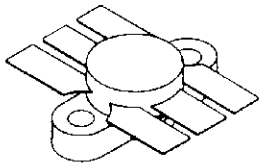
SGS-THOMSON MICROELECTRONICS

SD1477

RF & MICROWAVE TRANSISTORS VHF MOBILE APPLICATIONS

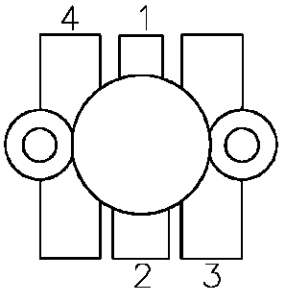
- 175 MHz
- 12.5 VOLTS
- COMMON EMITTER
- P_{OUT} = 100 W MIN. WITH 6.0 dB GAIN



.500 6LFL (M111)
epoxy sealed

ORDER CODE	BRANDING
SD1477	SD1477

PIN CONNECTION



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

DESCRIPTION

The SD1477 is a 12.5 V Class C epitaxial silicon NPN planar transistor designed primarily for VHF FM communications. This device utilizes diffused emitter resistors to withstand extremely high VSWR under rated operating conditions, and is internally input matched to optimize power gain and efficiency over the 136 - 175 MHz band.

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_{CES}	Collector-Emitter Voltage	36	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

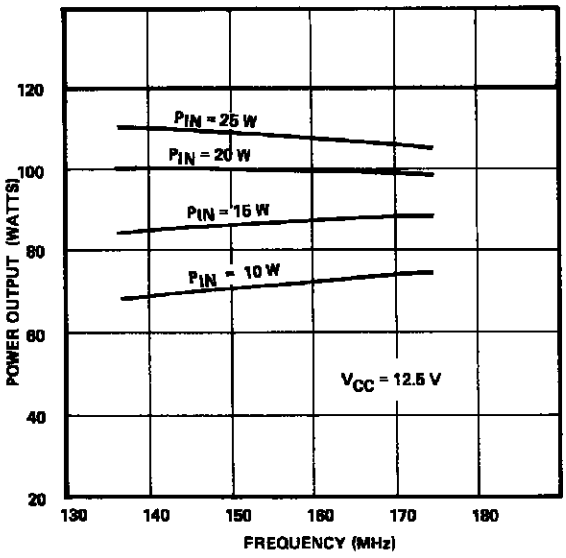
Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	I_C = 50mA	I_E = 0mA	36	—	—	V
BV_{CES}	I_C = 100mA	V_{BE} = 0V	36	—	—	V
BV_{CEO}	I_C = 100mA	I_B = 0mA	18	—	—	V
BV_{EBO}	I_E = 10mA	I_C = 0mA	4.0	—	—	V
I_{CES}	V_{CE} = 15V	I_E = 0mA	—	—	15	mA
h_{FE}	V_{CE} = 5V	I_C = 5A	10	—	—	—

DYNAMIC

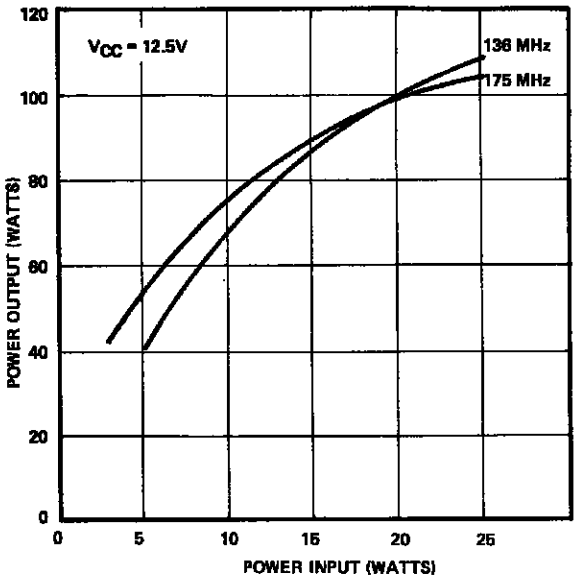
Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 175 MHz	P_{IN} = 25 W	V_{CC} = 12.5 V	100	—	—	W
G_P	f = 175 MHz	P_{IN} = 25 W	V_{CC} = 12.5 V	6.0	—	—	dB
C_{OB}	f = 1 MHz	V_{CB} = 12.5 V		—	350	—	pF

TYPICAL PERFORMANCE

POWER OUTPUT vs FREQUENCY

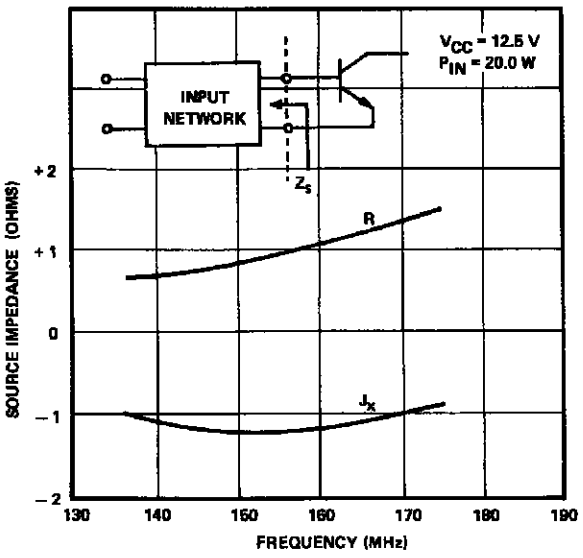


POWER OUTPUT vs POWER INPUT

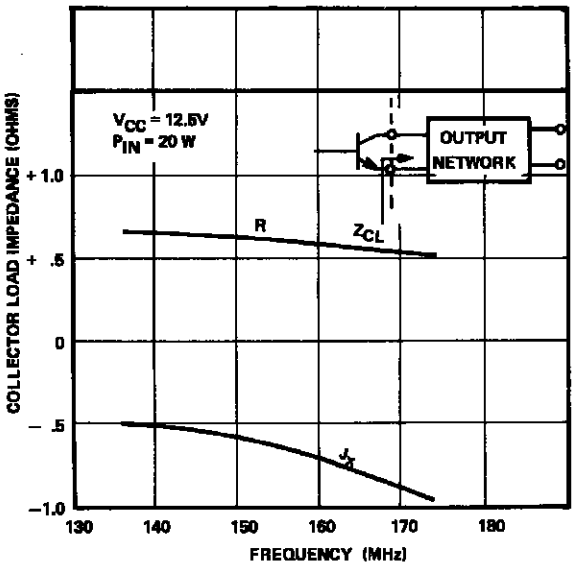


IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

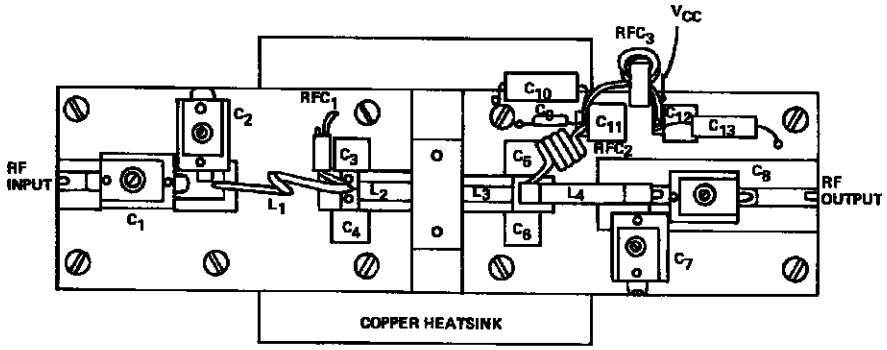


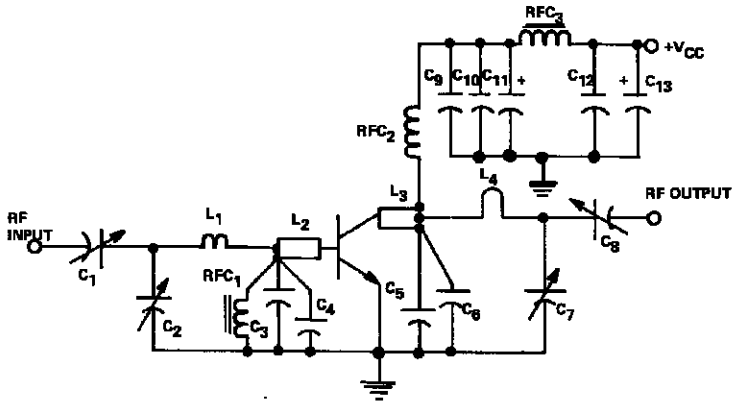
TYPICAL COLLECTOR LOAD IMPEDANCE



FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
175 MHz	1.5 – j 0.9	0.5 – j 1.0

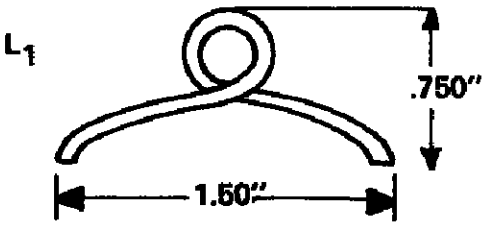
TEST CIRCUIT

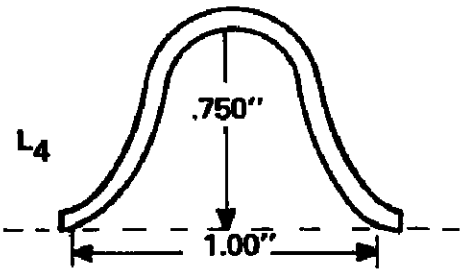




C1, C2	:	Arco 462 5 - 80pF
C3, C4	:	Unelco 100pF, 350V
C5, C6	:	Unelco 120pF, 350V
C7, C8	:	Arco 463 9 - 180pF
C9, C12	:	Unelco 1000pF, 350V
C10	:	Erie .15µF, 200V Red Cap
C11	:	25µF, 25V Electrolytic
C13	:	10µF, 25V Electrolytic

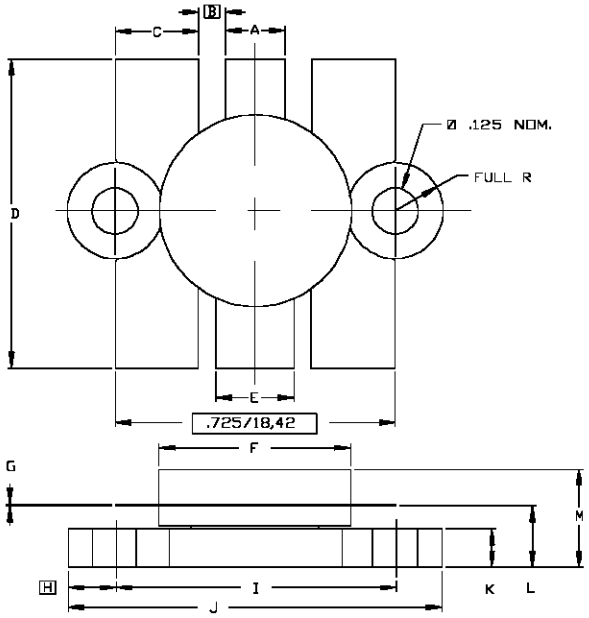
L1	:	1 Turn, #12, 1/4" I.D.
L2, L3	:	1/2" 50Ω Stripline (.180" Wide)
L4	:	1/8" Thick Copper Strap 1/4" Wide
RFC1	:	1 1/2 Turns on Ferroxcube VK200/19-B
RFC2	:	4 Turn #16 Enamel, 3/8" I.D., 3/8" Long
RFC3	:	4 Turns #16 Enamel on T50-2 Torroid
Board Material:		3M-K6098, 1/16" Thick





PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0111



SGS-THOMSON MICROELECTRONICS		
	MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.150/3,43	.160/4,06
B	.045/1,14	
C	.210/5,33	.220/5,59
D	.835/21,21	.865/21,97
E	.200/5,08	.210/5,33
F	.490/12,45	.510/12,95
G	.003/0,08	.007/0,18
H	.125/3,18	
I	.720/18,29	.730/18,54
J	.970/24,64	.980/24,89

CONT'D		
	MINIMUM Inches/mm	MAXIMUM Inches/mm
K	.095/2,41	.105/2,67
L	.150/3,81	.170/4,32
M		.280/7,11