APPLICATION NOTE

REPLACEMENT PART REFERENCE GUIDE, ZX60-2514M-S+ AN-60-101

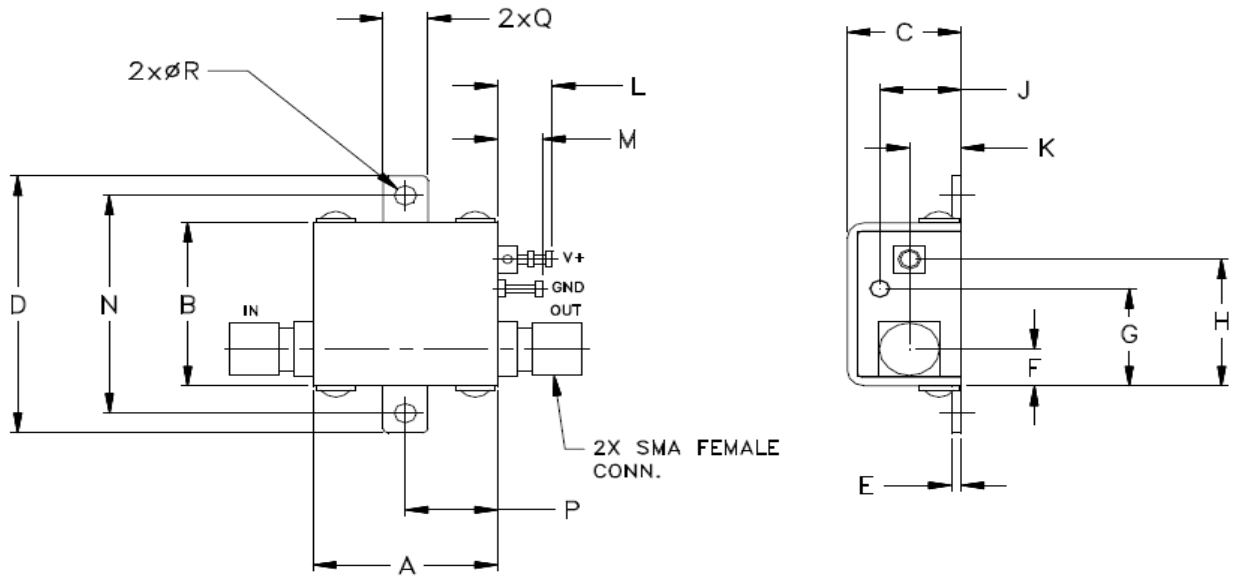
ORIGINAL PART: ZX60-2514M-S+
REPLACEMENT PART: ZX60-2514MA-S+

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

MECHANICAL DIMENSIONS & PCB LAND PATTERN

ORIGINAL PART: ZX60-2514M-S+	REPLACEMENT PART: ZX60-2514MA-S+

Case Style GC957 (No Change)



CASE #.	A	B	C	D	E	F	G	H	J	K	L	M	N
GC957	0.74 (18.80)	.75 (19.05)	.46 (11.68)	1.18 (29.97)	.04 (1.02)	.17 (4.32)	.45 (11.43)	.59 (14.99)	.33 (8.38)	.21 (5.33)	.22 (5.59)	.18 (4.57)	1.00 (25.40)

CASE #.	P	Q	R	WT. GRAM
GC957	.37 (9.40)	.18 (4.57)	.106 (2.69)	23.0

Dimensions are in inches (mm). Tolerances: 2Pl. ± .03; 3Pl. ± .015
Tolerance on hole size and interaxes dimensions to be ± .005.

Marking	Marking
ZX60-2514M-S+	**ZX60-2514MA-S+**

Notes:
a. Suitability for model replacement within a particular system must be determined by and is solely the responsibility of the customer based on, among other things, electrical performance criteria, stimulus conditions, application, compatibility with other components and environmental conditions and stresses.

CONCLUSION:

1) **FORM-FIT-FUNCTIONAL COMPATIBLE**[a]:

Replacement part is Form, Fit compatible. Following is a summary of changes/improvements:

Typical performance comparison: See paragraphs 2 to 5

Min/Max Specifications - see below:

Parameter	Original Part (ZX60-2514M-S+)	Replacement Part (ZX60-2514MA-S+)
Gain-Min at 2 GHz (dB)	14.3dB(2.8V); 15.7dB (5V)	14.9dB(2.8V); 17.7dB (5V)

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2) **PERFORMANCE COMPARISON[a] (TYPICAL), DC Voltage=5V**:

Parameter	Freq. MHz	ZX60-2514M-S+ Original part Data of one unit	ZX60-2514MA-S+ Replacement part Data of 10 units		
			Min	Average	Max
Gain (dB)	500	14.2	16.1	16.2	16.3
	1000	16.4	17.7	17.8	17.9
	1500	16.3	18.0	18.1	18.2
	2000	15.7	17.7	17.8	17.9
	2500	13.5	16.7	16.9	17.1
Input Return Loss (dB)	500	4.7	5.2	5.3	5.4
	1000	14.7	14.7	15.1	15.5
	1500	13.1	22.7	24.4	27.1
	2000	14.7	27.0	30.8	35.8
	2500	16.8	31.3	37.4	45.0
Output Return Loss (dB)	500	5.6	13.2	13.6	13.9
	1000	16.5	23.2	24.8	27.1
	1500	19.5	19.0	19.6	20.1
	2000	14.6	16.2	16.6	16.9
	2500	12.4	15.0	15.3	15.6
Output Power at 1dB Compression (dBm)	500	16.7	18.9	19.3	19.4
	1000	18.0	19.2	19.6	19.8
	1500	16.7	18.7	19.2	19.3
	2000	15.7	17.6	18.2	18.4
	2500	15.5	16.8	17.5	17.7
Output IP3 (dBm)	500	-	31.1	31.5	31.9
	1000	-	30.8	31.3	31.6
	1500	-	30.0	30.4	30.6
	2000	-	28.8	29.4	29.6
	2500	-	27.9	28.5	28.8
NF (dB)	500	4.7	4.7	4.8	4.9
	1000	4.8	4.4	4.4	4.4
	1500	4.8	4.3	4.3	4.4
	2000	4.9	4.3	4.3	4.3
	2500	5.2	4.3	4.3	4.4
Directivity (Isolation - Gain) (dB)	500	24.7	33.6	33.9	34.3
	1000	19.2	26.7	27.0	27.2
	1500	17.3	21.9	22.0	22.3
	2000	17.0	19.7	19.9	20.0
	2500	19.7	19.1	19.3	19.4
DC Current (mA)	DC	75.0	71.2	76.1	77.5

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3) **PERFORMANCE COMPARISON[a] (TYPICAL), DC Voltage=2.8V**:

Parameter	Freq. MHz	ZX60-2514M-S+ Original part Data of one unit	ZX60-2514MA-S+ Replacement part Data of 10 units		
			Min	Average	Max
Gain (dB)	500	13.0	14.3	14.4	14.7
	1000	14.8	15.5	15.6	15.8
	1500	14.7	15.4	15.5	15.7
	2000	14.3	14.9	15.0	15.1
	2500	12.2	14.0	14.1	14.3
Input Return Loss (dB)	500	4.7	5.5	5.6	5.7
	1000	14.7	14.7	15.0	15.4
	1500	13.2	22.5	23.4	25.0
	2000	14.4	27.2	29.6	31.7
	2500	14.3	25.6	27.5	28.9
Output Return Loss (dB)	500	5.2	12.2	12.6	13.3
	1000	12.4	12.7	13.1	14.2
	1500	13.5	11.7	12.0	12.8
	2000	11.0	11.2	11.5	12.0
	2500	8.7	11.2	11.4	11.7
Output Power at 1dB Compression (dBm)	500	13.2	11.2	11.4	12.1
	1000	14.8	12.1	12.3	12.8
	1500	14.2	12.3	12.5	12.9
	2000	13.4	12.4	12.6	12.9
	2500	13.3	12.6	12.7	12.9
Output IP3 (dBm)	500	-	22.9	23.1	23.8
	1000	-	23.3	23.5	23.9
	1500	-	23.3	23.5	23.8
	2000	-	23.5	23.6	23.8
	2500	-	23.5	23.6	23.8
NF (dB)	500	4.8	4.9	4.9	5.0
	1000	4.8	4.5	4.5	4.6
	1500	4.9	4.4	4.4	4.5
	2000	5.0	4.4	4.4	4.4
	2500	5.2	4.4	4.5	4.5
Directivity (Isolation - Gain) (dB)	500	26.3	36.1	36.8	37.2
	1000	20.1	26.6	27.0	27.2
	1500	17.3	22.7	23.0	23.2
	2000	16.3	20.8	21.0	21.2
	2500	18.2	20.1	20.2	20.4
DC Current (mA)	DC	67.0	66.7	71.1	72.5

Notes:
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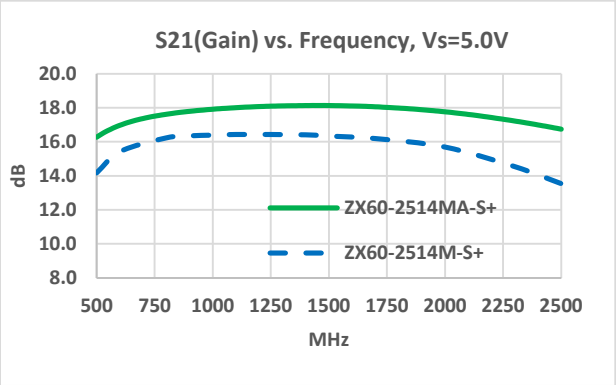
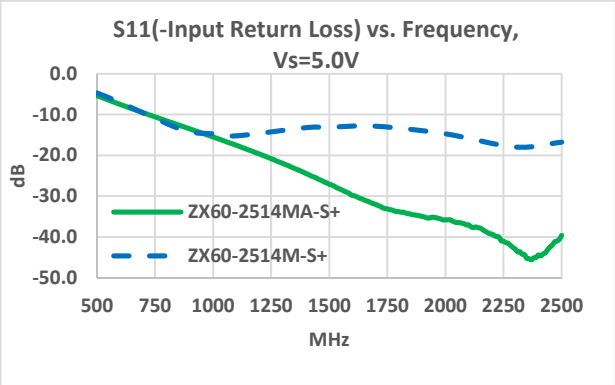
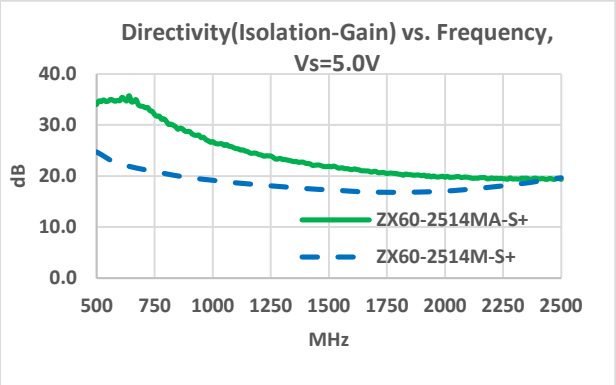
4) PERFORMANCE COMPARISON CURVES[a] (TYPICAL), DC Supply=5V:

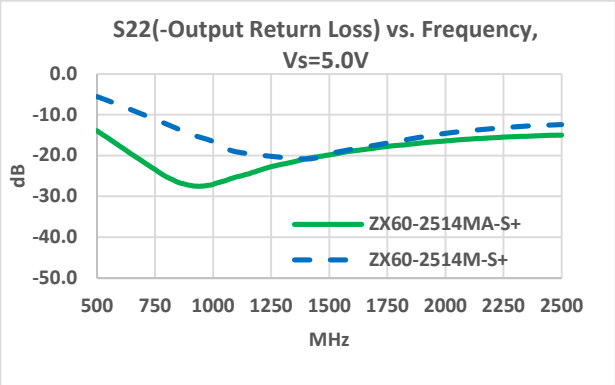
Data of Replacement Part

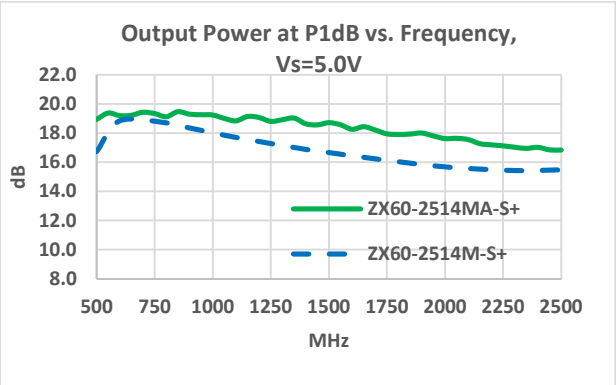
Data of Original Part

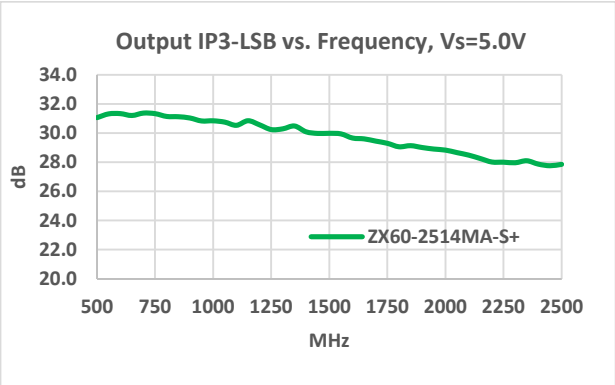












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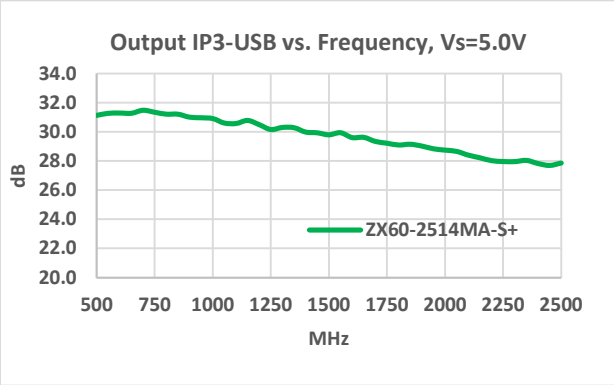
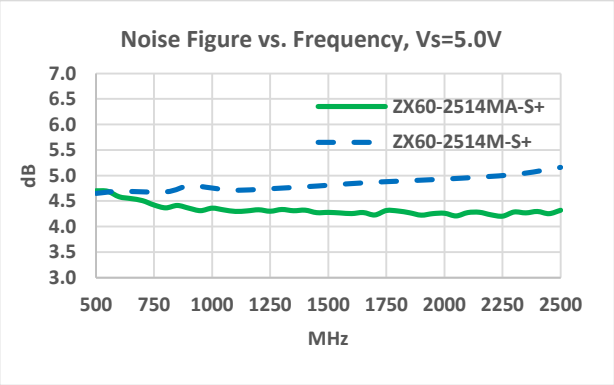
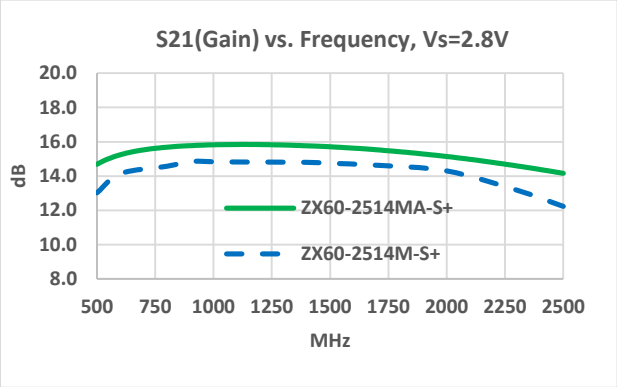


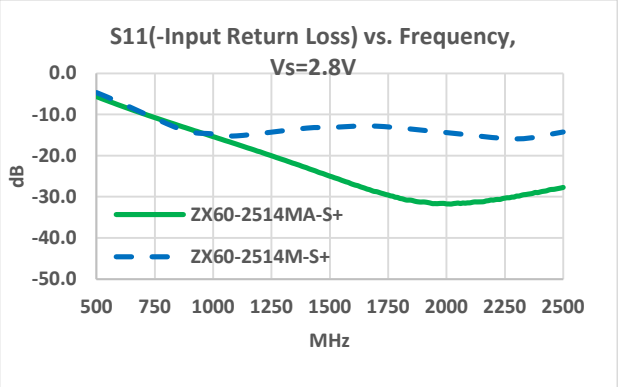


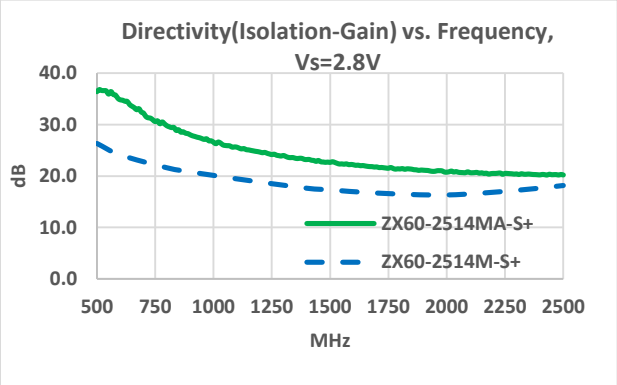
5) PERFORMANCE COMPARISON CURVES[a] (TYPICAL),DC Supply=2.8V:

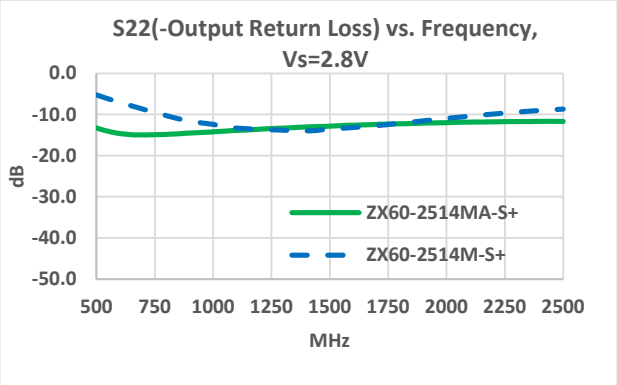
Data of Replacement Part

Data of Original Part









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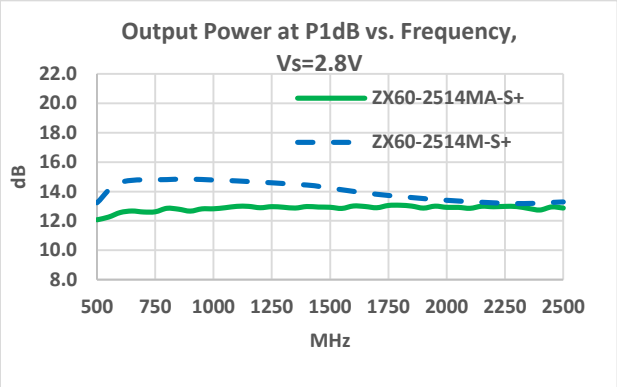

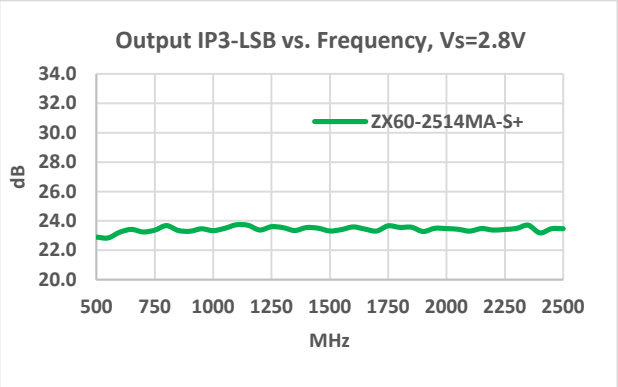

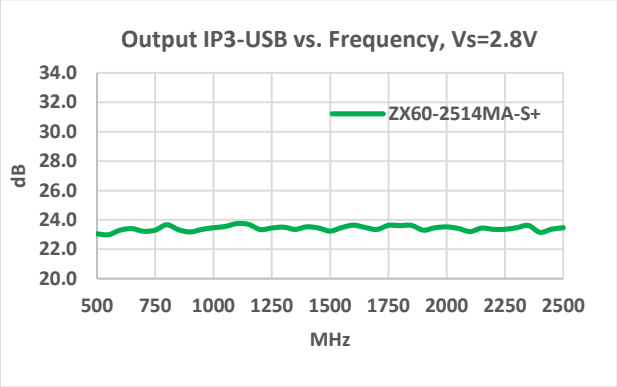

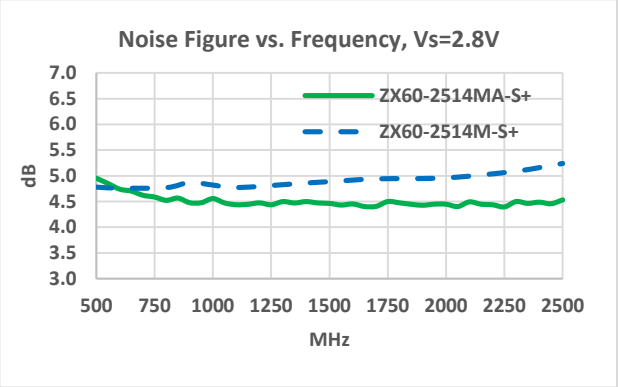

IMPORTANT NOTICE

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