



M/A-COM

# Radar Pulsed Power Transistor - 12 Watts, 1.20-1.40 GHz, 150 μS Pulse, 10% Duty



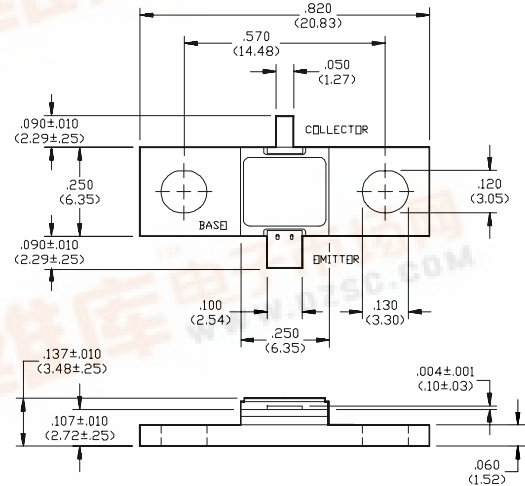
## Features

- 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 PH1214-12M is a silicon bipolar NPN power transistor intended for use in L-band 1.2 - 1.4 GHz pulsed radar's such as air traffic control and long-range weather radars. Designed for common-base, class C, broadband pulsed power applications, the PH1214-12M can produce 12 watts of output power with medium pulse length (150μS) 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. Diffused emitter ballast resistors and gold metalization assure ruggedness and long-term reliability.

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

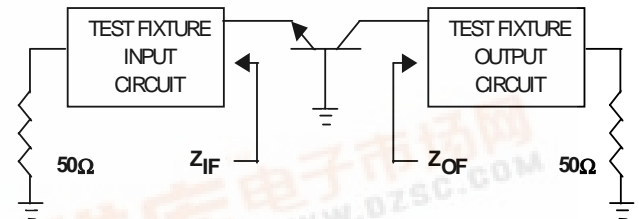


Notes: (unless otherwise specified)

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

## Broadband Test Fixture Impedance

F (GHz)	Z <sub>IF</sub> (Ω)	Z <sub>OF</sub> (Ω)
1.20	3.7 - j5.3	5.0 + j6.0
1.30	3.5 - j4.4	7.1 + j5.1
1.40	3.4 - j3.8	7.7 + j3.6



## Absolute Maximum Rating at 25°C

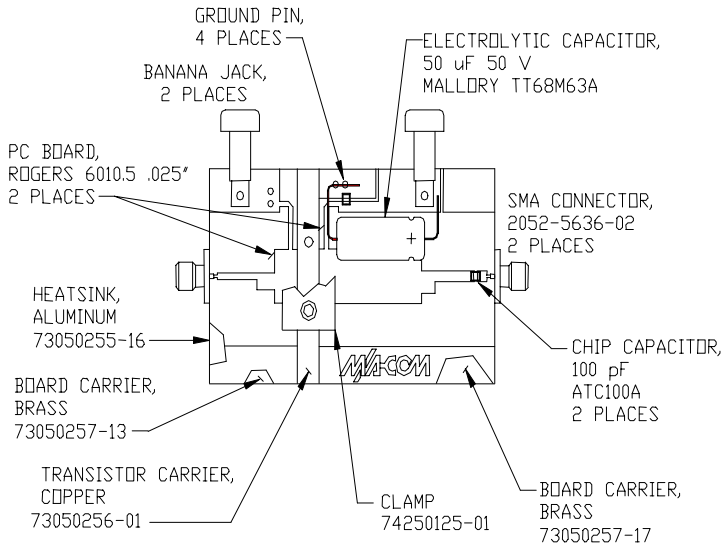
Parameter	Symbol	Rating	Units
Collector-Emitter Voltage	V <sub>CES</sub>	60	V
Emitter-Base Voltage	V <sub>EBO</sub>	3.0	V
Collector Current (Peak)	I <sub>C</sub>	1.3	A
Total Power Dissipation @ +25°C	P <sub>TOT</sub>	40	W
Storage Temperature	T <sub>stg</sub>	-65 to +200	°C
Junction Temperature	T <sub>j</sub>	200	°C

## Electrical Specifications at 25°C

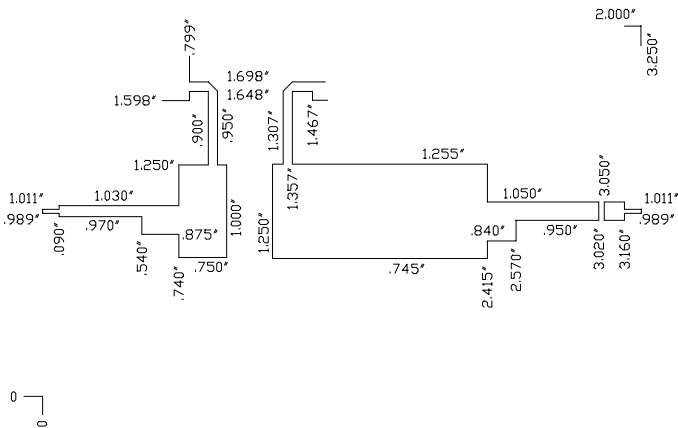
Symbol	Parameter	Test Conditions	Min	Max	Units
BV <sub>CES</sub>	Collector-Emitter Breakdown	I <sub>C</sub> = 12.5 mA	60	-	V
I <sub>CES</sub>	Collector-Emitter Breakdown	V <sub>CE</sub> = 40 V	-	1.25	mA
R <sub>TH(JC)</sub>	Thermal Resistance	V <sub>CC</sub> = 28 V, P <sub>o</sub> = 12 W, f = 1.2, 1.3, 1.4 GHz	-	3.7	°C/W
P <sub>IN</sub>	Input Power	V <sub>CC</sub> = 28 V, P <sub>o</sub> = 12 W, f = 1.2, 1.3, 1.4 GHz	-	1.5	W
G <sub>p</sub>	Power Gain	V <sub>CC</sub> = 28 V, P <sub>o</sub> = 12 W, f = 1.2, 1.3, 1.4 GHz	8.5	-	dB
η	Collector Efficiency	V <sub>CC</sub> = 28 V, P <sub>o</sub> = 12 W, f = 1.2, 1.3, 1.4 GHz	45	-	%
R <sub>L</sub>	Input Return Loss	V <sub>CC</sub> = 28 V, P <sub>o</sub> = 12 W, f = 1.2, 1.3, 1.4 GHz	9	-	dB
VSWR-T	Load Mismatch Tolerance	V <sub>CC</sub> = 28 V, P <sub>o</sub> = 12 W, f = 1.2, 1.3, 1.4 GHz	-	3:1	-
VSWR-S	Load Mismatch Stability	V <sub>CC</sub> = 28 V, P <sub>o</sub> = 12 W, f = 1.2, 1.3, 1.4 GHz	-	1.5:1	-

### Test Fixture Electrical Schematic

#### Top View



#### Circuit Dimensions



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