

Wireless Bipolar Power Transistor, 100W 1450 - 1550 MHz

PH1516-100

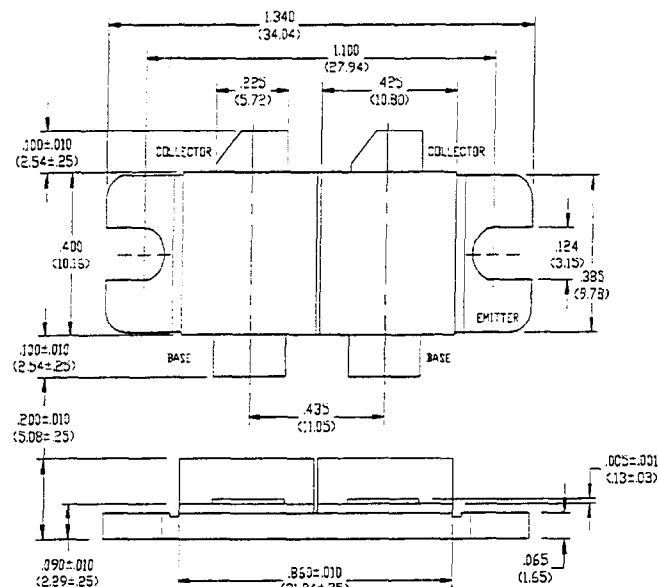
V2.00

Features

- Designed for Linear Amplifier Applications
- Class AB: -32 dBc Typ 3rd IMD at 100 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}	63	V
Collector-Emitter Voltage	V_{CES}	65	V
Emitter-Base Voltage	V_{EBO}	3.0	V
Collector Current	I_C	20	A
Power Dissipation	P_D	233	W
Junction Temperature	T_J	200	°C
Storage Temperature	T_{STG}	-55 to +150	°C
Thermal Resistance	θ_{JC}	.75	°C/W



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

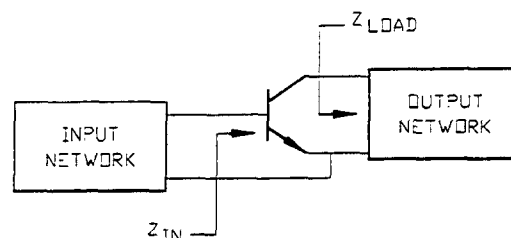
Electrical Characteristics at 25°C

Parameter	Symbol	Min	Max	Units	Test Conditions
Collector-Emitter Breakdown Voltage	BV_{CES}	65	-	V	$I_C=60\text{ mA}^*$
Collector-Emitter Leakage Current	I_{CES}	-	4.0	mA	$V_{CE}=30\text{ V}^*$
Collector-Emitter Breakdown Voltage	BV_{CEO}	22	-	V	$I_C=60\text{ mA}^*$
Emitter-Base Breakdown Voltage	BV_{EBO}	3.0	-	V	$I_E=8\text{ mA}^*$
DC Forward Current Gain	h_{FE}	15	120	-	$V_{CE}=5\text{ V}, I_C=1\text{ A}^*$
Power Gain	G_p	10	-	dB	$V_{CC}=26\text{ V}, I_{CC}=100\text{ mA}, P_{OUT}=100\text{ W PEP F}=1500\text{ MHz}, \Delta F=100\text{ kHz}$
Collector Efficiency	η_C	30	-	%	$V_{CC}=26\text{ V}, I_{CC}=100\text{ mA}, P_{OUT}=100\text{ W PEP F}=1500\text{ MHz}, \Delta F=100\text{ kHz}$
Input Return Loss	RL	10	-	dB	$V_{CC}=26\text{ V}, I_{CC}=100\text{ mA}, P_{OUT}=100\text{ W PEP F}=1500\text{ MHz}, \Delta F=100\text{ kHz}$
Load Mismatch Tolerance	VSWR-T	-	5.0:1	-	$V_{CC}=26\text{ V}, I_{CC}=100\text{ mA}, P_{OUT}=100\text{ W PEP F}=1500\text{ MHz}, \Delta F=100\text{ kHz}$
3rd Order IMD	IMD ₃	-	-30	dBc	$V_{CC}=26\text{ V}, I_{CC}=100\text{ mA}, P_{OUT}=100\text{ W PEP F}=1500\text{ MHz}, \Delta F=100\text{ kHz}$

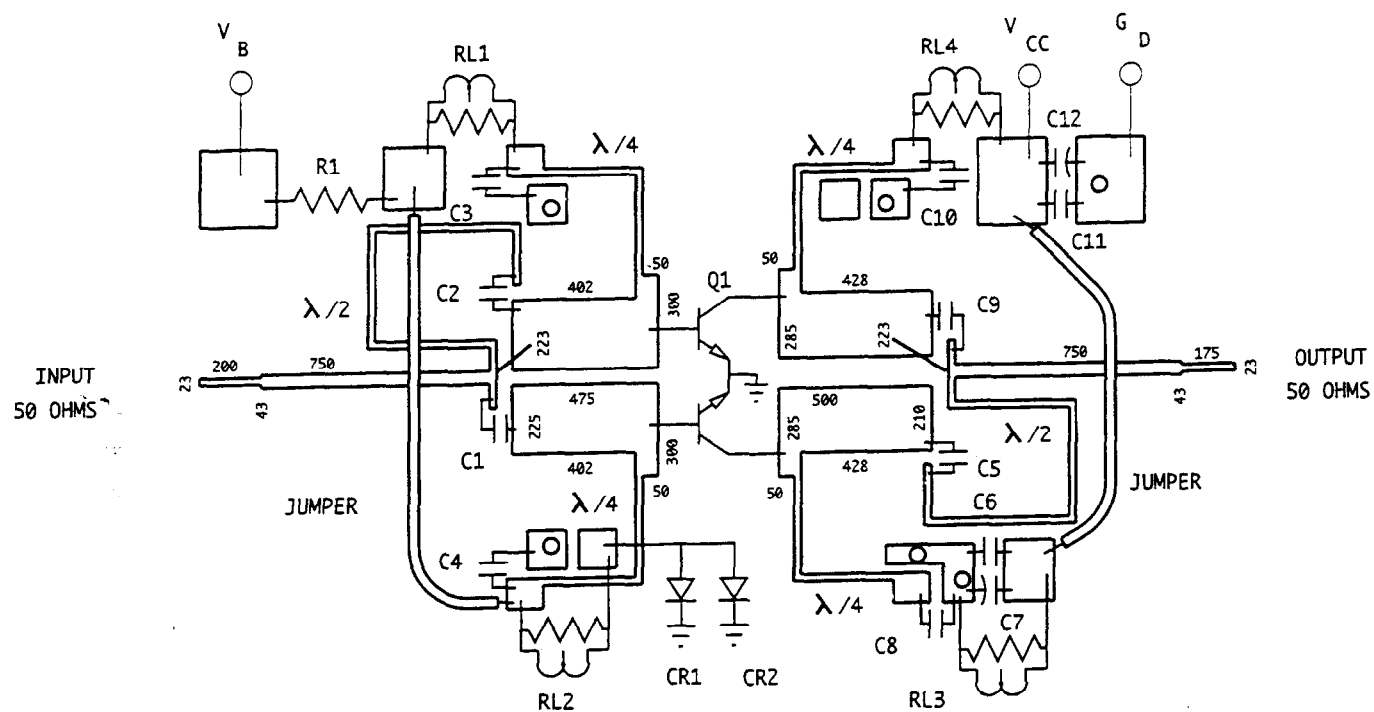
* Per Side

Typical Optimum Device Impedances

F(MHz)	$Z_{IN}(\Omega)$	$Z_{LOAD}(\Omega)$
1450	$4.4 + j10.0$	$6.0 - j7.6$
1500	$5.4 + j9.0$	$4.4 - j8.0$
1550	$4.2 + j7.4$	$3.0 - j8.2$



RF Test Fixture



ARTWORK DIMENSIONS IN MILS

PARTS LIST

C1 C2 C3	}	18pF ATC SIZE B CAPACITOR
C4 C5 C8		
C9 C10		
C6 C11		5000pF CHIP CAPACITOR
C7 C12		50 VOLT 50uF ELECTROLYTIC CAPACITOR
CR1 CR2		1N5417 DIODE
Q1		PH1516-100
R1		4.7 OHM 1/2 WATT METAL FILM RESISTOR
RL1 RL2		12 TURNS OF NO. 22 AWG ON 4.7 OHM 1/2 WATT METAL FILM RESISTOR
RL3 RL4		6 TURNS OF NO. 22 AWG ON 4.7 OHM 1/2 WATT METAL FILM RESISTOR
BOARD TYPE		ROGERS 6010.5 .025" THICK, $\epsilon_r = 10.5$