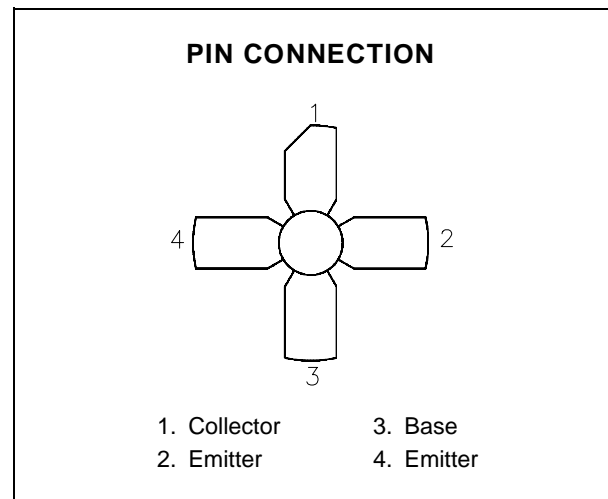
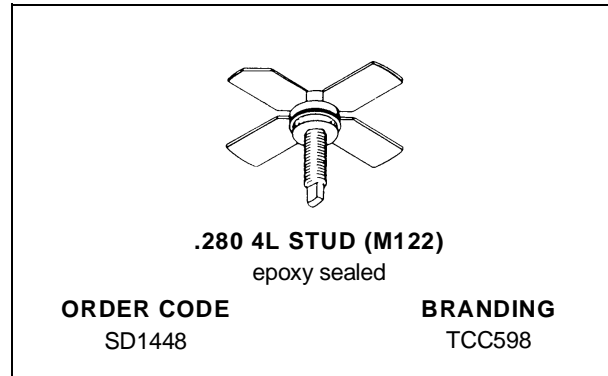


## RF & MICROWAVE TRANSISTORS UHF TV/LINEAR APPLICATIONS

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



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

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

### THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance	5.5	$^{\circ}C/W$
---------------	----------------------------------	-----	---------------

## SD1448 (TCC598)

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

#### 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  $P_{SYNC} = 4 W$

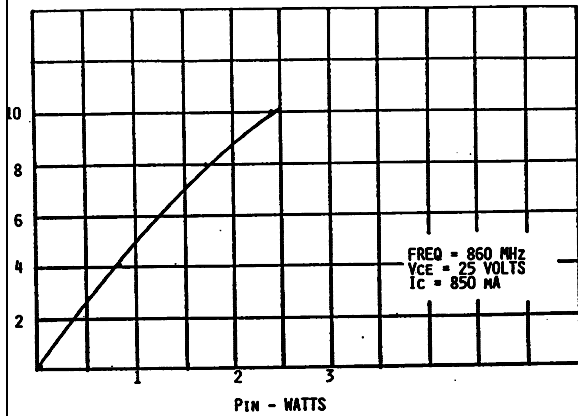
$f_1 = 860.0 MHz$  -8dBc

$f_2 = 863.5 MHz$  -16dBc

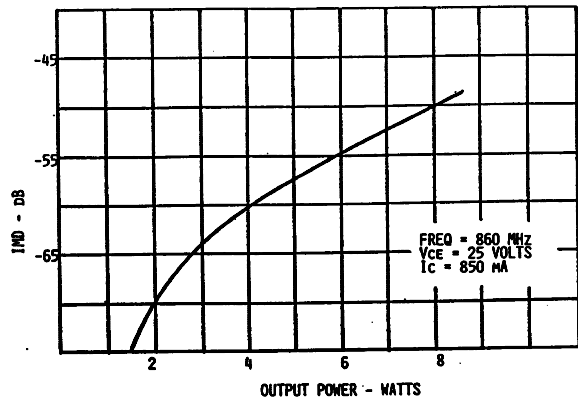
$f_3 = 864.5 MHz$  -7dBc

## TYPICAL PERFORMANCE

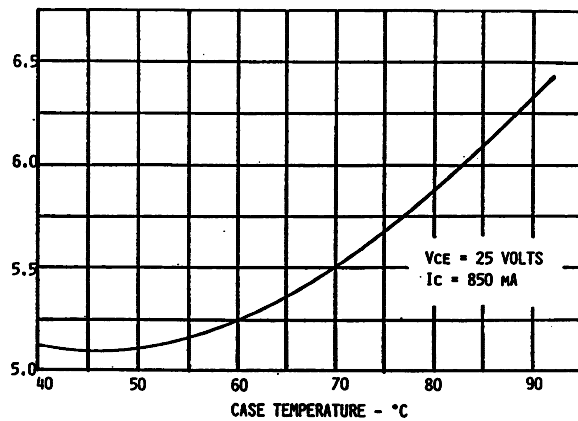
POWER OUTPUT vs POWER INPUT



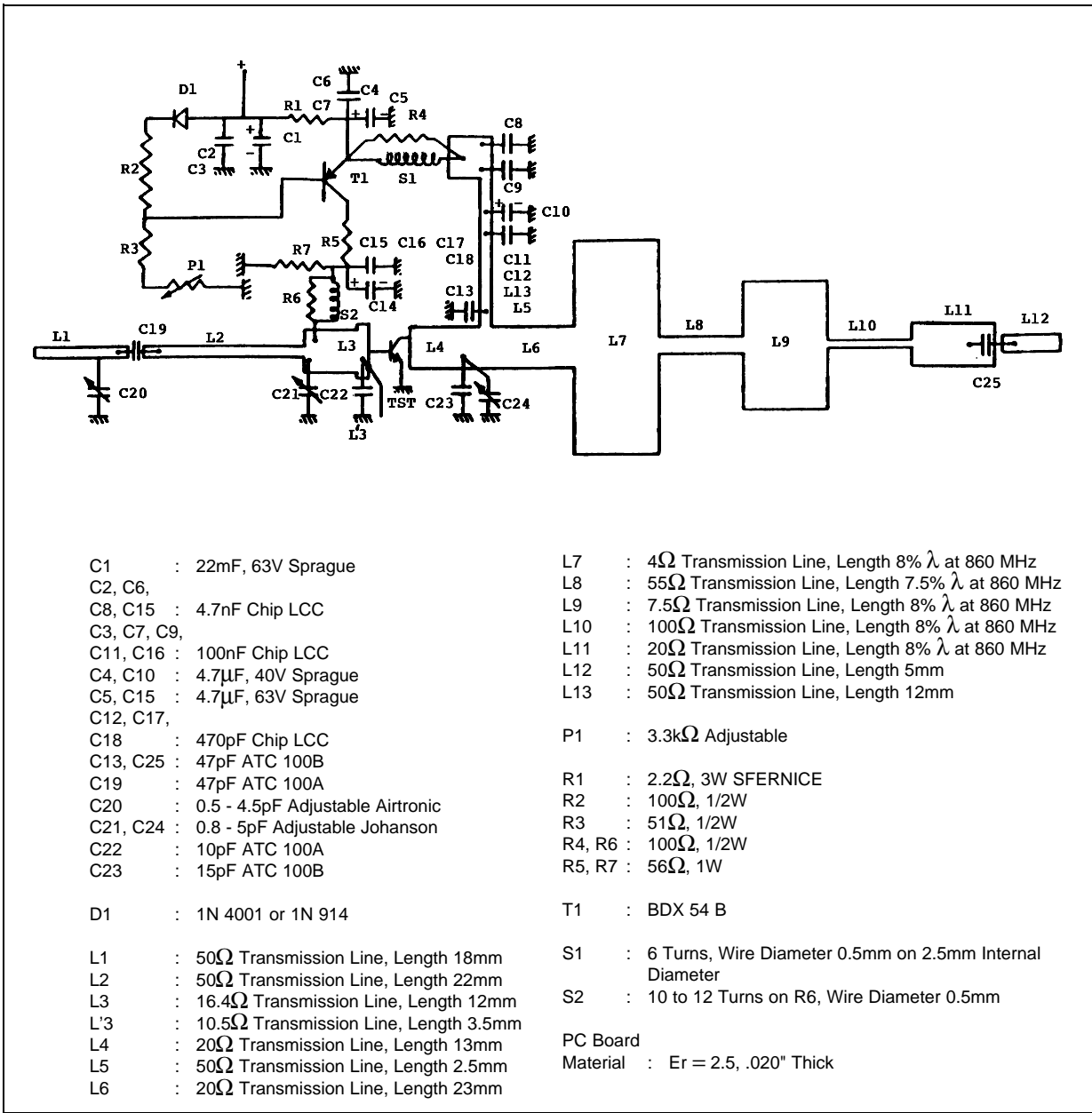
INTERMODULATION DISTORTION vs POWER OUTPUT



THERMAL RESISTANCE vs CASE TEMPERATURE

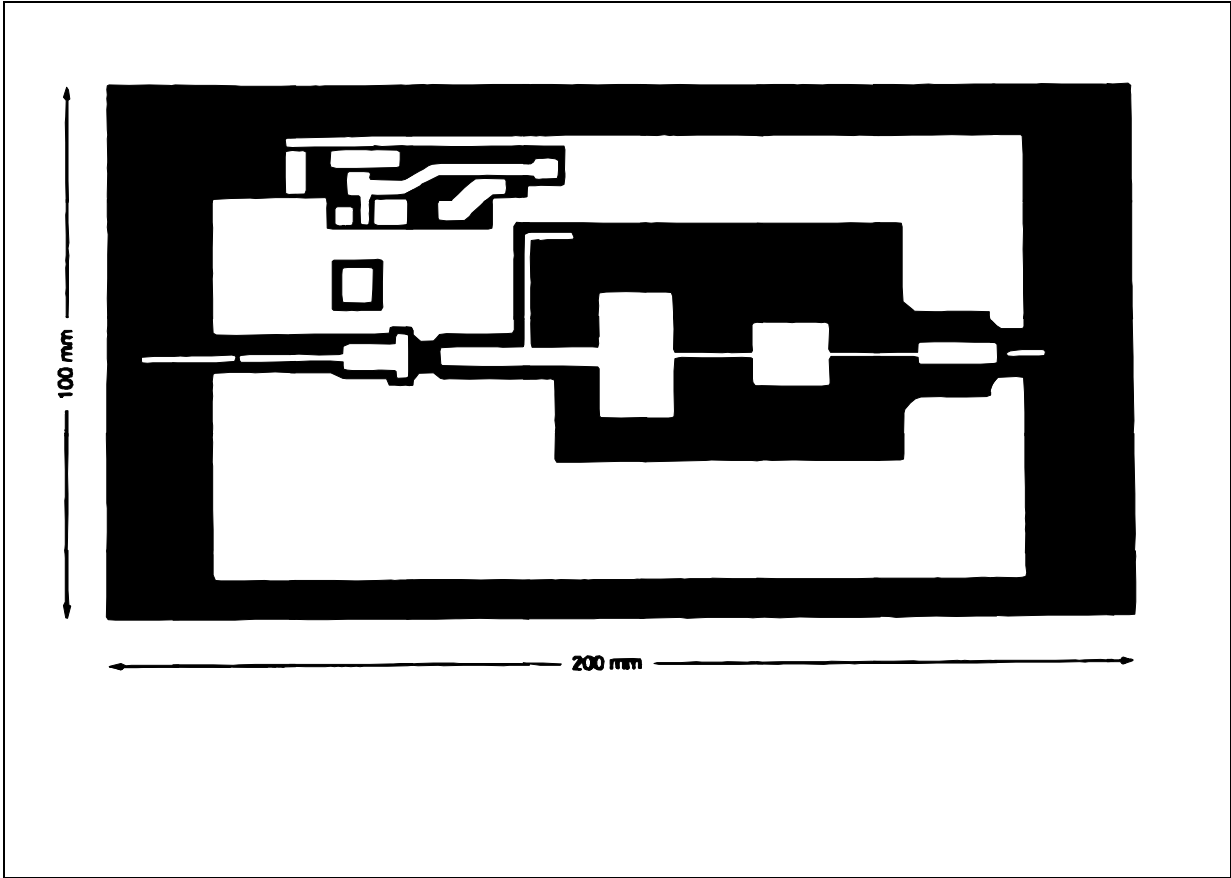


TEST CIRCUIT



- |             |   |          |   |
|-------------|---|----------|---|
| C1          | : 22mF, 63V Sprague                     | L7       | : 4Ω Transmission Line, Length 8% λ at 860 MHz            |
| C2, C6,     |   | L8       | : 55Ω Transmission Line, Length 7.5% λ at 860 MHz         |
| C8, C15     | : 4.7nF Chip LCC                        | L9       | : 7.5Ω Transmission Line, Length 8% λ at 860 MHz          |
| C3, C7, C9, |   | L10      | : 100Ω Transmission Line, Length 8% λ at 860 MHz          |
| C11, C16    | : 100nF Chip LCC                        | L11      | : 20Ω Transmission Line, Length 8% λ at 860 MHz           |
| C4, C10     | : 4.7μF, 40V Sprague                    | L12      | : 50Ω Transmission Line, Length 5mm                       |
| C5, C15     | : 4.7μF, 63V Sprague                    | L13      | : 50Ω Transmission Line, Length 12mm                      |
| C12, C17,   |   | P1       | : 3.3kΩ Adjustable  |
| C18         | : 470pF Chip LCC                        | R1       | : 2.2Ω, 3W SFERNICE                                       |
| C13, C25    | : 47pF ATC 100B                         | R2       | : 100Ω, 1/2W  |
| C19         | : 47pF ATC 100A                         | R3       | : 51Ω, 1/2W   |
| C20         | : 0.5 - 4.5pF Adjustable Airtronic      | R4, R6   | : 100Ω, 1/2W  |
| C21, C24    | : 0.8 - 5pF Adjustable Johanson         | R5, R7   | : 56Ω, 1W   |
| C22         | : 10pF ATC 100A                         | T1       | : BDX 54 B  |
| C23         | : 15pF ATC 100B                         | S1       | : 6 Turns, Wire Diameter 0.5mm on 2.5mm Internal Diameter |
| D1          | : 1N 4001 or 1N 914                     | S2       | : 10 to 12 Turns on R6, Wire Diameter 0.5mm               |
| L1          | : 50Ω Transmission Line, Length 18mm    | PC Board |   |
| L2          | : 50Ω Transmission Line, Length 22mm    | Material | : Er = 2.5, .020" Thick                                   |
| 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    |          |   |

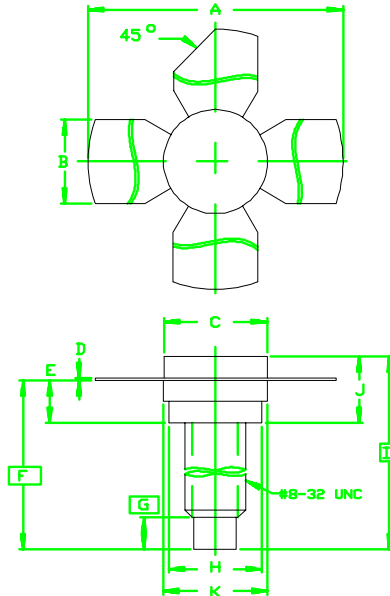
TEST CIRCUIT LAYOUT



# SD1448 (TCC598)

## 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

Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectronics.

© 1994 SGS-THOMSON Microelectronics - All Rights Reserved

SGS-THOMSON Microelectronics GROUP OF COMPANIES  
 Australia - Brazil - France - Germany - Hong Kong - Italy - Japan - Korea - Malaysia - Malta - Morocco - The Netherlands -  
 Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A