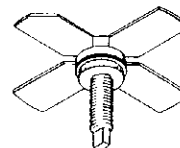


## RF & MICROWAVE TRANSISTORS UHF MOBILE APPLICATIONS

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

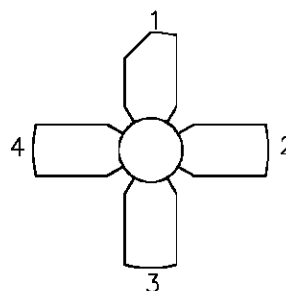


**.280 4L STUD (M122)**  
epoxy sealed

**ORDER CODE**  
SD1433

**BRANDING**  
SD1433

### PIN CONNECTION



- |              |            |
|--------------|------------|
| 1. Collector | 3. Base    |
| 2. Emitter   | 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 ( $T_{case} = 25^{\circ}\text{C}$ )

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	$^{\circ}\text{C}$
$T_{STG}$	Storage Temperature	- 65 to +150	$^{\circ}\text{C}$

### THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance	3.0	$^{\circ}\text{C/W}$
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## SD1433

### ELECTRICAL SPECIFICATIONS ( $T_{case} = 25^{\circ}C$ )

#### STATIC

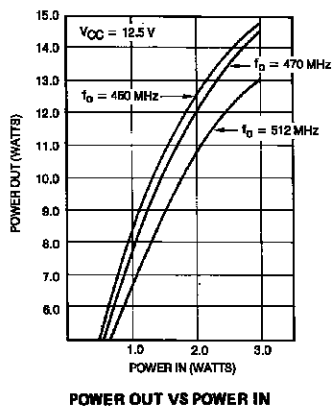
Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
$BV_{CES}$	$I_C = 25mA$ $V_{BE} = 0V$	36	—	—	V
$BV_{CEO}$	$I_C = 20mA$ $I_B = 0mA$	16	—	—	V
$BV_{EBO}$	$I_E = 10mA$ $I_C = 0mA$	4.0	—	—	V
$I_{CES}$	$V_{CE} = 10V$ $I_E = 0mA$	—	—	3	mA
$I_{CBO}$	$V_{CB} = 15V$ $I_E = 0mA$	—	—	2	mA
$h_{FE}$	$V_{CE}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

#### DYNAMIC

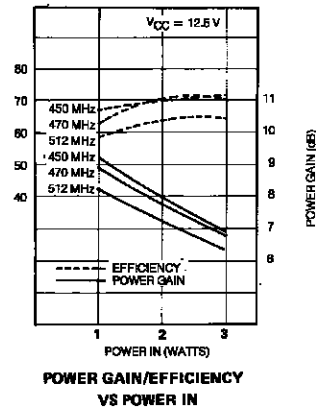
Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
$P_{OUT}$	$f = 470\text{ MHz}$ $P_{IN} = 2.0\text{ W}$ $V_{CE} = 12.5\text{ V}$	10	—	—	W
$G_P$	$f = 470\text{ MHz}$ $P_{OUT} = 10\text{ W}$ $V_{CE} = 12.5\text{ V}$	7	—	—	dB
$C_{OB}$	$f = 1\text{ MHz}$ $V_{CB} = 12.5\text{ V}$	—	19	—	pF

#### TYPICAL PERFORMANCE

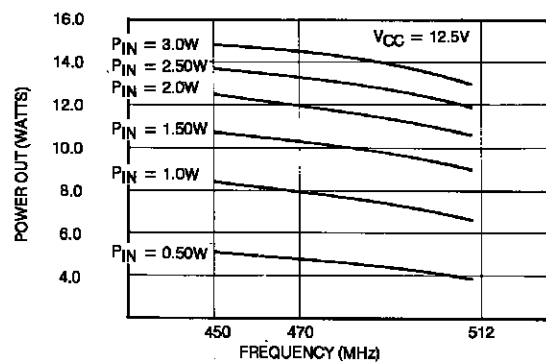
##### POWER OUTPUT vs POWER INPUT



##### POWER GAIN & EFFICIENCY vs POWER INPUT



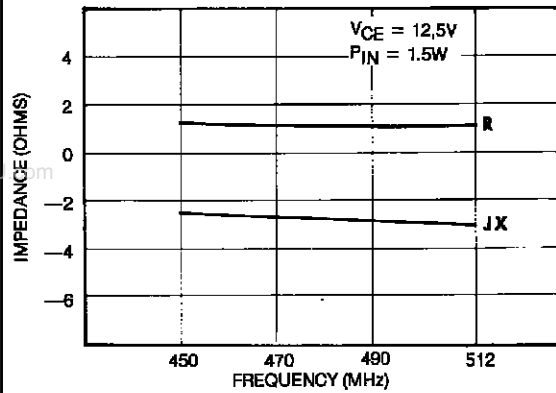
##### POWER OUTPUT vs FREQUENCY



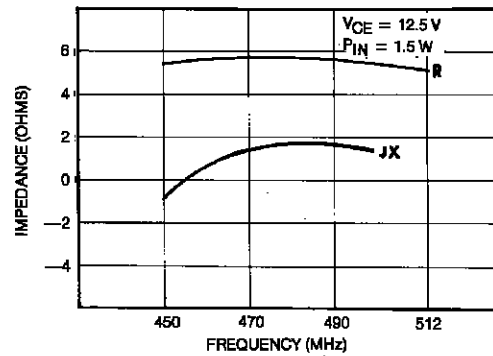
##### POWER OUT VS FREQUENCY

## IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE



TYPICAL COLLECTOR LOAD IMPEDANCE

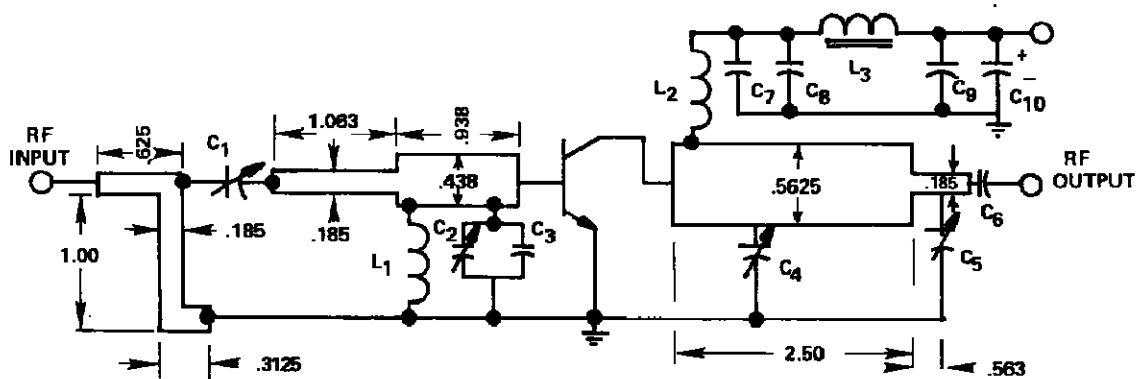
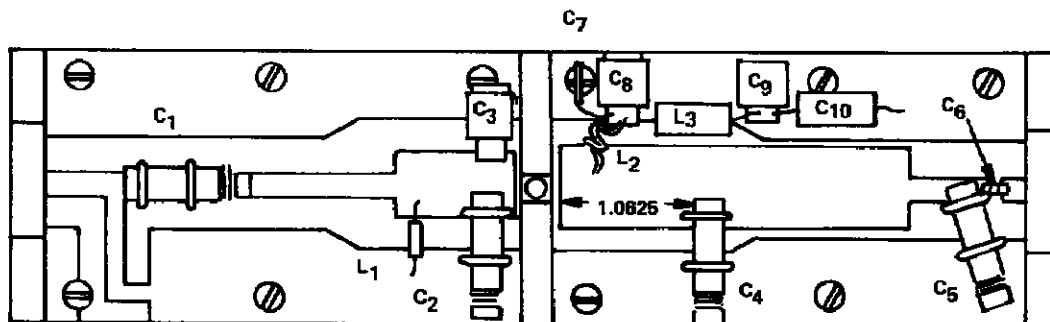


SERIES COLLECTOR LOAD IMPEDANCE VS FREQUENCY

SERIES SOURCE IMPEDANCE VS FREQUENCY

FREQ.	$Z_{IN}$ ( $\Omega$ )	$Z_{CL}$ ( $\Omega$ )
470 MHz	$1.5 - j 2.7$	$5.7 + j 1.5$

## TEST CIRCUIT



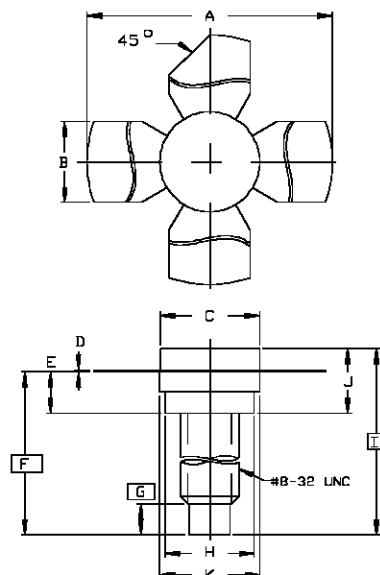
C1, C2 : 0.8pF Voltronics  
 C3 : 18pF Chip Capacitor  
 C4, C5 : AJ810  
 C6 : 1000pF Chip Capacitor  
 C7 : 0.01 $\mu$ F Disc Ceramic  
 C8, C9 : 1000pF Unelco  
 C10 : 10 $\mu$ F, 35V Electrolytic

L1 : 0.47 $\mu$ H 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

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