

Radar Pulsed Power Transistor - 12 Watts, 1.20-1.40 GHz, 150 μ 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

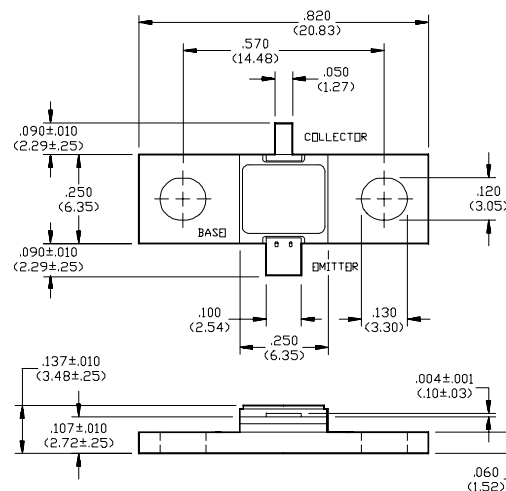
Description

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 (150 μ 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. 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}	60	V
Emitter-Base Voltage	V_{EBO}	3.0	V
Collector Current (Peak)	I_C	1.3	A
Total Power Dissipation @ +25°C	P_{TOT}	40	W
Storage Temperature	T_{stg}	-65 to +200	°C
Junction Temperature	T_j	200	°C

Outline Drawing¹

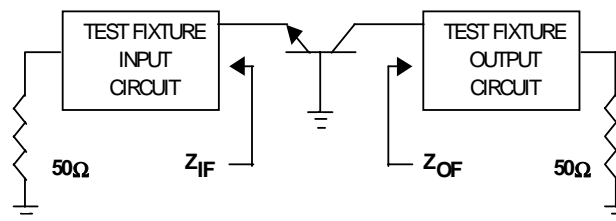


Notes: (unless otherwise specified)

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

Broadband Test Fixture Impedance

F (GHz)	Z_{IF} (Ω)	Z_{OF} (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



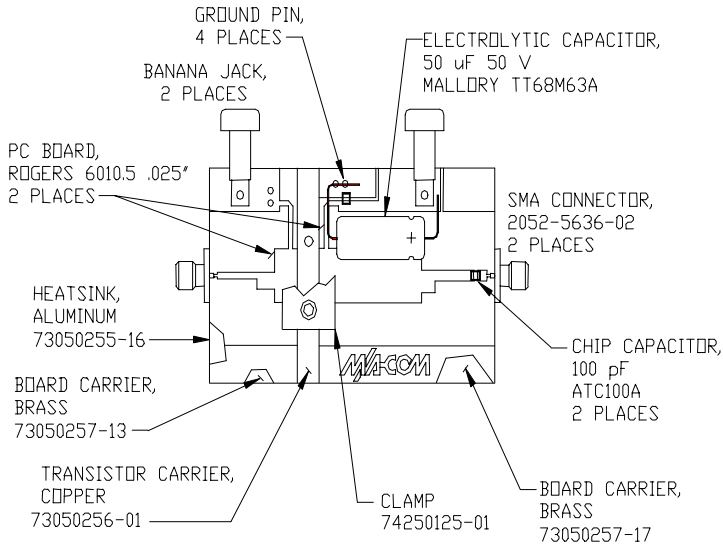
Electrical Specifications at 25°C

Symbol	Parameter	Test Conditions	Min	Max	Units
BV_{CES}	Collector-Emitter Breakdown	$I_C = 12.5$ mA	60	-	V
I_{CES}	Collector-Emitter Breakdown	$V_{CE} = 40$ V	-	1.25	mA
$R_{TH(JC)}$	Thermal Resistance	$V_{CC} = 28$ V, $P_o = 12$ W, $f = 1.2, 1.3, 1.4$ GHz	-	3.7	°C/W
P_{IN}	Input Power	$V_{CC} = 28$ V, $P_o = 12$ W, $f = 1.2, 1.3, 1.4$ GHz	-	1.5	W
G_p	Power Gain	$V_{CC} = 28$ V, $P_o = 12$ W, $f = 1.2, 1.3, 1.4$ GHz	8.5	-	dB
η	Collector Efficiency	$V_{CC} = 28$ V, $P_o = 12$ W, $f = 1.2, 1.3, 1.4$ GHz	45	-	%
R_L	Input Return Loss	$V_{CC} = 28$ V, $P_o = 12$ W, $f = 1.2, 1.3, 1.4$ GHz	9	-	dB
VSWR-T	Load Mismatch Tolerance	$V_{CC} = 28$ V, $P_o = 12$ W, $f = 1.2, 1.3, 1.4$ GHz	-	3:1	-
VSWR-S	Load Mismatch Stability	$V_{CC} = 28$ V, $P_o = 12$ W, $f = 1.2, 1.3, 1.4$ GHz	-	1.5:1	-

V2.00

Test Fixture Electrical Schematic

Top View



Circuit Dimensions

