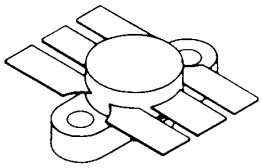
SGS-THOMSON MICROELECTRONICS

SD1480

RF & MICROWAVE TRANSISTORS VHF APPLICATIONS

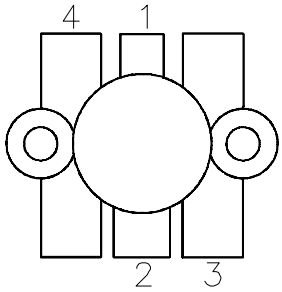
- 136 - 175 MHz
- 28 VOLTS
- EFFICIENCY 55%
- COMMON EMITTER
- GOLD METALLIZATION
- INTERNAL INPUT MATCHING
- P_{OUT} = 125 W MIN. WITH 9.2 dB GAIN



.500 6LFL (M111)
epoxy sealed

ORDER CODE	BRANDING
SD1480	SD1480

PIN CONNECTION



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

DESCRIPTION

The SD1480 is a common emitter 28 V Class C epitaxial silicon NPN planar transistor designed primarily for VHF communications applications. This internally matched device incorporates diffused emitter ballasting resistors nad provides high gain and stable operation across the entire 136 - 175 MHz VHF communications band.

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

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	65	V
V_{CEO}	Collector-Emitter Voltage	36	V
V_{CES}	Collector-Emitter Voltage	65	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

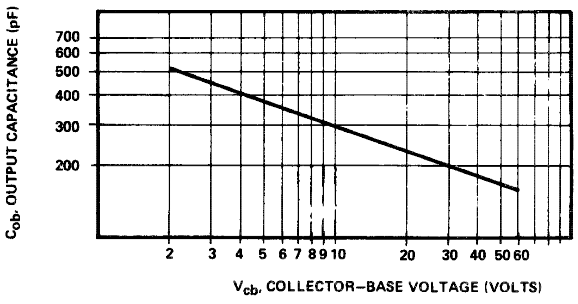
Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	I_C = 100 mA	I_E = 0 mA	65	—	—	V
BV_{CES}	I_C = 100 mA	V_{BE} = 0 V	65	—	—	V
BV_{CEO}	I_C = 100 mA	I_B = 0 mA	35	—	—	V
BV_{EBO}	I_E = 10 mA	I_C = 0 mA	4.0	—	—	V
I_{CES}	V_{CE} = 30 V	I_E = 0 mA	—	—	15	mA
h_{FE}	V_{CE} = 5 V	I_C = 5 A	20	—	200	—

DYNAMIC

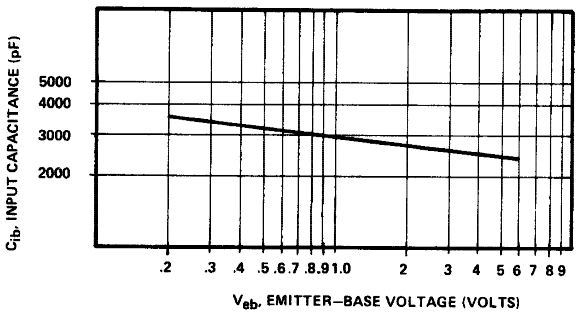
Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 150 MHz	P_{IN} = 15 W	V_{CE} = 28 V	125	—	—	W
P_G	f = 150 MHz	P_{OUT} = 125 W	V_{CE} = 28 V	9.2	—	—	dB
η_c	f = 150 MHz	P_{OUT} = 125 W	V_{CE} = 28 V	55	—	—	%
C_{OB}	f = 1 MHz	V_{CB} = 28 V		—	—	250	pF
Load Mismatch	f = 150 MHz	P_{IN} = 15 W	V_{CE} = 28 V	20:1	—	—	VSWR

TYPICAL PERFORMANCE

OUTPUT CAPACITANCE vs COLLECTOR BASE VOLTAGE

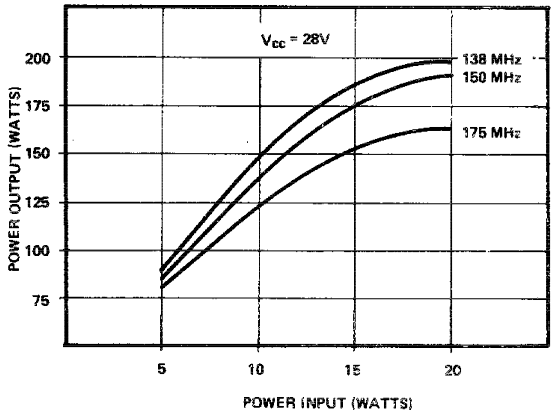


INPUT CAPACITANCE vs EMITTER BASE VOLTAGE

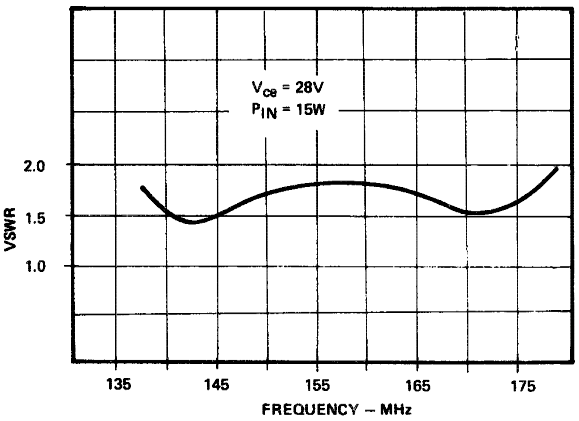


TYPICAL PERFORMANCE (cont'd)

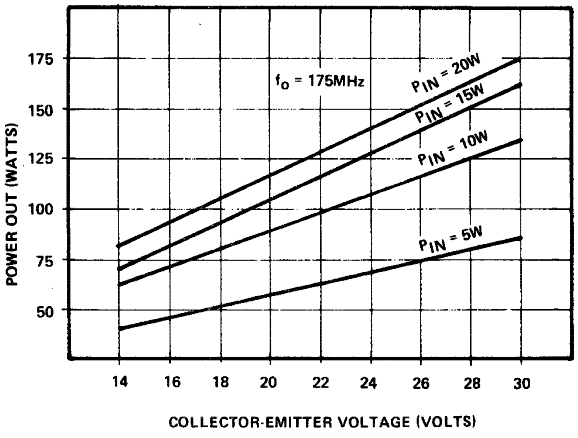
POWER OUTPUT vs POWER INPUT



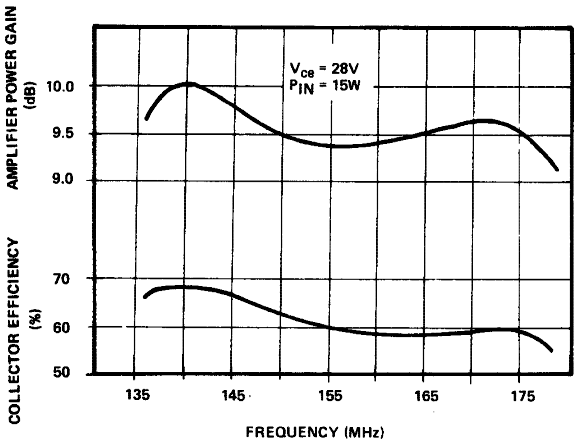
INPUT VSWR vs FREQUENCY



POWER OUTPUT vs COLLECTOR EMITTER VOLTAGE

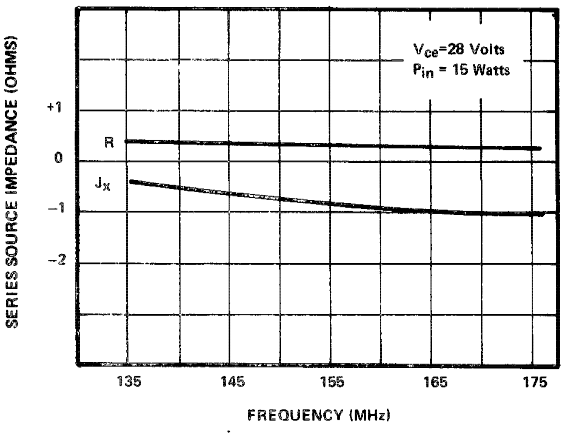


POWER GAIN & COLLECTOR EFFICIENCY vs FREQUENCY

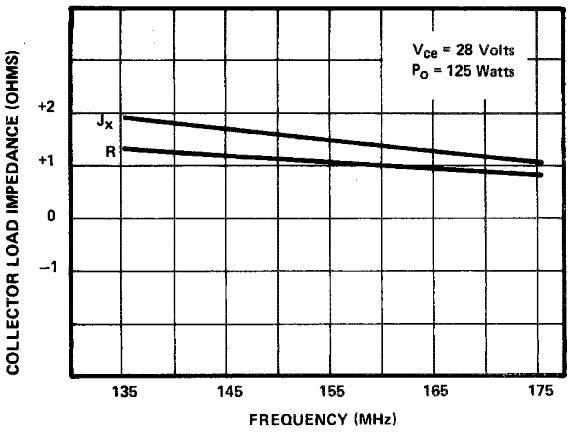


IMPEDANCE DATA

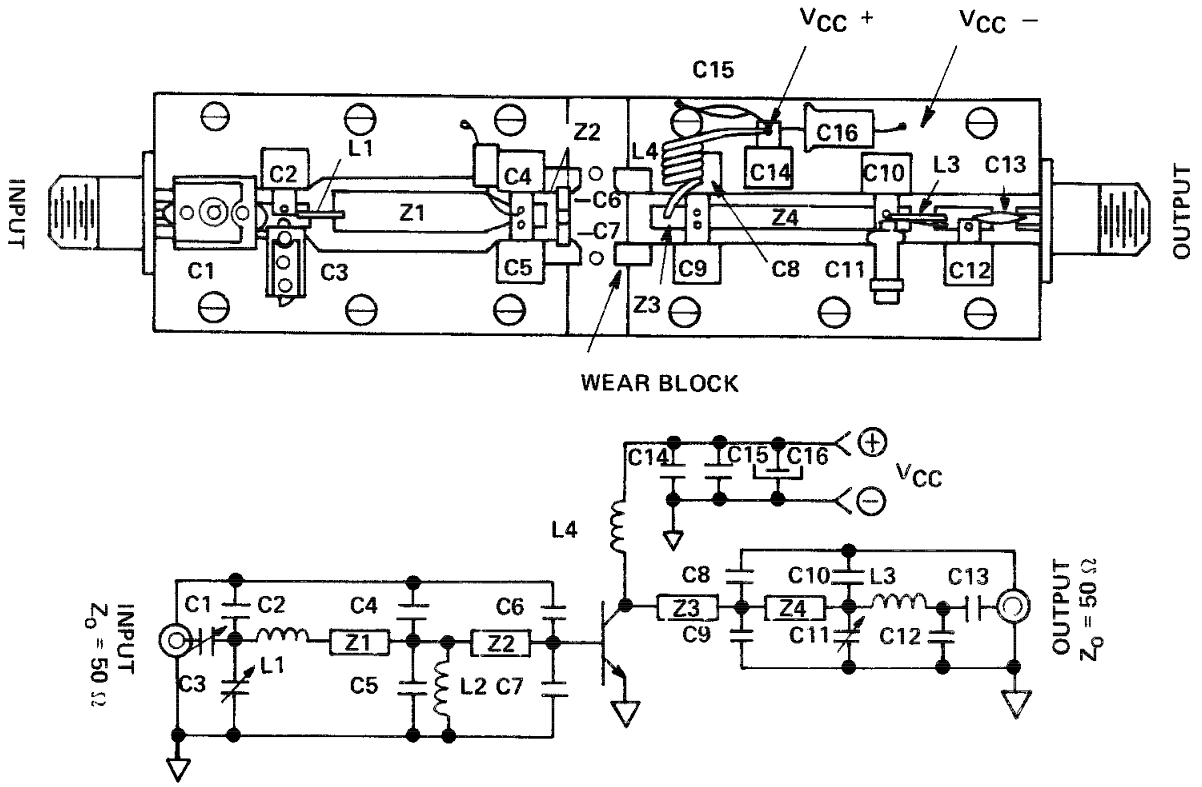
TYPICAL INPUT IMPEDANCE



TYPICAL COLLECTOR LOAD IMPEDANCE



TEST CIRCUIT



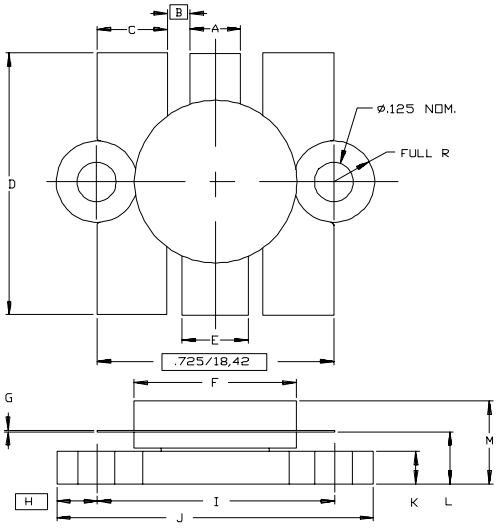
C1	:	.080pF Arco 462
C2	:	25mF Underwood
C3	:	2.020pF Arco 402
C4, C5	:	15pF Underwood
C6	:	240pF ATC Chip Capacitor
C7	:	270pF ATC Chip Capacitor
C8	:	150pF Underwood
C9	:	180pF Underwood
C10	:	100pF Underwood
C11	:	8.20pF Johanson JMC5501
C12	:	33pF Underwood
C13, C15	:	.15µF Disc Capacitor
C14	:	100pF Underwood
C16	:	10µF Electrolytic

L1	:	See Detail A
L2	:	Ferroxcube VK200 19/4B
L3	:	1 Turn #16 AWG 250 I.D. Close Wound
L4	:	5 Turns #16 AWG 250 I.D. Close Wound
Z1	:	Microstrip, .330" W x 1.600" L
Z2	:	Microstrip, .200" W x .400" L
Z3	:	Microstrip, .200" W x .600" L
Z4	:	Microstrip, .200" W x 1.600" L

PCB: 3M 1oz. Doulbe Sided 1/16" Teflon-Glass, Er = 2.5

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0111 rev. D



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	.160/4.06	.180/4.58
M		.285/7.24