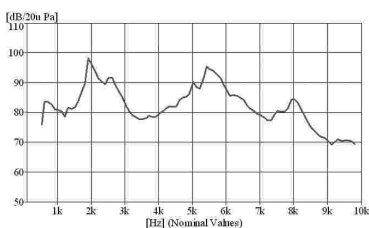
- dimensions



- DB108 Magnetic Transducer



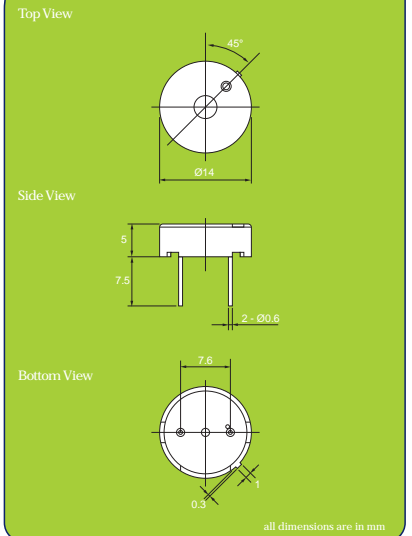
- Frequency Response



- electrical specifications

Model		DB108
Operating Voltage	(V)	1 ~ 4
Rated Voltage	(V)	3
Max. Rated Current	(mA)	35
Coil Resistance	(Ω)	15 \pm 6
Min. Sound Output	(dBA)	85 at 10cm
Frequency	(Hz)	2000
Operating Temperature	($^{\circ}$ C)	-20 ~ +60
Weight	(g)	2

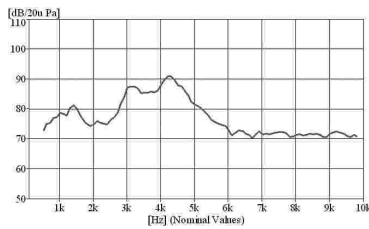
- dimensions



- RDT143A Magnetic Transducer



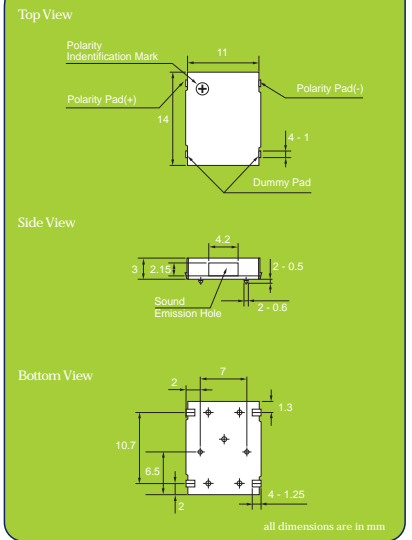
- Frequency Response



- electrical specifications

Model	RDT143A5B	
Operating Voltage	(V)	4 ~ 6
Rated Voltage	(V)	5
Max. Rated Current	(mA)	70
Coil Resistance	(Ω)	43 \pm 3
Min. Sound Output	(dBA)	87 at 10cm
Frequency	(Hz)	2730
Operating Temperature	($^{\circ}$ C)	-20 ~ +70
Weight	(g)	1

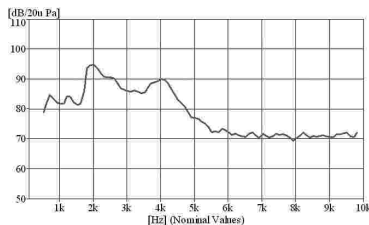
- dimensions



- GDX Magnetic Transducer



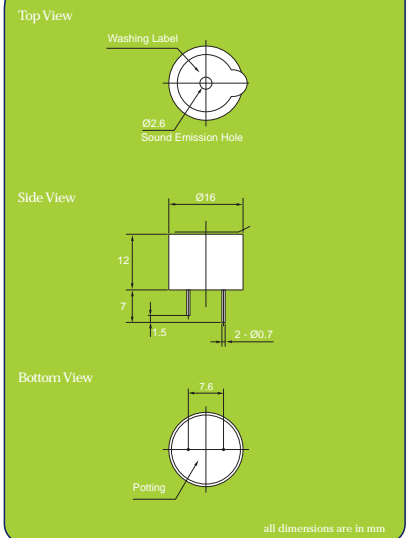
- Frequency Response



- electrical specifications

Model	GDX05	GDX12	
Operating Voltage	(V)	3 ~ 12	6 ~ 18
Rated Voltage	(V)	5	12
Max. Rated Current	(mA)	55	50
Coil Resistance	(Ω)	28 \pm 3	135 \pm 20
Min. Sound Output	(dBA)	85 at 10cm	85 at 10cm
Frequency	(Hz)	2048	2048
Operating Temperature	($^{\circ}$ C)	-20 ~ +70	-40 ~ +90
Weight	(g)	4	4

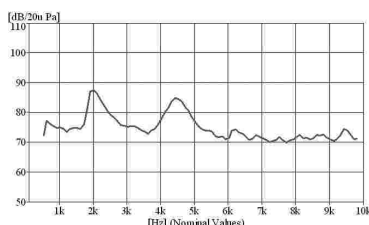
- dimensions



- DB Magnetic Transducer



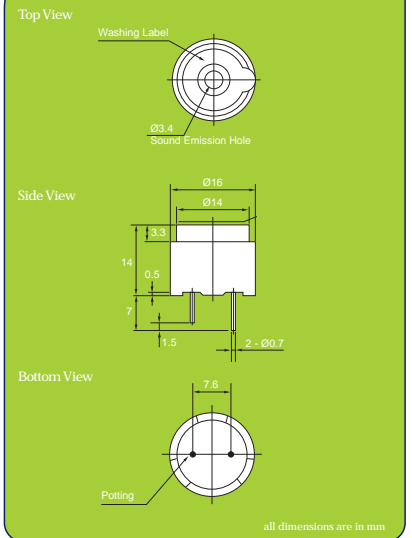
- Frequency Response



- electrical specifications

Model	DB06	DB12	
Operating Voltage	(V)	3 ~ 12	6 ~ 18
Rated Voltage	(V)	6	12
Max. Rated Current	(mA)	40	40
Coil Resistance	(Ω)	50 \pm 5	115 \pm 12
Min. Sound Output	(dBA)	85 at 10cm	85 at 10cm
Frequency	(Hz)	2048	2048
Operating Temperature	($^{\circ}$ C)	-25 ~ +70	-25 ~ +70
Weight	(g)	7	7

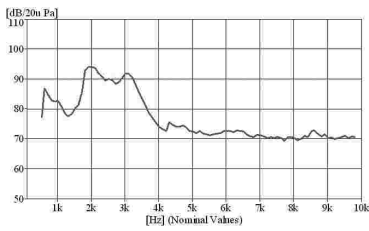
- dimensions



- RDX Magnetic Transducer



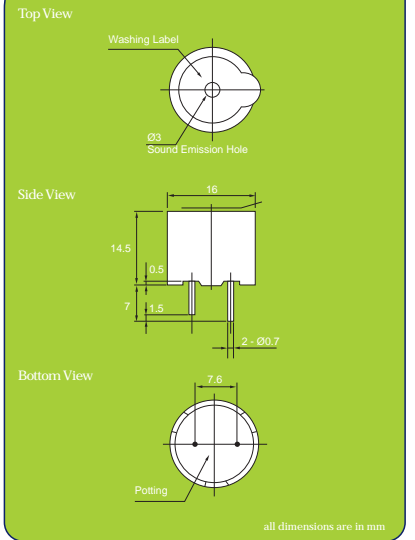
- Frequency Response



- electrical specifications

Model		RDX06	RDX12
Operating Voltage	(V)	3 ~ 12	8 ~ 16
Rated Voltage	(V)	6	12
Max. Rated Current	(mA)	40	40
Coil Resistance	(Ω)	45 \pm 7	115 \pm 17
Min. Sound Output	(dBA)	85 at 10cm	85 at 10cm
Frequency	(Hz)	2048	2048
Operating Temperature	($^{\circ}$ C)	-20 ~ +60	-30 ~ +80
Weight	(g)	7	7

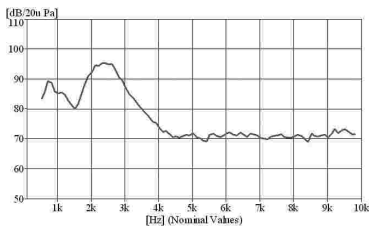
- dimensions



- SDX Magnetic Transducer



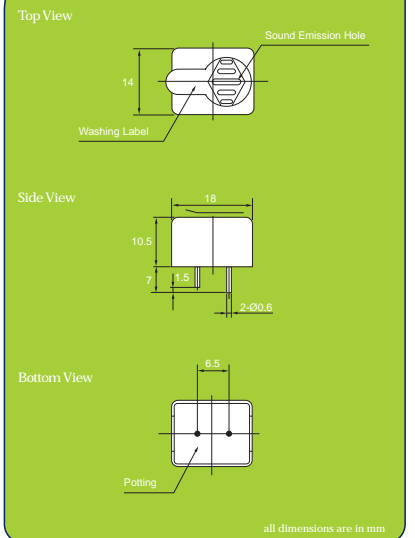
- Frequency Response



- electrical specifications

Model		SDX06	SDX12
Operating Voltage	(V)	3 ~ 10	5 ~ 15
Rated Voltage	(V)	6	12
Max. Rated Current	(mA)	40	40
Coil Resistance	(Ω)	60 \pm 9	120 \pm 18
Min. Sound Output	(dBA)	90 at 10cm	85 at 10cm
Frequency	(Hz)	2048	2048
Operating Temperature	($^{\circ}$ C)	-30 ~ +85	-30 ~ +85
Weight	(g)	7	7

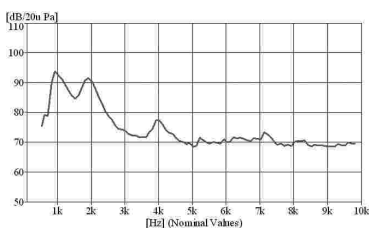
- dimensions



- TDX Magnetic Transducer



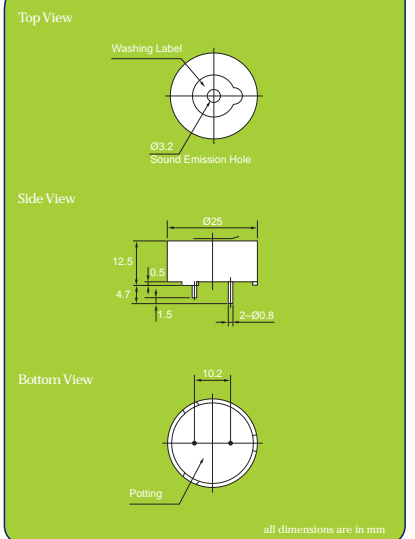
- Frequency Response

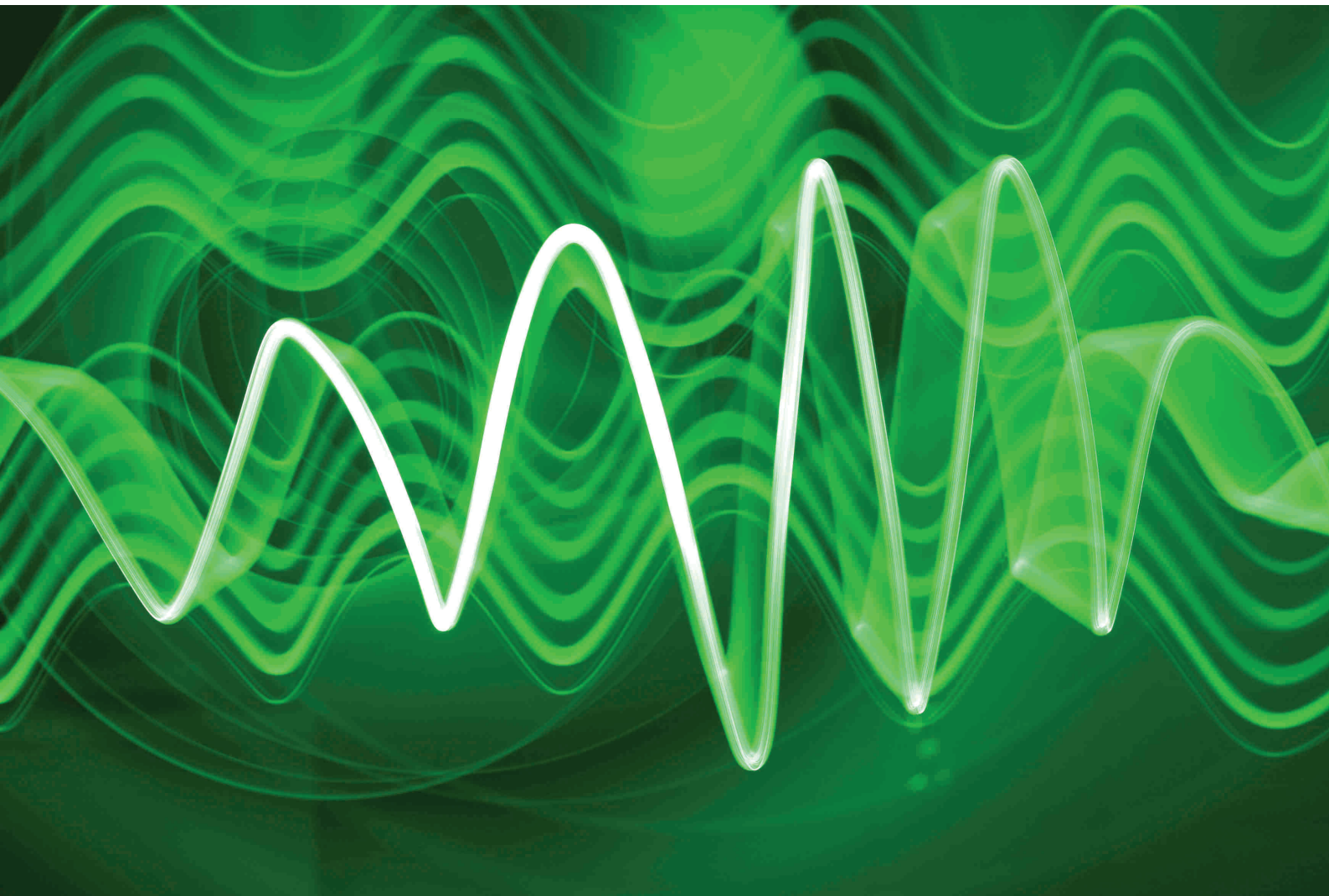


- electrical specifications

Model		TDX06
Operating Voltage	(V)	3 ~ 5
Rated Voltage	(V)	5
Max. Rated Current	(mA)	80
Coil Resistance	(Ω)	27 \pm 4
Min. Sound Output	(dBA)	85 at 10cm
Frequency	(Hz)	730
Operating Temperature	($^{\circ}$ C)	-40 ~ +85
Weight	(g)	10

- dimensions





02. **Transducer**
- External Drive Piezo Transducer

External Drive Piezo Transducer

IMO Series	Model	Diameter (Ømm)	Height (mm)	Min. Sound Output (dBA)	Capacitance (pF)	Page No.
DB-E1828	182PZ09290	9	8	75 min. (10V p-p / Square Wave / 10cm / 2900Hz)	5600 ± 30% at 1000Hz	022
DB-E1858	185PZ10320	10	3.2	80 min. (10V p-p / Square Wave / 10cm / 3200Hz)	11000 ± 30% at 120Hz	022
DB-E1998	199PZ11410	11 x 9	1.7	70 min. (5V p-p / Square Wave / 10cm / 4100Hz)	10000 ± 30% at 1000Hz	022
DB-E2098	209PZ11410	11 x 9	1.7	75 min. (5V p-p / Square Wave / 10cm / 4100Hz)	12000 ± 30% at 120Hz	023
DB-E1178	117PZ13400	12	8.3	70 min. (3V p-p / Square Wave / 10cm / 4000Hz)	14000 ± 30% at 120Hz	023
DB-E1478	147PZ12450	12	7.5	80 min. (12V p-p / Square Wave / 10cm / 4500Hz)	6000 ± 30% at 120Hz	023
DB-E1898	189PZ12400	12 x 12	3	70 min. (3V p-p / Square Wave / 10cm / 4000Hz)	15000 ± 30% at 120Hz	024
DB-E1108	110PZ13400	12.6	6.3	80 min. (5V p-p / Square Wave / 10cm / 4000Hz)	14000 ± 30% at 120Hz	024
DB-E1678	167PZ13400	12.8	6.3	75 min. (3V rms / Sine Wave / 10cm / 4000Hz)	12000 ± 30% at 1000Hz	024
DB-E1778	177PZ13480	13	2.5	80 min. (10V p-p / Square Wave / 10cm / 4800 Hz)	15000 ± 30% at 120Hz	025
DB-E1548	154PZ14480	13.6	4.15	80 min. (5V p-p / Square Wave / 10cm / 4800Hz)	12000 ± 30% at 120Hz	025
DB-E658	65PZ14400	14	6.7	80 min. (9V p-p / Square Wave / 10cm / 4000Hz)	13000 ± 30% at 120Hz	025
DB-E1648	164PZ14400	14	5.6	75 min. (3V rms / Sine Wave / 10cm / 4000Hz)	18000 ± 30% at 1000Hz	026
DB-E1768	176PZ14480	14	4	80 min. (10V p-p / Square Wave / 10cm / 4800Hz)	15000 ± 30% at 120Hz	026
DB-E2068	206PZ14400	14	8	85 min. (10V p-p / Square Wave / 10cm / 4000Hz) 75 min. (10V p-p / Square Wave / 10cm / 3600Hz)	13000 ± 30% at 120Hz	026
DB-E1868	186PZ14330	14.3 x 14.3	10.7	80 min. (5V p-p / Square Wave / 10cm / 3300Hz)	15000 ± 30% at 120Hz	027
DB-E1198	119PZ15500	14.8 x 14.8	6.8	85 min. (12V p-p / Square Wave / 10cm / 5000Hz)	12000 ± 30% at 120Hz	027
DB-E2148	214PZ15400	14.1 x 14.1	4	75 min. (5V p-p / Square Wave / 10cm / 4000Hz)	12000 ± 30% at 120Hz	027
DB-E1348	134PZ16400	16 x 16	2.5	73 min. (3V p-p / Square Wave / 10cm / 4000Hz)	15000 ± 30% at 120Hz	028
DB-E538	53PZ17400	16.5	6.7	75 min. (3V p-p / Square Wave / 10cm / 4000Hz)	10000 ± 30% at 1000Hz	028
DB-E678	67PZ17400	16.5	4	80 min. (9V p-p / Square Wave / 10cm / 4000Hz)	9500 ± 30% at 120Hz	028
DB-E478	47PZ17400	16.8	7.2	80 min. (9V p-p / Square Wave / 10cm / 4000Hz)	10500 ± 30% at 120Hz	029
DB-E1208	120PZ17280	16.8	7	80 min. (3V rms / Sine Wave / 10cm / 2800Hz)	23000 ± 30% at 1000Hz	029
DB-E1058	105PZ17400	17	5.2	80 min. (3V rms / Sine Wave / 10cm / 4000Hz)	6500 ± 30% at 120Hz	029
DB-E1758	175PZ17200	17	8.6	78 min. (9V p-p / Square Wave / 10cm / 2000Hz)	25000 ± 30% at 120Hz	030
DB-E1878	187PZ17400	17	6	90 min. (12V p-p / Square Wave / 10cm / 4000Hz)	15000 ± 30% at 120Hz	030
DB-E1098	109PZ18400	17.5	7.6	85 min. (3V rms / Sine Wave / 10cm / 4000Hz)	12000 ± 30% at 120Hz	030
DB-E2088	208PZ18200	18.4	7.3	75 min. (3.6V p-p / Square Wave / 10cm / 2000Hz)	34000 ± 30% at 120Hz	031
DB-E2008	200PZ17220	20 x 16.9	7	80 min. (9V p-p / Square Wave / 10cm / 2200Hz)	22000 ± 30% at 120Hz	031
DB-E1068	106PZ21400	21	9.2	80 min. (3V rms / Sine Wave / 10cm / 4000Hz)	9000 ± 30% at 1000Hz	031
DB-E608	60PZ22400	22	7	80 min. (3V rms / Sine Wave / 10cm / 4000Hz)	15000 ± 30% at 120Hz	032
DB-E698	69PZ22400	22	7	80 min. (3V rms / Sine Wave / 10cm / 4000Hz)	15000 ± 30% at 1000Hz	032
DB-E1318	131PZ22400	22	10.8	85 min. (3V p-p / Square Wave / 10cm / 4000Hz)	15000 ± 30% at 1000Hz	032
DB-E2038	203PZ22250	22	5.6	80 min. (10V p-p / Square Wave / 10cm / 2500Hz)	25000 ± 30% at 120Hz	033
DB-E1888	188PZ22400	22.1	7	90 min. (12V p-p / Square Wave / 10cm / 4000Hz)	15000 ± 30% at 120Hz	033
DB-E1078	107PZ23204	22.5	9	80 min. (10V p-p / Square Wave / 10cm / 2048Hz)	24000 ± 30% at 120Hz	033
DB-E508	50PZ23400	23	5	80 min. (12V p-p / Square Wave / 30cm / 4000Hz)	24000 ± 30% at 120Hz	034
DB-E518	51PZ23500	23	4.3	70 min. (12V p-p / Square Wave / 30cm / 5000Hz)	15000 ± 30% at 120Hz	034
DB-E2048	204PZ23480	23	9.8	85 min. (12V p-p / Square Wave / 10cm / 4800Hz)	15000 ± 30% at 120Hz	034
DB-E338	33PZ24400	24	7.5	85 min. (9V p-p / Square Wave / 10cm / 4000Hz)	17000 ± 30% at 120Hz	035
DB-E598	59PZ24409	24	5.5	75 min. (3V p-p / Square Wave / 10cm / 4096Hz)	10000 ± 30% at 1000Hz	035
DB-E1238	123PZ24550	24	4	90 min. (15V p-p / Square Wave / 10cm / 5500Hz)	18000 ± 30% at 120Hz	035
DB-E1918	191PZ24320	25 x 24	10	88 min. (10V p-p / Square Wave / 10cm / 3200Hz)	17000 ± 30% at 120Hz	036
DB-E2028	202PZ24600	24	6.7	86 min. (5V p-p / Square Wave / 10cm / 6000Hz)	12000 ± 30% at 120Hz	036
DB-E1398	139PZ25200	25	2.5	70 min. (3V rms / Sine Wave / 10cm / 2000Hz)	45000 ± 30% at 120Hz	036
DB-E788	78PZ22400	26.5 x 22	7	80 min. (3V p-p / Square Wave / 10cm / 4000Hz)	15000 ± 30% at 120Hz	037

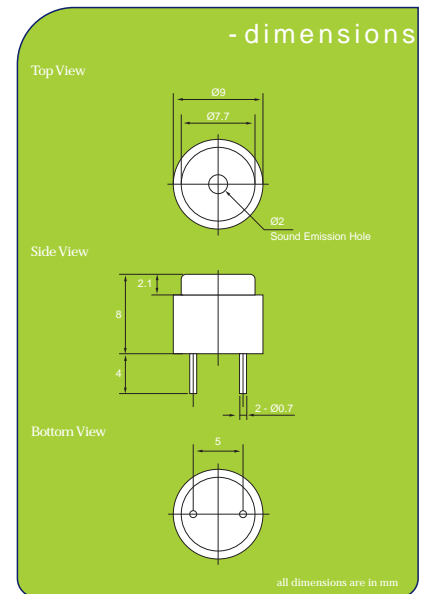
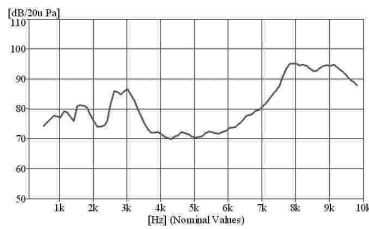
- DB-E1828 External Drive Piezo Transducer



- electrical specifications

Model	182PZ09290	
Min. Sound Output	(dBA)	75 min. (10V p-p / Square Wave / 10cm / 2900Hz)
Capacitance	(pF)	5600 ± 30% at 1000Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	0.5

- Frequency Response



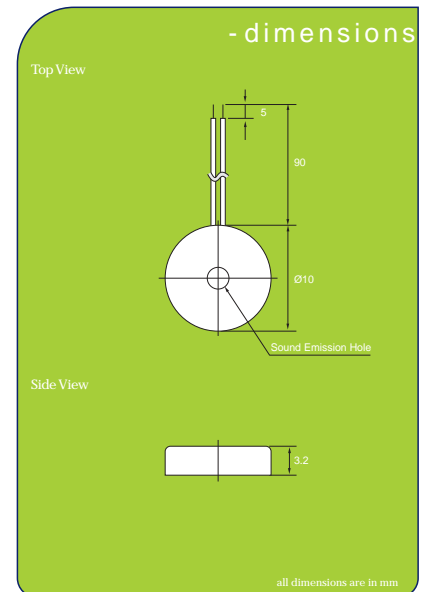
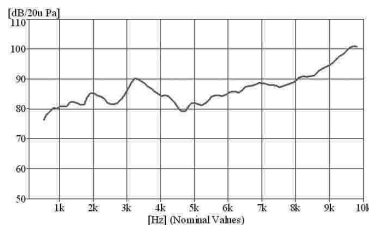
- DB-E1858 External Drive Piezo Transducer



- electrical specifications

Model	185PZ10320	
Min. Sound Output	(dBA)	80 min. (10V p-p / Square Wave / 10cm / 3200Hz)
Capacitance	(pF)	11000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	1

- Frequency Response



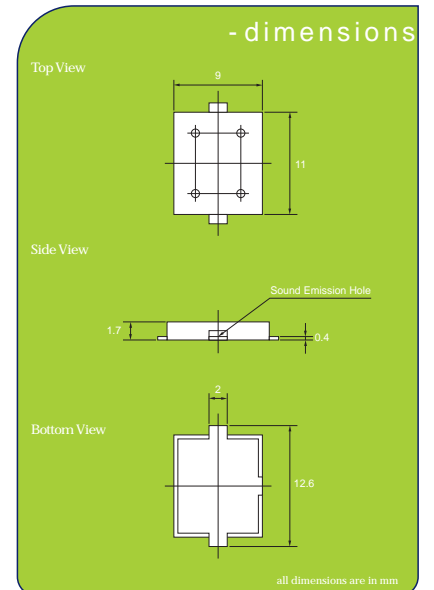
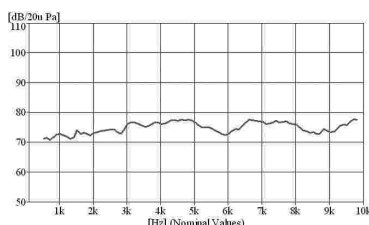
- DB-E1998 External Drive Piezo Transducer



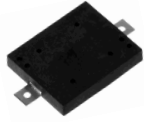
- electrical specifications

Model	199PZ11410	
Min. Sound Output	(dBA)	70 min. (5V p-p / Square Wave / 10cm / 4100Hz)
Capacitance	(pF)	10000 ± 30% at 1000Hz
Max. Input Voltage	(V p-p)	25
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	1.6

- Frequency Response



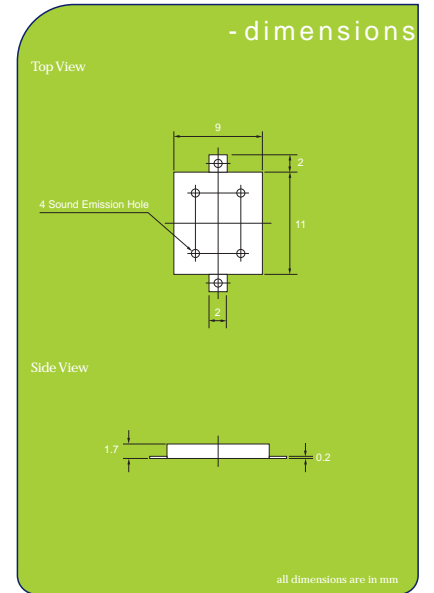
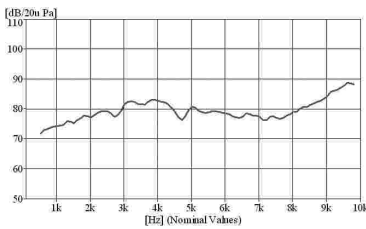
- DB-E2098 External Drive Piezo Transducer



- electrical specifications

Model	209PZ11410	
Min. Sound Output	(dBA)	75 min. (5V p-p / Square Wave / 10cm / 4100Hz)
Capacitance	(pF)	12000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	25
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	0.25

- Frequency Response



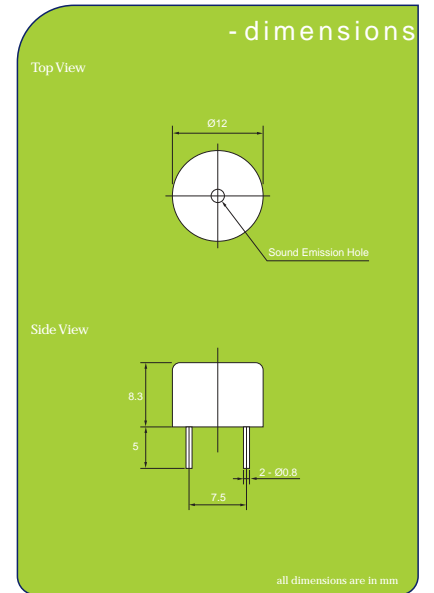
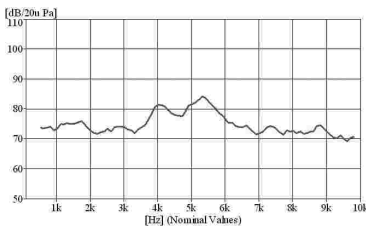
- DB-E1178 External Drive Piezo Transducer



- electrical specifications

Model	117PZ13400	
Min. Sound Output	(dBA)	70 min. (3V p-p / Square Wave / 10cm / 4000Hz)
Capacitance	(pF)	14000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	2

- Frequency Response



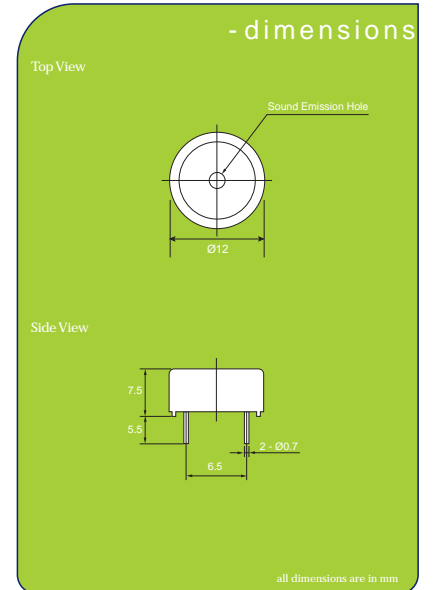
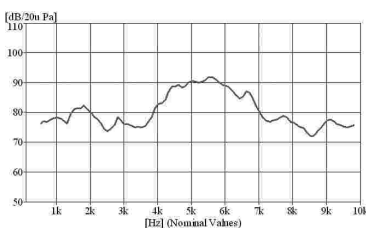
- DB-E1478 External Drive Piezo Transducer



- electrical specifications

Model	147PZ12450	
Min. Sound Output	(dBA)	80 min. (12V p-p / Square Wave / 10cm / 4500Hz)
Capacitance	(pF)	6000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +80
Weight	(g)	2

- Frequency Response



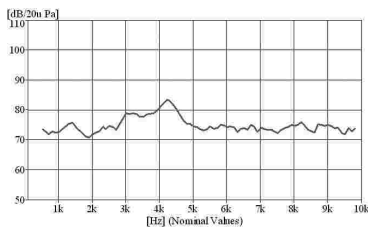
- DB-E1898 External Drive Piezo Transducer



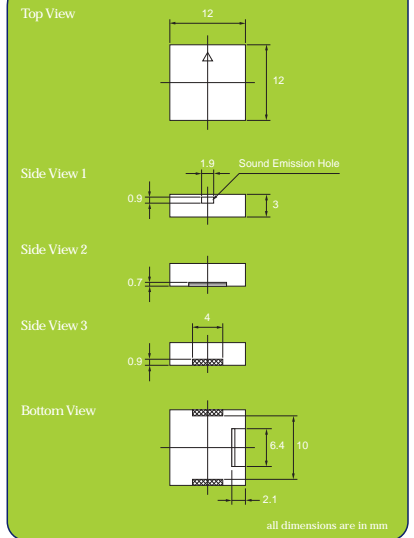
- electrical specifications

Model	189PZ12400	
Min. Sound Output	(dBA)	70 min. (3V p-p / Square Wave / 10cm / 4000Hz)
Capacitance	(pF)	15000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	25
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	1

- Frequency Response



- dimensions



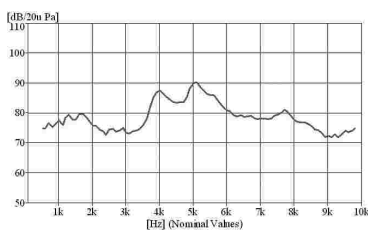
- DB-E1108 External Drive Piezo Transducer



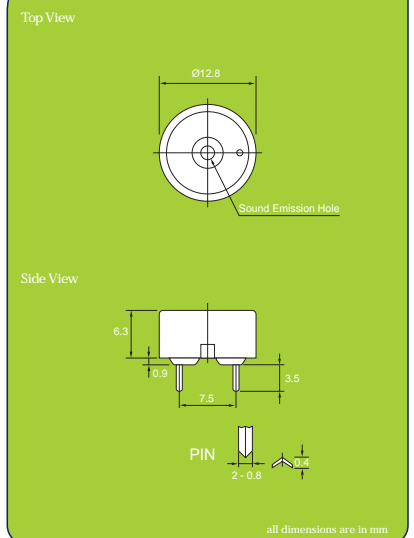
- electrical specifications

Model	110PZ13400	
Min. Sound Output	(dBA)	80 min. (5V p-p / Square Wave / 10cm / 4000Hz)
Capacitance	(pF)	14000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	2

- Frequency Response



- dimensions



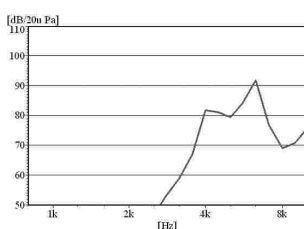
- DB-E1678 External Drive Piezo Transducer



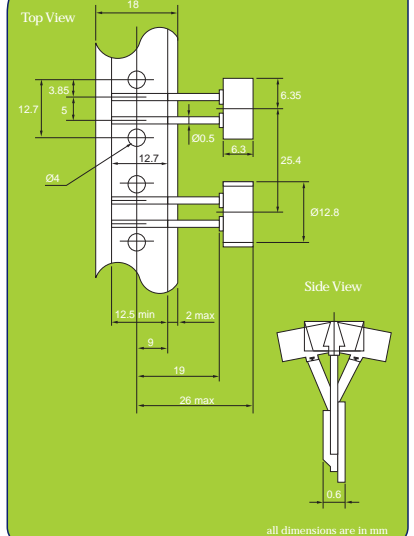
- electrical specifications

Model	167PZ13400	
Min. Sound Output	(dBA)	75 min. (3V rms / Sine Wave / 10cm / 4000Hz)
Capacitance	(pF)	12000 ± 30% at 1000Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	0.65

- Frequency Response



- dimensions



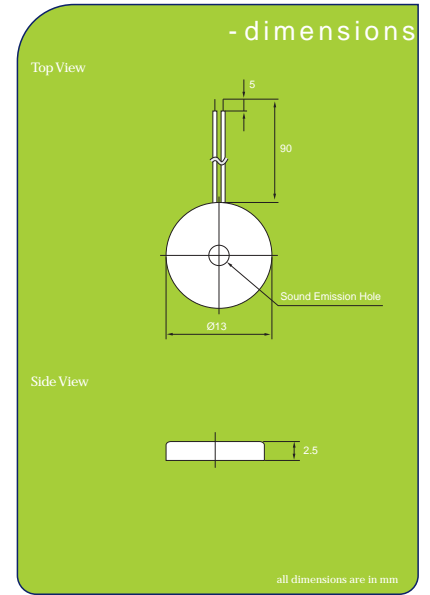
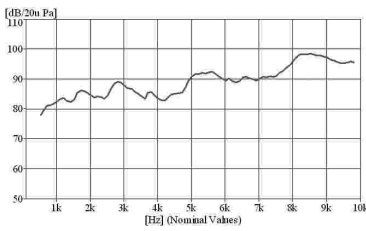
- DB-E1778 External Drive Piezo Transducer



- electrical specifications

Model	177PZ13480	
Min. Sound Output	(dBA)	80 min. (10V p-p / Square Wave / 10cm / 4800Hz)
Capacitance	(pF)	15000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	1

- Frequency Response



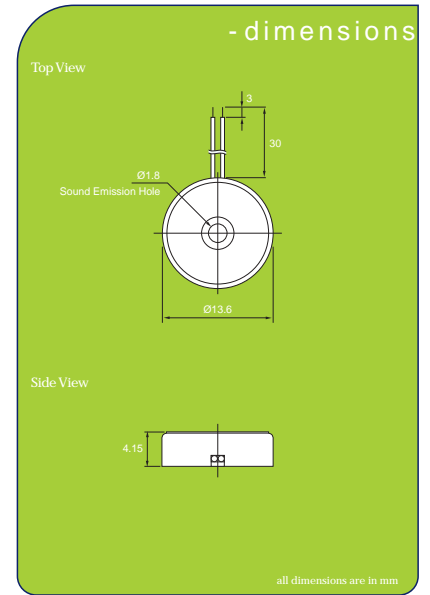
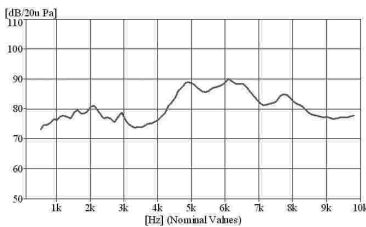
- DB-E1548 External Drive Piezo Transducer



- electrical specifications

Model	154PZ14480	
Min. Sound Output	(dBA)	80 min. (5V p-p / Square Wave / 10cm / 4800Hz)
Capacitance	(pF)	12000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	3

- Frequency Response



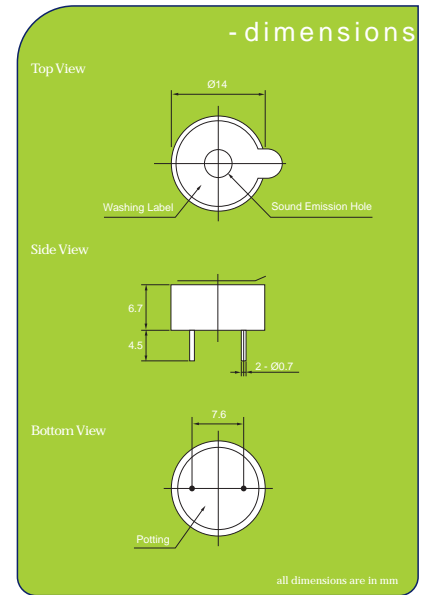
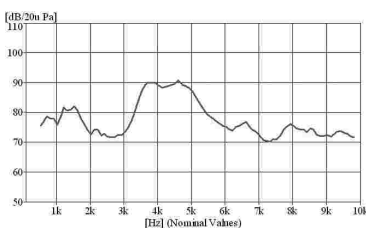
- DB-E658 External Drive Piezo Transducer



- electrical specifications

Model	65PZ14400	
Min. Sound Output	(dBA)	80 min. (9V p-p / Square Wave / 10cm / 4000Hz)
Capacitance	(pF)	13000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	20
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	1

- Frequency Response



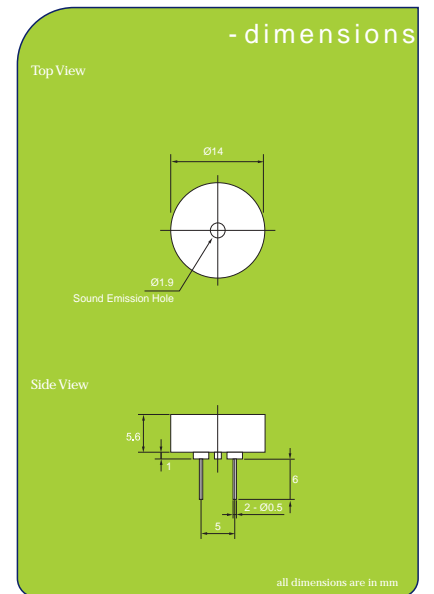
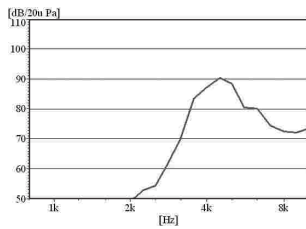
- DB-E1648 External Drive Piezo Transducer



- electrical specifications

Model	164PZ14400	
Min. Sound Output	(dBA)	75 min. (3V rms / Sine Wave / 10cm / 4000Hz)
Capacitance	(pF)	18000 ± 30% at 1000Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	1.5

- Frequency Response



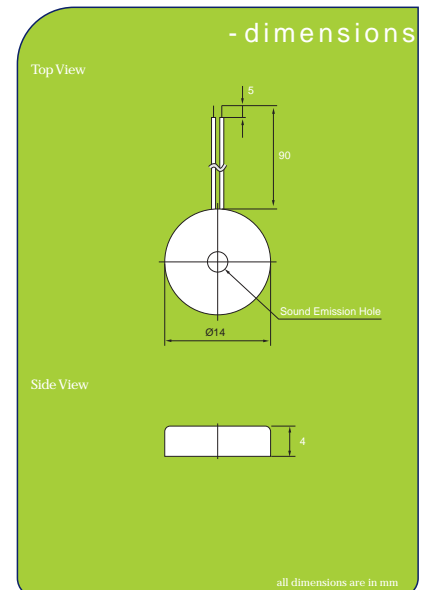
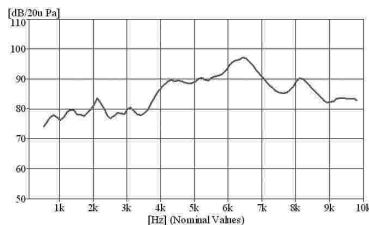
- DB-E1768 External Drive Piezo Transducer



- electrical specifications

Model	176PZ14480	
Min. Sound Output	(dBA)	80 min. (10V p-p / Square Wave / 10cm / 4800Hz)
Capacitance	(pF)	15000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	1

- Frequency Response



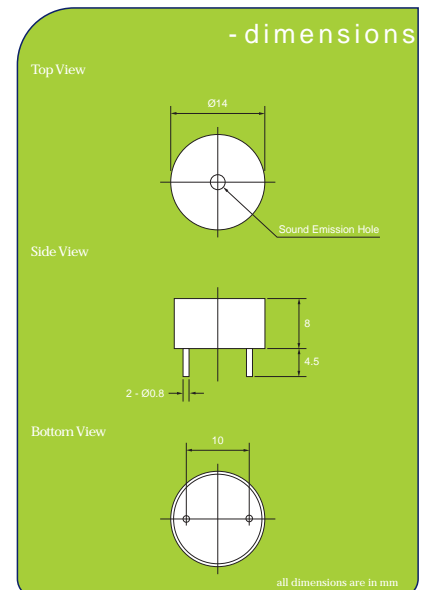
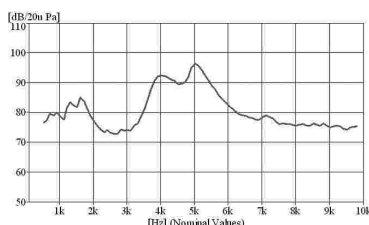
- DB-E2068 External Drive Piezo Transducer



- electrical specifications

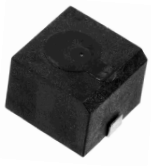
Model	206PZ14400	
Min. Sound Output	(dBA)	85 min. (10V p-p / Square Wave / 10cm / 4000Hz)
		75 min. (10V p-p / Square Wave / 10cm / 3600Hz)
Capacitance	(pF)	13000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	2

- Frequency Response



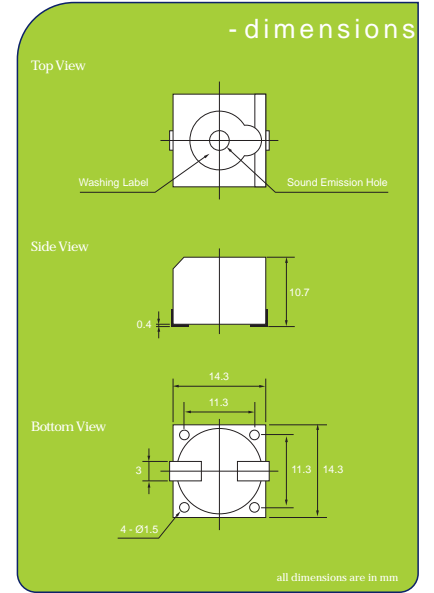
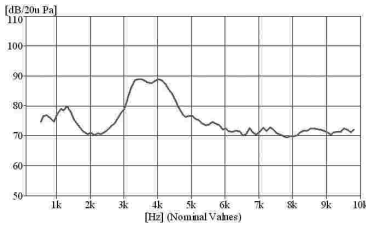
- DB-E1868 External Drive Piezo Transducer

- electrical specifications



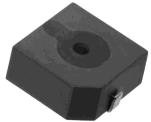
Model	186PZ14330	
Min. Sound Output	(dBA)	80 min. (5V p-p / Square Wave / 10cm / 3300Hz)
Capacitance	(pF)	15000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	20
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	2.3

- Frequency Response



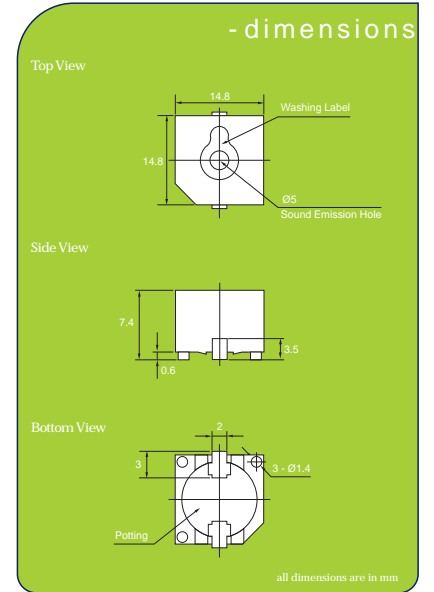
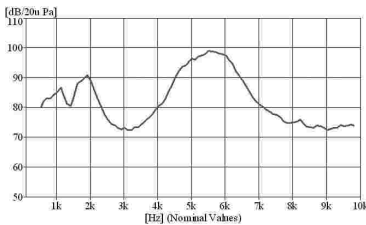
- DB-E1198 External Drive Piezo Transducer

- electrical specifications



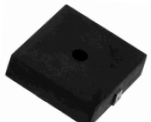
Model	119PZ15500	
Min. Sound Output	(dBA)	85 min. (12V p-p / Square Wave / 10cm / 5000Hz)
Capacitance	(pF)	12000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	40
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	2

- Frequency Response



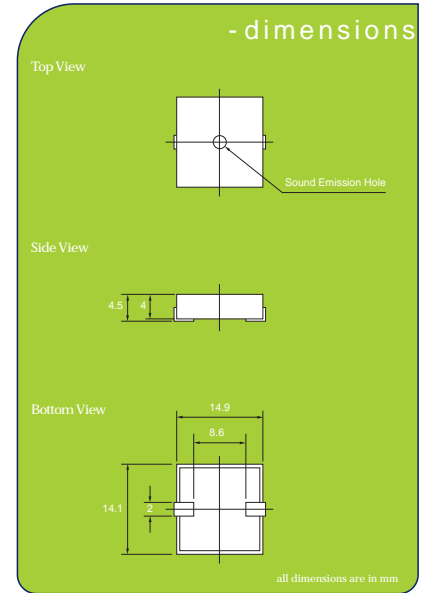
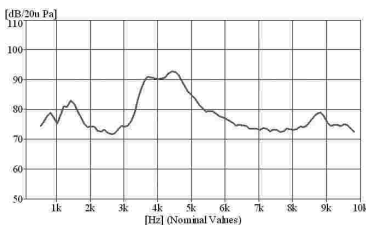
- DB-E2148 External Drive Piezo Transducer

- electrical specifications



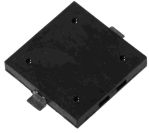
Model	214PZ15400	
Min. Sound Output	(dBA)	75 min. (5V p-p / Square Wave / 10cm / 4000Hz)
Capacitance	(pF)	12000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	20
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	0.8

- Frequency Response



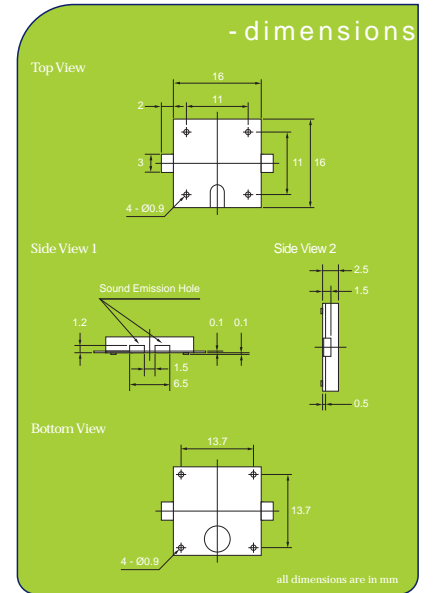
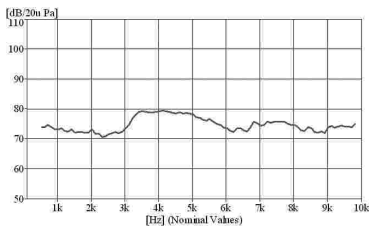
- DB-E1348 External Drive Piezo Transducer

- electrical specifications



Model	134PZ16400	
Min. Sound Output	(dBA)	73 min. (3V p-p / Square Wave / 10cm / 4000Hz)
Capacitance	(pF)	15000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	25
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	1

- Frequency Response



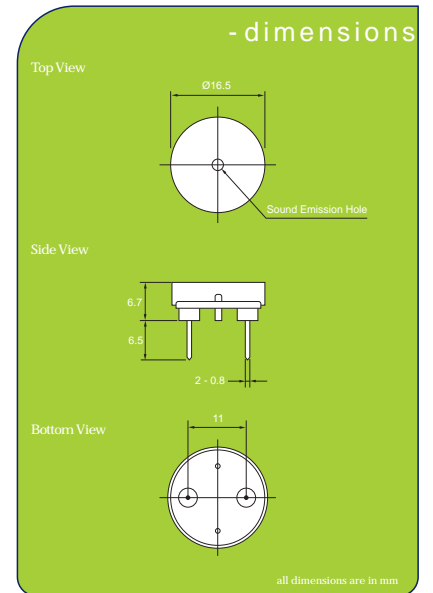
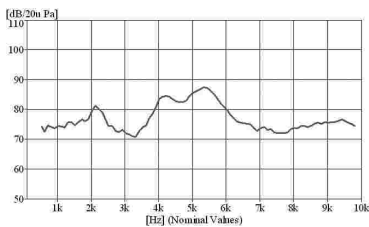
- DB-E538 External Drive Piezo Transducer

- electrical specifications



Model	53PZ17400	
Min. Sound Output	(dBA)	75 min. (3V p-p / Square Wave / 10cm / 4000Hz)
Capacitance	(pF)	10000 ± 30% at 1000Hz
Max. Input Voltage	(V p-p)	25
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	5

- Frequency Response



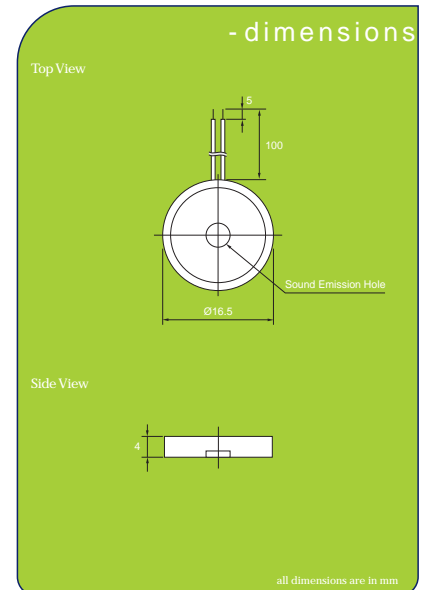
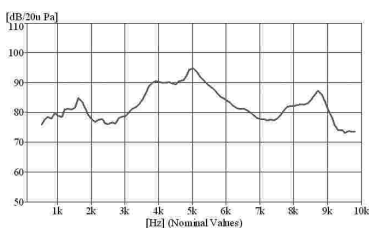
- DB-E678 External Drive Piezo Transducer

- electrical specifications



Model	67PZ17400	
Min. Sound Output	(dBA)	80 min. (9V p-p / Square Wave / 10cm / 4000Hz)
Capacitance	(pF)	9500 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	25
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	1

- Frequency Response



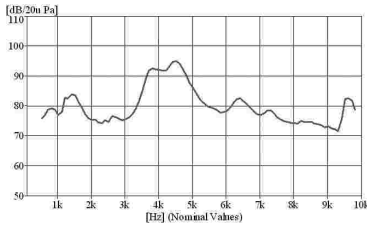
- DB-E478 External Drive Piezo Transducer



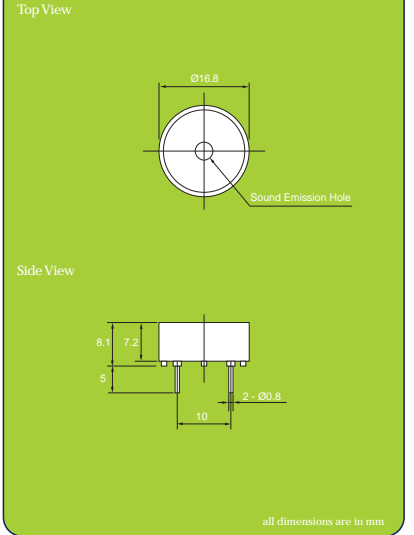
- electrical specifications

Model	47PZ17400	
Min. Sound Output	(dBA)	80 min. (9V p-p / Square Wave / 10cm / 4000Hz)
Capacitance	(pF)	10500 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	3

- Frequency Response



- dimensions



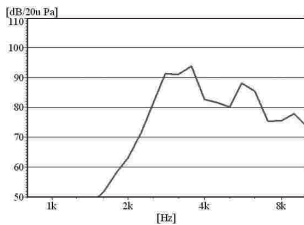
- DB-E1208 External Drive Piezo Transducer



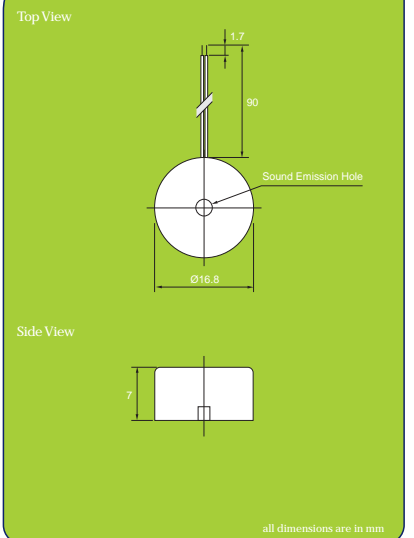
- electrical specifications

Model	120PZ17280	
Min. Sound Output	(dBA)	80 min. (3V rms / Sine Wave / 10cm / 2800Hz)
Capacitance	(pF)	23000 ± 30% at 1000Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	1

- Frequency Response



- dimensions



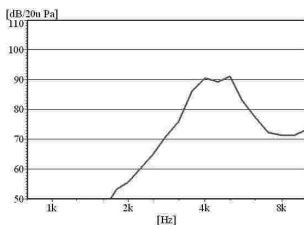
- DB-E1058 External Drive Piezo Transducer



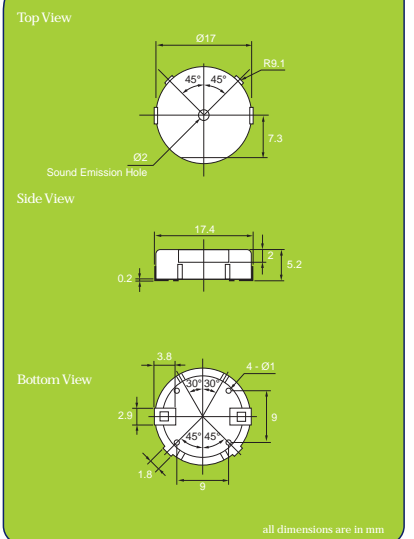
- electrical specifications

Model	105PZ17400	
Min. Sound Output	(dBA)	80 min. (3V rms / Sine Wave / 10cm / 4000Hz)
Capacitance	(pF)	6500 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	3

- Frequency Response



- dimensions



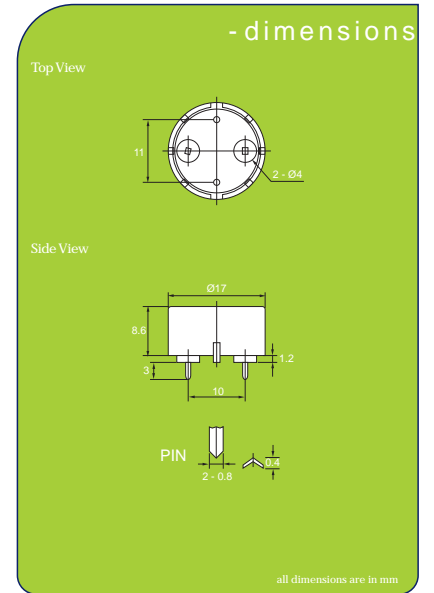
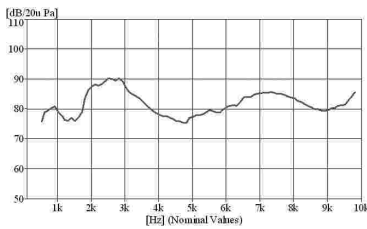
- DB-E1758 External Drive Piezo Transducer



- electrical specifications

Model	175PZ17200	
Min. Sound Output	(dBA)	78 min. (9V p-p / Square Wave / 10cm / 2000Hz)
Capacitance	(pF)	25000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	25
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	1

- Frequency Response



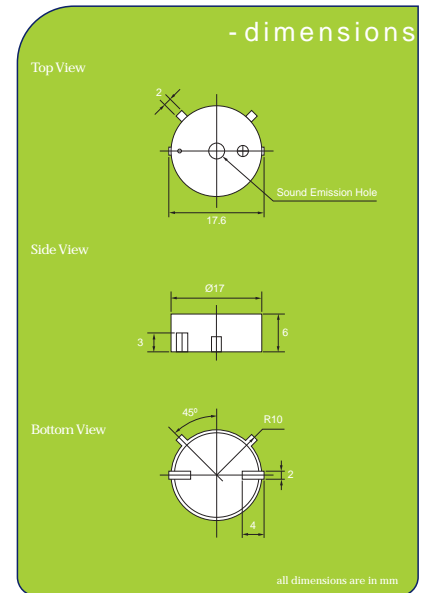
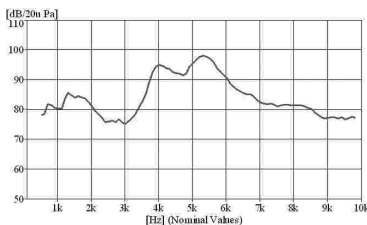
- DB-E1878 External Drive Piezo Transducer



- electrical specifications

Model	187PZ17400	
Min. Sound Output	(dBA)	90 min. (12V p-p / Square Wave / 10cm / 4000Hz)
Capacitance	(pF)	15000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	25
Operating Temperature	(°C)	-20 ~ +75
Weight	(g)	2

- Frequency Response



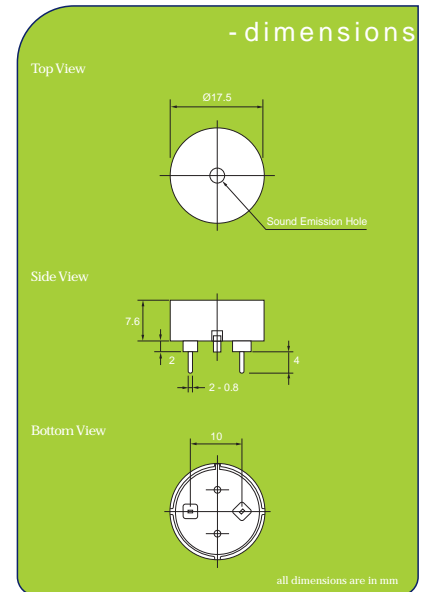
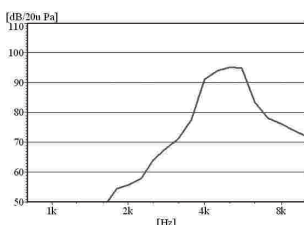
- DB-E1098 External Drive Piezo Transducer



- electrical specifications

Model	109PZ18400	
Min. Sound Output	(dBA)	85 min. (3V rms / Sine Wave / 10cm / 4000Hz)
Capacitance	(pF)	12000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	2

- Frequency Response



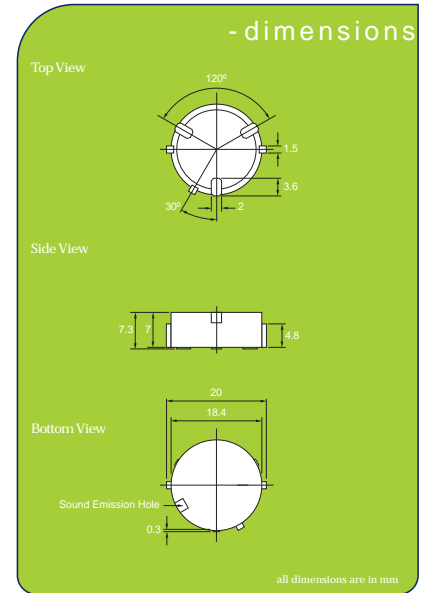
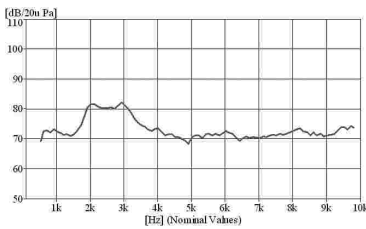
- DB-E2088 External Drive Piezo Transducer



- electrical specifications

Model	208PZ18200	
Min. Sound Output	(dBA)	75 min. (3.6V p-p / Square Wave / 10cm / 2000Hz)
Capacitance	(pF)	34000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	25
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	2

- Frequency Response



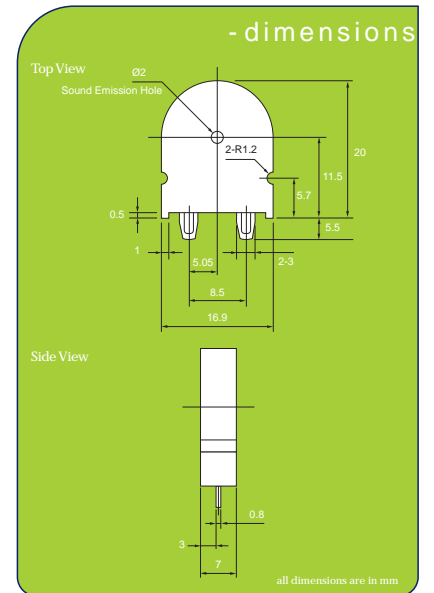
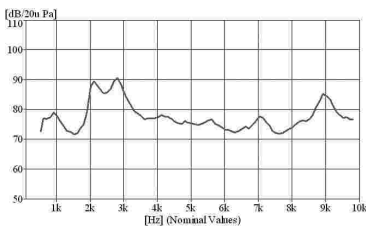
- DB-E2008 External Drive Piezo Transducer



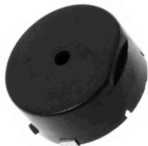
- electrical specifications

Model	200PZ17220	
Min. Sound Output	(dBA)	80 min. (9V p-p / Square Wave / 10cm / 2200Hz)
Capacitance	(pF)	22000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-30 ~ +80
Weight	(g)	3

- Frequency Response



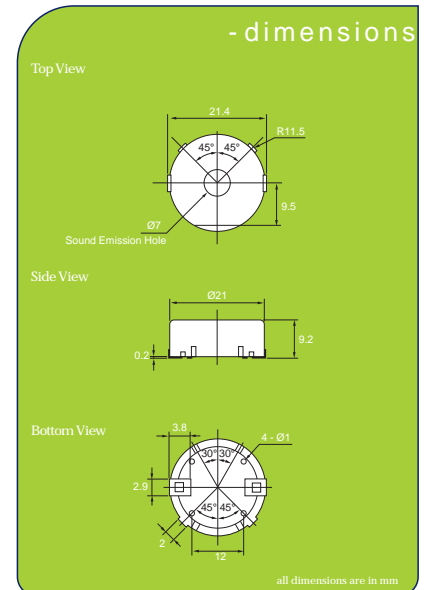
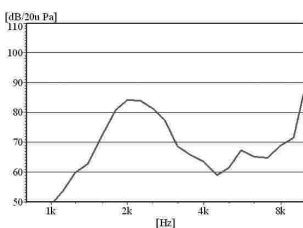
- DB-E1068 External Drive Piezo Transducer



- electrical specifications

Model	106PZ21400	
Min. Sound Output	(dBA)	80 min. (3V rms / Sine Wave / 10cm / 4000Hz)
Capacitance	(pF)	9000 ± 30% at 1000Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	3

- Frequency Response



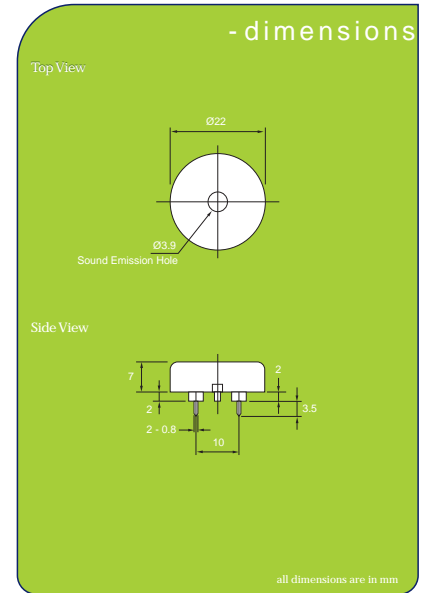
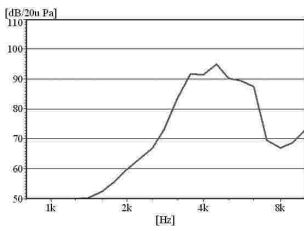
- DB-E608 External Drive Piezo Transducer



- electrical specifications

Model	60PZ22400	
Min. Sound Output	(dBA)	80 min. (3V rms / Sine Wave / 10cm / 4000Hz)
Capacitance	(pF)	15000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	1

- Frequency Response



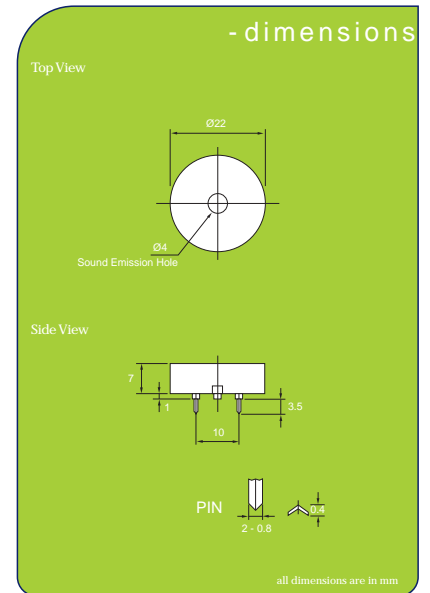
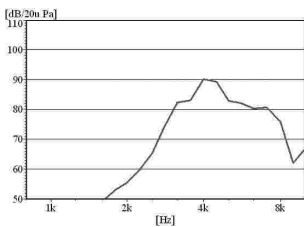
- DB-E698 External Drive Piezo Transducer



- electrical specifications

Model	69PZ22400	
Min. Sound Output	(dBA)	80 min. (3V rms / Sine Wave / 10cm / 4000Hz)
Capacitance	(pF)	15000 ± 30% at 1000Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	3

- Frequency Response



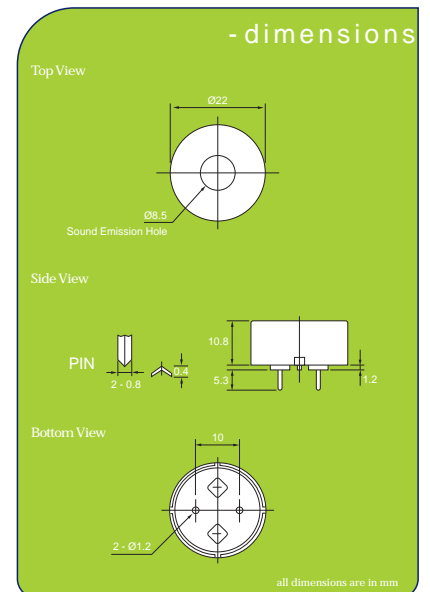
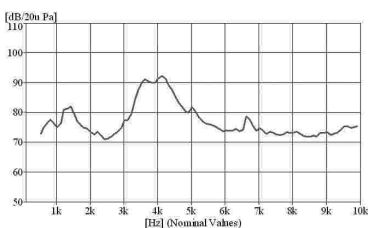
- DB-E1318 External Drive Piezo Transducer



- electrical specifications

Model	131PZ22400	
Min. Sound Output	(dBA)	85 min. (3V p-p / Square Wave / 10cm / 4000Hz)
Capacitance	(pF)	15000 ± 30% at 1000Hz
Max. Input Voltage	(V p-p)	40
Operating Temperature	(°C)	-40 ~ +85
Weight	(g)	3.2

- Frequency Response



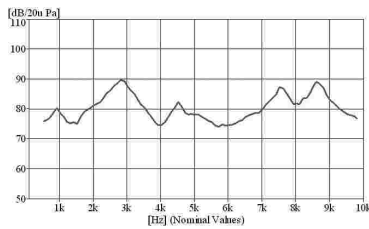
- DB-E2038 External Drive Piezo Transducer



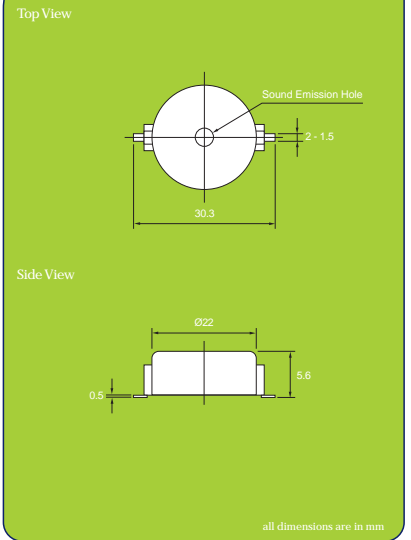
- electrical specifications

Model	203PZ22250	
Min. Sound Output	(dBA)	80 min. (10V p-p / Square Wave / 10cm / 2500Hz)
Capacitance	(pF)	25000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-30 ~ +85
Weight	(g)	2

- Frequency Response



- dimensions



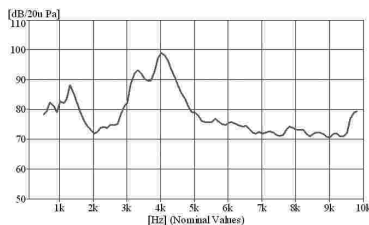
- DB-E1888 External Drive Piezo Transducer



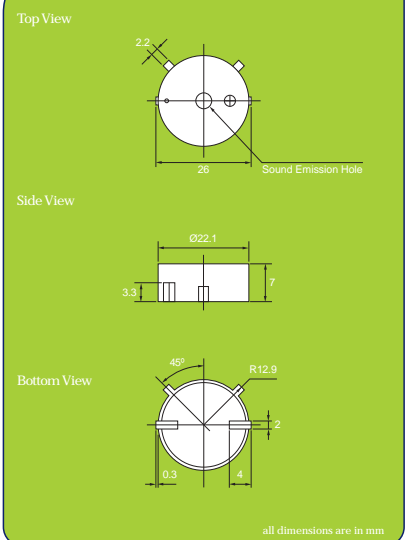
- electrical specifications

Model	188PZ22400	
Min. Sound Output	(dBA)	90 min. (12V p-p / Square Wave / 10cm / 4000Hz)
Capacitance	(pF)	15000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	2.8

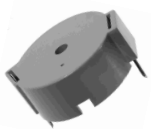
- Frequency Response



- dimensions



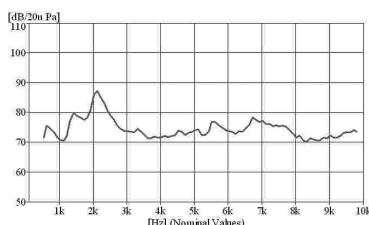
- DB-E1078 External Drive Piezo Transducer



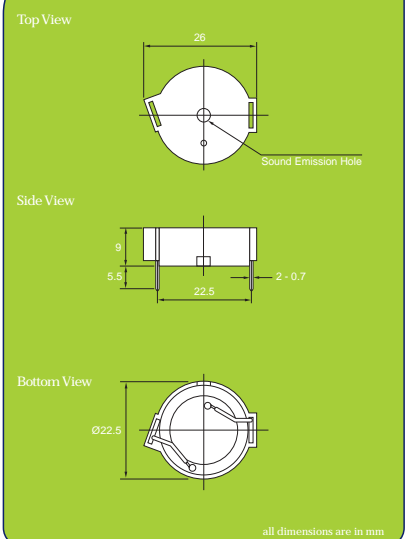
- electrical specifications

Model	107PZ23204	
Min. Sound Output	(dBA)	80 min. (10V p-p / Square Wave / 10cm / 2048Hz)
Capacitance	(pF)	24000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	40
Operating Temperature	(°C)	-20 ~ +80
Weight	(g)	2

- Frequency Response



- dimensions



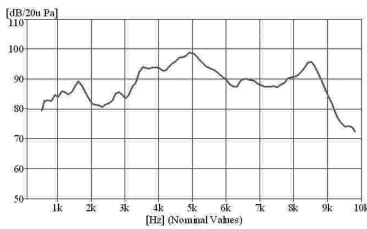
- DB-E508 External Drive Piezo Transducer



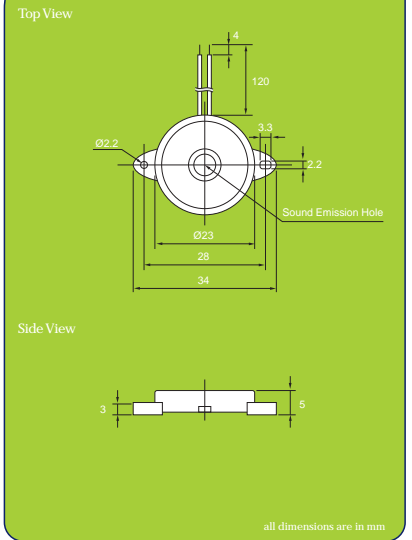
- electrical specifications

Model	50PZ23400	
Min. Sound Output	(dBA)	80 min. (12V p-p / Square Wave / 30cm / 4000Hz)
Capacitance	(pF)	24000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	40
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	2

- Frequency Response



- dimensions



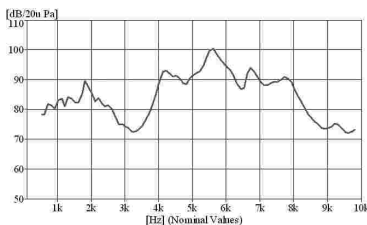
- DB-E518 External Drive Piezo Transducer



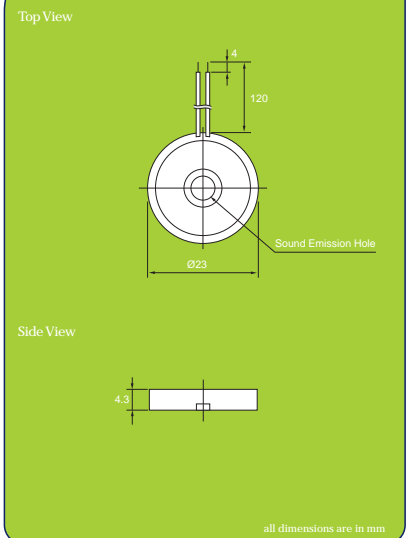
- electrical specifications

Model	51PZ23500	
Min. Sound Output	(dBA)	70 min. (12V p-p / Square Wave / 30cm / 5000Hz)
Capacitance	(pF)	15000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	40
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	2

- Frequency Response



- dimensions



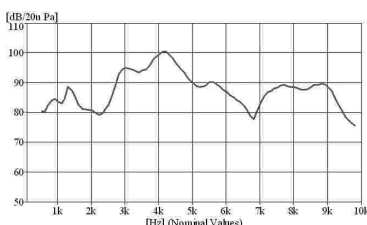
- DB-E2048 External Drive Piezo Transducer



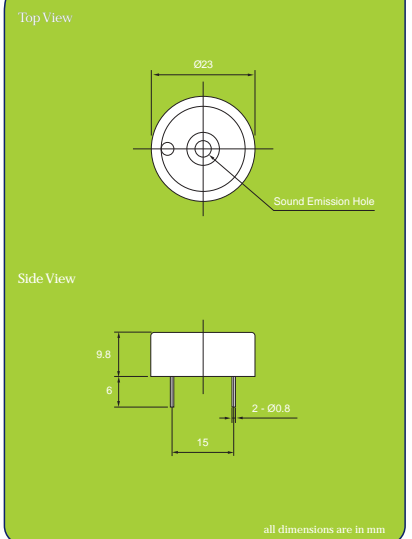
- electrical specifications

Model	204PZ23480	
Min. Sound Output	(dBA)	85 min. (12V p-p / Square Wave / 10cm / 4800Hz)
Capacitance	(pF)	15000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	40
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	3.5

- Frequency Response



- dimensions



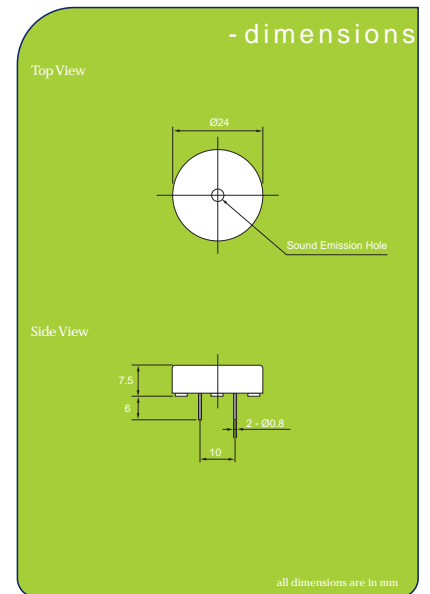
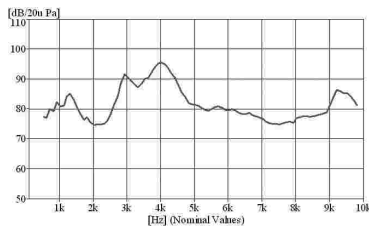
- DB-E338 External Drive Piezo Transducer

- electrical specifications



Model	33PZ24400	
Min. Sound Output	(dBA)	85 min. (9V p-p / Square Wave / 10cm / 4000Hz)
Capacitance	(pF)	17000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	60
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	3

- Frequency Response



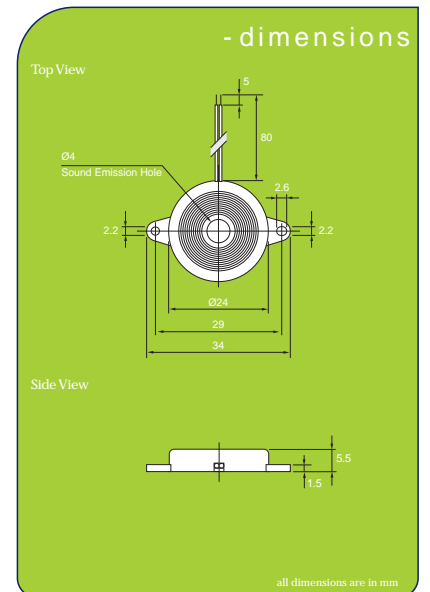
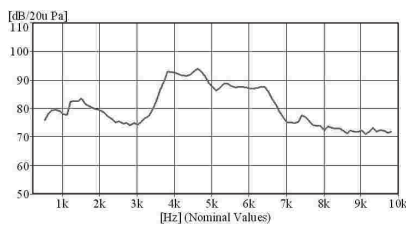
- DB-E598 External Drive Piezo Transducer

- electrical specifications



Model	59PZ24409	
Min. Sound Output	(dBA)	75 min. (3V p-p / Square Wave / 10cm / 4096Hz)
Capacitance	(pF)	10000 ± 30% at 1000Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	1

- Frequency Response



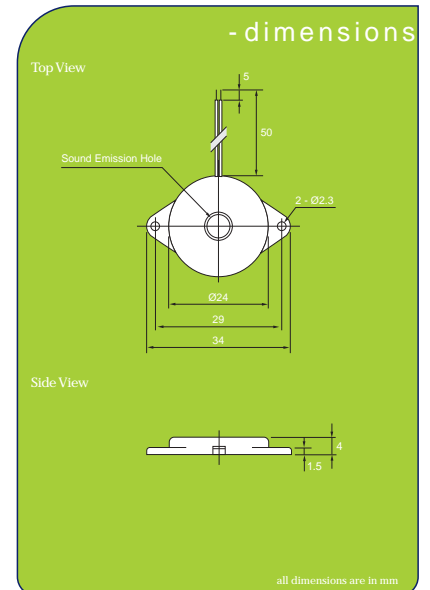
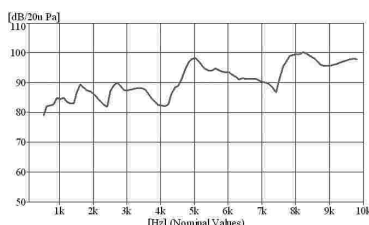
- DB-E1238 External Drive Piezo Transducer

- electrical specifications



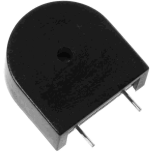
Model	123PZ24550	
Min. Sound Output	(dBA)	90 min. (15V p-p / Square Wave / 10cm / 5500Hz)
Capacitance	(pF)	18000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	1.9

- Frequency Response



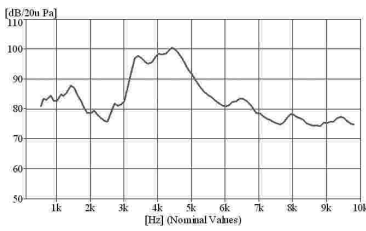
- DB-E1918 External Drive Piezo Transducer

- electrical specifications

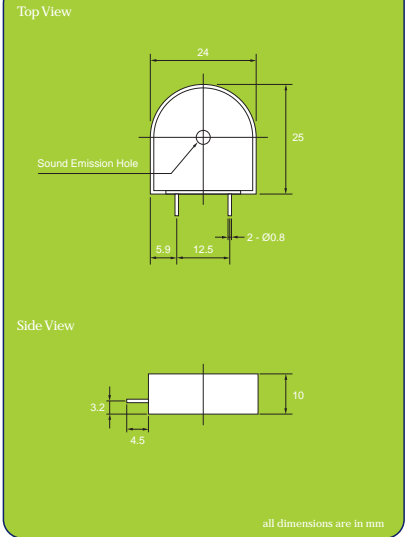


Model	191PZ24320	
Min. Sound Output	(dBA)	88 min. (10V p-p / Square Wave / 10cm / 3200Hz)
Capacitance	(pF)	17000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-30 ~ +115
Weight	(g)	3.7

- Frequency Response



- dimensions



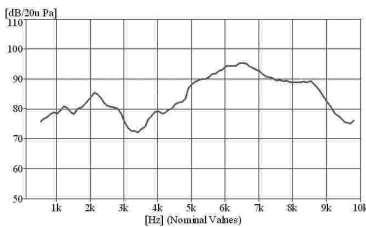
- DB-E2028 External Drive Piezo Transducer

- electrical specifications

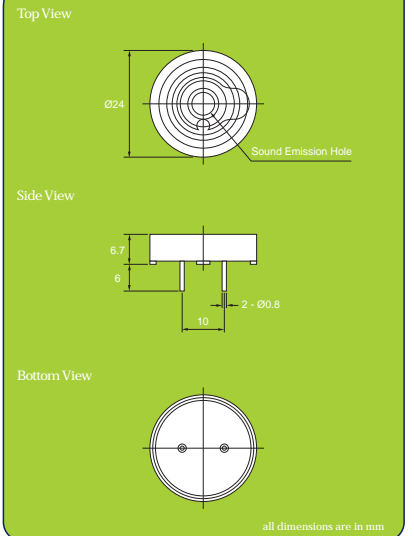


Model	202PZ24600	
Min. Sound Output	(dBA)	86 min. (5V p-p / Square Wave / 10cm / 6000Hz)
Capacitance	(pF)	12000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	3

- Frequency Response



- dimensions



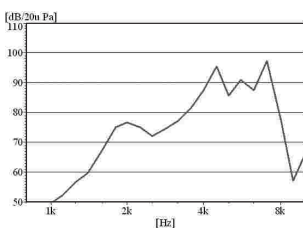
- DB-E1398 External Drive Piezo Transducer

- electrical specifications

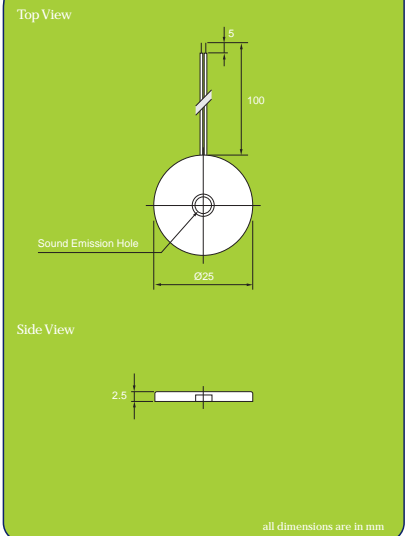


Model	139PZ25200	
Min. Sound Output	(dBA)	70 min. (3V rms / Sine Wave / 10cm / 2000Hz)
Capacitance	(pF)	45000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	40
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	5

- Frequency Response



- dimensions



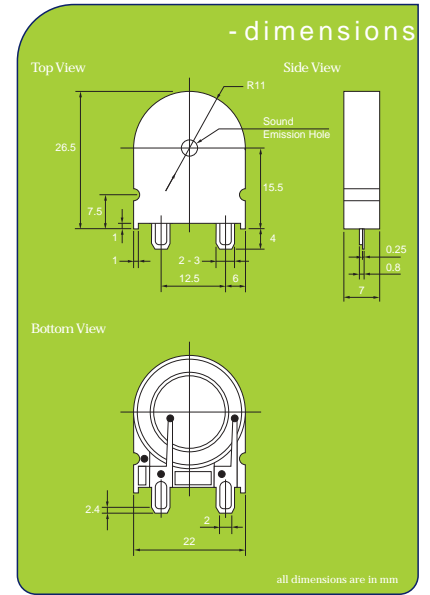
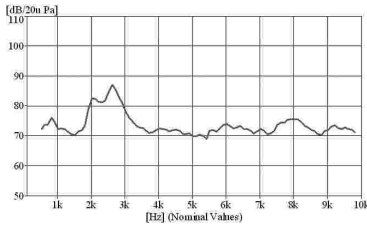
- DB-E788 External Drive Piezo Transducer



- electrical specifications

Model	78PZ22400	
Min. Sound Output	(dBA)	80 min. (3V p-p / Square Wave / 10cm / 4000Hz)
Capacitance	(pF)	15000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	2.5

- Frequency Response



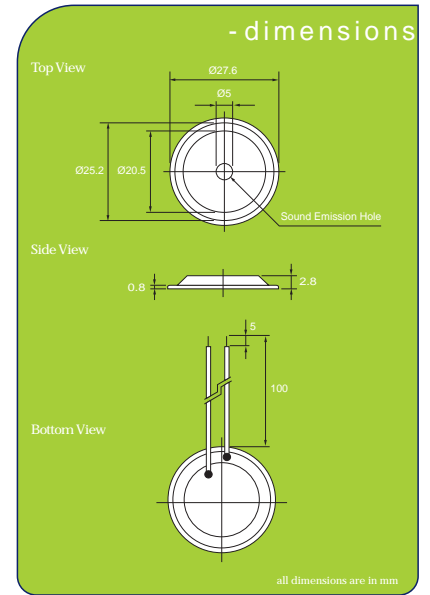
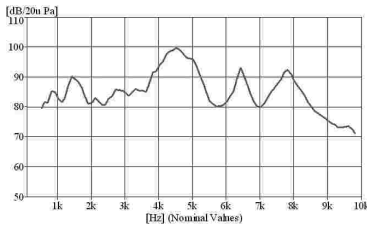
- DB-E1588 External Drive Piezo Transducer



- electrical specifications

Model	158PZ27410	
Min. Sound Output	(dBA)	85 min. (9V p-p / Square Wave / 10cm / 4100Hz)
Capacitance	(pF)	35000 ± 30% at 1000Hz
Max. Input Voltage	(V p-p)	40
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	2

- Frequency Response



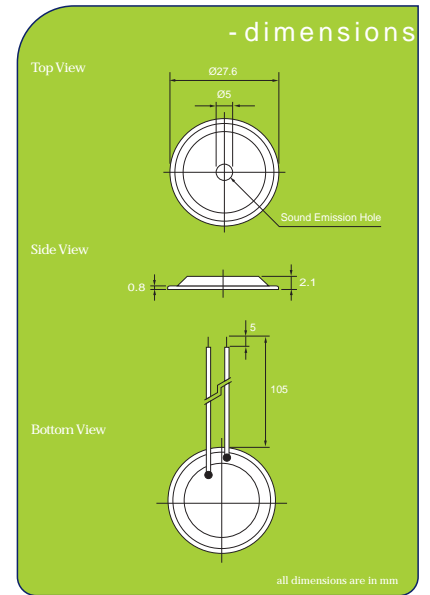
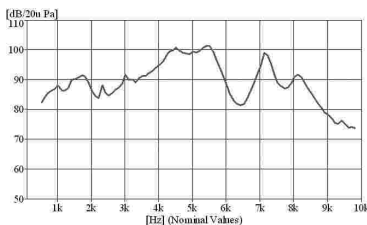
- DB-E1618 External Drive Piezo Transducer



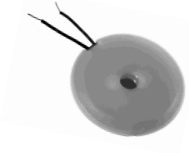
- electrical specifications

Model	161PZ28420	
Min. Sound Output	(dBA)	85 min. (9V p-p / Square Wave / 10cm / 4200Hz)
Capacitance	(pF)	35000 ± 30% at 1000Hz
Max. Input Voltage	(V p-p)	40
Operating Temperature	(°C)	-30 ~ +80
Weight	(g)	2

- Frequency Response



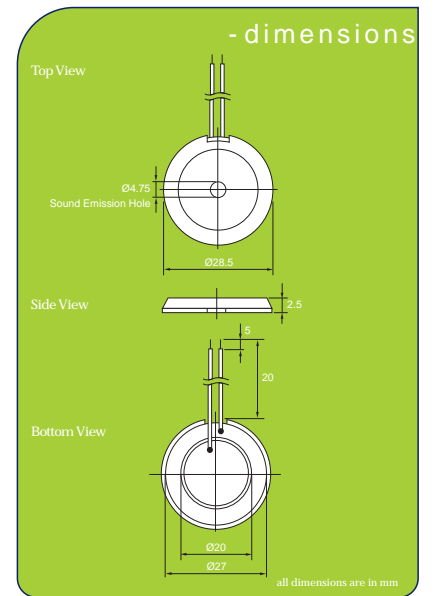
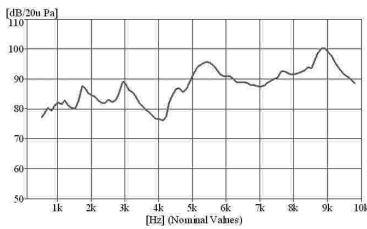
- DB-E1448 External Drive Piezo Transducer



- electrical specifications

Model	144PZ29300	
Min. Sound Output	(dBA)	80 min. (9V p-p / Square Wave / 10cm / 3000Hz)
Capacitance	(pF)	24000 ± 30% at 1000Hz
Max. Input Voltage	(V p-p)	40
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	2.4

- Frequency Response



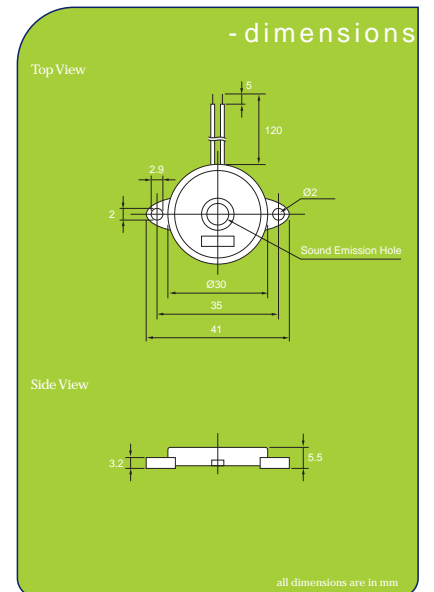
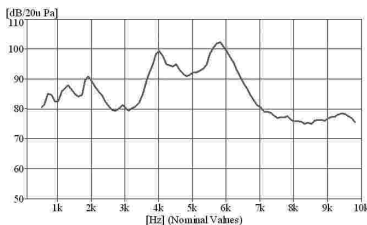
- DB-E398 External Drive Piezo Transducer



- electrical specifications

Model	39PZ30350	
Min. Sound Output	(dBA)	75 min. (3V p-p / Square Wave / 10cm / 3500Hz)
Capacitance	(pF)	25000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	3.5

- Frequency Response



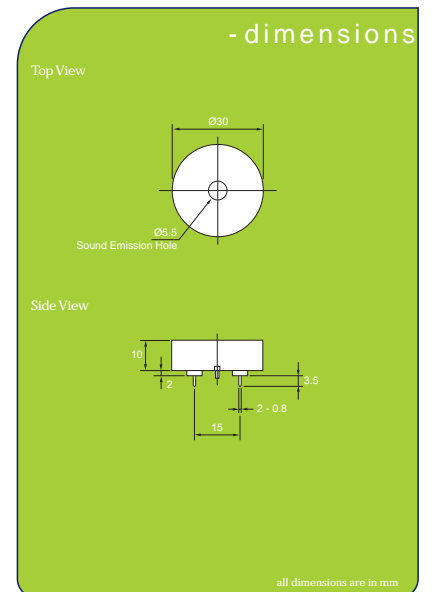
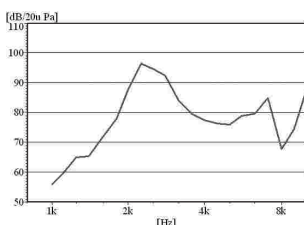
- DB-E548 External Drive Piezo Transducer



- electrical specifications

Model	54PZ30250	
Min. Sound Output	(dBA)	90 min. (3V rms / Sine Wave / 10cm / 2500Hz)
Capacitance	(pF)	25000 ± 30% at 1000Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	6

- Frequency Response



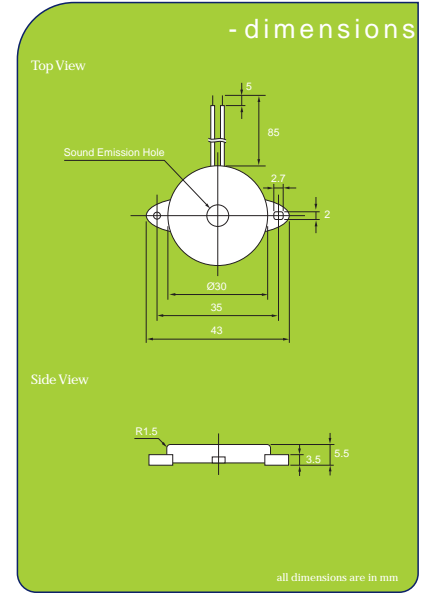
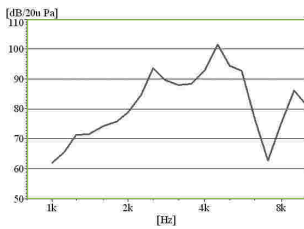
- DB-E558 External Drive Piezo Transducer



- electrical specifications

Model	55PZ30400	
Min. Sound Output	(dBA)	85 min. (3V rms / Sine Wave / 10cm / 4000Hz)
Capacitance	(pF)	25000 ± 30% at 1000Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	5

- Frequency Response



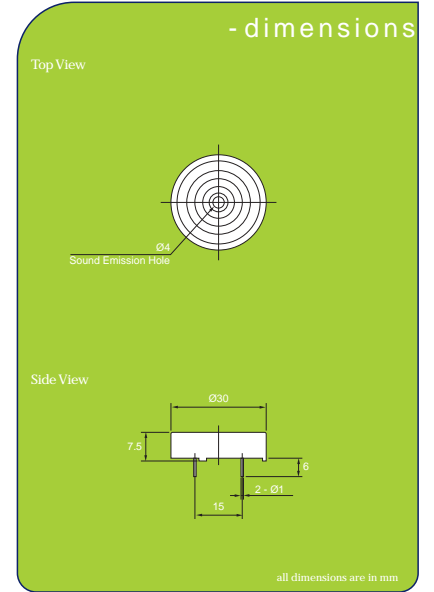
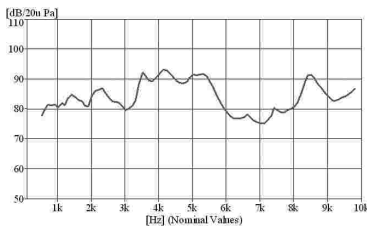
- DB-E2178 External Drive Piezo Transducer



- electrical specifications

Model	217PZ30460	
Min. Sound Output	(dBA)	85 min. (5V p-p / Square Wave / 10cm / 4600Hz)
Capacitance	(pF)	30000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	4

- Frequency Response



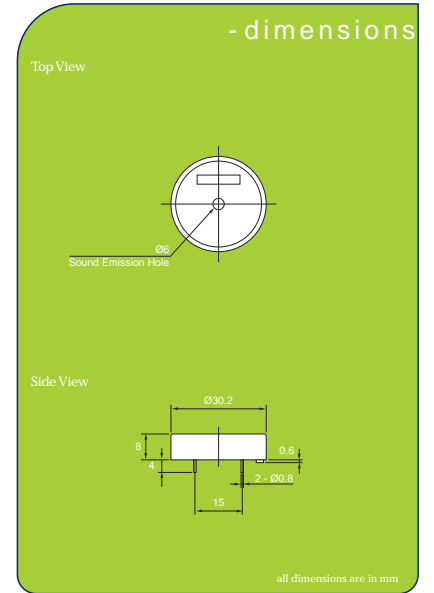
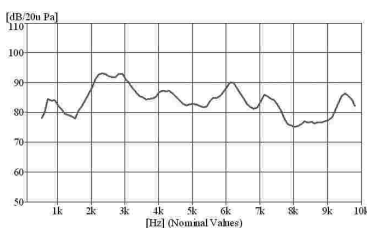
- DB-E708 External Drive Piezo Transducer



- electrical specifications

Model	70PZ30400	
Min. Sound Output	(dBA)	80 min. (9V p-p / Square Wave / 10cm / 4000Hz)
Capacitance	(pF)	25000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	40
Operating Temperature	(°C)	-30 ~ +70
Weight	(g)	5

- Frequency Response



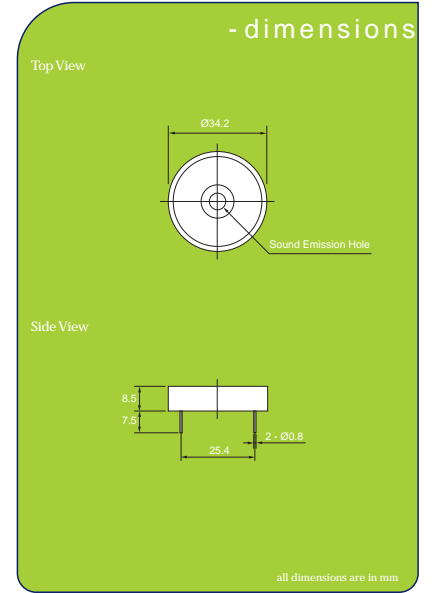
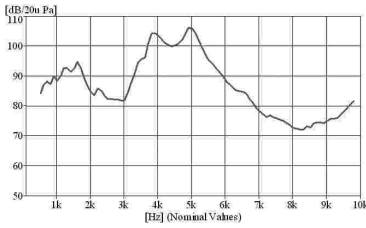
- DB-E1158 External Drive Piezo Transducer



- electrical specifications

Model	115PZ34120	
Min. Sound Output	(dBA)	80 min. (9V p-p / Square Wave / 30cm / 1200Hz)
Capacitance	(pF)	45000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	40
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	5

- Frequency Response



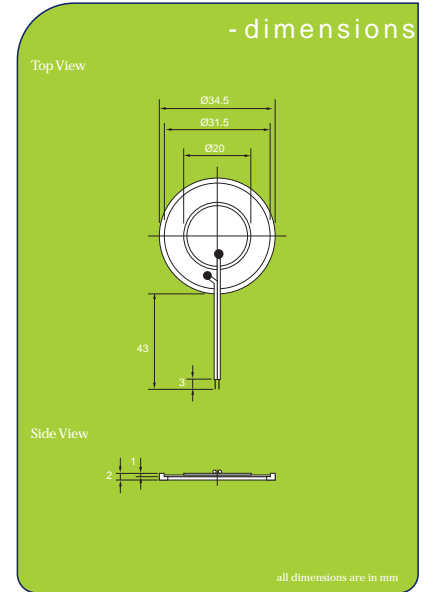
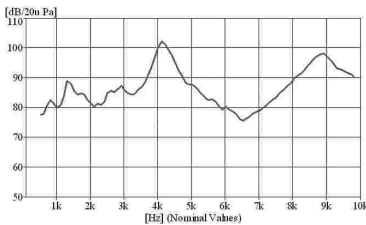
- DB-E528 External Drive Piezo Transducer



- electrical specifications

Model	52PZ35130	
Min. Sound Output	(dBA)	80 min. (30V p-p / Square Wave / 10cm / 1300Hz)
Capacitance	(pF)	45000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	40
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	2

- Frequency Response



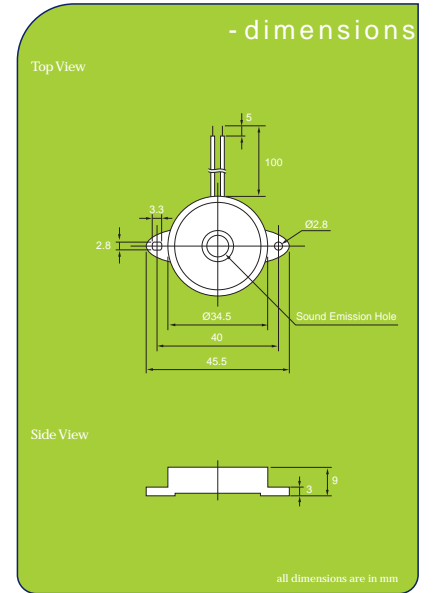
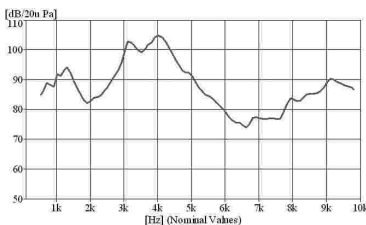
- DB-E588 External Drive Piezo Transducer



- electrical specifications

Model	58PZ34120	
Min. Sound Output	(dBA)	70 min. (3V rms / Sine Wave / 10cm / 1200Hz)
Capacitance	(pF)	50000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	6

- Frequency Response



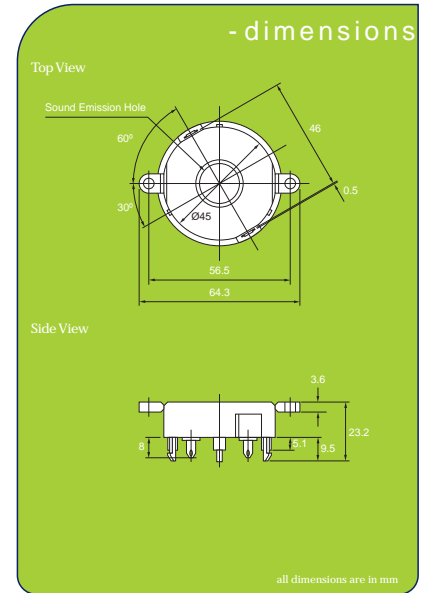
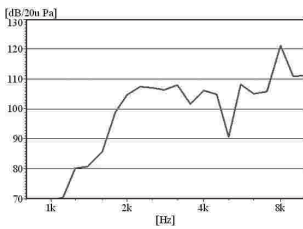
- DB-E2168 External Drive Piezo Transducer



- electrical specifications

Model	216PZ46320	
Min. Sound Output	(dBA)	100 min. (12V rms / Sine Wave / 30cm / 3200Hz)
Capacitance	(pF)	25000 ± 30% at 120Hz
Max. Input Voltage	(rms)	40
Operating Temperature	(°C)	-40 ~ +105
Weight	(g)	11

- Frequency Response

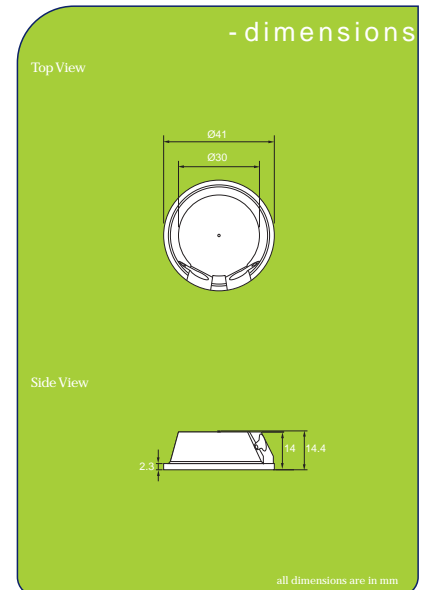


- DB-E1718 External Drive Piezo Transducer



- electrical specifications

Model	171PZ41350	
Min. Sound Output	(dBA)	95 min. (2.83V rms / Sine Wave / 30cm / 35000Hz)
Frequency Range	(pF)	22000 ~ 45000
Max. Input Voltage	(rms)	10
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	8



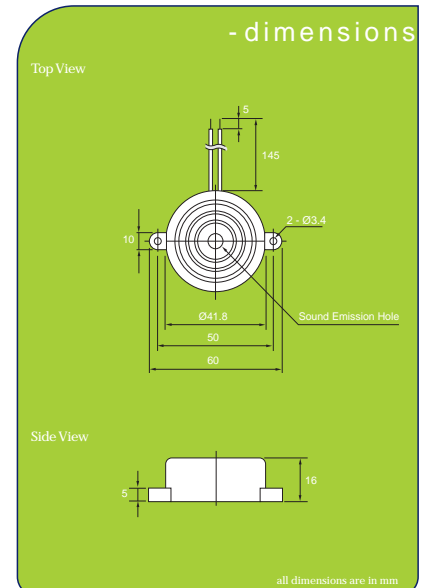
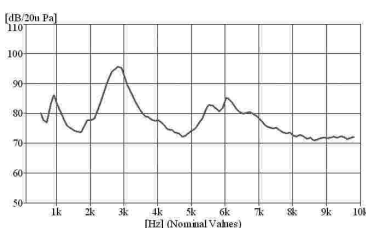
- DB-E1538 External Drive Piezo Transducer



- electrical specifications

Model	153PZ42280	
Min. Sound Output	(dBA)	90 min. (12V p-p / Square Wave / 30cm / 2800Hz)
Capacitance	(pF)	35000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	3

- Frequency Response



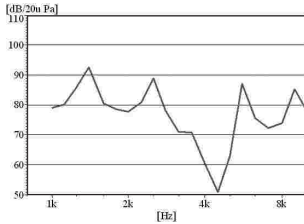
- DB-E568 External Drive Piezo Transducer



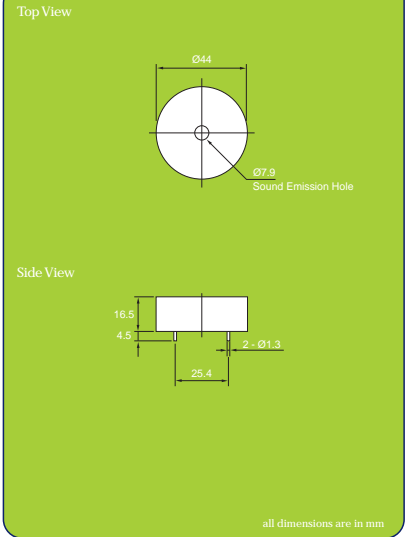
- electrical specifications

Model	56PZ44100	
Min. Sound Output	(dBA)	70 min. (3V rms / Sine Wave / 10cm / 1000Hz)
Capacitance	(pF)	80000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	12

- Frequency Response



- dimensions



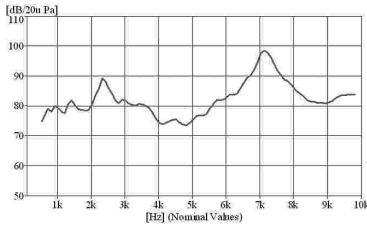
- DB-E498 External Drive Piezo Transducer



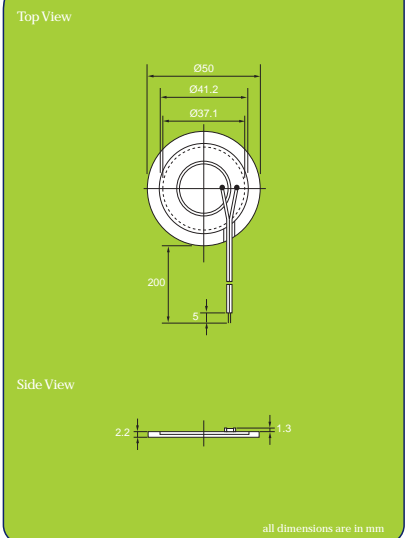
- electrical specifications

Model	49PZ50100B	
Min. Sound Output	(dBA)	75 min. (12V p-p / Square Wave / 10cm / 1000Hz)
Capacitance	(pF)	120000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	40
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	4

- Frequency Response



- dimensions



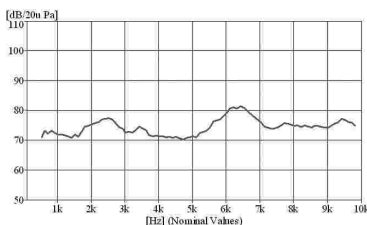
- DB-E1738 External Drive Piezo Transducer



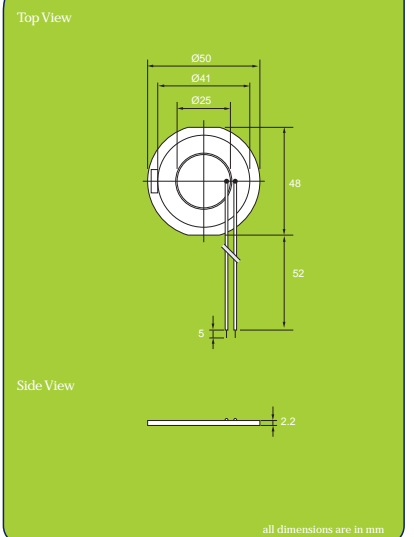
- electrical specifications

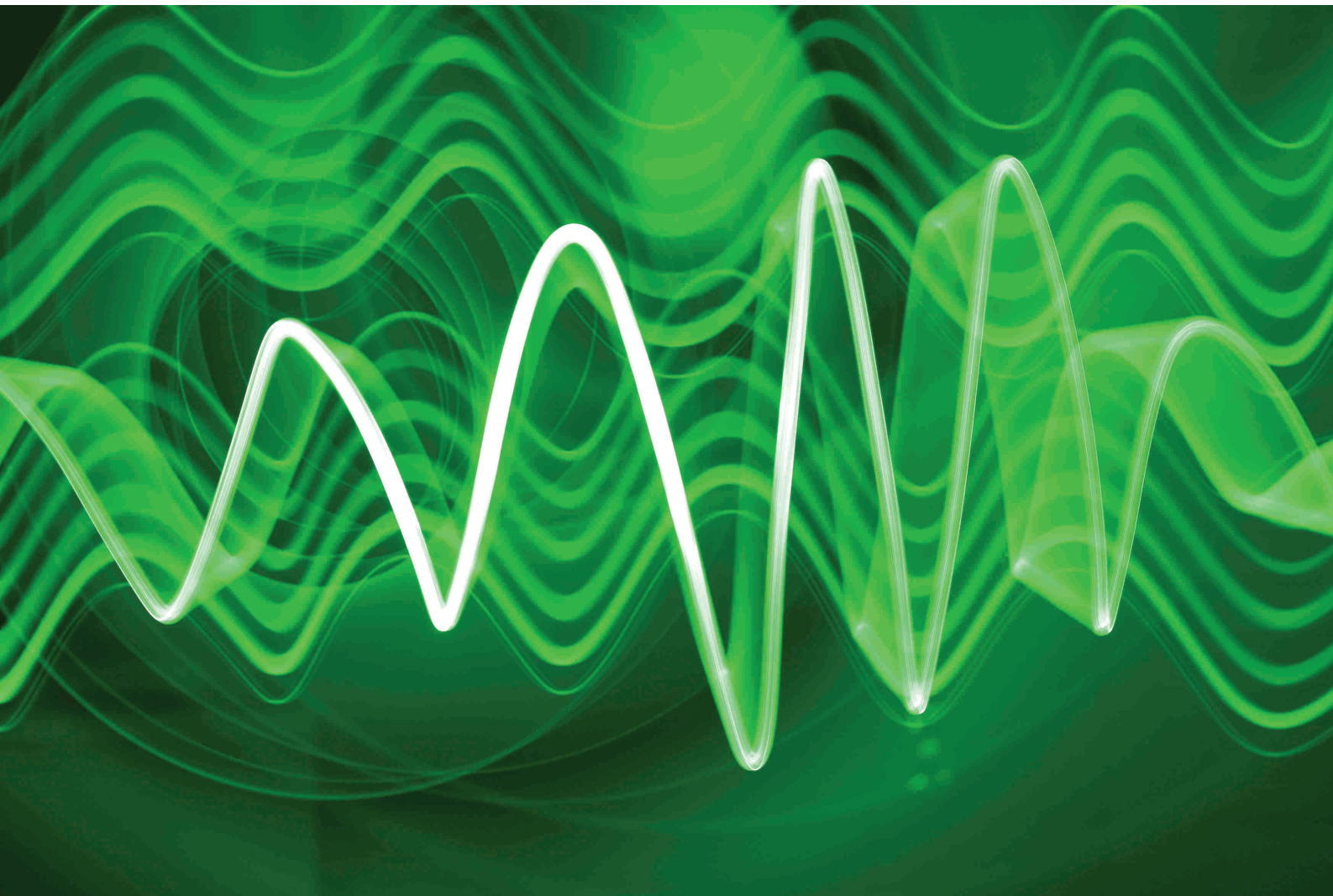
Model	173PZ50200	
Frequency Range	(Hz)	500 ~ 20000 (3V p-p / Square Wave / 30cm)
Capacitance	(pF)	120000 ± 30% at 120Hz
Max. Input Voltage	(V p-p)	30
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	2.5

- Frequency Response



- dimensions





03. **Transducer**
- Self Drive Piezo Transducer

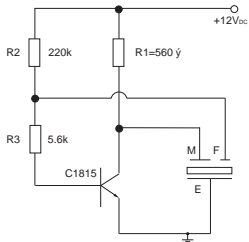
- DB-E758 Self Drive Piezo Transducer



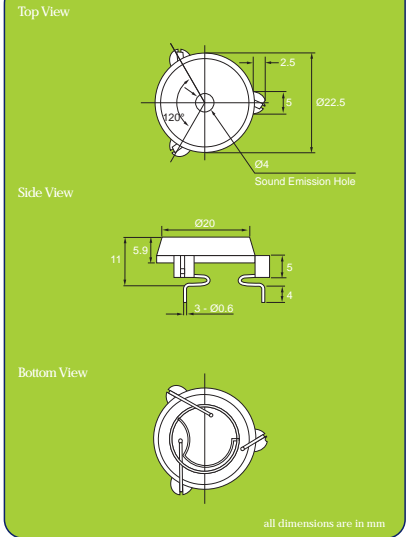
- electrical specifications

Model	75PZ23350	
Operating Voltage	(VDC)	3 - 18
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	15
Min. Sound Output	(dBA)	80 at 30cm
Resonant Frequency	(Hz)	3500 ± 500
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	1.7

-reference circuit



- dimensions



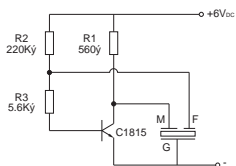
- DB-E418 Self Drive Piezo Transducer



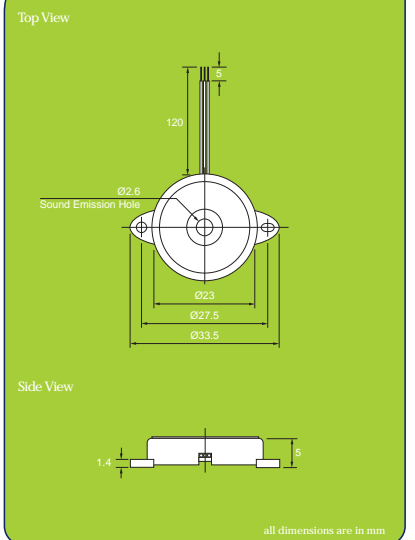
- electrical specifications

Model	41PZ23500	
Operating Voltage	(VDC)	3 - 18
Rated Voltage	(VDC)	6
Max. Rated Current	(mA)	5
Min. Sound Output	(dBA)	75 at 10cm
Resonant Frequency	(Hz)	5000 ± 1000
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	2

-reference circuit



- dimensions



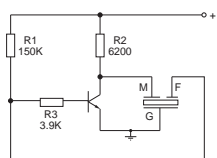
- DB-E928 Self Drive Piezo Transducer



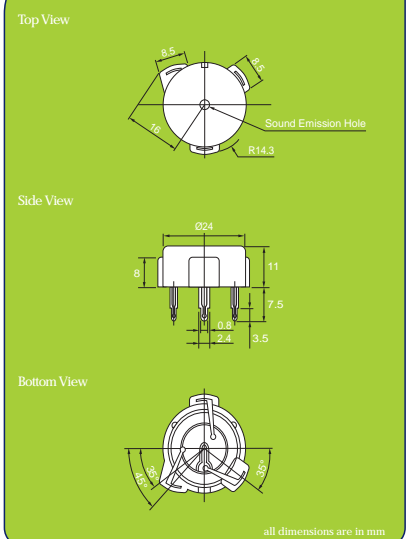
- electrical specifications

Model	92PZ24380	
Operating Voltage	(VDC)	3 - 18
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	15
Min. Sound Output	(dBA)	90 at 10cm
Resonant Frequency	(Hz)	3800 ± 500
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	4.5

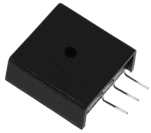
-reference circuit



- dimensions



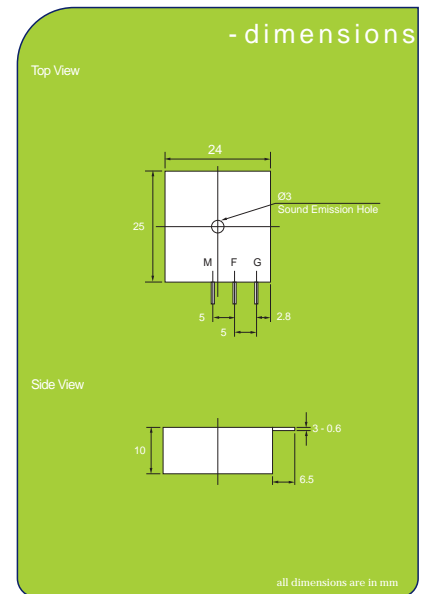
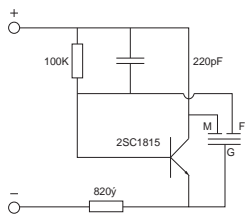
- DB-E1258 Self Drive Piezo Transducer



- electrical specifications

Model	125PZ25320	
Operating Voltage	(VDC)	6 ~ 30
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	20
Min. Sound Output	(dBA)	86 at 20cm
Resonant Frequency	(Hz)	3200 ± 400
Operating Temperature	(°C)	-20 ~ +125
Weight	(g)	3.5

-reference circuit



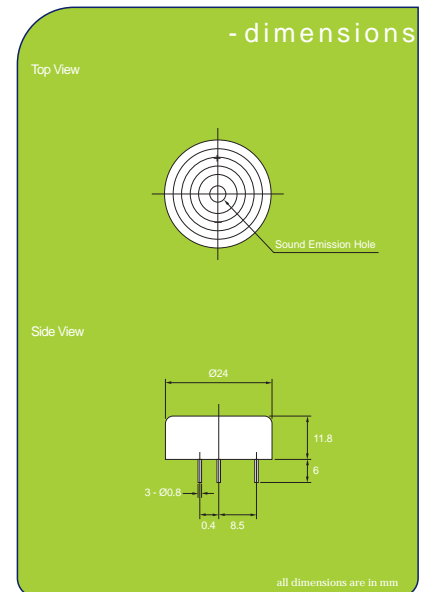
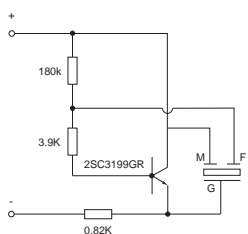
- DB-E1928 Self Drive Piezo Transducer



- electrical specifications

Model	192PZ24300	
Operating Voltage	(VDC)	3 ~ 28
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	10
Min. Sound Output	(dBA)	80 at 30cm
Resonant Frequency	(Hz)	3000 ± 500
Operating Temperature	(°C)	-30 ~ +80
Weight	(g)	3.4

-reference circuit



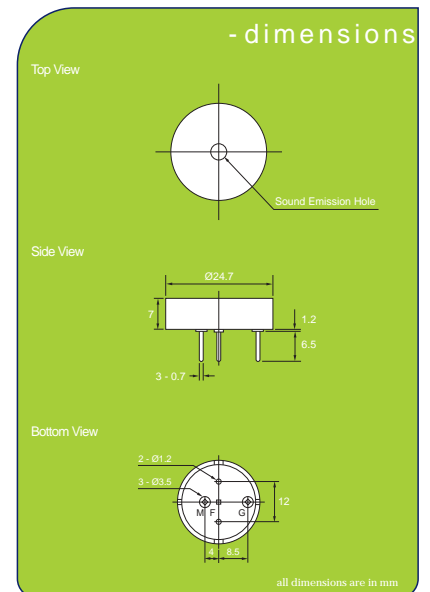
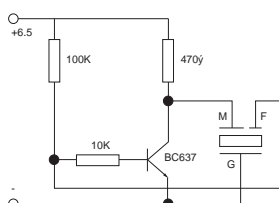
- DB-E768 Self Drive Piezo Transducer



- electrical specifications

Model	76PZ25680	
Operating Voltage	(VDC)	3 ~ 24
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	20
Min. Sound Output	(dBA)	90 at 10cm
Resonant Frequency	(Hz)	6800 ± 500
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	2.5

-reference circuit



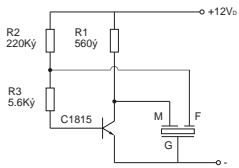
- DB-E358 Self Drive Piezo Transducer

- electrical specifications

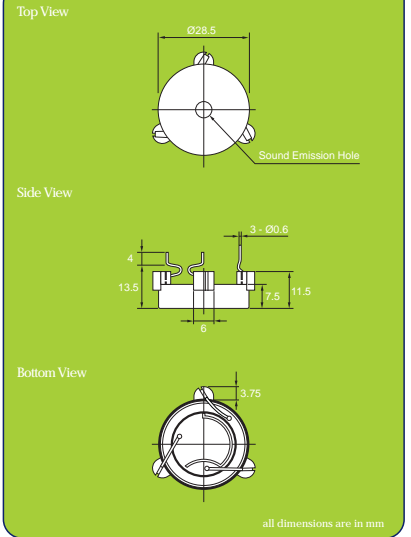


Model	35PZ28300	
Operating Voltage	(VDC)	3 - 24
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	30
Min. Sound Output	(dBA)	75 at 1m
Resonant Frequency	(Hz)	3000 ± 500
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	3

-reference circuit



- dimensions



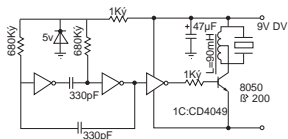
- DB-E1028 Self Drive Piezo Transducer

- electrical specifications

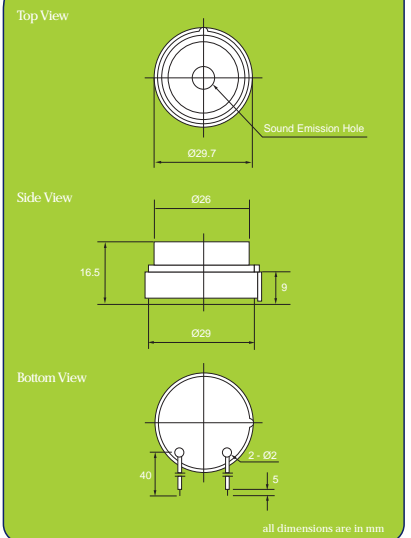


Model	102PZ30340	
Operating Voltage	(VDC)	3 - 28
Rated Voltage	(VDC)	9
Max. Rated Current	(mA)	180
Min. Sound Output	(dBA)	100 at 30cm
Resonant Frequency	(Hz)	3400 ± 500
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	8

-reference circuit



- dimensions



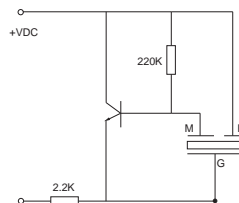
- DB-E878 Self Drive Piezo Transducer

- electrical specifications

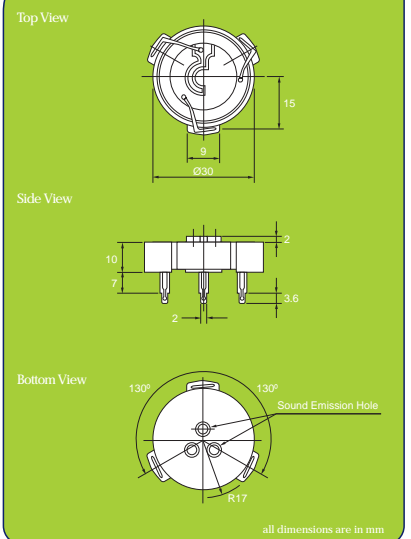


Model	87PZ30270	
Operating Voltage	(VDC)	1.5 - 24
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	75
Min. Sound Output	(dBA)	75 at 1m
Resonant Frequency	(Hz)	2700 ± 500
Operating Temperature	(°C)	-20 ~ +105
Weight	(g)	5

-reference circuit



- dimensions



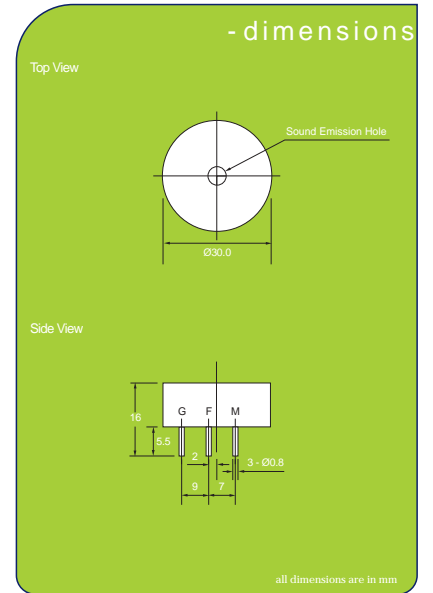
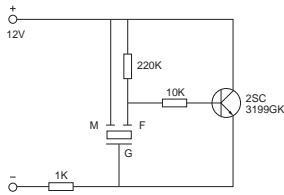
- DB-E1248 Self Drive Piezo Transducer



- electrical specifications

Model	124PZ30360	
Operating Voltage	(VDC)	3 ~ 20
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	10
Min. Sound Output	(dBA)	88 at 10cm
Resonant Frequency	(Hz)	3600 ± 500
Operating Temperature	(°C)	-30 ~ +70
Weight	(g)	5

-reference circuit



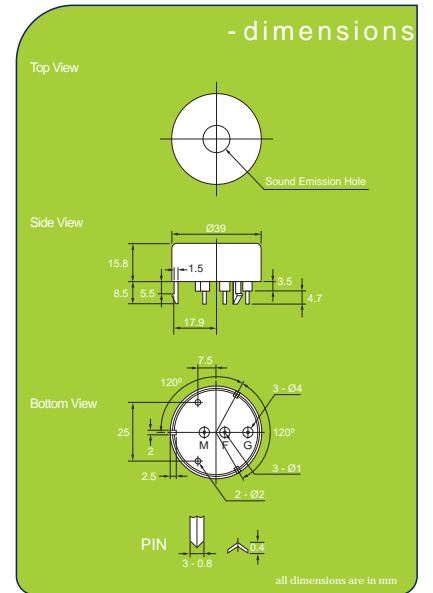
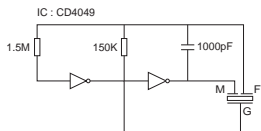
- DB-E168 Self Drive Piezo Transducer



- electrical specifications

Model	16PZ3200	
Operating Voltage	(VDC)	3.5 ~ 28
Rated Voltage	(VDC)	9
Max. Rated Current	(mA)	15
Min. Sound Output	(dBA)	95 at 30cm
Resonant Frequency	(Hz)	3400 ± 500
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	14.5

-reference circuit



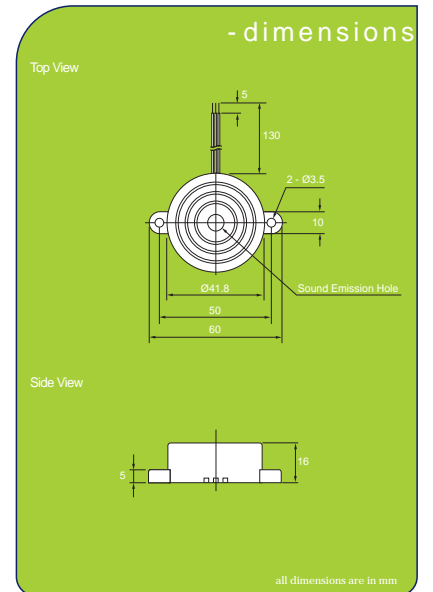
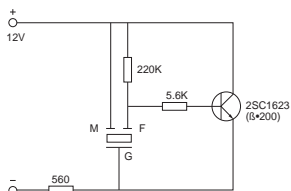
- DB-E1488 Self Drive Piezo Transducer

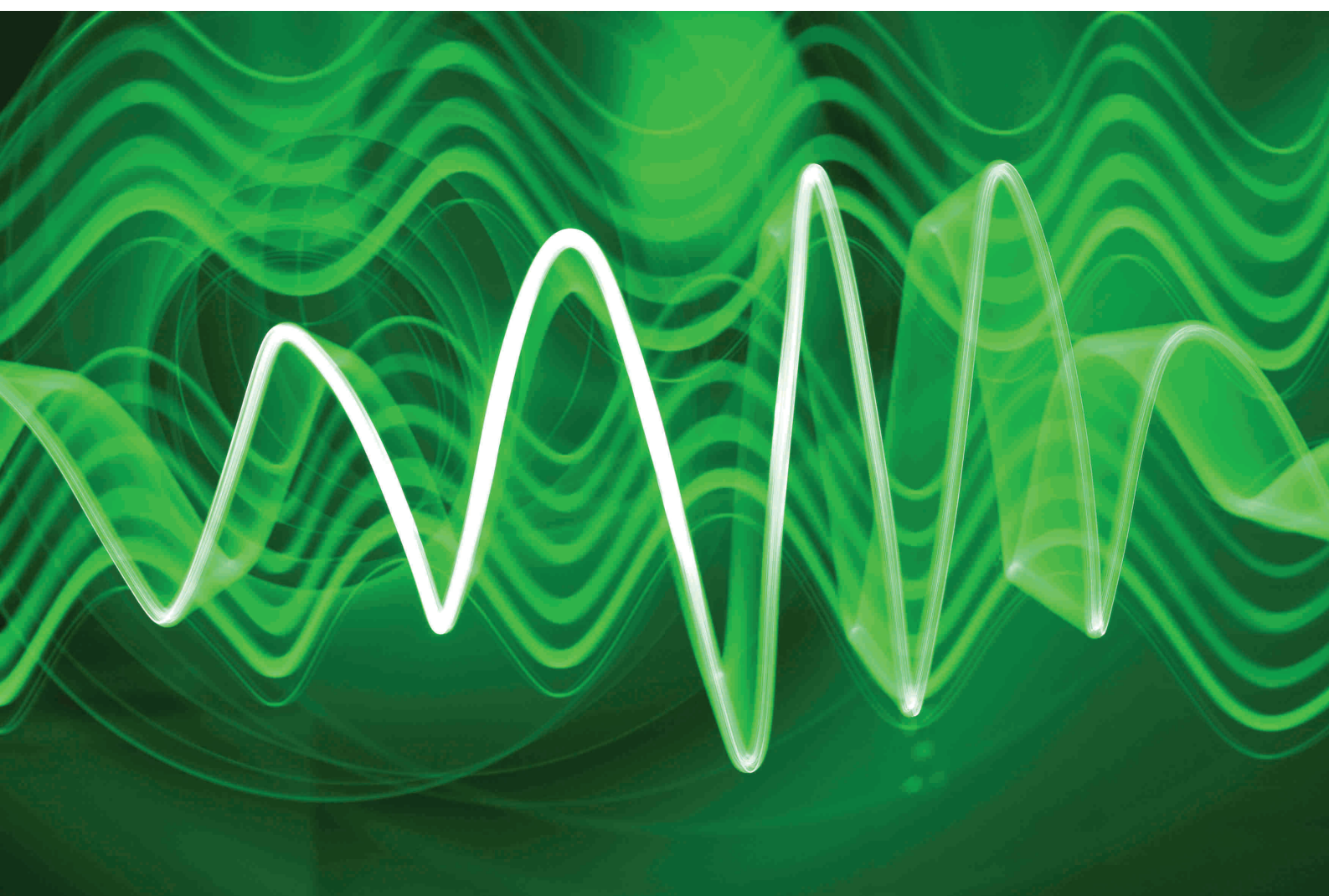


- electrical specifications

Model	148PZ42280	
Operating Voltage	(VDC)	3 ~ 24
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	8
Min. Sound Output	(dBA)	85 at 30cm
Resonant Frequency	(Hz)	2800 ± 500
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	10

-reference circuit





04. **Buzzer**
- Magnetic Buzzer

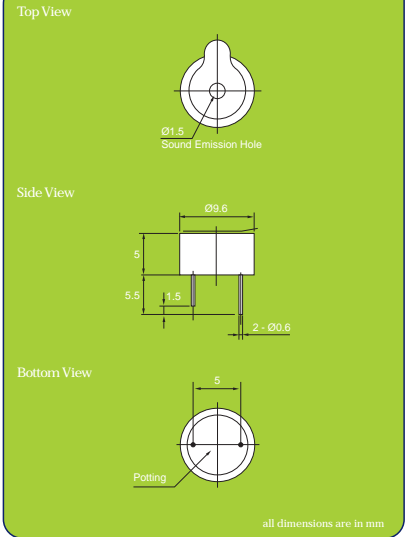
- MDB Magnetic Buzzer



- electrical specifications

Model		MDB03	MDB05
Operating Voltage	(VDC)	2 ~ 5	3 ~ 7
Rated Voltage	(VDC)	3	5
Max. Rated Current	(mA)	20	25
Min. Sound Output	(dBA)	73 at 10cm	76 at 10cm
Frequency	(Hz)	2500 ± 200	2500 ± 200
Tone Nature		Single	Single
Operating Temperature	(°C)	-25 ~ +70	-25 ~ +70
Weight	(g)	1	1

- dimensions



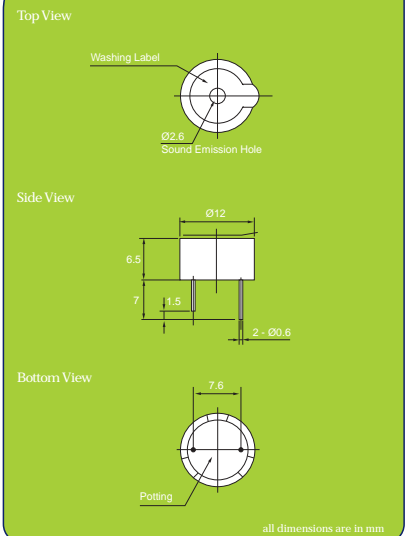
- WDB Magnetic Buzzer



- electrical specifications

Model		WDB05
Operating Voltage	(VDC)	4 ~ 7
Rated Voltage	(VDC)	5
Max. Rated Current	(mA)	30
Min. Sound Output	(dBA)	85 at 10cm
Frequency	(Hz)	2300 ± 300
Tone Nature		Single
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	2

- dimensions



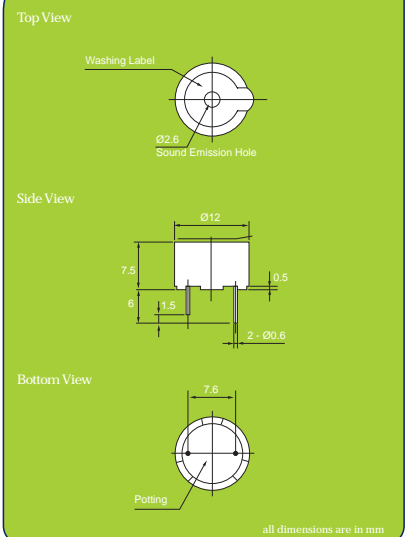
- UDB Magnetic Buzzer



- electrical specifications

Model		UDB05	UDB12
Operating Voltage	(VDC)	3 ~ 7	9 ~ 15
Rated Voltage	(VDC)	5	12
Max. Rated Current	(mA)	30	30
Min. Sound Output	(dBA)	83 at 10cm	83 at 10cm
Frequency	(Hz)	2300 ± 400	2300 ± 400
Tone Nature		Single	Single
Operating Temperature	(°C)	-20 ~ +70	-20 ~ +70
Weight	(g)	2	2

- dimensions



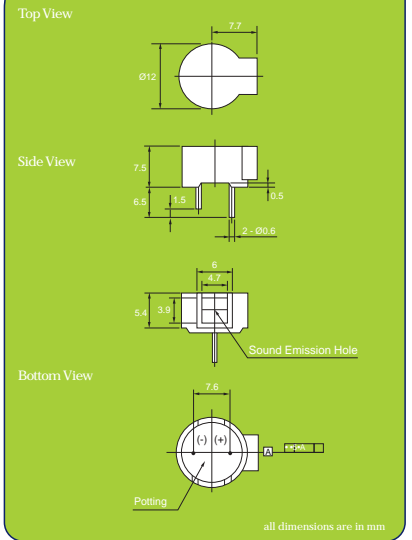
- PDB Magnetic Buzzer



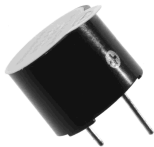
- electrical specifications

Model		PDB05	PDB12
Operating Voltage	(VDC)	3.5 ~ 7	8 ~ 15
Rated Voltage	(VDC)	5	12
Max. Rated Current	(mA)	25	25
Min. Sound Output	(dBA)	85 at 10cm	85 at 10cm
Frequency	(Hz)	2300 ± 300	2300 ± 300
Tone Nature		Single	Single
Operating Temperature	(°C)	-40 ~ +85	-40 ~ +85
Weight	(g)	2	2

- dimensions



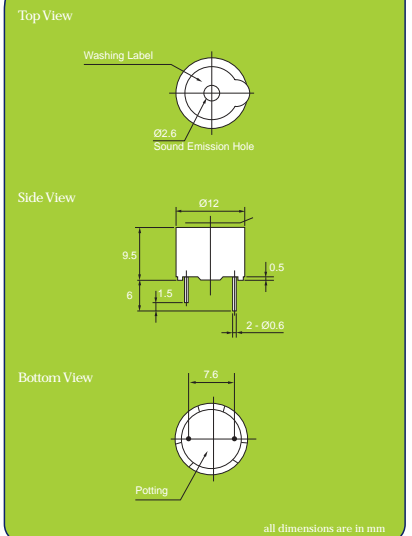
- TDB Magnetic Buzzer



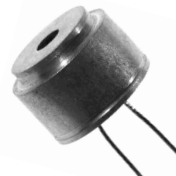
- electrical specifications

Model		TDB05	TDB12
Operating Voltage	(VDC)	4 ~ 7	8 ~ 15
Rated Voltage	(VDC)	5	12
Max. Rated Current	(mA)	30	30
Min. Sound Output	(dBA)	85 at 10cm	85 at 10cm
Frequency	(Hz)	2300 ± 300	2300 ± 300
Tone Nature		Single	Single
Operating Temperature	(°C)	-40 ~ +85	-40 ~ +85
Weight	(g)	2	2

- dimensions



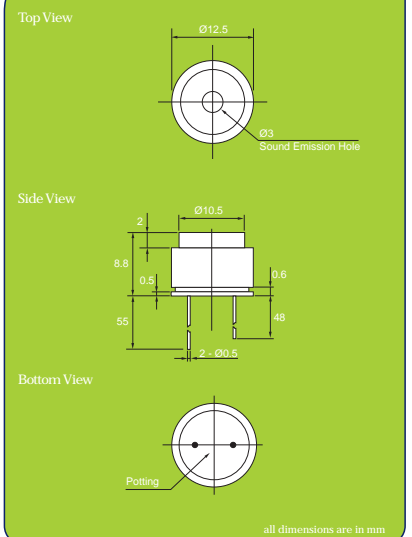
- ADB Magnetic Buzzer



- electrical specifications

Model		ADB01
Operating Voltage	(VDC)	1.25 ~ 3
Rated Voltage	(VDC)	1.5
Max. Rated Current	(mA)	30
Min. Sound Output	(dBA)	80 at 10cm
Frequency	(Hz)	2500 ± 250
Tone Nature		Single
Operating Temperature	(°C)	-20 ~ +80
Weight	(g)	3

- dimensions



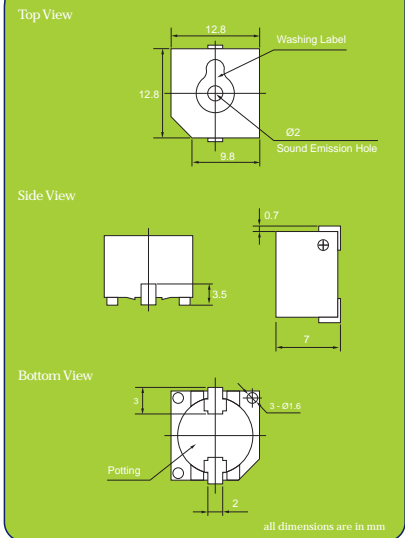
- SUDB Magnetic Buzzer



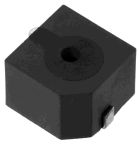
- electrical specifications

Model		SUDB05	SUDB12
Operating Voltage	(VDC)	4 ~ 7	8 ~ 15
Rated Voltage	(VDC)	5	12
Max. Rated Current	(mA)	30	30
Min. Sound Output	(dBA)	88 at 10cm	85 at 10cm
Frequency	(Hz)	2400 ± 300	2400 ± 300
Tone Nature		Single	Single
Operating Temperature	(°C)	-40 ~ +85	-20 ~ +70
Weight	(g)	2	2

- dimensions



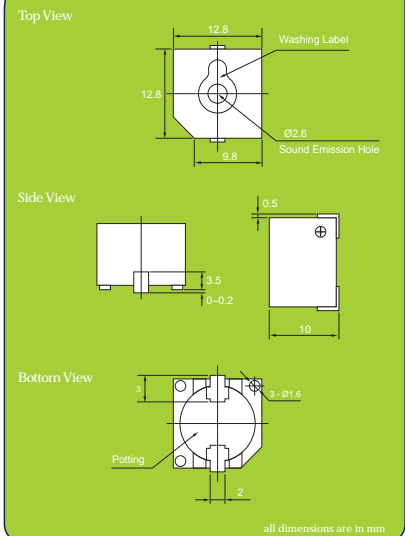
- STDB Magnetic Buzzer



- electrical specifications

Model		STDB05	STDB12
Operating Voltage	(VDC)	4 ~ 7	8 ~ 15
Rated Voltage	(VDC)	5	12
Max. Rated Current	(mA)	30	30
Min. Sound Output	(dBA)	85 at 10cm	85 at 10cm
Frequency	(Hz)	2300 ± 300	2300 ± 300
Tone Nature		Single	Single
Operating Temperature	(°C)	-20 ~ +70	-40 ~ +85
Weight	(g)	2	2

- dimensions



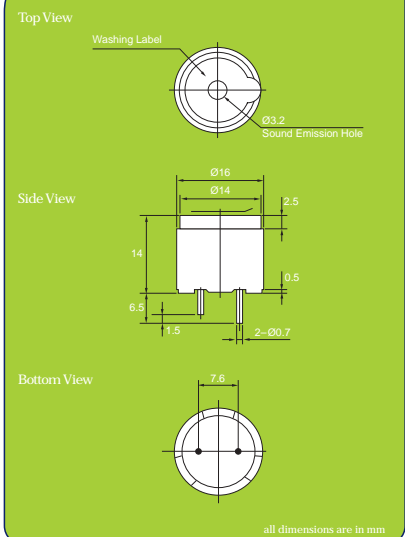
- HDB Magnetic Buzzer



- electrical specifications

Model		HDB06	HDB12
Operating Voltage	(V)	4 ~ 8	8 ~ 15
Rated Voltage	(V)	6	12
Max. Rated Current	(mA)	30	30
Min. Sound Output	(dBA)	85 at 10cm	85 at 10cm
Frequency	(Hz)	2300 ± 300	2300 ± 300
Tone Nature		Single	Single
Operating Temperature	(°C)	-40 ~ +85	-40 ~ +85
Weight	(g)	7	7

- dimensions



- DB-E98 Magnetic Buzzer

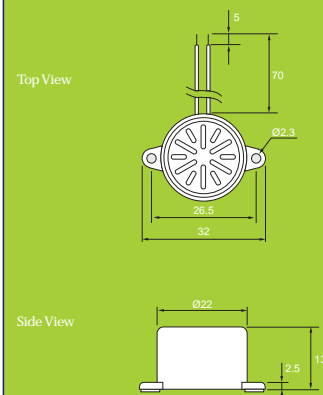


- electrical specifications

Model		9S3120
Operating Voltage	(VDC)	6 ~ 16
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	10
Min. Sound Output	(dBA)	85 at 30cm
Frequency	(Hz)	3400 ± 500
Tone Nature		Single
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	13

- dimensions

LEADWIRE TYPE



all dimensions are in mm

- DB-E18 Magnetic Buzzer

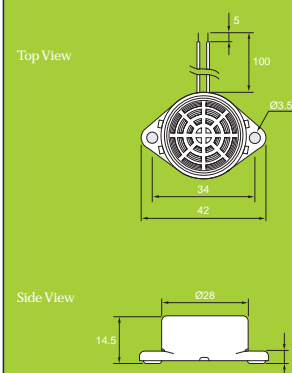


- electrical specifications

Model		1S3060
Operating Voltage	(VDC)	4 ~ 9
Rated Voltage	(VDC)	6
Max. Rated Current	(mA)	35
Min. Sound Output	(dBA)	85 at 30cm
Frequency	(Hz)	2800 ± 200
Tone Nature		Single
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	17

- dimensions

LEADWIRE TYPE



all dimensions are in mm

- DB-E28 Magnetic Buzzer

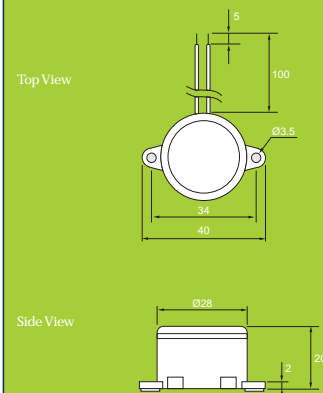


- electrical specifications

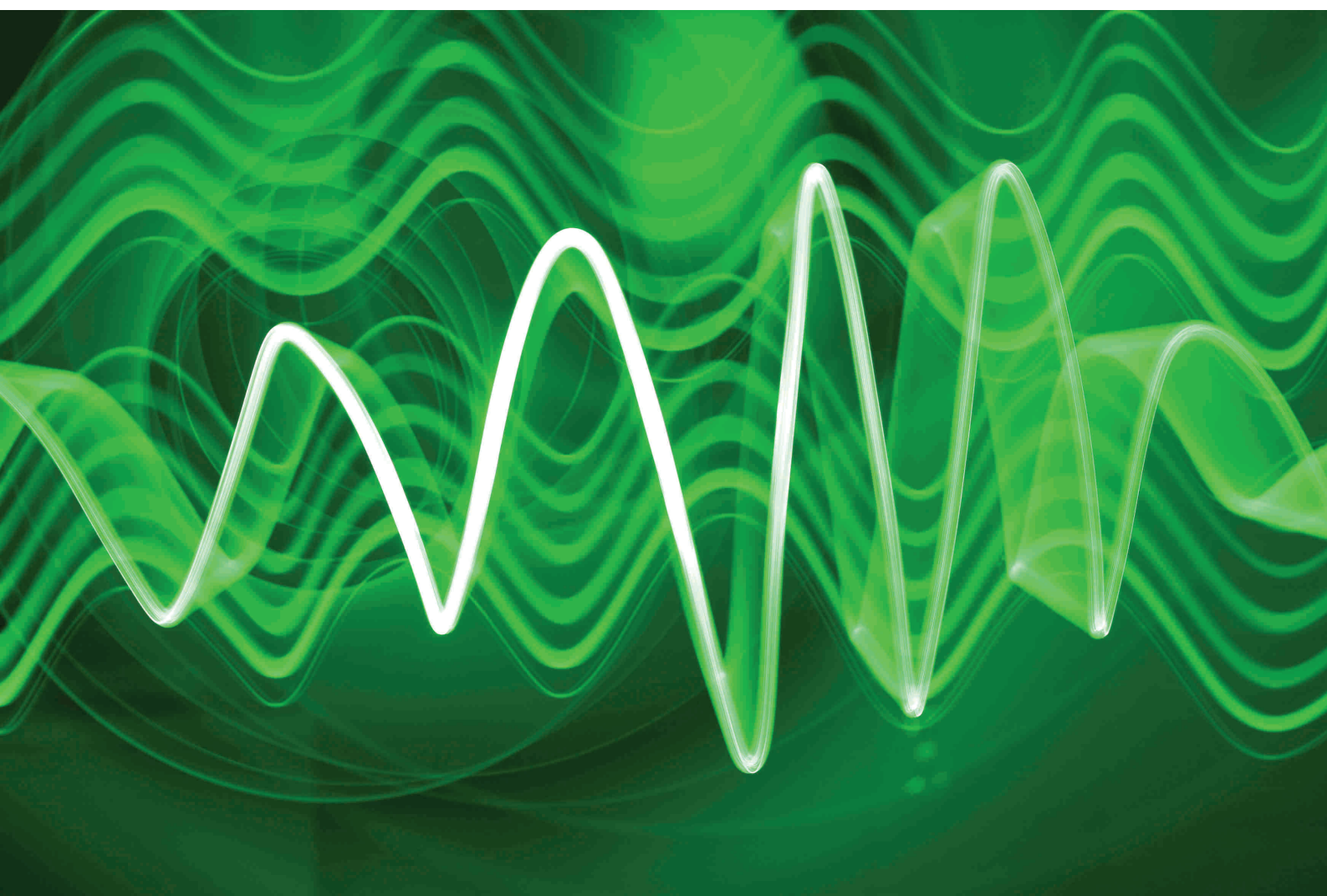
Model		2S3060
Operating Voltage	(VDC)	4 ~ 9
Rated Voltage	(VDC)	6
Max. Rated Current	(mA)	35
Min. Sound Output	(dBA)	90 at 30cm
Frequency	(Hz)	2800 ± 200
Tone Nature		Single
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	10

- dimensions

LEADWIRE TYPE



all dimensions are in mm



05.

Buzzer

- Mechanical Buzzer

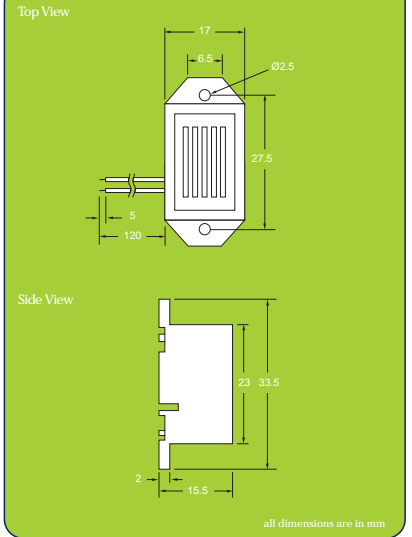
- DB-E208 Mechanical Buzzer



- electrical specifications

Model	20S1030	
Operating Voltage	(VDC)	2 ~ 4
Rated Voltage	(VDC)	3
Max. Rated Current	(mA)	25
Min. Sound Output	(dBA)	70 at 20cm
Resonant Frequency	(Hz)	400 ± 100
Tone Nature		Single
Operating Temperature	(°C)	-10 ~ +60
Weight	(g)	10

- dimensions



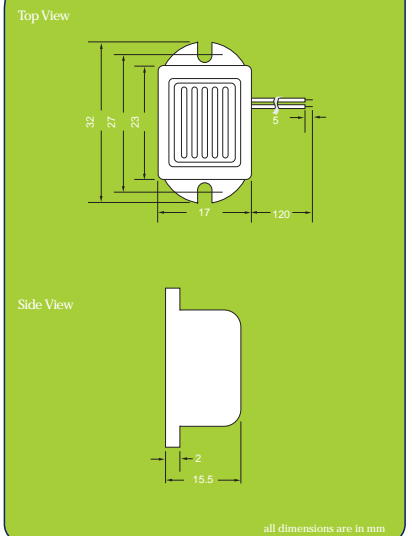
- DB-E638 Mechanical Buzzer



- electrical specifications

Model	63S1240	
Operating Voltage	(VDC)	15 ~ 27
Rated Voltage	(VDC)	24
Max. Rated Current	(mA)	30
Min. Sound Output	(dBA)	75 at 20cm
Resonant Frequency	(Hz)	400 ± 100
Tone Nature		Single
Operating Temperature	(°C)	-10 ~ +60
Weight	(g)	10

- dimensions



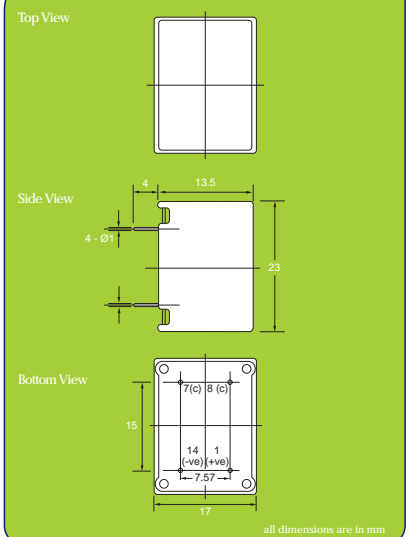
- DB-E668 Mechanical Buzzer



- electrical specifications

Model	66S1120	
Operating Voltage	(VDC)	9 ~ 15
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	25
Min. Sound Output	(dBA)	75 at 20cm
Resonant Frequency	(Hz)	400 ± 100
Tone Nature		Single
Operating Temperature	(°C)	-10 ~ +60
Weight	(g)	10

- dimensions



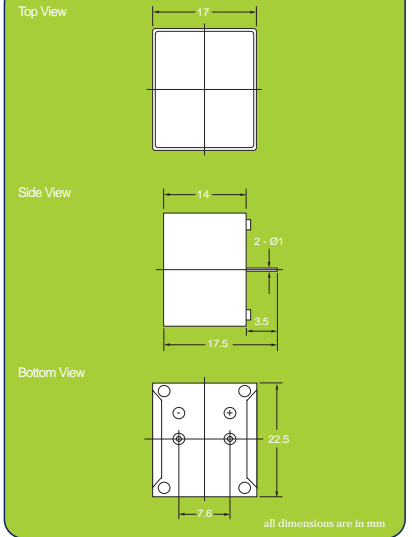
- DB-E688 Mechanical Buzzer



- electrical specifications

Model	68S1090	
Operating Voltage	(VDC)	6 ~ 12
Rated Voltage	(VDC)	9
Max. Rated Current	(mA)	25
Min. Sound Output	(dBA)	75 at 20cm
Resonant Frequency	(Hz)	400 ± 100
Tone Nature		Single
Operating Temperature	(°C)	-10 ~ +60
Weight	(g)	10

- dimensions



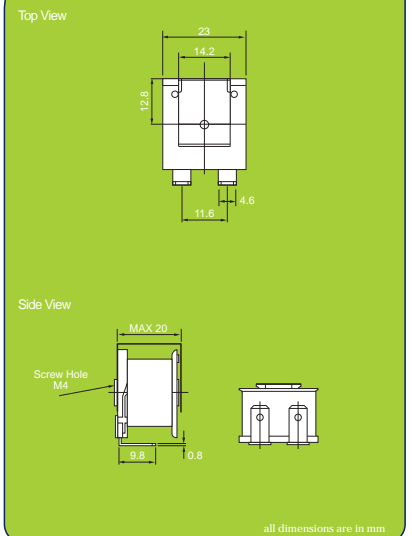
- DB-E1268 Mechanical Buzzer



- electrical specifications

Model	126S1230A	
Operating Voltage	(VAC)	230
Rated Voltage	(VAC)	160 ~ 260
Max. Rated Current	(mA)	30
Min. Sound Output	(dBA)	78 at 10cm
Tone Nature		Single
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	20

- dimensions



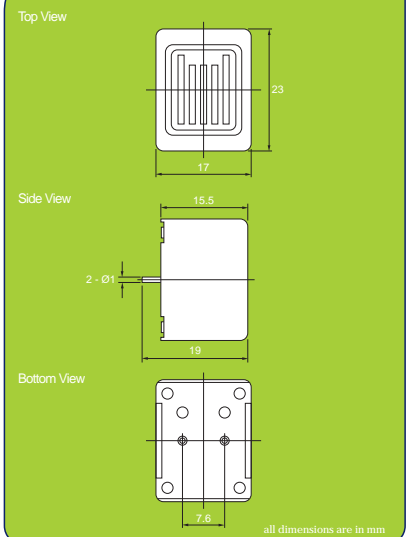
- DB-E2158 Mechanical Buzzer



- electrical specifications

Model	215S1240	
Operating Voltage	(VDC)	15 ~ 27
Rated Voltage	(VDC)	24
Max. Rated Current	(mA)	30
Min. Sound Output	(dBA)	75 at 30cm
Resonant Frequency	(Hz)	400 ± 50
Tone Nature		Single
Operating Temperature	(°C)	-20 ~ +65
Weight	(g)	8.5

- dimensions



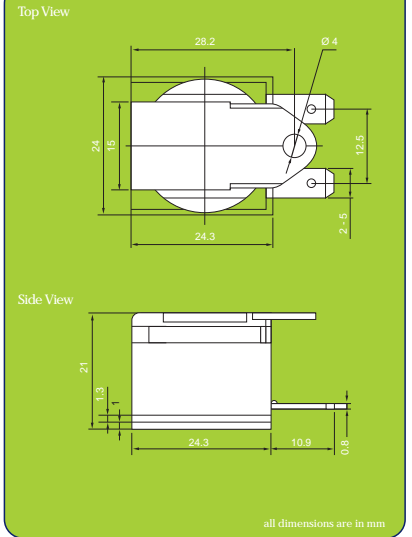
- DB-E1668 Mechanical Buzzer



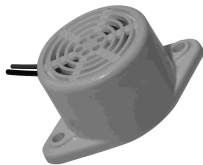
- electrical specifications

Model	166S1230	
Operating Voltage	(VAC)	230
Rated Voltage	(VAC)	160 ~ 260
Max. Rated Current	(mA)	30
Min. Sound Output	(dBA)	83 at 10cm
Tone Nature		Single
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	34

- dimensions



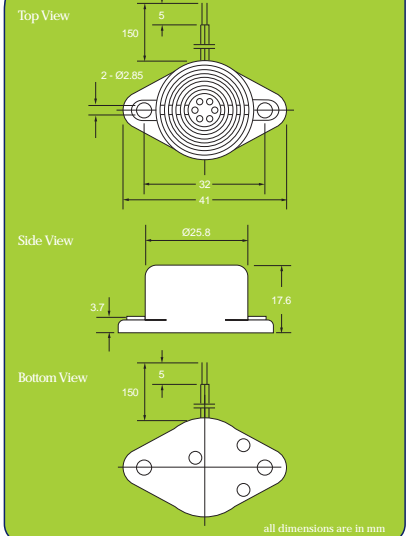
- DB-E1048 Mechanical Buzzer



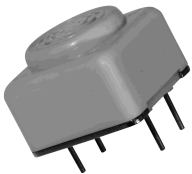
- electrical specifications

Model	104S1240	
Operating Voltage	(VDC)	20 ~ 28
Rated Voltage	(VDC)	24
Max. Rated Current	(mA)	21
Min. Sound Output	(dBA)	95 at 10cm
Resonant Frequency	(Hz)	400 ± 100
Tone Nature		Single
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	17

- dimensions



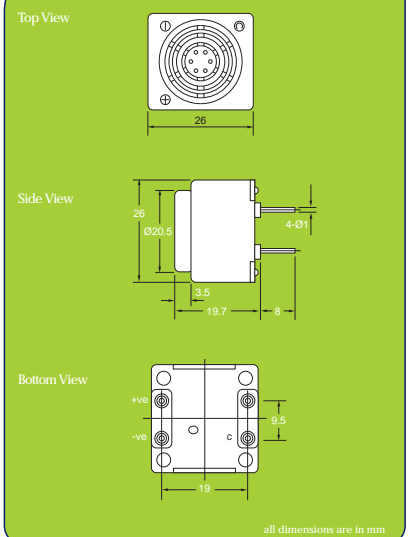
- DB-E348 Mechanical Buzzer



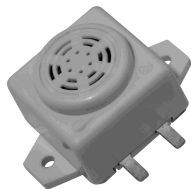
- electrical specifications

Model	34S1240	
Operating Voltage	(VDC)	20 ~ 28
Rated Voltage	(VDC)	24
Max. Rated Current	(mA)	50
Min. Sound Output	(dBA)	95 at 10cm
Resonant Frequency	(Hz)	400 ± 100
Tone Nature		Single
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	17

- dimensions



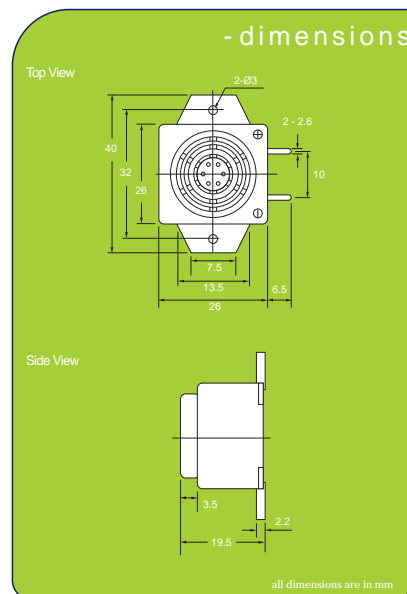
- DB-E728 Mechanical Buzzer

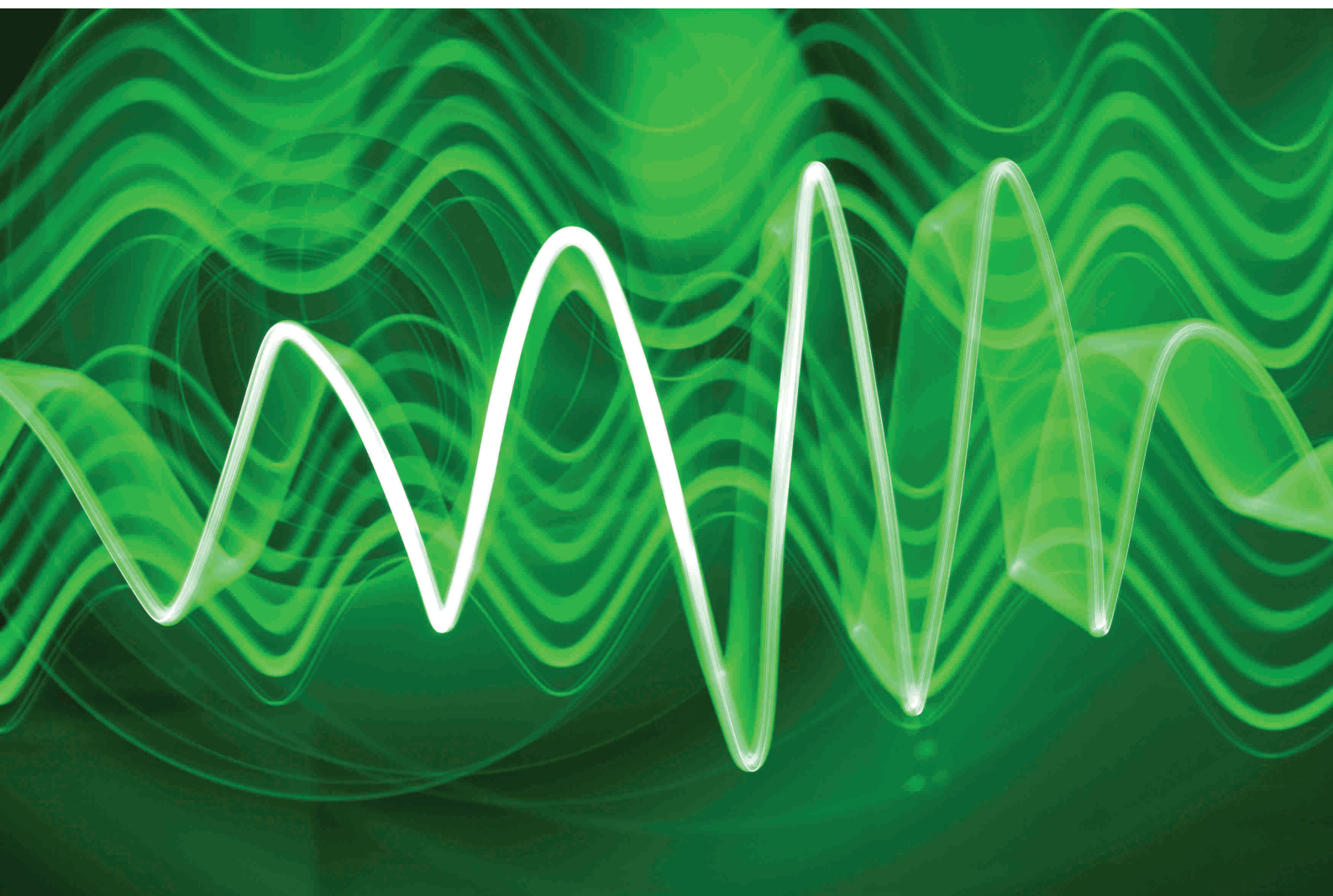


- electrical specifications

Model		72S1120
Operating Voltage	(VDC)	8 ~ 16
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	55
Min. Sound Output	(dBa)	95 at 10cm
Resonant Frequency	(Hz)	400 ± 100
Tone Nature		Single
Operating Temperature	(°C)	-10 ~ +60
Weight	(g)	17

- dimensions





06.

Buzz

- Piezo Buzzer

Piezo Buzzer

IMO Series	Model	Diameter (Ømm)	Height (mm)	Rated Voltage (VDC)	Tone Nature	Min. Sound Output (dBA)	Frequency (Hz)	Page No.
DB-E1418	141S5120	12	8.5	12	Single	85 at 10cm	5000 ± 1000	072
DB-E328	32S4120	13.8	7.5	12	Single	80 at 10cm	4000 ± 500	072
SL13	SL13S4120	15.4	13.9	12	Single	85 at 10cm	4000 ± 500	072
DB-E1978	197S4120	17.6	10	12	Single	85 at 10cm	4000 ± 500	073
DB-E218	21S5120	22	10.8	12	Single	85 at 30cm	4500 ± 500	073
DB-E248	24S3090	22	12	9	Single	85 at 30cm	3300 ± 500	073
DB-E268	26S4120	23	9.8	12	Single	85 at 30cm	3500 ± 500	074
DB-E948	94S4120	23	9.8	12	Single	85 at 30cm	3500 ± 500	074
DB-E1528	152S3120	23	17	12	Single	90 at 30cm	3700 ± 500	074
SL11	SL11S32200	23	19	220(VAC)	Single	80 at 30cm	3300 ± 500	075
DB-E1168	116S3120	23.5	9.5	12	Single	90 at 10cm	3400 ± 500	075
DB-E238	23S3120AN	23.8	16	12	Single	85 at 30cm	2900 ± 500	075
DB-E1938	193S3090	24	9.5	9	Single	82 at 30cm	3400 ± 500	076
DB-E1988	198S3120	24	12.5	12	Single	90 at 10cm	3400 ± 500	076
DB-E1328	132S3120	25.9 x 25.9	25.9	12	Single	88 at 30cm	3300 ± 500	076
DB-E1708	170S3120	26	22	9/12	Single	92/60cm(9V) / 98/60cm(12V)	2800 ± 500	077
DB-E1948	194S3120	27.5	14	12	Single	85 at 30cm	2800 ± 500	077
DB-E78	7D3240	29.5	24.5	24	Dual	90/95 at 30cm	3200 ± 500	077
DB-E1958	195S3120	29.8	9.5	12	Single	85 at 30cm	3400 ± 500	078
DB-E898	89S4120	30	19.5	12	Single	90 at 30cm	3500 ± 500	078
DB-E2138	213S2120	30	17	12	Single	87 at 10cm	1800 ± 500	078
DB-E278	27S3120	30.2	14.7	12	Single	90 at 30cm	3000 ± 500	079
DB-E318	31S5120	32 x 23.4	6.8	12	Single	85 at 10cm	5800 ± 500	079
DB-E858	85S4120	32	14	12	Single	87 at 30cm	3900 ± 500	079
DB-E1288	128S3120	33	19.4	12	Single	90 at 30cm	3100 ± 500	080
DB-E1968	196S3090	35.2	30.5	9	Single	80 at 1m	2800 ± 500	080
DB-E2188	218R2280	36	35	28	Siren	95 at 61cm	2200 ± 500	080
DB-E2198	219S3300	36	26	30	Single	90 at 60cm	2900 ± 500	081
DB-E2208	220R2090	36	40	9	Siren	105 at 10cm	2200 ± 300	081
DB-E1218	121PF3120	36.3	26	12	Fast Pulse	85 at 1m	3000 ± 500	081
DB-E298	29SL3120	41.8	16	12	Single	96 at 30cm	2800 ± 500	082
DB-E108	10S3240	42	20.5	24	Single	85 at 30cm	2900 ± 500	082
DB-E288	28SL3120	43	14	12	Single	100 at 30cm	2800 ± 500	082
SL12	SL12BDN3120	43	33	12	Single / Slow pulse	90 at 30cm	2900 ± 500	083
DB-E118	11D3120	43.5	34.5	12	Dual	90/95 at 30cm	2900 ± 500	083
DB-E38	3D3120	45	26	12	Dual	100/105 at 30cm	2900 ± 500	083
SL15	SL15R3240	44.5 x 40	57.5	24	Siren	100 at 30cm	1000 ~ 3500	084
DB-E308	30S3120	50	29	12	Single	108 at 25.4cm	2500 ± 500	084
DB-E628	62T3120	50	38	12	Two	105 at 30cm	3000 ~ 3200 ± 500	084
DB-E738	73R2120	52	50	12	Siren	105 at 1m	1500 ~ 4000	085
DB-E1228	122S3060	53	31	6	Single	93 at 30cm	2800 ± 500	085
DB-E1438	143S3120	60	38	12	Single	100 at 1m	2800 ± 400	085
DB-E188	18R3120	84.5 x 54.5	32.5	12	Siren	105 at 1m	2600 ~ 3100	086
DB-E198	19R3120	105.5 x 105.5	44.5	12	Siren	97 at 3m	1500 ~ 3100	086

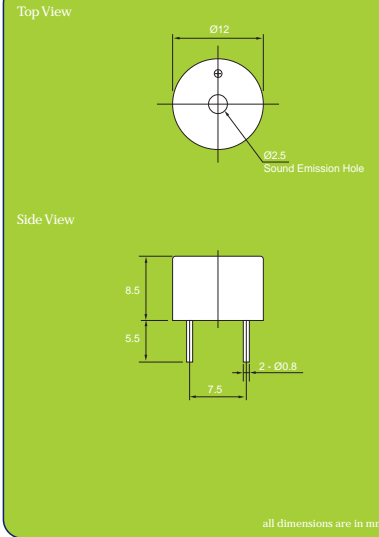
- DB-E1418 Piezo Buzzer



- electrical specifications

Model	141S5120	
Operating Voltage	(VDC)	3 ~ 18
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	8
Min. Sound Output	(dBA)	85 at 10cm
Frequency	(Hz)	5000 ± 1000
Tone Nature		Single
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	4

- dimensions



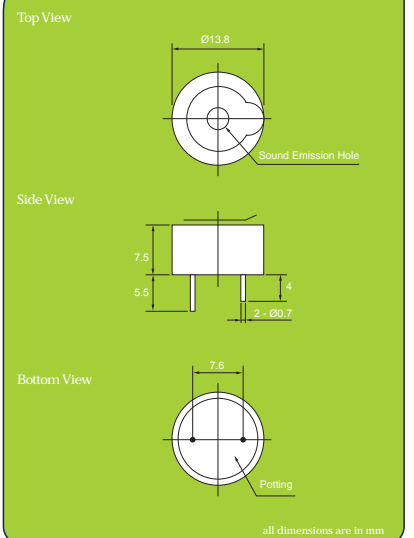
- DB-E328 Piezo Buzzer



- electrical specifications

Model	32S4120	
Operating Voltage	(VDC)	3 ~ 16
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	7
Min. Sound Output	(dBA)	80 at 10cm
Frequency	(Hz)	4000 ± 500
Tone Nature		Single
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	1

- dimensions



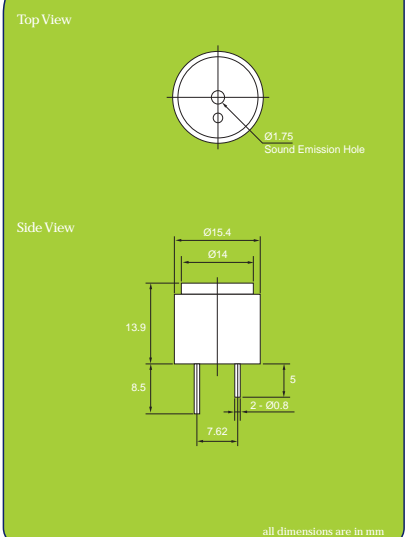
- SL13 Piezo Buzzer



- electrical specifications

Model	SL13S4120	
Operating Voltage	(VDC)	1 ~ 18
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	20
Min. Sound Output	(dBA)	85 at 10cm
Frequency	(Hz)	4000 ± 500
Tone Nature		Single
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	2.5

- dimensions



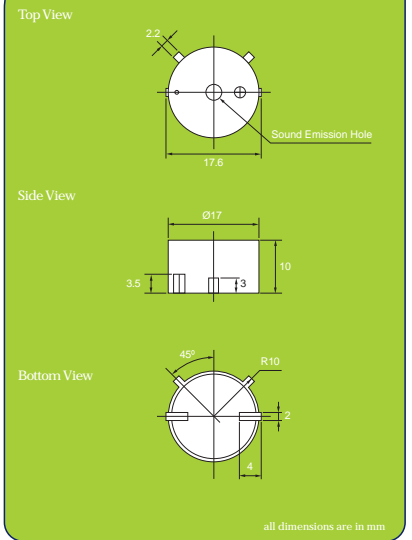
- DB-E1978 Piezo Buzzer



- electrical specifications

Model	197S4120	
Operating Voltage	(VDC)	3 - 16
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	10
Min. Sound Output	(dBA)	85 at 10cm
Frequency	(Hz)	4000 ± 500
Tone Nature		Single
Operating Temperature	(°C)	-20 ~ +75
Weight	(g)	1.6

- dimensions



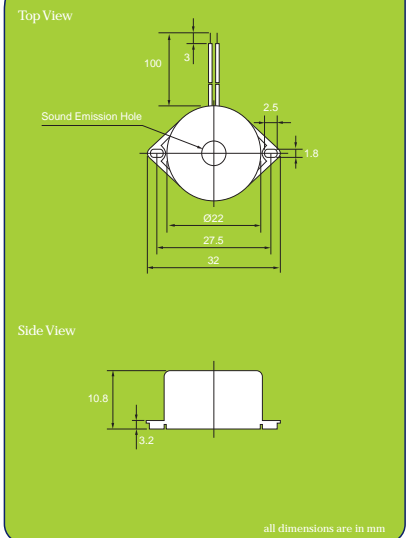
- DB-E218 Piezo Buzzer



- electrical specifications

Model	21S5120	
Operating Voltage	(VDC)	3 - 30
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	3
Min. Sound Output	(dBA)	85 at 30cm
Frequency	(Hz)	4500 ± 500
Tone Nature		Single
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	5

- dimensions



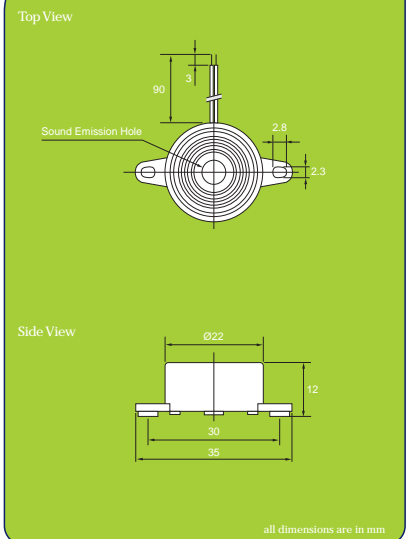
- DB-E248 Piezo Buzzer



- electrical specifications

Model	24S3090	
Operating Voltage	(VDC)	1.5 - 24
Rated Voltage	(VDC)	9
Max. Rated Current	(mA)	20
Min. Sound Output	(dBA)	85 at 30cm
Frequency	(Hz)	3300 ± 500
Tone Nature		Single
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	14

- dimensions



- DB-E268 Piezo Buzzer

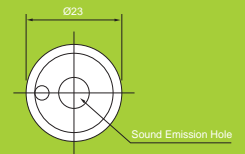


- electrical specifications

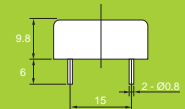
Model	26S4120	
Operating Voltage	(VDC)	1.5 ~ 28
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	10
Min. Sound Output	(dBA)	85 at 30cm
Frequency	(Hz)	3500 ± 500
Tone Nature		Single
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	4

- dimensions

Top View



Side View



all dimensions are in mm

- DB-E948 Piezo Buzzer

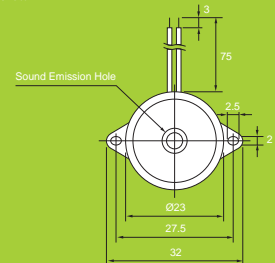


- electrical specifications

Model	94S4120	
Operating Voltage	(VDC)	3 ~ 28
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	10
Min. Sound Output	(dBA)	85 at 30cm
Frequency	(Hz)	3500 ± 500
Tone Nature		Single
Operating Temperature	(°C)	-25 ~ +65
Weight	(g)	3.5

- dimensions

Top View



Side View



all dimensions are in mm

- DB-E1528 Piezo Buzzer

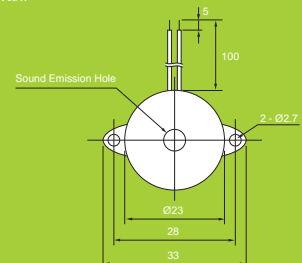


- electrical specifications

Model	152S3120	
Operating Voltage	(VDC)	3 ~ 16
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	8
Min. Sound Output	(dBA)	90 at 30cm
Frequency	(Hz)	3700 ± 500
Tone Nature		Single
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	5

- dimensions

Top View



Side View



all dimensions are in mm

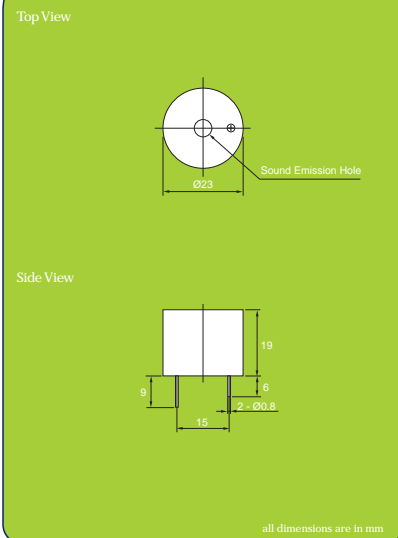
- SL11 Piezo Buzzer



- electrical specifications

Model	SL11S32200	
Operating Voltage	(VAC)	30 ~ 264
Rated Voltage	(VAC)	220
Max. Rated Current	(mA)	5
Min. Sound Output	(dBA)	80 at 30cm
Frequency	(Hz)	3300 ± 500
Tone Nature	Single	
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	8

- dimensions



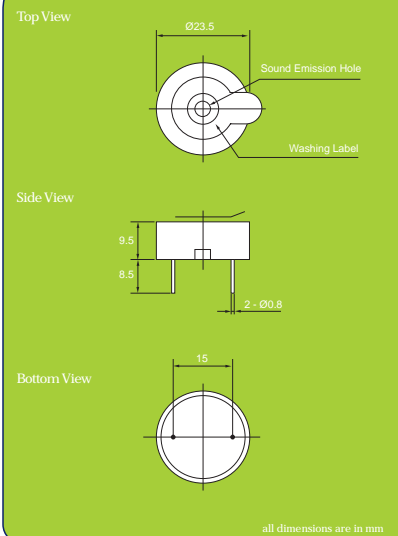
- DB-E1168 Piezo Buzzer



- electrical specifications

Model	116S3120	
Operating Voltage	(VDC)	3 ~ 20
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	15
Min. Sound Output	(dBA)	90 at 10cm
Frequency	(Hz)	3400 ± 500
Tone Nature	Single	
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	4

- dimensions



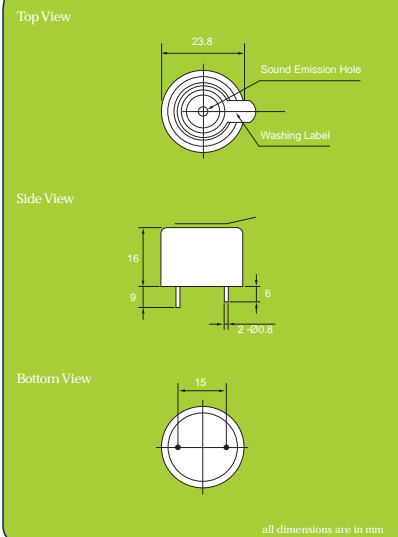
- DB-E238 Piezo Buzzer



- electrical specifications

Model	23S3120AN	
Operating Voltage	(VDC)	3 ~ 20
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	8
Min. Sound Output	(dBA)	85 at 30cm
Frequency	(Hz)	2900 ± 500
Tone Nature	Single	
Operating Temperature	(°C)	-20 ~ +85
Weight	(g)	6

- dimensions



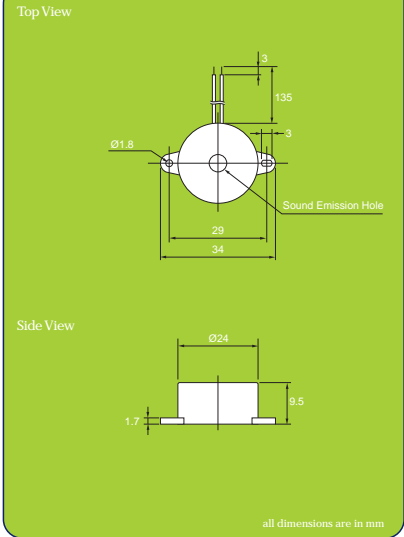
- DB-E1938 Piezo Buzzer



- electrical specifications

Model	193S3090	
Operating Voltage	(VDC)	3 – 20
Rated Voltage	(VDC)	9
Max. Rated Current	(mA)	10
Min. Sound Output	(dBA)	82 at 30cm
Frequency	(Hz)	3400 ± 500
Tone Nature		Single
Operating Temperature	(°C)	-20 – +65
Weight	(g)	4

- dimensions



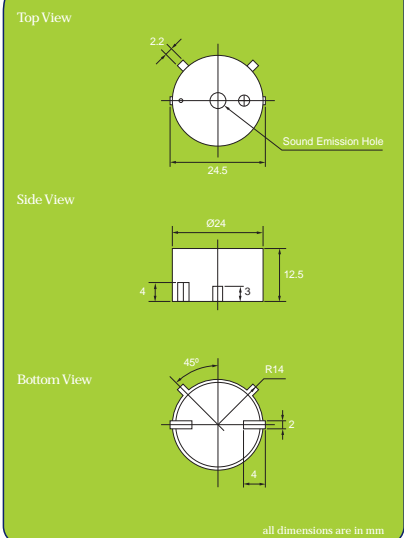
- DB-E1988 Piezo Buzzer



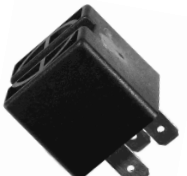
- electrical specifications

Model	198S3120	
Operating Voltage	(VDC)	3 – 16
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	10
Min. Sound Output	(dBA)	90 at 10cm
Frequency	(Hz)	3400 ± 500
Tone Nature		Single
Operating Temperature	(°C)	-20 – +75
Weight	(g)	0.8

- dimensions



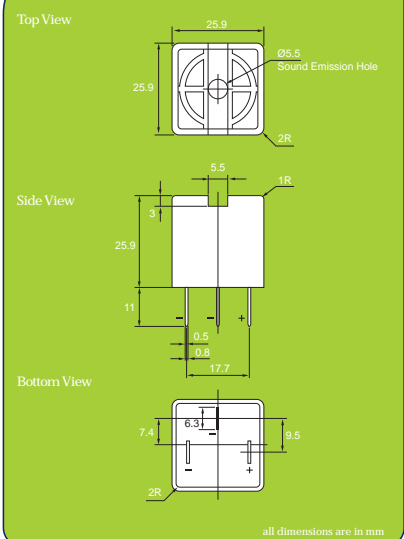
- DB-E1328 Piezo Buzzer



- electrical specifications

Model	132S3120	
Operating Voltage	(VDC)	9 – 18
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	15
Min. Sound Output	(dBA)	88 at 30cm
Frequency	(Hz)	3300 ± 500
Tone Nature		Single
Operating Temperature	(°C)	-20 – +85
Weight	(g)	10

- dimensions



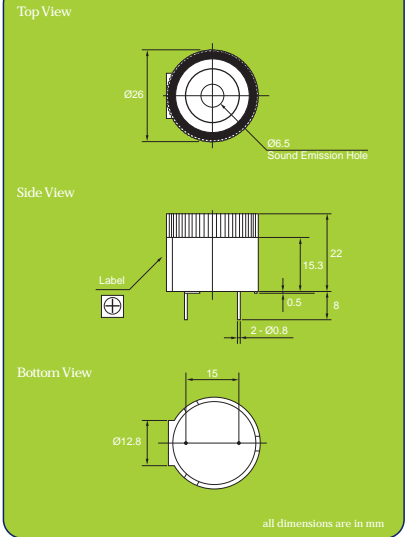
- DB-E1708 Piezo Buzzer



- electrical specifications

Model	170S3120	
Operating Voltage	(VDC)	5 - 18
Rated Voltage	(VDC)	9/12
Max. Rated Current	(mA)	50
Sound Output	(dBA)	92 ± 5(9V) / 98 ± 5(12V) at 60cm
Frequency	(Hz)	2800 ± 500
Tone Nature		Single
Operating Temperature	(°C)	-20 - +60
Weight	(g)	15

- dimensions



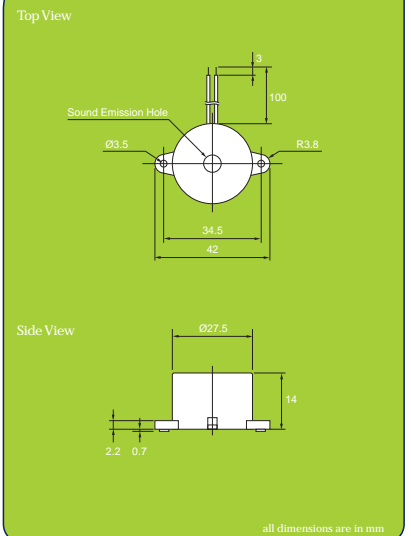
- DB-E1948 Piezo Buzzer



- electrical specifications

Model	194S3120	
Operating Voltage	(VDC)	3 - 16
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	15
Min. Sound Output	(dBA)	85 at 30cm
Frequency	(Hz)	2800 ± 500
Tone Nature		Single
Operating Temperature	(°C)	-20 - +65
Weight	(g)	6.8

- dimensions



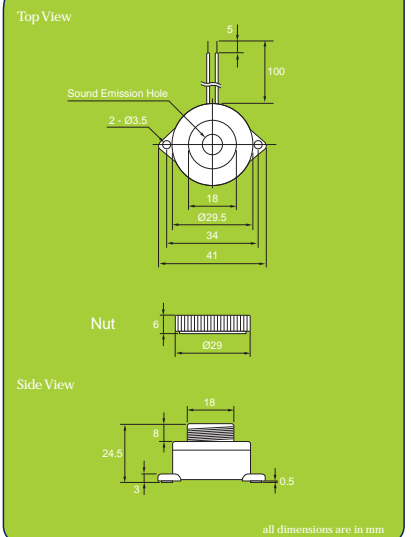
- DB-E78 Piezo Buzzer



- electrical specifications

Model	7D3240	
Operating Voltage	(VDC)	1.5 - 28
Rated Voltage	(VDC)	24
Max. Rated Current	(mA)	30
Min. Sound Output	(dBA)	90/95 at 30cm
Frequency	(Hz)	3200 ± 500
Tone Nature		Dual
Operating Temperature	(°C)	-20 - +60
Weight	(g)	15

- dimensions



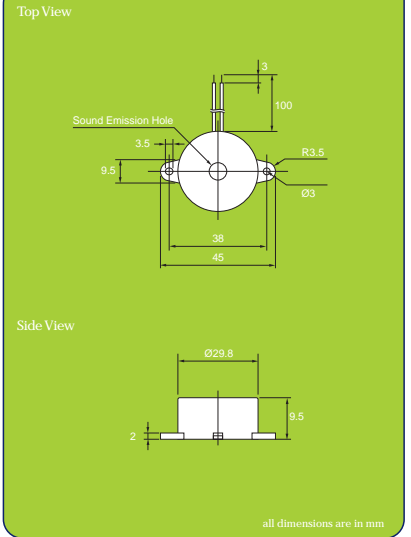
- DB-E1958 Piezo Buzzer



- electrical specifications

Model	195S3120	
Operating Voltage	(VDC)	3 - 20
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	15
Min. Sound Output	(dBA)	85 at 30cm
Frequency	(Hz)	3400 ± 500
Tone Nature		Single
Operating Temperature	(°C)	-20 - +65
Weight	(g)	6

- dimensions



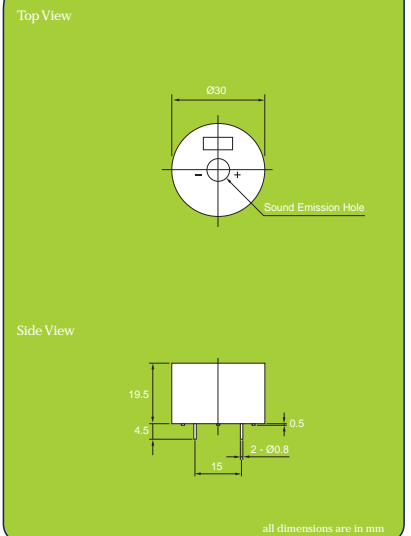
- DB-E898 Piezo Buzzer



- electrical specifications

Model	89S4120	
Operating Voltage	(VDC)	3 - 20
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	10
Min. Sound Output	(dBA)	90 at 30cm
Frequency	(Hz)	3500 ± 500
Tone Nature		Single
Operating Temperature	(°C)	-20 - +60
Weight	(g)	10

- dimensions



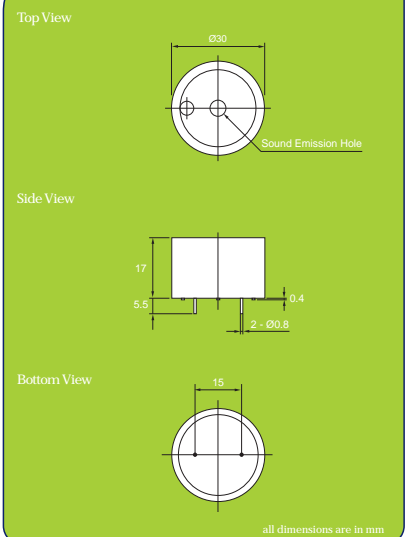
- DB-E2138 Piezo Buzzer



- electrical specifications

Model	213S2120	
Operating Voltage	(VDC)	3 - 30
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	12
Min. Sound Output	(dBA)	87 at 10cm
Frequency	(Hz)	1800 ± 500
Tone Nature		Single
Operating Temperature	(°C)	-20 - +70
Weight	(g)	5

- dimensions



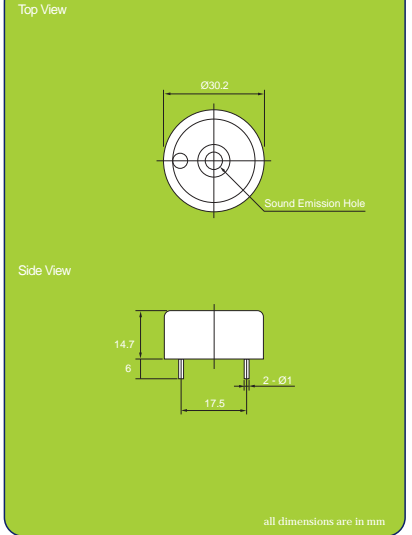
- DB-E278 Piezo Buzzer



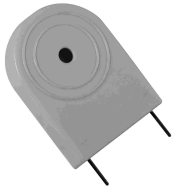
- electrical specifications

Model		27S3120
Operating Voltage	(VDC)	3 - 20
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	10
Min. Sound Output	(dBA)	90 at 30cm
Frequency	(Hz)	3000 ± 500
Tone Nature		Single
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	3

- dimensions



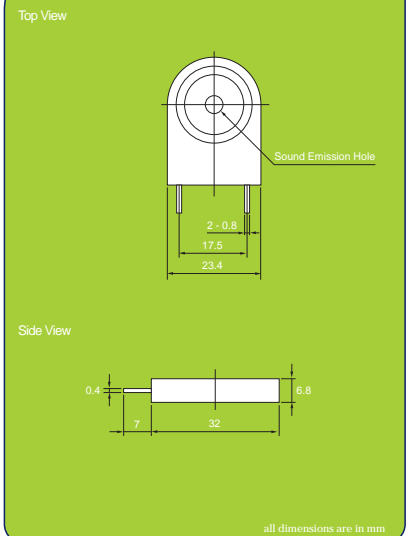
- DB-E318 Piezo Buzzer



- electrical specifications

Model		31S5120
Operating Voltage	(VDC)	3 - 24
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	8
Min. Sound Output	(dBA)	85 at 10cm
Frequency	(Hz)	5800 ± 500
Tone Nature		Single
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	8

- dimensions



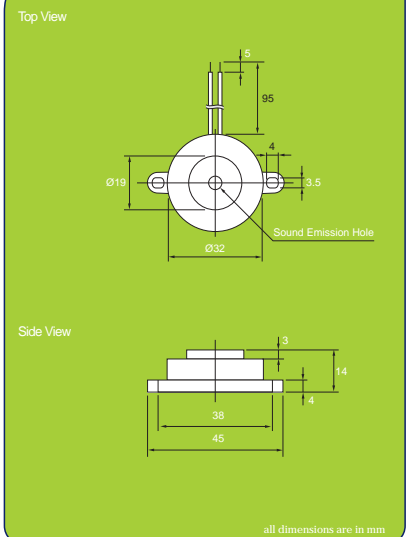
- DB-E858 Piezo Buzzer



- electrical specifications

Model		85S4120
Operating Voltage	(VDC)	3 - 28
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	15
Min. Sound Output	(dBA)	87 at 30cm
Frequency	(Hz)	3900 ± 500
Tone Nature		Single
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	8

- dimensions

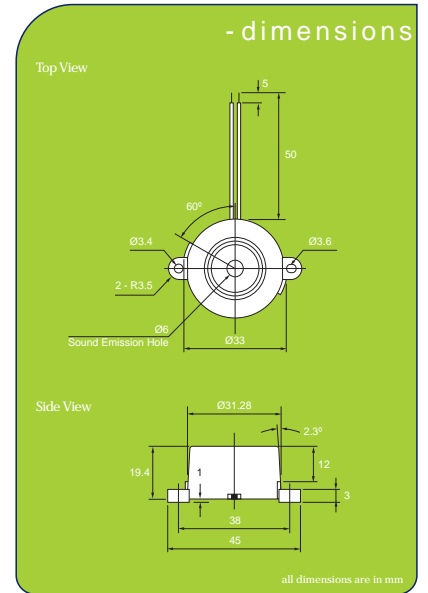


- DB-E1288 Piezo Buzzer



- electrical specifications

Model		128S3120
Operating Voltage	(VDC)	3 ~ 20
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	15
Min. Sound Output	(dBA)	90 at 30cm
Frequency	(Hz)	3100 ± 500
Tone Nature		Single
Operating Temperature	(°C)	-20 ~ +85
Weight	(g)	2.5

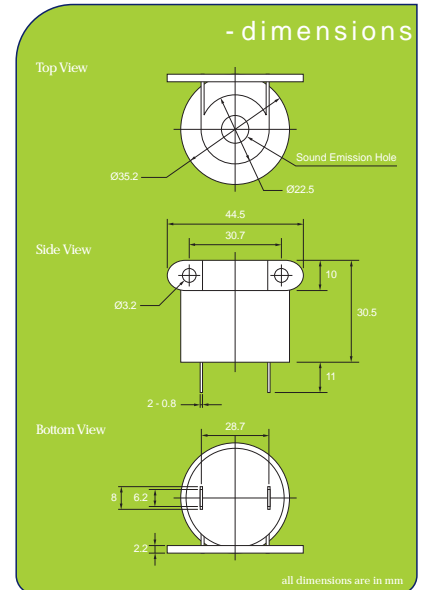


- DB-E1968 Piezo Buzzer



- electrical specifications

Model		196S3090
Operating Voltage	(VDC)	9 ~ 48
Rated Voltage	(VDC)	9
Max. Rated Current	(mA)	3
Min. Sound Output	(dBA)	80 at 1m
Frequency	(Hz)	2800 ± 500
Tone Nature		Single
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	26

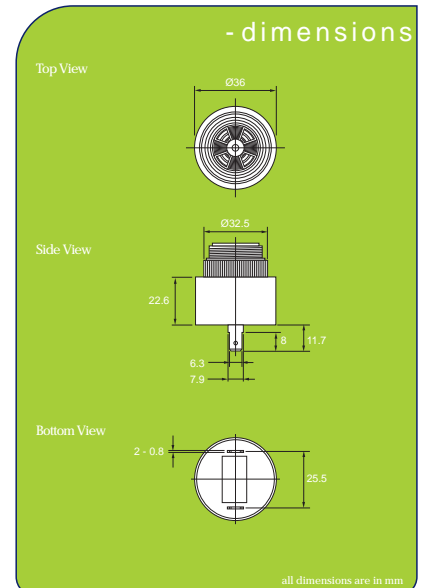


- DB-E2188 Piezo Buzzer



- electrical specifications

Model		218R2280
Operating Voltage	(VDC)	6 ~ 28
Rated Voltage	(VDC)	28
Max. Rated Current	(mA)	50
Min. Sound Output	(dBA)	95 at 61cm
Frequency	(Hz)	2200 ± 500
Tone Nature		Siren
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	35



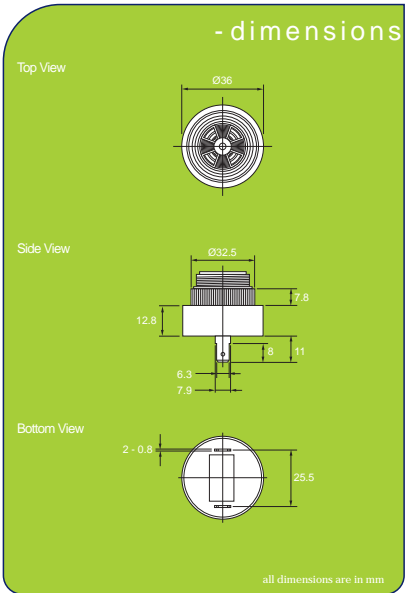
- DB-E2198 Piezo Buzzer



- electrical specifications

Model		219S3300
Operating Voltage	(VDC)	5 ~ 32
Rated Voltage	(VDC)	30
Max. Rated Current	(mA)	60
Min. Sound Output	(dBA)	90 at 60cm
Frequency	(Hz)	2900 ± 500
Tone Nature		Single
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	35

- dimensions



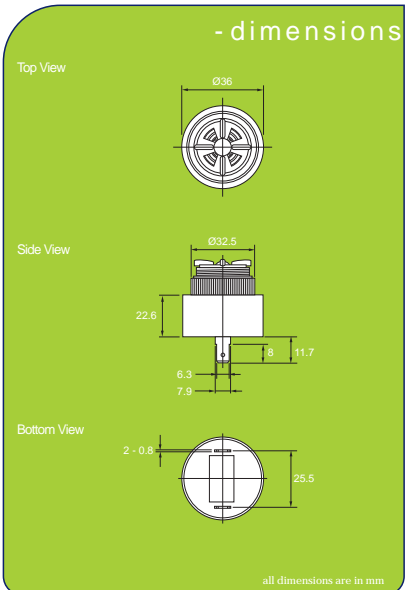
- DB-E2208 Piezo Buzzer



- electrical specifications

Model		220R2090
Operating Voltage	(VDC)	5 ~ 15
Rated Voltage	(VDC)	9
Max. Rated Current	(mA)	50
Min. Sound Output	(dBA)	105 at 10cm
Frequency	(Hz)	2200 ± 300
Tone Nature		Siren
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	35

- dimensions



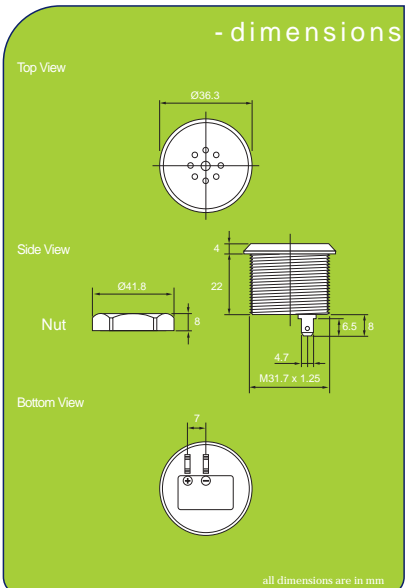
- DB-E1218 Piezo Buzzer



- electrical specifications

Model		121PF3120
Operating Voltage	(VDC)	5 ~ 28
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	18
Min. Sound Output	(dBA)	85 at 1m
Frequency	(Hz)	3000 ± 500
Tone Nature		Fast Pulse
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	35

- dimensions



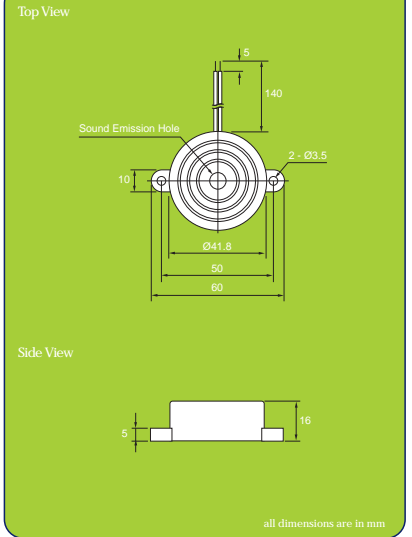
- DB-E298 Piezo Buzzer



- electrical specifications

Model		29SL3120
Operating Voltage	(VDC)	1.5 ~ 20
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	10
Min. Sound Output	(dBA)	96 at 30cm
Frequency	(Hz)	2800 ± 500
Tone Nature		Single
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	15

- dimensions



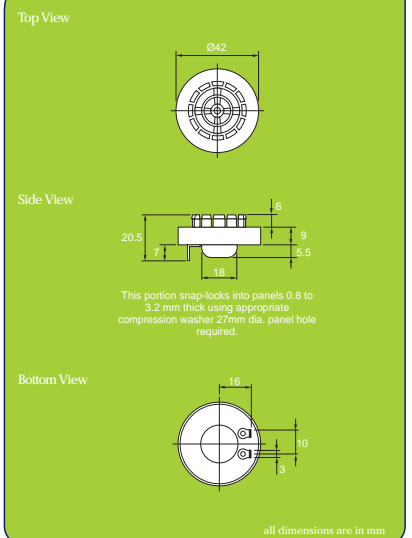
- DB-E108 Piezo Buzzer



- electrical specifications

Model		10S3240
Operating Voltage	(VDC)	1 ~ 28
Rated Voltage	(VDC)	24
Max. Rated Current	(mA)	15
Min. Sound Output	(dBA)	85 at 30cm
Frequency	(Hz)	2900 ± 500
Tone Nature		Single
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	18

- dimensions



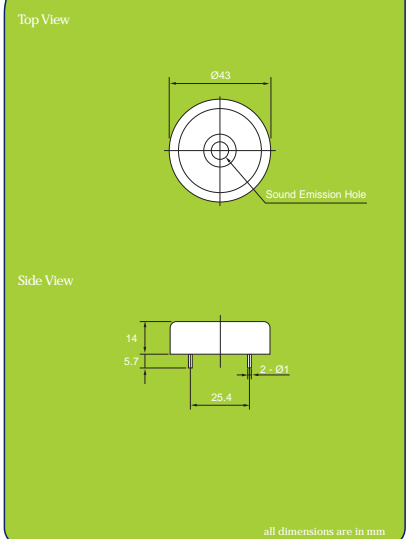
- DB-E288 Piezo Buzzer



- electrical specifications

Model		28SL3120
Operating Voltage	(VDC)	3 ~ 20
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	12
Min. Sound Output	(dBA)	100 at 30cm
Frequency	(Hz)	2800 ± 500
Tone Nature		Single
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	11

- dimensions

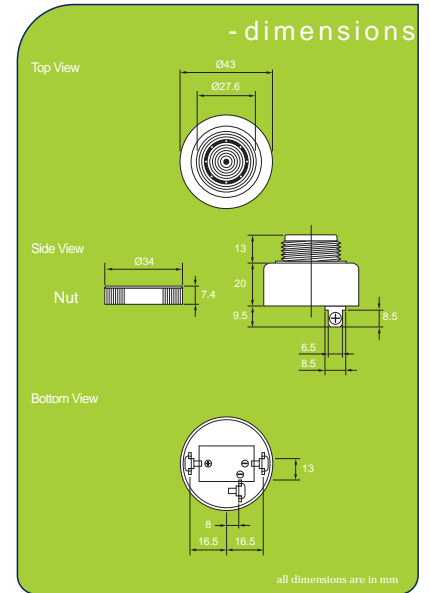


- SL12 Piezo Buzzer



- electrical specifications

Model	SL12BDN3120	
Operating Voltage	(VDC)	6 – 28
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	20
Min. Sound Output	(dBA)	90 at 30cm
Frequency	(Hz)	2900 ± 500
Tone Nature		Single / Slow pulse
Operating Temperature	(°C)	-20 – +60
Weight	(g)	35

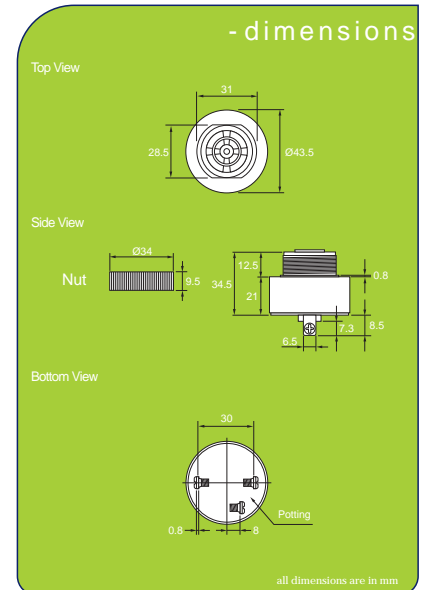


- DB-E118 Piezo Buzzer



- electrical specifications

Model	11D3120	
Operating Voltage	(VDC)	4 – 16
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	20/25
Min. Sound Output	(dBA)	90/95 at 30cm
Frequency	(Hz)	2900 ± 500
Tone Nature		Dual
Operating Temperature	(°C)	-20 – +60
Weight	(g)	35

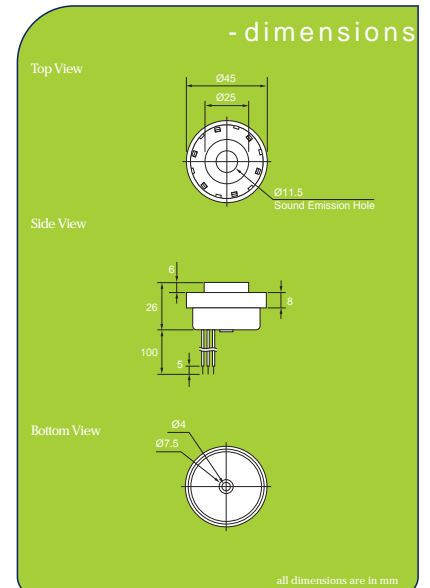


- DB-E38 Piezo Buzzer



- electrical specifications

Model	3D3120	
Operating Voltage	(VDC)	3 – 18
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	35
Min. Sound Output	(dBA)	100/105 at 30cm
Frequency	(Hz)	2900 ± 500
Tone Nature		Dual
Operating Temperature	(°C)	-20 – +60
Weight	(g)	28



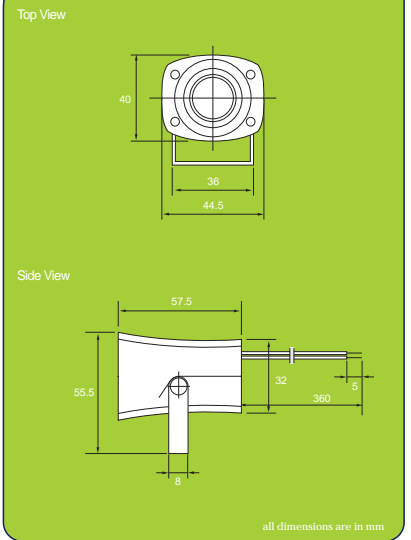
- SL15 Piezo Buzzer



- electrical specifications

Model	SL15R3240	
Operating Voltage	(VDC)	12 ~ 28
Rated Voltage	(VDC)	24
Max. Rated Current	(mA)	150
Min. Sound Output	(dBA)	100 at 30cm
Frequency	(Hz)	1000 ~ 3500
Tone Nature		Siren
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	75

- dimensions



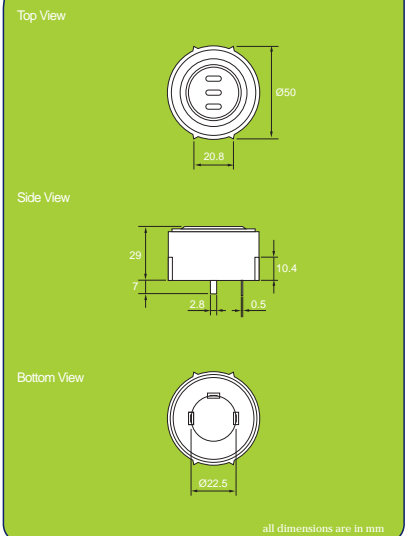
- DB-E308 Piezo Buzzer



- electrical specifications

Model	30S3120	
Operating Voltage	(VDC)	3 ~ 13
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	75
Min. Sound Output	(dBA)	108 at 25.4cm
Frequency	(Hz)	2500 ± 500
Tone Nature		Single
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	40

- dimensions



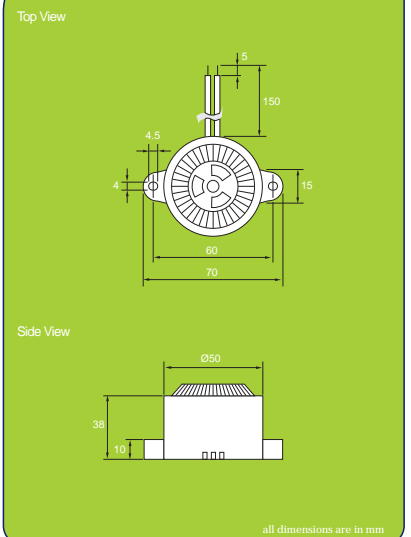
- DB-E628 Piezo Buzzer



- electrical specifications

Model	62T3120	
Operating Voltage	(VDC)	6 ~ 16
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	65
Min. Sound Output	(dBA)	105 at 30cm
Frequency	(Hz)	3000 ~ 3200 ± 500
Tone Nature		Two
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	45

- dimensions



Buzzer

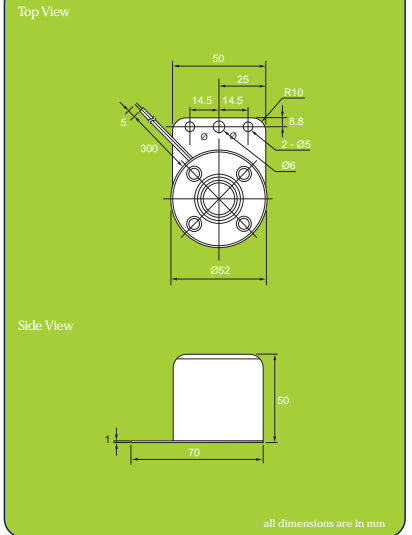
- DB-E738 Piezo Buzzer



- electrical specifications

Model	73R2120	
Operating Voltage	(VDC)	6 ~ 15
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	280
Min. Sound Output	(dBA)	105 at 1m
Frequency	(Hz)	1500 ~ 4000
Tone Nature		Siren
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	80

- dimensions



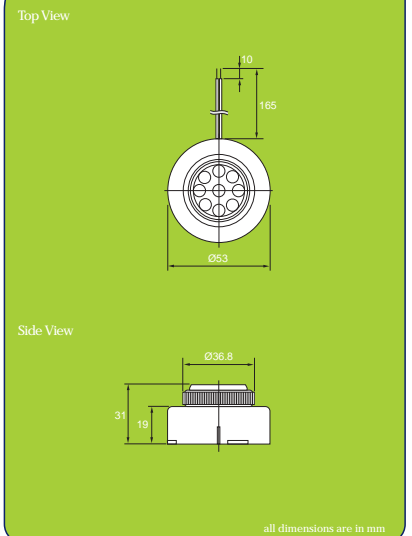
- DB-E1228 Piezo Buzzer



- electrical specifications

Model	122S3060	
Operating Voltage	(VDC)	3 ~ 12
Rated Voltage	(VDC)	6
Max. Rated Current	(mA)	20
Min. Sound Output	(dBA)	93 at 30cm
Frequency	(Hz)	2800 ± 500
Tone Nature		Single
Operating Temperature	(°C)	-30 ~ +70
Weight	(g)	38

- dimensions



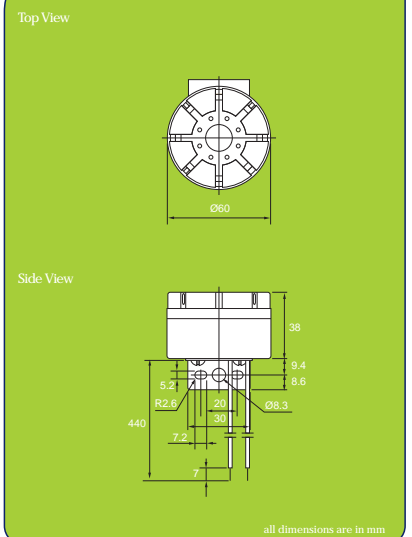
- DB-E1438 Piezo Buzzer



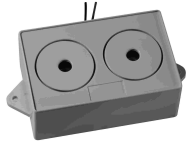
- electrical specifications

Model	143S3120	
Operating Voltage	(VDC)	6 ~ 15
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	300
Min. Sound Output	(dBA)	100 at 1m
Frequency	(Hz)	2800 ± 400
Tone Nature		Single
Operating Temperature	(°C)	-20 ~ +70
Weight	(g)	110

- dimensions



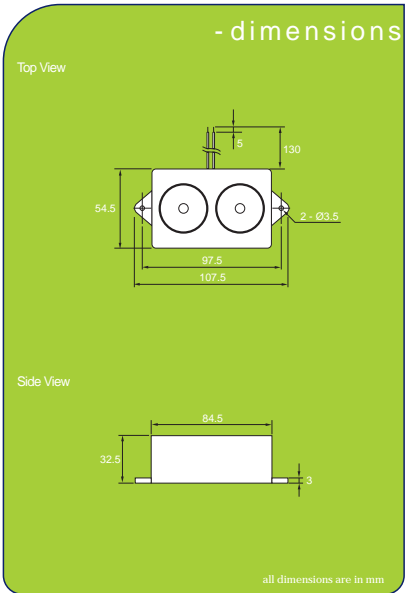
- DB-E188 Piezo Buzzer



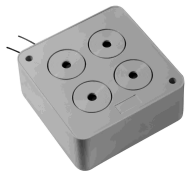
- electrical specifications

Model		18R3120
Operating Voltage	(VDC)	9 ~ 15
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	120
Min. Sound Output	(dBA)	105 at 1m
Frequency	(Hz)	2600 ~ 3100
Tone Nature		Siren
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	90

- dimensions



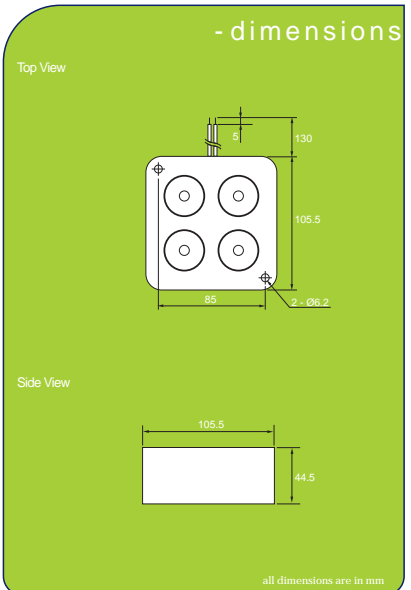
- DB-E198 Piezo Buzzer

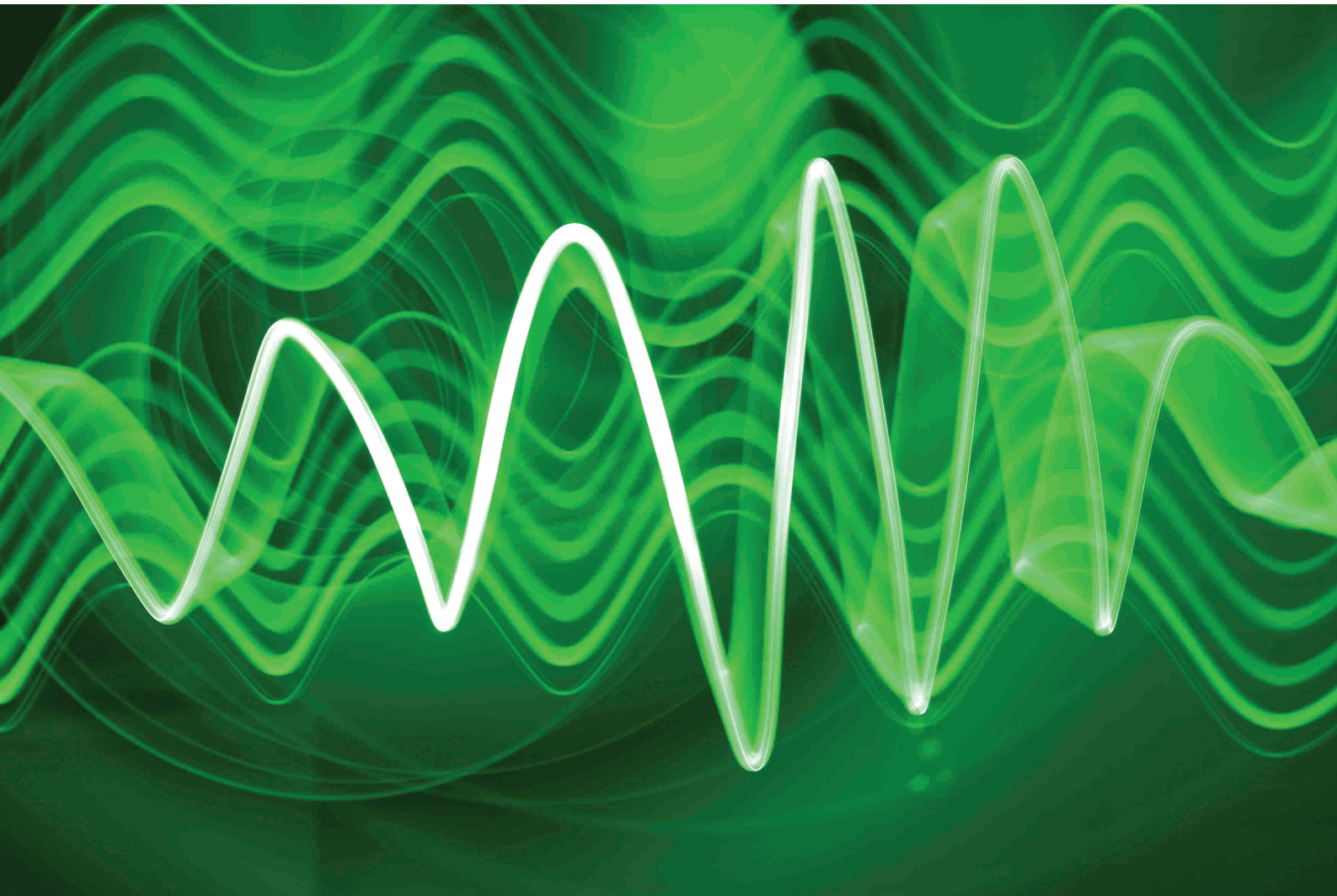


- electrical specifications

Model		19R3120
Operating Voltage	(VDC)	6 ~ 15
Rated Voltage	(VDC)	12
Max. Rated Current	(mA)	190
Min. Sound Output	(dBA)	97 at 3m
Frequency	(Hz)	1500 ~ 3100
Tone Nature		Siren
Operating Temperature	(°C)	-20 ~ +60
Weight	(g)	190

- dimensions





07. Piezo Element

- External Drive Piezo Element
- Self Drive Piezo Element

- DB-E648 External Drive Piezo Element



- electrical specifications

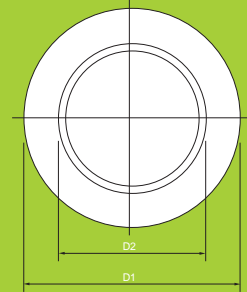
Model		64PE061350	64PE121650	64PE151000
Diameter (D1) (Ømm)		6.5	12	15
Diameter (D2) (Ømm)		5	9	11
Metal Thickness (H) (mm)		0.1	0.2	0.2
Total Height (T) (mm)		0.23	0.41	0.39
Frequency (Hz)		13500 ± 2000	16500 ± 1500	10500 ± 1000
Resonant Impedance (ȳ)		6000 Max.	600 Max.	500 Max.
Capacitance ± 30 % (pF)		2600	6000	8500

- electrical specifications

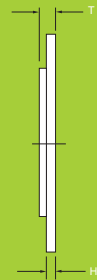
Model		64PE200710	64PE270330	64PE310290	64PE350280	64PE410150	64PE500130
Diameter (D1) (Ømm)		20	27	31	35	41	50
Diameter (D2) (Ømm)		15	20	20	25	25	30
Metal Thickness (H) (mm)		0.2	0.2	0.2	0.25	0.2	0.2
Total Height (T) (mm)		0.46	0.38	0.46	0.53	0.41	0.41
Frequency (Hz)		7000 ± 500	3300 ± 500	2900 ± 300	2800 ± 500	1500 ± 300	1100 ± 500
Resonant Impedance (ȳ)		250 Max.	200 Max.	500 Max.	250 Max.	500 Max.	800 Max.
Capacitance ± 30 % (pF)		13000	35000	23000	40000	40000	60000

- dimensions

Top View

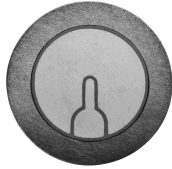


Side View



all dimensions are in mm

- DB-E648 Self Drive Piezo Element

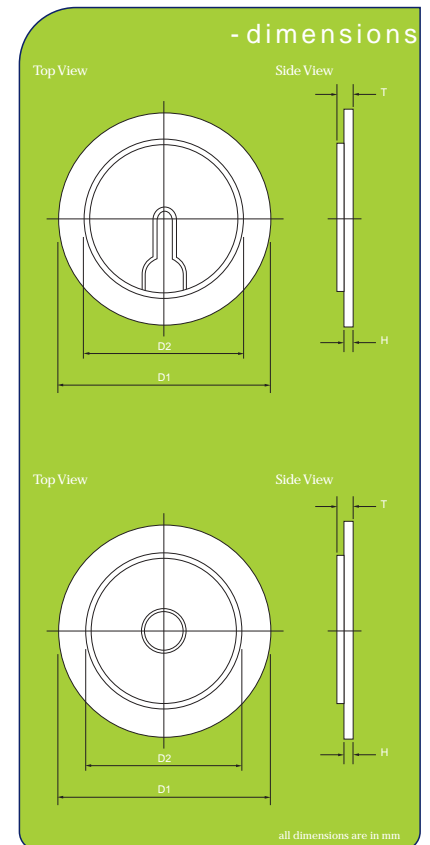


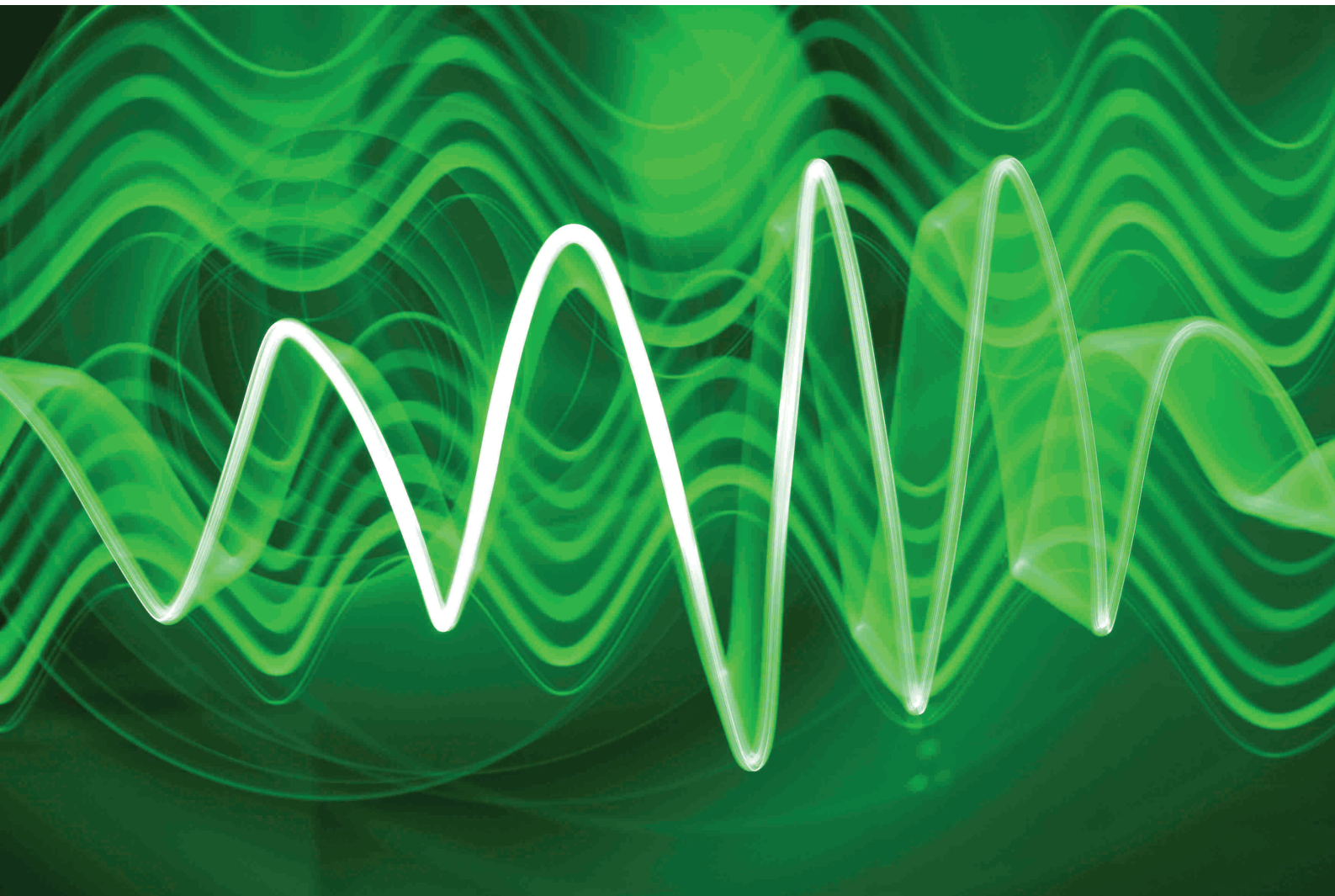
- electrical specifications

Model	64FE200390	64FE270300
Diameter (D1) (Ømm)	20	27
Diameter (D2) (Ømm)	15	20
Metal Thickness (H) (mm)	0.1	0.15
Total Height (T) (mm)	0.22	0.32
Frequency (Hz)	3900 ± 500	3000 ± 300
Resonant Impedance (ȳ)	400 Max.	300 Max.
Capacitance ± 30 % (pF)	Cm : 25000 / Cf: 3000	Cm : 30000 / Cf: 3100

- electrical specifications

Model	64FE350320	64FE350260
Diameter (D1) (Ømm)	34.55	35
Diameter (D2) (Ømm)	25	25
Metal Thickness (H) (mm)	0.3	0.25
Total Height (T) (mm)	0.52	0.48
Frequency (Hz)	3200 ± 300	2600 ± 300
Resonant Impedance (ȳ)	200 Max.	200 Max.
Capacitance ± 30 % (pF)	Cm : 37000 / Cf: 4600	Cm : 36000 / Cf: 4000





08.

Microphone

- MEMS Microphone
- Back Electret Condenser Microphone
- Omnidirectional Electret Condenser Microphone
- Unidirectional Electret Condenser Microphone
- Noise Cancelling Electret Condenser Microphone

Microphone

- selection guide

MEMS Microphone

IMO Series	Model	Diameter (mm)	Height (mm)	Sensitivity (dB)	Power Supply (Vs) (V)	Resistance Loading (RL) (Ω)	Frequency Range (Hz)	Max Current (mA)	S/N Ratio (dB)	Page No.
UC4545	UC4545TD423C3	4.5 x 4.5	1.45	- 42 ± 3	2.2	2.2K	100 ~ 16000	0.15	> 57	093
RC4738	RC4738TD423C3	4.72 x 3.76	1.25	- 42 ± 3	2.2	2.2K	100 ~ 16000	0.2	> 55	093
RC6038	RC6038TD423C3	6.15 x 3.76	1.45	- 42 ± 3	2.2	2.2K	100 ~ 16000	0.15	> 57	093

Back Electret Condenser Microphone

DB Series	Model	Diameter (Ømm)	Height (mm)	Sensitivity (dB)	Power Supply (Vs) (V)	Resistance Loading (RL) (Ω)	Frequency Range (Hz)	Max Current (mA)	S/N Ratio (dB)	Page No.
RBF4018	RBF4018ED443	5 X 4.2	1.8	- 44 ± 3	3	2.2K	100 ~ 10000	0.5	> 55	094
CBF4518	CBF4518CD443	Ø 4.5	1.8	- 44 ± 3	2	2.2K	100 ~ 10000	0.5	> 60	094
SBF4518	SBF4518CD443	4.8 X 4.8	1.8	- 44 ± 3	2	2.2K	50 ~ 16000	0.5	> 60	094
SBF6016	SBF6016ED443	6.4 X 6.4	1.6	- 44 ± 3	3	2.2K	50 ~ 16000	0.5	> 60	095
BF6016	BF6016ED422	Ø 6	1.6	- 42 ± 2	3	2.2K	50 ~ 16000	0.5	> 60	095

Omnidirectional Electret Condenser Microphone

IMO Series	Model	Diameter (Ømm)	Height (mm)	Sensitivity (dB)	Power Supply (Vs) (V)	Resistance Loading (RL) (Ω)	Frequency Range (Hz)	Max Current (mA)	S/N Ratio (dB)	Page No.
IB3015	IB3015CD443	3	1.5	- 44 ± 3	2	2.2K	100 ~ 10000	0.5	> 60	095
C4015	C4015CD443	4	1.5	- 44 ± 3	2	2.2K	100 ~ 10000	0.5	> 60	096
C6022	C6022CD403	6	2.2	- 40 ± 3	2	2.2K	50 ~ 16000	0.5	> 60	096
C6027	C6027CD423	6	2.7	- 42 ± 3	2	2.2K	50 ~ 16000	0.5	> 60	096
C6052	C6052CD423	6	5.2	- 42 ± 3	2	2.2K	50 ~ 16000	0.5	> 60	097
C9745	C9745BD403	9.7	4.5	- 40 ± 3	1.5	2.2K	50 ~ 16000	0.5	> 60	097
C9767	C9767BD403	9.7	6.7	- 40 ± 3	1.5	2.2K	50 ~ 16000	0.5	> 60	097

Unidirectional Electret Condenser Microphone

IMO Series	Model	Diameter (Ømm)	Height (mm)	Sensitivity (dB)	Power Supply (Vs) (V)	Resistance Loading (RL) (Ω)	Frequency Range (Hz)	Max Current (mA)	S/N Ratio (dB)	Page No.
U6027	U6027CD464	6	2.7	- 46 ± 4	2	2.2K	100 ~ 10000	0.5	> 55	098
U6035	U6035CD464	6	3.5	- 46 ± 4	2	2.2K	100 ~ 10000	0.5	> 55	098

Noise Cancelling Electret Condenser Microphone

IMO Series	Model	Diameter (Ømm)	Height (mm)	Sensitivity (dB)	Power Supply (Vs) (V)	Resistance Loading (RL) (Ω)	Frequency Range (Hz)	Max Current (mA)	S/N Ratio (dB)	Page No.
N4530	N4530CD543	4.5	3.0	- 53 ± 3 (at L = 50cm)	2	2.2K	100 ~ 10000	0.5	> 55	098
N9752	N9752BA544	9.7	5.2	- 54 ± 4 (at L = 50cm)	1.5	680	100 ~ 10000	0.5	> 55	099

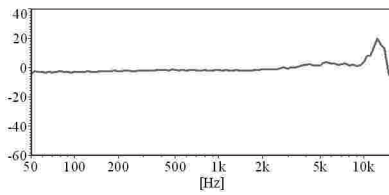
- UC4545 MEMS Microphone



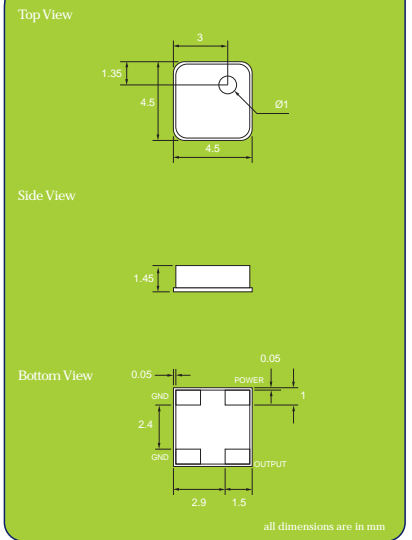
- electrical specifications

Model	UC4545TD423C3	
Directivity	Omnidirectional	
Operating Voltage Range	(V)	1.5 ~ 3.6
Power Supply (Vs)	(V)	2.2
Resistance Loading (RL)	(Ω)	2.2 K
Sensitivity (0 dB = 1V / Pa) at 1K Hz	(dB)	-42 \pm 3
Max. Current	(mA)	0.15
Frequency Range	(Hz)	100 ~ 16000
Voltage Deduction Characteristic	Within 3 dB at 2 V	
S / N Ratio	(dB)	More than 57

- Frequency Response



- dimensions



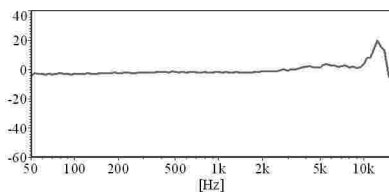
- RC4738 MEMS Microphone



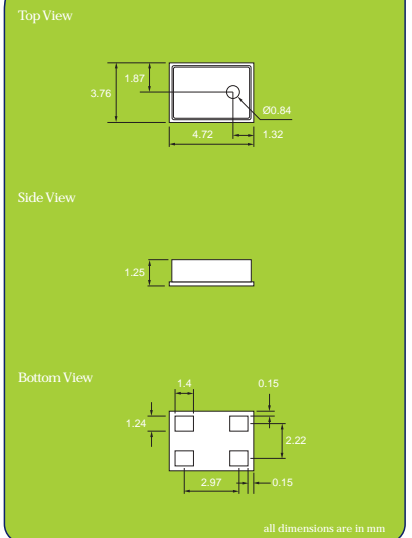
- electrical specifications

Model	RC4738TD423C3	
Directivity	Omnidirectional	
Operating Voltage Range	(V)	1.5 ~ 3.6
Power Supply (Vs)	(V)	2.2
Resistance Loading (RL)	(Ω)	2.2 K
Sensitivity (0 dB = 1V / Pa) at 1K Hz	(dB)	-42 \pm 3
Max. Current	(mA)	0.2
Frequency Range	(Hz)	100 ~ 16000
Voltage Deduction Characteristic	Within 3 dB at 2 V	
S / N Ratio	(dB)	More than 55

- Frequency Response



- dimensions



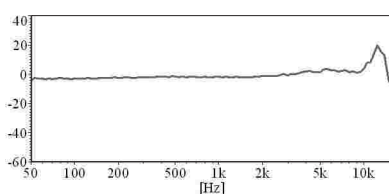
- RC6038 MEMS Microphone



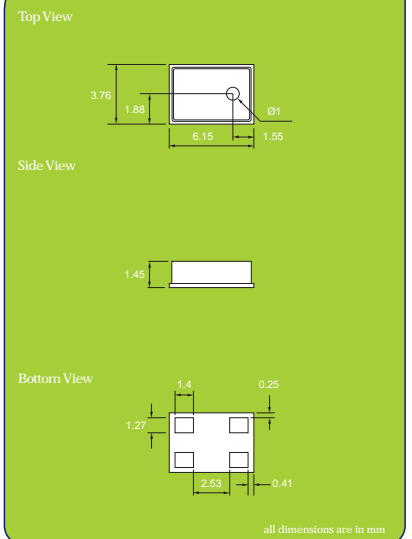
- electrical specifications

Model	RC6038TD423C3	
Directivity	Omnidirectional	
Operating Voltage Range	(V)	1.5 ~ 3.6
Power Supply (Vs)	(V)	2.2
Resistance Loading (RL)	(Ω)	2.2 K
Sensitivity (0 dB = 1V / Pa) at 1K Hz	(dB)	-42 \pm 3
Max. Current	(mA)	0.15
Frequency Range	(Hz)	100 ~ 16000
Voltage Deduction Characteristic	Within 3 dB at 2 V	
S / N Ratio	(dB)	More than 57

- Frequency Response



- dimensions



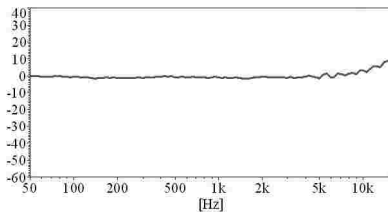
- RBF4018 Back Electret Condenser Microphone

- electrical specifications

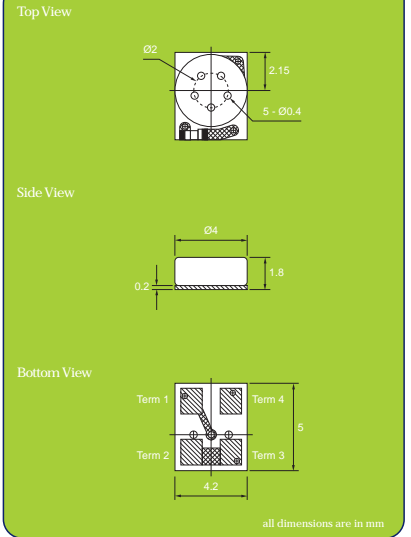
Model	RBF4018ED443	
Directivity	Omnidirectional	
Operating Voltage Range	(V)	1 ~ 10
Power Supply (Vs)	(V)	3
Resistance Loading (RL)	(Ω)	2.2 K
Sensitivity (0 dB = 1V / Pa) at 1K Hz	(dB)	-44 \pm 3
Max. Current	(mA)	0.5
Frequency Range	(Hz)	100 ~ 10000
Voltage Deduction Characteristic	Within 3 dB at 2 V	
S / N Ratio	(dB)	More than 55



- Frequency Response



- dimensions



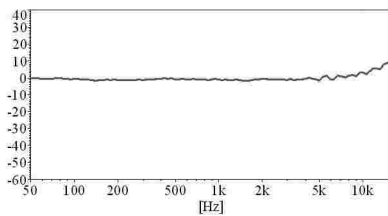
- CBF4518 Back Electret Condenser Microphone

- electrical specifications

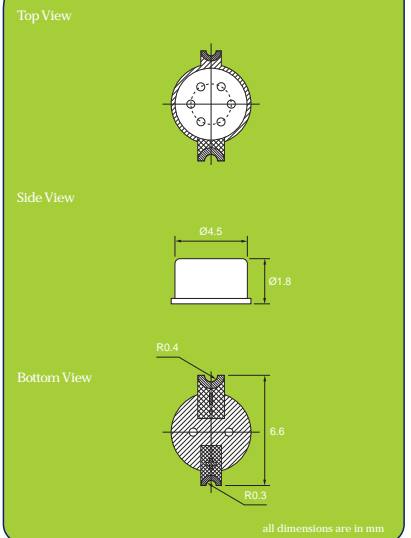
Model	CBF4518CD443	
Directivity	Omnidirectional	
Operating Voltage Range	(V)	1 ~ 10
Power Supply (Vs)	(V)	2
Resistance Loading (RL)	(Ω)	2.2 K
Sensitivity (0 dB = 1V / Pa) at 1K Hz	(dB)	-44 \pm 3
Max. Current	(mA)	0.5
Frequency Range	(Hz)	100 ~ 10000
Voltage Deduction Characteristic	Within 3 dB at 1.5 V	
S / N Ratio	(dB)	More than 60



- Frequency Response



- dimensions



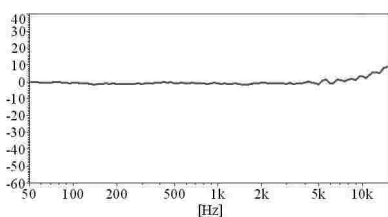
- SBF4518 Back Electret Condenser Microphone

- electrical specifications

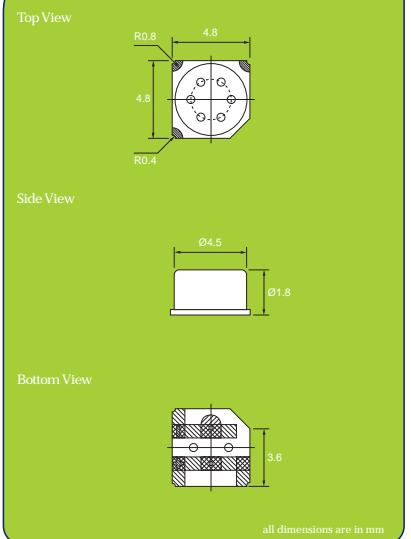
Model	SBF4518CD443	
Directivity	Omnidirectional	
Operating Voltage Range	(V)	1 ~ 10
Power Supply (Vs)	(V)	2
Resistance Loading (RL)	(Ω)	2.2 K
Sensitivity (0 dB = 1V / Pa) at 1K Hz	(dB)	-44 \pm 3
Max. Current	(mA)	0.5
Frequency Range	(Hz)	50 ~ 16000
Voltage Deduction Characteristic	Within 3 dB at 1.5 V	
S / N Ratio	(dB)	More than 60



- Frequency Response



- dimensions



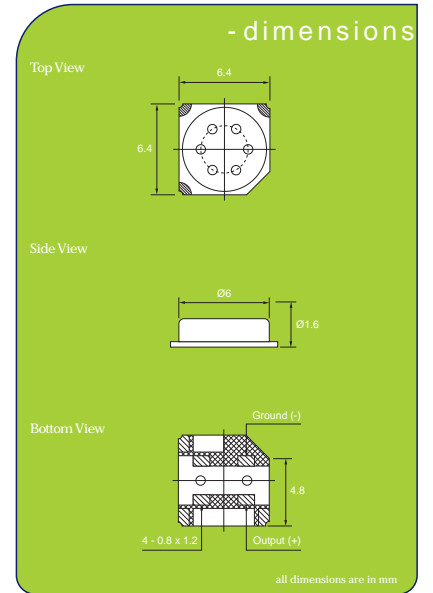
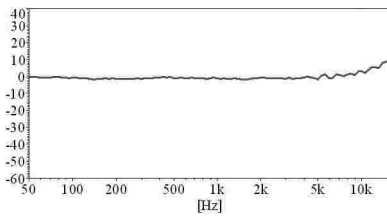
- SBF6016 Back Electret Condenser Microphone



- electrical specifications

Model	SBF6016ED443	
Directivity	Omnidirectional	
Operating Voltage Range	(V)	1 - 10
Power Supply (Vs)	(V)	3
Resistance Loading (RL)	(Ω)	2.2 K
Sensitivity (0 dB = 1V / Pa) at 1K Hz	(dB)	-44 ± 3
Max. Current	(mA)	0.5
Frequency Range	(Hz)	50 - 16000
Voltage Deduction Characteristic	Within 3 dB at 2 V	
S / N Ratio	(dB)	More than 60

- Frequency Response



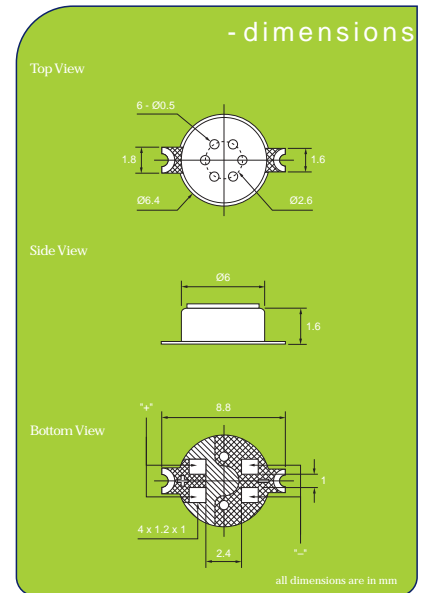
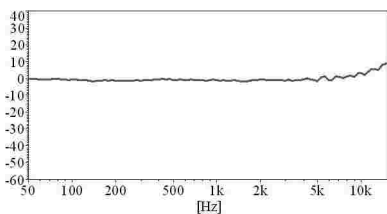
- BF6016 Back Electret Condenser Microphone



- electrical specifications

Model	BF6016ED422	
Directivity	Omnidirectional	
Operating Voltage Range	(V)	1 - 10
Power Supply (Vs)	(V)	3
Resistance Loading (RL)	(Ω)	2.2 K
Sensitivity (0 dB = 1V / Pa) at 1K Hz	(dB)	-42 ± 2
Max. Current	(mA)	0.5
Frequency Range	(Hz)	50 - 16000
Voltage Deduction Characteristic	Within 3 dB at 2 V	
S / N Ratio	(dB)	More than 60

- Frequency Response



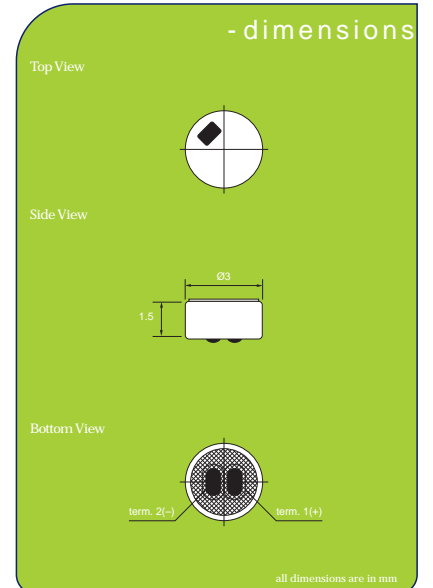
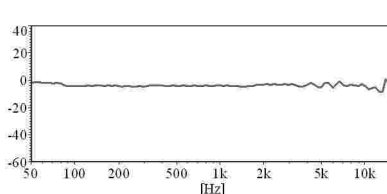
- IB3015 Omnidirectional Electret Condenser Microphone



- electrical specifications

Model	IB3015CD443	
Directivity	Omnidirectional	
Operating Voltage Range	(V)	1.4 - 5
Power Supply (Vs)	(V)	2
Resistance Loading (RL)	(Ω)	2.2 K
Sensitivity (0 dB = 1V / Pa) at 1K Hz	(dB)	-44 ± 3
Max. Current	(mA)	0.5
Frequency Range	(Hz)	100 - 10000
Voltage Deduction Characteristic	Within 3 dB at 1.5 V	
S / N Ratio	(dB)	More than 60

- Frequency Response



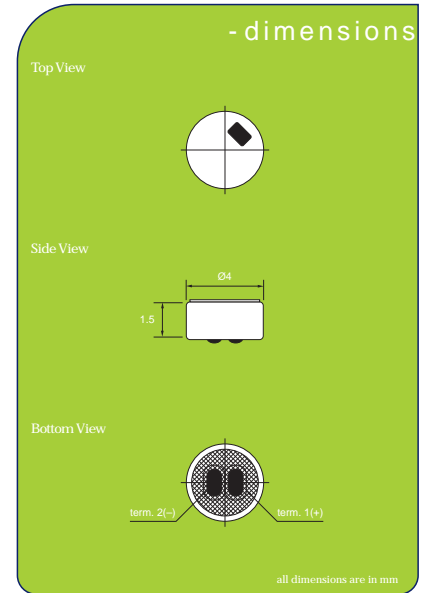
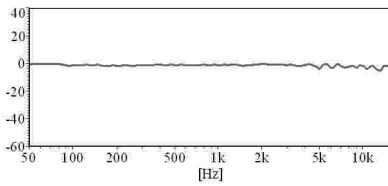
- C4015 Omnidirectional Electret Condenser Microphone

- electrical specifications

Model	C4015CD443	
Directivity	Omnidirectional	
Operating Voltage Range	(V)	1 - 10
Power Supply (Vs)	(V)	2
Resistance Loading (RL)	(Ω)	2.2 K
Sensitivity (0 dB = 1V / Pa) at 1K Hz	(dB)	-44 ± 3
Max. Current	(mA)	0.5
Frequency Range	(Hz)	100 - 10000
Voltage Deduction Characteristic	Within 3 dB at 1.5 V	
S / N Ratio	(dB)	More than 60



- Frequency Response



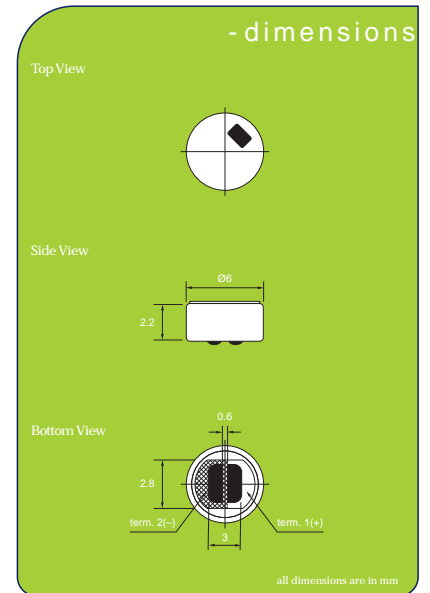
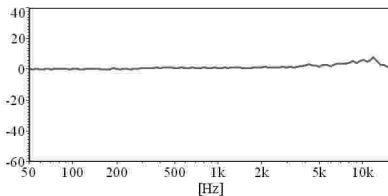
- C6022 Omnidirectional Electret Condenser Microphone

- electrical specifications

Model	C6022CD403	
Directivity	Omnidirectional	
Operating Voltage Range	(V)	1 - 10
Power Supply (Vs)	(V)	2
Resistance Loading (RL)	(Ω)	2.2 K
Sensitivity (0 dB = 1V / Pa) at 1K Hz	(dB)	-40 ± 3
Max. Current	(mA)	0.5
Frequency Range	(Hz)	50 - 16000
Voltage Deduction Characteristic	Within 3 dB at 1.5 V	
S / N Ratio	(dB)	More than 60



- Frequency Response



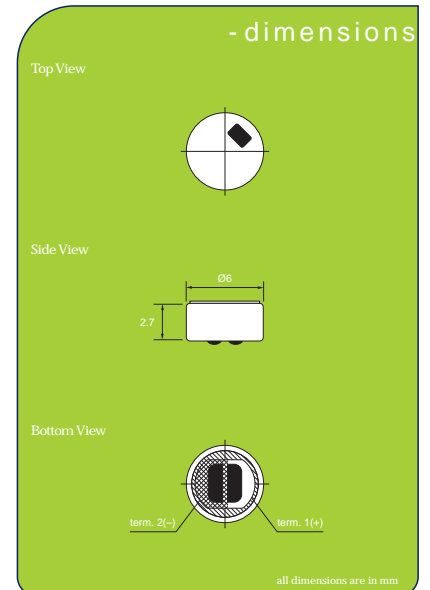
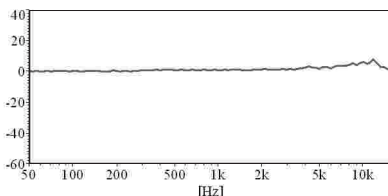
- C6027 Omnidirectional Electret Condenser Microphone

- electrical specifications

Model	C6027CD423	
Directivity	Omnidirectional	
Operating Voltage Range	(V)	1 - 10
Power Supply (Vs)	(V)	2
Resistance Loading (RL)	(Ω)	2.2 K
Sensitivity (0 dB = 1V / Pa) at 1K Hz	(dB)	-42 ± 3
Max. Current	(mA)	0.5
Frequency Range	(Hz)	50 - 16000
Voltage Deduction Characteristic	Within 3 dB at 1.5 V	
S / N Ratio	(dB)	More than 60



- Frequency Response



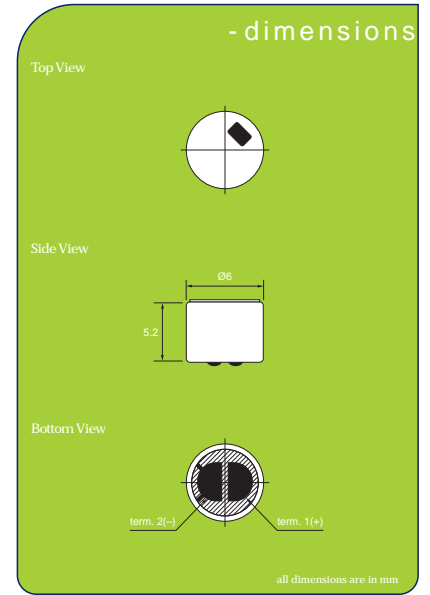
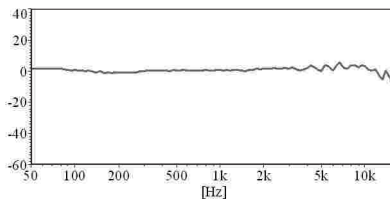
- C6052 Omnidirectional Electret Condenser Microphone

- electrical specifications

Model	C6052CD423	
Directivity	Omnidirectional	
Operating Voltage Range	(V)	1 - 10
Power Supply (Vs)	(V)	2
Resistance Loading (RL)	(Ω)	2.2 K
Sensitivity (0 dB = 1V / Pa) at 1K Hz	(dB)	-42 \pm 3
Max. Current	(mA)	0.5
Frequency Range	(Hz)	50 - 16000
Voltage Deduction Characteristic	Within 3 dB at 1.5 V	
S / N Ratio	(dB)	More than 60



- Frequency Response



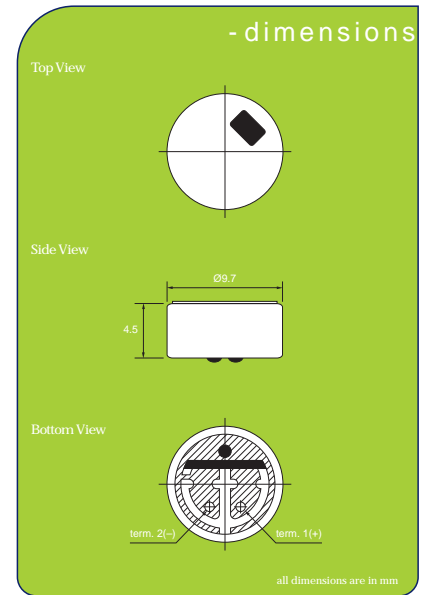
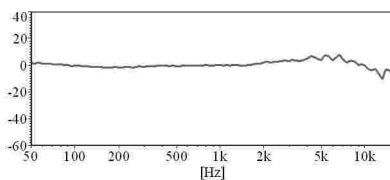
- C9745 Omnidirectional Electret Condenser Microphone

- electrical specifications

Model	C9745BD403	
Directivity	Omnidirectional	
Operating Voltage Range	(V)	1 - 10
Power Supply (Vs)	(V)	1.5
Resistance Loading (RL)	(Ω)	2.2 K
Sensitivity (0 dB = 1V / Pa) at 1K Hz	(dB)	-40 \pm 3
Max. Current	(mA)	0.5
Frequency Range	(Hz)	50 - 16000
Voltage Deduction Characteristic	Within 3 dB at 1.1 V	
S / N Ratio	(dB)	More than 60



- Frequency Response



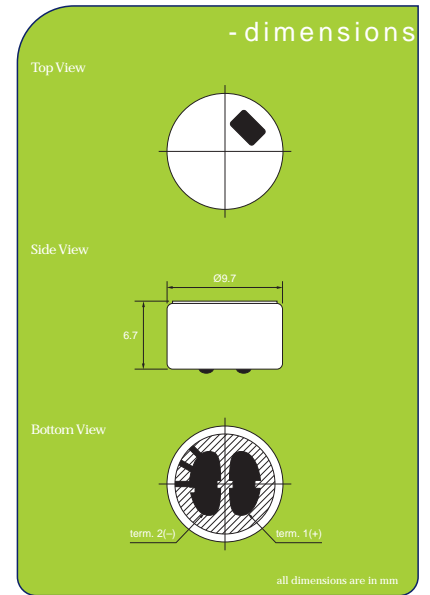
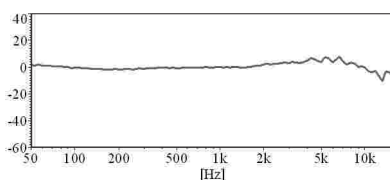
- C9767 Omnidirectional Electret Condenser Microphone

- electrical specifications

Model	C9767BD403	
Directivity	Omnidirectional	
Operating Voltage Range	(V)	1 - 10
Power Supply (Vs)	(V)	1.5
Resistance Loading (RL)	(Ω)	2.2 K
Sensitivity (0 dB = 1V / Pa) at 1K Hz	(dB)	-40 \pm 3
Max. Current	(mA)	0.5
Frequency Range	(Hz)	50 - 16000
Voltage Deduction Characteristic	Within 3 dB at 1.1 V	
S / N Ratio	(dB)	More than 60



- Frequency Response



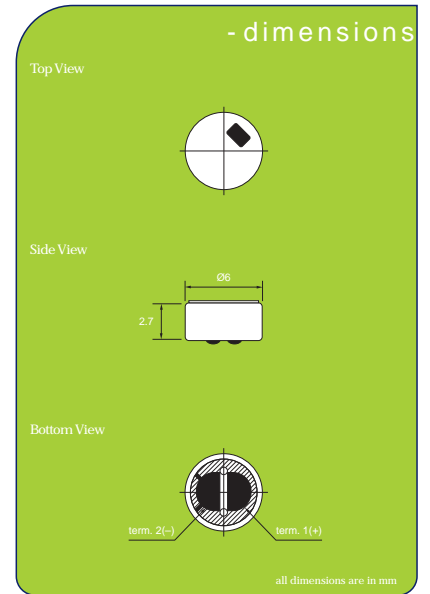
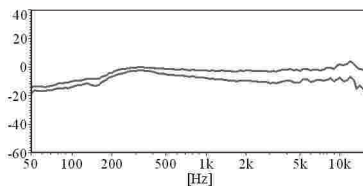
- U6027 Unidirectional Electret Condenser Microphone



- electrical specifications

Model	U6027CD464	
Directivity	Unidirectional	
Operating Voltage Range	(V)	1 ~ 10
Power Supply (Vs)	(V)	2
Resistance Loading (RL)	(Ω)	2.2 K
Sensitivity (0 dB = 1V / Pa) at 1K Hz	(dB)	-46 \pm 4
Max. Current	(mA)	0.5
Frequency Range	(Hz)	100 ~ 10000
Voltage Deduction Characteristic	Within 3 dB at 1.5 V	
S / N Ratio	(dB)	More than 55

- Frequency Response



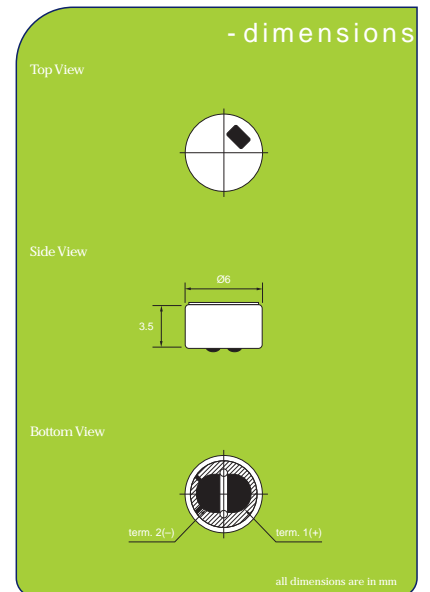
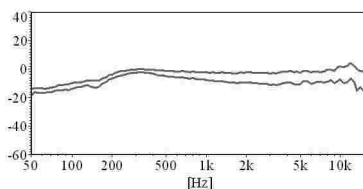
- U6035 Unidirectional Electret Condenser Microphone



- electrical specifications

Model	U6035CD464	
Directivity	Unidirectional	
Operating Voltage Range	(V)	1 ~ 10
Power Supply (Vs)	(V)	2
Resistance Loading (RL)	(Ω)	2.2 K
Sensitivity (0 dB = 1V / Pa) at 1K Hz	(dB)	-46 \pm 4
Max. Current	(mA)	0.5
Frequency Range	(Hz)	100 ~ 10000
Voltage Deduction Characteristic	Within 3 dB at 1.5 V	
S / N Ratio	(dB)	More than 55

- Frequency Response



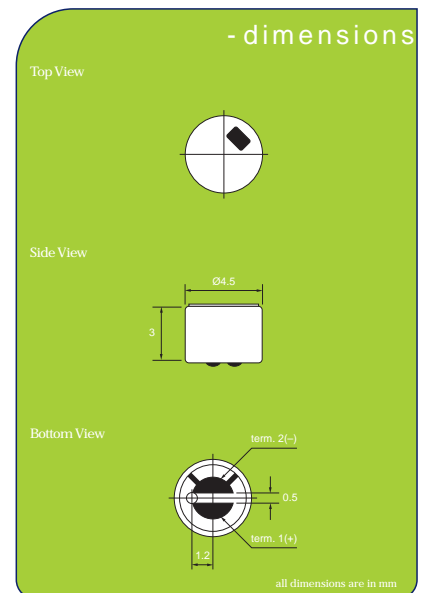
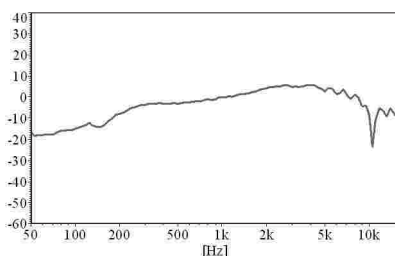
- N4530 Noise Cancelling Electret Condenser Microphone



- electrical specifications

Model	N4530CD543	
Directivity	Noise Cancelling	
Operating Voltage Range	(V)	1 ~ 10
Power Supply (Vs)	(V)	2
Resistance Loading (RL)	(Ω)	2.2 K
Sensitivity (0 dB = 1V / Pa) at 1K Hz	(dB)	-54 \pm 3 (at L = 50 cm)
Max. Current	(mA)	0.5
Frequency Range	(Hz)	100 ~ 10000
Voltage Deduction Characteristic	Within 3 dB at 1.5 V	
S / N Ratio	(dB)	More than 55

- Frequency Response



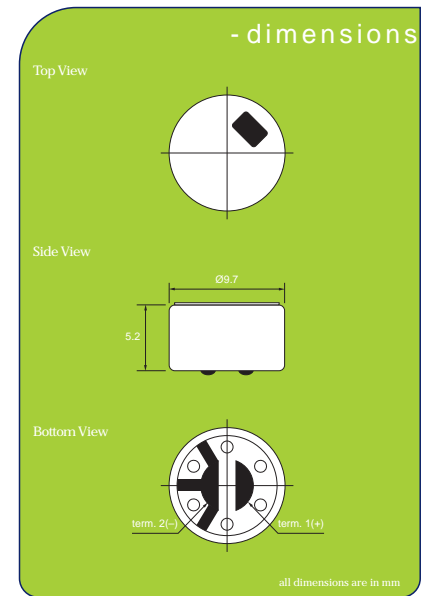
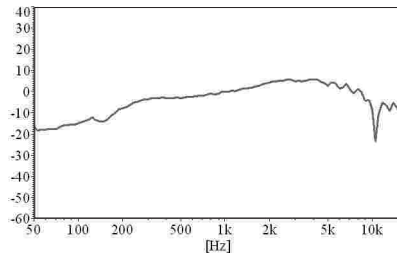
- N9752 Noise Cancelling Electret Condenser Microphone

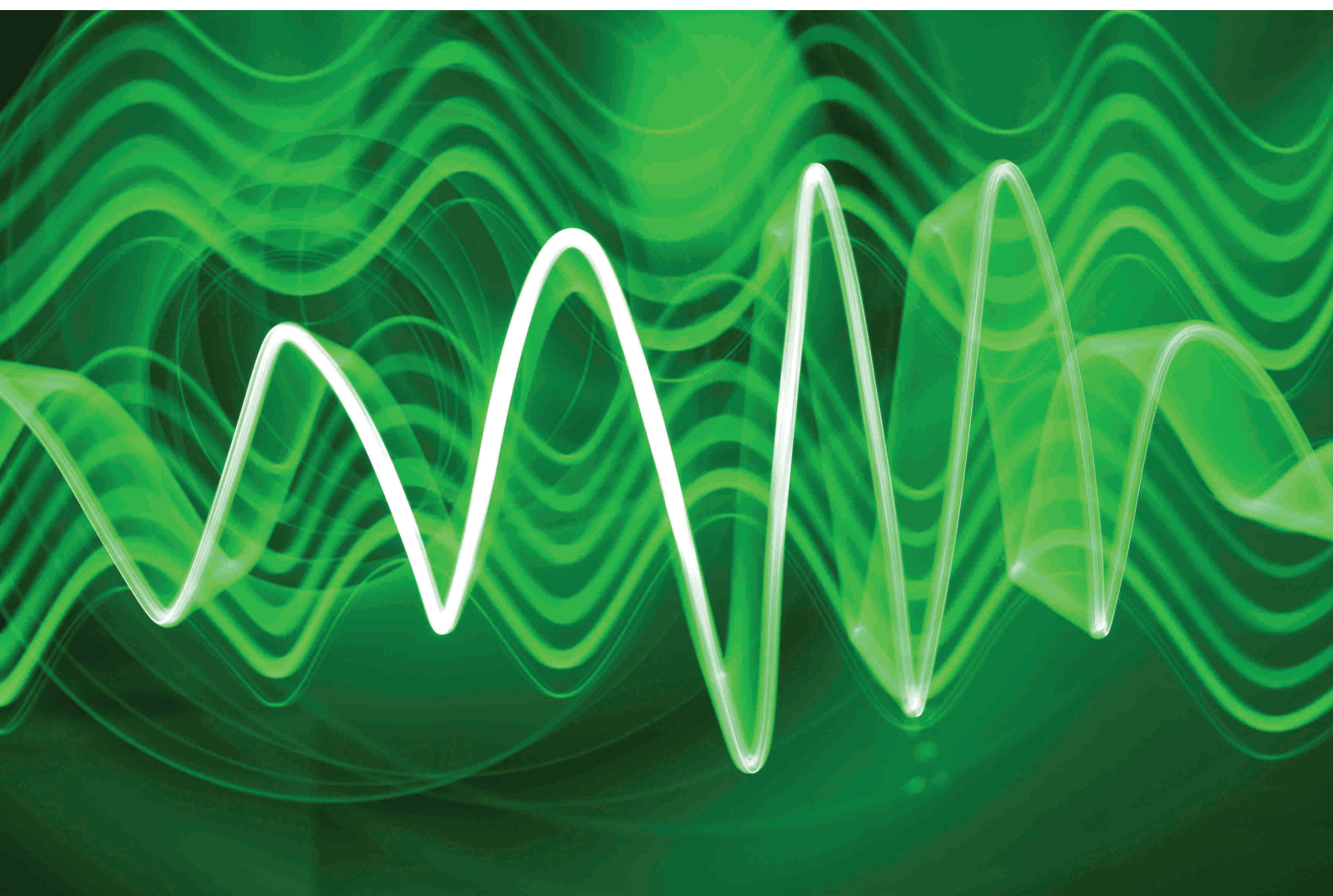
- electrical specifications



Model	N9752BA544	
Directivity		Noise Cancelling
Operating Voltage Range	(V)	1 - 10
Power Supply (Vs)	(V)	1.5
Resistance Loading (RL)	(Ω)	680
Sensitivity (0 dB = 1V / Pa) at 1K Hz	(dB)	- 54 \pm 4 (at L = 50 cm)
Max. Current	(mA)	0.5
Frequency Range	(Hz)	100 - 10000
Voltage Deduction Characteristic		Within 3 dB at 1.1 V
S / N Ratio	(dB)	More than 55

- Frequency Response





09. **Speaker**

- Mylar Speaker
- Loud Speaker
- Notebook Speaker

Speaker

- selection guide

Mylar Speaker

IMO Series	Model	Diameter (mm)	Height (mm)	Impedance (Ω)	Sound Output (dB)	Resonance Frequency (f0) (Hz)	Respose Frequency f0~(Hz)	Rated Power (W)	Max Power (W)	Page No.
UM1313IA	UM1313IA085008	13 x 13	4	8	88 ± 3	850	20000	0.7	1	104
UM1511IA	UM1511IA085008	15 x 11	2.9	8	86 ± 3	850	20000	0.5	0.8	104
UM1515IA	UM1515IA080008	15 x 15	4	8	87 ± 3	800	20000	0.5	0.8	104
M13IG	M13IG090008	Ø 13	4.6	8	90 ± 3	900	10000	0.5	0.8	105
M15IQ	M15IQ090008	Ø 15	4.6	8	88 ± 3	900	12000	0.5	0.8	105
M17II	M17II080008	Ø 17	3.9	8	90 ± 3	800	10000	0.8	1	105
M20IA	M20IA060008	Ø 20	3	8	80 ± 3	800	20000	0.3	0.5	106
M28IA	M28IA070008	Ø 28	4.9	8	83 ± 3	700	10000	1	1.5	106
M36IH	M36IH050008	Ø 36	4.9	8	90 ± 3	500	10000	0.5	0.8	106
M40IE	M40IE060008	Ø 40	5	8	96 ± 3	600	15000	1	1.5	107
OM1813IA	OM1813IA085008	18 x 13	3.5	8	89 ± 3	850	10000	0.8	1	107

Loud Speaker

IMO Series	Model	Diameter (mm)	Height (mm)	Impedance (Ω)	Sound Output (dB)	Resonance Frequency (f0) (Hz)	Respose Frequency f0~(Hz)	Rated Power (W)	Max Power (W)	Page No.
L40IA	L40IA070008	Ø 40	6.55	8	92 ± 3	700	4800	0.5	0.8	107
L50IL	L50IL045008	Ø 50	12.2	8	85 ± 3	450	5000	1	1.5	108
L66IA	L66IA038008	Ø 66	12.5	8	95 ± 3	380	4000	0.5	0.8	108

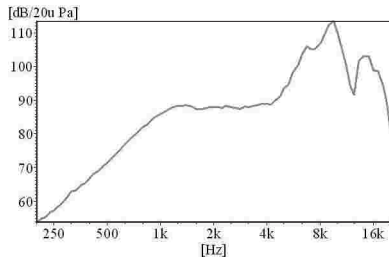
Notebook Speaker

IMO Series	Model	Diameter (mm)	Height (mm)	Impedance (Ω)	Sound Output (dB)	Resonance Frequency (f0) (Hz)	Respose Frequency f0~(Hz)	Rated Power (W)	Max Power (W)	Page No.
N25IA	N25IA090008	25 x 14.9	5	8	82 ± 3	900	20000	0.5	1	108
N40IA	N40IA045008	40 x 20	8	8	89 ± 3	450	20000	1	2	109

- UM1313IA Mylar Speaker



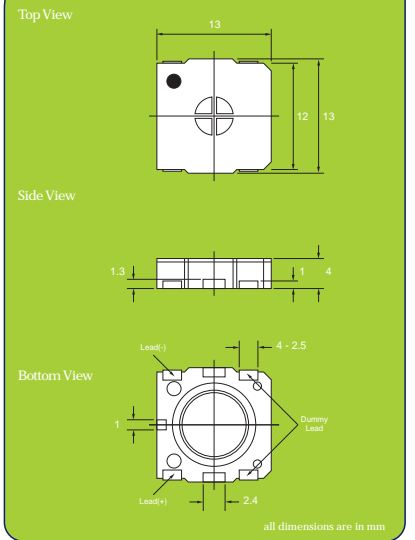
- Frequency Response



- electrical specifications

Model	UM1313IA085008	
Rated Power	(W)	0.7
Max Power	(W)	1
Impedance $\pm 20\%$ at 2KHz	(Ω)	8
Sound Output	(dB)	88 \pm 3
R. Frequency $\pm 15\%$	(Hz)	850
Response Frequency f0 to	(Hz)	20 K
Operating Temperature	($^{\circ}$ C)	- 30 ~ + 85
Weight	(g)	1.4

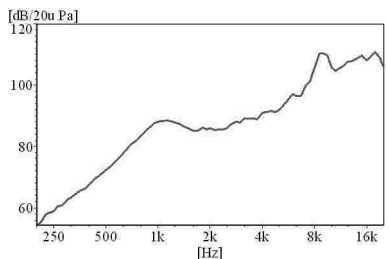
- dimensions



- UM1511IA Mylar Speaker



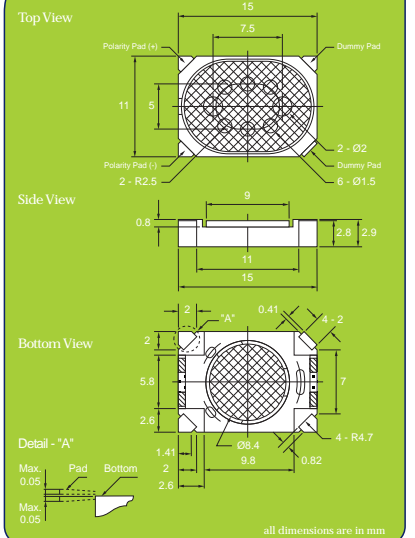
- Frequency Response



- electrical specifications

Model	UM1511IA085008	
Rated Power	(W)	0.5
Max Power	(W)	0.8
Impedance $\pm 20\%$ at 2KHz	(Ω)	8
Sound Output	(dB)	86 \pm 3
R. Frequency $\pm 15\%$	(Hz)	850
Response Frequency f0 to	(Hz)	20 K
Operating Temperature	($^{\circ}$ C)	- 30 ~ + 70
Weight	(g)	1

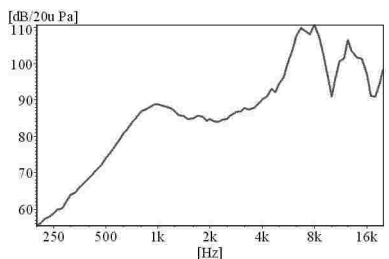
- dimensions



- UM1515IA Mylar Speaker



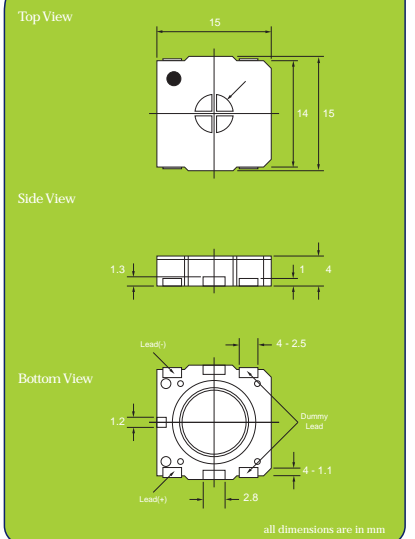
- Frequency Response



- electrical specifications

Model	UM1515IA080008	
Rated Power	(W)	0.5
Max Power	(W)	0.8
Impedance $\pm 20\%$ at 2KHz	(Ω)	8
Sound Output	(dB)	87 \pm 3
R. Frequency $\pm 15\%$	(Hz)	800
Response Frequency f0 to	(Hz)	20 K
Operating Temperature	($^{\circ}$ C)	- 30 ~ + 85
Weight	(g)	1.5

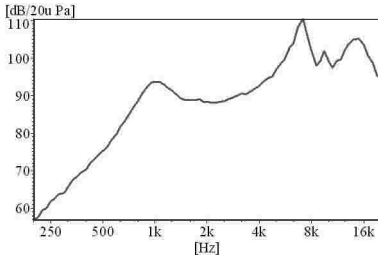
- dimensions



- M13IG Mylar Speaker



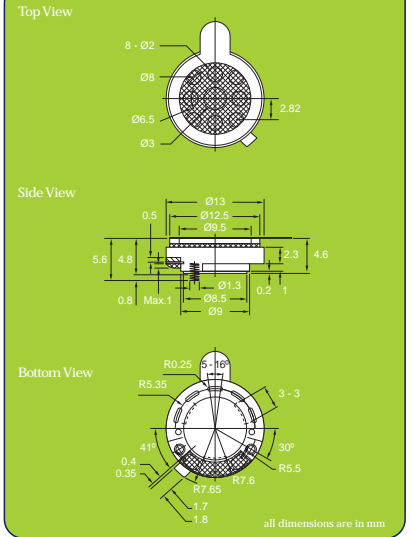
- Frequency Response



- electrical specifications

Model	M13IG090008	
Rated Power (W)		0.5
Max Power (W)		0.8
Impedance ± 15 % at 1.5KHz (Ω)		8
Sound Output (dB)		90 ± 3
R. Frequency ± 20 % (Hz)		900
Response Frequency (Hz)		250 – 10 K
Operating Temperature (°C)		- 30 ~ + 70
Weight (g)		1.3

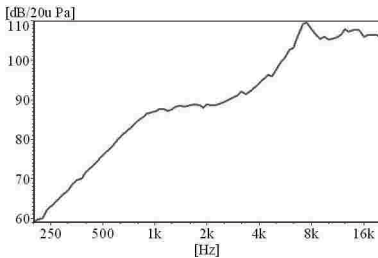
- dimensions



- M15IQ Mylar Speaker



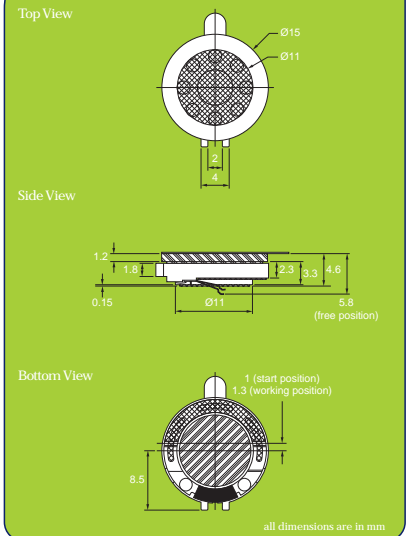
- Frequency Response



- electrical specifications

Model	M15IQ090008	
Rated Power (W)		0.5
Max Power (W)		0.8
Impedance ± 15 % at 2.5KHz (Ω)		8
Sound Output (dB)		88 ± 3
R. Frequency ± 20 % (Hz)		900
Response Frequency (Hz)		700 – 12 K
Operating Temperature (°C)		- 30 ~ + 70
Weight (g)		2

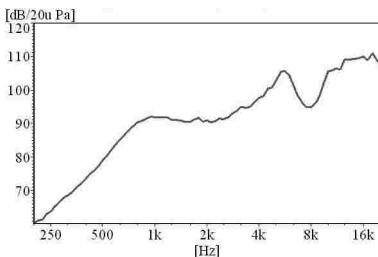
- dimensions



- M17II Mylar Speaker



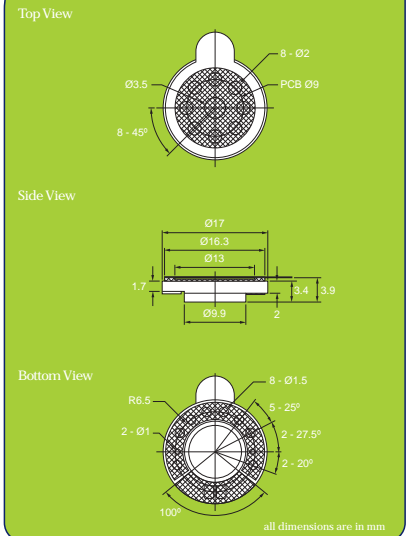
- Frequency Response



- electrical specifications

Model	M17II080008	
Rated Power (W)		0.8
Max Power (W)		1
Impedance ± 15 % at 1.5KHz (Ω)		8
Sound Output (dB)		90 ± 3
R. Frequency ± 20 % (Hz)		800
Response Frequency (Hz)		250 – 10 K
Operating Temperature (°C)		- 30 ~ + 70
Weight (g)		1.5

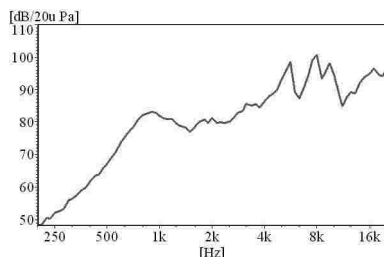
- dimensions



- M20IA Mylar Speaker



- Frequency Response

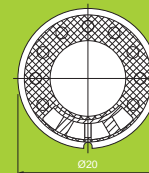


- electrical specifications

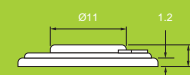
Model	M20IA080008	
Rated Power	(W)	0.3
Max Power	(W)	0.5
Impedance $\pm 15\%$ at 1KHz	(Ω)	8
Sound Output	(dB)	80 ± 3
R. Frequency $\pm 20\%$	(Hz)	800
Response Frequency f_0 to	(Hz)	20 K
Operating Temperature	($^{\circ}\text{C}$)	- 20 ~ + 55
Weight	(g)	2.4

- dimensions

Bottom View



Side View

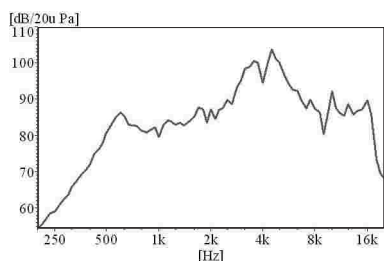


all dimensions are in mm

- M28IA Mylar Speaker



- Frequency Response

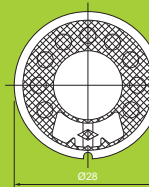


- electrical specifications

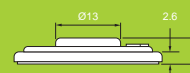
Model	M28IA070008	
Rated Power	(W)	1
Max Power	(W)	1.5
Impedance $\pm 15\%$ at 1KHz	(Ω)	8
Sound Output	(dB)	83 ± 3
R. Frequency $\pm 20\%$	(Hz)	700
Response Frequency f_0 to	(Hz)	10 K
Operating Temperature	($^{\circ}\text{C}$)	- 20 ~ + 55
Weight	(g)	5.8

- dimensions

Bottom View



Side View

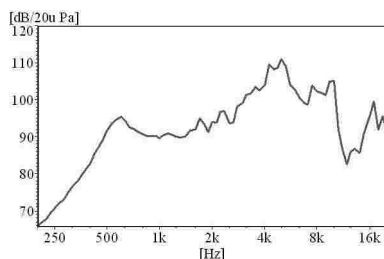


all dimensions are in mm

- M36IH Mylar Speaker



- Frequency Response

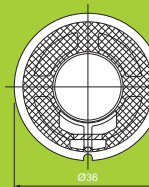


- electrical specifications

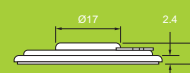
Model	M36IH050008	
Rated Power	(W)	0.5
Max Power	(W)	0.8
Impedance $\pm 15\%$ at 1KHz	(Ω)	8
Sound Output	(dB)	90 ± 3
R. Frequency $\pm 20\%$	(Hz)	500
Response Frequency f_0 to	(Hz)	10 K
Operating Temperature	($^{\circ}\text{C}$)	- 20 ~ + 55
Weight	(g)	8.6

- dimensions

Bottom View



Side View

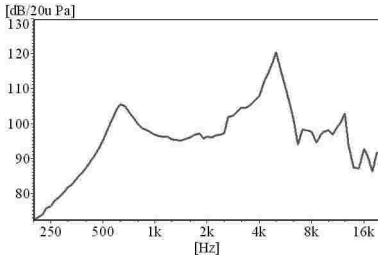


all dimensions are in mm

- M40IE Mylar Speaker



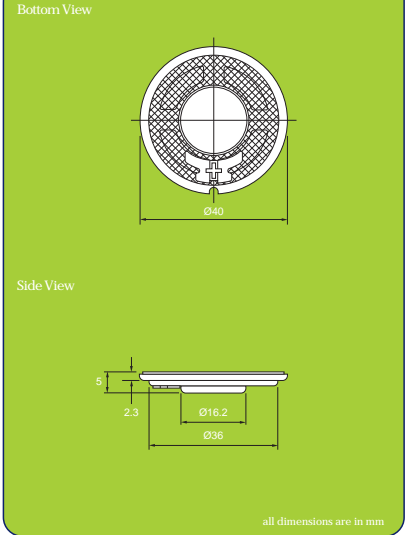
- Frequency Response



- electrical specifications

Model	M40IE060008	
Rated Power	(W)	1
Max Power	(W)	1.5
Impedance $\pm 15\%$ at 1KHz	(Ω)	8
Sound Output	(dB)	96 \pm 3
R. Frequency $\pm 20\%$	(Hz)	600
Response Frequency f0 to	(Hz)	15 K
Operating Temperature	($^{\circ}$ C)	- 20 ~ + 55
Weight	(g)	9.5

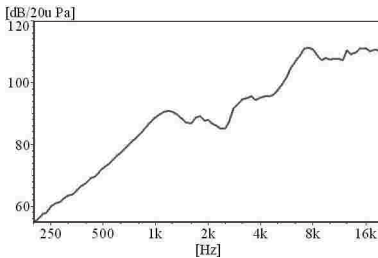
- dimensions



- OM1813IA Mylar Speaker



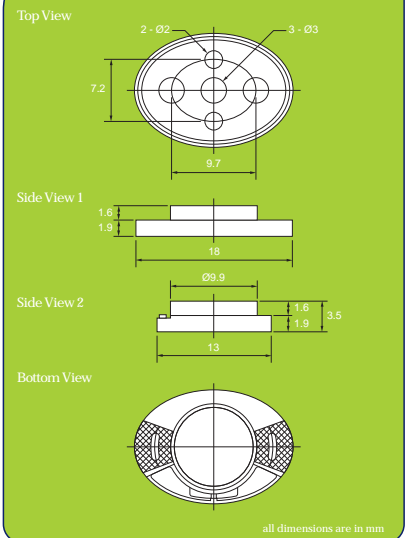
- Frequency Response



- electrical specifications

Model	OM1813IA085008	
Rated Power	(W)	0.8
Max Power	(W)	1
Impedance $\pm 15\%$ at 1.5KHz	(Ω)	8
Sound Output	(dB)	89 \pm 3
R. Frequency $\pm 20\%$	(Hz)	850
Response Frequency	(Hz)	200 ~ 10 K
Operating Temperature	($^{\circ}$ C)	- 30 ~ + 70
Weight	(g)	1.3

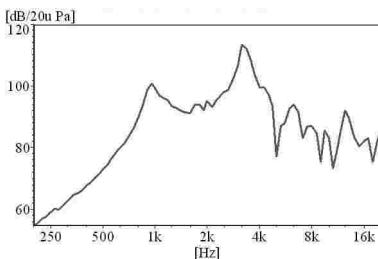
- dimensions



- L40IA Loud Speaker



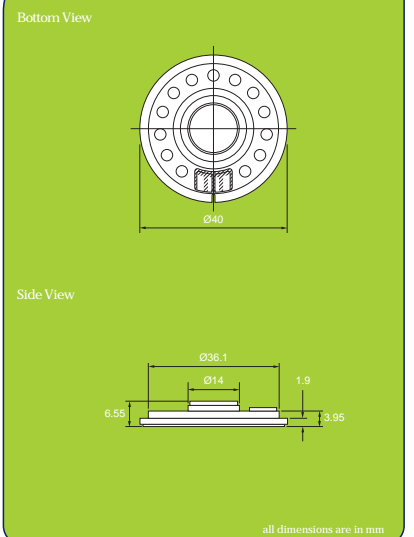
- Frequency Response



- electrical specifications

Model	L40IA070008	
Rated Power	(W)	0.5
Max Power	(W)	0.8
Impedance $\pm 15\%$ at 1KHz	(Ω)	8
Sound Output	(dB)	92 \pm 3
R. Frequency $\pm 20\%$	(Hz)	700
Response Frequency f0 to	(Hz)	4.8 K
Operating Temperature	($^{\circ}$ C)	- 20 ~ + 55
Weight	(g)	9.1

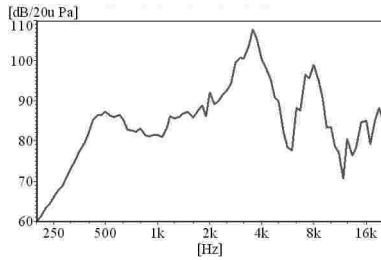
- dimensions



- L50IL Loud Speaker



- Frequency Response

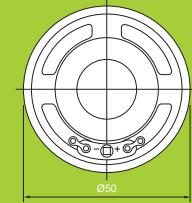


- electrical specifications

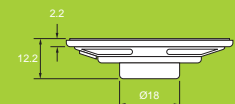
Model	L50IL045008	
Rated Power	(W)	1
Max Power	(W)	1.5
Impedance $\pm 15\%$ at 1KHz	(Ω)	8
Sound Output	(dB)	85 \pm 3
R. Frequency $\pm 20\%$	(Hz)	450
Response Frequency f0 to	(Hz)	5 K
Operating Temperature	($^{\circ}$ C)	- 20 ~ + 60
Weight	(g)	14.8

- dimensions

Bottom View



Side View

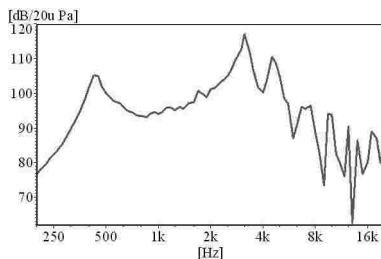


all dimensions are in mm

- L66IA Loud Speaker



- Frequency Response

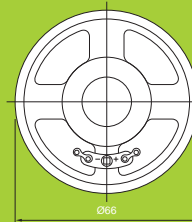


- electrical specifications

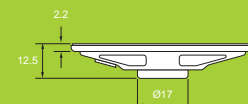
Model	L66IA038008	
Rated Power	(W)	0.5
Max Power	(W)	0.8
Impedance $\pm 15\%$ at 1KHz	(Ω)	8
Sound Output	(dB)	95 \pm 3
R. Frequency $\pm 20\%$	(Hz)	380
Response Frequency f0 to	(Hz)	4K
Operating Temperature	($^{\circ}$ C)	- 20 ~ + 55
Weight	(g)	17.2

- dimensions

Bottom View

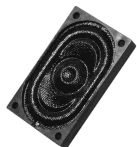


Side View

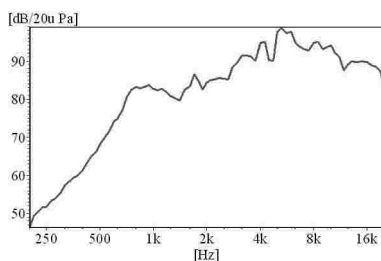


all dimensions are in mm

- N251A Notebook Speaker



- Frequency Response



- electrical specifications

Model	N251A090008	
Rated Power	(W)	0.5
Max Power	(W)	1
Impedance $\pm 15\%$ at 1KHz	(Ω)	8
Sound Output	(dB)	82 \pm 3
R. Frequency $\pm 20\%$	(Hz)	900
Response Frequency f0 to	(Hz)	20 K
Operating Temperature	($^{\circ}$ C)	- 20 ~ + 50
Weight	(g)	2

- dimensions

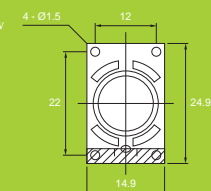
Top View



Side View



Bottom View

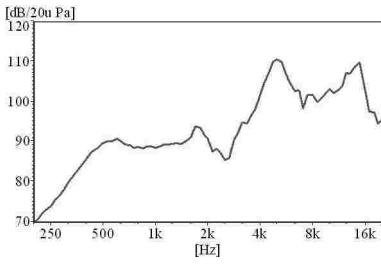


all dimensions are in mm

- N401A Notebook Speaker



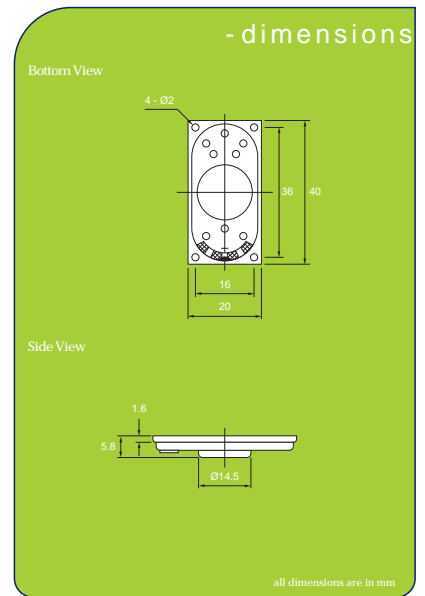
- Frequency Response

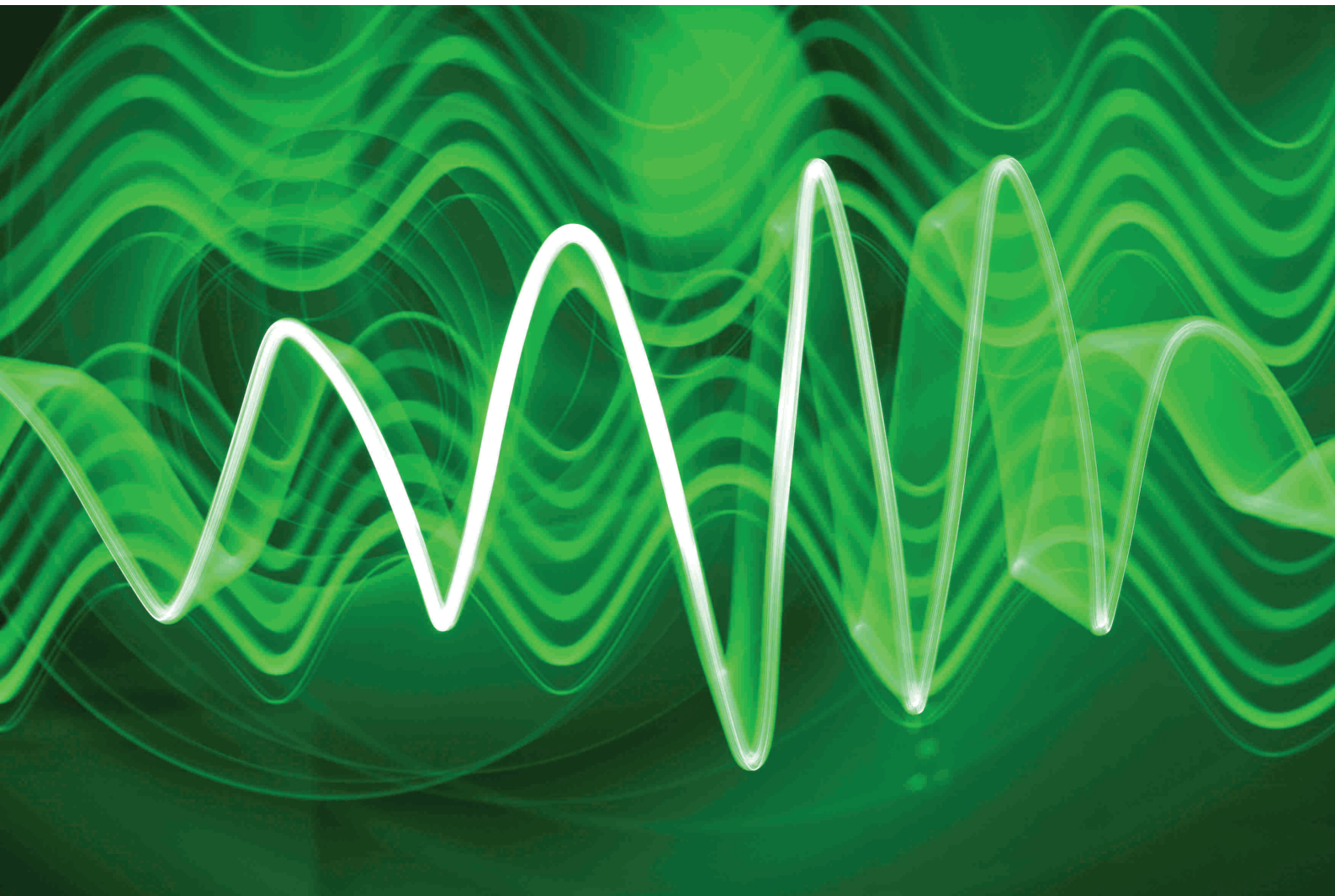


- electrical specifications

Model		N401A045008
Rated Power	(W)	1
Max Power	(W)	2
Impedance $\pm 15\%$ at 1KHz	(Ω)	8
Sound Output	(dB)	89 \pm 3
R. Frequency $\pm 20\%$	(Hz)	450
Response Frequency f0 to	(Hz)	20 K
Operating Temperature	($^{\circ}$ C)	- 40 ~ + 70
Weight	(g)	7.6

- dimensions





10. Receiver
- Dynamic Receiver

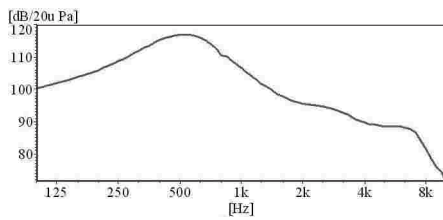
- J10B Dynamic Receiver



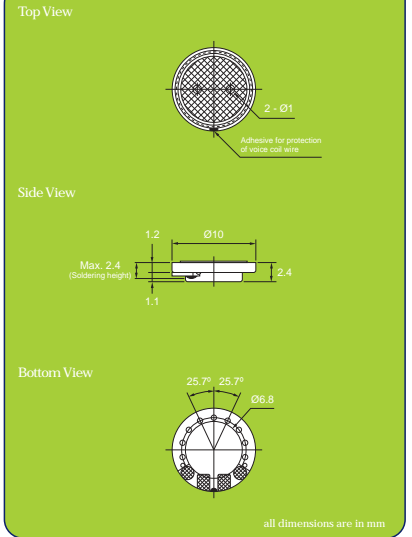
- electrical specifications

Model	J10B106032	
Sensitivity at 1K Hz (IEC318 COUPLER)	(dB)	106 ± 3
Input at 1KHz	(V)	100 m
Impedance at 1 KHz	(\hat{y})	32 ± 4.8
Frequency range	(Hz)	300 - 4000
Operating Temperature	(°C)	- 20 - + 60
Weight	(g)	0.7

- Frequency Response



- dimensions



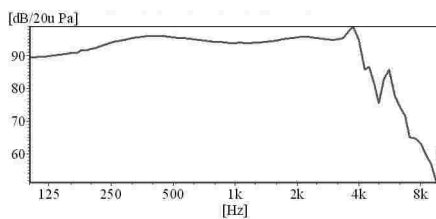
- H28A Dynamic Receiver



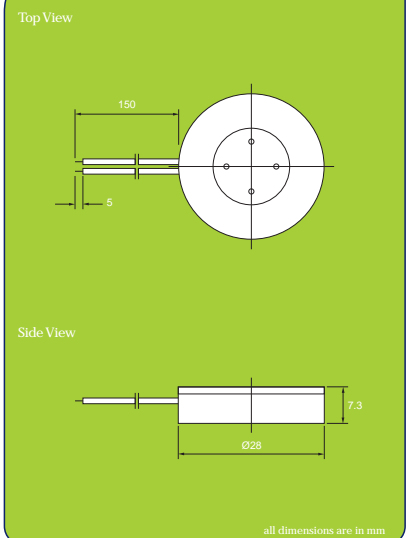
- electrical specifications

Model	H28A093150	
Sensitivity at 1K Hz (IEC318 COUPLER)	(dB)	93 ± 3
Input at 1KHz	(V)	60 m
Impedance at 1 KHz	(\hat{y})	150 ± 20 %
Frequency range	(Hz)	300 - 4000
Operating Temperature	(°C)	- 20 - + 60
Weight	(g)	8

- Frequency Response



- dimensions



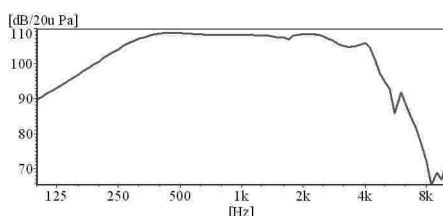
- J35A Dynamic Receiver



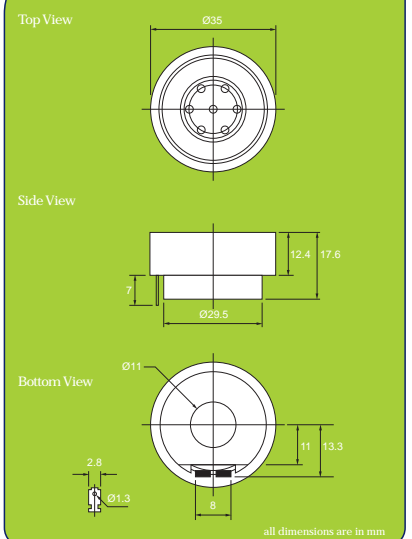
- electrical specifications

Model	J35A110150	
Sensitivity at 1K Hz (IEC318 COUPLER)	(dB)	110 ± 3
Input at 1KHz	(W)	1 m
Impedance at 1 KHz	(\hat{y})	150 ± 20 %
Frequency range	(Hz)	300 - 3400
Operating Temperature	(°C)	- 20 - + 60
Weight	(g)	35

- Frequency Response



- dimensions



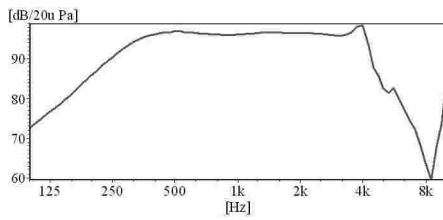
- H38A Dynamic Receiver



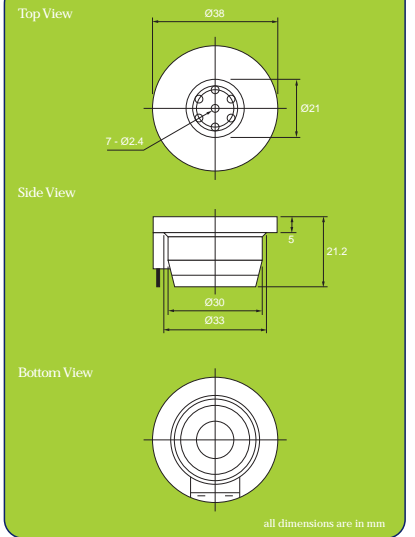
- electrical specifications

Model	H38A096150	
Sensitivity at 1K Hz (IEC318 COUPLER)	(dB)	96 ± 3
Input at 1KHz	(V)	60 m
Impedance at 1 KHz	(\hat{y})	150 ± 20 %
Frequency range	(Hz)	300 ~ 4000
Operating Temperature	(°C)	- 20 ~ + 60
Weight	(g)	36

- Frequency Response



- dimensions



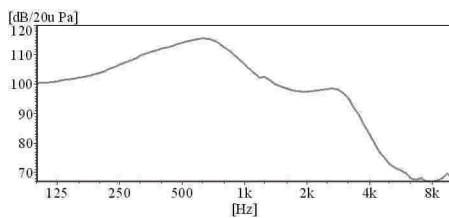
- RJ1506D Dynamic Receiver



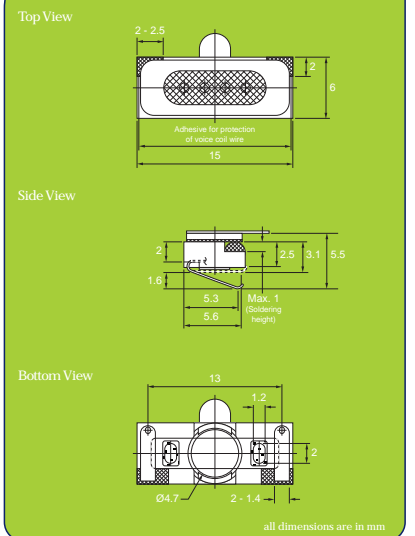
- electrical specifications

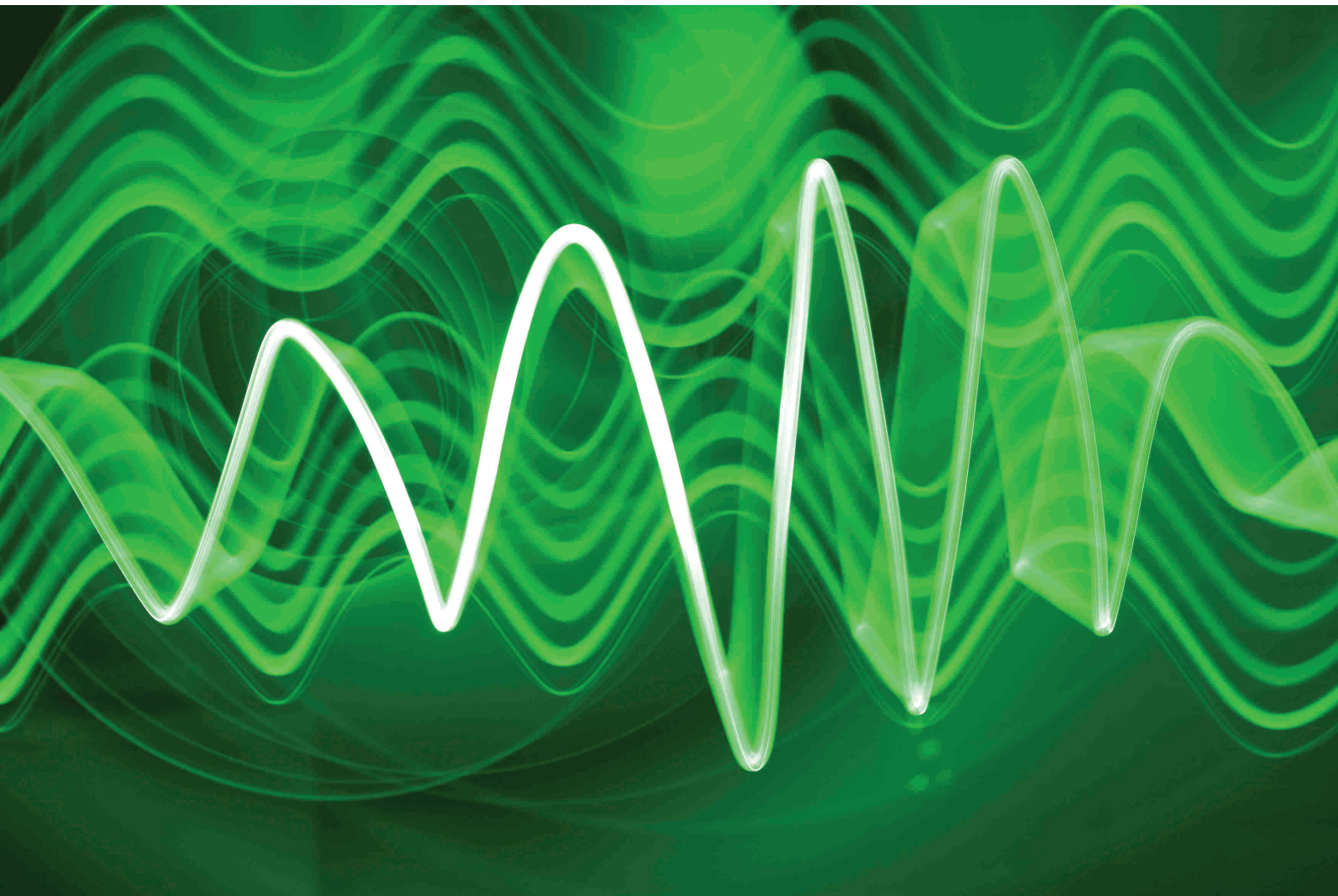
Model	RJ1506D107032	
Sensitivity at 1K Hz (IEC318 COUPLER)	(dB)	107 ± 3
Input at 1KHz	(V)	180 m
Impedance at 1.5 KHz	(\hat{y})	32 + 10 / - 20 %
Frequency range	(Hz)	300 ~ 4000
Operating Temperature	(°C)	- 30 ~ + 70
Weight	(g)	0.7

- Frequency Response



- dimensions





11.

Ultrasonic

- Asymmetric Ultrasonic Sensor
- Symmetric Ultrasonic Sensor
- Open Structure Ultrasonic Sensor
- Shock Sensor
- Ultrasonic Atomizing Transducer

Asymmetric Ultrasonic Sensor

IMO Series	Model	Construction	Function	Diameter (Ømm)	Height (mm)	Sound Pressure Level (dB)	Sensitivity (dB)	Center Frequency (Hz)	Capacitance (pF) ± 15 %	Page No.
USWA12A	USWA12A08	Waterproof Type	Dual Use	12	8	Min. 95	Min. -82	40000	1800	110
USWA14A	USWA14A09	Waterproof Type	Dual Use	14	9	Min. 95	Min. -82	40000	1800	110
USWA15A	USWA15A09	Waterproof Type	Dual Use	15	9	Min. 95	Min. -82	40000	1800	110

Symmetric Ultrasonic Sensor

IMO Series	Model	Construction	Function	Diameter (Ømm)	Height (mm)	Sound Pressure Level (dB)	Sensitivity (dB)	Center Frequency (Hz)	Capacitance (pF) ± 15 %	Page No.
USWS14A	USWS14A09	Waterproof Type	Dual Use	14	9	Min. 95	Min. -82	40000	1800	111
USWS16A	USWS16A12	Waterproof Type	Dual Use	16	12	Min. 100	Min. -82	40000	1800	111
USWS18A	USWS18A12	Waterproof Type	Dual Use	18	12	Min. 100	Min. -82	40000	1800	111

Open Structure Ultrasonic Sensor

IMO Series	Model	Construction	Function	Diameter (Ømm)	Height (mm)	Sound Pressure Level (dB)	Sensitivity (dB)	Center Frequency (Hz)	Capacitance (pF) ± 20 %	Page No.
USO10A	USO10A07	Open Type	Dual Use	9.8	7	Min. 100	Min. -70	40000	1400	112
USO16A	USO16A12	Open Type	Transmitter	16.2	12.2	Min. 118	-	40000	2100	112
USO16A	USO16A12	Open Type	Receiver	16.2	12.2	-	Min. -60	40000	2100	112
USO16B	USO16B12	Open Type	Dual Use	16	12	Min. 115	Min. -65	40000	2100	113

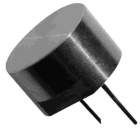
Shock Sensor

IMO Series	Model	Diameter (Ømm)	Height (mm)	Output Voltage	Capacitance (pF)	Insulation Resistance (ý)	Page No.
SST24	SST24045	24	4.5	40.0 mVp / G typ. (25 °C, 20.0 M ý Load, 10~ 1000 Hz)	12000	Min. 100M	113

Ultrasonic Atomizing Transducer

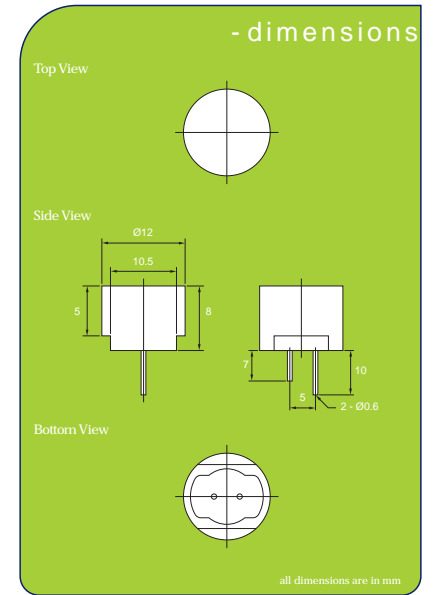
IMO Series	Model	Diameter (Ømm)	Height (mm)	Thick Resonant Frequency (Hz)	Static Capacitance (pF)	Resonant Impedance (ý)	Page No.
AS15	AS15040103K	15	4	103K	550	< 30	113
AS20	AS20012017M	20	1.23	1.7 M	1500	< 1	114
AS30	AS30058016M	30	6.2	1.66 M	1700	< 2	114

- USWA12A Asymmetric Ultrasonic Sensor



- electrical specifications

Model	USWA12A08	
Function	Transmitter & Receiver	
Sound Pressure Level (0dB = 0.0002 ubar) (dB)	Min. 95	
Sensitivity (v / ubar) (dB)	Min. - 82	
Center Frequency (Hz)	40000 ± 1000	
Capciance at 1KHz (pF)	1800 ± 15 %	
Allowable Input Voltage (p-p)	140V (40 KHz) Pulse width 0.5 ms / Interval 20 ms	
Operating Temperature (°C)	- 40 - + 80	
Weight (g)	3	

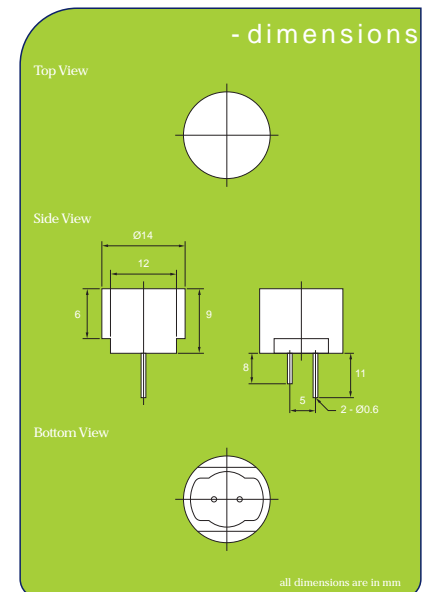


- USWA14A Asymmetric Ultrasonic Sensor

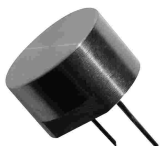


- electrical specifications

Model	USWA14A09	
Function	Transmitter & Receiver	
Sound Pressure Level (0dB = 0.0002 ubar) (dB)	Min. 95	
Sensitivity (v / ubar) (dB)	Min. - 82	
Center Frequency (Hz)	40000 ± 1000	
Capciance at 1KHz (pF)	1800 ± 15 %	
Allowable Input Voltage (p-p)	140V (40 KHz) Pulse width 0.5 ms / Interval 20 ms	
Operating Temperature (°C)	- 40 - + 80	
Weight (g)	3	

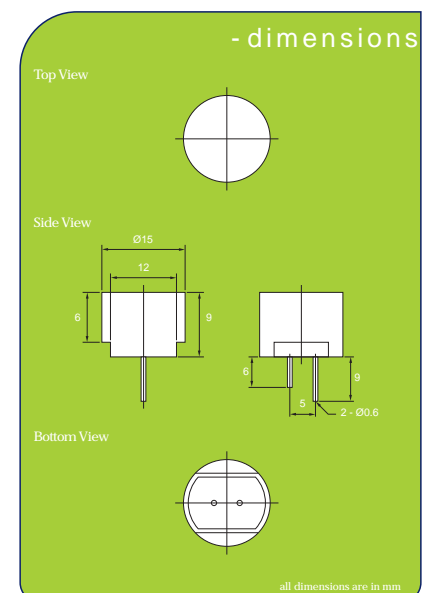


- USWA15A Asymmetric Ultrasonic Sensor



- electrical specifications

Model	USWA15A09	
Function	Transmitter & Receiver	
Sound Pressure Level (0dB = 0.0002 ubar) (dB)	Min. 95	
Sensitivity (v / ubar) (dB)	Min. - 82	
Center Frequency (Hz)	40000 ± 1000	
Capciance at 1KHz (pF)	1800 ± 15 %	
Allowable Input Voltage (p-p)	140V (40 KHz) Pulse width 0.5 ms / Interval 20 ms	
Operating Temperature (°C)	- 40 - + 80	
Weight (g)	3	

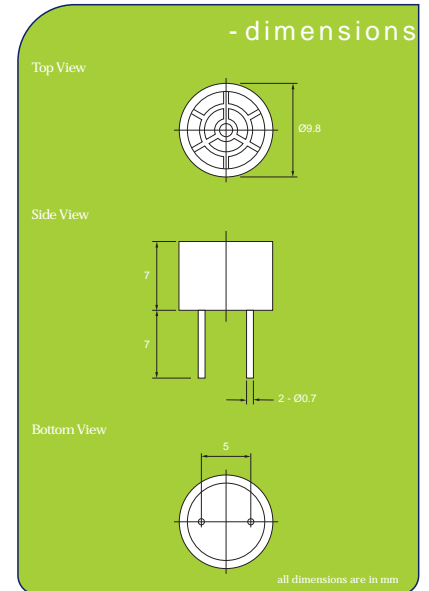


- USO10A Open Structure Ultrasonic Sensor



- electrical specifications

Model	USO10A07	
Function	Transmitter & Receiver	
Sound Pressure Level (0dB = 0.0002 ubar)	(dB)	Min. 100
Sensitivity (v / ubar)	(dB)	Min. - 70
Center Frequency	(Hz)	40000 ± 1000
Capcitanace at 1KHz	(pF)	1400 ± 20 %
Operating Temperature	(°C)	- 20 ~ + 70
Weight	(g)	2

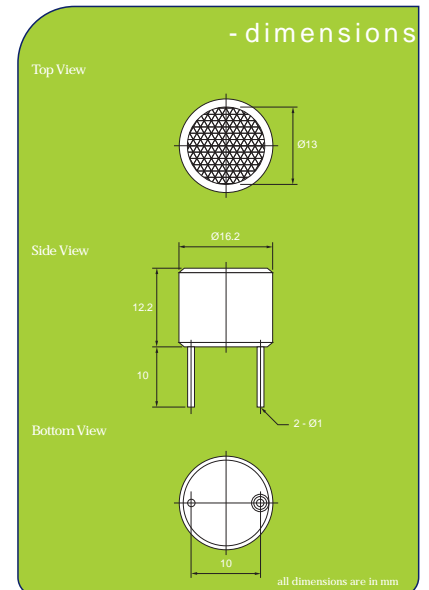


- USO16A Open Structure Ultrasonic Sensor



- electrical specifications

Model	USO16A12T	
Function	Transmitter	
Sound Pressure Level (0dB = 0.0002 ubar)	(dB)	Min. 118
Center Frequency	(Hz)	40000 ± 1000
Capcitanace at 1KHz	(pF)	2100 ± 20 %
Operating Temperature	(°C)	- 20 ~ + 70
Weight	(g)	3

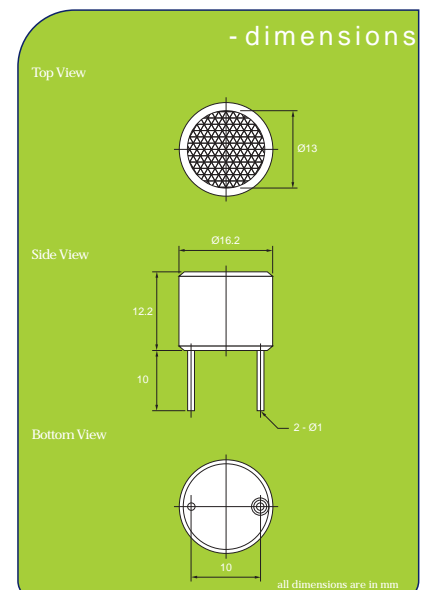


- USO16A Open Structure Ultrasonic Sensor



- electrical specifications

Model	USO16A12R	
Function	Receiver	
Sensitivity (v / ubar)	(dB)	Min. - 60
Center Frequency	(Hz)	40000 ± 1000
Capcitanace at 1KHz	(pF)	2100 ± 20 %
Operating Temperature	(°C)	- 20 ~ + 70
Weight	(g)	3

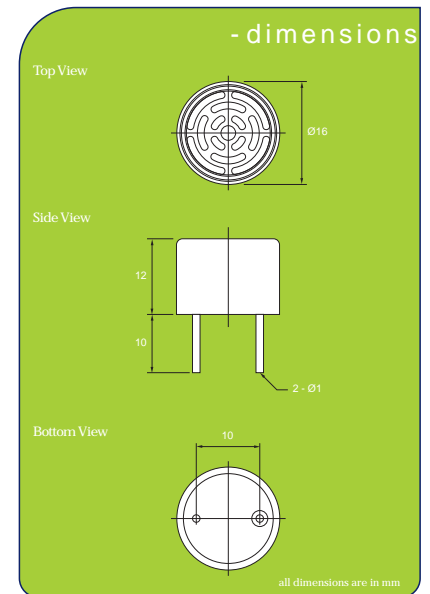


- USO16B Open Structure Ultrasonic Sensor



- electrical specifications

Model	USO16B12	
Function	Transmitter & Receiver	
Sound Pressure Level (0dB = 0.0002 ubar) (dB)	Min. 115	
Sensitivity (v / ubar) (dB)	Min. - 65	
Center Frequency (Hz)	40000 ± 1000	
Capcitanace at 1KHz (pF)	2100 ± 20 %	
Operating Temperature (°C)	- 20 - + 70	
Weight (g)	2	

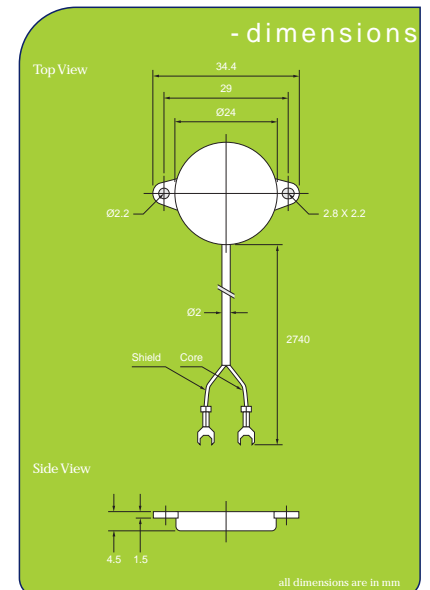


- SST24 Shock Sensor



- electrical specifications

Model	SST24045	
Output Voltage	40 mVp / G typ. (25 °C, 20 M Ω Load, 10 - 1000 Hz)	
Capacitance at 1000 Hz / 1 V (pF)	12000 pF ± 30 %	
Insulation Resistance (Ω)	100 M Min.	
Operating Temperature (°C)	- 20 - + 70	
Weight (g)	24.6	

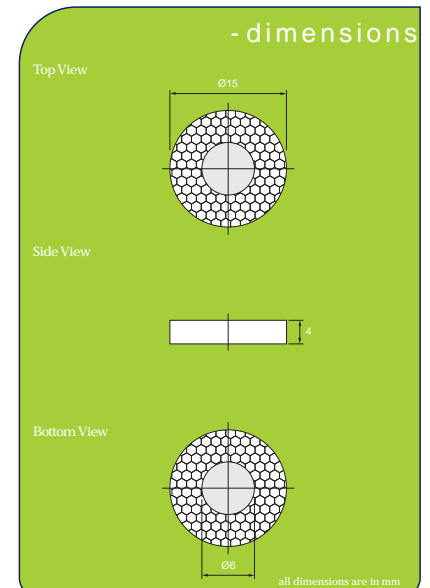


- AS15 Ultrasonic Atomizing Transducer



- electrical specifications

Model	AS15040103K	
Thick Resonant Frequency (KHz)	103 ± 3	
Resonant Impedance (Ω)	< 30	
Static Capacitance at 1000 Hz / 1 V (pF)	550 ± 20 %	
Electrical - Mechanical Coupling Coefficient (Ke)	> 0.32	
Operating Temperature (°C)	- 20 - + 60	

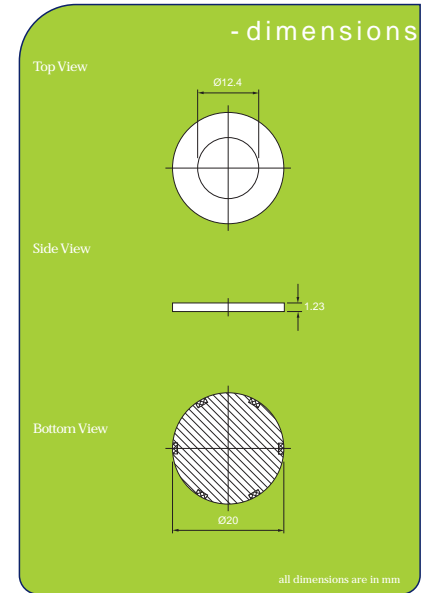


- AS20 Ultrasonic Atomizing Transducer



- electrical specifications

Model	AS20012017M	
Thick Resonant Frequency (MHz)		1.7 ± 0.05
Resonant Impedance (ȳ)		< 1
Static Capacitance at 1000 Hz / 1 V (pF)		1500 pF ± 20 %
Electrical - Mechanical Coupling Coefficient (Kt)		> 0.45
Operating Temperature (°C)		- 20 ~ + 60

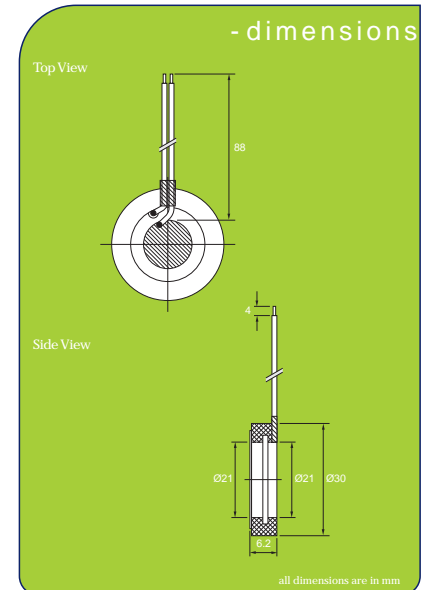


- AS30 Ultrasonic Atomizing Transducer



- electrical specifications

Model	AS30058016M	
Thick Resonant Frequency (MHz)		1.66 ± 0.05
Resonant Impedance (ȳ)		< 2
Static Capacitance at 1000 Hz / 1 V (pF)		1700 pF ± 20 %
Electrical - Mechanical Coupling Coefficient (Kt)		> 0.45
Operating Temperature (°C)		- 20 ~ + 60





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