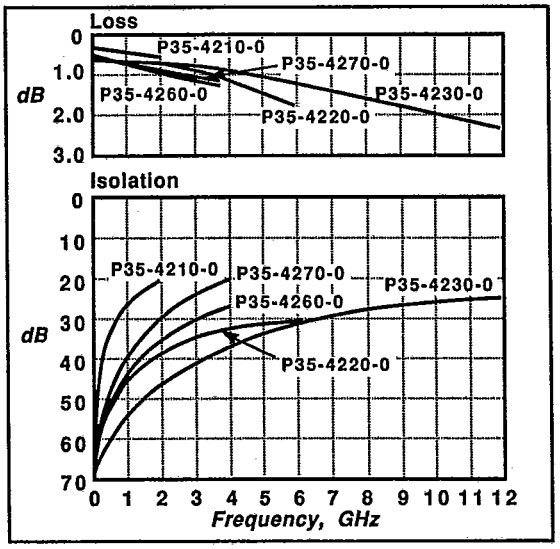
Three Five Product Information

T-51-11

GaAs MMIC Switches

Summary Qualification Report

Plessey now offer an extensive range of RF switch chip devices based on GaAs MESFET technology. These switch products span the frequency range up to 12GHz and offer a variety of switching functions. To provide the confidence in the basic MESFET device as used in this novel application of rf switching, an extensive product qualification programme was carried out on the basic rf switch cell, the P35-4210, an SPDT switch usable to 2 GHz frequencies. This report summarises the tests undertaken and the results obtained on samples of devices taken from pilot production lots.



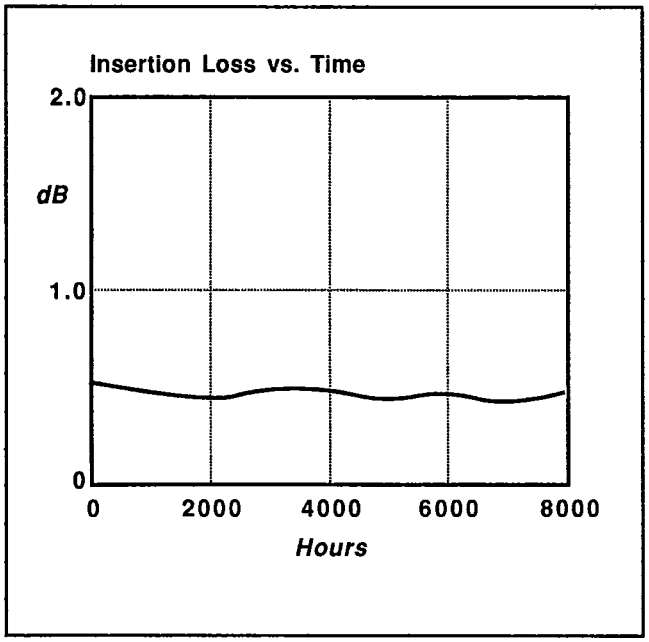
Qualification Tests Based on MILSTD 883C/BS9300

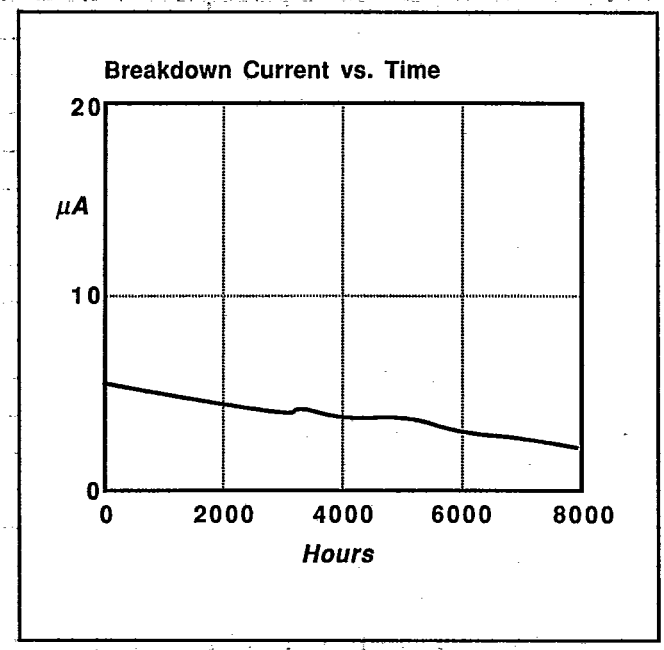
Sub Group	Qualification Tests	Conditions
A & B	(1) DC Tests (2) RF Tests	Internal production test specification
C	(1) RF Testing (2) Rapid change of temp (3) Solderability (4) 1000 hour endurance test	@ spot frequencies up to 1GHz T_{amb} = −65°C to 150°C T_{amb} = 150°C, VG = −12V
D	(1) Maximum RF (2) RF @ temperature (3) Vibration (4) Acceleration (5) Damp heat (6) 8000 hour endurance test	1W CW @ 1GHz and 0.3W CW @ 10MHz T_{amb} = −55°C and +150°C 150 to 2000 Hz, 196ms^{-2} 196 Kms^{-2} + 25°C/ + 55°C/95%RH 28 cycles T_{amb} = 150°C, VG = −12V

Test and Failure Criteria

Symbol	Parameters	Maximum allowable delta
I_{DSS}	Channel current	±10%
I_P	Pinch off current	±20% or 100μA, whichever greatest
I_B	Breakdown current	±20% or 100μA, whichever greatest
I_F	Forward current	±10%

Typical Results





39 off devices were selected from 3 off consecutive production batches and subject to the above qualification tests.

The total number of accumulated device test hours on endurance test was 275,000.

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Publication No. PRT-0031 Issue 1 1-90