

Avionics Pulsed Power Transistor 175W, 1090 MHz, 250µs Pulse, 10% Duty

Released, 30 May 07

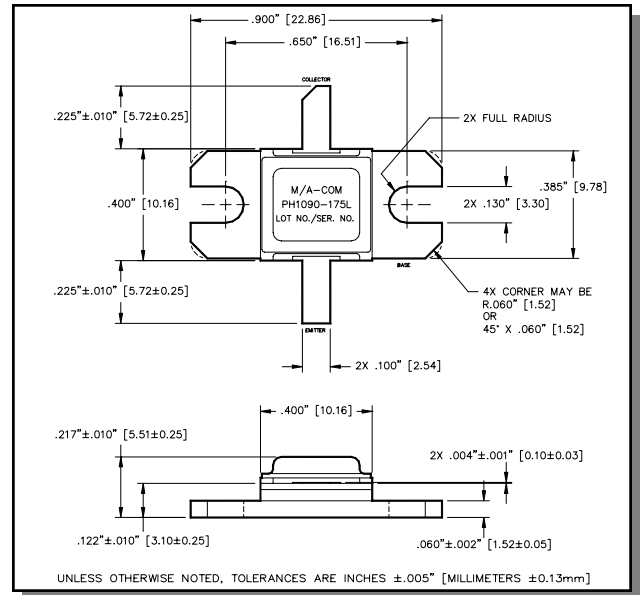
Features

- NPN silicon microwave power transistors
- Common base configuration
- Broadband Class C operation
- High efficiency inter-digitized geometry
- Diffused emitter ballasting resistors
- Gold metallization system
- Internal input and output impedance matching
- Hermetic metal/ceramic package
- RoHS Compliant

Absolute Maximum Ratings at 25°C

Parameter	Symbol	Rating	Units
Collector-Emitter Voltage	V_{CES}	80	V
Emitter-Base Voltage	V_{EBO}	3.0	V
Collector Current (Peak)	I_C	10.5	A
Power Dissipation @ +25°C	P_{TOT}	375	W
Storage Temperature	T_{STG}	-65 to +200	°C
Junction Temperature	T_J	200	°C

Outline Drawing



Electrical Specifications: $T_C = 25 \pm 5^\circ\text{C}$ (Room Ambient)

Parameter	Test Conditions	Frequency	Symbol	Min	Max	Units
Collector-Emitter Breakdown Voltage	$I_C = 125\text{mA}$		BV_{CES}	80	-	V
Collector-Emitter Leakage Current	$V_{CE} = 45\text{V}$		I_{CES}	-	12.5	mA
Thermal Resistance	$V_{CC} = 45\text{V}$, $P_{in} = 26\text{W}$	$F = 1090\text{ MHz}$	$R_{TH(JC)}$	-	0.4	°C/W
Output Power	$V_{CC} = 45\text{V}$, $P_{in} = 26\text{W}$	$F = 1090\text{ MHz}$	P_{OUT}	175	-	W
Power Gain	$V_{CC} = 45\text{V}$, $P_{in} = 26\text{W}$	$F = 1090\text{ MHz}$	G_P	8.3	-	dB
Collector Efficiency	$V_{CC} = 45\text{V}$, $P_{in} = 26\text{W}$	$F = 1090\text{ MHz}$	η_C	55	-	%
Input Return Loss	$V_{CC} = 45\text{V}$, $P_{in} = 26\text{W}$	$F = 1090\text{ MHz}$	RL	-	-9	dB
Load Mismatch Tolerance	$V_{CC} = 45\text{V}$, $P_{in} = 26\text{W}$	$F = 1090\text{ MHz}$	VSWR-T	-	3:1	-
Load Mismatch Stability	$V_{CC} = 45\text{V}$, $P_{in} = 26\text{W}$	$F = 1090\text{ MHz}$	VSWR-S	-	1.5:1	-

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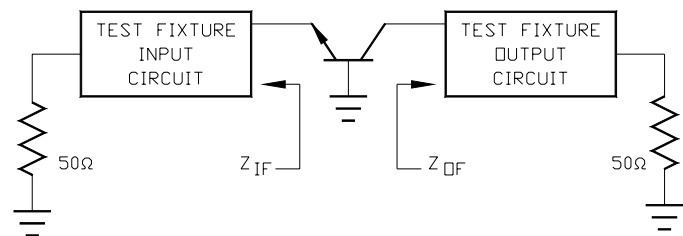
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Typical RF Performance

Freq. (MHz)	Pin (W)	Pout (W)	Gain (dB)	Ic (A)	Eff (%)	RL (dB)	VSWR-S (1.5:1)	VSWR-T (3:1)
1090	26.0	188	8.58	7.16	58.3	-16.0	S	P

RF Test Fixture Impedance

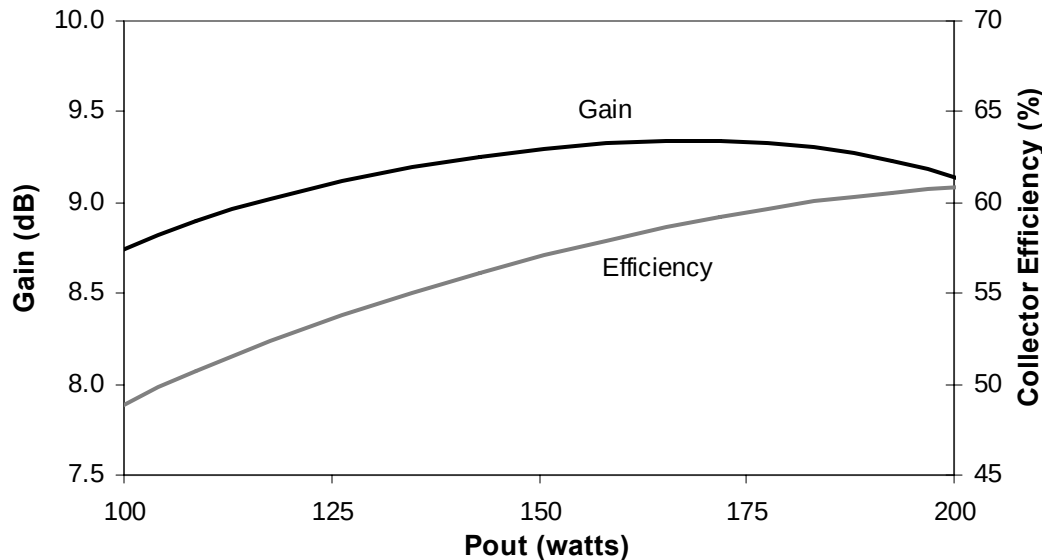
F (MHz)	Z _{IF} (Ω)	Z _{OF} (Ω)
1030	3.4 - j5.6	2.3 - j2.2
1090	3.2 - j5.1	2.3 - j1.7



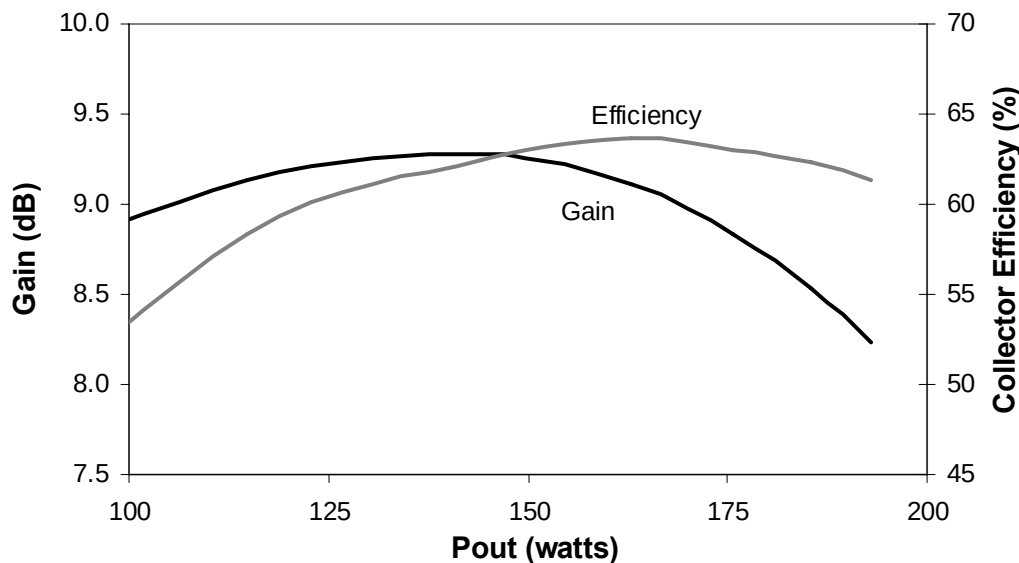
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RF Power Transfer Curve 1030 MHz, Gain & Efficiency vs. Output Power



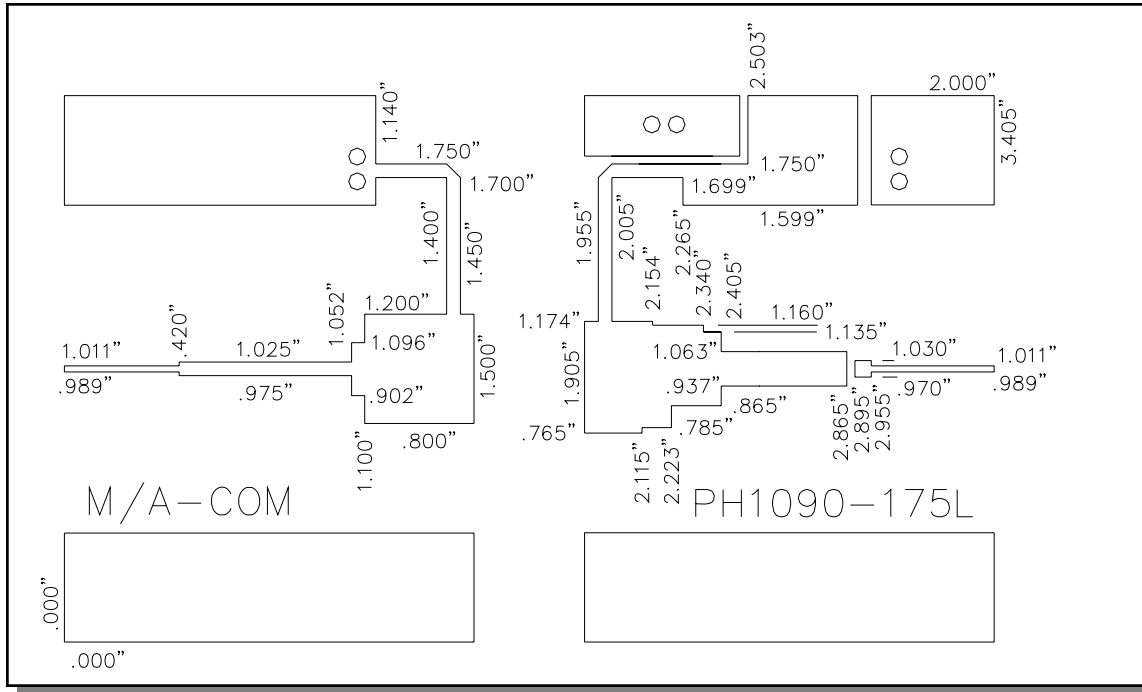
RF Power Transfer Curve 1090 MHz, Gain & Efficiency vs. Output Power



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Test Fixture Circuit Dimensions



Test Fixture Assembly

