CSWA2-63DR+ PCN Report

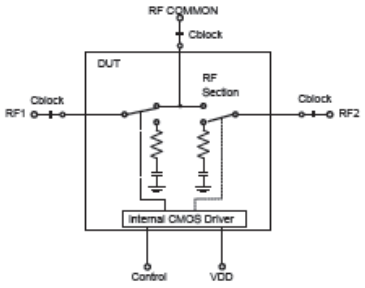
AN-80-009

As a result of obsolescence of the original dice, the re-design effort includes the use of a new set of dice in existing package maintaining existing PCB footprint. The replacement dice has been judged by Mini-Circuits Engineering as a suitable replacement for the existing CSWA2-63DR+[a].

APPLICATION CIRCUITS, CASE STYLES & FOOT PRINT

ORIGINAL PART: CSWA2-63DR+	REPLACEMENT PART: CSWA2-63DR+

APPLICATION CIRCUIT: No Change

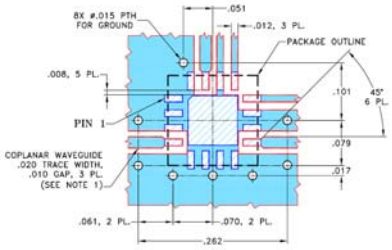


Cblock should be free of resonance over frequency of operation.

Frequency (MHz)	Cblock (Suggested value)
0.3-500	0.1µF
500-6000	47pF

CASE STYLE: DG1293: No Change

Suggested PCB drawing: No Change



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CONCLUSION:

1) **FORM-FIT-FUNCTIONAL COMPATIBLE**$_a$: Form & FIT Compatible with minor Functional Changes as follows:

ORIGINAL PART: CSWA2-63DR+	**REPLACEMENT PART: CSWA2-63DR+**
Control Voltage High: 2.7V min, V_{DD} max	Control Voltage High: 2.7V min*, V_{DD} max *V_{DD} = 3 to 4V, Control Voltage High = 2.7V min V_{DD} = 4 to 5V, Control Voltage High = 3.5V min
Supply Current (V_{DD} = 5V): 18uA typ	Supply Current (V_{DD} = 5V): 50uA typ
Isolation between common port and RF1/RF2 ports 1) 54dB min, 70dB typ at 500-2000MHz 2) 50dB min, 60dB typ at 2000-3000MHz 3) 50dB min, 54dB typ at 3000-4000MHz	Isolation between common port and RF1/RF2 ports 1) 50dB min, 60dB typ at 500-2000MHz 2) 47dB min, 52dB typ at 2000-3000MHz 3) 45dB min, 50dB typ at 3000-4000MHz
Isolation between RF1 and RF2 ports 1) 76dB typ at 0.3-500MHz 2) 64dB typ at 500-2000MHz 3) 50dB min, 54dB typ at 2000-3000MHz	Isolation between RF1 and RF2 ports 1) 70dB typ at 0.3-500MHz 2) 60dB typ at 500-2000MHz 3) 47dB min, 52dB typ at 2000-3000MHz

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2) **TYPICAL PERFORMANCE COMPARISON** [a]: T_{AMB}=25°C, V_{DD}=5V

		Current Fab			Future Fab		
	Condition (MHz)	Min	Max	Average	Min	Max	Average
Insertion Loss (dB)	500 to 2000	0.78	1.04	1.0	0.65	0.92	0.9
	2000 to 3000	0.81	1.14	1.1	0.79	1.00	1.0
	3000 to 4000	1.05	1.29	1.2	0.86	1.25	1.2
	4000 to 6000	1.20	1.50	1.4	0.99	1.35	1.3
Isolation RF-IN to RF-OUT (dB)	500 to 2000	56.38	65.65	58	51.83	66.29	56
	2000 to 3000	54.40	58.25	55	49.14	57.49	52
	3000 to 4000	52.40	55.58	54	47.32	53.77	50
	4000 to 6000	50.35	55.89	50	43.76	50.85	44
Isolation OUT1 to OUT2 (dB)	500 to 2000	57.75	70.58	64	55.00	66.72	60
	2000 to 3000	51.90	60.49	54	50.22	58.99	52
	3000 to 4000	46.82	55.80	50	47.09	53.49	50
	4000 to 6000	40.41	54.39	44	41.08	49.91	44
Return Loss RF-IN (dB)	500 to 2000	16.74	22.73	20	17.18	21.92	20
	2000 to 3000	19.51	26.98	19	19.33	26.16	19
	3000 to 4000	12.64	26.98	15	12.03	26.96	15
	4000 to 6000	10.11	19.55	13	10.07	22.93	13
Return Loss RF-OUT (ON) (dB)	500 to 2000	17.78	28.69	20	18.63	27.10	20
	2000 to 3000	14.58	20.42	15	15.29	25.44	15
	3000 to 4000	14.58	20.92	15	13.73	19.59	15
	4000 to 6000	12.89	21.76	13	12.64	21.54	13
Return Loss RF-OUT (OFF) (dB)	500 to 2000	10.73	12.47	11	11.66	30.98	13
	2000 to 3000	11.26	12.39	11	16.52	30.98	17
	3000 to 4000	11.44	14.14	12	14.08	21.89	14
	4000 to 6000	13.56	23.26	15	13.74	18.08	14
Input IP3 (dBm)	500 to 2000	43.40	49.50	47	43.90	48.40	47
	2000 to 6000	36.50	45.40	43	37.30	45.70	43
Switching Time (ns)							
Rise Time at OUT1		17.93	19.95	18	15.58	16.32	16
Rise Time at OUT2		28.64	78.79	35	19.58	24.13	20
Fall Time at OUT1		0.75	3.40	3	0.82	1.61	1
Fall Time at OUT2		15.20	20.22	18	20.03	20.83	20
ON Time at OUT1		29.45	32.23	30	24.89	27.62	25
ON Time at OUT2		53.87	111.93	63	41.68	50.47	43
OFF Time at OUT1		8.07	10.78	9	3.30	4.65	4
OFF Time at OUT2		27.43	29.95	28	4.38	7.21	5

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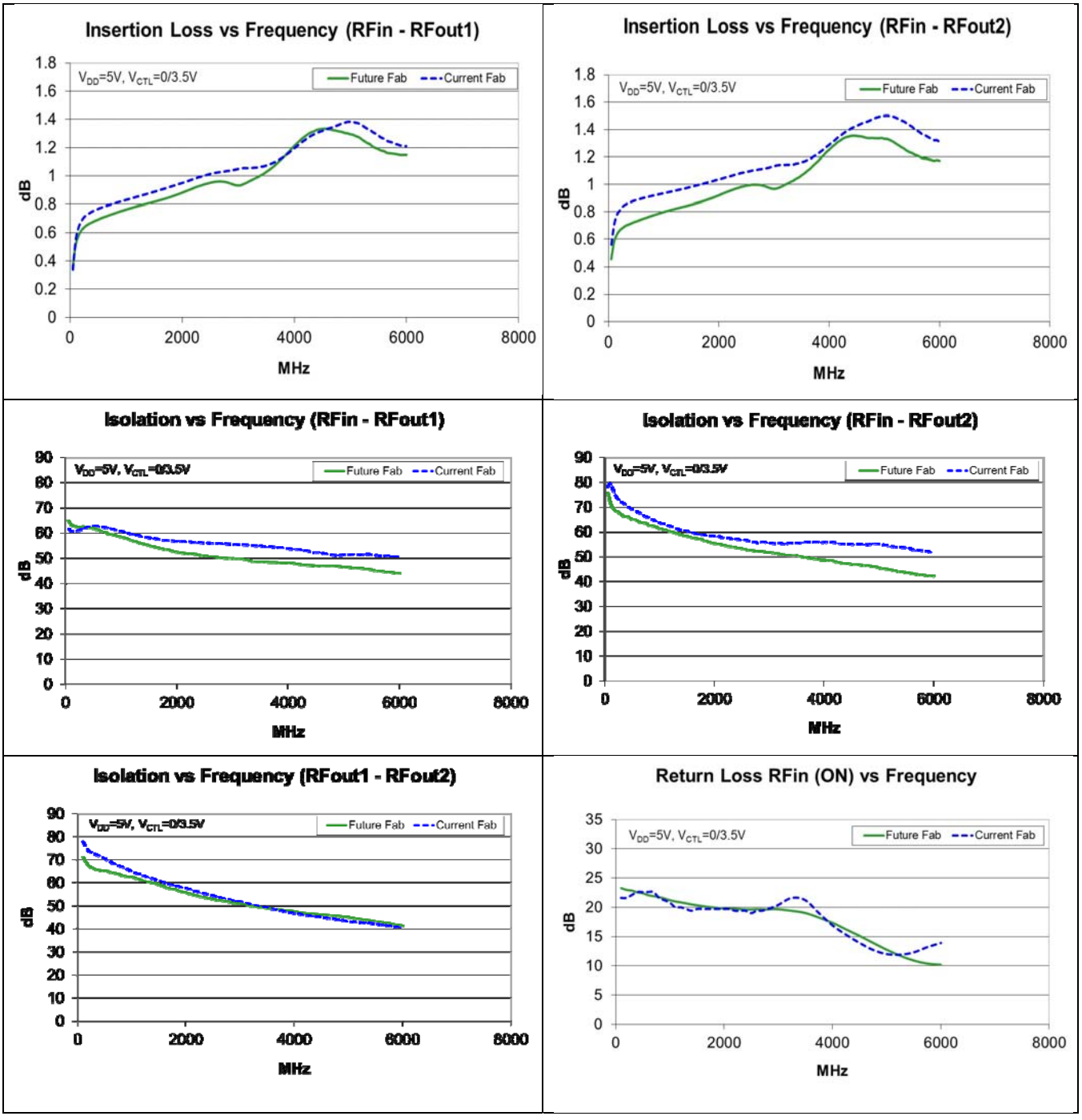
COMPARISON PERFORMANCE CURVES[a]:



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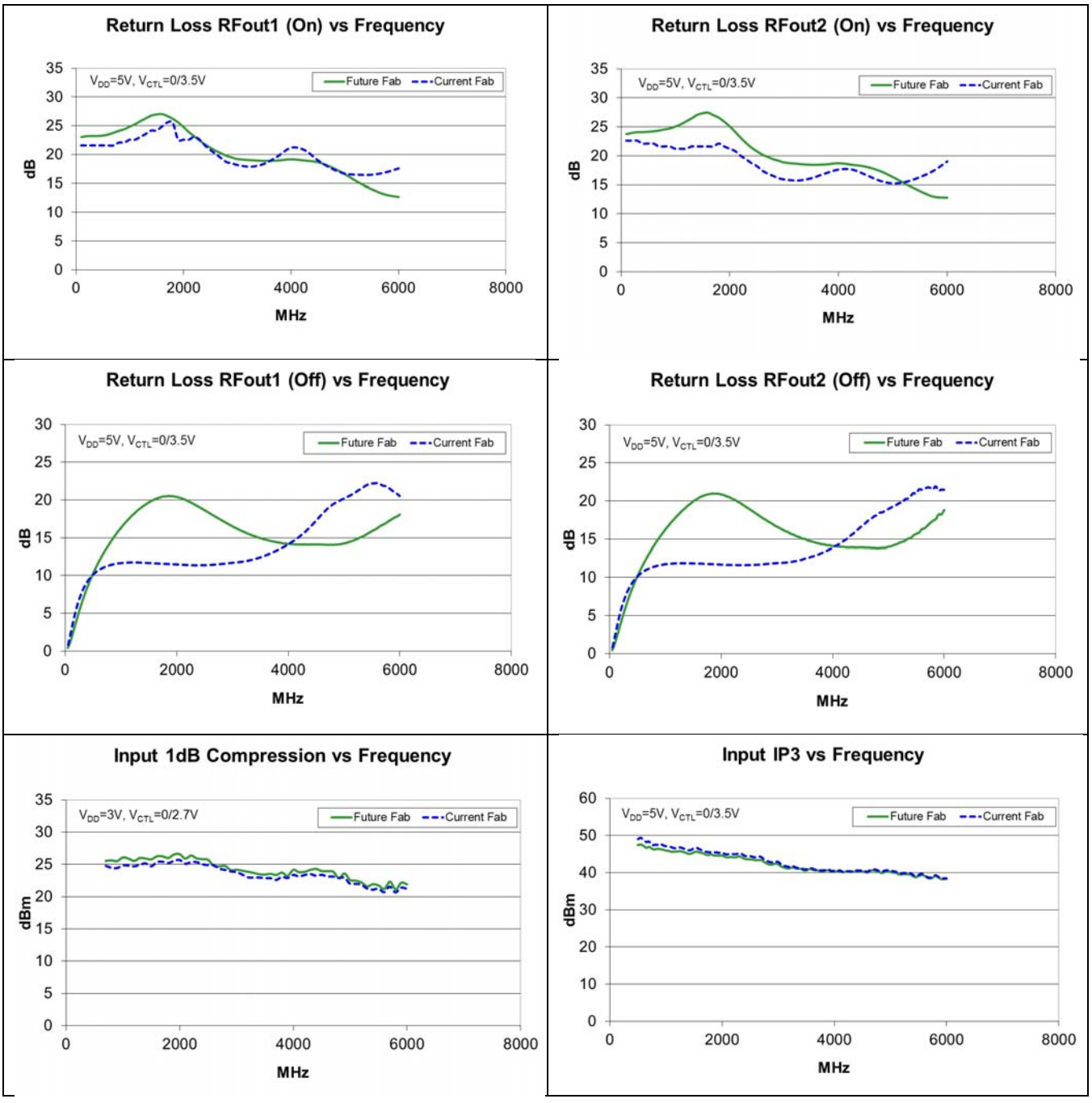
COMPARISON PERFORMANCE CURVES[a] (Continued):



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