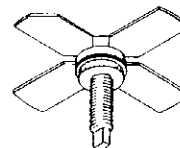


RF & MICROWAVE TRANSISTORS UHF TV/LINEAR APPLICATIONS

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



.280 4L STUD (M122)
epoxy sealed

ORDER CODE
SD1448

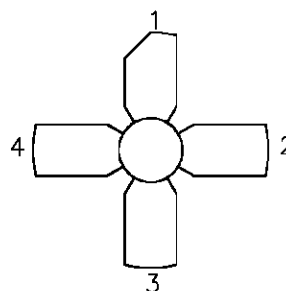
BRANDING
TCC598

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.

PIN CONNECTION



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

ABSOLUTE MAXIMUM RATINGS ($T_{case} = 25^{\circ}\text{C}$)

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

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance	5.5	$^{\circ}\text{C/W}$
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SD1448 (TCC598)

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

STATIC

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

DYNAMIC

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

Note 1: $P_{IN} = 0.8\text{W}$

Note 2: $P_{OUT} = 4\text{ W}$

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

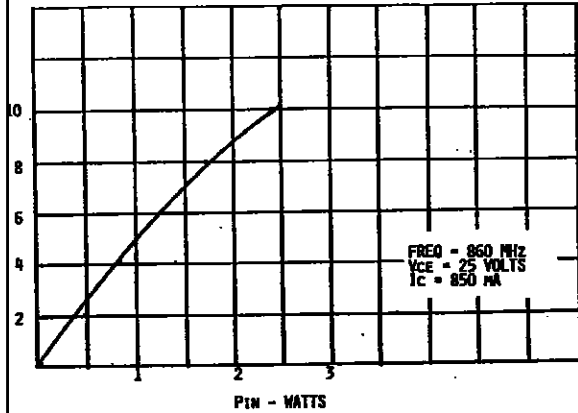
$f_1 = 860.0\text{ MHz}$ -8dBc

$f_2 = 863.5\text{ MHz}$ -16dBc

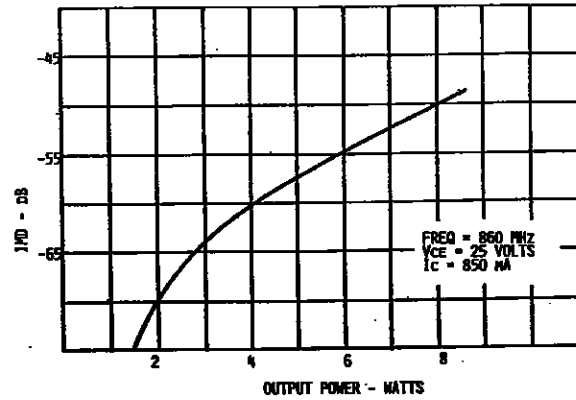
$f_3 = 864.5\text{ MHz}$ -7dBc

TYPICAL PERFORMANCE

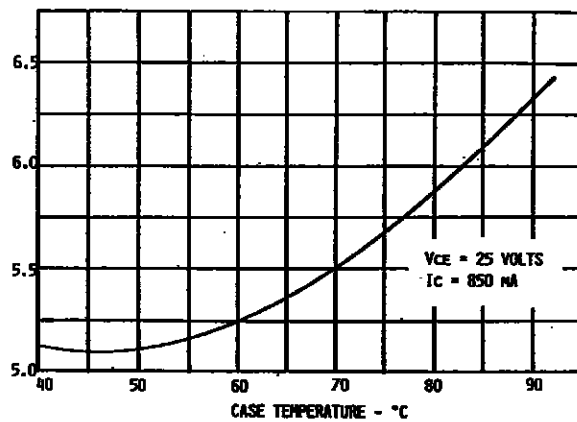
POWER OUTPUT vs POWER INPUT



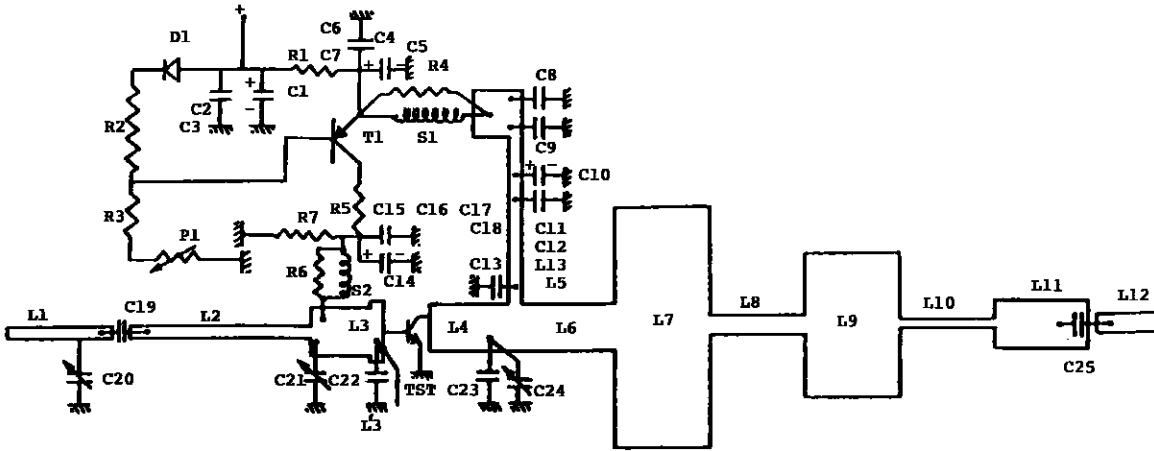
INTERMODULATION DISTORTION vs POWER OUTPUT



THERMAL RESISTANCE vs CASE TEMPERATURE

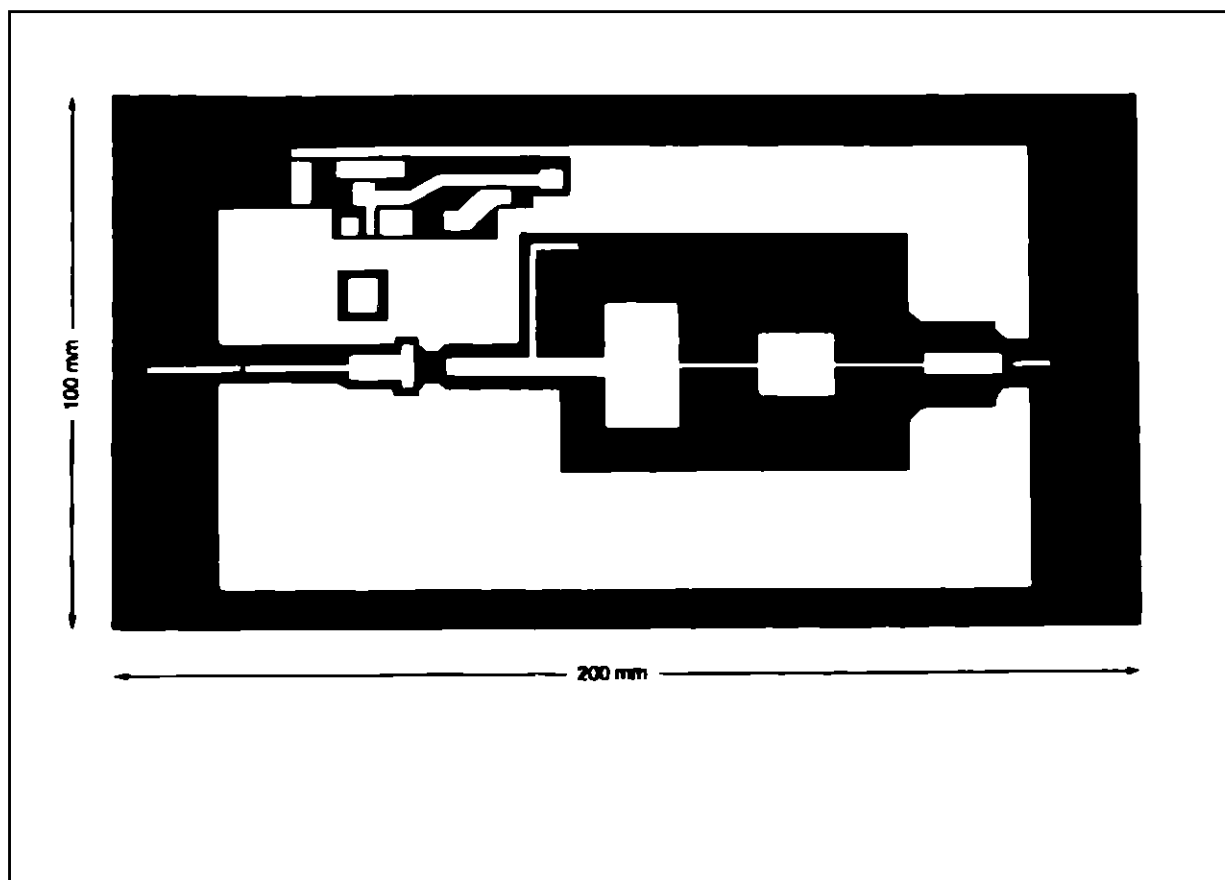


TEST CIRCUIT



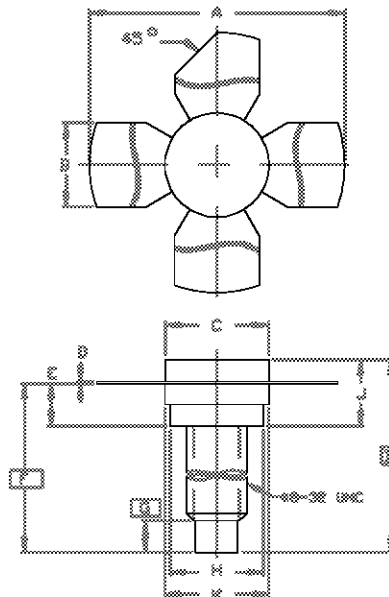
C1	: 22mF, 63V Sprague	L7	: 4Ω Transmission Line, Length 8% λ at 860 MHz
C2, C6,		L8	: 55Ω Transmission Line, Length 7.5% λ at 860 MHz
C8, C15	: 4.7nF Chip LCC	L9	: 7.5Ω Transmission Line, Length 8% λ at 860 MHz
C3, C7, C9,		L10	: 100Ω Transmission Line, Length 8% λ at 860 MHz
C11, C16	: 100nF Chip LCC	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



PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0122



SGS-THOMSON MICROELECTRONICS		
	MINIMUM Inches/mm	MAXIMUM Inches/mm
A	1.010/25.65	1.095/27.80
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	.127/3.18
F	.572/14.53	
G	.130/3.30	
H	.245/6.22	.255/6.48
I	.640/16.26	
J	.175/4.43	.217/5.51
K	.275/6.99	.285/7.24

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