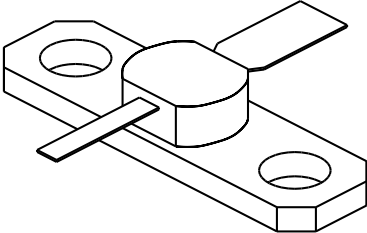


# 2304

4.0 Watts - 20 Volts, Class C  
Microwave 2300 MHz

<p><b>GENERAL DESCRIPTION</b> The 2304 is a COMMON BASE transistor capable of providing 4 Watts Class C, RF output power at 2300 MHz. Gold metalization and diffused ballasting are used to provide high reliability and supreme ruggedness. The transistor uses a fully hermetic High Temperature Solder Sealed package.</p>	<p><b>CASE OUTLINE</b> <b>55 BT- Style 1</b></p> 
<p><b>ABSOLUTE MAXIMUM RATINGS</b></p> <p>Maximum Power Dissipation @ 25°C <span style="float: right;">10.2 Watts</span></p> <p><b>Maximum Voltage and Current</b></p> <p>BVces Collector to Emitter Voltage <span style="float: right;">45 Volts</span>          BVebo Emitter to Base Voltage <span style="float: right;">3.5 Volts</span>          Ic Collector Current <span style="float: right;">0.6 A</span></p> <p><b>Maximum Temperatures</b></p> <p>Storage Temperature <span style="float: right;">- 65 to + 200°C</span>          Operating Junction Temperature <span style="float: right;">+ 200°C</span></p>	

## ELECTRICAL CHARACTERISTICS @ 25 °C

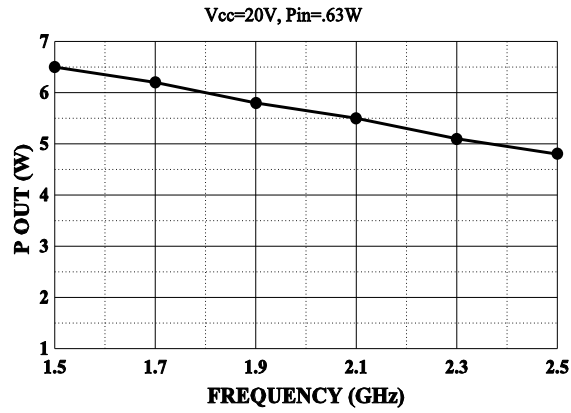
SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
<b>Pout</b>	Power Out	F = 2.3 GHz	4.0			Watt
<b>Pin</b>	Power Input	Vcb = 20 Volts			0.63	Watt
<b>Pg</b>	Power Gain	Po = 4 Watts	8.0			dB
$\eta_c$	Collector Efficiency	As Above		40		%
<b>VSWR<sub>1</sub></b>	Load Mismatch Tolerance	F = 2.3 GHz, Po = 4 W			30:1	

<b>BVces</b>	Collector to Emitter Breakdown	Ic = 30 mA	45			Volts
<b>BVebo</b>	Emitter to Base Breakdown	Ie = 3.0 mA	3.5			Volts
<b>Icbo</b>	Collector to Base Current	Vcb = 22 Volts			1.5	mA
<b>h<sub>FE</sub></b>	Current Gain	Vce = 5 V, Ic = 300 mA	10			
<b>Cob</b>	Output Capacitance	F = 1.0 MHz, Vcb = 22 V		7.0		pF
$\theta_{jc}$	Thermal Resistance				17	°C/W

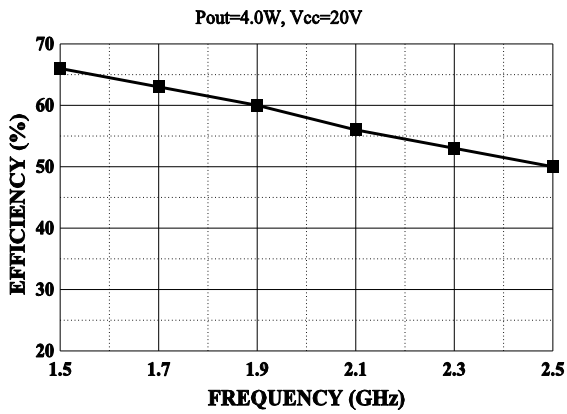
Issue August 1996

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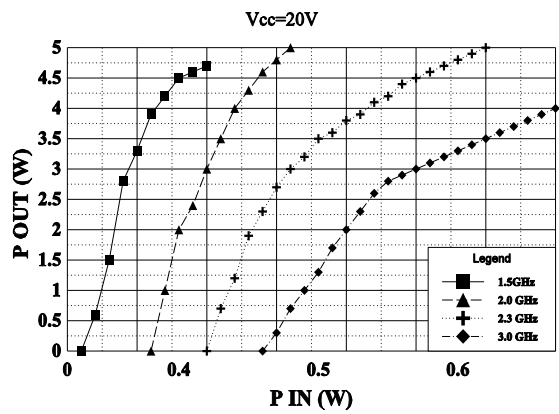
**POWER OUTPUT VS FREQUENCY**



**EFFICIENCY VS FREQUENCY**



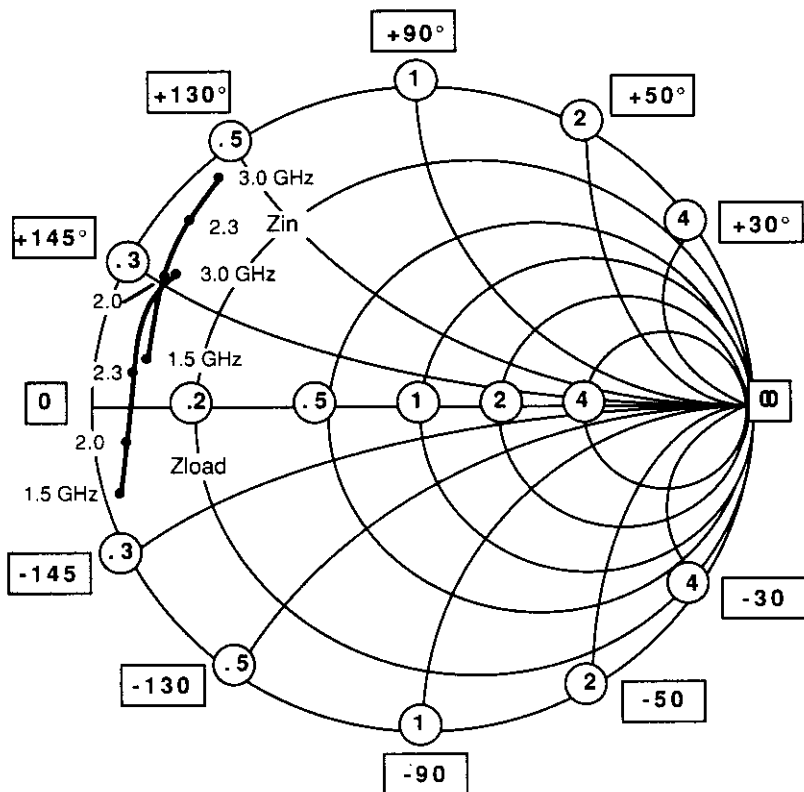
**TRANSFER CHARACTERISTICS VS FREQUENCY**



# SMITH CHART

2304

NORMALIZED IMPEDANCE AND ADMITTANCE COORDINATES

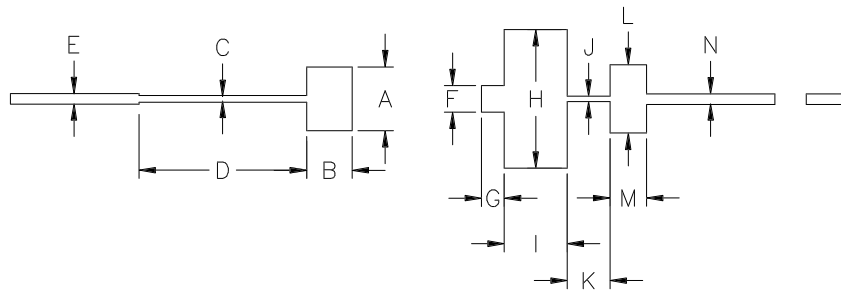


NORMALIZED TO A 50 OHM SYSTEM.

FREQUENCY MHz	Z <sub>in</sub>		FREQUENCY MHz	Z <sub>load</sub>	
	R	JX		R	JX
1500	4	5	1500	3.9	16
2000	3.3	15	2000	2.7	3
2300	3.0	18	2300	2.6	-3
3000	2.5	22	3000	1.8	-7.5

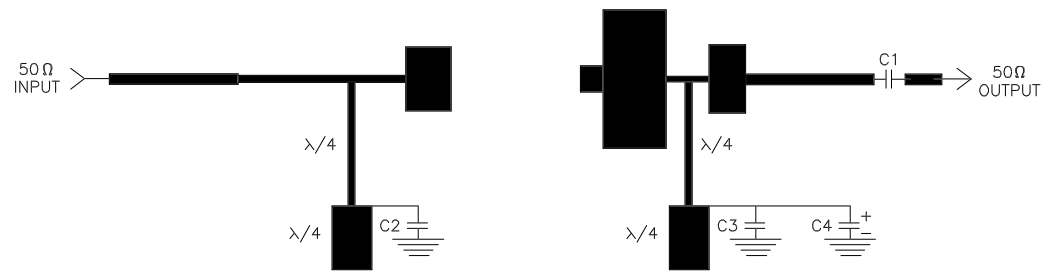
REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPROVED
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DIM	INCHES
A	.350
B	.250
C	.038
D	.920
E	.058
F	.145
G	.125
H	.760
I	.345
J	.030
K	.235
L	.375
M	.200
N	.058

2304 TEST CIRCUIT  
F = 2.3 GHz



— = Microstrip on 0.010" Duroid, Er=2.3  
 C1,C2 = 100PF ATC "A"  
 C3 = 82PF ATC "B"  
 C4 = 10MFD 35v



CAGE OPJR2	DWG NO. 2304	REV B
SCALE 1/1	SHEET	