ADVANCED POWER TECHNOLOGY RF®

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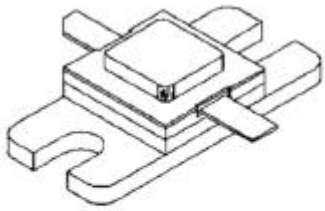
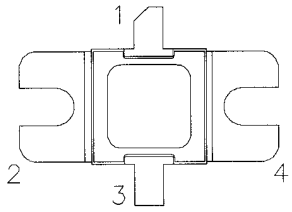
MS2422

RF & MICROWAVE TRANSISTORS
AVIONICS APPLICATIONS



.400 SQ. 2LFL (M138)
hermetically sealed

PIN CONNECTION



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

ABSOLUTE MAXIMUM RATINGS (Tcase = 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

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%						

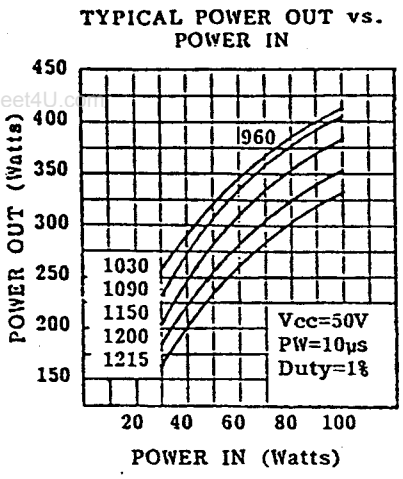
IMPEDANCE DATA

FREQ	$Z_{IN}(\Omega)$	$Z_{CL}(\Omega)$
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

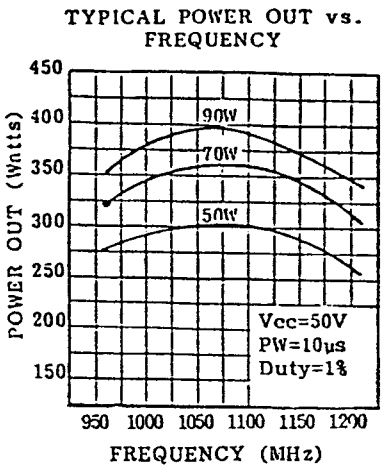
Pin = 70W Vce = 50V

TYPICAL PERFORMANCE

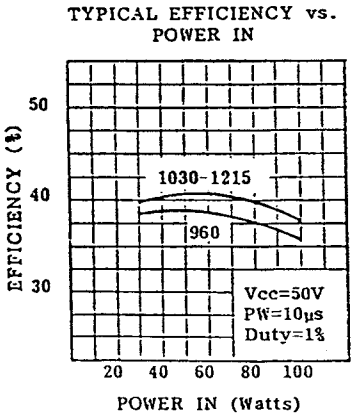
POWER OUTPUT vs POWER INPUT



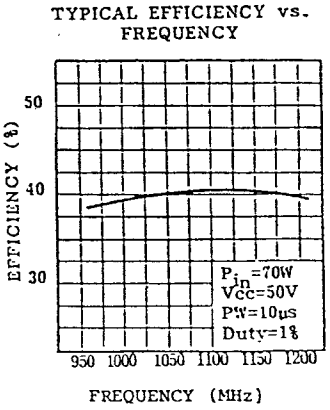
POWER OUTPUT vs FREQUENCY



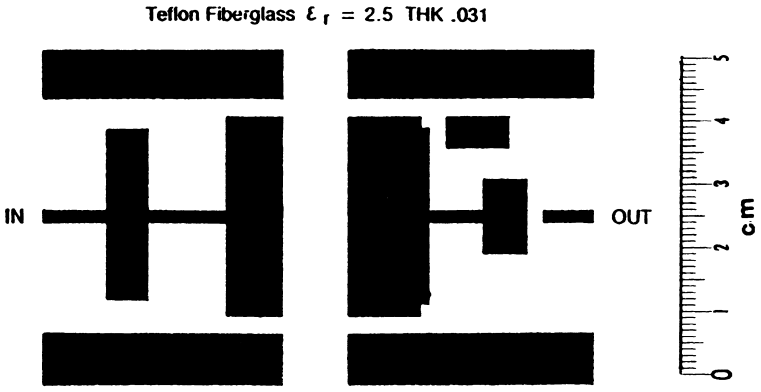
EFFICIENCY vs POWER INPUT

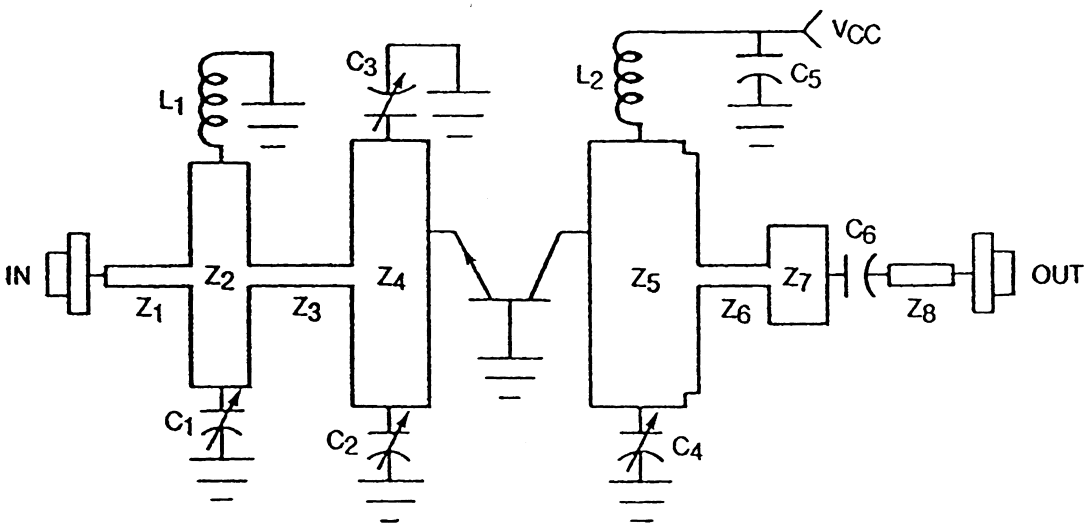


EFFICIENCY vs FREQUENCY



TEST CIRCUIT





All Dimension are in Inches

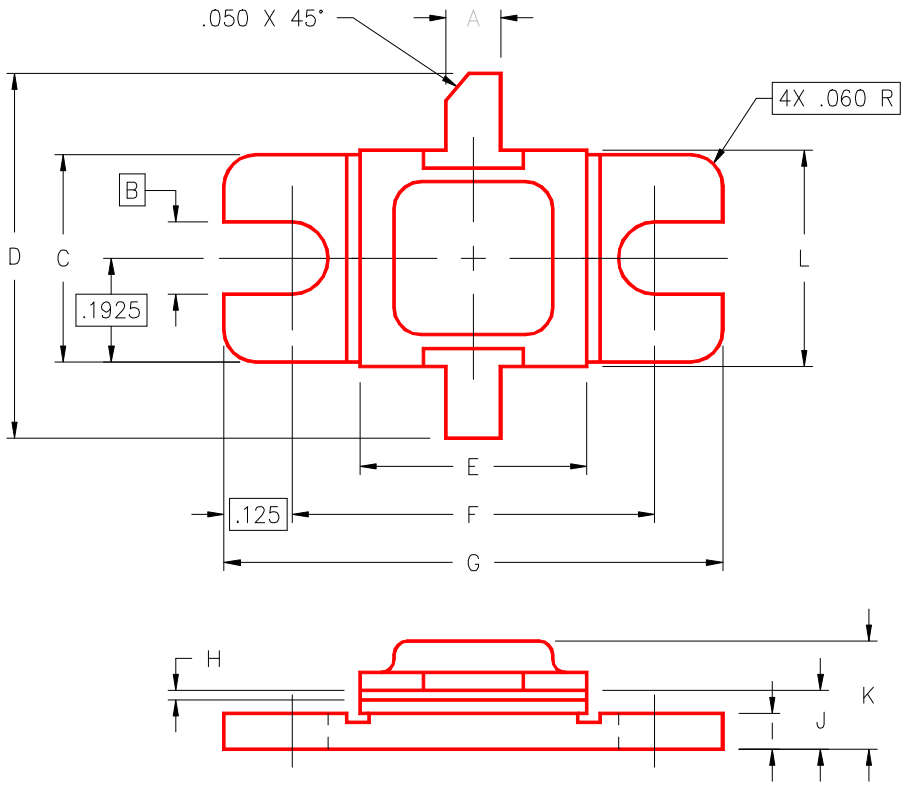
C1,C2.
C3, C4 : .6 - 4.5pF JOHANSON Gigatrim
C5 : 1000µF, 63V, Electrolytic
C6 : 100pF Chip Capacitor Across .090 Gap

L1 : 2 Turns #24 .12 I.D., Spaced Wire Diameter
L2 : 4 Turns #24, .07 I.D., Spaced Wire Diameter

Z1 : .404 x .075
Z2 : .263 x .995
Z3 : .483 x .077
Z4 : .350 x 1.203
Z5 : .505 x 1.200 with Two Notches .05 Long By .068 Wide
Z6 : .335 x .076
Z7 : .260 x .442
Z8 : .310 x .082

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			