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Product Note No 7

Test Fixture for Medium and High Power RF Transistors

Focus Microwaves presents a modular test fixture, model PTJ0, designed for S-parameter and load pull tests of packaged transistors in R&D and Production in the frequency range DC to 4.5 GHz (optional 8 GHz).

Description of the Test Fixture

The fixture consists of one fixed and one movable block, both carrying female SMA connectors (figure 1). Variable transistor supports from 0.1" to 1" large can be inserted between the two blocks and fastened using a traversing screw.
For good heat removal and RF ground plane definition the transistor packages can be either clamped down using package-specific clamps, or screwed to the body of the support.
The two connector blocks are fixed on a flat base with four adjustable feet to better fit in existing test setups.
DC bias can be applied either via bias tees from the test setup or via wire transformers connected to the microstrip sections.
The test fixture includes TRL characterization components (Through and Delay Line sections) that permit 'in fixture' S-parameter measurements.
The S-parameters of both halves of the fixture can be supplied in S2P (ASCII) format on a 1.44 MB diskette for the user's own applications..
The fixture supports both 50 Ω and lower impedance microstrip sections used as pre-matching transformers to load pull test very low impedance transistors .

The fixture weighs 1.5 kg and its massive layout aims for better heat removal and ruggedness.

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Specifications Test Fixture, model PTJ0

Feature	Standard	Optional
Frequency Range	DC to 4.5 GHz	8 GHz
Return Loss (Through Line)	20 dB, min	
Insertion Loss	0.5 dB, max	
Connector Type	SMA fem/fem-direct	SMA with launchers
Microstrip Substrate, Thickness	0.031" Teflon ϵ=2.2	0.02" to 0.1" TBD
Test Substrate (Freq TBD)	2 X 50Ω + 2 X 20 Ω	CPW, <20 Ω
Power Dissipation DC/RF	100/50(CW) Watts	
Thermal Resistance	0.5°/Watt	Radiator/Fan
Size (L x H x W inches)	5.25 X 2.0 X 3.12 inches	
Weight	1.5 kg	
Material	Aluminum	Copper Inserts
Transistor Inserts (two)	0.1 to 1" wide	TBD

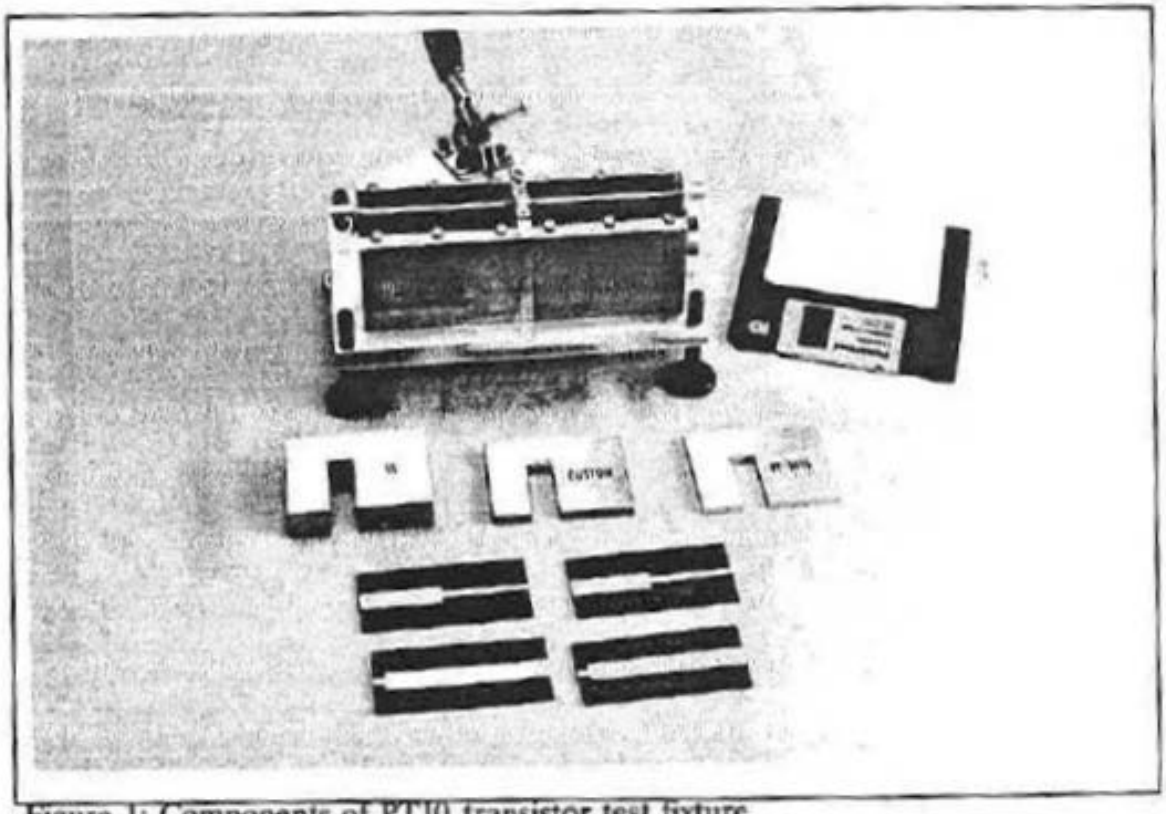

Figure 1: Components of PTJ0 transistor test fixture