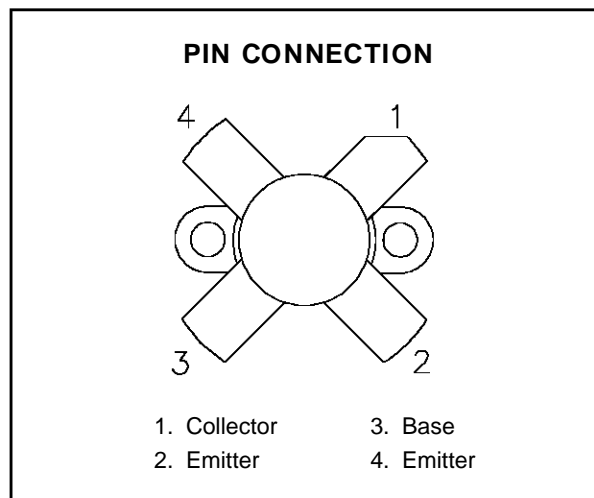
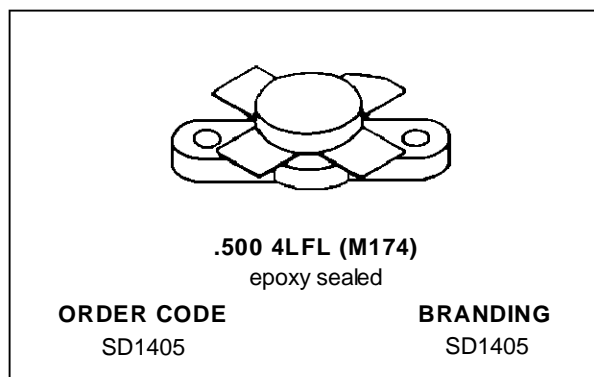


**RF & MICROWAVE TRANSISTORS  
HF SSB APPLICATIONS**

- 30 MHz
- 12.5 VOLTS
- COMMON EMITTER
- IMD -32 dB
- GOLD METALLIZATION
- P<sub>OUT</sub> = 75 W MIN. WITH 13 dB GAIN


**DESCRIPTION**

The SD1405 is a 12.5 V Class C epitaxial silicon NPN planar transistor designed primarily for HF communications. This device utilizes diffused emitter resistors to achieve infinite VSWR under rated operating conditions.

**ABSOLUTE MAXIMUM RATINGS (T<sub>case</sub> = 25°C)**

Symbol	Parameter	Value	Unit
V <sub>CB0</sub>	Collector-Base Voltage	36	V
V <sub>CEO</sub>	Collector-Emitter Voltage	18	V
V <sub>EBO</sub>	Emitter-Base Voltage	4.0	V
I <sub>c</sub>	Device Current	20	A
P <sub>DISS</sub>	Power Dissipation	270	W
T <sub>J</sub>	Junction Temperature	+200	°C
T <sub>STG</sub>	Storage Temperature	- 65 to +150	°C

**THERMAL DATA**

R <sub>TH(j-c)</sub>	Junction-Case Thermal Resistance	0.65	°C/W
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# SD1405

## 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> = 50 mA	I <sub>E</sub> = 0 mA	36	—	—	V
BV <sub>CES</sub>	I <sub>C</sub> = 100 mA	V <sub>BE</sub> = 0 V	36	—	—	V
BV <sub>CEO</sub>	I <sub>C</sub> = 100 mA	I <sub>B</sub> = 0 mA	18	—	—	V
BV <sub>EBO</sub>	I <sub>E</sub> = 10 mA	I <sub>C</sub> = 0 mA	4.0	—	—	V
I <sub>CES</sub>	V <sub>CE</sub> = 15 V	I <sub>E</sub> = 0 mA	—	—	15	mA
h <sub>FE</sub>	V <sub>CE</sub> = 5 V	I <sub>C</sub> = 5 A	20	—	300	—

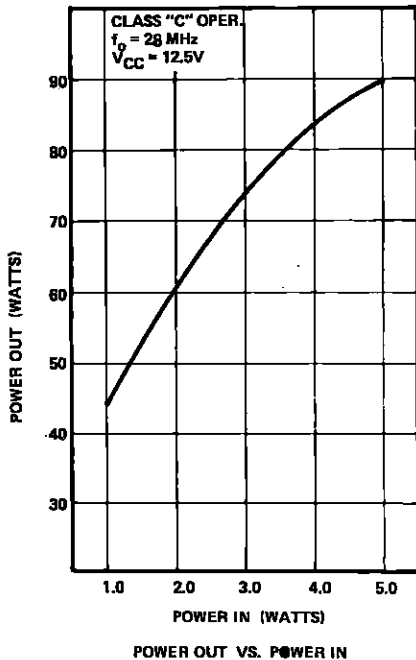
### DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P <sub>OUT</sub>	f = 30 MHz	P <sub>IN</sub> = 3.8 W	V <sub>CE</sub> = 12.5 V	75	—	—	W
G <sub>p</sub>	f = 30 MHz	P <sub>IN</sub> = 3.8 W	V <sub>CE</sub> = 12.5 V	13	—	—	dB
IMD*	f = 30 MHz	V <sub>CE</sub> = 12.5 V	I <sub>CQ</sub> = 100 mA	-32	—	—	dB
C <sub>OB</sub>	f = 1 MHz	V <sub>CB</sub> = 12 V		—	350	—	pF

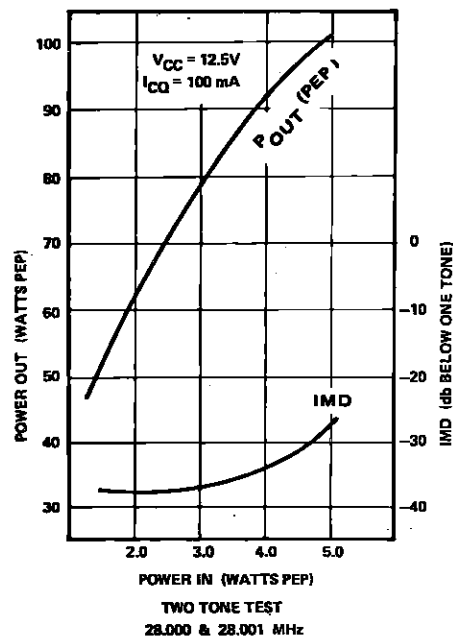
Note: \*P<sub>OUT</sub> = 60WPEP, f<sub>0</sub> = 30 + 30.001 MHz

### TYPICAL PERFORMANCE

POWER OUTPUT vs POWER INPUT

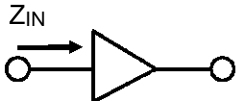


POWER OUTPUT vs POWER INPUT  
TWO TONE TEST

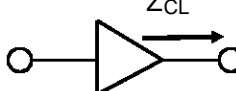


IMPEDANCE DATA

**TYPICAL INPUT IMPEDANCE**

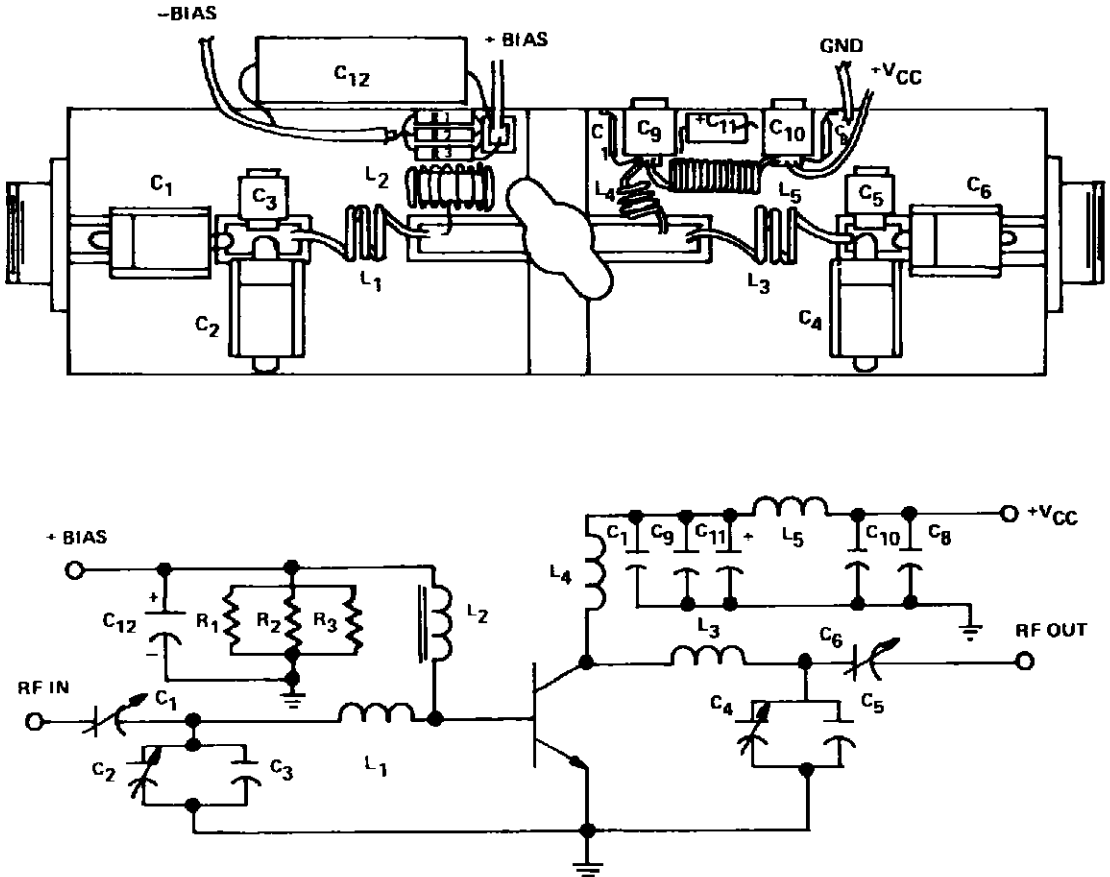


**TYPICAL COLLECTOR LOAD IMPEDANCE**



FREQ.	Z <sub>IN</sub> (Ω)	Z <sub>CL</sub> (Ω)
30 MHz	0.7 + j 0.75	1.2 + j 1.0

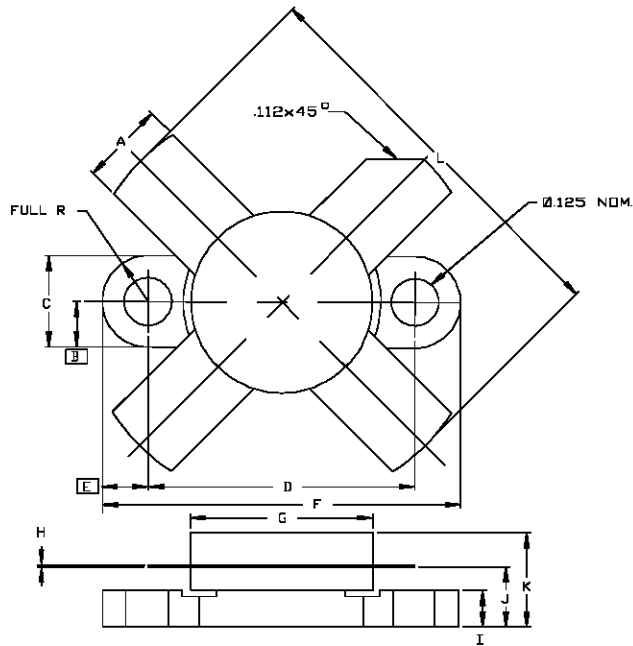
TEST CIRCUIT



<p>C1 : 9 - 180 pF, Arco 463</p> <p>C2,C4 : 5 - 380pF, Arco 465</p> <p>C3,C5 : 200pF, Unelco</p> <p>C6 : 110 - 580pF, Arco 467</p> <p>C7,C8 : 0.1μF Ceramic Disk</p> <p>C9,C10 : 1000pF, Unelco</p> <p>C11 : 10μF, Electrolytic, 35Vdc</p> <p>C12 : 1000μF, Electrolytic, 50Vdc</p>	<p>L1,L3 : 2 1/2 Turns, #14 AWG, 1/4" I.D. Loose Wound</p> <p>L2 : 16 Turns, #16 AWG, Enameled Wire On Micrometals Torroid #T-94</p> <p>L4 : 3 1/2 Turns, #16 AWG, Enameled Wire, 1/4" I.D.</p> <p>L5 : 14 Turns, #16 AWG, Enameled Wire, 1/4" I.D.</p> <p>R1,R2,R3 : 1.5 Ohm, 1 Watt Carbon</p>
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PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0174



SGS-THOMSON MICROELECTRONICS			CONT'D	
	MINIMUM Inches/mm	MAXIMUM Inches/mm	MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.220/5,59	.230/5,84	K	.280/7,11
B	.125/3,18		L	1.050/26,67
C	.245/6,22	.255/6,48		
D	.720/18,28	.730/18,54		
E	.125/3,18			
F	.970/24,64	.980/24,89		
G	.495/12,57	.505/12,83		
H	.003/0,08	.007/0,18		
I	.090/2,29	.110/2,79		
J	.160/4,06	.175/4,45		

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