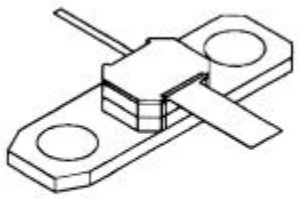
ADVANCED POWER TECHNOLOGY RF®

140 COMMERCE DRIVE
MONTGOMERYVILLE, PA
18936-1013
PHONE: (215) 631-9840
FAX: (215) 631-9855

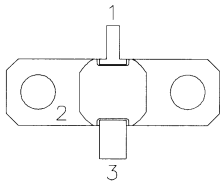
MS2321

RF & MICROWAVE TRANSISTORS
AVIONICS APPLICATIONS



.250 SQ. 2LFL (M105)
hermetically sealed

PIN CONNECTION



1. Collector
2. Base
3. Emitter

Features

- DESIGNED FOR HIGH POWER PULSED IFF, DME, AND TACAN APPLICATIONS
- 20 W (typ.) IFF 1030–1090 MHz
- 15 W (min.) DME 1025–1150 MHz
- 15 W (typ.) TACAN 960–1215 MHz
- 1025 - 1150 MHz
- 50 VOLT OPERATION
- P_{OUT} = 15 WATTS
- G_P = 10 dB MINIMUM
- 20:1 VSWR CAPABILITY @ RATED CONDITIONS
- COMMON BASE CONFIGURATION

DESCRIPTION:

The MS2321 is a gold metallized, silicon NPN power transistor designed for pulsed applications with low duty cycles such as IFF, DME and TACAN. Internal impedance matching is utilized for maximum broadband performance and simplified external matching.

ABSOLUTE MAXIMUM RATINGS (Tcase = 25°C)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	65	V
V_{CEO}	Collector-Emitter Voltage	65	V
V_{EBO}	Emitter-Base Voltage	3.5	V
I_C	Device Current	1.5	A
P_{DISS}	Power Dissipation	87.5	W
T_J	Junction Temperature	+200	°C
T_{STG}	Storage Temperature	-65 to +150	°C

Thermal Data

$R_{TH(J-C)}$	Junction-case Thermal Resistance	2.0	°C/W

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ELECTRICAL SPECIFICATIONS (Tcase = 25°C)

STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	I_C = 10mA	I_E = 0mA	65	---	---	V
BV_{CES}	I_C = 25mA	V_{BE} = 0V	65	---	---	V
BV_{EBO}	I_E = 1mA	I_C = 0mA	3.5	---	---	V
I_{CES}	V_{CE} = 50V	I_E = 0mA	---	---	2	mA

DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f =1025 - 1150 MHz	P_{IN} = 1.5W	V_{CC} = 50V	15	---	---	W
G_P	f =1025 - 1150 MHz	P_{IN} = 1.5W	V_{CC} = 50V	10	---	---	dB
η_C	f =1025 - 1150 MHz	P_{IN} = 1.5W	V_{CC} = 50V	30	---	---	%

Conditions: Pulse Width = 10 μSec Duty Cycle = 1%

IMPEDANCE DATA

FREQ	Z_{IN} (Ω)	Z_{CL} (Ω)
1025 MHz	3.0 + j5.0	5.8 + j7.5
1090 MHz	3.8 + j7.5	3.3 + j8.5
1150 MHz	2.5 + j20.0	6.0 + j8.9

V_{CC} = 50V
P_{IN} = 1.5W

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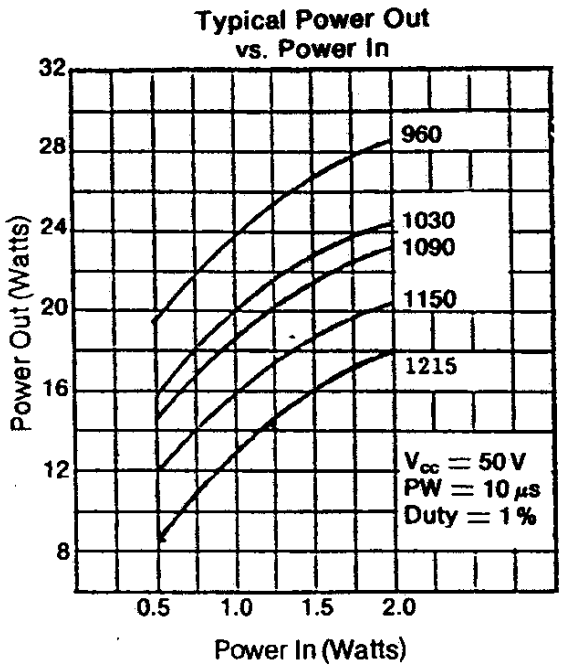
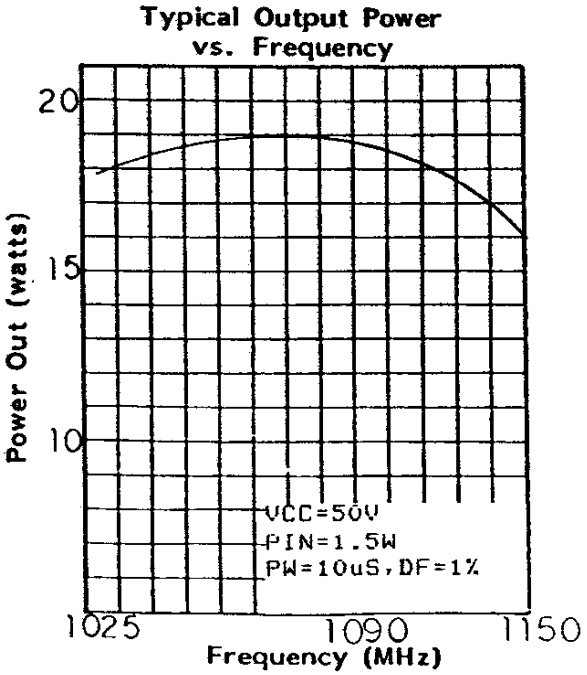
TYPICAL PERFORMANCE

POWER OUTPUT vs POWER INPUT



POWER OUTPUT vs FREQUENCY



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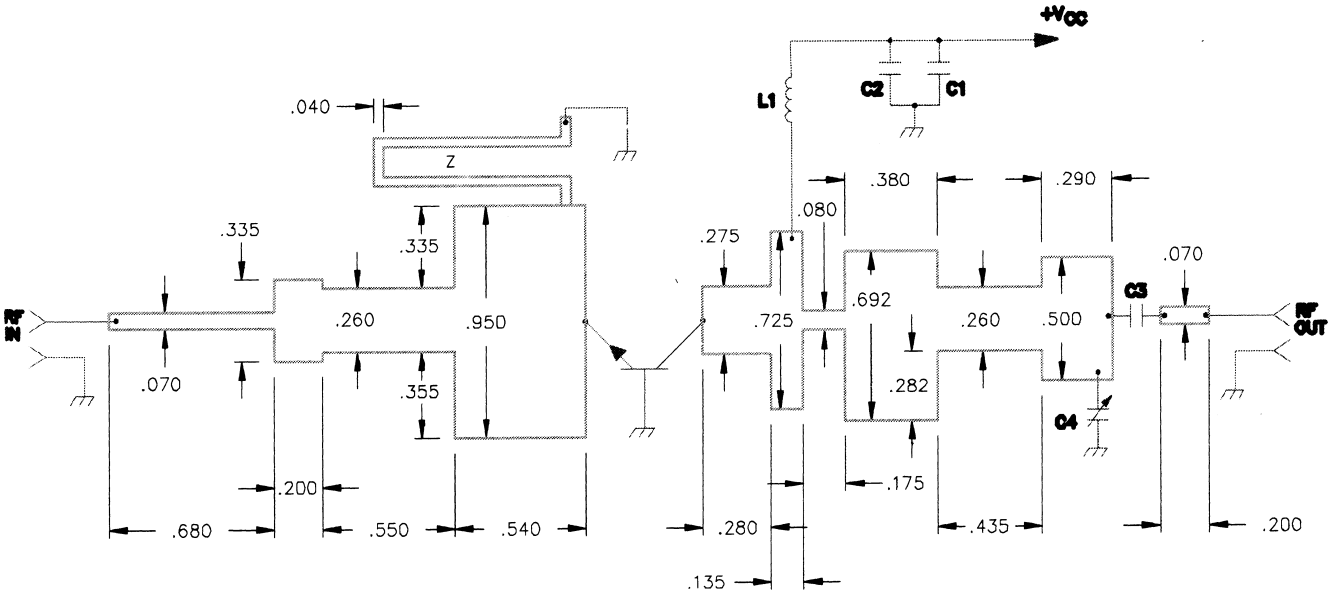
TEST CIRCUIT



C1 : 1000µF Electrolytic
C2 : 680pF Chip Capacitor
C3 : 120pF Chip Capacitor
C4 : 0.6 - 4.5pF Johanson Gigatrim

L1 : 6 1/2 Turns, #22 AWG on a #30 Drill Bit
Z : Printed Transmission Line, Length = 1.91"

Board : Er = 2.5, .034" Thick
All Dimensions are in Inches.

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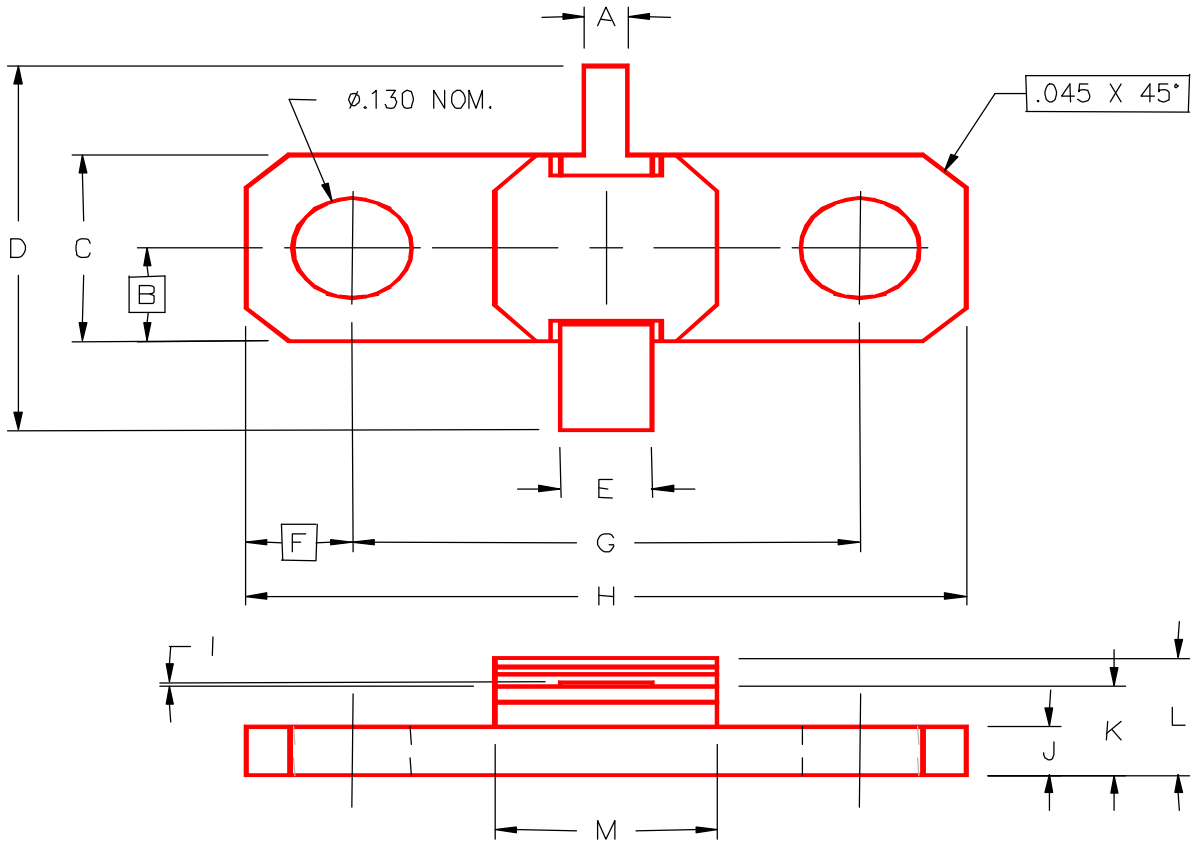
PACKAGE MECHANICAL DATA

PACKAGE STYLE M105



	MINIMUM INCHES/MM	MAXIMUM INCHES/MM		MINIMUM INCHES/MM	MAXIMUM INCHES/MM
A	.045/1,14	.055/1,40	I	.002/0,05	.006/0,15
B	.125/3,18		J	.057/1,45	.067/1,70
C	.245/6,22	.255/6,48	K	.112/2,84	.132/3,35
D	1.235/31,37		L		.175/4,45
E	.095/2,41	.105/2,67	M	.245/6,48	.405/10,29
F	.120/3,05				
G	.557/14,15	.567/14,40			
H	.795/20,19	.805/20,45			

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