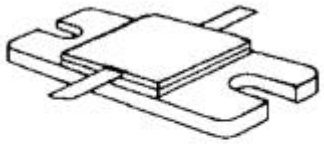
ADVANCED POWER TECHNOLOGY RF®

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

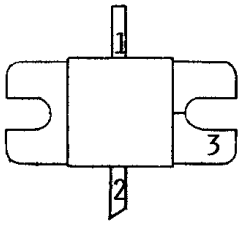
MS2421

RF & MICROWAVE TRANSISTORS
AVIONICS APPLICATIONS



.400 x .400 2LFL (M103)
epoxy sealed

PIN CONNECTION



1 emitter
2 collector
3 base

Features

- DESIGNED FOR HIGH POWER PULSED IFF, DME, AND TACAN APPLICATIONS
- 350 W (typ.) IFF 1030 – 1090 MHz
- 300 W (min.) DME 1025 – 1150 MHz
- 290 W (typ.) TACAN 960 – 1215 MHz
- 960 – 1215 MHz
- GOLD METALLIZATION
- P_{OUT} = 300W MINIMUM
- G_P = 6.3 dB MINIMUM
- INFINITE VSWR CAPABILITY @ RATED CONDITIONS
- EMITTER BALLASTED
- COMMON BASE

DESCRIPTION:

The MS2421 is a gold metallized silicon, NPN power transistor designed for applications requiring high peak power and low duty cycles such as IFF, DME, and TACAN. The MS2421 is designed with internal input/output matching resulting in improved broadband performance and low thermal resistance.

ABSOLUTE MAXIMUM RATINGS (Tcase = 25°C)

Symbol	Parameter	Value	Unit
P_{DISS}	Power Dissipation	875	W
V_{CES}	Collector-Emitter Voltage	65	V
V_{CBO}	Collector-Base Voltage	65	V
V_{EBO}	Emitter-Base Voltage	3.5	V
T_J	Junction Temperature	200	°C
I_C	Device Current	22	A
T_{STG}	Storage Temperature	-65 to +200	°C

Thermal Data

$R_{TH(J-C)}$	Junction-case Thermal Resistance	0.20	°C/W

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ELECTRICAL SPECIFICATIONS (Tcase = 25°C)

STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	I_C = 10 mA	I_E = 0 mA	65	---	---	V
BV_{EBO}	I_E = 5.0 mA	I_C = 0 mA	3.5	---	---	V
I_{CES}	V_{CE} = 50 V		---	---	25	mA
HFE	V_{CE} = 5 V	I_C= 500mA	10	---	200	mA

DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f =1025 - 1150 MHz	P_{IN} = 70W	V_{CE} =50V	300	---	---	W
G_P	f =1025 - 1150 MHz	P_{IN} = 70W	V_{CE} =50V	6.3	---	---	dB
η_C	f =1025 - 1150 MHz	P_{IN} = 70W	V_{CE} =50V	35	---	---	%
Conditions	Pulse Width = 10 μs	Duty Cycle = 1%					

IMPEDANCE DATA

FREQ	$Z_{IN}(\Omega)$	$Z_{CL}(\Omega)$
960 MHz	2.6 + j6.0	2.5 – j6.0
1090 MHz	7.4 + j4.4	2.4 – j6.2
1215 MHz	4.3 + j1.1	2.5 – j4.9

Pin = 70W Vce = 50V

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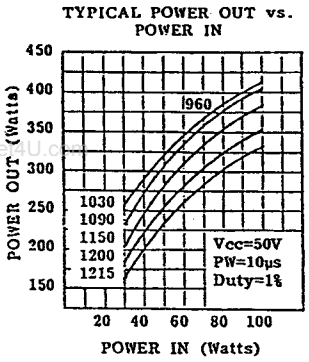
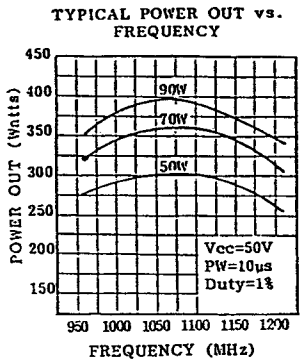
TYPICAL PERFORMANCE

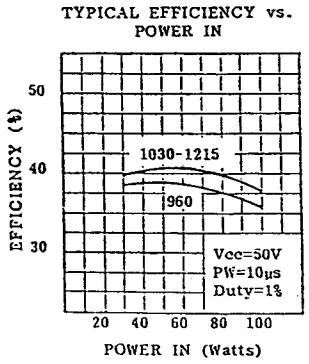
POWER OUTPUT vs POWER INPUT



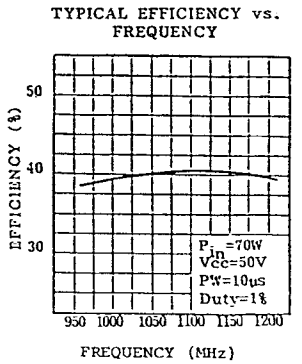
POWER OUTPUT vs FREQUENCY



EFFICIENCY vs POWER INPUT

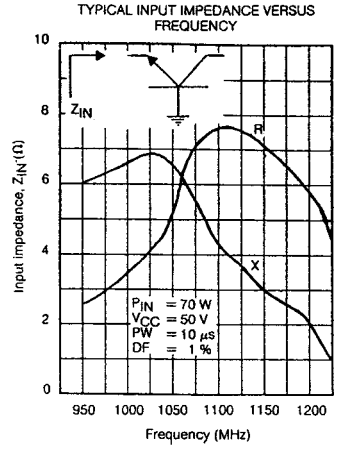


EFFICIENCY vs FREQUENCY

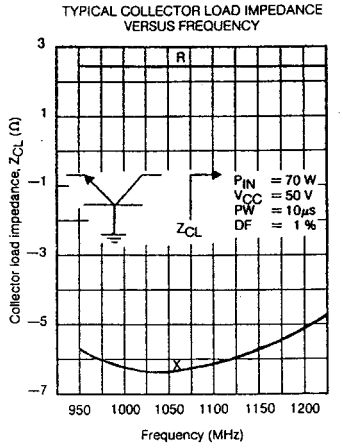


IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE



TYPICAL COLLECTOR LOAD IMPEDANCE



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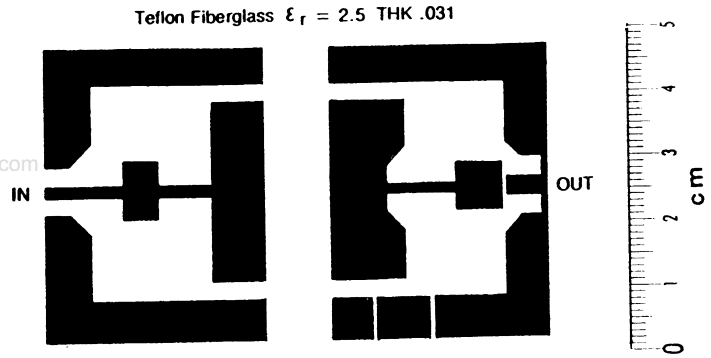
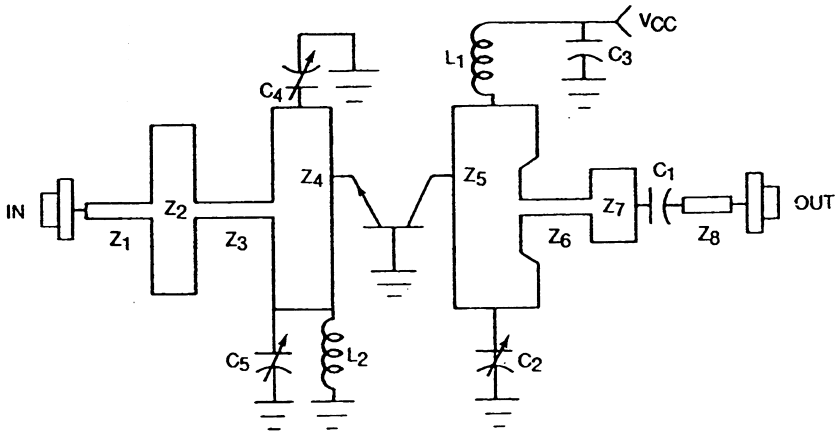
TEST CIRCUIT





All Dimension are in Inches

C1	:	100pF Chip Capacitor Across .120 Sq. Gap
C2	:	.6 - 4.5pF JOHANSON
C3	:	470pF Chip Capacitor Across .120 Sq. Gap
C4, C5	:	.35 - 3.5pF
L1	:	2 3/4 Turns Diameter 16 Tinned .125 I.D. .215 Long
L2	:	2 3/4 Turns Diameter 20 Tinned .090 I.D. .220 Long

Z1	:	.395 x .083
Z2	:	.250 x .340
Z3	:	.495 x .083
Z4	:	.360 x 1.193
Z5	:	.485 x 1.2
Z6	:	.520 x .035
Z7	:	.270 x .330
Z8	:	.270 x .110

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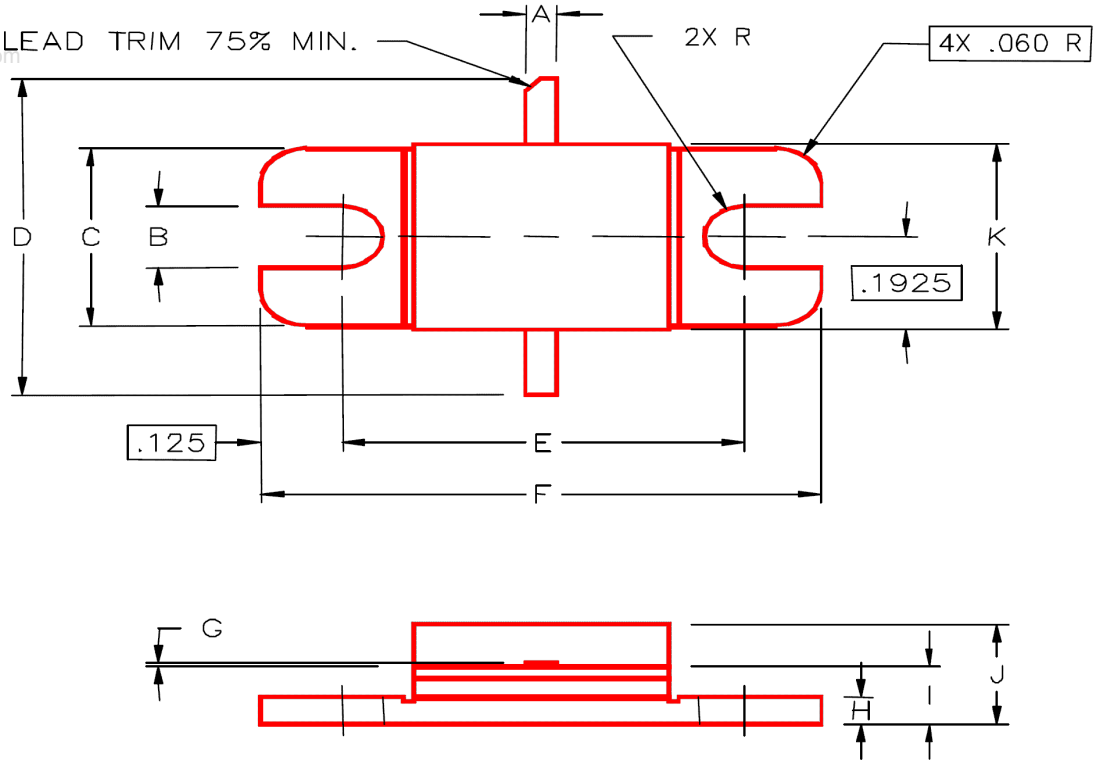
PACKAGE MECHANICAL DATA

PACKAGE STYLE M103



	MINIMUM INCHES/MM	MAXIMUM INCHES/MM		MINIMUM INCHES/MM	MAXIMUM INCHES/MM
A	.045/1,14	.055/1,40	I	.110/2,79	.130/3,30
B	.130/3,30		J	.190/4,83	.215/5,46
C	.380/9,65	.390/9,91	K	.390/9,91	.410/10,41
D	.880/22,35	.920/23,37			
E	.645/16,38	.655/16,64			
F	.890/22,61	.910/23,11			
G	.002/0,05	.006/0,15			
H	.055/1,40	.065/1,65			