


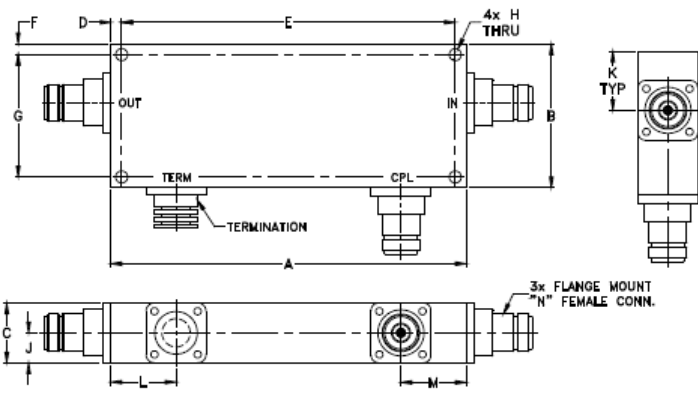
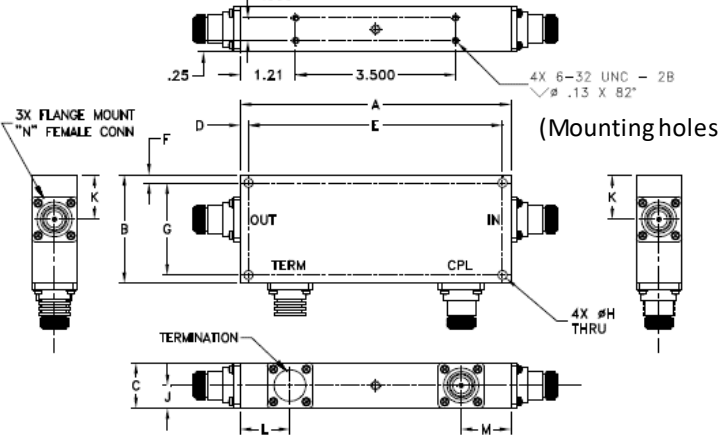
REPLACEMENT PART REFERENCE GUIDE, ZGDC20-33HP+

AN-30-013

ORIGINAL PART:	ZGDC20-33HP+	
REPLACEMENT PART:	ZGDC20-372HP+	

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

MECHANICAL DIMENSIONS

ORIGINAL PART: ZGDC20-33HP+	REPLACEMENT PART: ZGDC20-372HP+															
<p style="text-align: center; color: #00AEEF; font-weight: bold;">Case Style HT1412</p> 	<p style="text-align: center; color: #00AEEF; font-weight: bold;">Case Style HT1398-3</p> 															
<p>*Replacement part has additional mounting holes as shown.</p> <p>*Updates in dimension sizes are noted in the table. All other dimension sizes are equal.</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="background-color: #00AEEF; color: white;">Dimension</th> <th style="background-color: #FFD700;">ZGBDC20-33HP+</th> <th style="background-color: #00FF00;">ZGBDC20-372HP+</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>5.58 in.</td> <td>5.93 in.</td> </tr> <tr> <td>B</td> <td>2.50 in.</td> <td>2.40 in.</td> </tr> <tr> <td>E</td> <td>5.215 in.</td> <td>5.565 in.</td> </tr> <tr> <td>G</td> <td>2.140 in.</td> <td>2.040 in.</td> </tr> </tbody> </table>		Dimension	ZGBDC20-33HP+	ZGBDC20-372HP+	A	5.58 in.	5.93 in.	B	2.50 in.	2.40 in.	E	5.215 in.	5.565 in.	G	2.140 in.	2.040 in.
Dimension	ZGBDC20-33HP+	ZGBDC20-372HP+														
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G	2.140 in.	2.040 in.														

CONCLUSION:

1) FORM-FIT-FUNCTIONAL ANALYSIS_a:

The replacement part has minor dimensional changes, see page 1.

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

Parameter	ZGDC20-33HP+ (Original Part)		ZGDC20-372HP+ (Replacement Part)	
	Frequency (MHz)	Spec	Frequency (MHz)	Spec
Frequency (MHz)	300-3000		300-3700	
Coupling Flatness, Max (±)	300-700	3.0	300-380	1.5
	700-2700	0.75	380-600	2.0
	2700-3000	0.5	600-2700	0.75
Mainline Loss, Max (dB)	300-700	0.2	2700-3700	0.5
	700-2700	0.3	300-380	0.2
	2700-3000	0.35	380-600	0.2
Directivity, Min (dB)	300-700	20	600-2700	0.3
	700-2700	15	2700-3700	0.4
	2700-3000	15	300-380	20
Input Power, Max (W)	300-700	250	380-600	20
	700-2700	250	600-2700	15
	2700-3000	160	2700-3700	14
Weatherproof	300-3000	IP67	300-3700	250
				250
				250
				150
				None

For typical performance and Graphs: See paragraphs 2 and 3

2) TYPICAL PERFORMANCE COMPARISON AT ROOM TEMPERATURE:

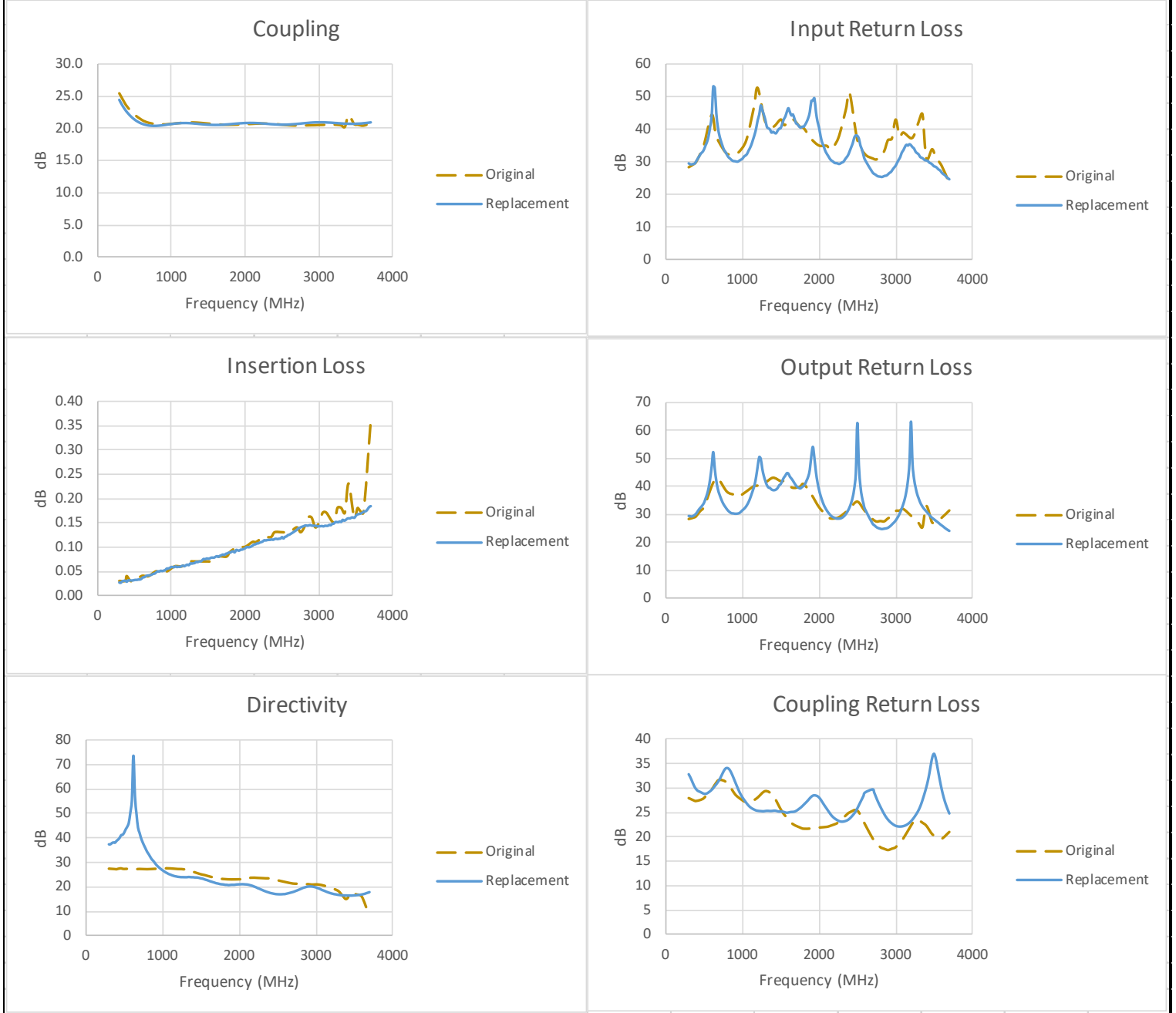
MODEL: ZGDC20-33HP+ (RF Parameters)

For typical performance and Graphs: See paragraphs 2 and 3

RF Parameters	Frequency (MHz)		Original Design @ 15 Units			Replacement Design @ 10 Units		
	Low	High	Min	Ave	Max.	Min.	Ave.	Max
Coupling (dB)	300	380	23.3	24.4	25.6	22.5	23.5	24.6
	380	600	20.7	22.5	23.9	20.5	21.5	23.0
	600	700	20.2	20.8	21.4	20.2	20.5	20.9
	700	2700	19.8	20.4	20.9	20.1	20.6	21.1
	2700	3000	19.8	20.3	20.5	20.6	20.9	21.2
	3000	3700	-	-	-	20.6	20.9	21.4
Coupling Flatness (±)	300	380	0.83	0.84	0.84	0.78	0.79	0.80
	380	600	1.24	1.25	1.27	1.04	1.07	1.10
	600	700	0.24	0.24	0.25	0.14	0.14	0.16
	700	2700	0.16	0.20	0.25	0.23	0.27	0.31
	2700	3000	0.02	0.04	0.05	0.09	0.12	0.15
	3000	3700	-	-	-	0.12	0.15	0.18
Insertion Loss (dB)	300	380	0.02	0.03	0.03	0.02	0.03	0.03
	380	600	0.03	0.03	0.05	0.03	0.03	0.04
	600	700	0.04	0.04	0.05	0.03	0.04	0.05
	700	2700	0.04	0.08	0.15	0.04	0.09	0.14
	2700	3000	0.11	0.14	0.18	0.13	0.14	0.15
	3000	3700	-	-	-	0.14	0.16	0.20
Directivity (dB)	300	380	24.7	27.3	29.4	30.4	36.4	47.7
	380	600	25.2	27.6	30.1	32.5	39.5	55.3
	600	700	25.5	28.1	31.0	30.2	43.1	73.6
	700	2700	18.3	25.9	39.4	16.2	27.0	56.1
	2700	3000	18.1	23.8	40.1	16.5	23.1	48.4
	3000	3700	-	-	-	14.9	20.1	48.4
Input Return Loss (dB)	300	380	27.1	29.6	33.2	28.0	33.6	44.2
	380	600	27.7	35.7	72.1	28.1	37.5	52.7
	600	700	32.8	39.9	72.1	29.5	37.0	53.2
	700	2700	25.3	38.4	62.3	25.5	35.9	70.9
	2700	3000	24.4	33.7	46.8	24.0	28.7	36.3
	3000	3700	-	-	-	23.1	32.3	45.3
Output Return Loss (dB)	300	380	27.3	29.6	33.7	28.1	34.2	48.4
	380	600	27.6	34.5	63.8	28.5	37.9	51.4
	600	700	36.4	43.0	63.8	28.8	35.8	52.3
	700	2700	23.3	34.8	67.1	24.7	35.3	62.7
	2700	3000	22.1	28.0	41.8	23.3	27.8	36.7
	3000	3700	-	-	-	23.1	34.1	69.4
Coupling Return Loss (dB)	300	380	25.1	28.1	30.8	28.3	34.2	44.5
	380	600	25.1	28.6	35.3	28.1	32.8	41.8
	600	700	26.8	30.9	35.3	29.5	34.8	46.2
	700	2700	17.7	26.6	39.3	23.1	32.3	55.8
	2700	3000	16.6	18.4	21.0	22.3	30.4	44.5
	3000	3700	-	-	-	20.0	28.8	50.4

3) TYPICAL PERFORMANCE GRAPHS AT ROOM TEMPERATURE:

MODELS: ZGDC20-33HP+ (Original Part) & ZGDC20-372HP+ (Replacement Part)





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