

MS2214

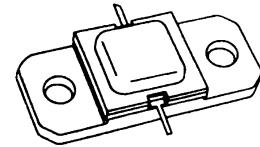
RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

Features

- GOLD METALLIZATION
- EMITTER SITE BALLASTED
- $P_{out} = 85\text{ W}$ MINIMUM
- $G_p = 7.5\text{ dB}$
- OVERLAY GEOMETRY
- METAL/CERAMIC HERMETIC PACKAGE
- LOW THERMAL RESISTANCE

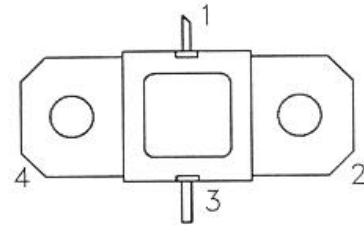
DESCRIPTION:

The MS2214 is a silicon NPN bipolar transistor designed for avionics applications with high duty cycle requirements. Gold metallization and emitter ballasting provides long term reliability under JTIDS and similar pulse formats.



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

PIN CONNECTION



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

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

Symbol	Parameter	Value	Unit
V _{CC}	Collector-Supply Voltage*	40	V
I _C	Device Current*	8.0	A
P _{DISS}	Power Dissipation*	300	W
T _J	Junction Temperature	+250	°C
T _{STG}	Storage Temperature	- 65 to + 200	°C

Thermal Data

R _{TH(i-c)}	Junction-Case Thermal Resistance*	0.75	°C/W
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* Applies only to rated RF operation.

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ELECTRICAL SPECIFICATIONS (Tcase = 25°C)

STATIC

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
BV_{CBO}	$I_C = 25\text{mA}$ $I_E = 0\text{ mA}$	55	----	----	V
BV_{CER}	$I_C = 25\text{ mA}$ $R_{BE} = 10\ \Omega$	55	----	----	V
BV_{EBO}	$I_E = 10\text{ mA}$ $I_C = 0\text{ mA}$	3.5	----	----	V
I_{CES}	$V_{CE} = 35\text{ V}$ $V_{BE} = 0\text{ V}$	----	----	20	mA
h_{FE}	$V_{CE} = 5\text{ V}$ $I_C = 2\text{A}$	20	----	200	----

DYNAMIC

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
P_{OUT}	$f = 960 - 1215\text{ MHz}$ $P_{IN} = 15\text{ W}$ $V_{CC} = 35\text{ V}$	85	----	----	W
η_C	$f = 960 - 1215\text{ MHz}$ $P_{IN} = 15\text{ W}$ $V_{CC} = 35\text{ V}$	40	----	----	%
G_P	$f = 960 - 1215\text{ MHz}$ $P_{IN} = 15\text{ W}$ $V_{CC} = 35\text{ V}$	7.5	----	----	dB
Note:	Pulse Format: 6.4 μS on 6.6 μS off, repeat for 3.3 ms. Duty Cycle: Burst 49.2%, overall 20.8%				

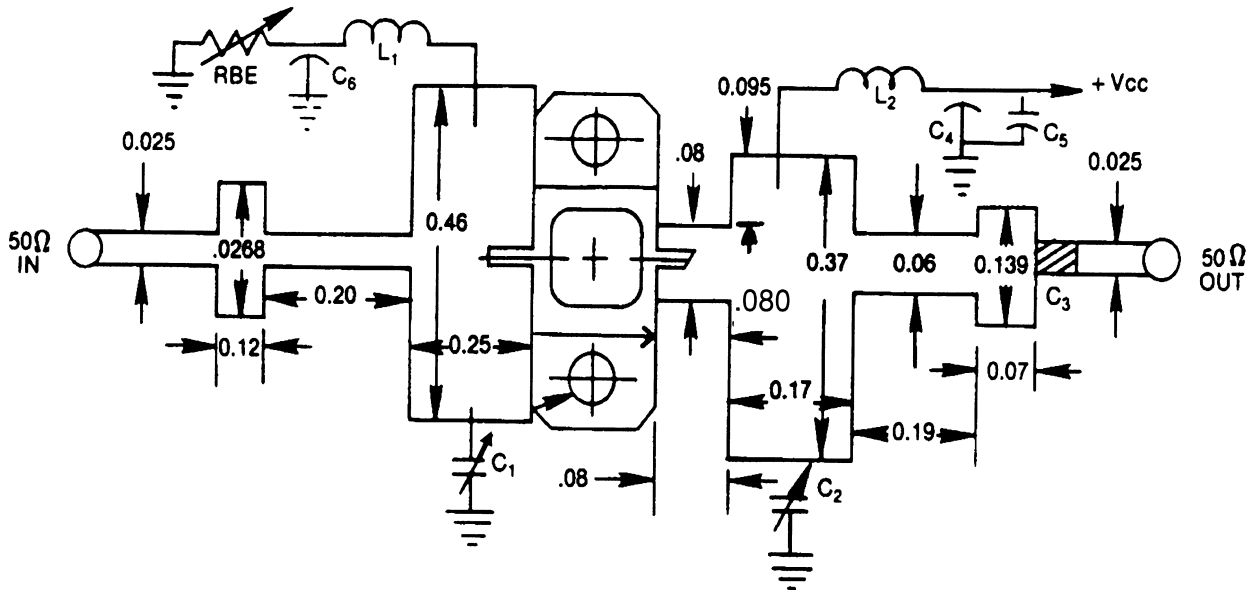
IMPEDANCE DATA:

FREQUENCY	Z_{in}	Z_{cl}
960 MHz	$3.0 + j5.0$	$7.0 - j5.0$
1090 MHz	$5.5 + j5.5$	$3.7 - j1.8$
1215 MHz	$5.3 + j4.5$	$3.0 - j2.5$

$P_{in} = 15\text{W}$ $V_{cc} = 35\text{V}$

TEST CIRCUIT

Ref. Dwg. No. J-313119



All dimensions are in inches.

Substrate material: .025 thick Al_2O_3 ($\text{Er} = 9.6$)

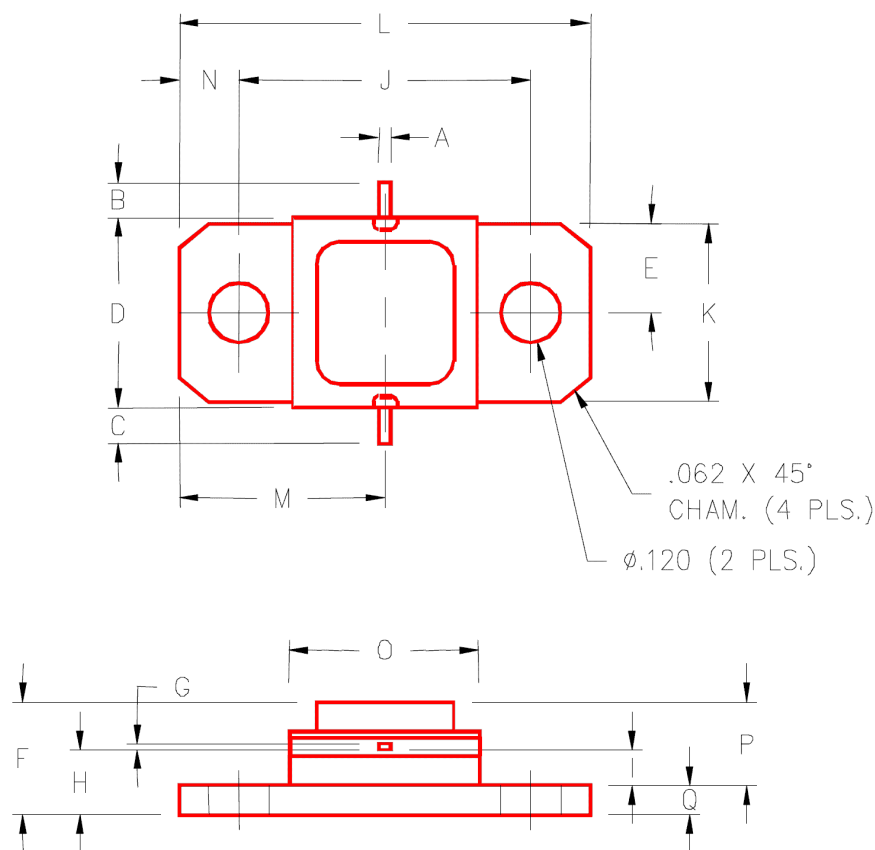
- C1 : 0.3—3.5 pF Variable Johanson Capacitor or Equiv.
- C2 : 0.3—3.5 pF Variable Johanson Capacitor or Equiv.
- C3 : 100 pF Chip Capacitor
- C4 : 1500 pF Erie RF Feedthrough, or Equiv.

- C5 : 100 MF, Electrolytic Capacitor, 50V
- C6 : 1500 pF Erie RF Feedthrough, or Equiv.
- L1 : No. 32 Wire, 4 Turns 1/16" I.D.
- L2 : No. 32 Wire, 4 Turns 1/16" I.D.

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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				