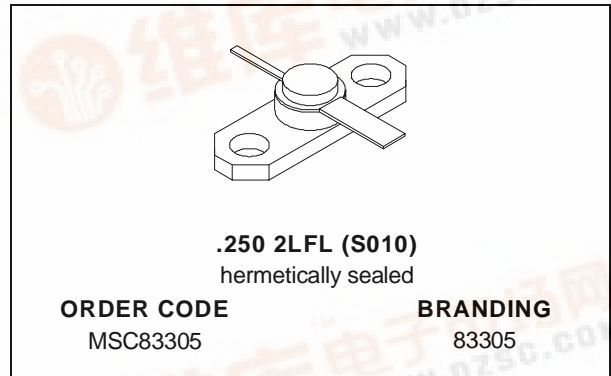




MSC83305

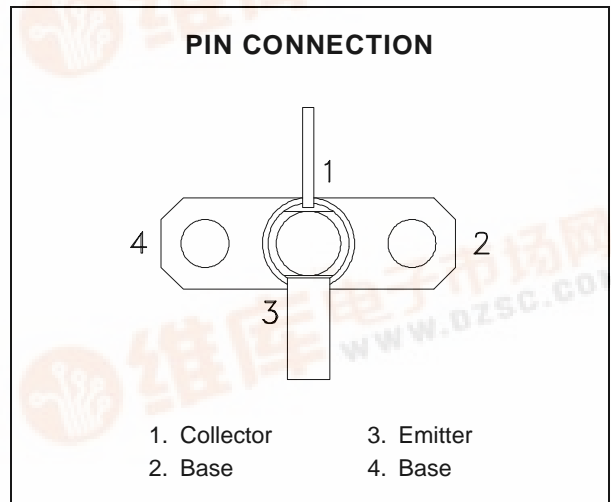
RF & MICROWAVE TRANSISTORS GENERAL PURPOSE AMPLIFIER APPLICATIONS

- REFRACTORY/GOLD METALLIZATION
- EMITTER BALLASTED
- VSWR CAPABILITY $\infty:1$ @ RATED CONDITIONS
- HERMETIC STRIPAC® PACKAGE
- $P_{OUT} = 4.5$ W MIN. WITH 4.5 dB GAIN @ 3.0 GHz



DESCRIPTION

The MSC83305 is a common base hermetically sealed silicon NPN microwave power transistor utilizing an emitter site ballasted geometry with a refractory gold metallization system. This device is capable of withstanding an infinite load VSWR at any phase angle under rated conditions. The MSC83305 was designed for Class C amplifier/oscillator applications in the 1.0 - 3.0 GHz frequency range.



ABSOLUTE MAXIMUM RATINGS ($T_{case} = 25^{\circ}C$)

Symbol	Parameter	Value	Unit
P_{DISS}	Power Dissipation* ($T_c \leq 50^{\circ}C$)	17.6	W
I_c	Device Current*	700	mA
V_{CC}	Collector-Supply Voltage*	30	V
T_J	Junction Temperature	200	$^{\circ}C$
T_{STG}	Storage Temperature	- 65 to +200	$^{\circ}C$

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance*	8.5	$^{\circ}C/W$
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*Applies only to rated RF amplifier operation



MSC83305

ELECTRICAL SPECIFICATIONS (T_{case} = 25°C)

STATIC

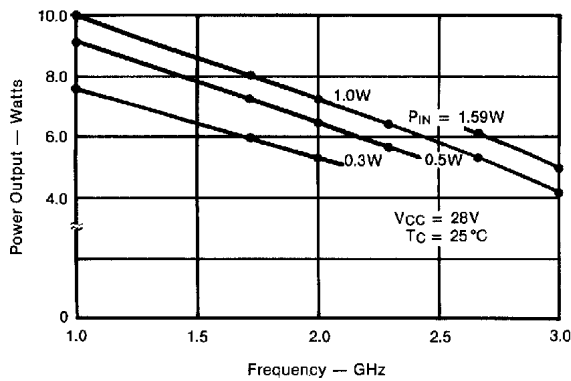
Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV _{CBO}	I _C = 1mA	I _E = 0mA	45	—	—	V
BV _{EBO}	I _E = 1mA	I _C = 0mA	3.5	—	—	V
BV _{CER}	I _C = 5mA	R _{BE} = 10Ω	45	—	—	V
I _{CBO}	V _{CB} = 28V		—	—	0.5	mA
h _{FE}	V _{CE} = 5V	I _C = 500mA	30	—	300	—

DYNAMIC

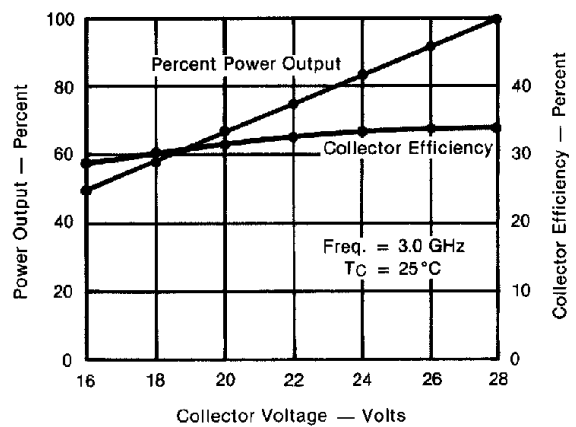
Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P _{OUT}	f = 3.0 GHz	P _{IN} = 1.59 W	V _{CC} = 28 V	4.5	5.0	—	W
η _c	f = 3.0 GHz	P _{IN} = 1.59 W	V _{CC} = 28 V	30	33	—	%
G _P	f = 3.0 GHz	P _{IN} = 1.59 W	V _{CC} = 28 V	4.5	5.0	—	dB
C _{OB}	f = 1 MHz	V _{CB} = 28 V		—	—	7.5	pF

TYPICAL PERFORMANCE

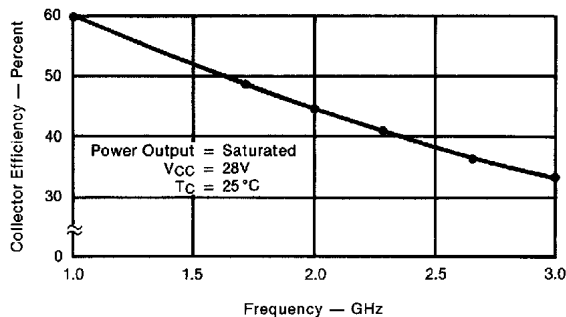
POWER OUTPUT vs FREQUENCY



PERCENT POWER OUTPUT & COLLECTOR EFFICIENCY vs COLLECTOR VOLTAGE

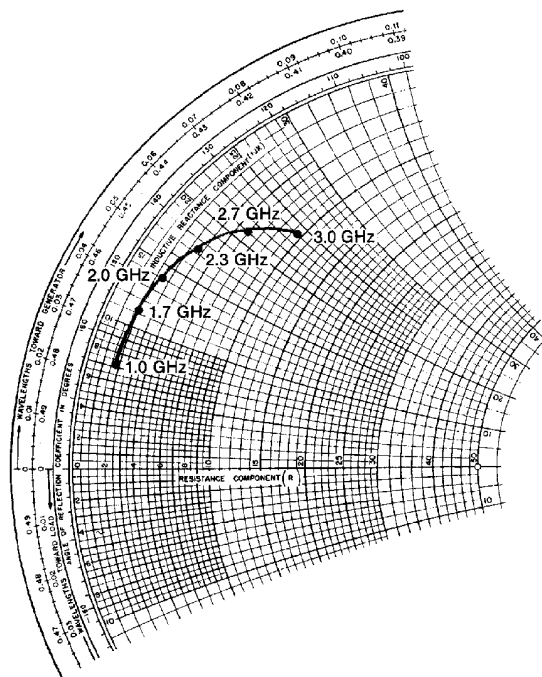
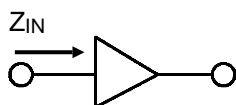


COLLECTOR EFFICIENCY vs FREQUENCY



IMPEDANCE DATA

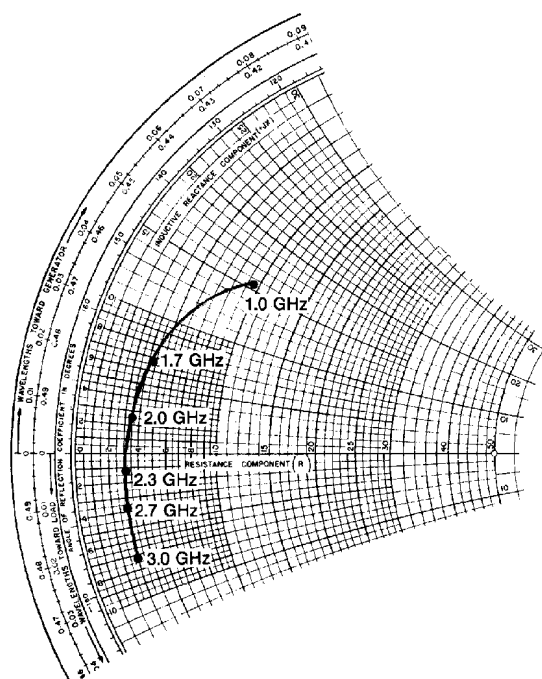
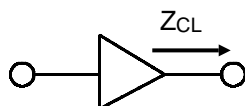
TYPICAL INPUT IMPEDANCE



FREQ.	Z _{IN} (Ω)	Z _{CL} (Ω)
1.0 GHz	1.7 + j 7.2	9.5 + j 15.5
1.7 GHz	2.0 + j 11.2	4.2 + j 6.7
2.0 GHz	2.4 + j 14.0	3.5 + j 2.5
2.3 GHz	3.6 + j 17.4	3.1 - j 1.2
2.7 GHz	6.0 + j 21.0	3.0 - j 3.8
3.0 GHz	9.5 + j 24.0	3.0 - j 7.2

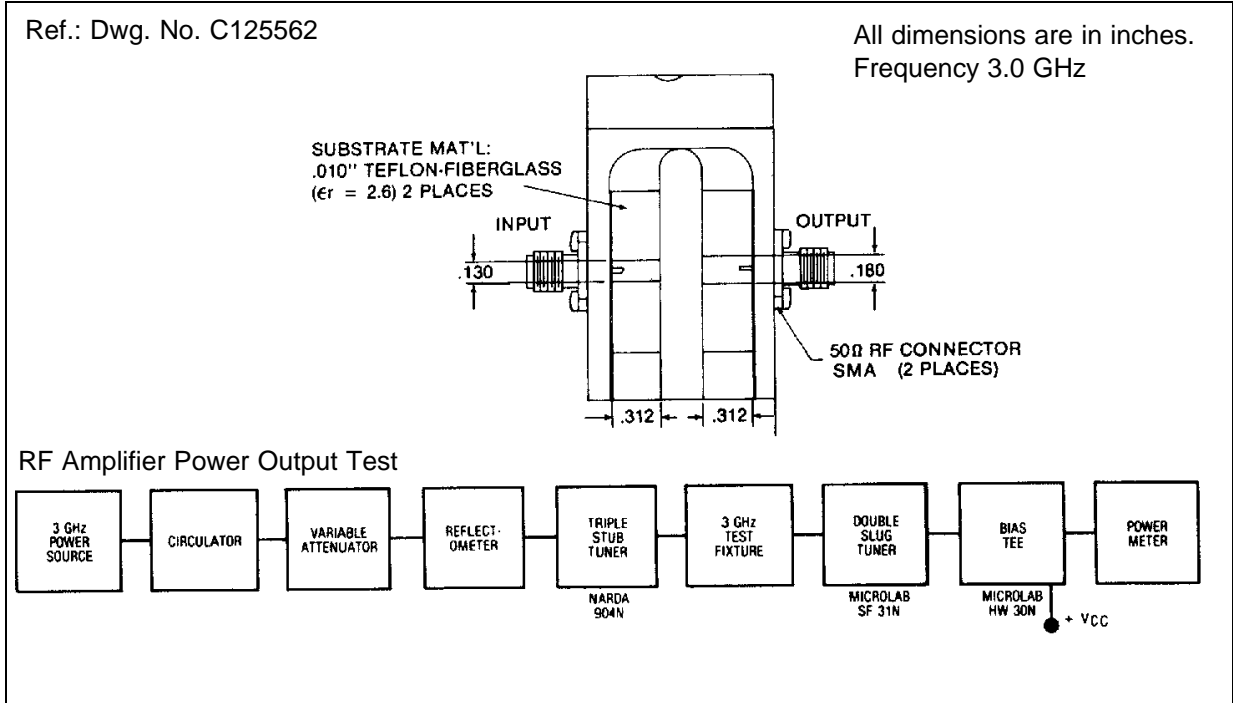
P_{OUT} = Saturated
 V_{CC} = 28V
 Normalized to 50 ohms

TYPICAL COLLECTOR LOAD IMPEDANCE

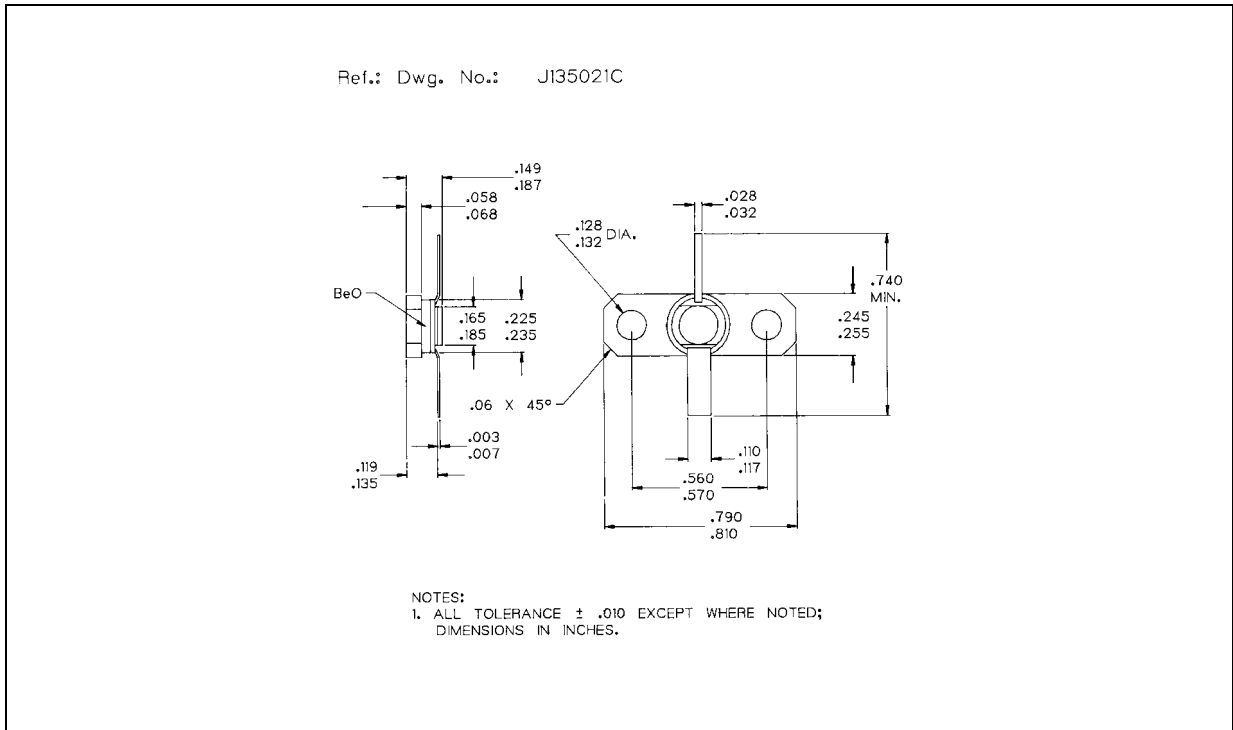


MSC83305

TEST CIRCUIT



PACKAGE MECHANICAL DATA



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