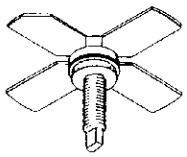
SGS-THOMSON MICROELECTRONICS

SD1448 (TCC598)

RF & MICROWAVE TRANSISTORS UHF TV/LINEAR APPLICATIONS

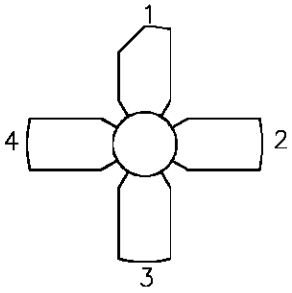
- 860 MHz
- 25 VOLTS
- COMMON EMITTER
- GOLD METALLIZATION
- CLASS A LINEAR OPERATION
- P_{OUT} = 4.0 W MIN. WITH 7.0 dB GAIN



.280 4L STUD (M122)
epoxy sealed

ORDER CODE	BRANDING
SD1448	TCC598

PIN CONNECTION



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

DESCRIPTION

The SD1448 is a silicon NPN bipolar device specifically designed for high linearity applications in the UHF frequency range including TV Bands IV and V.

Gold metallization and emitter ballasting assure high reliability under Class A linear amplifier operation.

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

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	45	V
V_{CEO}	Collector-Emitter Voltage	25	V
V_{EBO}	Emitter-Base Voltage	4	V
I_C	Device Current	1.6	A
P_{DISS}	Power Dissipation	31.8	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	5.5	°C/W

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

STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	I_C = 10mA	I_E = 0mA	45	—	—	V
BV_{CEO}	I_C = 20mA	I_B = 0mA	25	—	—	V
BV_{EBO}	I_E = 2.5mA	I_C = 0mA	3.0	—	—	V
I_{CBO}	V_{CB} = 28V	I_E = 0mA	—	—	0.9	mA
h_{FE}	V_{CE} = 20V	I_C = 500mA	10	—	—	—

DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}[1]	f = 860 MHz	V_{CE} = 25 V	I_C = 850 mA	4.0	—	—	W
G_P[2]	f = 860 MHz	V_{CE} = 25 V	I_C = 850 mA	7.0	—	—	dB
IMD_3[3]	P_{SYNC} = 4 W	V_{CE} = 25 V	I_C = 850 mA	—	—	–60	dBc
C_{OB}	f = 1 MHz	V_{CB} = 25 V		—	—	20	pF

Note 1: P_{IN} = 0.8W

Note 2: P_{OUT} = 4 W

Note 3: Levels relative to P_{SYNC} = 4 W

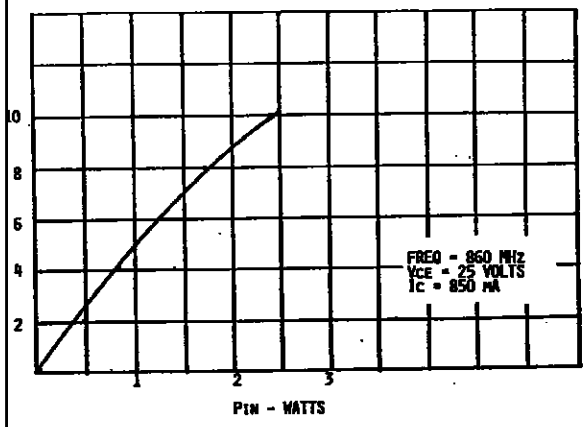
f_1 = 860.0 MHz –8dBc

f_2 = 863.5 MHz –16dBc

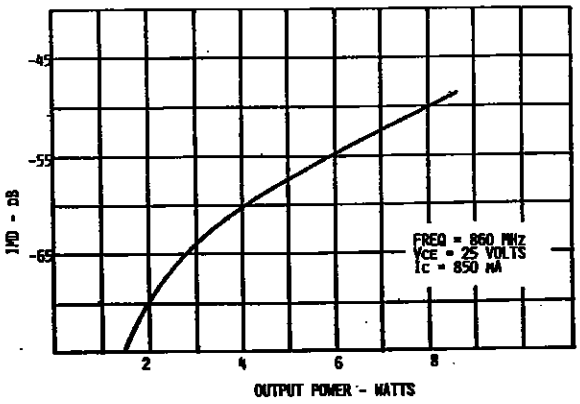
f_3 = 864.5 MHz –7dBc

TYPICAL PERFORMANCE

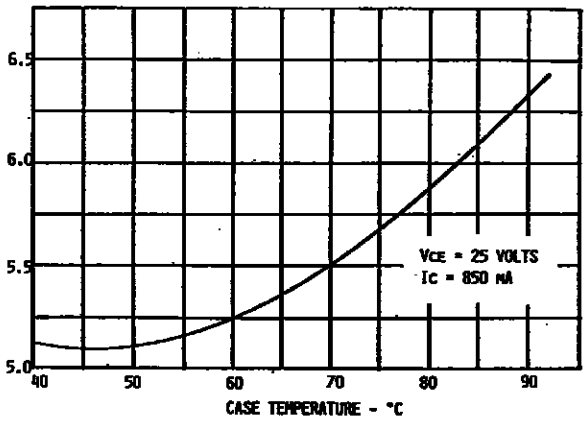
POWER OUTPUT vs POWER INPUT



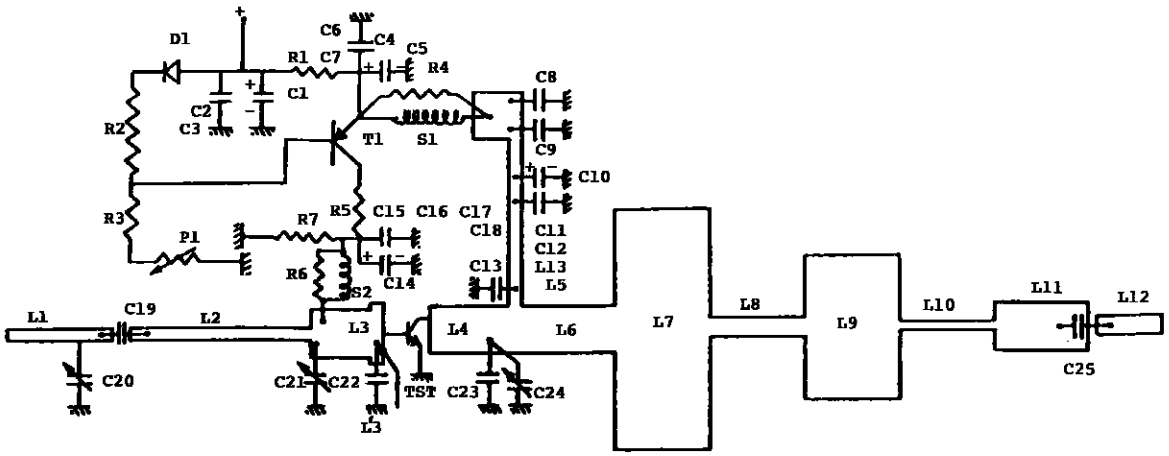
INTERMODULATION DISTORTION vs POWER OUTPUT



THERMAL RESISTANCE vs CASE TEMPERATURE



TEST CIRCUIT



C1 : 22mF, 63V Sprague
C2, C6, C8, C15 : 4.7nF Chip LCC
C3, C7, C9, C11, C16 : 100nF Chip LCC
C4, C10 : 4.7µF, 40V Sprague
C5, C15 : 4.7µF, 63V Sprague
C12, C17, C18 : 470pF Chip LCC
C13, C25 : 47pF ATC 100B
C19 : 47pF ATC 100A
C20 : 0.5 - 4.5pF Adjustable Airtronic
C21, C24 : 0.8 - 5pF Adjustable Johanson
C22 : 10pF ATC 100A
C23 : 15pF ATC 100B

D1 : 1N 4001 or 1N 914

L1 : 50Ω Transmission Line, Length 18mm
L2 : 50Ω Transmission Line, Length 22mm
L3 : 16.4Ω Transmission Line, Length 12mm
L'3 : 10.5Ω Transmission Line, Length 3.5mm
L4 : 20Ω Transmission Line, Length 13mm
L5 : 50Ω Transmission Line, Length 2.5mm
L6 : 20Ω Transmission Line, Length 23mm
L7 : 4Ω Transmission Line, Length 8% λ at 860 MHz
L8 : 55Ω Transmission Line, Length 7.5% λ at 860 MHz
L9 : 7.5Ω Transmission Line, Length 8% λ at 860 MHz
L10 : 100Ω Transmission Line, Length 8% λ at 860 MHz
L11 : 20Ω Transmission Line, Length 8% λ at 860 MHz
L12 : 50Ω Transmission Line, Length 5mm
L13 : 50Ω Transmission Line, Length 12mm

P1 : 3.3kΩ Adjustable

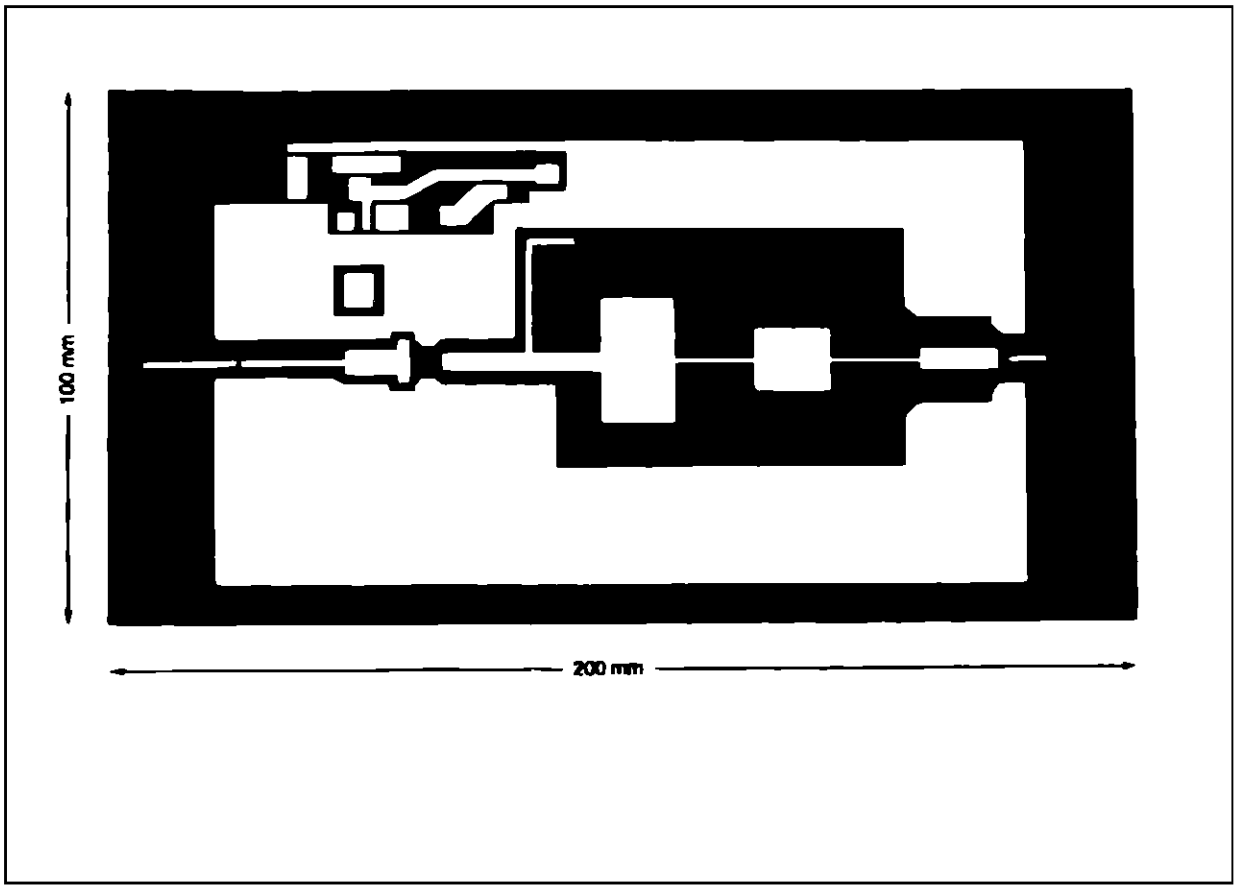
R1 : 2.2Ω, 3W SFERNICE
R2 : 100Ω, 1/2W
R3 : 51Ω, 1/2W
R4, R6 : 100Ω, 1/2W
R5, R7 : 56Ω, 1W

T1 : BDX 54 B

S1 : 6 Turns, Wire Diameter 0.5mm on 2.5mm Internal Diameter
S2 : 10 to 12 Turns on R6, Wire Diameter 0.5mm

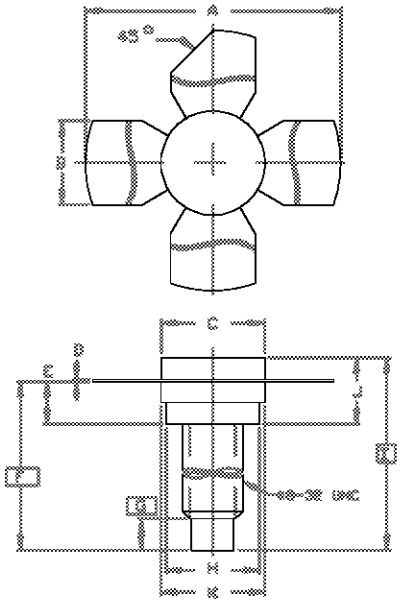
PC Board Material : Er = 2.5, .020" Thick

TEST CIRCUIT LAYOUT



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	.540/13.25	
J	.175/4.45	.217/5.51
K	.275/6.99	.285/7.24