



# Radar Pulsed Power Transistor—150 Watts 2.7-2.9 GHz, 100 $\mu$ s Pulse, 10% Duty

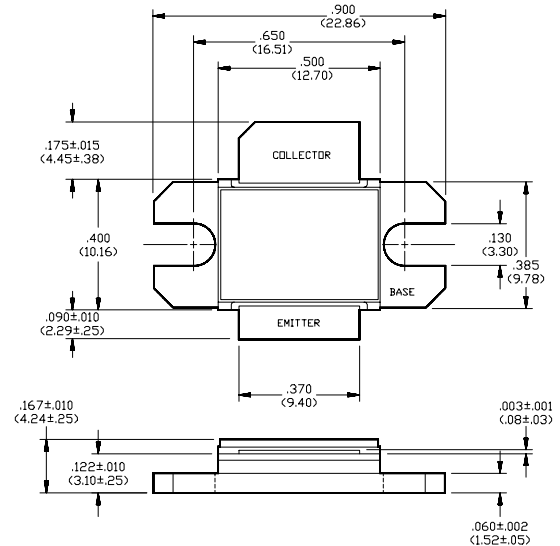
## Features

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

## Description

M/A-COM's PH2729-150M is a silicon bipolar NPN transistor specifically designed for use in high efficiency, common base, Class C microwave power amplifiers. It is ideally suited for S-Band radar and pulsed power applications where the highest gain and saturated power are required. The flanged ceramic package provides for excellent thermal and hermetic properties, which when combined with M/A-COM's mature transistor fabrication technology results in the highest reliability available.

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



Notes: (unless otherwise specified)

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

## Absolute Maximum Rating at 25°C

Parameter	Symbol	Rating	Units
Collector-Emitter Voltage	$V_{CES}$	65	V
Emitter-Base Voltage	$V_{EBO}$	3.0	V
Collector Current (Peak)	$I_C$	15.0	A
Power Dissipation	$P_D$	500	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 Voltage	$I_C = 40$ mA	65	-	V
$I_{CES}$	Collector-Emitter Leakage Current	$V_{CE} = 38$ V	-	7.5	mA
$R_{TH(JC)}$	Thermal Resistance	$V_{CC} = 38$ V, $P_{IN} = 22$ W, $f = 2.7, 2.8, 2.9$ GHz	-	0.4	°C/W
$P_{OUT}$	Output Power	$V_{CC} = 38$ V, $P_{IN} = 22$ W, $f = 2.7, 2.8, 2.9$ GHz	150	-	W
$G_P$	Power Gain	$V_{CC} = 38$ V, $P_{IN} = 22$ W, $f = 2.7, 2.8, 2.9$ GHz	8.3	-	dB
$\eta$	Collector Efficiency	$V_{CC} = 38$ V, $P_{IN} = 22$ W, $f = 2.7, 2.8, 2.9$ GHz	38	-	%
RL	Input Return Loss	$V_{CC} = 38$ V, $P_{IN} = 22$ W, $f = 2.7, 2.8, 2.9$ GHz	10	-	dB
OD-S	Overdrive Stability (Osc.)	$V_{CC} = 38$ V, $P_{IN} = 27.5$ W, $f = 2.7, 2.8, 2.9$ GHz	-	60	dBc
VSWR-T	Load Mismatch Tolerance	$V_{CC} = 38$ V, $P_{IN} = 22$ W, $f = 2.7, 2.8, 2.9$ GHz	-	2:1	-
VSWR-S	Load Mismatch Stability	$V_{CC} = 38$ V, $P_{IN} = 22$ W, $f = 2.7, 2.8, 2.9$ GHz	-	1.5:1	-

Specifications subject to change without notice.

- North America: Tel. (800) 366-2266, Fax (800) 618-8883
- Asia/Pacific: Tel.+81-44-844-8296, Fax +81-44-844-8298
- Europe: Tel. +44 (1344) 869 595, Fax+44 (1344) 300 020

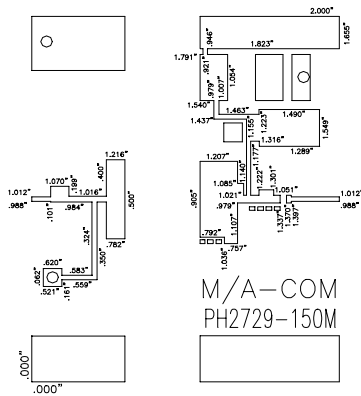
Visit [www.macom.com](http://www.macom.com) for additional data sheets and product information.

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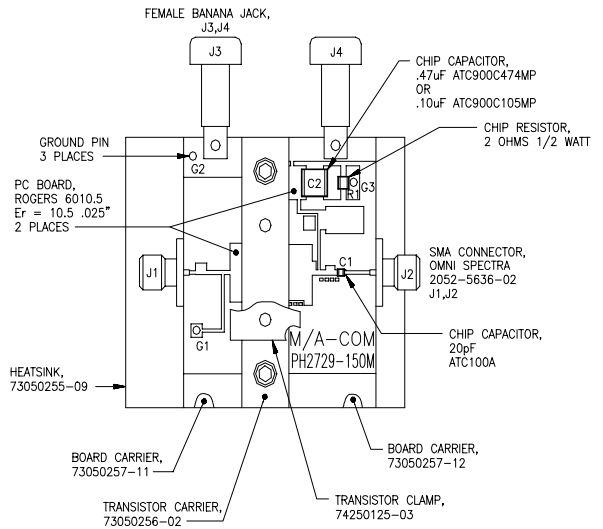
Test Fixture Matching Circuit Dimensions

Circuit Dimensions<sup>1</sup>



1. PCB Material Rogers 6010.5 .025" Thk.

Assembly View

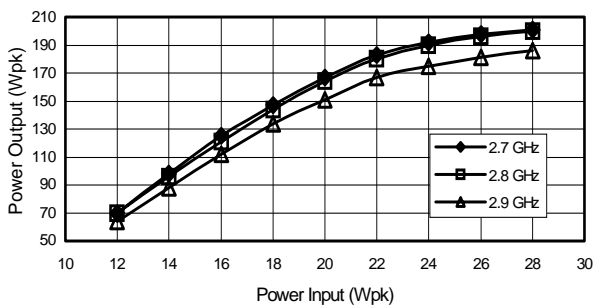


Broadband Test Fixture Impedance

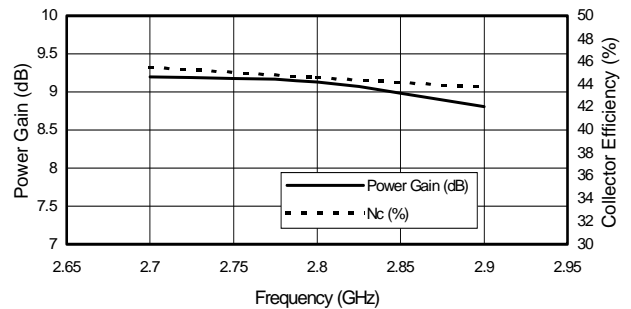
F (GHz)	Z <sub>IF</sub> (Ω)	Z <sub>OF</sub> (Ω)
2.70	4.8 - j6.9	1.7 - j3.2
2.80	4.8 - j6.6	1.7 - j2.8
2.90	4.8 - j6.4	1.7 - j2.4

Typical Performance Curves

Typical Power Transfer vs. Frequency



Typical Power Gain and Collector Efficiency



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