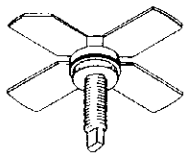
SGS-THOMSON MICROELECTRONICS

SD1433

RF & MICROWAVE TRANSISTORS UHF MOBILE APPLICATIONS

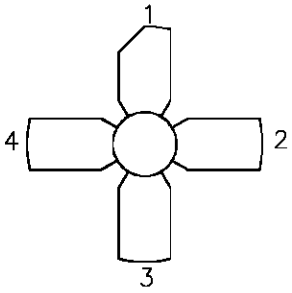
- 470 MHz
- 12.5 VOLTS
- CLASS C
- EFFICIENCY 60%
- COMMON EMITTER
- P_{OUT} = 10 W MIN. WITH 8.0 dB GAIN



.280 4L STUD (M122)
epoxy sealed

ORDER CODE	BRANDING
SD1433	SD1433

PIN CONNECTION



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

DESCRIPTION

The SD1433 is a Class C epitaxial silicon NPN planar transistor designed for driver applications in the 450 - 512 MHz frequency range. This device uses an emitter ballasted geometry specifically designed for optimum stable power gain, maximum efficiency and infinite VSWR.

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

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	36	V
V_{CEO}	Collector-Emitter Voltage	16	V
V_{CES}	Collector-Emitter Voltage	36	V
V_{EBO}	Emitter-Base Voltage	4.0	V
I_C	Device Current	2.5	A
P_{DISS}	Power Dissipation	58	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	3.0	°C/W

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

STATIC

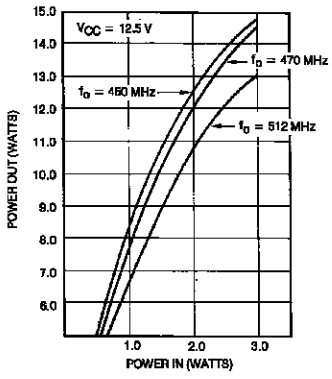
Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CES}	I_C = 25mA	V_{BE} = 0V	36	—	—	V
BV_{CEO}	I_C = 20mA	I_B = 0mA	16	—	—	V
BV_{EBO}	I_E = 10mA	I_C = 0mA	4.0	—	—	V
I_{CES}	V_{CE} = 10V	I_E = 0mA	—	—	3	mA
I_{CBO}	V_{CB} = 15V	I_E = 0mA	—	—	2	mA
h_{FE}	V_{CE} = 5V	I_C = 1A	10	—	—	—

DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 470 MHz	P_{IN} = 2.0 W	V_{CE} = 12.5 V	10	—	—	W
G_P	f = 470 MHz	P_{OUT} = 10 W	V_{CE} = 12.5 V	7	—	—	dB
C_{OB}	f = 1 MHz	V_{CB} = 12.5 V		—	19	—	pF

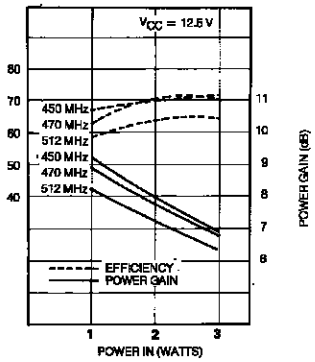
TYPICAL PERFORMANCE

POWER OUTPUT vs POWER INPUT



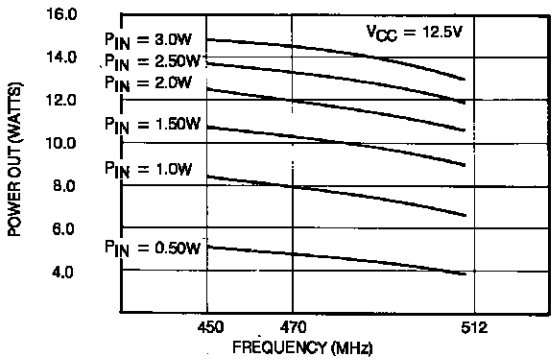
POWER OUT VS POWER IN

POWER GAIN & EFFICIENCY vs POWER INPUT



POWER GAIN/EFFICIENCY VS POWER IN

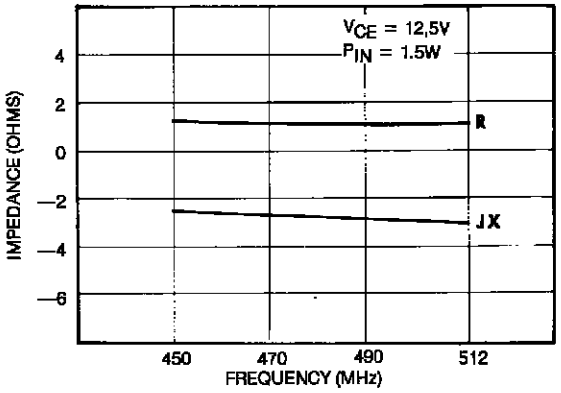
POWER OUTPUT vs FREQUENCY



POWER OUT VS FREQUENCY

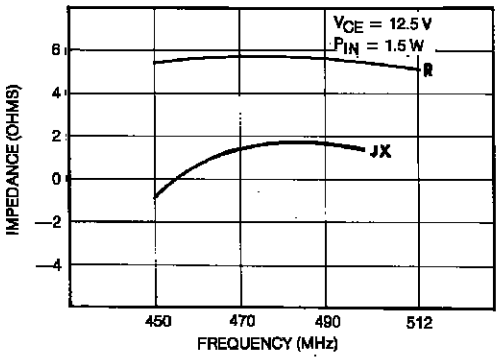
IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE



SERIES SOURCE IMPEDANCE VS FREQUENCY

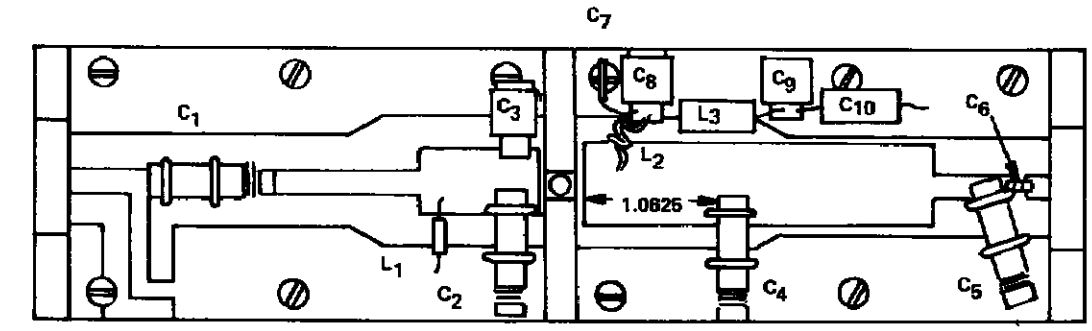
TYPICAL COLLECTOR LOAD IMPEDANCE

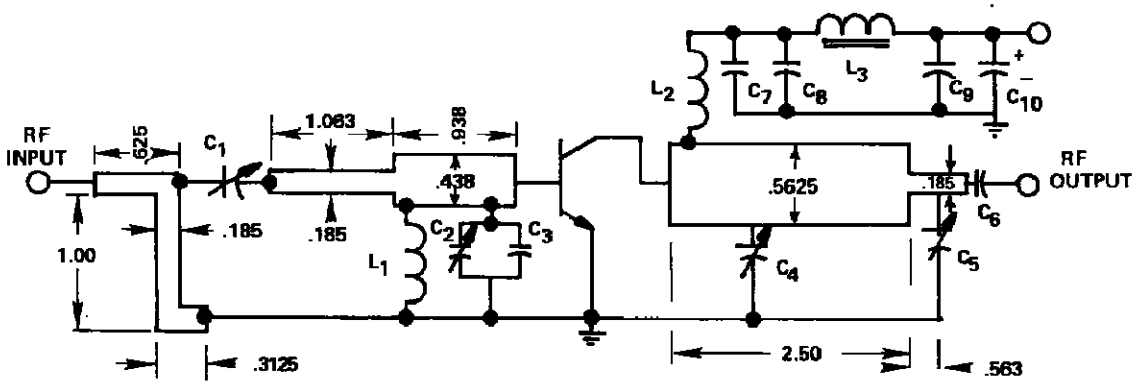


SERIES COLLECTOR LOAD IMPEDANCE VS FREQUENCY

FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
470 MHz	1.5 – j 2.7	5.7 + j 1.5

TEST CIRCUIT





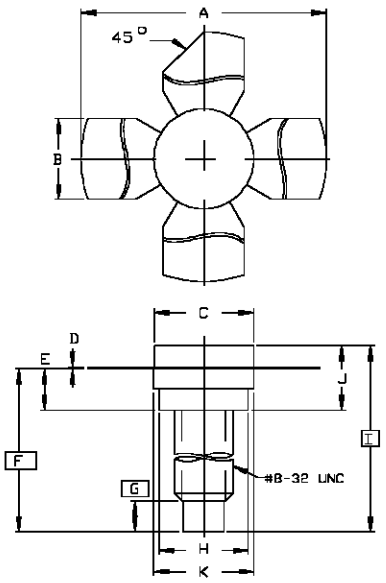
C1, C2 : 0.8pF Voltronics
C3 : 18pF Chip Capacitor
C4, C5 : AJ810
C6 : 1000pF Chip Capacitor
C7 : 0.01µF Disc Ceramic
C8, C9 : 1000pF Unelco
C10 : 10µF, 35V Electrolytic

L1 : 0.47µH Molded Choke
L2 : 2 Turns, #20 AWG, 1/8" I.D.
L3 : 2 Turns in Ferroxcube VK200/19-4B

Board
Material: 3M-K6098, 1/16" Thick

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0122



SGS-THOMSON MICROELECTRONICS		
	MINIMUM Inches/mm	MAXIMUM Inches/mm
A	1.010/25,65	1.055/26,80
B	.220/5,59	.230/5,84
C	.270/6,86	.285/7,24
D	.003/0,08	.007/0,18
E	.117/2,97	.137/3,48
F	.572/14,53	
G	.130/3,30	
H	.245/6,22	.255/6,48
I	.640/16,26	
J	.175/4,45	.217/5,51
K	.275/6,99	.285/7,24