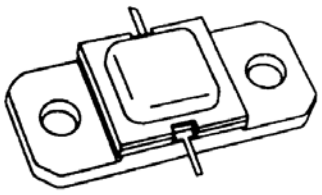
Microsemi
POWER PRODUCTS GROUP

MS2209

RF & MICROWAVE TRANSISTORS
AVIONICS APPLICATIONS

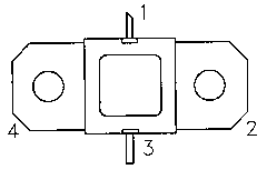


.400 x .400 2NLFL (M218)
hermetically sealed

Features

- **225 MHz BANDWIDTH**
- **COMMON BASE**
- **GOLD METALLIZATION**
- **CLASS C OPERATION**
- **POUT = 90 W MIN. WITH 8.4 dB GAIN**

PIN CONNECTION



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

DESCRIPTION:

The MS2209 is a broadband, high peak pulse power silicon NPN bipolar device specifically designed for avionics applications requiring broad bandwidth with moderate duty cycles and pulse width constraints such as ground/ship based DME/TACAN.

This device is also designed for specialized applications including JTIDS applications when duty cycle is moderately higher. Gold metallization and emitter ballasting assure high reliability under Class C amplifier operation.

ABSOLUTE MAXIMUM RATINGS (Tcase = 25°C)

Symbol	Parameter	Value	Unit
V_{CC}	Collector Supply Voltage	50	V
I_C	Device Current	7.0	A
P_{DISS}	Power Dissipation	220	W
T_J	Junction Temperature (RF Pulsed Operation)	+200	°C
T_{STG}	Storage Temperature	-65 to +200	°C

Thermal Data

$R_{TH(J-C)}$	Junction-case Thermal Resistance	0.80	°C/W

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ELECTRICAL SPECIFICATIONS (Tcase = 25°C)

STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	I_C = 40mA	I_E = 0mA	65	---	---	V
BV_{EBO}	I_E = 10mA	I_C=0mA	3.0	---	---	V
BV_{CER}	I_C= 40mA	R_{BE} = 10Ω	65	---	---	V
I_{CBO}	V_{CB}= 35 V		------	---	12	mA
h_{FE}	V_{CE} = 5 V	I_C = 2A	20	---	120	---

DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 960-1215MHz	V_{CC} = 50V	P_{IN} = 13W	90	100	---	W
G_P	f = 960-1215MHz	V_{CC} = 50V	P_{IN} = 13W	8.4	---	---	dB
η_C	f = 960-1215MHz	V_{CC} = 50V	P_{IN} = 13W	38	44	---	%
VSWR	f = 960MHz	V_{CC} = 50V	P_{IN} = 13W			10:1	

Pulse Width = 10 μs
Duty Cycle = 10%

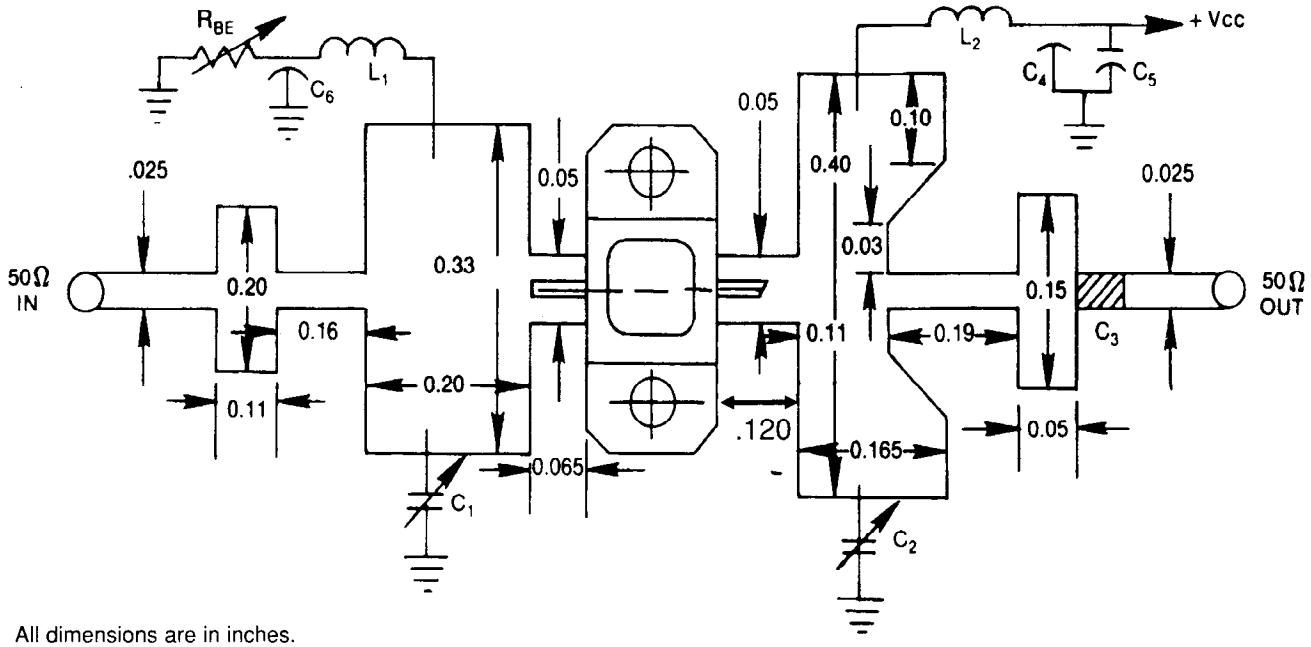
IMPEDANCE DATA

Freq	Z_{in} (Ω)	Z_{cl} (Ω)
960	5+j9.0	10.2-j8.8
1025	6+j8.0	9.5-j7.6
1090	6.8+j7.2	9.0-j6.2
1150	6.3+j7.0	8.4-j5.0
1215	5.8+j7.8	7.0-j3.7

Vcc=50v
Pout=90w

TEST CIRCUIT

Ref. Dwg. No. J-313120



All dimensions are in inches.
Substrate material: .025 thick Al_2O_3

C1,C2 : 0.3 - 3.5 pF Johanson Capacitors, or Equiv.
C3 : 100 pF Chip Capacitor
C4,C6 : 1500 pF RF Feedthru

C5 : 100 MF, Electrolytic 50V
L1,L2 : No. 32 Wire, 4 Turn .062 I.D.
RBE : 0 - 1.0 Ohm

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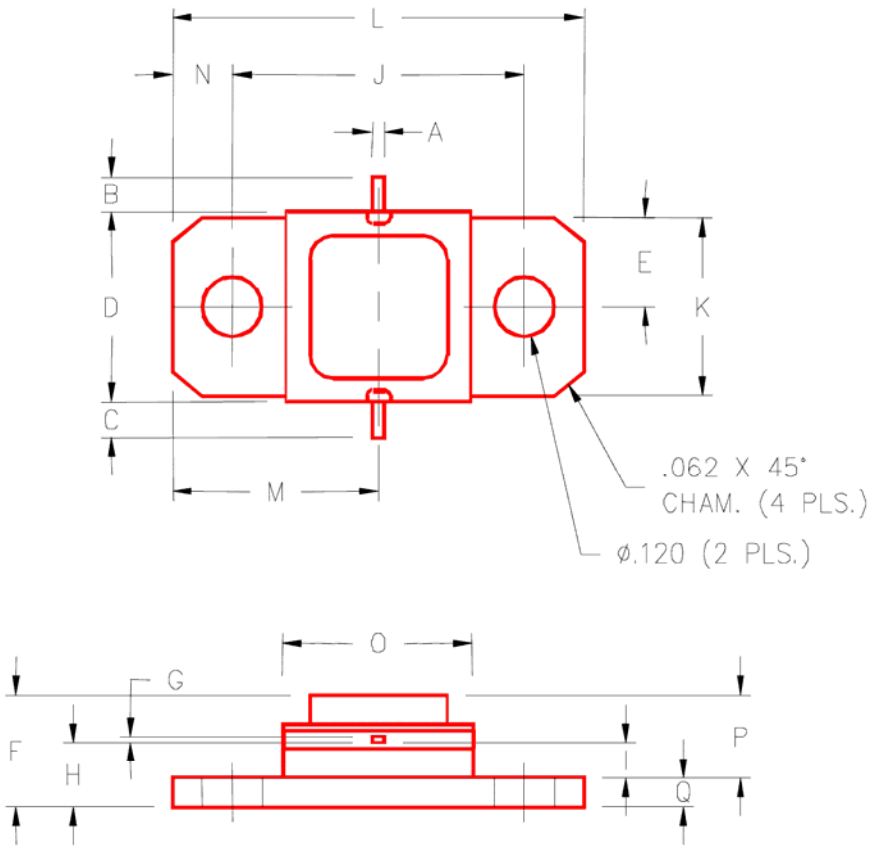
PACKAGE MECHANICAL DATA

PACKAGE STYLE M218



	MINIMUM INCHES/MM	MAXIMUM INCHES/MM		MINIMUM INCHES/MM	MAXIMUM INCHES/MM
A	.025/0,64		J	.650/16,51	
B	.100/2,54		K	.386/9,80	
C	.100/2,54		L	.900/22.86	
D	.395/10,03	.407/10,34	M	.450/11,43	
E	.193/4,90		N	.125/3,18	
F		.230/5,84	O	.405/10,29	
G	.004/0,10	.007/0,18	P		.170/4,32
H	.118/3,00	.131/3,33	Q	.062/1,58	
I	.063/1,60				