

Wireless Bipolar Power Transistor, 10W

1.78 - 1.90 GHz

PH1819-10

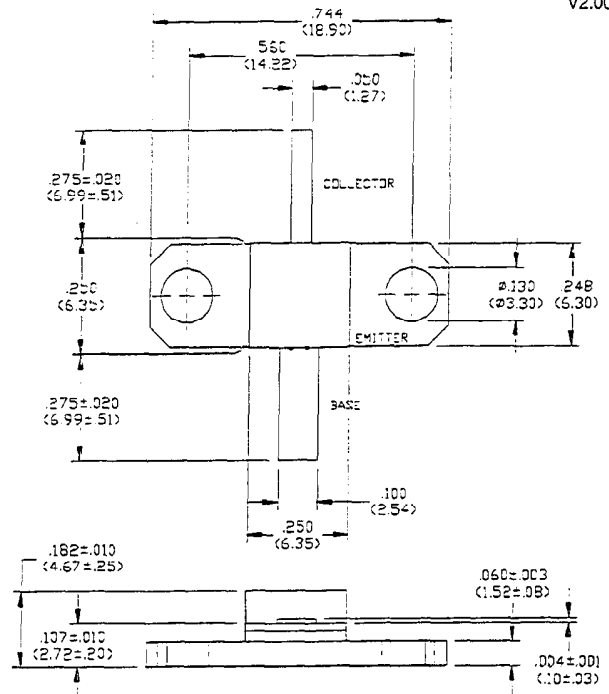
V2.00

Features

- Designed for Cellular Base Station Applications
- -30 dBc Typ 3rd IMD at 10 Watts PEP
- Common Emitter Configuration
- Internal Input Impedance Matching
- Diffused Emitter Ballasting

Absolute Maximum Ratings 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



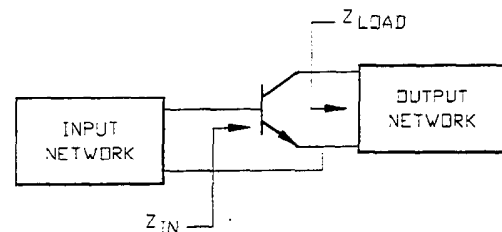
UNLESS OTHERWISE NOTED, TOLERANCES ARE INCHES = .005" (MILLIMETERS = .13MM)

Electrical Characteristics at 25°C

Parameter	Symbol	Min	Max	Units	Test Conditions
Collector-Emitter Breakdown Voltage	BV_{CES}	65	-	V	$I_C=10$ mA
Collector-Emitter Leakage Current	I_{CES}	-	2.0	mA	$V_{CE}=25$ V
Collector-Emitter Breakdown Voltage	BV_{CEO}	20	-	V	$I_C=10$ mA
Collector-Emitter Breakdown Voltage	BV_{CER}	30	-	V	$I_C=10$ mA, $R_{BE}=220$ Ω
Emitter-Base Breakdown Voltage	BV_{EBO}	3.0	-	V	$I_B=10$ mA
DC Forward Current Gain	h_{FE}	15	120	-	$V_{CE}=5$ V, $I_C=250$ mA
Power Gain	G_P	9.0	-	dB	$V_{CC}=25$ V, $I_{CO}=100$ mA, $P_{OUT}=10$ W, $F=1.78 - 1.90$ GHz
Collector Efficiency	η_c	40	-	%	$V_{CC}=25$ V, $I_{CO}=100$ mA, $P_{OUT}=10$ W, $F=1.78 - 1.90$ GHz
Input Return Loss	RL	10	-	dB	$V_{CC}=25$ V, $I_{CO}=100$ mA, $P_{OUT}=10$ W, $F=1.78 - 1.90$ GHz
Load Mismatch Tolerance	VSWR	-	3.0:1	-	$V_{CC}=25$ V, $I_{CO}=100$ mA, $P_{OUT}=10$ W, $F=1.78 - 1.90$ GHz
3rd Order IMD	IMD ₃	-	-28	dBc	$V_{CC}=25$ V, $I_{CO}=100$ mA, $P_{OUT}=10$ W PEP, $F=1850$ MHz, $\Delta F=100$ kHz

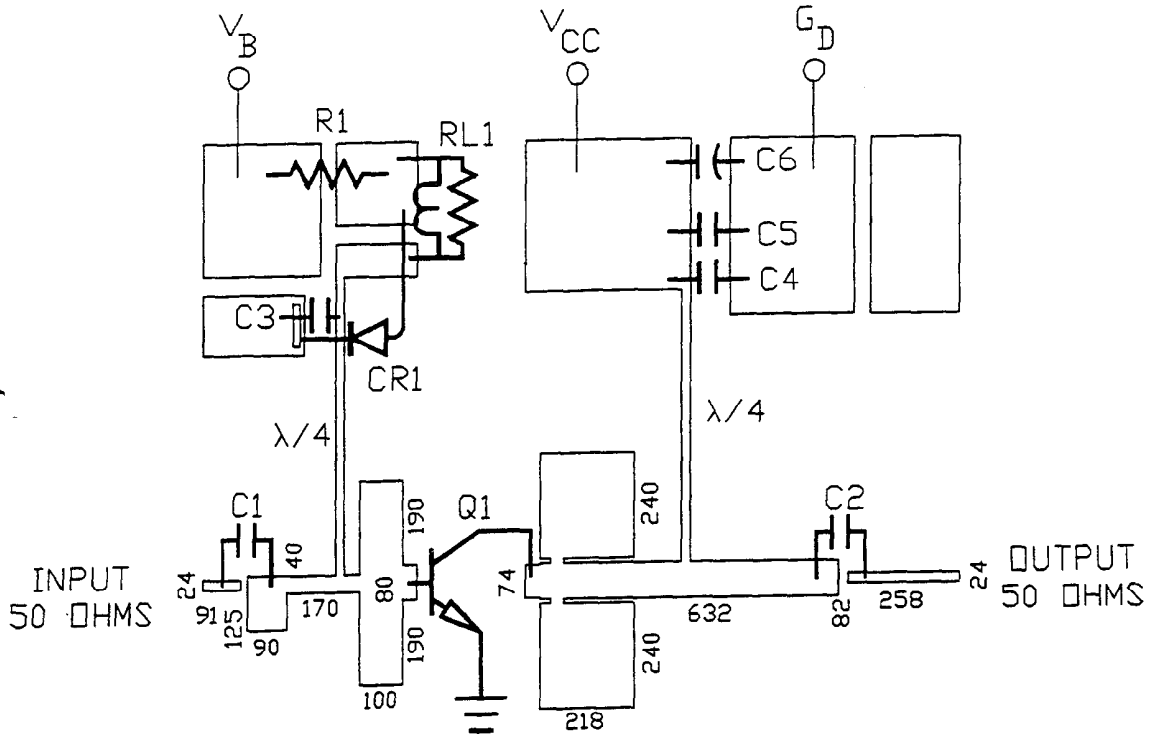
Typical Optimum Device Impedances

F(GHz)	$Z_{IN}(\Omega)$	$Z_{LOAD}(\Omega)$
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



Specifications Subject to Change Without Notice.

RF Test Fixture



ARTWORK DIMENSIONS IN MILS

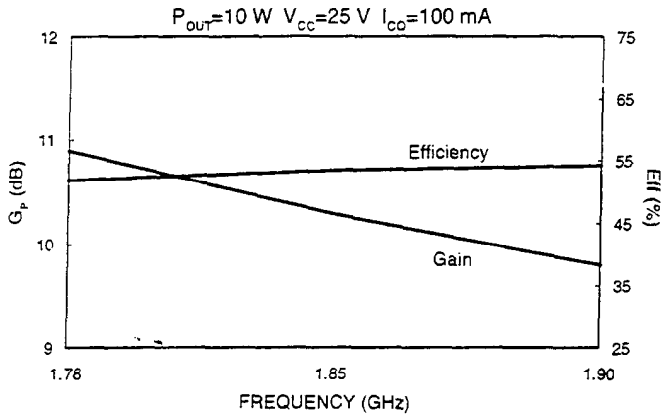
PARTS LIST

C1	C2	C3	C4	33 pF	ATC	SIZE A
C5				5000 pF		
C6				50 uF	50 VOLTS	
CR1				1N4245	DIODE	
Q1				PH1819-10		
R1				5.1 OHMS	1/4 WATT	
RL1				6T/NO.	24 AWG ON 3 OHM	1/4 WATT
BOARD TYPE:		ROGERS 6010.5 .025" THICK, E _R = 10.5				

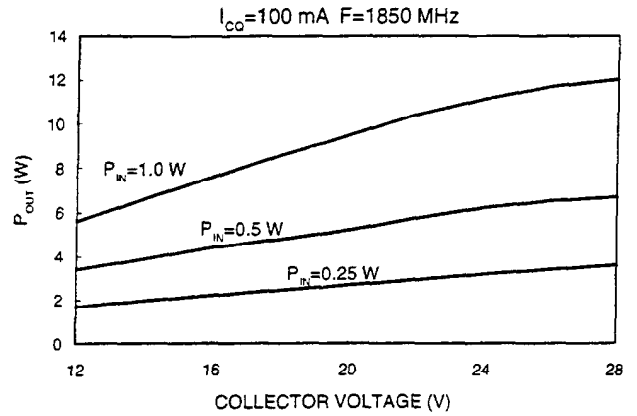
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Typical Broadband Performance Curves

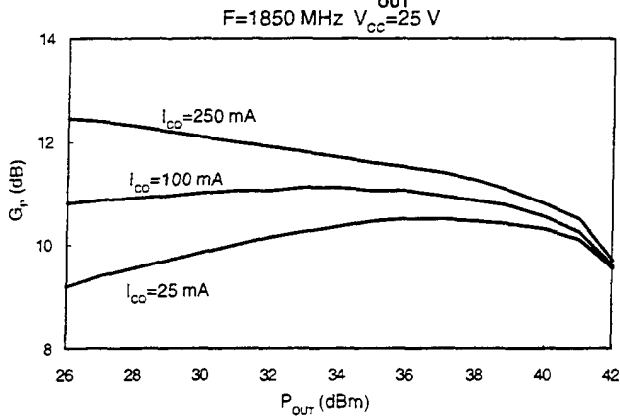
GAIN-EFFICIENCY vs FREQUENCY



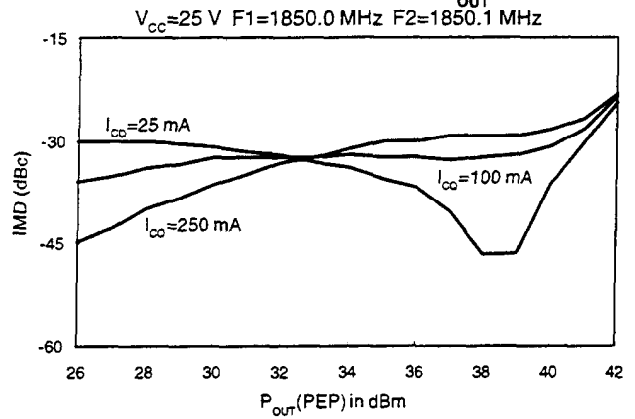
OUTPUT POWER vs COLLECTOR VOLTAGE



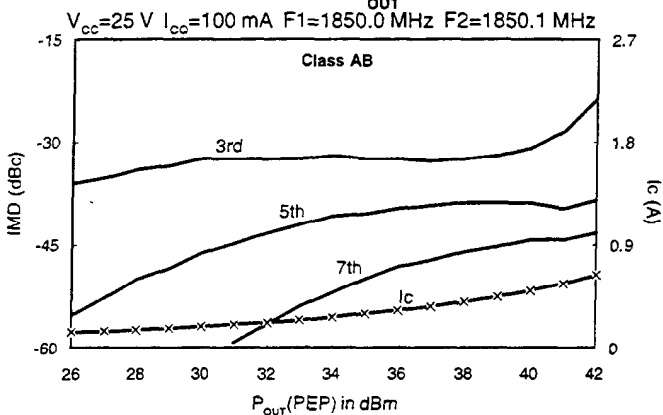
GAIN vs P_{OUT}



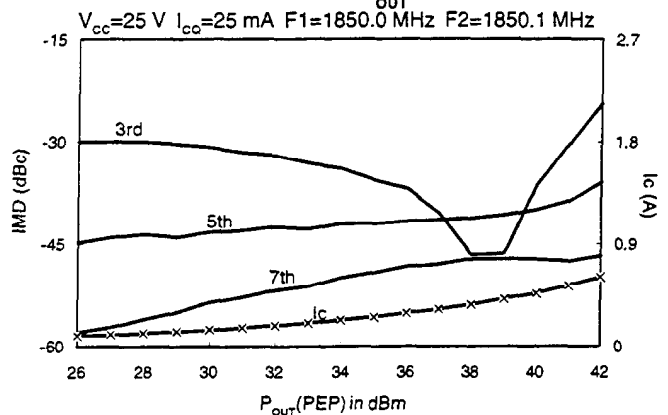
3RD ORDER IMD vs P_{OUT}



IMD vs P_{OUT}



IMD vs P_{OUT}



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