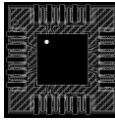

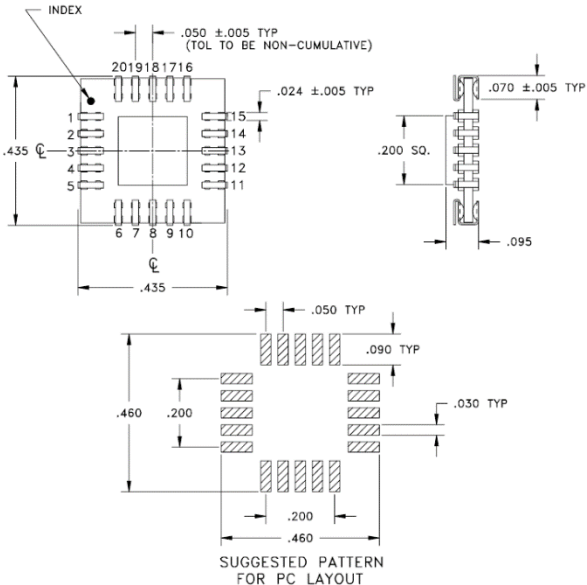
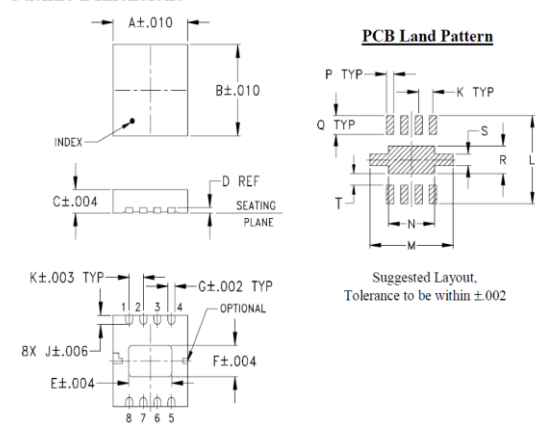


**REPLACEMENT PART REFERENCE GUIDE, YSWA-2-50DR+ AN-80-017**

ORIGINAL PART: YSWA-2-50DR+  
 REPLACEMENT PART: M3SWA-2-50DRA+

*Replacement Part has been judged by Mini-Circuits Engineering as a close replacement to Original Part<sup>a</sup>*

**MECHANICAL DIMENSIONS & PCB LAND PATTERN**

ORIGINAL PART: YSWA-2-50DR+	REPLACEMENT PART: M3SWA-2-50DRA+																																																												
																																																													
<p><b><u>Case Style 99-01-560</u></b></p>  <p style="text-align: center;">SUGGESTED PATTERN FOR PC LAYOUT</p>	<p><b><u>Case Style DL805</u></b></p> <p><b>Outline Dimensions</b></p>  <p style="text-align: center;">Suggested Layout, Tolerance to be within ±.002</p> <p><b>Outline Dimensions (inch/mm)</b></p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>A</th><th>B</th><th>C</th><th>D</th><th>E</th><th>F</th><th>G</th><th>H</th><th>J</th><th>K</th> </tr> </thead> <tbody> <tr> <td>0.128</td><td>0.128</td><td>0.035</td><td>0.008</td><td>0.080</td><td>0.047</td><td>0.013</td><td>--</td><td>0.014</td><td>0.026</td> </tr> <tr> <td>3.25</td><td>3.25</td><td>0.89</td><td>0.20</td><td>2.03</td><td>1.19</td><td>0.33</td><td>--</td><td>0.36</td><td>0.66</td> </tr> <tr> <th>L</th><th>M</th><th>N</th><th>P</th><th>Q</th><th>R</th><th>S</th><th>T</th><th colspan="2">wt</th> </tr> <tr> <td>0.158</td><td>0.158</td><td>0.084</td><td>0.013</td><td>0.030</td><td>0.048</td><td>0.020</td><td>0.025</td><td colspan="2">grams</td> </tr> <tr> <td>4.01</td><td>4.01</td><td>2.13</td><td>0.33</td><td>0.76</td><td>1.22</td><td>0.51</td><td>0.64</td><td colspan="2">0.02</td> </tr> </tbody> </table>	A	B	C	D	E	F	G	H	J	K	0.128	0.128	0.035	0.008	0.080	0.047	0.013	--	0.014	0.026	3.25	3.25	0.89	0.20	2.03	1.19	0.33	--	0.36	0.66	L	M	N	P	Q	R	S	T	wt		0.158	0.158	0.084	0.013	0.030	0.048	0.020	0.025	grams		4.01	4.01	2.13	0.33	0.76	1.22	0.51	0.64	0.02	
A	B	C	D	E	F	G	H	J	K																																																				
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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.

**ORIGINAL PART: YSWA-2-50DR+**

**REPLACEMENT PART: M3SWA-2-50DRA+**

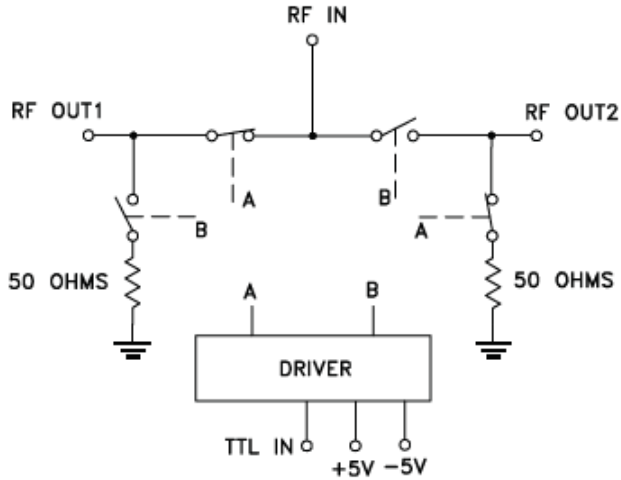
Marking

- WYW
- + MCL
- YSWA

Marking

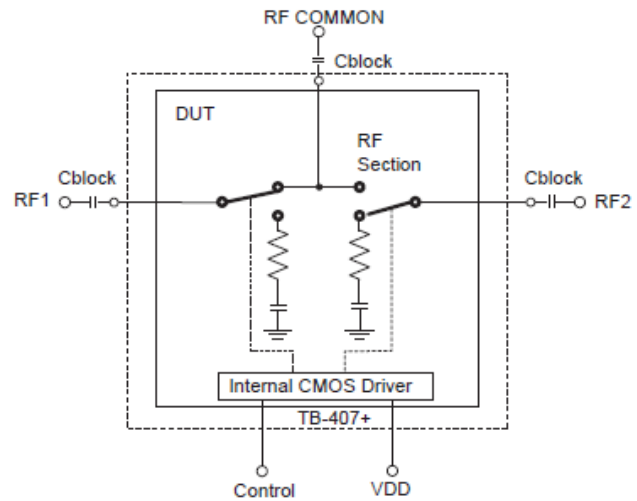
- 3SWA
- WYW
- MCL

Application Circuit



All RF connections must be DC blocked or held at 0V DC.

Application Circuit



Needs external blocking Capacitors on all RF ports  
(Suggested value: 47 pF)

Pin Connections

Function	Pin
RF IN	4
RF OUT 1	12
RF OUT 2	14
Control	2
+5V	19
-5V	7
NOT USED	9,17
GND EXT	ALL OTHER

Pin Connections

Function	Pin
RF IN	6
RF OUT 1	1
RF OUT 2	4
CMOS IN (Note 1)	2
VDD( +3 to +5V)	5
No Connection (Note 2)	7
CMOS GND (Note 1)	3
GND	8
GND	PADDLE

Notes: Pin Connections are same as in original part, except Pin 7 has no internal connection  
 1) Driver is CMOS compatible instead of TTL  
 2) In replacement situations, -5V can be applied to Pin 7 with no impact on performance

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.

## CONCLUSIONS:

### 1) FORM-FIT-FUNCTION COMPATIBLE<sub>a</sub>:

Replacement part is not Form-Fit compatible. Customer PCB layout need to change plus external blocking Capacitors on RF ports are needed.

Following is a summary of Electrical changes/improvements:

Typical performance: See Paragraphs 2

Min/Max Specifications seen below,

Parameter	Original Part (YSWA-2-50DR+)	Replacement Part (M3SWA-2-50DRA+)
Positive Power Supply (V <sub>DD</sub> )	4.9 to 5.5V	+3V to +5.0V
Negative Power Supply(V <sub>SS</sub> )	-5.5 to -4.9V	Not Required
Control Input Low Voltage	0.2V Max	0V Min, 0.5 Max
Control Input High Voltage	5V Max	0.7V <sub>DD</sub> to V <sub>DD</sub>
+5V Positive Supply Current (I <sub>DD</sub> ) -5V Negative Supply Current (I <sub>SS</sub> )	5mA Typ. 20mA Max. 5mA Typ. 20mA Max	50 µA typ. , 200 µA max ---
Control Current	High V, 5mA Max, Low V, 0.2mA Max	0.2uA typ., 10 uA max
Rise/Fall Time (10 to 90%)	5ns typ. 15ns Max	16 ns Typ.
Switching Time (turn on/off) 50% Control to 90% RF/10% RF	10ns typ. 20ns Max	29 ns Typ.
P1dB (dBm) at V <sub>DD</sub> =5V typ. Over	DC to 500MHz 18 Typ. 500-2000MHz 20 Typ. 2000-5000MHz 22.5 Typ.	100- 1000MHz 23 Typ. 1000-2000MHz 30 Typ. 2000- 4500MHz 26 Typ.
ESD HBM	Class 1C (1000 to <2000V)	Class 1A (250 to < 500V)
Absorptive	Yes	Yes, from 500-4500 MHz (See Paragraph 3)
DC Blocking Caps on RF ports	All RF connections must be DC blocked or held at 0V DC.	Needs external blocking Capacitors on all RF ports (Suggested value: 47 pF)

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.

**2) PERFORMANCE COMPARISON CURVES: Original Part (Vdd = 4.6 & -4.6V, Vctrl = 0 & 4.6V)  
Replacement Part (Vdd = 5V, Vctrl = 0 & 3.7V)**

Replacement Guide	Freq (MHz)		M3SWA-2-50DRA+ 5 Units @Vdd = 5V @Vctrl = 0V & 3.7V			YSWA-2-50DR(+) 19 Units @Vdd = -4.6V & 4.6V @Vctrl = 0, 4.6V		
	From	To	Min.	Avg.	Max.	Min.	Avg.	Max.
INSERTION LOSS S-1 (dB)	10	10	0.6	0.6	0.6	0.5	0.5	0.6
	100	100	0.7	0.7	0.7	0.6	0.6	0.6
	1200	1200	0.8	0.8	0.8	0.8	0.8	0.8
	2250	2250	1.0	1.0	1.1	1.1	1.1	1.2
	4750	4750	1.4	1.5	1.6	1.5	1.5	1.6
INSERTION LOSS S-2 (dB)	10	10	0.6	0.6	0.6	0.5	0.5	0.6
	100	100	0.6	0.6	0.7	0.6	0.6	0.7
	1200	1200	0.8	0.8	0.8	0.8	0.8	0.9
	2250	2250	1.0	1.0	1.0	1.0	1.0	1.1
	4750	4750	1.3	1.4	1.4	1.5	1.5	1.7
ISOLATION S-1 (dB)	10	10	75.4	76.4	77.1	73.2	86.2	92.1
	100	100	65.9	66.0	66.2	65.3	73.8	77.1
	1200	1200	55.5	59.1	72.8	46.0	46.9	47.4
	2250	2250	42.1	43.5	48.2	37.7	38.2	38.5
	4750	4750	27.2	30.4	37.9	28.5	28.8	29.8
ISOLATION S-2 (dB)	10	10	69.9	70.3	70.9	73.1	84.5	91.5
	100	100	59.3	59.3	59.4	65.0	72.8	74.7
	1200	1200	61.0	62.6	65.9	46.5	47.5	47.9
	2250	2250	44.6	46.4	51.8	39.9	40.4	40.6
	4750	4750	27.7	30.9	38.3	28.0	28.7	29.0
RETURN LOSS S(ON1) (dB)	10	10	24.5	24.5	24.6	25.2	25.3	25.6
	100	100	24.6	24.7	24.7	25.8	26.0	26.3
	1200	1200	26.6	26.9	27.5	20.2	20.8	21.1
	2250	2250	21.5	22.1	23.4	15.3	15.8	16.1
	4750	4750	15.6	16.9	17.9	15.7	16.5	17.6
RETURN LOSS S(ON2) (dB)	10	10	23.5	24.0	24.3	24.0	24.9	25.1
	100	100	23.3	23.9	24.1	24.8	25.7	26.0
	1200	1200	23.7	24.3	24.7	26.7	27.9	28.6
	2250	2250	23.0	23.5	24.0	18.1	18.7	19.2
	4750	4750	16.2	17.4	18.3	15.9	17.0	17.9
RETURN LOSS 1(ON) (dB)	10	10	24.4	24.4	24.4	25.3	25.4	25.7
	100	100	24.5	24.6	24.6	26.3	26.5	26.7
	1200	1200	21.8	21.9	21.9	24.2	25.2	26.4
	2250	2250	17.9	18.1	18.4	13.2	13.5	13.7
	4750	4750	20.5	22.1	24.4	15.8	16.5	17.1
RETURN LOSS 2(ON) (dB)	10	10	23.2	23.8	24.0	24.4	25.3	25.6
	100	100	23.1	23.6	23.8	25.4	26.4	26.7
	1200	1200	22.6	23.1	23.3	26.8	27.6	28.9
	2250	2250	17.6	17.9	18.1	16.5	17.1	17.8
	4750	4750	23.4	25.4	28.1	15.5	16.6	17.4
RETURN LOSS 1(OFF) (dB)	10	10	0.1	0.1	0.1	28.2	28.7	29.2
	100	100	2.2	2.2	2.2	27.6	28.0	28.4
	1200	1200	20.8	21.2	21.5	18.7	18.9	19.1
	2250	2250	20.4	21.0	21.7	20.6	21.2	22.1
	4750	4750	13.3	13.7	14.2	19.3	20.1	20.9
RETURN LOSS 2(OFF) (dB)	10	10	0.1	0.1	0.1	28.2	28.9	31.1
	100	100	2.1	2.1	2.1	28.0	28.6	30.7
	1200	1200	20.3	20.5	20.9	24.1	24.9	25.7
	2250	2250	22.7	23.3	23.7	27.3	28.1	29.3
	4750	4750	14.3	14.9	15.4	20.2	21.5	22.3

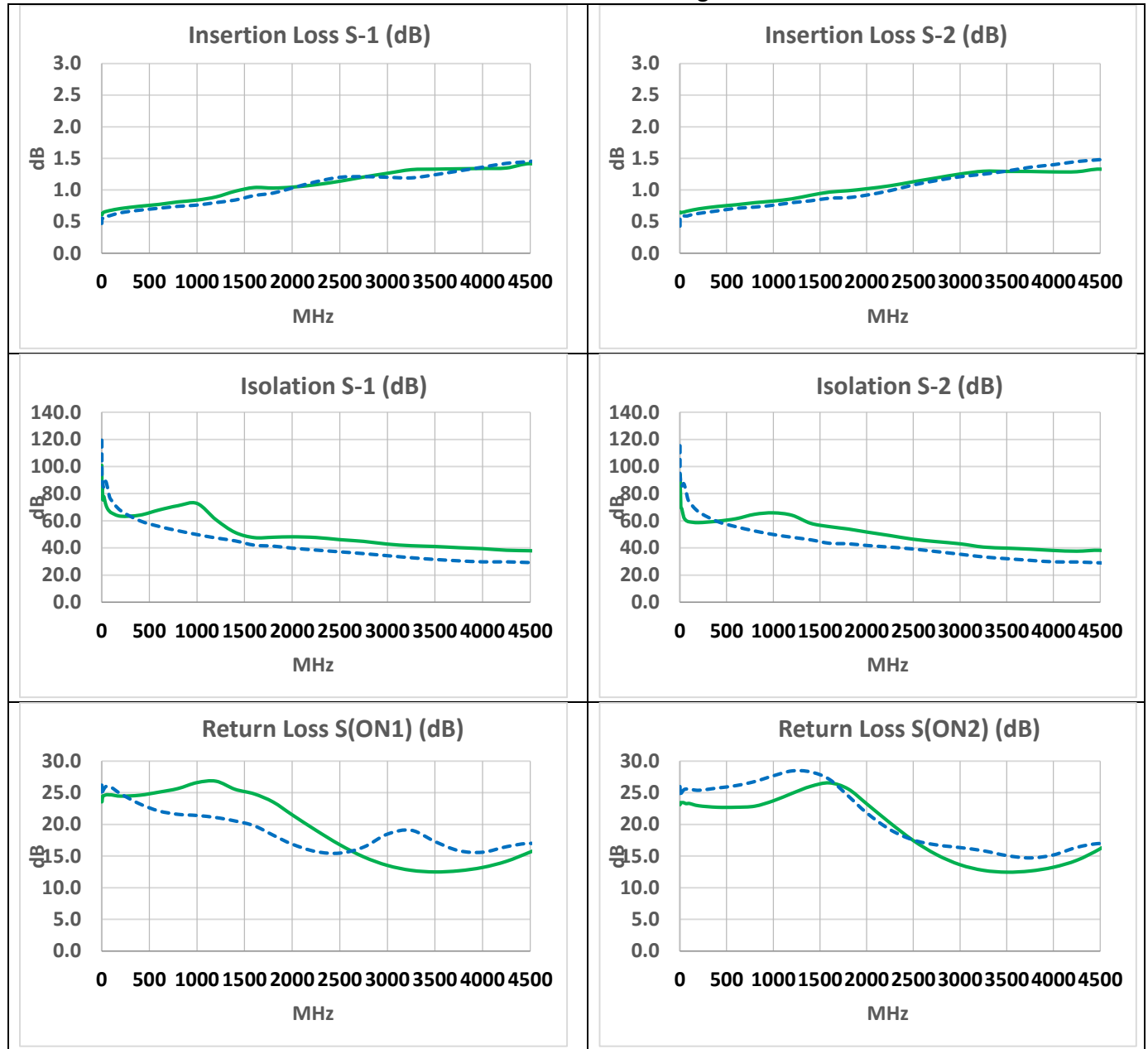
Notes:  
a. Suitability for model replacement within a particular system must be determined by and is solely the responsibility of the customer based on, among other things, electrical performance criteria, stimulus conditions, application, compatibility with other components and environmental conditions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

3) **PERFORMANCE COMPARISON CURVES: Original Part (Vdd = 4.6 & -4.6V, Vctrl = 0 & 4.6V)**  
**Replacement Part (Vdd = 5V, Vctrl = 0 & 3.7V)**

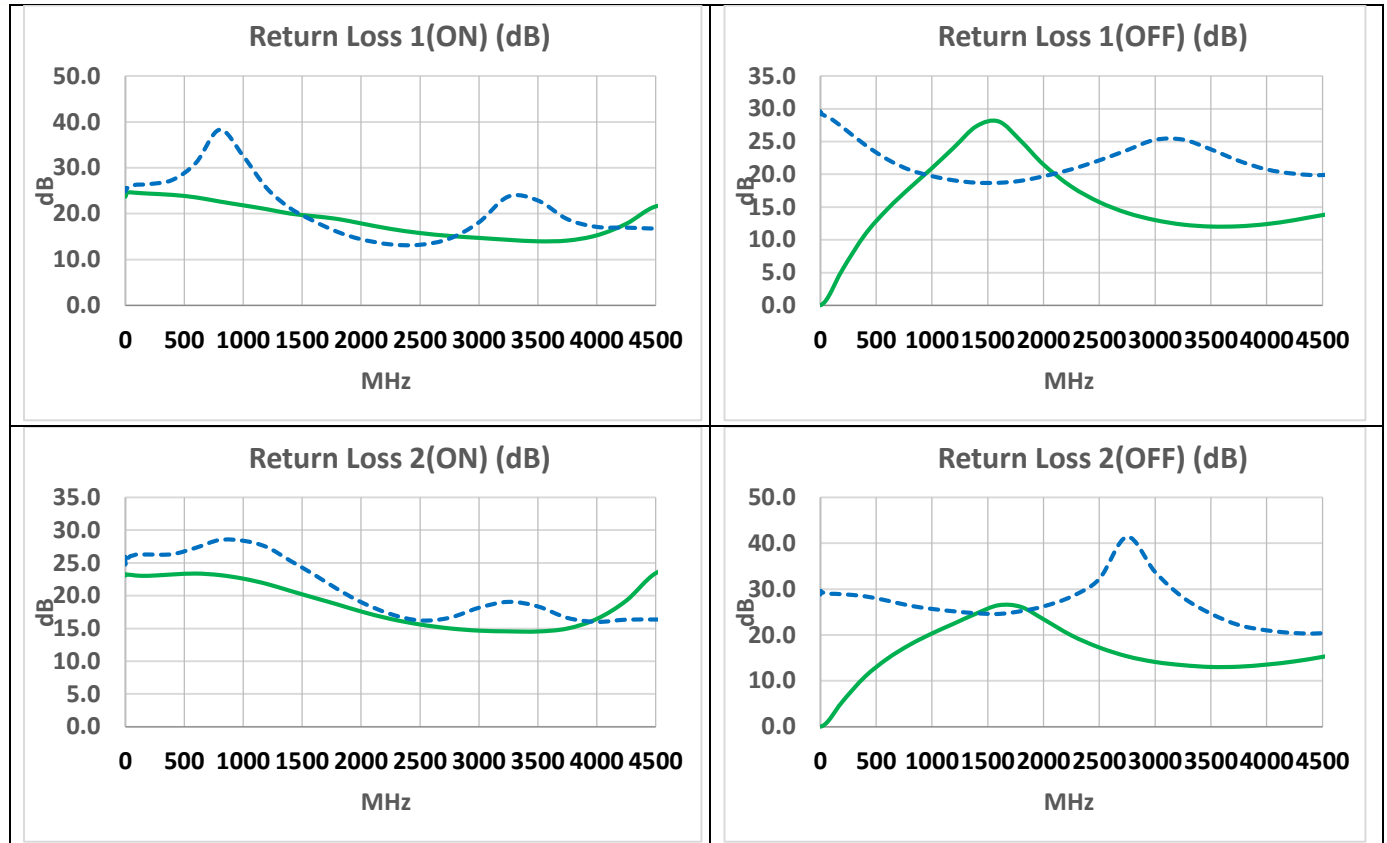


Data of Replacement Part

Data of Original Part



Notes:  
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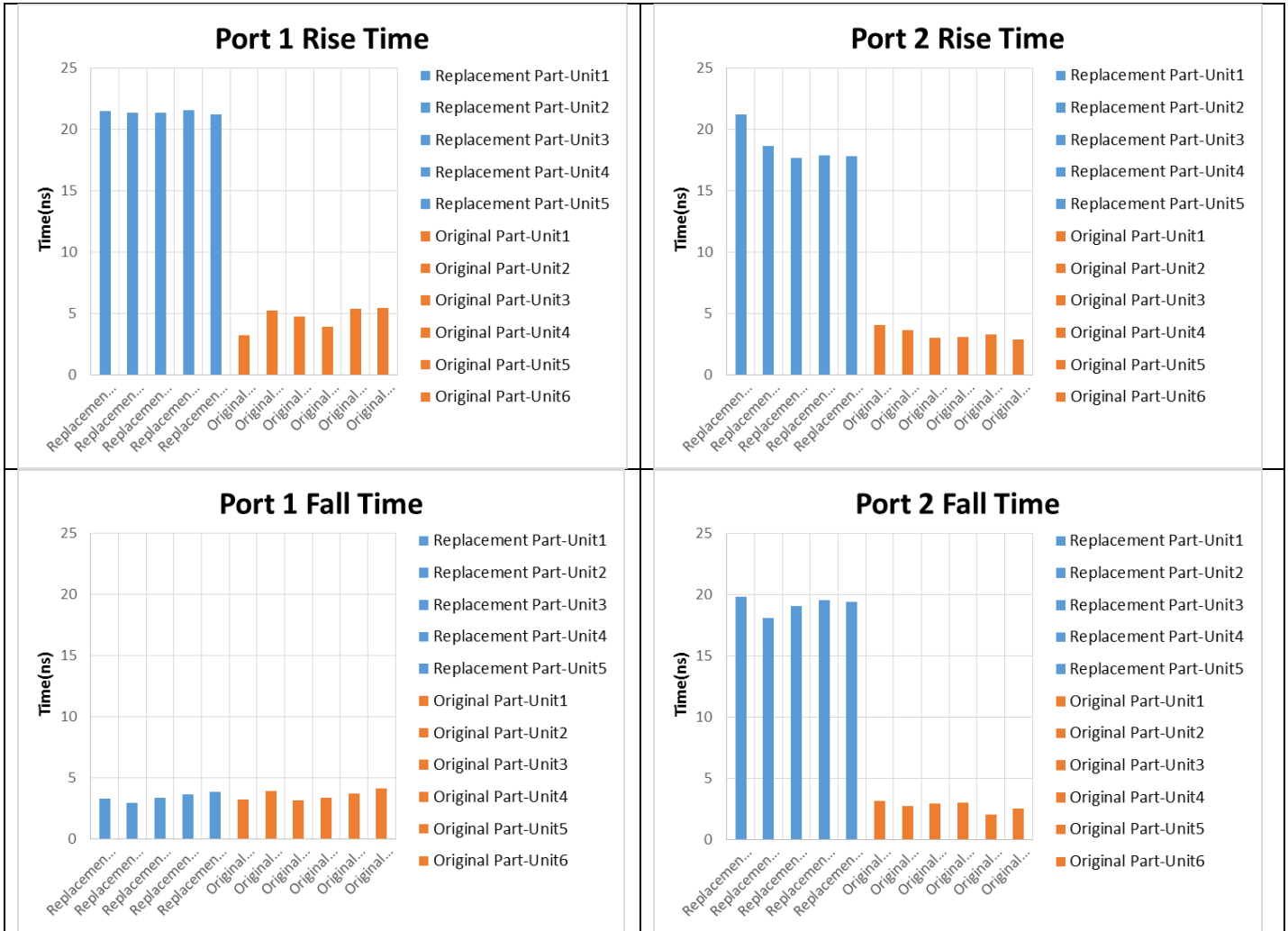
Notes:  
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**1) SWITCHING/RISE/FALL TIME COMPARISON (Original Part (Vdd = 5 & -5V, Vctrl = 0 & 3.7V)  
Replacement Part (Vdd =5V, Vctrl = 0 & 3.7V)**

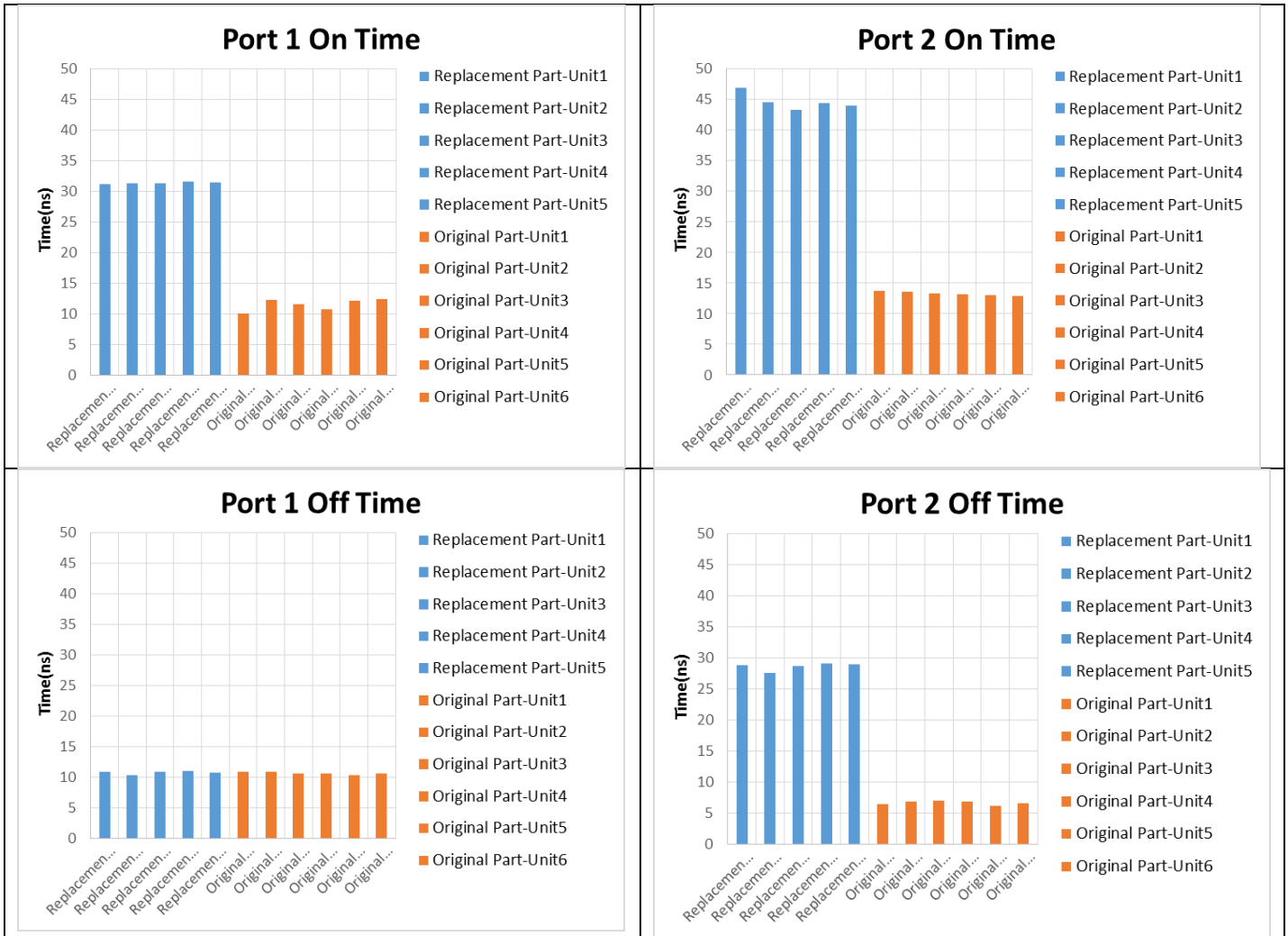
Rise Time: 10 to 90% RF, Fall Time: 90% to 10% RF

Switching Time:

On Time 50% Control to 90%/10% RF, Fall Time 50% Control to 10% RF



Notes:  
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