REPLACEMENT PART REFERENCE GUIDE, ZHL-2X-S+ and ZHL-2-S+

Replacement Part has been judged by Mini-Circuits Engineering as a suitable replacement to Original Part[a]

ORIGINAL PART:	ZHL-2X-S+ ZHL-2-S+	
REPLACEMENT PART:	ZHL-10M1G01W0X+ ZHL-10M1G01W0+	

Note: This replacement part reference guide is applicable for the ZHL-2X-S+ (amplifier without heatsink) and the ZHL-2-S+ (amplifier with heatsink). The heatsink properties and dimensions for the original part and the replacement part are the same.

MECHANICAL DIMENSIONS

Case Style: T34
Replacement part uses same case style as original part.

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CONCLUSION:

1) **FORM-FIT-FUNCTIONAL ANALYSIS$_a$**:

The Replacement Part is Form, Fit compatible.

Following is a summary of changes/improvements in the electrical specification:

Parameter	Original Part ZHL-2X-S+	Replacement Part ZHL-10M1G01W0X+
P1dB	+28 dBm, Min	+29 dBm, Min
P3dB	+29 dBm, Min	+30 dBm, Min
DC Supply Voltage	No Max Spec Specified	+25 V, Max
DC Supply Current with Fan	No Max Spec Specified	1.0 A, Max
Ambient Operating Temperature	-20°C to +65°C	-20°C to +60°C

For typical performance and graphs: See paragraphs 2 and 3

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2) TYPICAL PERFORMANCE COMPARISON AT ROOM TEMPERATURE:

MODEL: ZHL-2X-S+ (Original), ZHL-10M1G01W0X+ (Replacement) (RF Parameters)

RF Parameter	Frequency MHz		Original Design @ 2 Units ZHL-2X-S+			Replacement Design @ 5 Units ZHL-10M1G01W0(X)+		
	From	To	Min	Avg	Max	Min	Avg	Max
Gain (dB)	10	1000	20.19	21.10	21.45	22.22	22.49	22.70
Gain Flatness (dB)	10	1000	0.27	0.42	0.58	0.15	0.20	0.24
Isolation (dB)	10	1000	53.02	53.82	54.77	48.70	50.28	52.01
P1dB Compression (dBm)	10	1000	30.59	31.04	31.43	29.76	31.12	31.74
P3dB Compression (dBm)	10	1000	30.71	31.43	32.22	30.45	31.60	32.30
OIP3 Lower Sideband (dBm)	11.0001	1000	43.79	46.54	48.70	43.94	45.83	53.50
OIP3 Upper Sideband (dBm)	10.0001	1000	43.91	46.37	48.64	44.49	46.24	50.07
OIP3 (dBm) (Worse of Lower/Upper)	10.0001	1000	43.79	46.37	48.64	43.94	45.83	50.07
Noise Figure (dB)	10	1000	9.88	10.06	10.58	8.77	8.87	9.33
Input Return Loss (dB)	10	1000	16.88	25.18	46.09	19.49	24.18	34.38
Output Return Loss (dB)	10	1000	12.02	17.27	33.07	10.36	15.88	20.59
DC Current (A)	10	1000	0.497	0.498	0.500	0.48	0.51	0.54

Please note that data compiled above and plotted on next page is for ZHL-2X-S+ and ZHL-10M1G01W0X+ (models without heatsink). Similar performance can be expected between the model supplied without heatsink and the model supplied with heatsink.

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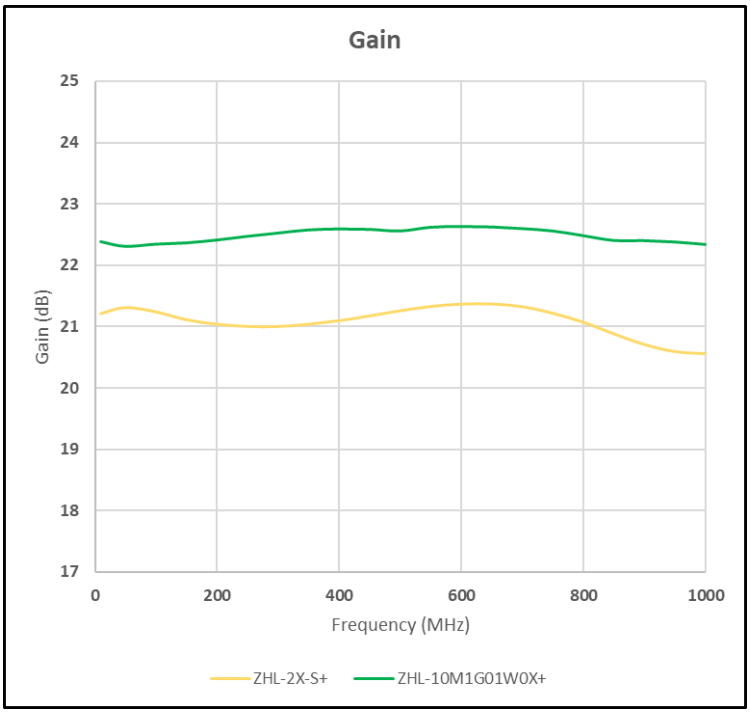
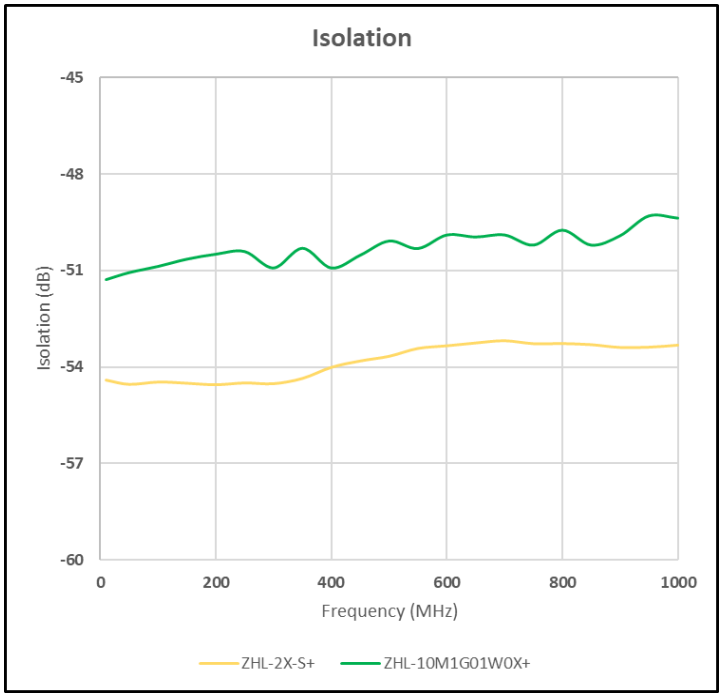
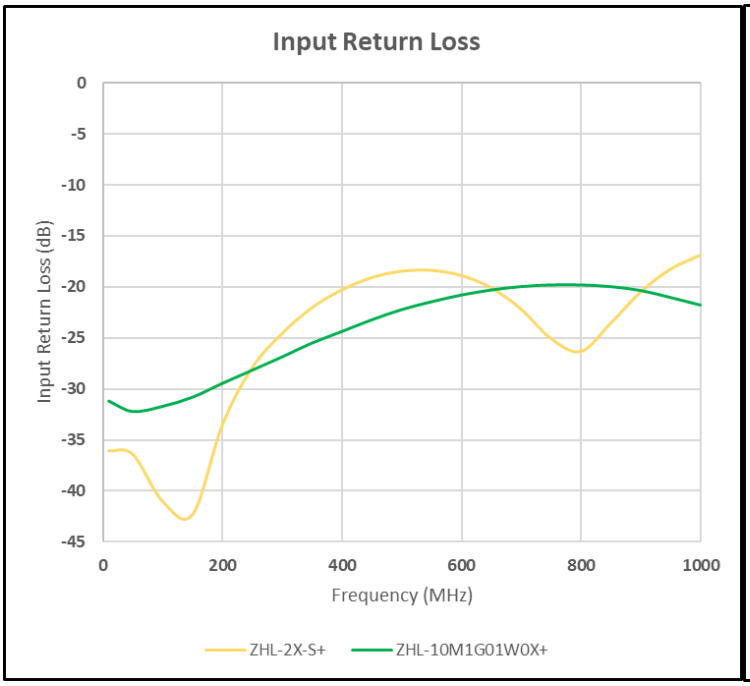
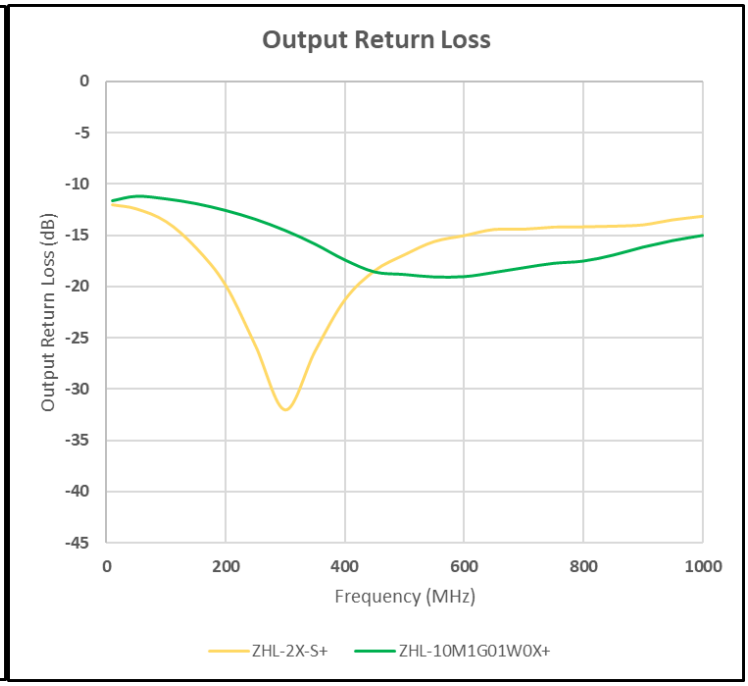
3) TYPICAL PERFORMANCE GRAPHS AT ROOM TEMPERATURE:









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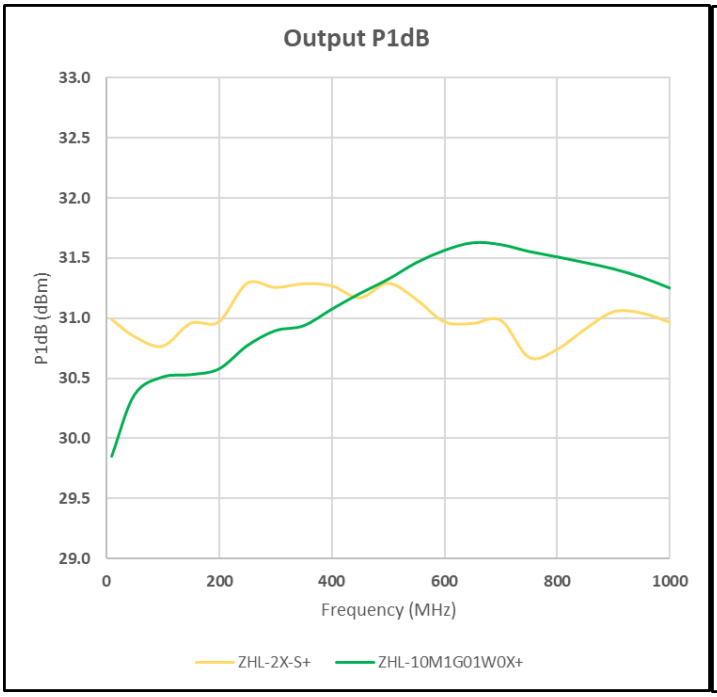

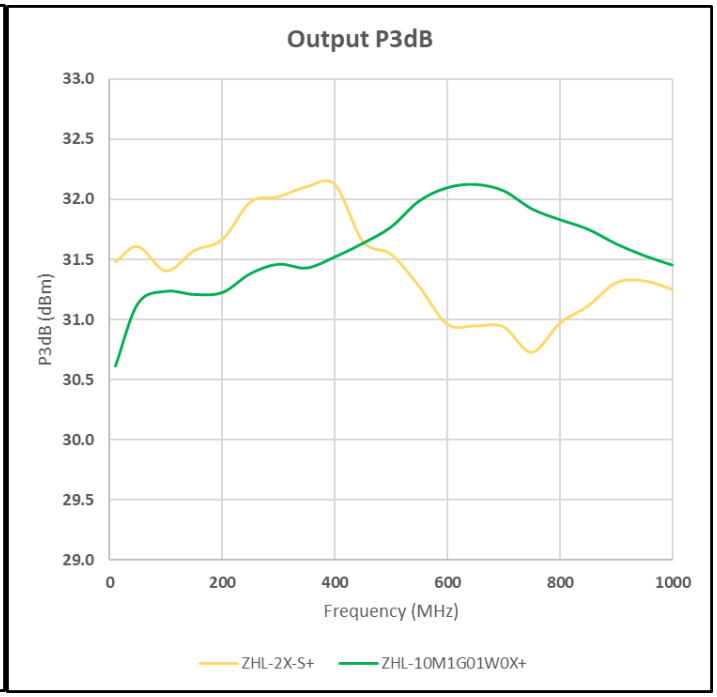

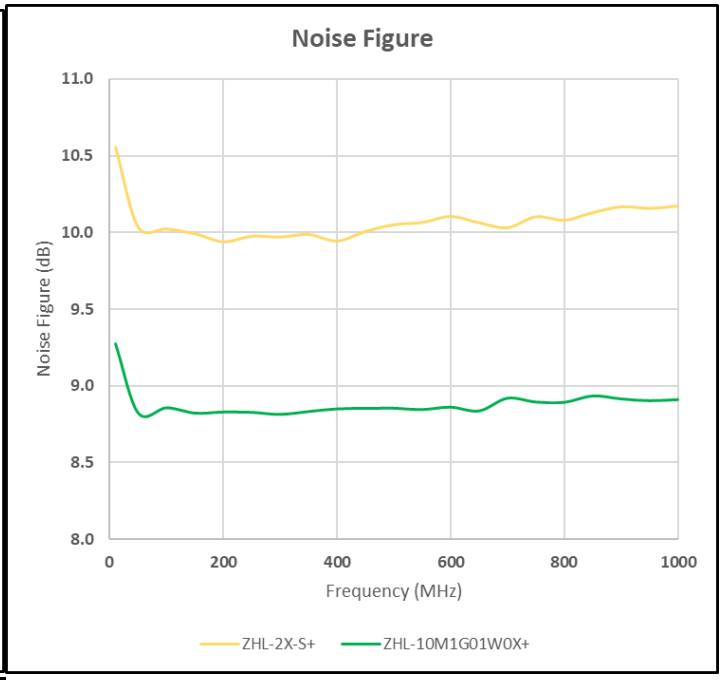

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