M/A-COM

Radar Pulsed Power Transistor - 25 Watts, 1.20-1.40 GHz, 150µS 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

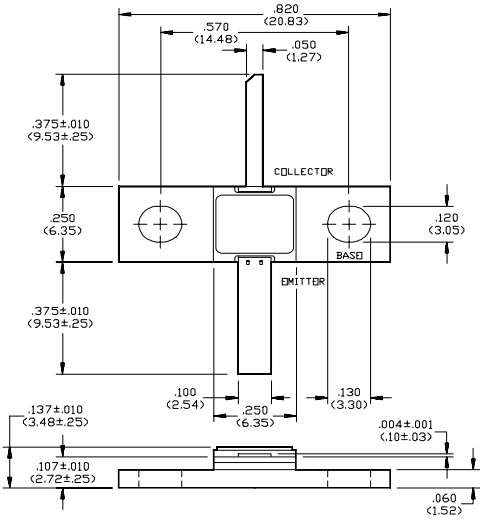
Description

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 µS) 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_{stg}	-65 to +200	°C
Junction Temperature	T_j	200	°C

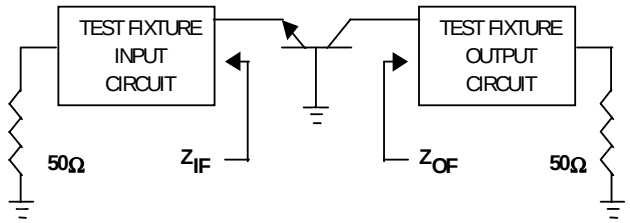
Outline Drawing[1]



Notes: (unless otherwise specified)
1. Tolerances are: inches ± .005" (millimeters ± 0.13mm)

Broadband Test Fixture Impedance

F (GHz)	Z_{IF} (Ω)	Z_{OF} (Ω)
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
η	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	-

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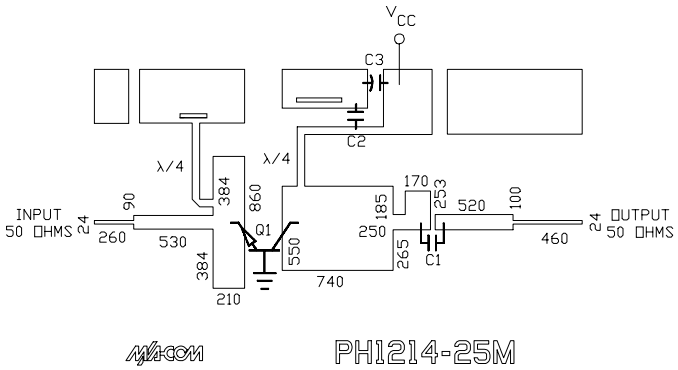
Test Fixture Electrical Schematic[1]

Top View



PH1214-25M

Note:
1. Dimensions are in mils.

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_R = 10.5

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