

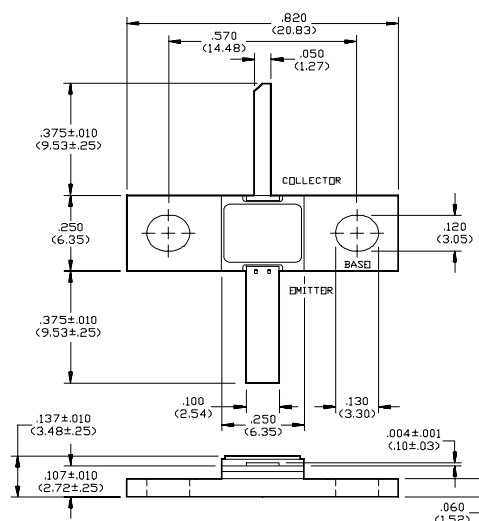
# Radar Pulsed Power Transistor - 25 Watts, 1.20-1.40 GHz, 150 $\mu$ S Pulse, 10% Duty



## Features

- 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  $\pm 0.13$ mm)

## Description

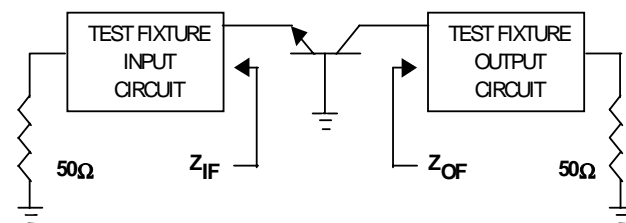
M/A-COM's PH1214-25M is a silicon bipolar NPN power transistor designed for use in L-band, 1.2 - 1.4 GHz pulsed radars such as air traffic control and long-range weather radars. Designed for common-base, class C, broadband pulsed power applications, the PH1214-25M can produce 25 watts of output power with medium pulse length (150  $\mu$ S) at 10 percent duty cycle. The transistor is housed in a 2-lead, rectangular metal-ceramic flange package, with internal input and output impedance matching networks. In addition to L-band pulsed radars, this high performance transistor can also be used in pulsed digital communication systems.

## Absolute Maximum Rating at 25°C

Parameter	Symbol	Rating	Units
Collector-Emitter Voltage	$V_{CES}$	60	V
Emitter-Base Voltage	$V_{EBO}$	3.0	V
Collector Current (Peak)	$I_C$	2.8	A
Total Power Dissipation @ +25°C	$P_{TOT}$	58	W
Storage Temperature	$T_{sig}$	-65 to +200	°C
Junction Temperature	$T_j$	200	°C

## Broadband Test Fixture Impedance

F (GHz)	$Z_{IF}$ ( $\Omega$ )	$Z_{OF}$ ( $\Omega$ )
1.20	2.1 - j4.5	3.7 + j0.9
1.30	2.1 - j3.9	3.6 + j0.4
1.40	2.2 - j3.4	3.0 + j0.2



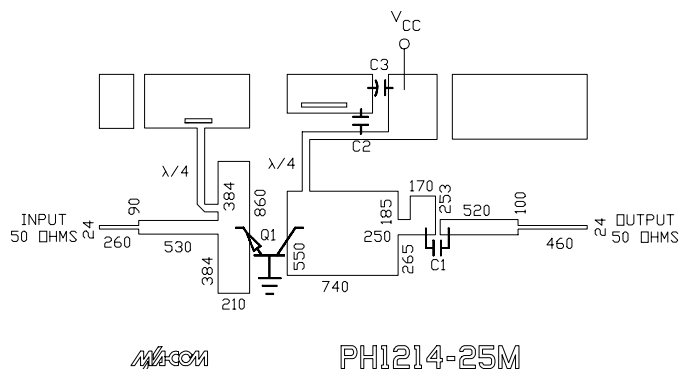
## Electrical Specifications at 25°C

Symbol	Parameter	Test Conditions	Min	Max	Units
$BV_{CES}$	Collector-Emitter Breakdown	$I_C = 25$ mA	60	-	V
$I_{CES}$	Collector-Emitter Breakdown	$V_{CE} = 40$ V	-	2.5	mA
$R_{TH(JC)}$	Thermal Resistance	$V_{CC} = 28$ V, $P_o = 25$ W, $f = 1.2, 1.3, 1.4$ GHz	-	2.6	°C/W
$P_{IN}$	Input Power	$V_{CC} = 28$ V, $P_o = 25$ W, $f = 1.2, 1.3, 1.4$ GHz	-	2.8	W
$G_P$	Power Gain	$V_{CC} = 28$ V, $P_o = 25$ W, $f = 1.2, 1.3, 1.4$ GHz	9.5	-	dB
$\eta$	Collector Efficiency	$V_{CC} = 28$ V, $P_o = 25$ W, $f = 1.2, 1.3, 1.4$ GHz	50	-	%
$R_L$	Input Return Loss	$V_{CC} = 28$ V, $P_o = 25$ W, $f = 1.2, 1.3, 1.4$ GHz	6	-	dB
VSWR-T	Load Mismatch Tolerance	$V_{CC} = 28$ V, $P_o = 25$ W, $f = 1.2, 1.3, 1.4$ GHz	-	3:1	-
VSWR-S	Load Mismatch Stability	$V_{CC} = 28$ V, $P_o = 25$ W, $f = 1.2, 1.3, 1.4$ GHz	-	1.5:1	-

V2.00

### Test Fixture Electrical Schematic<sup>1</sup>

#### Top View



### Electrical Schematic Parts List

C1, C2	100 pF ATC size A
C3	50 uF 50 Volts
Q1	PH1214-25M
Board Type	Rogers 6010.5 .025" Thick, E <sub>R</sub> = 10.5

**Note:**

1. Dimensions are in mils.