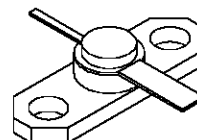


RF & MICROWAVE TRANSISTORS GENERAL PURPOSE AMPLIFIER APPLICATIONS

- EMITTER BALLASTED
- REFRACTORY/GOLD METALLIZATION
- VSWR CAPABILITY $\infty:1$ @ RATED CONDITIONS
- HERMETIC STRIPAC® PACKAGE
- $P_{OUT} = 5.0$ W MIN. WITH 10 dB GAIN @ 1 GHz



.250 2LFL (S010)
hermetically sealed

ORDER CODE

MSC81111

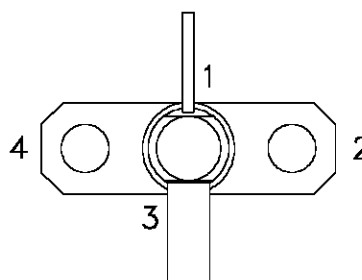
BRANDING

81111

DESCRIPTION

The MSC81111 is a common base hermetically sealed silicon NPN microwave transistor utilizing a fishbone emitter 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 MSC81111 is designed for Class C amplifier applications in the 0.4 - 1.2 GHz frequency range.

PIN CONNECTION



1. Collector

2. Base

3. Emitter

4. Base

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

Symbol	Parameter	Value	Unit
P_{DISS}	Power Dissipation* ($T_C \leq 50^{\circ}\text{C}$)	18.75	W
I_C	Device Current*	600	mA
V_{CC}	Collector-Supply Voltage*	35	V
T_J	Junction Temperature	200	$^{\circ}\text{C}$
T_{STG}	Storage Temperature	- 65 to +200	$^{\circ}\text{C}$

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance*	8.0	$^{\circ}\text{C/W}$
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*Applies only to rated RF amplifier operation

MSC81111

ELECTRICAL SPECIFICATIONS ($T_{\text{case}} = 25^{\circ}\text{C}$)

STATIC

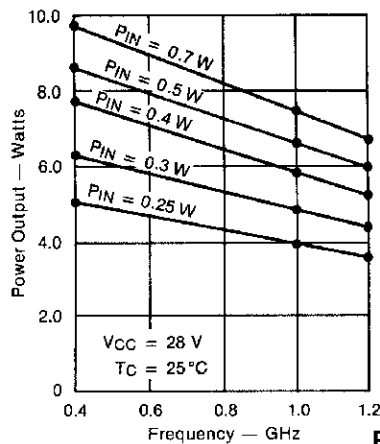
Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
BV_{CBO}	$I_{\text{C}} = 1\text{mA}$ $I_{\text{E}} = 0\text{mA}$	45	—	—	V
BV_{EBO}	$I_{\text{E}} = 1\text{mA}$ $I_{\text{C}} = 0\text{mA}$	3.5	—	—	V
BV_{CER}	$I_{\text{C}} = 5\text{mA}$ $R_{\text{BE}} = 10\Omega$	45	—	—	V
I_{CBO}	$V_{\text{CB}} = 28\text{V}$	—	—	1.0	mA
h_{FE}	$V_{\text{CE}} = 5\text{V}$ $I_{\text{C}} = 200\text{mA}$	15	—	120	—

DYNAMIC

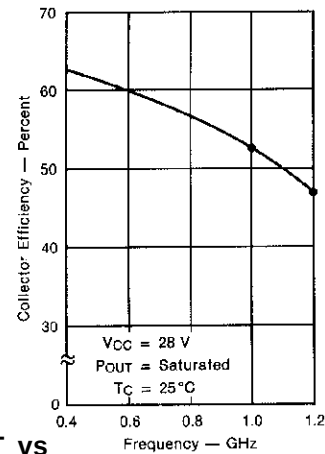
Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
P_{OUT}	$f = 1.0\text{ GHz}$ $P_{\text{IN}} = 0.5\text{ W}$ $V_{\text{CC}} = 28\text{ V}$	5.0	6.6	—	W
η_{C}	$f = 1.0\text{ GHz}$ $P_{\text{IN}} = 0.5\text{ W}$ $V_{\text{CC}} = 28\text{ V}$	50	52	—	%
G_{P}	$f = 1.0\text{ GHz}$ $P_{\text{IN}} = 0.5\text{ W}$ $V_{\text{CC}} = 28\text{ V}$	10	11.2	—	dB
C_{OB}	$f = 1\text{ MHz}$ $V_{\text{CB}} = 28\text{ V}$	—	—	6.5	pF

TYPICAL PERFORMANCE

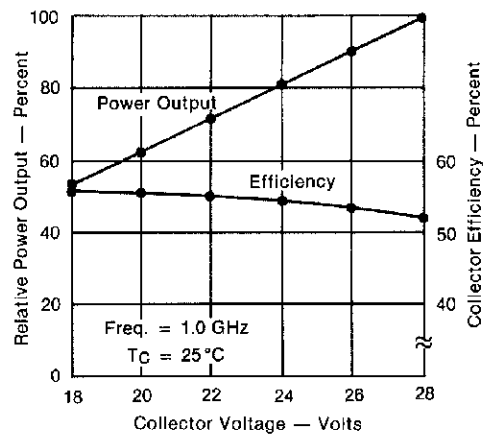
POWER OUTPUT vs FREQUENCY



COLLECTOR EFFICIENCY vs FREQUENCY

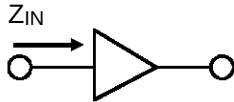


RELATIVE POWER OUTPUT vs COLLECTOR VOLTAGE

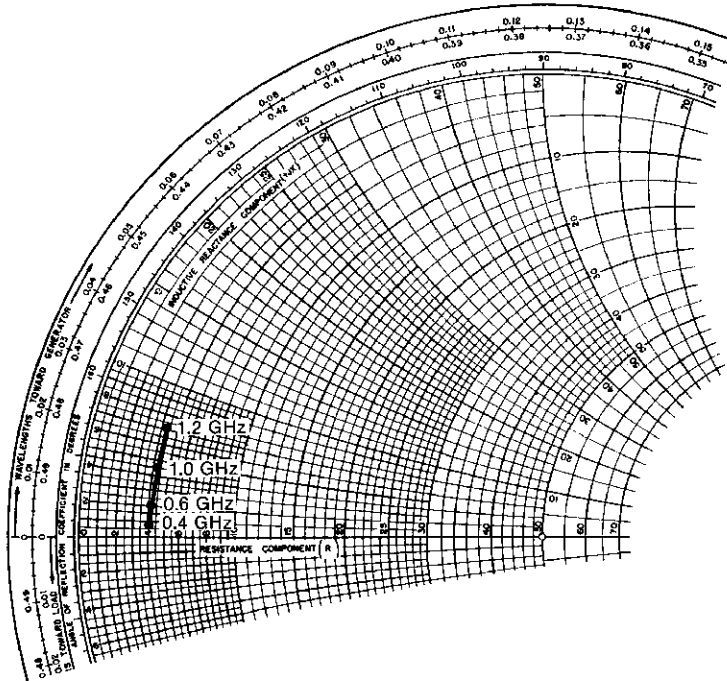


IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

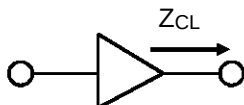


$P_{IN} = 0.5 \text{ W}$
 $V_{CC} = 35 \text{ V}$
 Normalized to 50 ohms

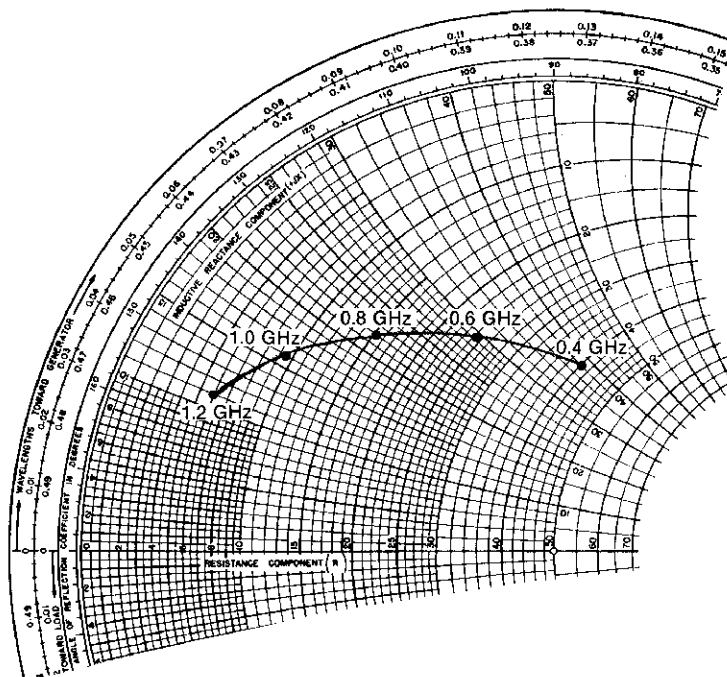


FREQ.	$Z_{IN} (\Omega)$	$Z_{CL} (\Omega)$
0.4 GHz	$4.0 + j 0.8$	$40.0 + j 38.0$
0.6 GHz	$4.1 + j 2.0$	$24.0 + j 29.5$
0.8 GHz	$4.2 + j 3.2$	$15.0 + j 22.0$
1.0 GHz	$4.3 + j 4.5$	$9.4 + j 16.0$
1.2 GHz	$4.4 + j 7.1$	$6.0 + j 11.0$

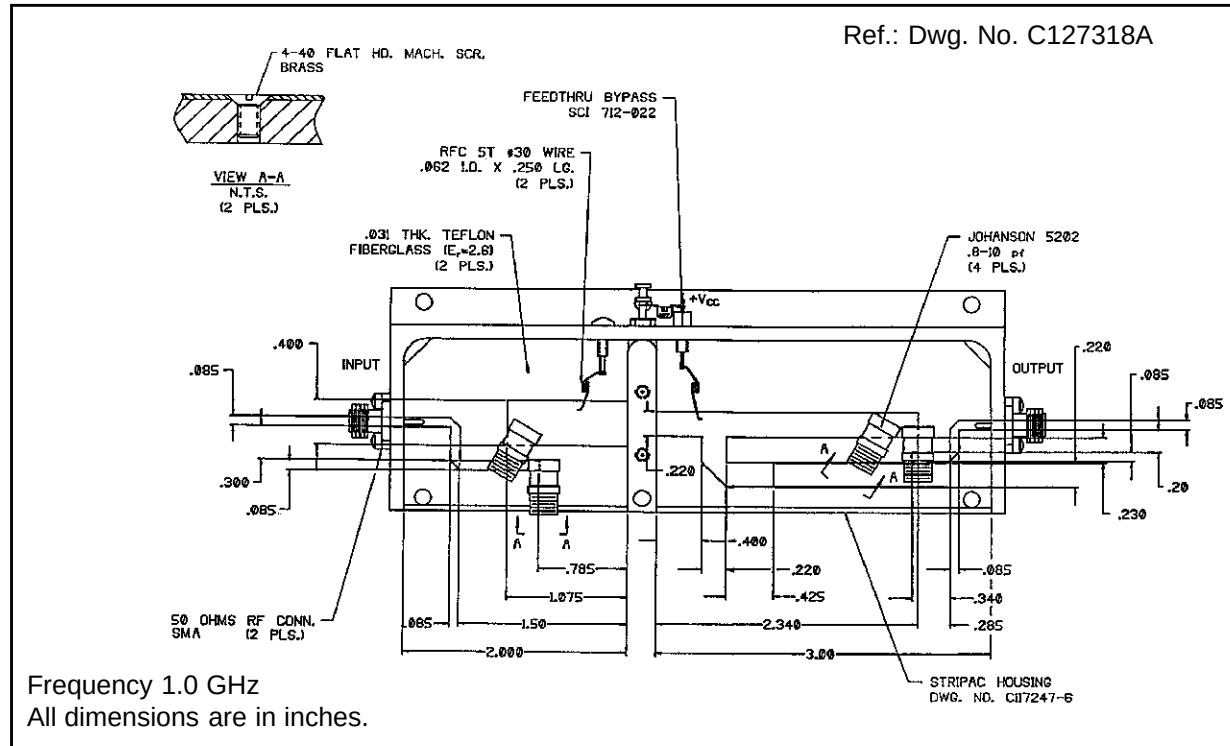
TYPICAL COLLECTOR LOAD IMPEDANCE



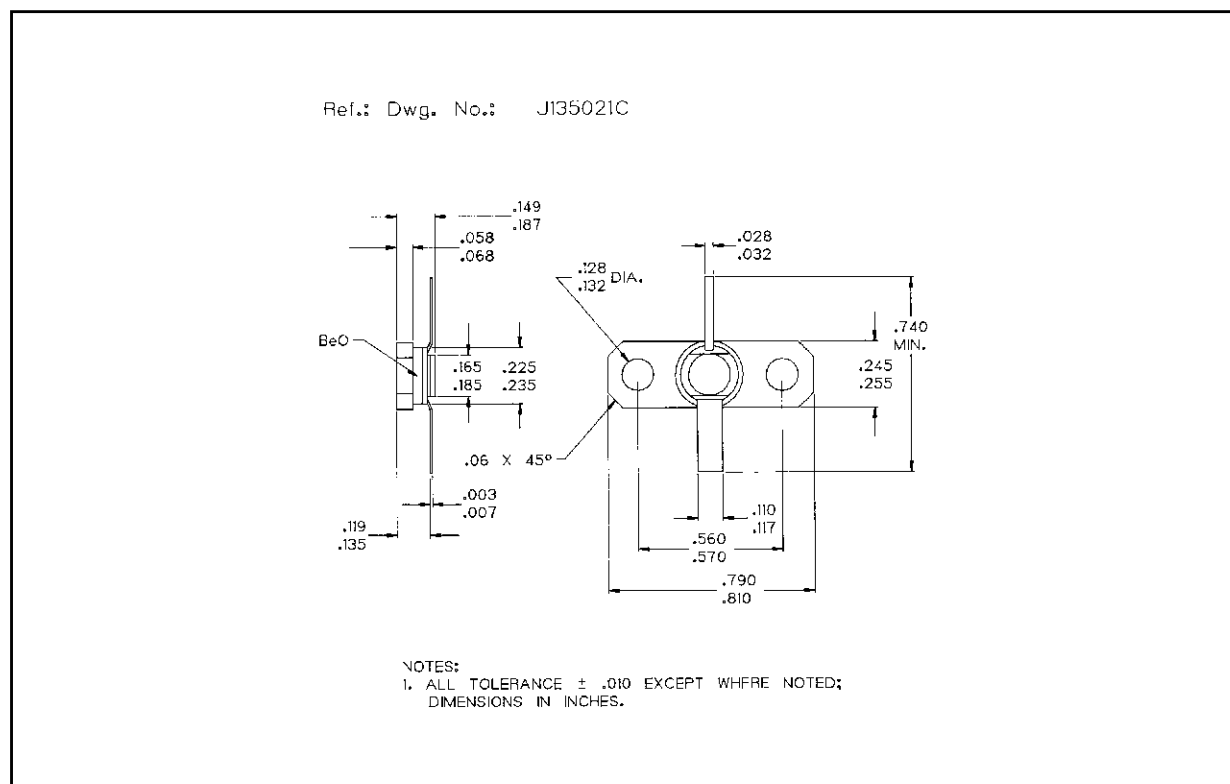
$P_{OUT} = \text{Saturated}$
 $V_{CC} = 35 \text{ V}$
 Normalized to 50 ohms



TEST CIRCUIT



PACKAGE MECHANICAL DATA



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