

Avionics Pulsed Power Transistor - 550 Watts, 1030-1090 MHz, 10μs Pulse, 1% Duty



Features

- Designed for Short Pulse IFF Applications
- NPN Silicon Microwave Power Transistor
- Common Base Configuration
- Broadband Class C Operation
- High Efficiency Interdigitated Geometry
- Diffused Emitter Ballasting Resistors
- Gold Metalization System
- Internal Input and Output Impedance Matching
- Hermetic Metal/Ceramic Package

Description

M/A-COM's PH1090-550S is a silicon bipolar NPN transistor intended for use in L-band, 1.2 - 1.4 GHz avionics equipment such as IFF, mode-S and TCAS systems. Designed for common-base, class C broadband pulsed power applications, the PH1090-550S delivers 7.5 dB of gain at 550 watts of output power when operating with short pulse length (10μS), at 1 percent duty cycle. The transistor is housed in a 2-lead, rectangular metal-ceramic flange package, with internal input and output impedance matching networks. Diffused emitter ballast resistors and gold metalization assure ruggedness and long-term reliability.

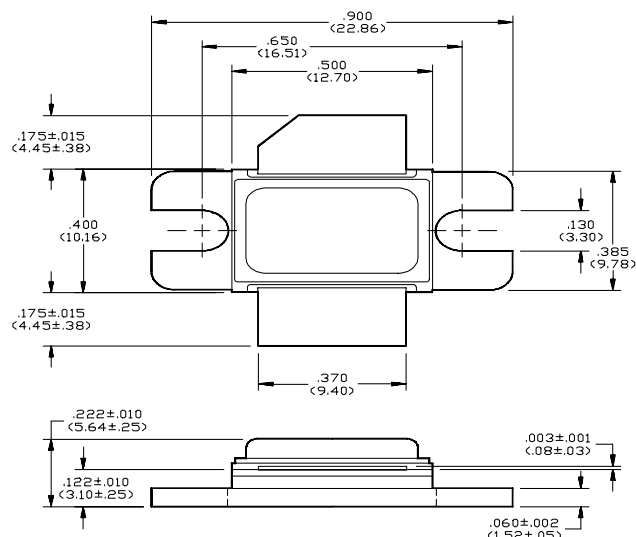
Absolute Maximum Rating at 25°C

Parameter	Symbol	Rating	Units
Collector-Emitter Voltage	V_{CES}	80	V
Emitter-Base Voltage	V_{EBO}	3.0	V
Collector Current (Peak)	I_C	28	A
Total Power Dissipation @ +25°C	P_{TOT}	1800	W
Storage Temperature	T_{stg}	-65 to +200	°C
Junction Temperature	T_j	200	°C

Electrical Specifications at 25°C

Symbol	Parameter	Test Conditions	Min	Max	Units
BV_{CES}	Collector-Emitter Breakdown	$I_C=250mA$	80	-	V
I_{CES}	Collector-Emitter Leakage	$V_{CE}=45 V$	-	25	mA
$R_{TH(JC)}$	Thermal Resistance	$V_{CC}=50 V, P_{out}=550 W, f=1090 MHz$	-	0.05	°C/W
P_{in}	Input Power	$V_{CC}=50 V, P_{out}=550 W, f=1090 MHz$	-	100	W
G_P	Power Gain	$V_{CC}=50 V, P_{out}=550 W, f=1090 MHz$	7.5	-	dB
η	Collector Efficiency	$V_{CC}=50 V, P_{out}=550 W, f=1090 MHz$	55	-	%
R_L	Input Return Loss	$V_{CC}=50 V, P_{out}=550 W, f=1090 MHz$	9	-	dB
VSWR-T	Load Mismatch Tolerance	$V_{CC}=50 V, P_{out}=550 W, f=1090 MHz$	-	10:1	-
VSWR-S	Load Mismatch Stability	$V_{CC}=50 V, P_{out}=550 W, f=1090 MHz$	-	1.5:1	-

Outline Drawing¹

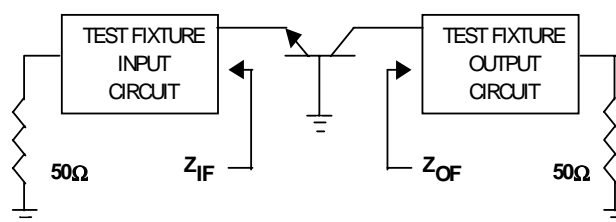


Notes: (unless otherwise specified)

1. Tolerances are: inches ± .005" (millimeters ± 0.13mm)

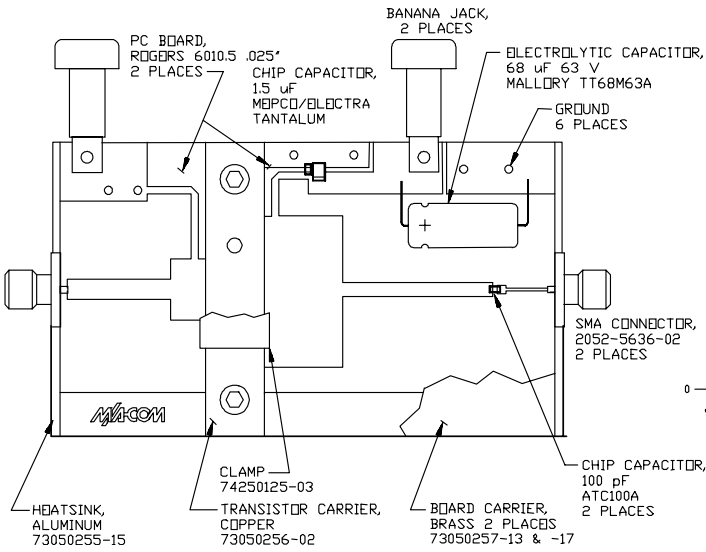
Broadband Test Fixture Impedance

F (MHz)	Z_{IF} (Ω)	Z_{OF} (Ω)
1030	4.0 - j3.5	1.4 - j1.6
1090	3.6 - j2.7	1.1 - j1.9



Test Fixture Electrical Schematic

Top View



Circuit Dimensions

