

MS2421

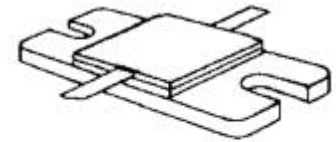
RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

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

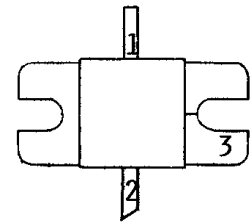
DESCRIPTION:

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.



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

PIN CONNECTION



1 emitter
2 collector

3 base

ABSOLUTE MAXIMUM RATINGS ($T_{case} = 25^{\circ}C$)

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	$^{\circ}C$
I_C	Device Current	22	A
T_{STG}	Storage Temperature	-65 to +200	$^{\circ}C$

Thermal Data

$R_{TH(J-C)}$	Junction-case Thermal Resistance	0.20	$^{\circ}C/W$
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ELECTRICAL SPECIFICATIONS (T_{case} = 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%				

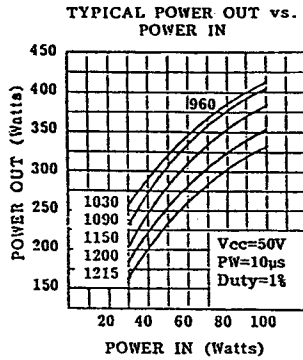
IMPEDANCE DATA

FREQ	Z _{IN} (Ω)	Z _{CL} (Ω)
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

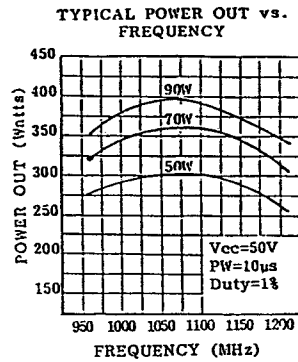
Pin = 70W Vce = 50V

TYPICAL PERFORMANCE

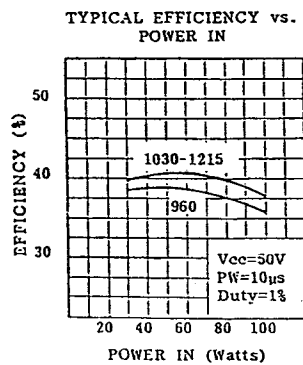
POWER OUTPUT vs POWER INPUT



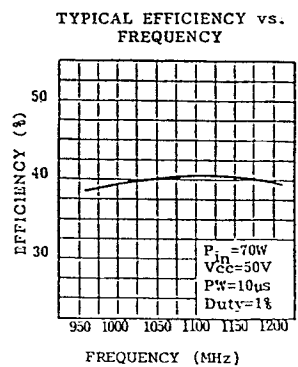
POWER OUTPUT vs FREQUENCY



EFFICIENCY vs POWER INPUT

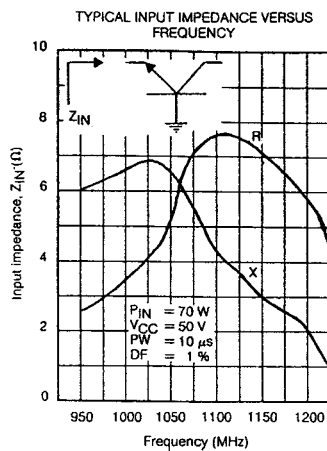


EFFICIENCY vs FREQUENCY

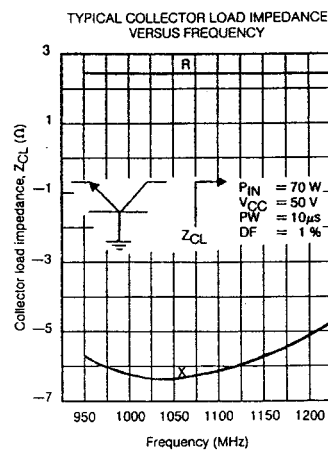


IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

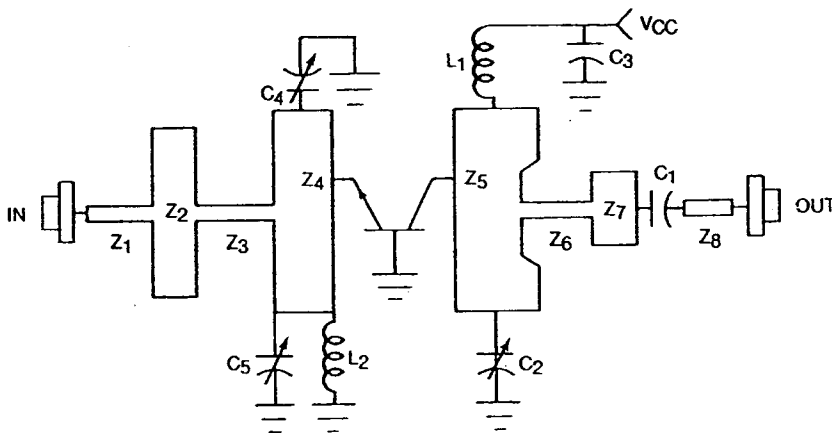
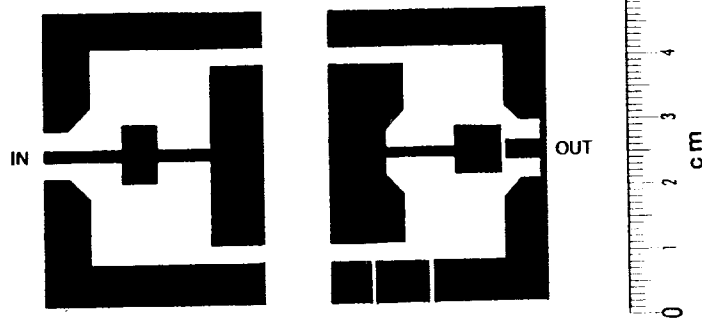


TYPICAL COLLECTOR LOAD IMPEDANCE



TEST CIRCUIT

Teflon Fiberglass $\epsilon_r = 2.5$ THK .031

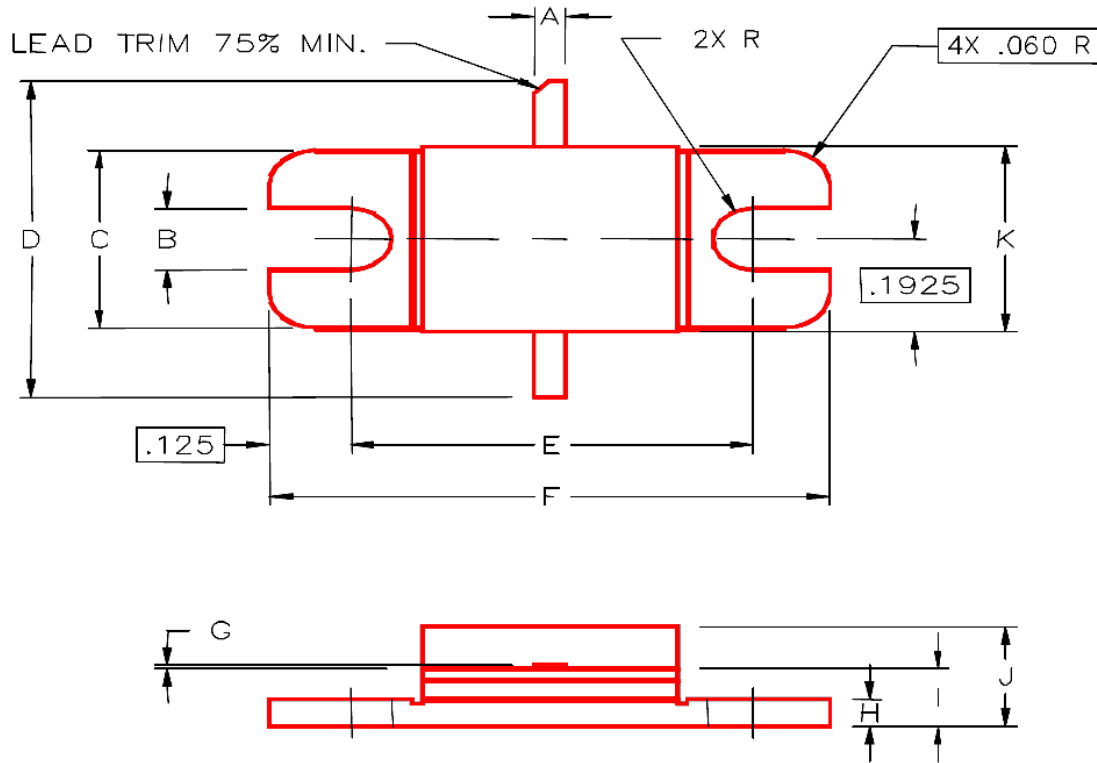


All Dimension are in Inches

C1	: 100pF Chip Capacitor Across .120 Sq. Gap	Z1	: .395 x .083
C2	: 6 - 4.5pF JOHANSON	Z2	: .250 x .340
C3	: 470pF Chip Capacitor Across .120 Sq. Gap	Z3	: .495 x .083
C4, C5	: .35 - 3.5pF	Z4	: .360 x 1.193
L1	: 2 3/4 Turns Diameter 16 Tinned .125 I.D. .215 Long	Z5	: .485 x 1.2
L2	: 2 3/4 Turns Diameter 20 Tinned .090 I.D. .220 Long	Z6	: .520 x .035
		Z7	: .270 x .330
		Z8	: .270 x .110

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			