ADVANCED POWER TECHNOLOGY RF®

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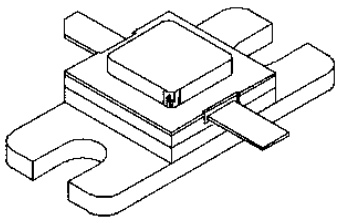
MS2393

RF AND MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

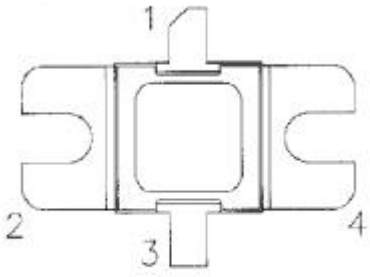


.400 SQ. 2LFL (M138)
hermetically sealed

Features

- **Designed For High Power Pulse IFF, DME, and TACAN Applications**
- **200 W (typ.) IFF 1030 – 1090 MHz**
- **150 W (min.) DME 1025 – 1150 MHz**
- **140 W (typ.) TACAN 960 – 1215 MHz**
- **8.2 dB Gain**
- **Refractory Gold Metallization**
- **Ballasting And Low Thermal Resistance For Reliability And Ruggedness**
- **20:1 Load VSWR At Specified Operating Conditions**
- **Input And Output Matched Common Base Configuration**

PIN CONNECTION



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

DESCRIPTION:

The MS2393 is a gold metallized, silicon NPN power transistor. The MS2393 is designed for applications requiring high peak power and low duty cycles such as IFF, DME and TACAN. The MS2393 is packaged in a metal/ceramic package 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	11	A
P_{DISS}	Power Dissipation	583	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	0.30	°C/W

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ELECTRICAL SPECIFICATIONS (Tcase = 25°C)

STATIC

Symbol	Test Conditions	Value			Units
		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 mA I_C = 0 mA	3.5			V
I_{CES}	V_{CE} = 50 V I_E = 0 mA			10	mA
h_{FE}	V_{CE} = 5 V I_C = 300 mA	5			

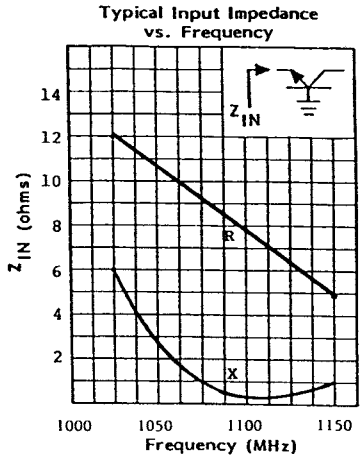
DYNAMIC

Symbol	Test Conditions	Value			Units
		Min.	Typ.	Max.	
P_{OUT}	f = 1025 – 1150 MHz P_{IN} = 25 W V_{CE} = 50 V	150			W
G_P	f = 1025 – 1150 MHz P_{IN} = 25 W V_{CE} = 50 V	8.2			dB

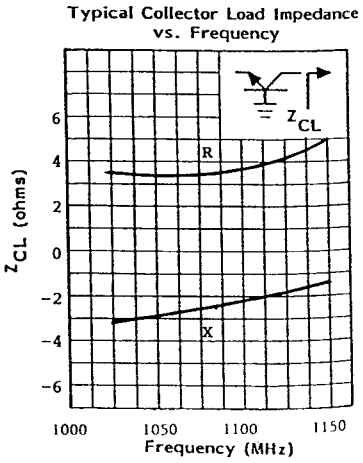
Condition: **Pulse Width = 10µS, Duty Cycle = 1%**

IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

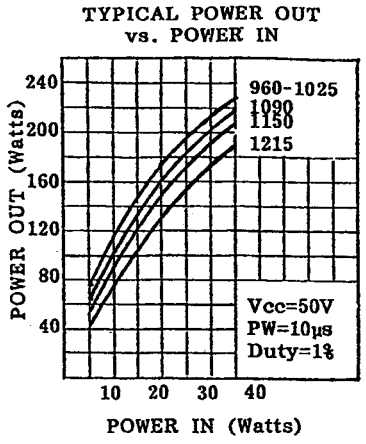


TYPICAL COLLECTOR LOAD IMPEDANCE

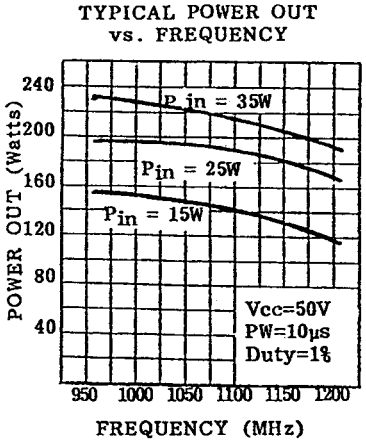


TYPICAL PERFORMANCE

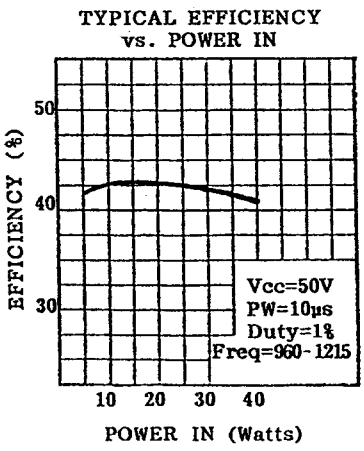
POWER OUTPUT vs POWER INPUT



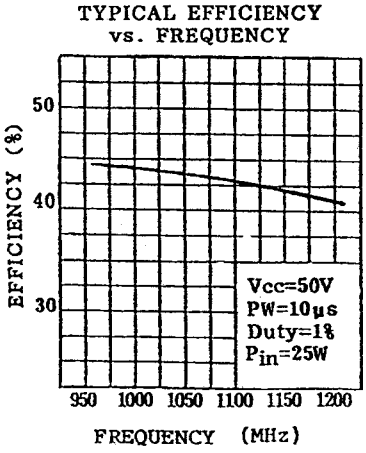
POWER OUTPUT vs FREQUENCY



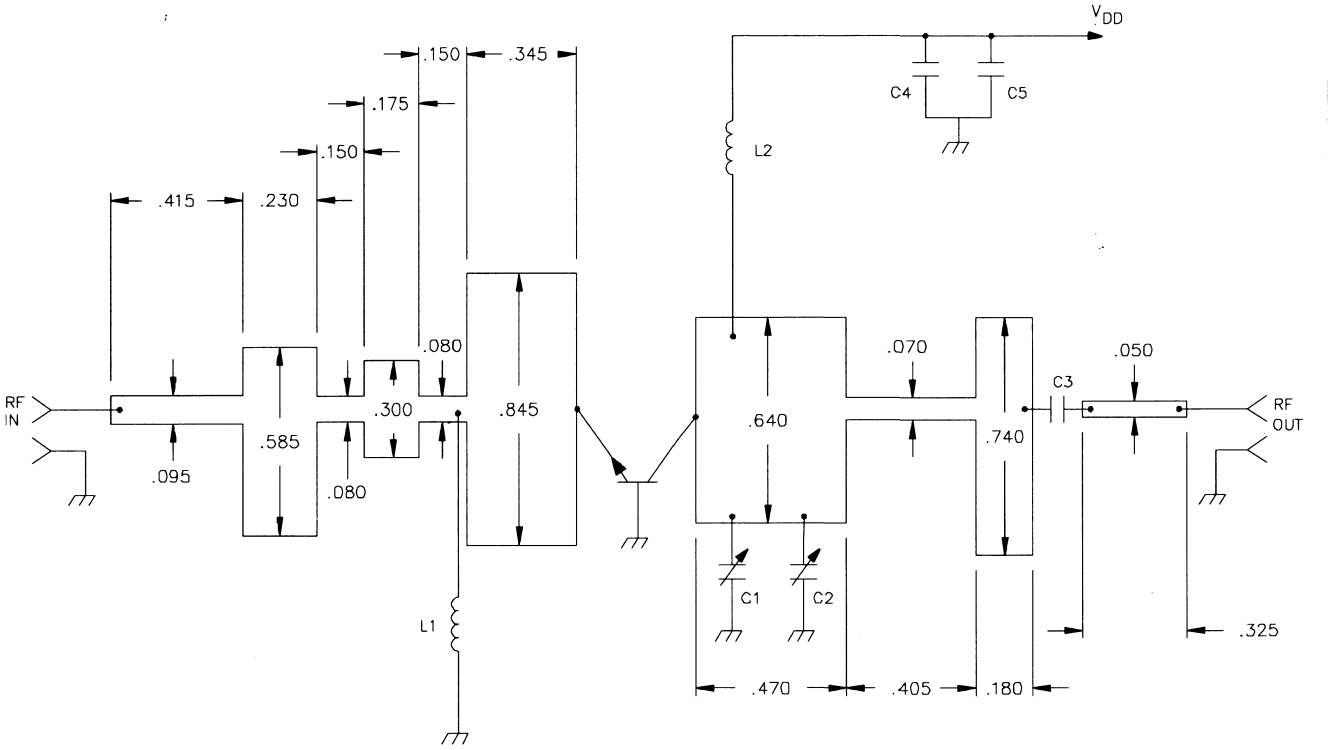
EFFICIENCY vs POWER INPUT



EFFICIENCY vs FREQUENCY



TEST CIRCUIT



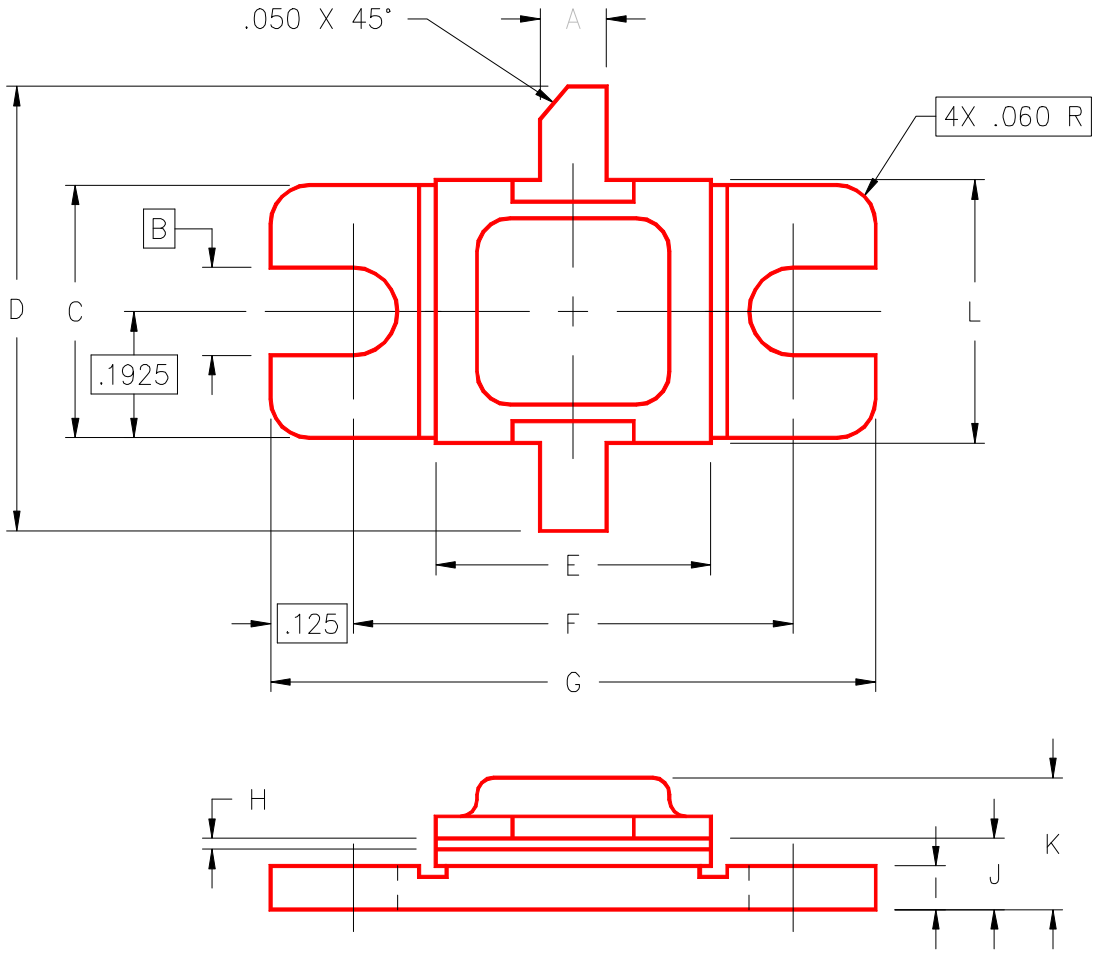
C1, C2 : .6 - 4.5pF Gigatrim
C3 : .100 x .100 120pF Chip Capacitor
C4 : .100 x .100 470pF Chip Capacitor
C5 : 100µF Electrolytic

L1 : #20 AWG
L2 : 3 Turns, #20 AWG Wound on #32 Drill Bit

MS2393

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			