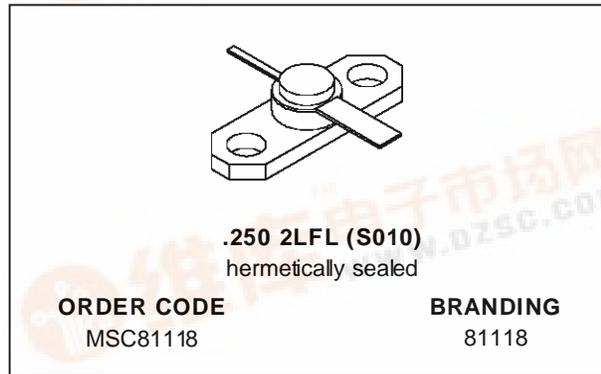




**MSC81118**

**RF & MICROWAVE TRANSISTORS  
GENERAL PURPOSE AMPLIFIER APPLICATIONS**

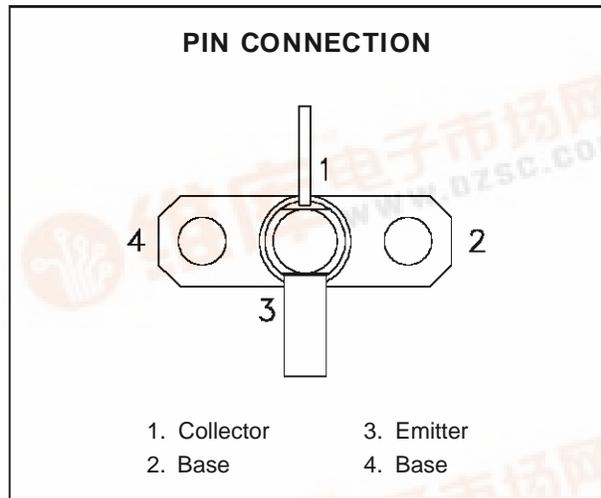
- EMITTER BALLASTED
- VSWR CAPABILITY  $\infty:1$  @ RATED CONDITIONS
- HERMETIC STRIPAC® PACKAGE
- $P_{OUT} = 2.0$  W MIN. WITH 10 dB GAIN @ 1.0 GHz



**DESCRIPTION**

The MSC81118 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 MSC81118 was designed for Class C amplifier applications in the 0.4 - 1.2 GHz frequency range.



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

Symbol	Parameter	Value	Unit
$P_{DISS}$	Power Dissipation* ( $T_c \leq 75^{\circ}C$ )	6.25	W
$I_c$	Device Current*	200	mA
$V_{CC}$	Collector-Supply Voltage*	35	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*	20	$^{\circ}C/W$
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\*Applies only to rated RF amplifier operation



# MSC81118

## ELECTRICAL SPECIFICATIONS (T<sub>case</sub> = 25°C)

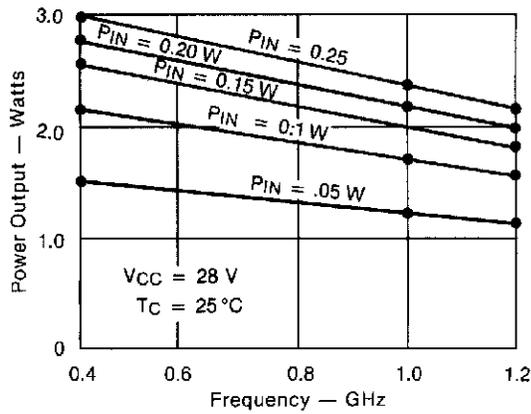
### STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV <sub>CBO</sub>	I <sub>C</sub> = 1mA	I <sub>E</sub> = 0mA	45	—	—	V
BV <sub>EBO</sub>	I <sub>E</sub> = 1mA	I <sub>C</sub> = 0mA	3.5	—	—	V
BV <sub>CER</sub>	I <sub>C</sub> = 5mA	R <sub>BE</sub> = 10Ω	45	—	—	V
I <sub>CBO</sub>	V <sub>CB</sub> = 28V		—	—	0.5	mA
h <sub>FE</sub>	V <sub>CE</sub> = 5V	I <sub>C</sub> = 100mA	15	—	120	—

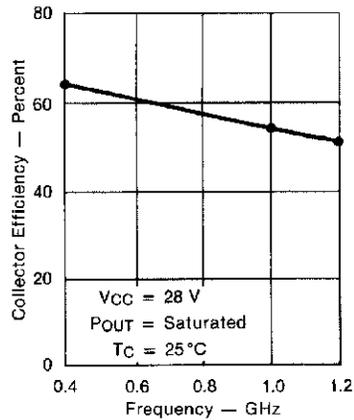
### DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P <sub>OUT</sub>	f = 1.0 GHz	P <sub>IN</sub> = 0.2 W	V <sub>CC</sub> = 28 V	2.0	2.2	—	W
η <sub>c</sub>	f = 1.0 GHz	P <sub>IN</sub> = 0.2 W	V <sub>CC</sub> = 28 V	50	55	—	%
G <sub>P</sub>	f = 1.0 GHz	P <sub>IN</sub> = 0.2 W	V <sub>CC</sub> = 28 V	10	10.4	—	dB
C <sub>OB</sub>	f = 1 MHz	V <sub>CB</sub> = 28 V		—	—	3.2	pF

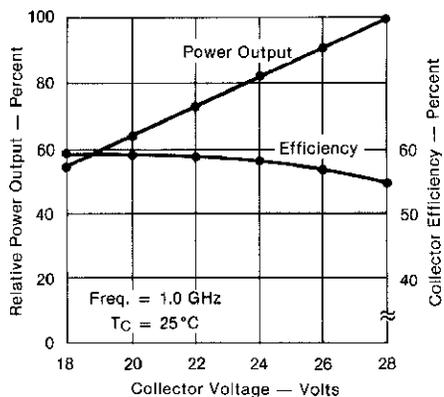
### TYPICAL PERFORMANCE POWER OUTPUT vs FREQUENCY



### COLLECTOR EFFICIENCY vs FREQUENCY

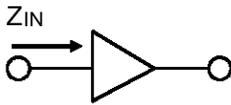


### RELATIVE POWER OUTPUT vs COLLECTOR VOLTAGE

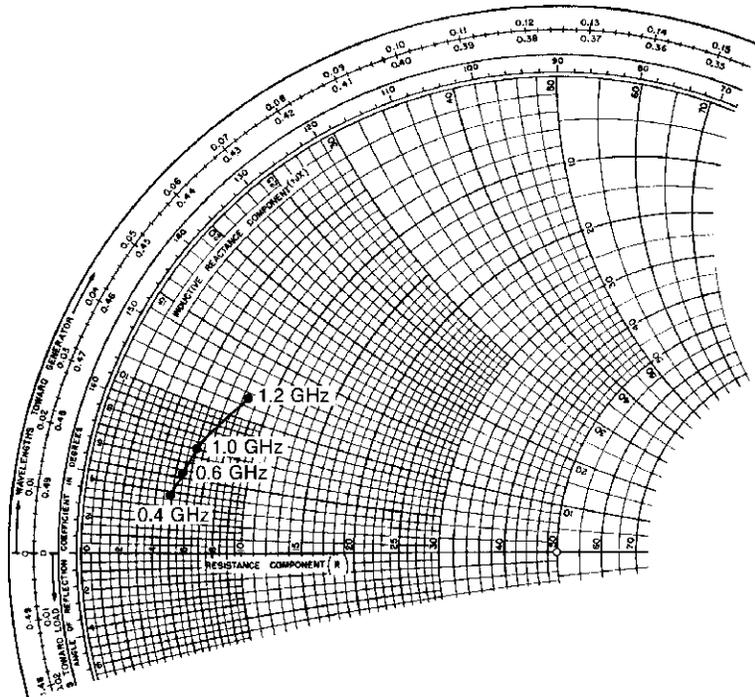


IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

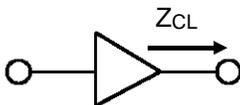


$P_{IN} = 0.2\text{ W}$   
 $V_{CC} = 28\text{ V}$   
 Normalized to 50 ohms

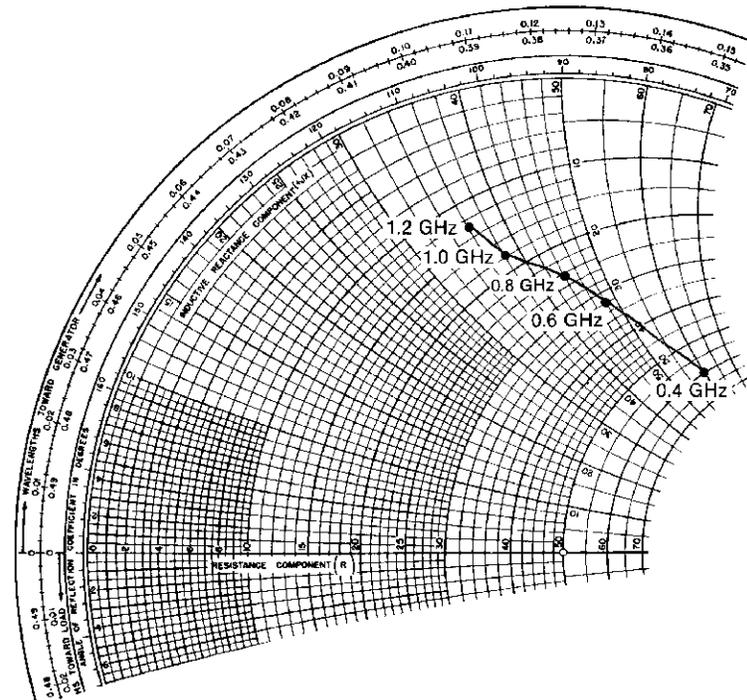


FREQ.	$Z_{IN} (\Omega)$	$Z_{CL} (\Omega)$
0.4 GHz	$4.8 + j 3.7$	$60.0 + j 60.0$
0.6 GHz	$5.4 + j 5.3$	$32.0 + j 48.0$
1.0 GHz	$6.0 + j 7.0$	$18.0 + j 38.0$
1.2 GHz	$8.2 + j 11.6$	$12.8 + j 36.0$

TYPICAL COLLECTOR LOAD IMPEDANCE



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





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