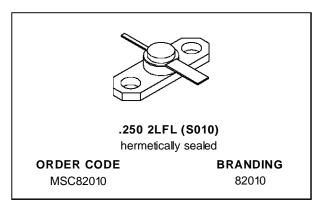


### MSC82010

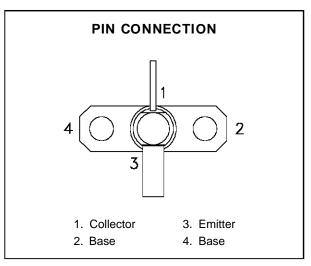
# RF & MICROWAVE TRANSISTORS GENERAL PURPOSE AMPLIFIER APPLICATIONS

- EMITTER BALLASTED
- VSWR CAPABILITY ∞:1 @ RATED CONDITIONS
- HERMETIC STRIPAC® PACKAGE
- Pout = 10 W MIN. WITH 5.2 dB GAIN @ 2.0 GHz



#### **DESCRIPTION**

The MSC82010 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 rated conditions. The MSC82010 was designed for Class C amplifier applications in the 1.0 - 2.0 GHz frequency range.



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

Symbol	Parameter	Value	Unit
Poiss	Power Dissipation*	35	W
Ic	Device Current*	1.5	Α
Vcc	Collector-Supply Voltage*	35	V
TJ	Junction Temperature	200	°C
T <sub>STG</sub>	Storage Temperature	- 65 to +200	°C

#### THERMAL DATA

R <sub>TH(j-c)</sub> Junction-Case Thermal Resistance*	5.0	°C/W
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<sup>\*</sup>Applies only to rated RF amplifier operation

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

#### **STATIC**

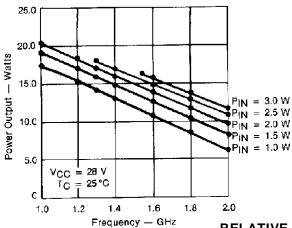
Symbol	Took Conditions		Value				
	Test Conditions		Min.	Тур.	Max.	Unit	
ВУсво	I <sub>C</sub> = 5mA	I <sub>E</sub> = 0mA		45	_	_	V
BV <sub>EBO</sub>	I <sub>E</sub> = 1mA	$I_C = 0mA$		3.5	_	_	V
BV <sub>CER</sub>	IC = 15mA	$R_{BE} = 10\Omega$		45	_	_	V
I <sub>CBO</sub>	V <sub>CB</sub> = 28V			_	_	5.0	mA
h <sub>FE</sub>	V <sub>CE</sub> = 5V	I <sub>C</sub> = 1000mA		15	_	120	_

#### **DYNAMIC**

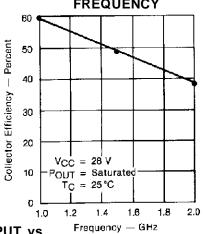
Cumbal	Sumbol Test Conditions				Value		Unit
Symbol		Test Conditions		Min.	Тур.	Max.	Unit
Pout	f = 2.0 GHz	$P_{IN} = 3.0 \text{ W}$	$V_{CC}=28\ V$	10	11.5	_	W
ης	f = 2.0 GHz	$P_{IN} = 3.0 \text{ W}$	$V_{CC} = 28 \text{ V}$	35	38	_	%
GP	f = 2.0 GHz	$P_{IN} = 3.0 \text{ W}$	$V_{CC} = 28 V$	5.2	5.8	_	dB
Сов	f = 1 MHz	$V_{CB} = 28 \text{ V}$		_	_	19	pF

#### **TYPICAL PERFORMANCE**

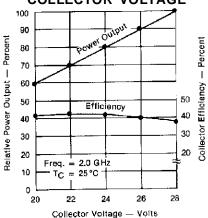
#### **POWER OUTPUT vs FREQUENCY**



#### COLLECTOR EFFICIENCY vs FREQUENCY

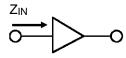


#### RELATIVE POWER OUTPUT vs COLLECTOR VOLTAGE

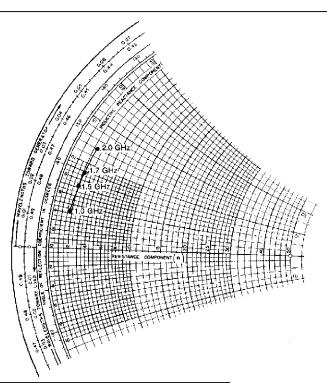


#### **IMPEDANCE DATA**

### TYPICAL INPUT IMPEDANCE

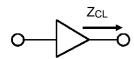


 $P_{IN} = 3.0 \text{ W}$   $V_{CC} = 28 \text{ V}$ Normalized to 50 ohms

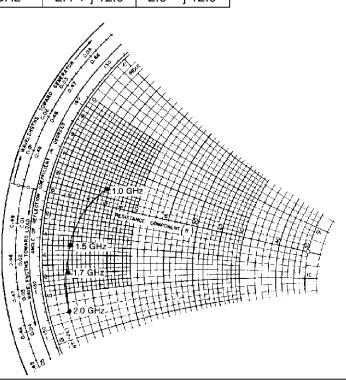


FREQ.	Z <sub>IN</sub> (Ω)	Z <sub>CL</sub> (Ω)
1.0 GHz	1.7 + j 4.2	5.7 + j 1.9
1.5 GHz	2.0 + j 7.2	2.8 – j 5.0
1.7 GHz	2.2 + j 8.8	2.5 – j 7.8
2.0 GHz	2.4 + j 12.0	2.0 – j 12.0

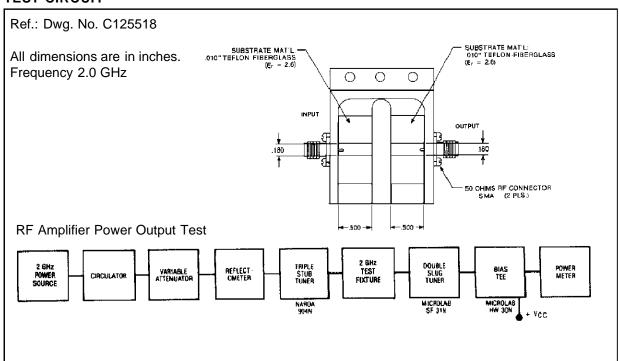
## TYPICAL COLLECTOR LOAD IMPEDANCE



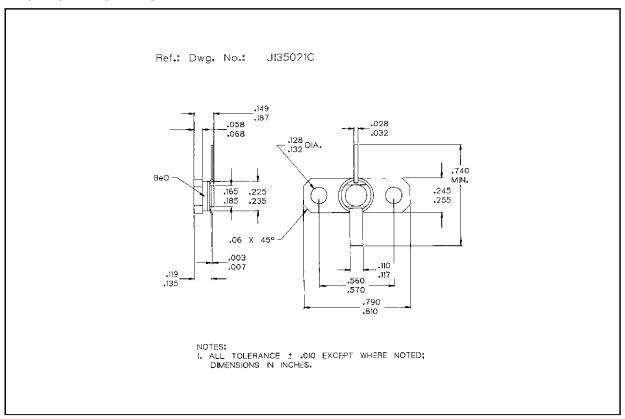
 $P_{OUT} = Saturated$   $V_{CC} = 28 \text{ V}$ Normalized to 50 ohms



#### **TEST CIRCUIT**



#### PACKAGE MECHANICAL DATA



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