PH1819-10

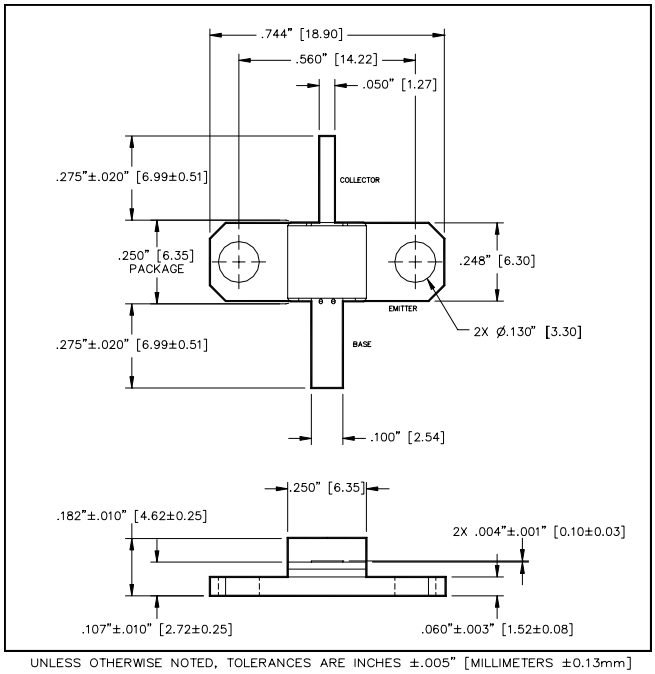
Wireless Bipolar Power Transistor
10W, 1.78-1.90 GHz

M/A-COM Products
Released - Rev. 07.07

Features

- Designed for cellular base station applications
- -30 dBc typ. 3rd IMD at 10 W PEP
- Common emitter configuration
- Internal input impedance matching
- Diffused emitter ballasting

Outline Drawing



UNLESS OTHERWISE NOTED, TOLERANCES ARE INCHES ±.005" [MILLIMETERS ±0.13mm]

ABSOLUTE MAXIMUM RATING AT 25°C

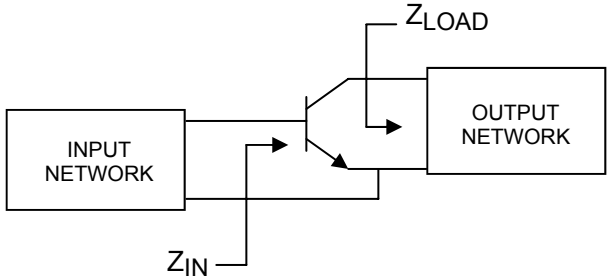
Parameter	Symbol	Rating	Units
Collector-Base Voltage	V_{CBO}	65	V
Collector-Emitter Voltage	V_{CES}	65	V
Emitter-Base Voltage	V_{EBO}	3.0	V
Collector Current	I_C	3.0	A
Power Dissipation	P_D	44	W
Junction Temperature	T_J	200	°C
Storage Temperature	T_{STG}	-55 to + 150	°C
Thermal Resistance	θ_{JC}	4.0	°C/W

ELECTRICAL SPECIFICATIONS AT 25°C

Parameter	Symbol	Min	Max	Units	Test Conditions
Collector-Emitter Breakdown Voltage	BV_{CES}	65	-	V	I_C = 10mA
Collector-Emitter Leakage Current	I_{CES}	-	2.0	mA	V_{CE} = 25V
Collector-Emitter Breakdown Voltage	BV_{CEO}	20	-	V	I_C = 10mA
Collector-Emitter Breakdown Voltage	BV_{CER}	30	-	V	I_C = 10mA, R_{BE} =220 **Ω**
Emitter-Base Breakdown Voltage	BV_{EBO}	3.0	-	V	I_B = 10mA
DC Forward Current Gain	h_{FE}	315	120	-	V_{CE} = 5V, I_C = 250 mA
Power Gain	G_P	9.0	-	dB	V_{CC} = 25V, I_{CQ} = 100 mA, P_{out} = 10 W PEP, F =1.78-1.90 GHz
Collector Efficiency	η_C	40	-	%	V_{CC} = 25V, I_{CQ} = 100 mA, P_{out} = 10 W PEP, F =1.78-1.90 GHz
Input Return Loss	RL	10	-	dB	V_{CC} = 25V, I_{CQ} = 100 mA, P_{out} = 10 W PEP, F =1.78-1.90 GHz
Load Mismatch Tolerance	VSWR	-	3.0:1	-	V_{CC} = 25V, I_{CQ} = 100 mA, P_{out} = 10 W PEP, F =1.78-1.90 GHz
3rd Order IMD	IMD_3	-	-28	dBc	V_{CC} = 25V, I_{CQ} = 100 mA, P_{out} = 10 W PEP, F =1.78-1.90 GHz, Δ F=100kHz

TYPICAL OPTIMUM DEVICE IMPEDANCES

F (GHz)	Z_{IN} (Ω)	Z_{LOAD} (Ω)
1.78	4.5+j7.0	2.5+j0.2
1.85	5.0+j7.3	2.5+j0
1.90	6.0+j6.1	2.6+j0.2



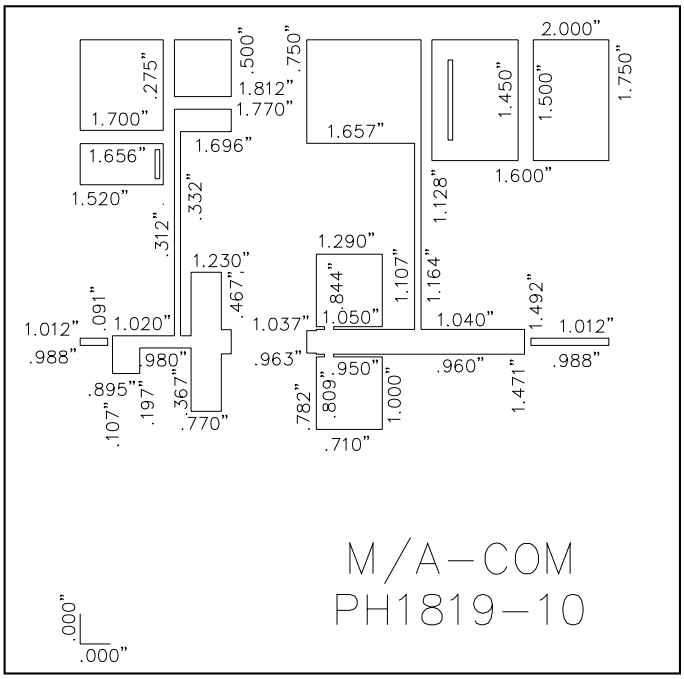
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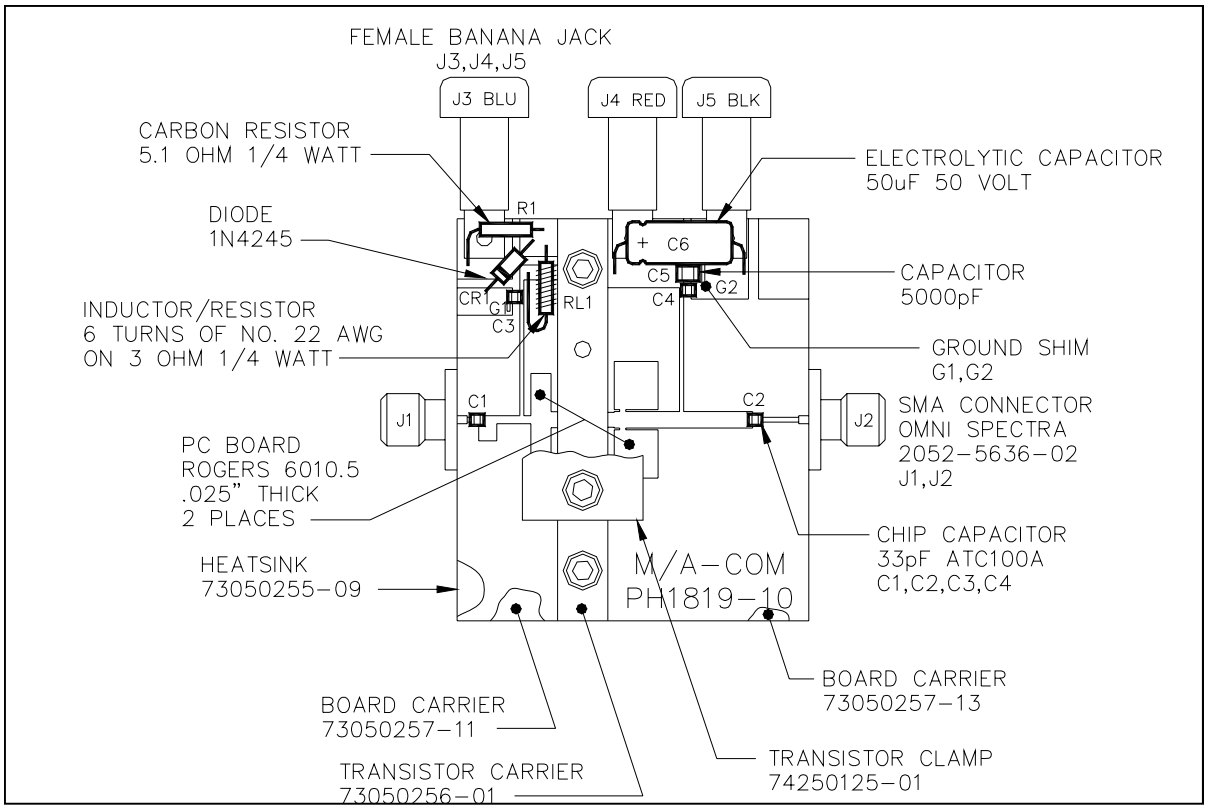
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TEST FIXTURE DIMENSIONS



TEST FIXTURE ASSEMBLY



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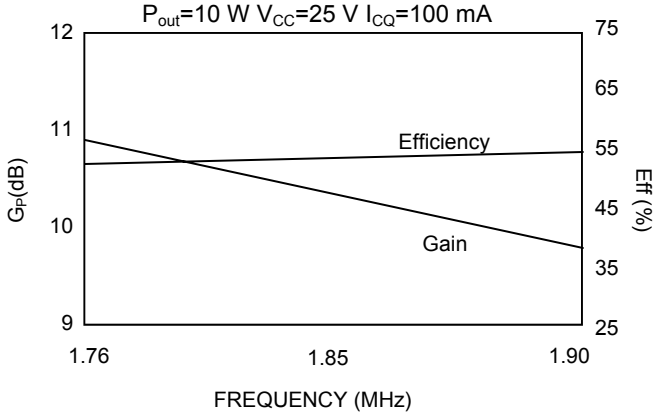
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Typical Broadband Performance Curves

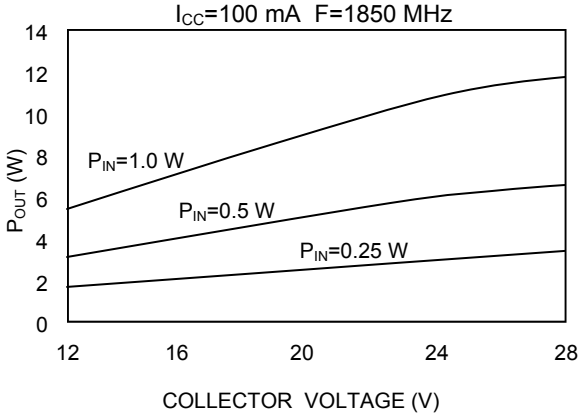
GAIN-EFFICIENCY vs FREQUENCY

P_{out}=10 W V_{CC}=25 V I_{CQ}=100 mA



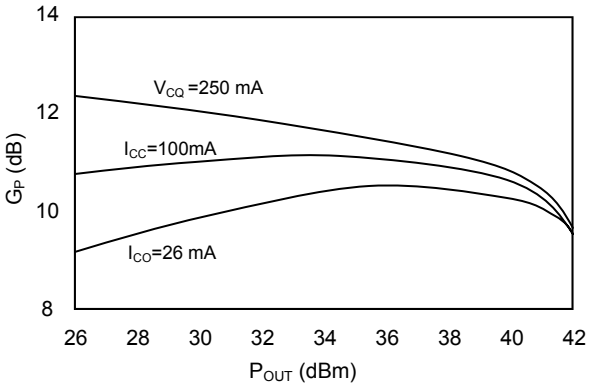
OUTPUT POWER vs COLLECTOR VOLTAGE

I_{CC}=100 mA F=1850 MHz



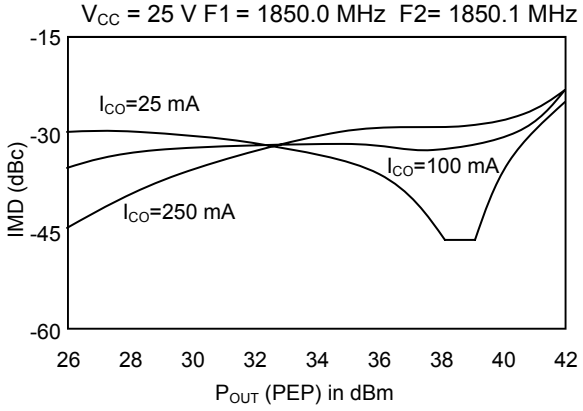
Gain vs P_{OUT}

F=1850 MHz F =25 V



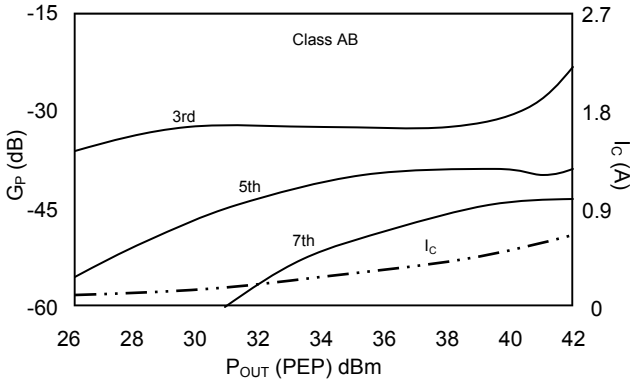
3RD ORDER IMD vs P_{OUT}

V_{CC} = 25 V F1 = 1850.0 MHz F2= 1850.1 MHz



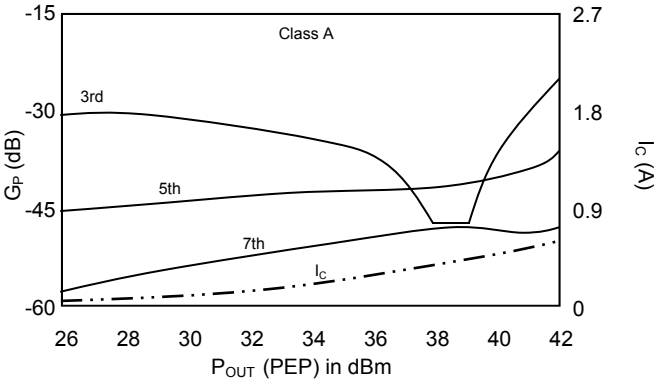
IMD vs P_{OUT}

V_{CC} = 25 V I_{CQ}= 100 mA F1 = 1850.0 MHz F2= 1850.1 MHz



IMD vs P_{OUT}

V_{CC} = 25 V I_{CQ}= 25 mA F1 = 1850.0 MHz F2= 1850.1 MHz



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