

# SPECIFICATIONS

## SW223BD02/03 8¾" die cast, alu cone subwoofers, 4/8 ohm

The 8¾" transducers SW223BD02 (4 ohm) and SW223BD03 (8 ohm) were designed specifically for high performance compact subwoofer applications where sound quality and low distortion are the priorities.

### FEATURES

- Balanced Drive motor structure for optimal drive force symmetry resulting in largely reduced even order harmonic distortion
- Extremely large linear stroke,  $X_{max} = \pm 10.7$  mm, ensuring low distortion at high output levels
- Very rigid black aluminium cone to ensure piston motion at high levels and for better heat transfer at high continuous power levels
- Rigid die cast alu chassis with extensive venting for lower air flow speed reducing audible distortion
- Heavy-duty black fiber glass voice coil former to reduce mechanical losses resulting in better dynamic performance and low-level details
- Large motor with 2" voice coil diameter for better control and power handling
- Built-in alu field-stabilizing ring for reduced distortion at high levels
- Low-loss suspension (high  $Q_m$ ) for better reproduction of details and dynamics
- Black plated cone and motor parts for better heat transfer to the surrounding air
- Conex spider for better durability under extreme conditions
- Gold plated terminals to ensure long-term trouble free connection



### NOMINAL SPECIFICATIONS

Notes	Parameter	SW223BD02		SW223BD03		Unit
		Before burn-in	After burn-in	Before burn-in	After burn-in	
	Nominal size	8¾		8¾		[inch.]
	Nominal impedance	4		8		[ohm]
	Recommended max. upper frequency limit	1,000		1,000		[Hz]
1, 3	Sensitivity, 2.83V/1m	83		81		[dB]
2	Power handling, short term, IEC 268-5, no additional filtering					[W]
2	Power handling, long term, IEC 268-5, no additional filtering					[W]
2	Power handling, continuous, IEC 268-5, no additional filtering	200		200		[W]
	Effective radiating area, $S_d$	206		206		[cm <sup>2</sup> ]
3, 6	Resonance frequency (free air, no baffle), $F_s$	24		25		[Hz]
	Moving mass, incl. air (free air, no baffle), $M_{ms}$	97		89		[g]
3	Force factor, $B_{xl}$	11.0		13.1		[N/A]
3, 6	Suspension compliance, $C_{ms}$	0.47		0.47		[mm/N]
3, 6	Equivalent air volume, $V_{as}$	28		28		[lit.]
3, 6	Mechanical resistance, $R_{ms}$	1.35		1.35		[Ns/m]
3, 6	Mechanical Q, $Q_{ms}$	10.7		10.2		[-]
3, 6	Electrical Q, $Q_{es}$	0.42		0.48		[-]
3, 6	Total Q, $Q_{ts}$	0.40		0.46		[-]
4	Voice coil resistance, $R_{DC}$	3.5		6.0		[ohm]
5	Voice coil inductance, $L_e$ (measured at 1 kHz)	0.80		1.16		[mH]
	Voice coil inside diameter	51		51		[mm]
	Voice coil winding height	29.4		29.4		[mm]
	Air gap height	6		6		[mm]
	Theoretical linear motor stroke, $X_{max}$	±11.7		±11.7		[mm]
	Magnet weight					[g]
	Total unit net weight excl. packaging	4.4		4.4		[kg]
3, 5	$K_{rm}$	84		88		[mohm]
3, 5	$E_{rm}$	0.37		0.40		[-]
3, 5	$K_{xm}$	20		36		[mH]
3, 5	$E_{xm}$	0.57		0.54		[-]

Note 1 Measured in infinite baffle.

Note 2 Tested in free air (no cabinet).

Note 3 Measured using a semi-constant current source, nominal level 2 mA.

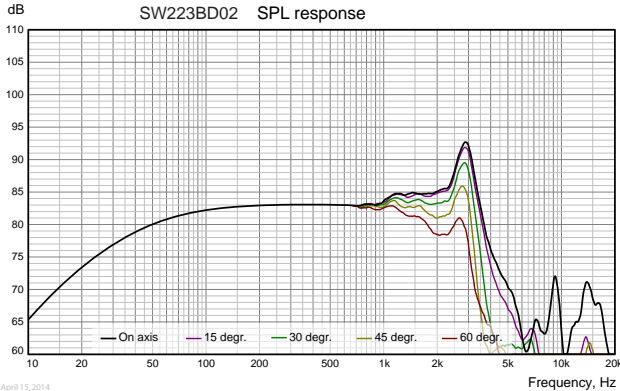
Note 4 Measured at 25 deg. C

Note 5 It is generally a rough simplification to assume that loudspeaker transducer voice coils exhibit the characteristics of an inductor. Instead it is a far more accurate approach to use the more advanced model often referred to as the "Wright empirical model", also used in LEAP-4 as the TSL model ([www.linearx.com](http://www.linearx.com)), involving parameters  $K_{rm}$ ,  $E_{rm}$ ,  $K_{xm}$ , and  $E_{xm}$ . This more accurate transducer model is described in a technical paper [here at our web site](#).

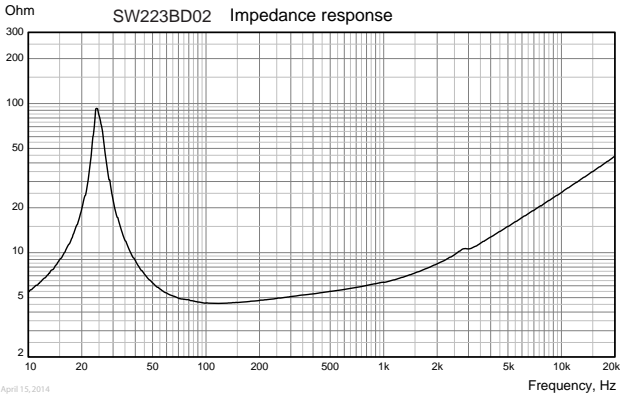
Note 6 After burn-in specifications are measured 12 hours after exiting the transducer by a 20 Hz sine wave for 2 hours at level 10/14.1  $V_{RMS}$  (4/8 ohm version). The unit is not burned in before shipping.

# SPECIFICATIONS

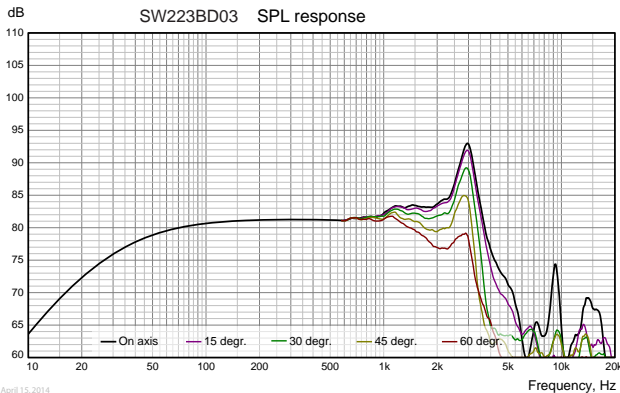
## SW223BD02/03 8¾" die cast, alu cone subwoofers, 4/8 ohm



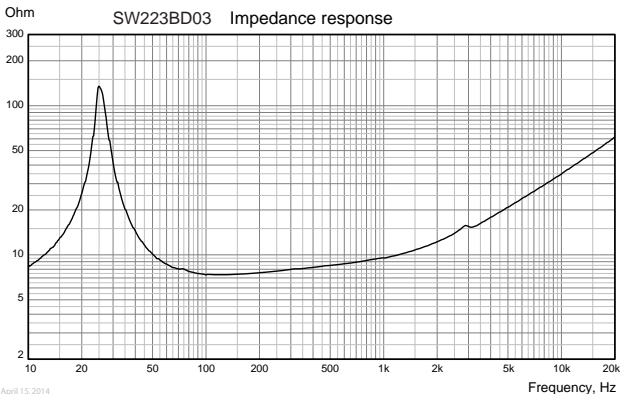
Measuring conditions, SPL  
 Driver mounting: Flush in infinite baffle, back side open (no cabinet)  
 Microphone distance: 1.0 m  
 Input signal: 2.83 VRMS stepped sine wave  
 Smoothing: 1/6 oct.



Measuring conditions, impedance  
 Driver mounting: Free air, no baffle, back side open (no cabinet)  
 Input signal: Stepped sine wave, semi-current-drive, nominal current 2 mA  
 Smoothing: None



Measuring conditions, SPL  
 Driver mounting: Flush in infinite baffle, back side open (no cabinet)  
 Microphone distance: 1.0 m  
 Input signal: 2.83 VRMS stepped sine wave  
 Smoothing: 1/6 oct.



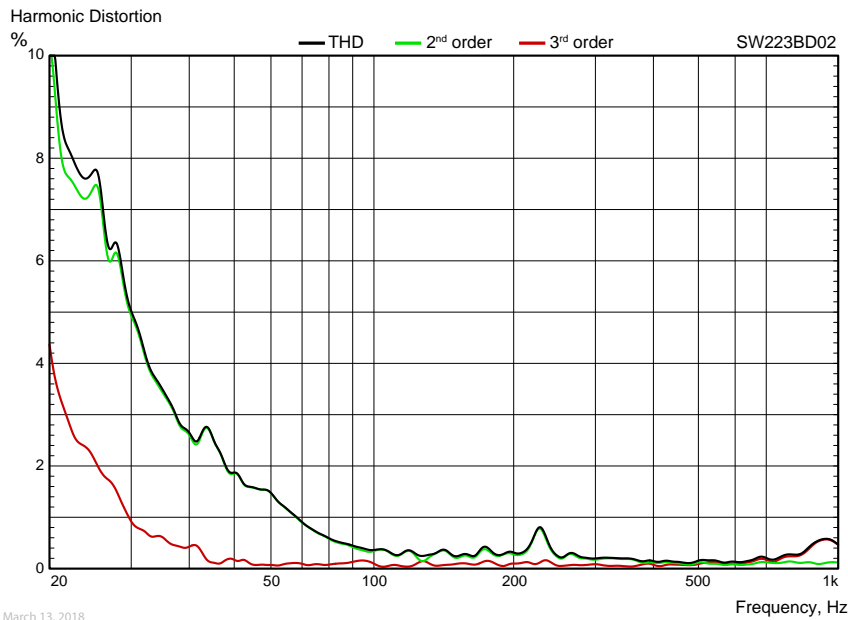
Measuring conditions, impedance  
 Driver mounting: Free air, no baffle, back side open (no cabinet)  
 Input signal: Stepped sine wave, semi-current-drive, nominal current 2 mA  
 Smoothing: None

# SPECIFICATIONS



SW223BD02/03 8<sup>3/4</sup>" die cast, alu cone subwoofers, 4/8 ohm

## HARMONIC DISTORTION



March 13, 2018

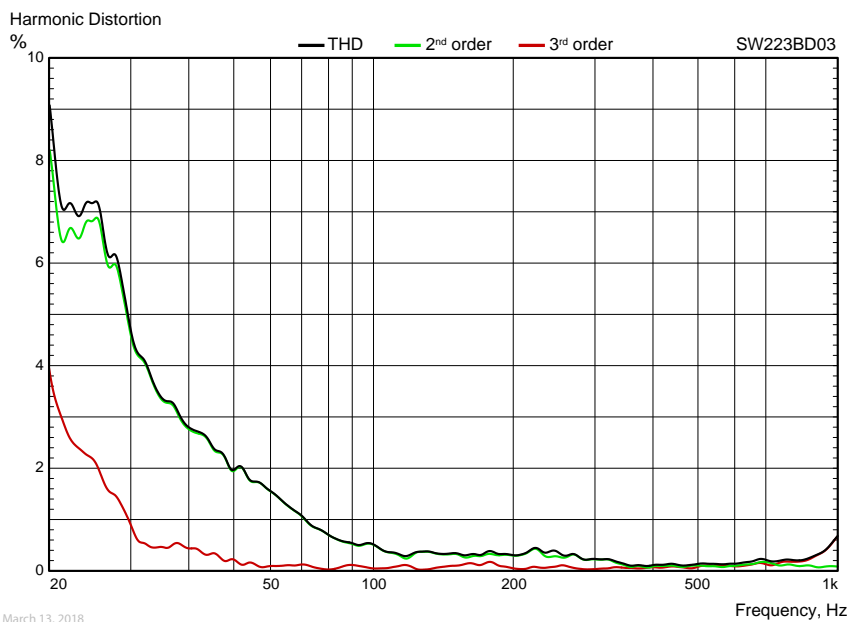
### Measuring conditions, Harmonic Distortion

Driver mounting: In sealed, heavily stuffed enclosure, internal volume 28 lit.

Microphone distance: 0.5 m

Input signal: Stepped sine wave, 8.95 VRMS (SW223BD02) / 12.65 VRMS (SW223BD03)

Smoothing: 1/12 oct.



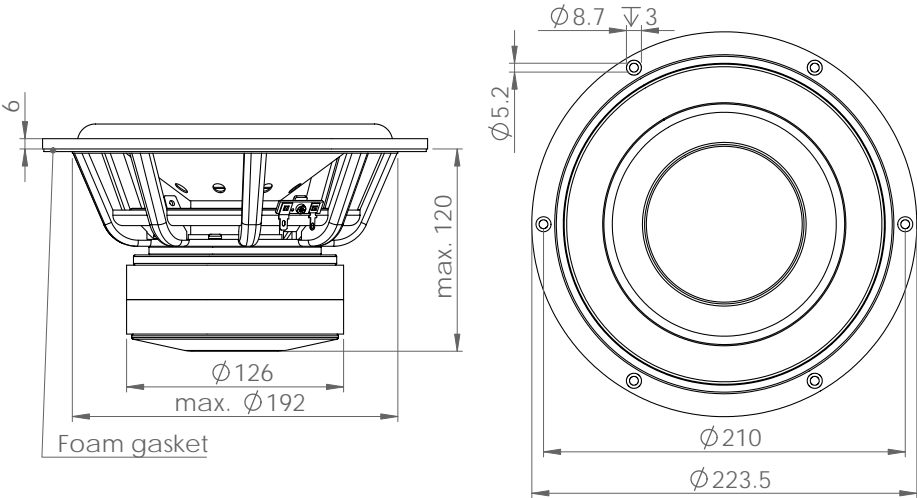
March 13, 2018

# SPECIFICATIONS

## SW223BD02/03 8 3/4" die cast, alu cone subwoofers, 4/8 ohm

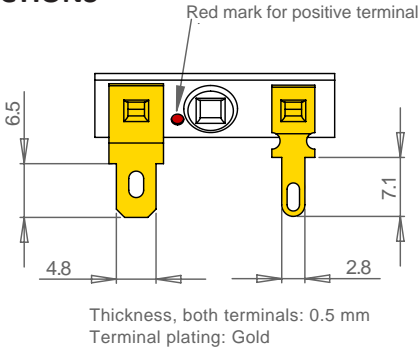
### OUTLINE DRAWING (nominal dimensions)

Dimensions in mm



April 12, 2014

### CONNECTIONS



### PACKAGING AND ORDERING INFORMATION

Part no. SW223BD02-01	4 ohm version, individual packaging (one piece per box)
Part no. SW223BD03-01	8 ohm version, individual packaging (one piece per box)

Latest update: March 13, 2018