



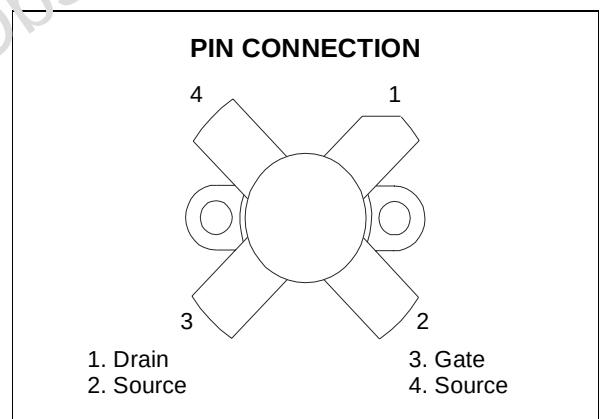
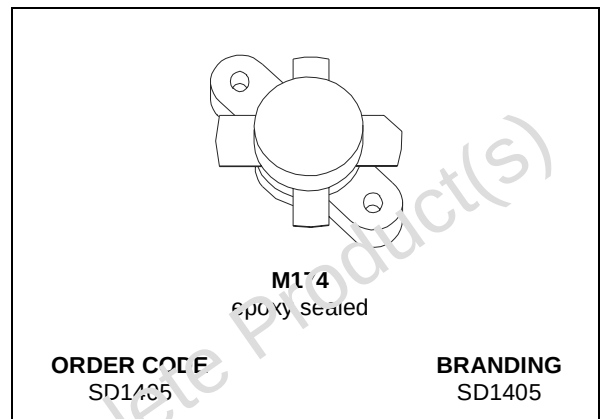
SD1405

RF & MICROWAVE TRANSISTORS HF SSB APPLICATIONS

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

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 ($T_{CASE} = 25^\circ\text{C}$)

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	Max. Operating Junction Temperature	+200	$^\circ\text{C}$
T_{STG}	Storage Temperature	-65 to +150	$^\circ\text{C}$

THERMAL DATA

$R_{th(j-c)}$	Junction -Case Thermal Resistance	0.65	$^\circ\text{C/W}$
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ELECTRICAL SPECIFICATION (T_{CASE} = 25 °C)

STATIC

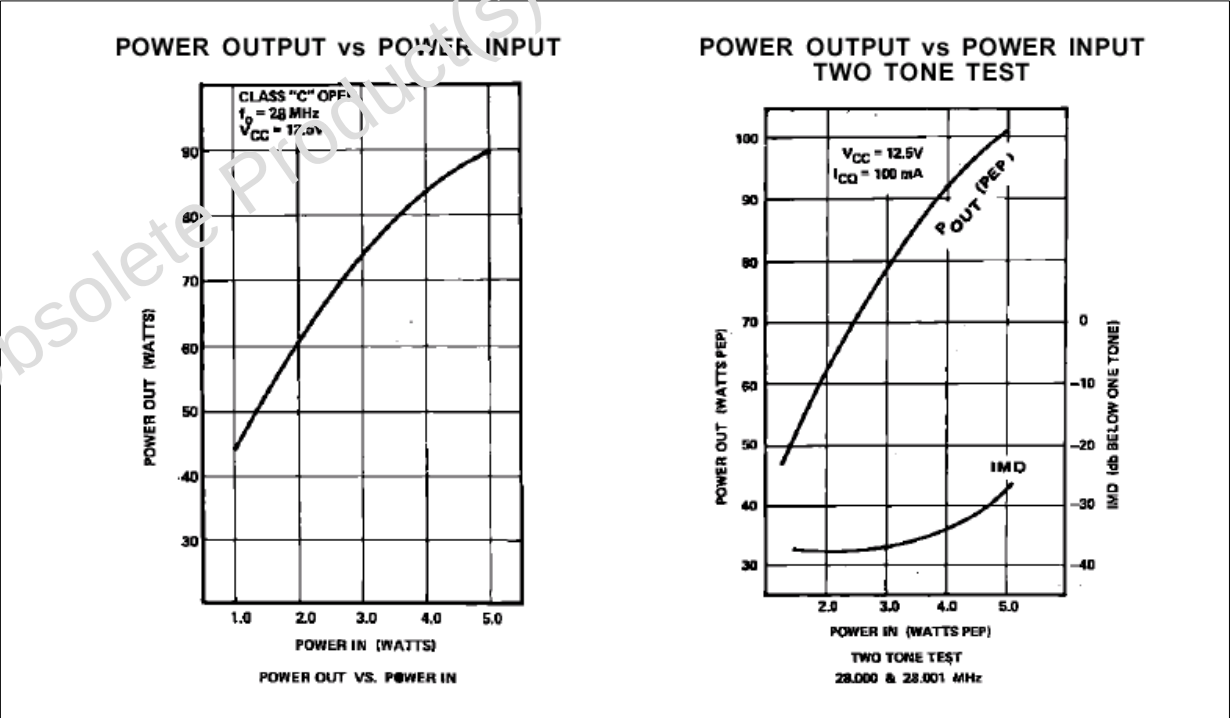
Symbol	Test Conditions	Min.	Typ.	Max.	Unit
BV _{CB0}	I _C = 50 mA I _E = 0 mA	36			V
BV _{CES}	I _C = 100 mA V _{BE} = 0 V	36			V
BV _{CEO}	I _C = 100 mA I _B = 0 mA	18			V
BV _{EBO}	I _E = 10 mA I _C = 0 mA	4.0			V
I _{CES}	V _{CE} = 15 V I _E = 0 mA			2	mA
h _{FE}	V _{CE} = 5 V I _C = 5 A	20		300	

DYNAMIC

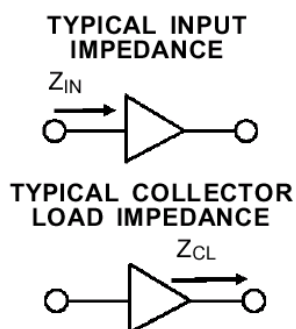
Symbol	Test Conditions	Min.	Typ.	Max.	Unit
P _{OUT}	f = 30 MHz P _{IN} = 3.8 W V _{CE} = 12.5 V	75			W
G _P	f = 30 MHz P _{IN} = 3.8 W V _{CE} = 12.5 V	13			dB
IMD*	f = 30 MHz V _{CE} = 12.5 V I _{CQ} = 100 mA	32			dB
C _{OB}	f = 1 MHz V _{CB} = 12 V		350		pF

* P_{OUT} = 60 W PEP, f₀ = 30 + 30.001 MHz

TYPICAL PERFORMANCE

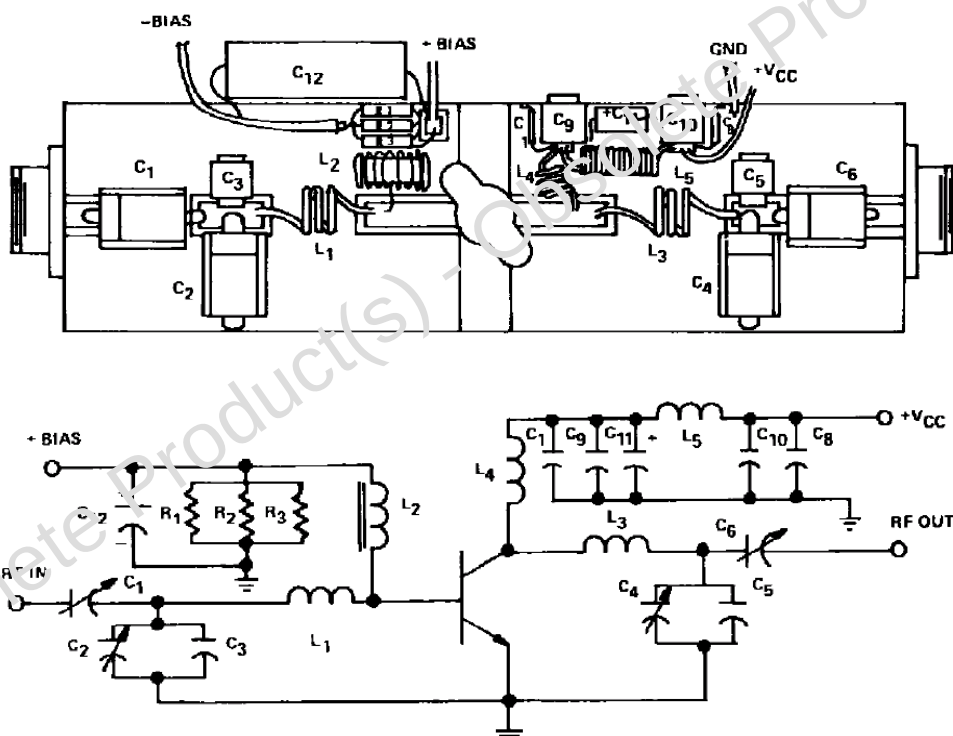


IMPEDANCE DATA



FREQ.	$Z_{IN} (\Omega)$	$Z_{CL} (\Omega)$
30 MHz	$0.70 - j 0.75$	$1.2 + j 1.0$
40 MHz	$0.65 - j 0.70$	$1.1 + j 0.8$
50 MHz	$0.60 - j 0.65$	$1.0 + j 0.7$

TEST CIRCUIT

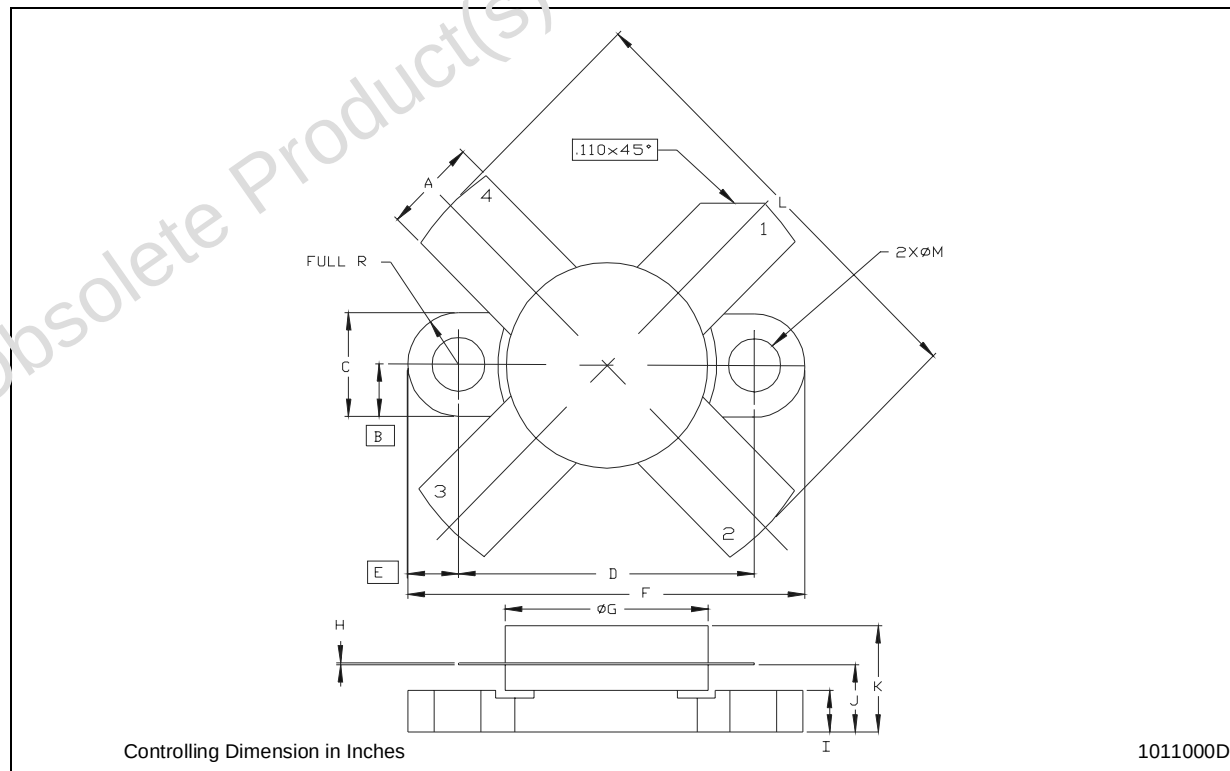


C1 : 9 - 180 pF, Arco 463
 C2, C4 : 5 - 380pF, Arco 465
 C3, C5 : 200pF, Unelco
 C6 : 110 - 580pF, Arco 467
 C7, C8 : 0.1 F Ceramic Disk
 C9, C10 : 1000pF, Unelco
 C11 : 10 F, Electrolytic, 35Vdc
 C12 : 1000 F, Electrolytic, 50Vdc

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

M174 (.500 DIA 4/L N/HERM W/FLG) MECHANICAL DATA

DIM.	mm			Inch		
	MIN.	TYP.	MAX	MIN.	TYP.	MAX
A	5.56		5.584	0.219		0.230
B		3.18			0.125	
C	6.22		6.48	0.245		0.255
D	18.28		18.54	0.720		0.730
E		3.18			0.125	
F	24.64		24.89	0.970		0.980
G	12.57		12.83	0.495		0.505
H	0.08		0.18	0.003		0.007
I	2.11		3.00	0.083		0.118
J	3.81		4.45	0.150		0.175
K			7.11			0.280
L	25.53		26.67	1.005		1.050
M	3.05		3.30	0.120		0.130



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