

MS2422

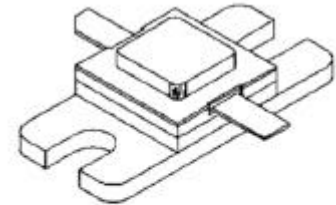
RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

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

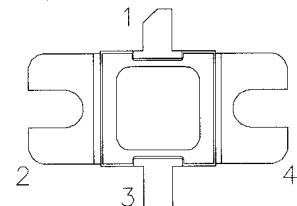
DESCRIPTION:

The MS2422 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 MS2422 is designed with internal input/output matching resulting in improved broadband performance and low thermal resistance.



.400 SQ. 2LFL (M138)
hermetically sealed

PIN CONNECTION



1. Collector 3. Emitter
2. Base 4. Base

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	65	V
V_{CES}	Collector-Emitter Voltage	65	V
V_{EBO}	Emitter-Base Voltage	3.5	V
I_C	Device Current	22	A
P_{DISS}	Power Dissipation	875	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	0.20	°C/W
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MS2422

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_{CES}	I_C = 25 mA V_{BE} = 0 V	65	---	---	V
BV_{EBO}	I_E = 5.0 mA I_C = 0 mA	3.5	---	---	V
I_{CES}	V_{CE} = 50 V I_E = 0 mA	---	---	25	mA
h_{FE}	V_{CE} = 5 V I_C = 1A	10	---	---	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%				

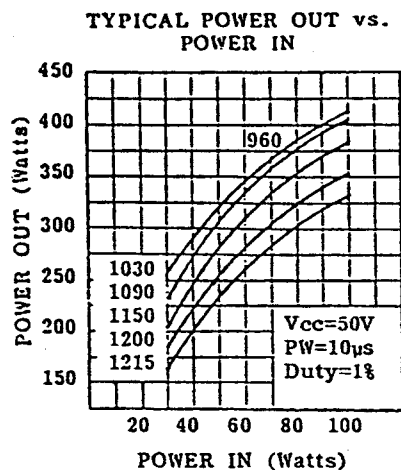
IMPEDANCE DATA

FREQ	Z _{IN} (Ω)	Z _{CL} (Ω)
960 MHz	5.1 + j1.0	2.2 – j3.5
1090 MHz	4.2 + j0.5	2.5 – j3.5
1215 MHz	7.5 + j1.5	2.3 – j1.5

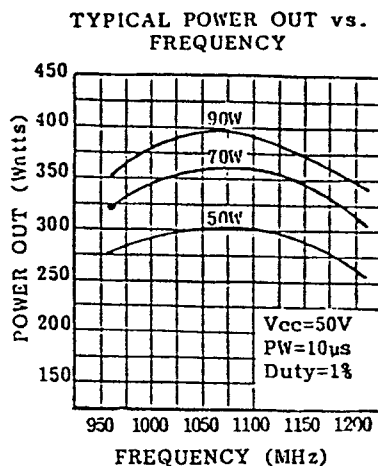
P_{in} = 70W V_{ce} = 50V

TYPICAL PERFORMANCE

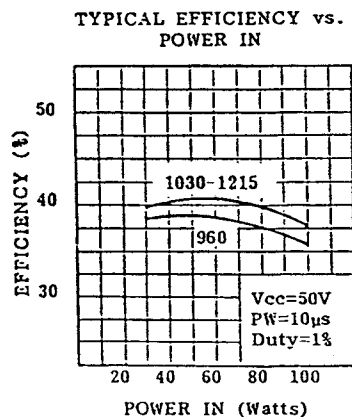
POWER OUTPUT vs POWER INPUT



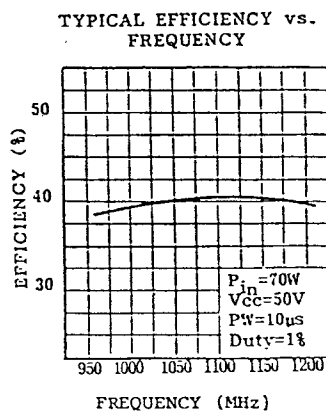
POWER OUTPUT vs FREQUENCY



EFFICIENCY vs POWER INPUT

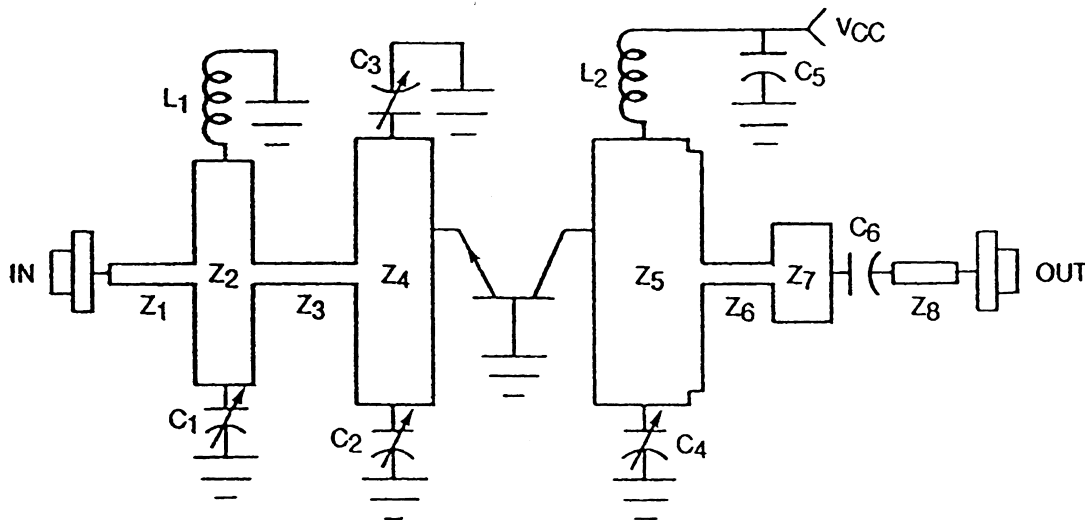
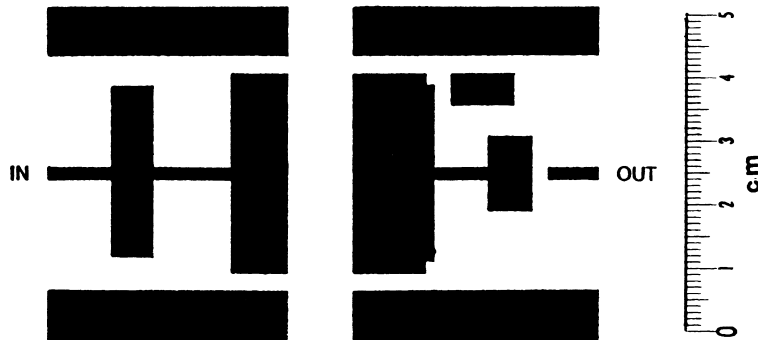


EFFICIENCY vs FREQUENCY



TEST CIRCUIT

Teflon Fiberglass $\epsilon_r = 2.5$ THK .031



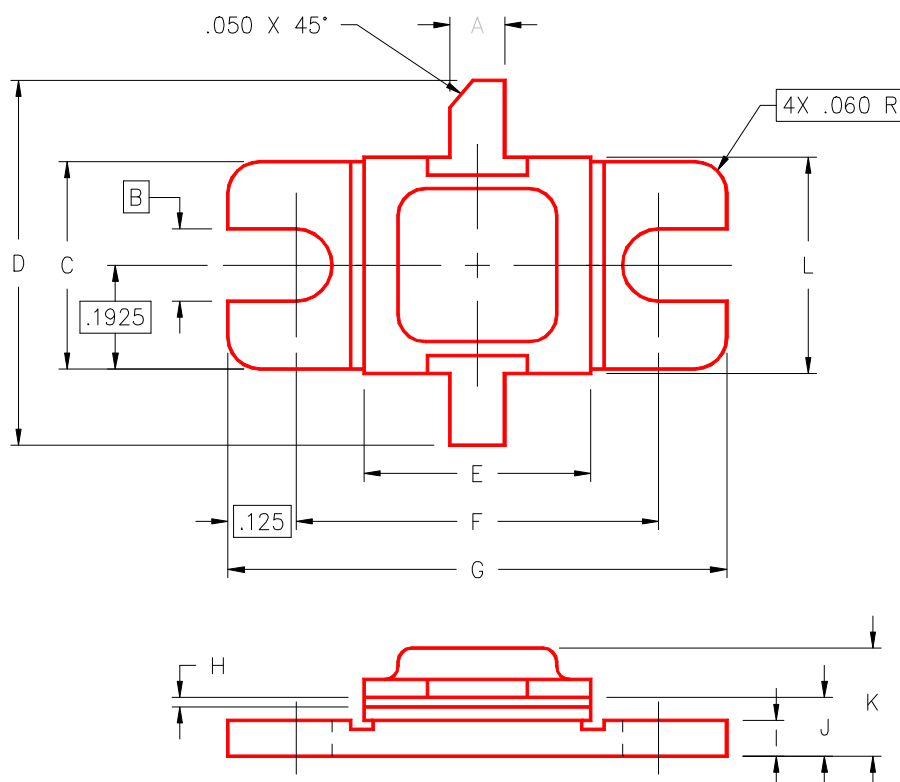
All Dimension are in Inches

C1, C2:		Z1	: .404 x .075
C3, C4 :	.6 - 4.5pF JOHANSON Gigatrim	Z2	: .263 x .995
C5	: 1000 μ F, 63V, Electrolytic	Z3	: .483 x .077
C6	: 100pF Chip Capacitor Across .090 Gap	Z4	: .350 x 1.203
L1	: 2 Turns #24 .12 I.D., Spaced Wire Diameter	Z5	: .505 x 1.200 with Two Notches .05 Long By .068 Wide
L2	: 4 Turns #24, .07 I.D., Spaced Wire Diameter	Z6	: .335 x .076
		Z7	: .260 x .442
		Z8	: .310 x .082

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PACKAGE MECHANICAL DATA

PACKAGE STYLE M138



	MINIMUM INCHES/MM	MAXIMUM INCHES/MM		MINIMUM INCHES/MM	MAXIMUM INCHES/MM
A	.095/2,41	.105/2,67	I	.055/1,40	.065/1,65
B	.125/3,18		J	.105/2,67	.125/3,18
C	.380/9,65	.390/9,91	K		.230/5,84
D	.790/20,07		L	.392/9,96	.402/10,21
E	.392/9,96	.402/10,21			
F	.645/16,38	.655/16,64			
G	.895/22,73	.905/22,99			
H	.002/0,05	.006/0,15			