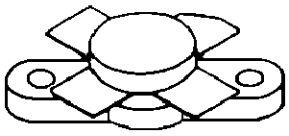
SGS-THOMSON MICROELECTRONICS

SD1446

RF & MICROWAVE TRANSISTORS HF/VHF APPLICATIONS

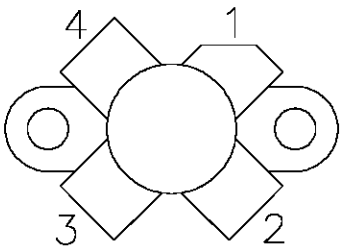
- 50 MHz
- 12.5 VOLTS
- EFFICIENCY 55%
- COMMON EMITTER
- GOLD METALLIZATION
- P_{OUT} = 70 W MIN. WITH 10 dB GAIN



.380 4LFL (M113)
epoxy sealed

ORDER CODE	BRANDING
SD1446	SD1446

PIN CONNECTION



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

DESCRIPTION

The SD1446 is a 12.5 V Class C epitaxial silicon NPN planar transistor designed primarily for land mobile transmitter applications. This device utilizes emitter ballasting and is extremely stable and capable of withstanding high VSWR under 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	3.5	V
I_C	Device Current	12.0	A
P_{DISS}	Power Dissipation	183	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	1.05	°C/W

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

STATIC

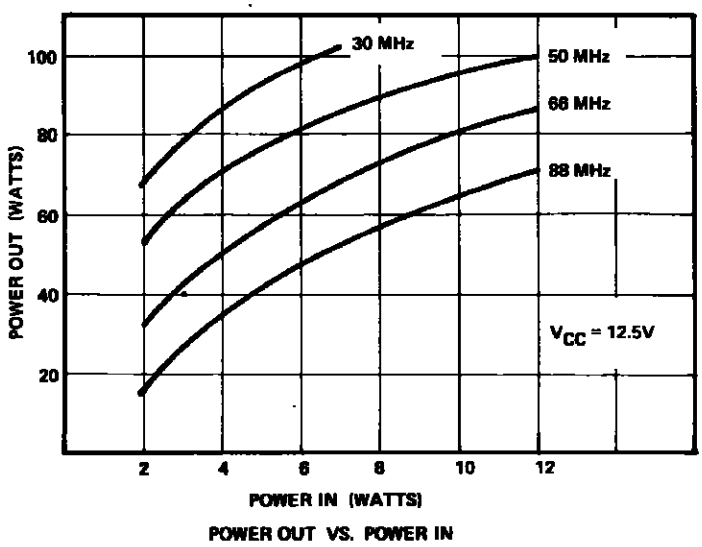
Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	I_C = 50mA	I_E = 0mA	36	—	—	V
BV_{CES}	I_C = 100mA	V_{BE} = 0V	36	—	—	V
BV_{CEO}	I_C = 50mA	I_B = 0mA	18	—	—	V
BV_{EBO}	I_E = 10mA	I_C = 0mA	3.5	—	—	V
I_{CES}	V_{CE} = 15V	I_E = 0mA	—	—	10	mA
h_{FE}	V_{CE} = 5V	I_C = 5A	10	—	—	—

DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 50 MHz	P_{IN} = 7 W	V_{CE} = 12.5 V	70	—	—	W
G_P	f = 50 MHz	P_{IN} = 7 W	V_{CE} = 12.5 V	10	—	—	dB
η_C	f = 50 MHz	P_{IN} = 7 W	V_{CE} = 12.5 V	—	55	—	%
C_{OB}	f = 1 MHz	V_{CB} = 12.5V		—	—	300	pF

TYPICAL PERFORMANCE

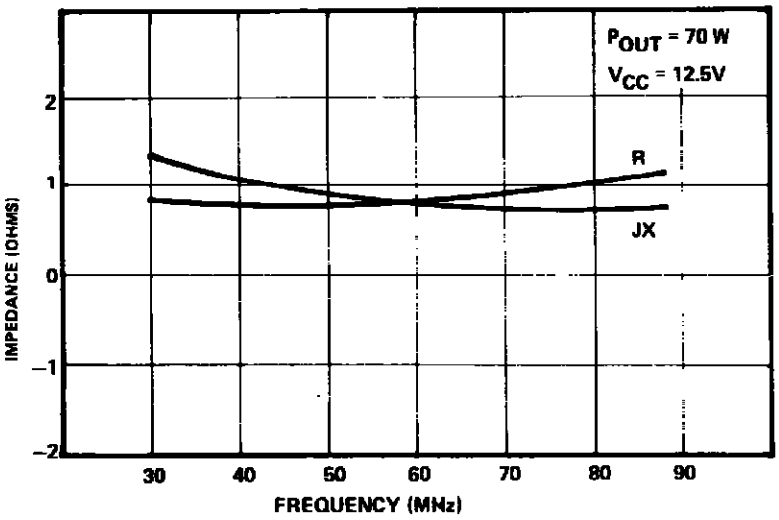
POWER OUTPUT vs POWER INPUT



POWER OUT VS. POWER IN

IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

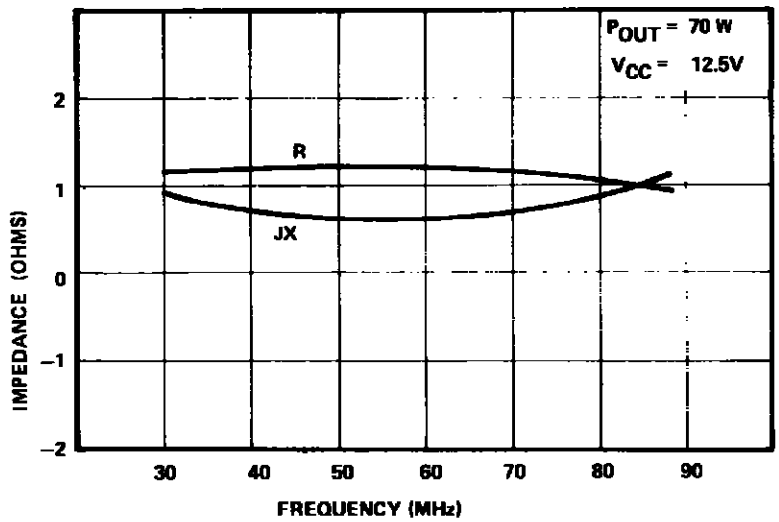


SERIES SOURCE IMPEDANCE

FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
50 MHz	0.8 + j 0.9	1.2 + j 0.6

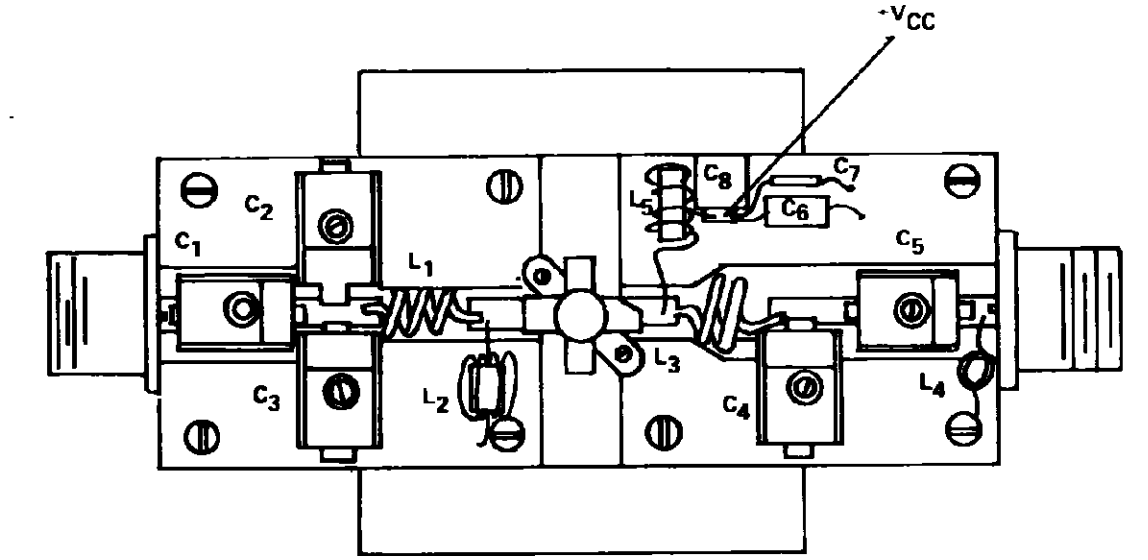
P_{OUT} = 70W
V_{CE} = 12.5V

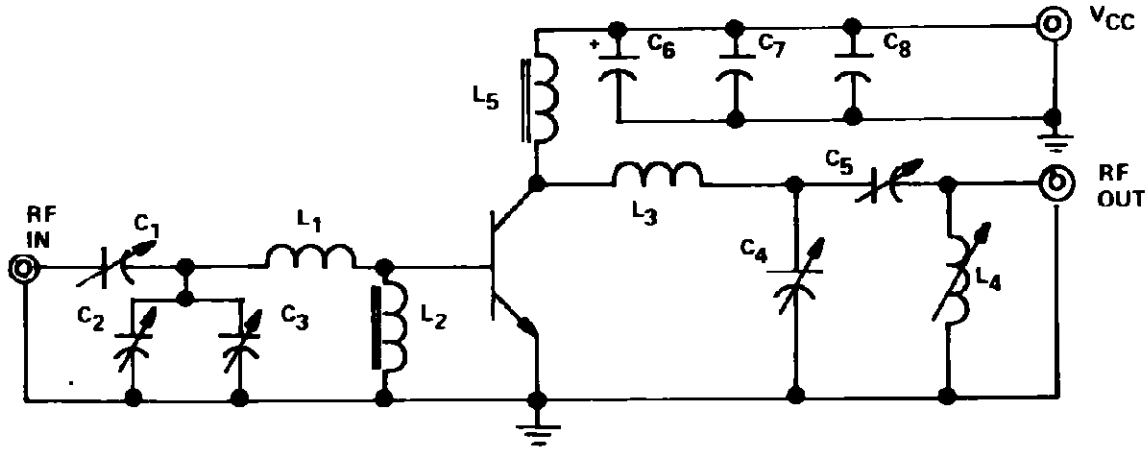
TYPICAL COLLECTOR LOAD IMPEDANCE



SERIES COLLECTOR LOAD IMPEDANCE

TEST CIRCUIT



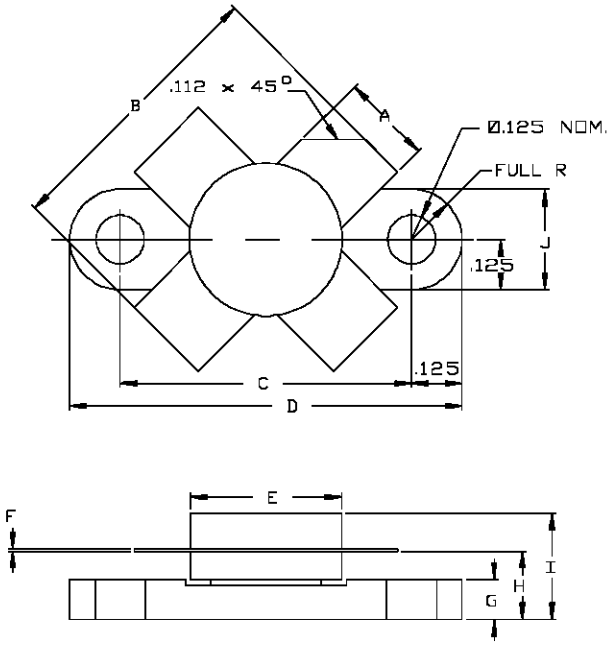


C1, C4	:	50 - 380pF Arco 465
C2	:	110 - 580pF Arco 467
C3	:	140 - 680pF Arco 468
C5	:	9 - 180pF Arco 463
C6	:	10µF, 35Vdc, Electrolytic
C7	:	.01µF Erie
C8	:	1000pF Unelco
L1	:	2 1/2 Turns, #14 Awg, Tinned, 1/4" I.D. Loose Wound
L2	:	10 Turns, #28 AWG, Enameled on Ferroxcube Sleeve #3B
L3	:	1 1/2 Turns, #12 AWG, Tinned, 3/8" I.D. Loose Wound
L4	:	8 Turns, #18 AWG on 1/4" I.D. Coil form 1/2" Length with Ferrite Slug
L5	:	11 Turns, #16 AWG, Enameled on Torroid, Micrometals, T50-2

Board Material: Double Sided Copper 1/16" Thick

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0113



SGS-THOMSON MICROELECTRONICS		
	MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.220/5,59	.230/5,84
B	.785/19,94	
C	.720/18,29	.730/18,54
D	.970/24,64	.980/24,89
E		.385/9,78
F	.004/0,10	.006/0,15
G	.085/2,16	.105/2,67
H	.160/4,06	.180/4,57
I		.280/7,11
J	.240/6,10	.255/6,48