

REPLACEMENT PART REFERENCE GUIDE D17I+:

AN-30-005



Background:

Mini-Circuits D17I+ is MMIC based Directional Coupler. Foundry has obsoleted the die (Fab A) used in D17I+. Mini-Circuits has designed a new die (Fab B) to replace the existing die. At the same time new die is packaged in Mini-Circuits standard package (Case style CA531) instead of the existing (Case Style CA531-1). Both case styles have same dimensions, the difference is in plating, see following Table. New/replacement model is called D17IA+ (FAB B).

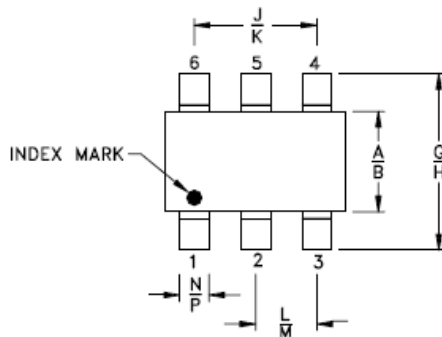
Replacement model has been judged by Mini-Circuits Engineering as a suitable replacement to Original model.

MECHANICAL DIMENSIONS & PCB LAND PATTERN

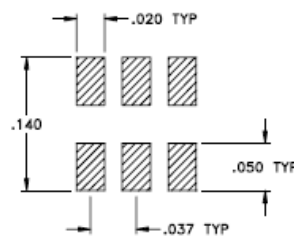
PART WITH ORIGINAL DIE (FAB A) (D17I+)	PART WITH REPLACEMENT DIE (FAB B) (D17IA+)
Case Style: CA531-1	Case Style: CA531
Lead finish: Tin plate over Nickel plate	Lead Finish: Tin-Silver alloy plate over Nickel barrier

No change in mechanical Dimensions

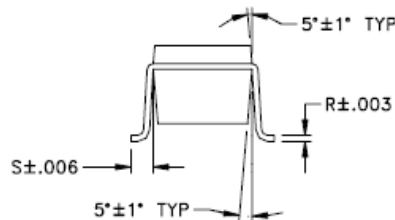
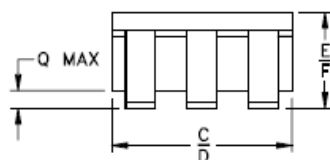
Outline Dimensions



PCB Land Pattern



Suggested Layout,
Tolerance to be within $\pm .002$



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 except as noted. Following is a summary of changes:

	Current Part FAB A	New Part FAB B
Electrical, Coupling	16.9 dB min, 19.5 dB max	15.9 dB min, 18.3 dB max
Insertion Loss (dB) max	0.8	0.7
Operating Temperature (°C)	-40 to 85°C	-40 to 105°C
Lead Finish	Tin plate over Nickel plate	Tin-Silver alloy plate over Nickel barrier

2) PERFORMANCE COMPARISON (TYPICAL) at 25°C_a:

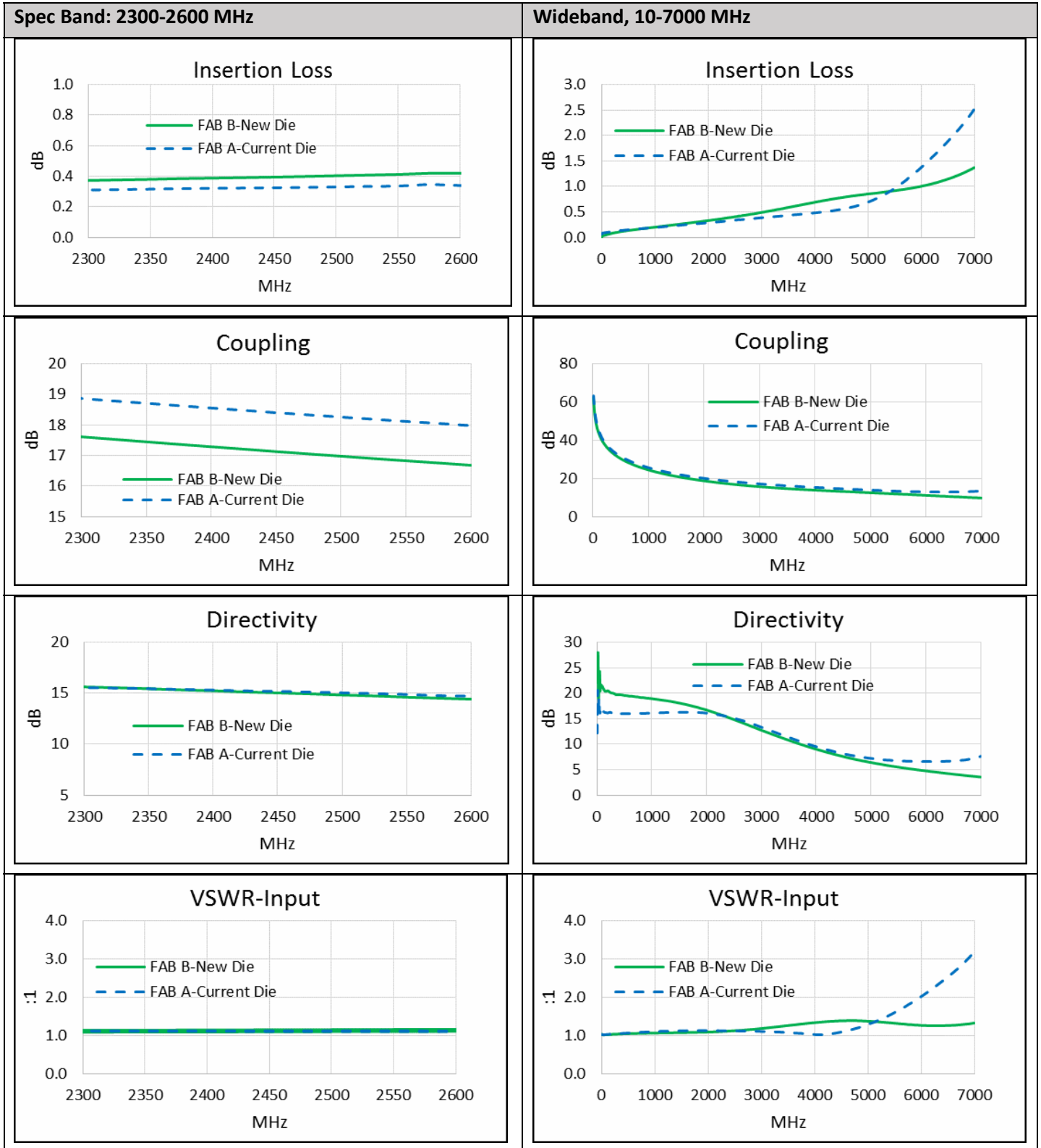
Frequency: 2300-2600 MHz

Parameter	Die Data from Current Fab A			Die Data From New Fab B			Data Sheet Specification Rev E		
	Min	Average	Max	Min	Average	Max	Min	Typ.	Max
Coupling (dB)	18.0	18.5	19.1	16.6	17.1	17.6	16.9		19.5
Mainline Loss (dB)	0.31	0.33	0.35	0.37	0.40	0.42		0.5	0.8
Directivity (dB)	14.1	14.9	15.6	14.2	15.2	16.4	9	14	
VSWR-INPUT (:1)	1.11	1.12	1.12	1.08	1.12	1.16		1.3	
VSWR-OUTPUT (:1)	1.11	1.11	1.12	1.08	1.11	1.15		1.3	
VSWR- COUPLED (:1)	1.28	1.33	1.38	1.27	1.33	1.38		1.3	

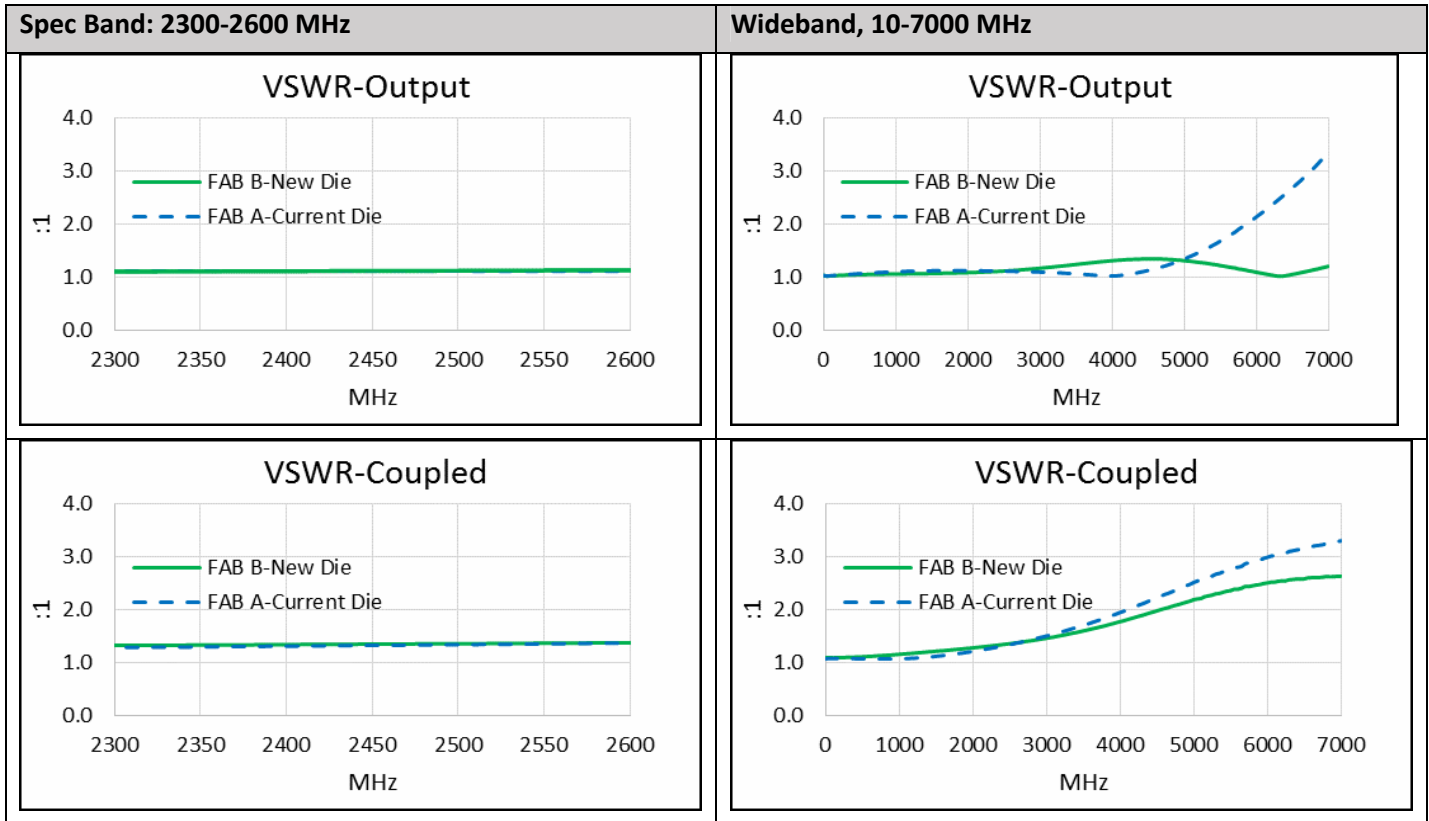
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3) PERFORMANCE COMPARISON CURVES^a (TYPICAL) at 25°C:



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