

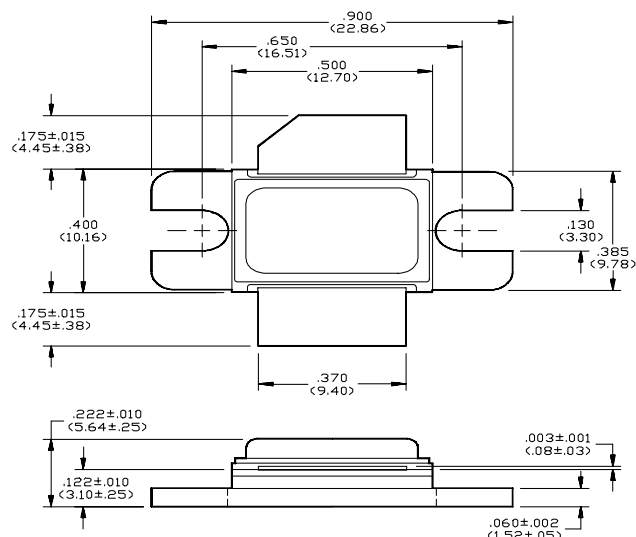
# Avionics Pulsed Power Transistor - 550 Watts, 1030-1090 MHz, 10 $\mu$ s Pulse, 1% Duty



## 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

## Outline Drawing<sup>1</sup>



Notes: (unless otherwise specified)

1. Tolerances are: inches  $\pm$  .005" (millimeters  $\pm$  0.13mm)

## Description

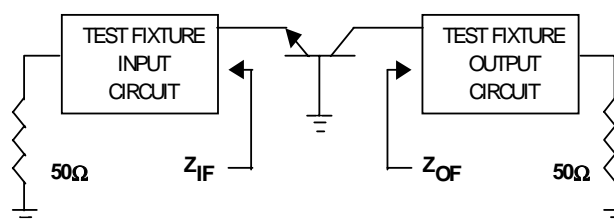
M/A-COM's PH1090-550S is a silicon bipolar NPN transistor intended for use in L-band, 1.2 - 1.4 GHz avionics equipment such as IFF, mode-S and TCAS systems. Designed for common-base, class C broadband pulsed power applications, the PH1090-550S delivers 7.5 dB of gain at 550 watts of output power when operating with short pulse length (10 $\mu$ S), 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

## Broadband Test Fixture Impedance

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



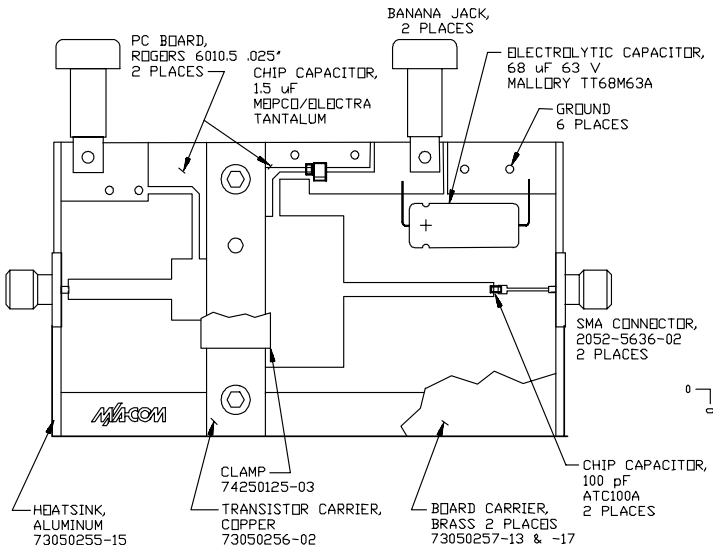
## Electrical Specifications at 25°C

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

V2.00

### Test Fixture Electrical Schematic

#### Top View



#### Circuit Dimensions

