

## Driver specifications, tweeters

Latest update: April 23, 2015

Model no.	Nom. size	Nom. imp.	Freq. range	Sensitivity	VC. diam.	$X_{max}$	$S_d$	$F_s$	$M_{ms}$	$B_{xl}$	$Q_{ms}$	$Q_{es}$	$Q_{ts}$	$V_{as}$	$R_{DC}$
	[mm]	[ohm]	[kHz]	[dB@2.83V/1m]	[mm]	[mm]	[cm <sup>2</sup> ]	[Hz]	[g]	[N/A]	[-]	[-]	[-]	[mlit.]	[ohm]
TW013WA01	13	4	5-50	87	13	±0.3	2.1	1,300	0.12	0.71	1.7	5.3	1.29	0.81	2.9
TW022WA02	22	4	2.5-30	88.5	22	±0.45	6.1	1,150	0.28	1.33	1.5	4.1	1.11	3.6	3.6
TW022WA04	22	4	2-30	89.5	22	±0.45	6.1	825	0.26	1.6	1.4	1.9	0.80	7.6	3.6
TW022WA05	22	4	2.5-25	91.5	22	±0.35	6.1	750	0.28	1.9	5.3	1.36	1.08	8.5	3.7
TW022WA06	22	4	2-25	90.5	22	±0.35	6.1	750	0.30	1.9	2.5	1.45	0.92	7.9	3.7
TW030WA01	30	4	2-25	94	30	±0.65	11.5	1,050	0.42	2.3	4.8	1.78	1.30	10.3	3.4
TW030WA02	30	4	2-25	94	30	±0.65	11.5	1,100	0.45	2.5	1.2	1.69	0.70	8.7	3.4
TW030WA05	30	4	1.5-25	91.5	30	±0.4	11.5	450	0.40	2.0	1.5	0.96	0.59	59	3.4
TW030WA06	30	4	1.5-25	91	30	±0.4	11.5	450	0.42	2.0	1.2	1.01	0.55	56	3.4
TW030WA07	30	8	1.5-25	89	30	±0.4	11.5	470	0.37	2.4	1.6	1.19	0.68	59	6.3
TW030WA08	30	8	1.5-25	88.5	30	±0.4	11.5	470	0.39	2.4	1.3	1.25	0.64	56	6.3
TW030WA09	30	4	2-27	92.5	30	±0.4	11.5	725	0.45	2.0	8.1	1.74	1.43	20	3.4
TW030WA10	30	8	2-27	90	30	±0.4	11.5	750	0.42	2.4	7.8	2.17	1.70	20	6.3
TW030WA11	30	4	1.5-25	93.5	30	±0.4	11.5	410	0.43	1.7	1.9	1.34	0.79	66	3.5
TW030WA12	30	8	1.5-25	91	30	±0.4	11.5	425	0.40	2.0	1.9	1.74	0.90	66	6.5
TW030WA13	30	4	2-30	93.5	30	±0.4	11.5	690	0.43	1.95	2.5	1.62	1.01	23	3.5
TW030WA14	30	8	2-30	90.5	30	±0.4	11.5	715	0.40	2.25	2.4	2.31	1.17	23	6.5

All specifications are measured at 25 °C (77 °F) and are before burn-in.

## Driver specifications, full ranges

Latest update: October 4, 2015

Model no.	Nom. size	Nom. imp.	Freq. range	Sensitivity	VC. diam.	X <sub>max</sub>	S <sub>d</sub>	F <sub>s</sub>	M <sub>ms</sub>	Bxl	Q <sub>ms</sub>	Q <sub>es</sub>	Q <sub>ts</sub>	V <sub>as</sub>	R <sub>DC</sub>
	[inch.]	[ohm]	[Hz]	[dB@2.83V/1m]	[mm]	[mm]	[cm <sup>2</sup> ]	[Hz]	[g]	[N/A]	[-]	[-]	[-]	[lit.]	[ohm]
FR040WA01	1½	4	full range	84	16	±0.5	7.8	233	0.63	1.67	9.6	0.99	0.90	0.064	3.0
FR040WA02	1½	8	full range	81	16	±0.5	7.8	239	0.60	2.0	9.4	1.42	1.23	0.064	6.3
FR070WA01	2¾	4	full range	86.5	22	±2	21	121	2.0	3.0	12.6	0.58	0.56	0.54	3.45
FR070WA02	2¾	8	full range	84	22	±2	21	124	1.9	3.6	12.3	0.73	0.69	0.54	6.4
FR070WA03	2¾	4	full range	86	22	±2	21	121	2.0	2.3	13.8	0.99	0.92	0.54	3.45
FR070WA04	2¾	8	full range	83	22	±2	21	124	1.9	2.9	13.4	1.13	1.04	0.54	6.4
FR084WA01	3¾	4	full range	87	22	±2.25	36	113	3.45	2.9	5.6	0.96	0.82	1.07	3.3
FR084WA02	3¾	8	full range	84	22	±2.25	36	114	3.35	3.65	5.3	1.10	0.92	1.07	6.1
FR090WA01	3½	4	full range	86.5	22	±2.25	36	113	3.45	2.75	6.0	1.03	0.88	1.07	3.2
FR090WA02	3½	8	full range	83.5	22	±2.25	36	114	3.35	3.4	5.9	1.27	1.04	1.07	6.1

All specifications are measured at 25 °C (77 °F) and are before burn-in.

## Driver specifications, mid/woofers

Latest update: August 1, 2017

Model no.	Nom. size	Nom. imp.	Freq. range	Sensitivity	VC. diam.	X <sub>max</sub>	S <sub>d</sub>	F <sub>s</sub>	M <sub>ms</sub>	Bxl	Q <sub>ms</sub>	Q <sub>es</sub>	Q <sub>ts</sub>	V <sub>as</sub>	R <sub>DC</sub>
	[inch.]	[ohm]	[kHz]	[dB@2.83V/1m]	[mm]	[mm]	[cm <sup>2</sup> ]	[Hz]	[g]	[N/A]	[-]	[-]	[-]	[lit.]	[ohm]
WF090WA01	3½	4	to 5k	86.5	22	±2.75	36	115	3.45	2.9	6.4	0.92	0.81	1.02	3.1
WF090WA02	3½	8	to 5k	84	22	±2.75	36	117	3.35	3.5	6.3	1.11	0.94	1.02	5.5
WF118WA01	4½	4	to 4k	89	32	±3	55	64	6.2	4.6	8.8	0.38	0.36	4.3	3.2
WF118WA02	4½	8	to 4k	86	32	±3	55	65	6.0	5.8	8.8	0.46	0.44	4.3	6.3
WF118WA05	4½	4	to 4k	87.5	32	±3	54	65	7.1	4.3	7.5	0.49	0.46	3.5	3.2
WF118WA06	4½	8	to 4k	84.5	32	±3	54	66	6.9	5.6	7.4	0.59	0.55	3.5	6.5
WF118WA07	4½	4	to 3k	87	26	±4	54	56	6.9	4.5	7.8	0.38	0.36	4.9	3.2
WF118WA08	4½	8	to 3k	84	26	±4	54	58	6.5	5.8	7.6	0.45	0.42	4.9	6.4
WF120BD03 / -07	4¾	4	to 4k	88.5	26	±4	54	70	6.55	4.5	5.9	0.46	0.42	3.25	3.2
WF120BD04 / -08	4¾	8	to 4k	86	26	±4	54	71.5	6.25	5.5	5.7	0.56	0.51	3.25	6.0
WF120BD05 / -09	4¾	4	to 3.5k	87	32	±4	54	52	7.3	4.1	7.9	0.45	0.43	5.3	3.2
WF120BD06 / -10	4¾	8	to 3.5k	84	32	±4	54	54	6.7	5.2	7.6	0.54	0.50	5.3	6.4
WF146WA01	5¾	4	to 3.5k	90	32	±3	95	56	10.4	5.1	7.0	0.45	0.42	10.0	3.2
WF146WA02	5¾	8	to 3.5k	87.5	32	±3	95	58	9.7	6.4	7.0	0.54	0.51	10.0	6.3
WF146WA05	5¾	4	to 3.5k	88.5	32	±3	93	41	12.5	5.0	8.2	0.41	0.39	15.0	3.2
WF146WA06	5¾	8	to 3.5k	85.5	32	±3	93	42	11.9	6.4	8.0	0.50	0.47	15.0	6.5
WF152BD03	6	4	to 3.5k	91	32	±4.5	93	55.5	11.0	5.8	8.9	0.36	0.35	9.2	3.2
WF152BD04	6	8	to 3.5k	88.5	32	±4.5	93	56.5	10.6	7.3	8.7	0.44	0.42	9.2	6.3
WF152BD05	6	4	to 3k	90	32	±4.5	93	50	13.5	6.35	10.3	0.34	0.33	9.2	3.2
WF152BD06	6	8	to 3k	87	32	±4.5	93	51.5	12.8	8.0	10.1	0.41	0.39	9.2	6.3
WF168WA01	6½	4	to 3k	91.5	32	±3	139	47.5	12.5	5.1	7.0	0.46	0.43	24.6	3.2
WF168WA02	6½	8	to 3k	89	32	±3	139	49	11.8	6.4	7.1	0.56	0.52	24.6	6.3
WF168WA05	6½	4	to 3k	91	32	±3	131	40	14.0	5.0	7.2	0.45	0.42	27.7	3.2
WF168WA06	6½	8	to 3k	88	32	±3	131	41	13.4	6.4	7.0	0.54	0.50	27.7	6.4
WF182BD03 / -07	7	4	to 2.5k	91	39	±5.5	131	39	16.7	6.75	11	0.30	0.29	24.4	3.3
WF182BD04 / -08	7	8	to 2.5k	88	39	±5.5	131	40	16.1	8.5	10.9	0.35	0.34	24.4	6.3
WF182BD09 / -11	7	4	to 2.5k	90	39	±5.5	131	33	23.4	6.5	10.9	0.37	0.35	24.3	3.2
WF182BD10 / -12	7	8	to 2.5k	87	39	±5.5	131	34	21.9	8.2	10.5	0.44	0.42	24.3	6.4
WF223BD01	8¾	4	to 2k	89.5	39	±6.5	213	32.6	34	7.7	14.5	0.40	0.39	45	3.4
WF223BD02	8¾	8	to 2k	86.5	39	±6.5	213	33.1	33	9.5	14.3	0.47	0.46	45	6.2
WF259PA01	10¾	8	to 1.5k	94	76	±4.5	370	55	56	17	12	0.38	0.37	29	5.65

All specifications are measured at 25 °C (77 °F) and are before burn-in.

## Driver specifications, subwoofers

Latest update: July 31, 2017

Model no.	Nom. size	Nom. imp.	Freq. range	Sensitivity	VC. diam.	X <sub>max</sub>	S <sub>d</sub>	F <sub>s</sub>	M <sub>ms</sub>	Bxl	Q <sub>ms</sub>	Q <sub>es</sub>	Q <sub>ts</sub>	V <sub>as</sub>	R <sub>DC</sub>
	[inch.]	[ohm]	[Hz]	[dB@2.83V/1m]	[mm]	[mm]	[cm <sup>2</sup> ]	[Hz]	[g]	[N/A]	[-]	[-]	[-]	[lit.]	[ohm]
SW070WA01	2¾	4	to 4,000	84.5	26	±2.5	22	84	3.65	3.85	6.4	0.42	0.39	0.68	3.2
SW070WA02	2¾	8	to 4,000	81	26	±2.5	22	87	3.4	4.75	6.2	0.53	0.49	0.68	6.4
SW118WA01	4½	4	to 1,200	86	26	±4	49	58	7.9	4.7	8.4	0.41	0.39	3.3	3.2
SW118WA02	4½	8	to 1,200	83.5	26	±4	49	60	7.3	5.9	8.1	0.50	0.47	3.3	6.3
SW146WA01	5¾	4	to 500	88	32	±6	55	51	18.3	5.9	9.5	0.50	0.48	5.5	3.0
SW146WA02	5¾	8	to 500	85	32	±6	55	54	16.2	7.8	9.0	0.57	0.53	5.5	6.3
SW168WA01	6½	4	to 500	88.5	32	±7	127	43	32.5	7.5	10.2	0.47	0.45	9.6	3.0
SW178WA01	7	8	to 600	85	39	±5	131	36	35	11.7	17.6	0.38	0.37	13.6	6.5
PR178WA01	7	passive	-	-	-	-	131	19.9-26	50-85	-	24	-	-	17	-
SW182BD03	7	4	to 600	84	39	±7	131	35.1	39.5	7.6	13.3	0.45	0.44	12.7	3.0
SW182BD04	7	8	to 600	81.5	39	±7	131	37.2	35.2	10.2	12.6	0.51	0.49	12.7	6.4
PR182BD02	7	passive	-	-	-	-	131	36.2	37	-	32.5	-	-	12.7	-
SW215WA01	8½	4	to 500	88.5	39	±10	206	33	53	8.45	11	0.51	0.49	26	3.3
SW215WA02	8½	8	to 500	86	39	±10	206	35	49	11.4	10.7	0.52	0.49	26	6.3
SW223BD02	8¾	4	to 1,000	83	51	±10.7	206	24	97	11.0	10.7	0.42	0.40	28	3.5
SW223BD03	8¾	8	to 1,000	81	51	±10.7	206	23	89	13.1	10.2	0.48	0.46	28	6.0
PR223BD02	8¾	passive	-	-	-	-	206	8.5-15	162-512	-	19	-	-	41.6	-
SW259WA01	10%	4	to 400	83.5	51	±11.5	312	29	173	14.5	10.0	0.49	0.46	25	6.3
SW259WA02	10%	8	to 400	81.5	51	±11.5	312	24	158	18.6	14.2	0.44	0.43	40	3.4
PR259WA01	10%	passive	-	-	-	-	312	11.9-18.1	266-616	-	26	-	-	40	-
SW270WA01	10½	4	to 400	88	51	±11	312	28	88	9.7	8.1	0.53	0.49	51	3.2
PR270WA01	10½	passive	-	-	-	-	312	16.3-26	112-287	-	24	-	-	46	-
SW275BD01	10%	4	to 400	86	64	±16	314	30.8	121	12.1	12.7	0.59	0.57	31	3.7
SW275BD02	10%	8	to 400	83	64	±16	314	31.6	115	15.2	12.4	0.70	0.67	31	7.1
PR275BD01	10%	passive	-	-	-	-	314			-		-	-		-
SW312WA03/05	12¾	4	to 300	90	51	±11.5	488	28	185	14.5	11.5	0.50	0.48	61	3.2
SW312WA04/06	12¾	8	to 300	87	51	±11.5	488	29	172	18.4	11.0	0.60	0.57	61	6.6
PR312WA02/03	12¾	passive	-	-	-	-	488	12.2-18.4	278-628	-	27	-	-	91	-

All specifications are measured at 25 °C (77 °F) and are before burn-in.