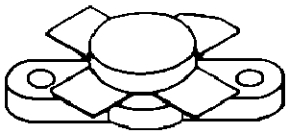
SGS-THOMSON MICROELECTRONICS

SD1405

RF & MICROWAVE TRANSISTORS HF SSB APPLICATIONS

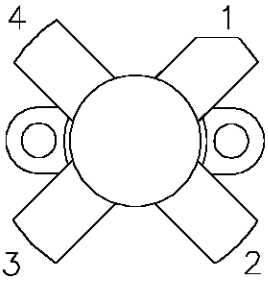
- 30 MHz
- 12.5 VOLTS
- COMMON EMITTER
- IMD –32 dB
- GOLD METALLIZATION
- P_{OUT} = 75 W MIN. WITH 13 dB GAIN



.500 4LFL (M174)
epoxy sealed

ORDER CODE	BRANDING
SD1405	SD1405

PIN CONNECTION



1. Collector
2. Emitter
3. Base
4. Emitter

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 infinte VSWR under rated operating conditions.

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	36	V
V_{CEO}	Collector-Emitter Voltage	18	V
V_{EBO}	Emitter-Base Voltage	4.0	V
I_C	Device Current	20	A
P_{DISS}	Power Dissipation	270	W
T_J	Junction Temperature	+200	°C
T_{STG}	Storage Temperature	– 65 to +150	°C

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance	0.65	°C/W

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

STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	I_C = 50 mA	I_E = 0 mA	36	—	—	V
BV_{CES}	I_C = 100 mA	V_{BE} = 0 V	36	—	—	V
BV_{CEO}	I_C = 100 mA	I_B = 0 mA	18	—	—	V
BV_{EBO}	I_E = 10 mA	I_C = 0 mA	4.0	—	—	V
I_{CES}	V_{CE} = 15 V	I_E = 0 mA	—	—	15	mA
h_{FE}	V_{CE} = 5 V	I_C = 5 A	20	—	300	—

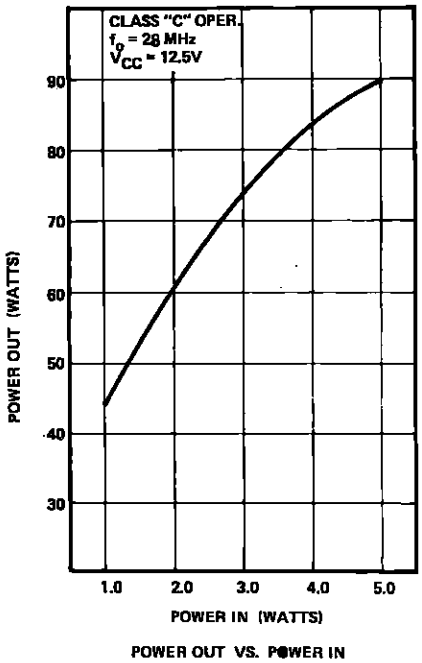
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 30 MHz	P_{IN} = 3.8 W	V_{CE} = 12.5 V	75	—	—	W
G_P	f = 30 MHz	P_{IN} = 3.8 W	V_{CE} = 12.5 V	13	—	—	dB
IMD*	f = 30 MHz	V_{CE} = 12.5 V	I_{CQ} = 100 mA	–32	—	—	dB
C_{OB}	f = 1 MHz	V_{CB} = 12 V		—	350	—	pF

Note: *P_{OUT} = 60WPEP, f_O = 30 + 30.001 MHz

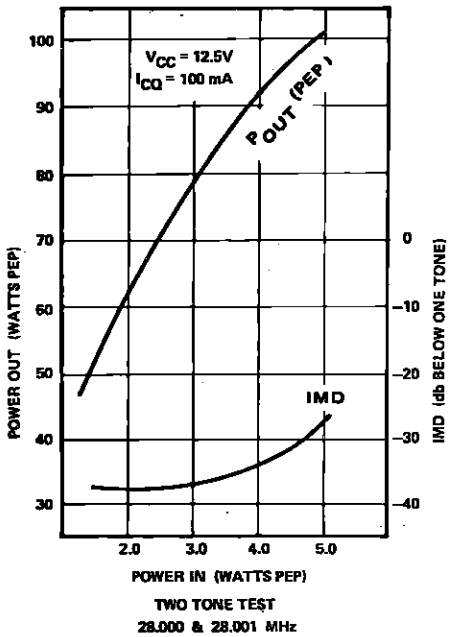
TYPICAL PERFORMANCE

POWER OUTPUT vs POWER INPUT



POWER OUT VS. POWER IN

POWER OUTPUT vs POWER INPUT TWO TONE TEST

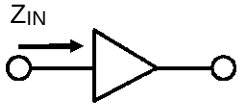


TWO TONE TEST
28.000 & 28.001 MHz

IMPEDANCE DATA

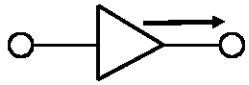
TYPICAL INPUT IMPEDANCE

Z_{IN}



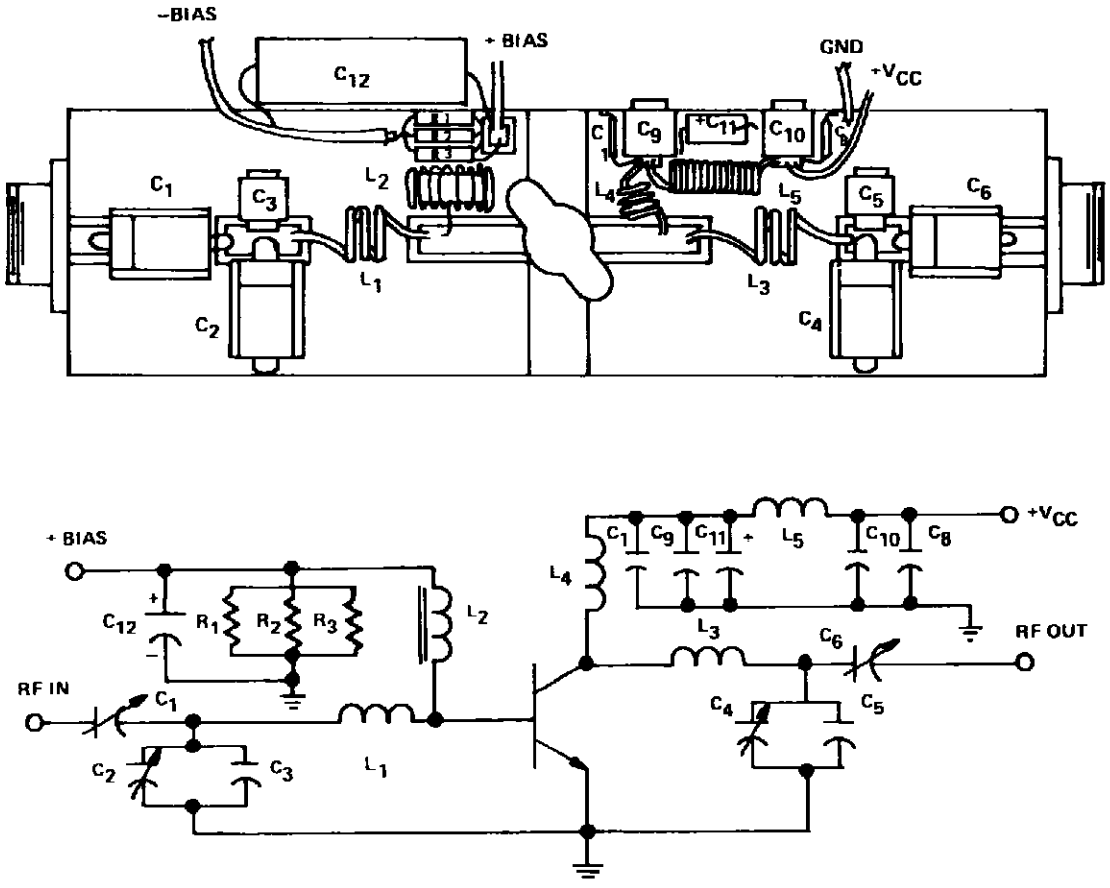
TYPICAL COLLECTOR LOAD IMPEDANCE

Z_{CL}



FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
30 MHz	0.7 + j 0.75	1.2 + j 1.0

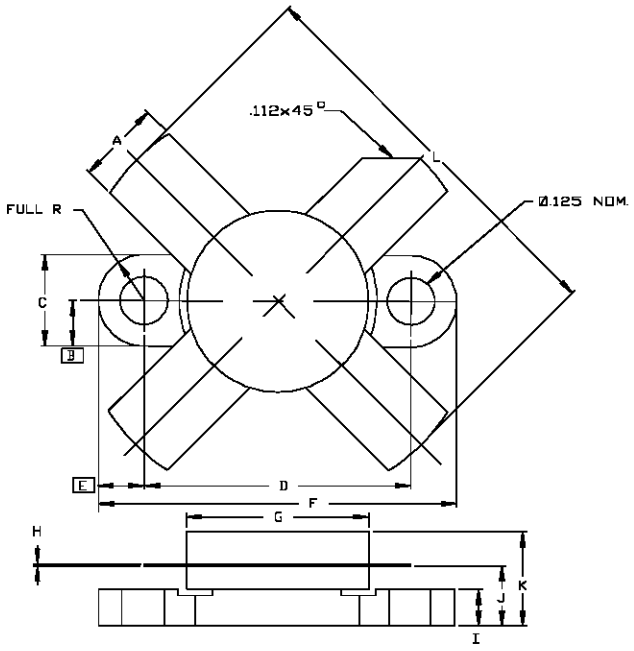
TEST CIRCUIT



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

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0174



SGS-THOMSON MICROELECTRONICS		
	MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.220/5,59	.230/5,84
B	.125/3,18	
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

CONT'D		
	MINIMUM Inches/mm	MAXIMUM Inches/mm
K		.280/7,11
L		1.050/26,67