

Wireless Bipolar Power Transistor, 4W

1.6 - 1.7 GHz

PH1617-4N

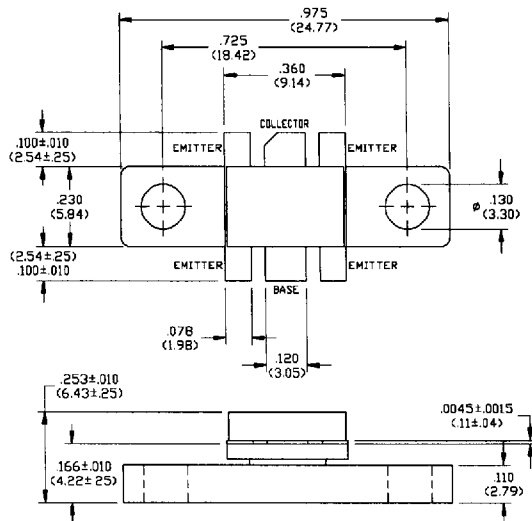
V2.00

Features

- NPN Silicon Microwave Power Transistor
- Designed for Linear Amplifier Applications
- Class AB: -33 dBc Typ 3rd IMD at 4 Watts PEP
- Class A: +44 dBm Typ 3rd Order Intercept Point
- Common Emitter Configuration
- Internal Input Impedance Matching
- Diffused Emitter Ballasting Resistors
- Gold Metalization System

Absolute Maximum Ratings at 25°C

Parameter	Symbol	Rating	Units
Collector-Base Voltage	V_{CBO}	60	V
Collector-Emitter Voltage	V_{CES}	60	V
Emitter-Base Voltage	V_{EB0}	3.0	V
Collector Current	I_C	0.7	A
Power Dissipation	P_D	19.5	W
Junction Temperature	T_J	200	°C
Storage Temperature	T_{STG}	-55 to +150	°C
Thermal Resistance	θ_{JC}	7.5	°C/W



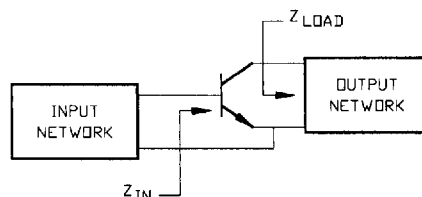
UNLESS OTHERWISE NOTED, TOLERANCES ARE INCHES ±.005" (MILLIMETERS ±.13MM)

Electrical Characteristics at 25°C

Parameter	Symbol	Min	Max	Units	Test Conditions
Collector-Emitter Breakdown Voltage	BV_{CES}	60	-	V	$I_C=5$ mA
Collector-Emitter Leakage Current	I_{CES}	-	2.0	mA	$V_{CE}=24$ V
Collector-Emitter Breakdown Voltage	BV_{CEO}	20	-	V	$I_C=5$ mA
Emitter-Base Breakdown Voltage	BV_{EBO}	3.0	-	V	$I_E=2.5$ mA
DC Forward Current Gain	h_{FE}	15	120	-	$V_{CE}=5$ V, $I_C=0.1$ A
Power Gain	G_P	12	-	dB	$V_{CC}=26$ V, $I_{CQ}=20$ mA, $P_{OUT}=4$ W PEP, $F=1650$ MHz, $\Delta F=100$ kHz
Collector Efficiency	η_C	35	-	%	$V_{CC}=26$ V, $I_{CQ}=20$ mA, $P_{OUT}=4$ W PEP, $F=1650$ MHz, $\Delta F=100$ kHz
Input Return Loss	RL	10	-	dB	$V_{CC}=26$ V, $I_{CQ}=20$ mA, $P_{OUT}=4$ W PEP, $F=1650$ MHz, $\Delta F=100$ kHz
Load Mismatch Tolerance	VSWR-T	-	10:1	-	$V_{CC}=26$ V, $I_{CQ}=20$ mA, $P_{OUT}=4$ W PEP, $F=1650$ MHz, $\Delta F=100$ kHz
3rd Order IMD	IMD ₃	-	-30	dBc	$V_{CC}=26$ V, $I_{CQ}=20$ mA, $P_{OUT}=4$ W PEP, $F=1650$ MHz, $\Delta F=100$ kHz

Typical Optimum Device Impedances

F(MHz)	$Z_{IN}(\Omega)$	$Z_{LOAD}(\Omega)$
1600	$2.5 + j8.7$	$4.2 + j9.3$
1650	$3.2 + j6.6$	$4.3 + j9.1$
1700	$3.5 + j8.5$	$4.4 + j9.0$



Specifications Subject to Change Without Notice.

MA-COM, Inc.

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Fax (800) 618-8883

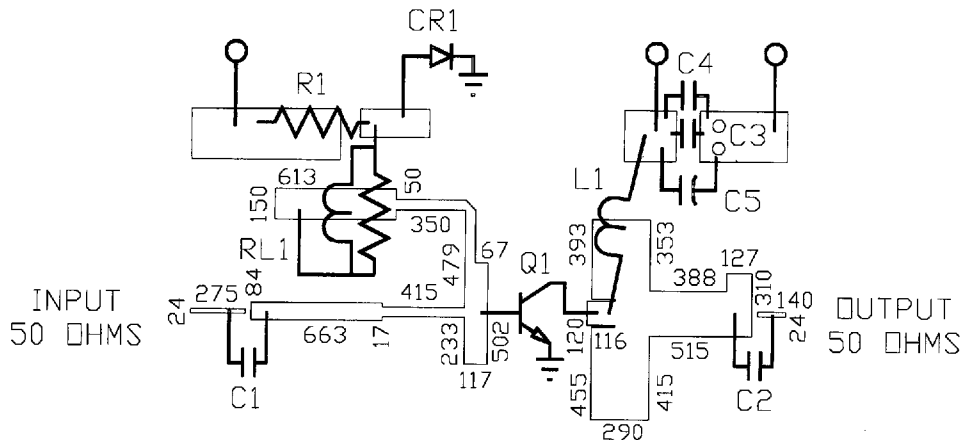
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RF Test Fixture



ARTWORK DIMENSIONS IN MILS

P A R T S L I S T

C1 C2 C3	33pF ATC SIZE A
C4	5000pF CHIP
C5	50uF 50 VOLTS
CR1	1N4245
L1	5 TURNS OF NO. 24 AWG ON Ø.160"
R1	4.7 OHMS .25 WATT
RL1	7 TURNS OF NO. 24 AWG ON 3 OHM .25 WATT
Q1	PH1617-4N
BOARD TYPE	ROGERS 6010.5 .025" THICK, $\epsilon_R=10.5$

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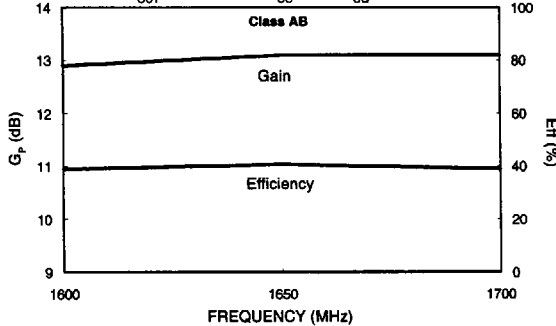
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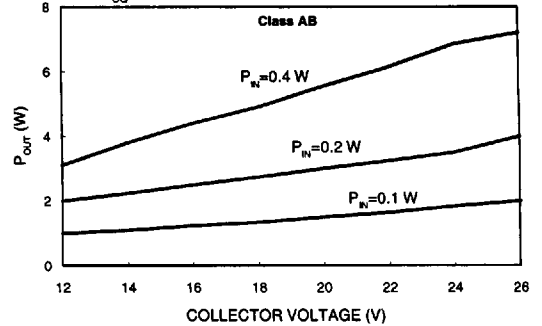
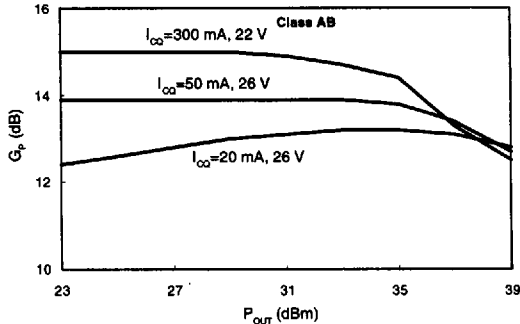
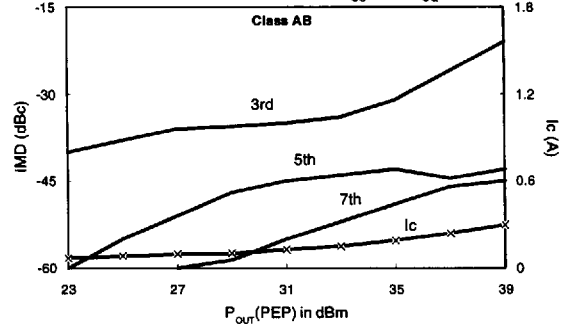
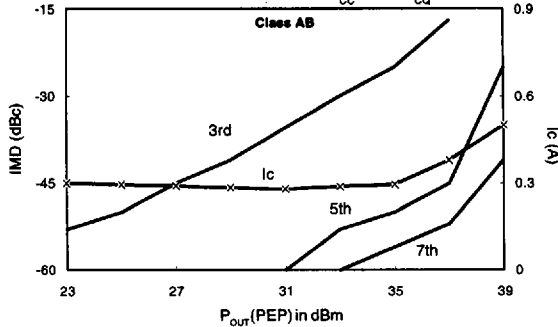
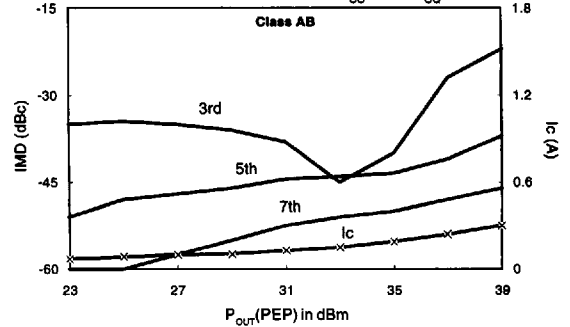
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Typical Broadband Performance Curves

GAIN-EFFICIENCY vs FREQUENCY

 $P_{OUT}=4.0\text{ W PEP}$ $V_{CC}=26\text{ V}$ $I_{CQ}=20\text{ mA}$ 

OUTPUT POWER vs COLLECTOR VOLTAGE

 $I_{CQ}=20\text{ mA}$ $F1=1650.0\text{ MHz}$ $F2=1650.1\text{ MHz}$ GAIN vs P_{OUT} $F1=1650.0\text{ MHz}$ $F2=1650.1\text{ MHz}$ IMD vs P_{OUT} $F1=1650.0\text{ MHz}$ $F2=1650.1\text{ MHz}$ $V_{CC}=26\text{ V}$ $I_{CQ}=50\text{ mA}$ IMD vs P_{OUT} $F1=1650.0\text{ MHz}$ $F2=1650.1\text{ MHz}$ $V_{CC}=22\text{ V}$ $I_{CQ}=300\text{ mA}$ IMD vs P_{OUT} $F1=1650.0\text{ MHz}$ $F2=1650.1\text{ MHz}$ $V_{CC}=26\text{ V}$ $I_{CQ}=20\text{ mA}$ 

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