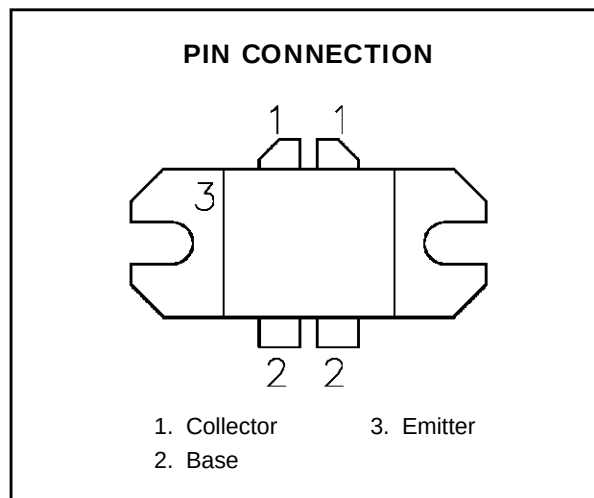
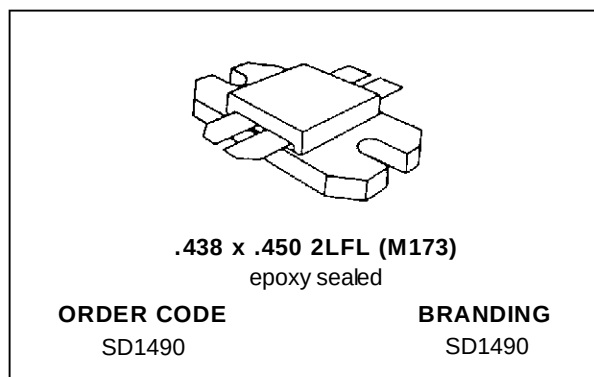


## RF & MICROWAVE TRANSISTORS TV/LINEAR APPLICATIONS

- 470 - 860 MHz
- 28 VOLTS
- CLASS A PUSH PULL
- DESIGNED FOR HIGH POWER LINEAR OPERATION
- HIGH SATURATED POWER CAPABILITY
- GOLD METALLIZATION
- DIFFUSED EMITTER BALLAST RESISTORS
- COMMON EMITTER CONFIGURATION
- INTERNAL INPUT MATCHING
- $P_{OUT} = 25 \text{ W MIN. WITH } 9.0 \text{ dB GAIN}$



### DESCRIPTION

The SD1490 is a gold metallized epitaxial silicon NPN planar transistor using diffused emitter ballast resistors for high linearity Class A operation in UHF and Band IV, V television transmitters and transposers.

### 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 | 30           | V                  |
| $V_{EBO}$  | Emitter-Base Voltage      | 3.0          | V                  |
| $I_C$      | Device Current            | 8            | A                  |
| $P_{DISS}$ | Power Dissipation         | 135          | W                  |
| $T_J$      | Junction Temperature      | +200         | $^{\circ}\text{C}$ |
| $T_{STG}$  | Storage Temperature       | - 50 to +150 | $^{\circ}\text{C}$ |

### THERMAL DATA

|               |                                  |     |                      |
|---------------|----------------------------------|-----|----------------------|
| $R_{TH(j-c)}$ | Junction-Case Thermal Resistance | 1.3 | $^{\circ}\text{C/W}$ |
|---------------|----------------------------------|-----|----------------------|

## SD1490

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

#### STATIC

| Symbol            | Test Conditions               |                             | Value |      |      | Unit |
|-------------------|-------------------------------|-----------------------------|-------|------|------|------|
|                   |                               |                             | Min.  | Typ. | Max. |      |
| $BV_{\text{CBO}}$ | $I_{\text{C}} = 50\text{mA}$  | $I_{\text{E}} = 0\text{mA}$ | 45    | —    | —    | V    |
| $BV_{\text{CEO}}$ | $I_{\text{C}} = 200\text{mA}$ | $I_{\text{B}} = 0\text{mA}$ | 30    | —    | —    | V    |
| $BV_{\text{EBO}}$ | $I_{\text{E}} = 10\text{mA}$  | $I_{\text{C}} = 0\text{mA}$ | 3.0   | —    | —    | V    |
| $I_{\text{CEO}}$  | $V_{\text{CE}} = 25\text{V}$  | $I_{\text{E}} = 0\text{mA}$ | —     | —    | 5    | mA   |
| $h_{\text{FE}}$   | $V_{\text{CE}} = 5\text{V}$   | $I_{\text{C}} = 3\text{A}$  | 10    | —    | 80   | —    |

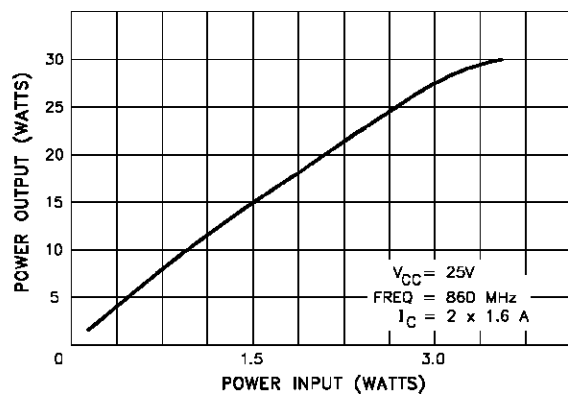
#### DYNAMIC

| Symbol           | Test Conditions      |                               |                                | Value |      |      | Unit |
|------------------|----------------------|-------------------------------|--------------------------------|-------|------|------|------|
|                  |                      |                               |                                | Min.  | Typ. | Max. |      |
| $P_{\text{OUT}}$ | $f = 860\text{ MHz}$ | $V_{\text{CE}} = 25\text{ V}$ | $I_{\text{C}} = 3.2\text{ A}$  | 25    | —    | —    | W    |
| $G_{\text{P}}$   | $f = 860\text{ MHz}$ | $V_{\text{CE}} = 25\text{ V}$ | $I_{\text{C}} = 3.2\text{ A}$  | 8.0   | —    | —    | dB   |
| $\text{CMOD}$    | $f = 860\text{ MHz}$ | $V_{\text{CE}} = 25\text{ V}$ | $P_{\text{REF}} = 25\text{ W}$ | —     | —    | 20   | %    |
| $\text{IMD}_3^*$ | $f = 860\text{ MHz}$ | $V_{\text{CE}} = 25\text{ V}$ | $P_{\text{REF}} = 25\text{ W}$ | —     | —    | -45  | dB   |
| $C_{\text{OB}}$  | $f = 1\text{ MHz}$   | $V_{\text{CB}} = 28\text{ V}$ |                                | —     | 70   | —    | pF   |

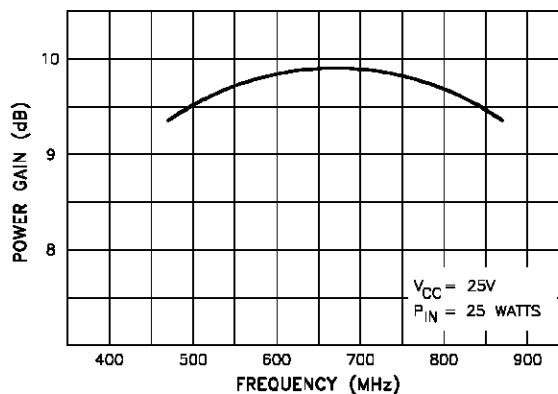
Note: \* 3 Tone Testing ( - 8, - 10, - 16 dB Relative to  $P_{\text{REF}}$ )

## TYPICAL PERFORMANCE

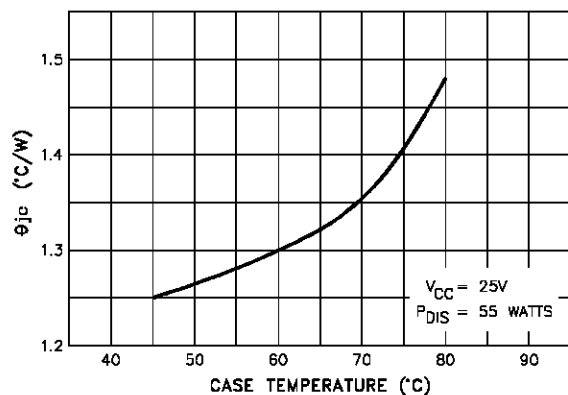
POWER OUTPUT vs POWER INPUT



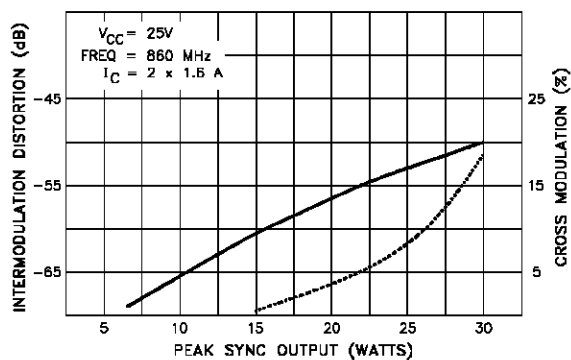
BROADBAND POWER GAIN vs FREQUENCY



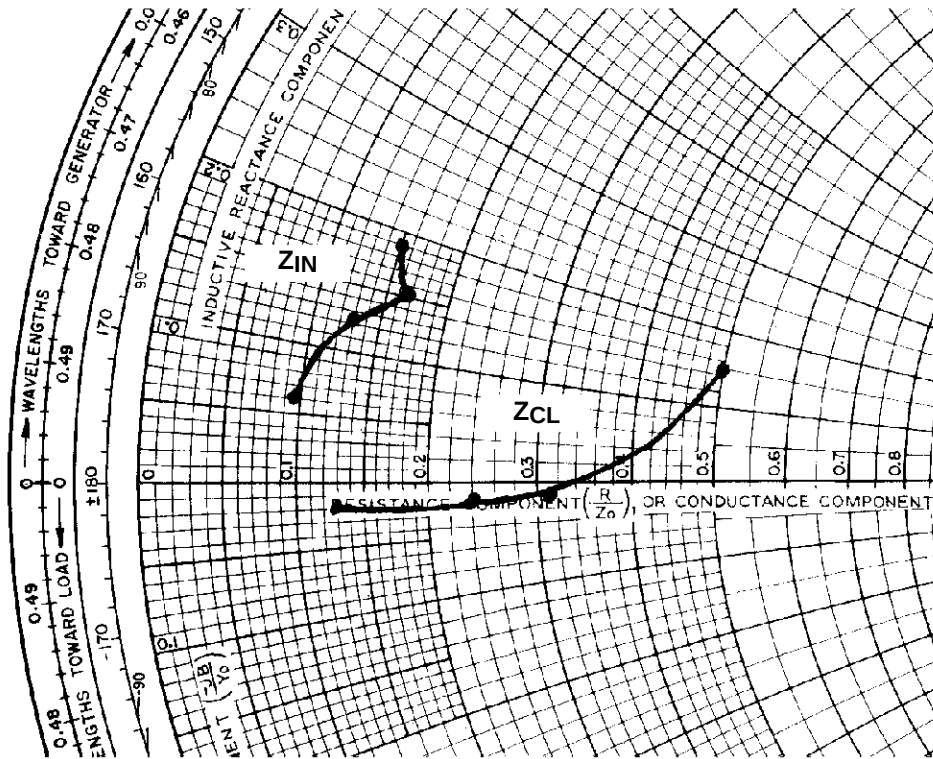
THERMAL RESISTANCE vs CASE TEMPERATURE



CROSS MODULATION &amp; INTERMODULATION vs PEAK SYNC OUTPUT



## IMPEDANCE DATA



| FREQ.   | $Z_{IN} (\Omega)$ | $Z_{CL} (\Omega)$ |
|---------|-------------------|-------------------|
| 470 MHz | $7.5 + j 9.5$     | $25 + j 7.5$      |
| 590 MHz | $8.2 + j 7.5$     | $15.6 - j 0.13$   |
| 710 MHz | $6.6 + j 6.2$     | $11.9 - j 0.28$   |
| 860 MHz | $4.7 + j 3.0$     | $6.7 - j 0.38$    |

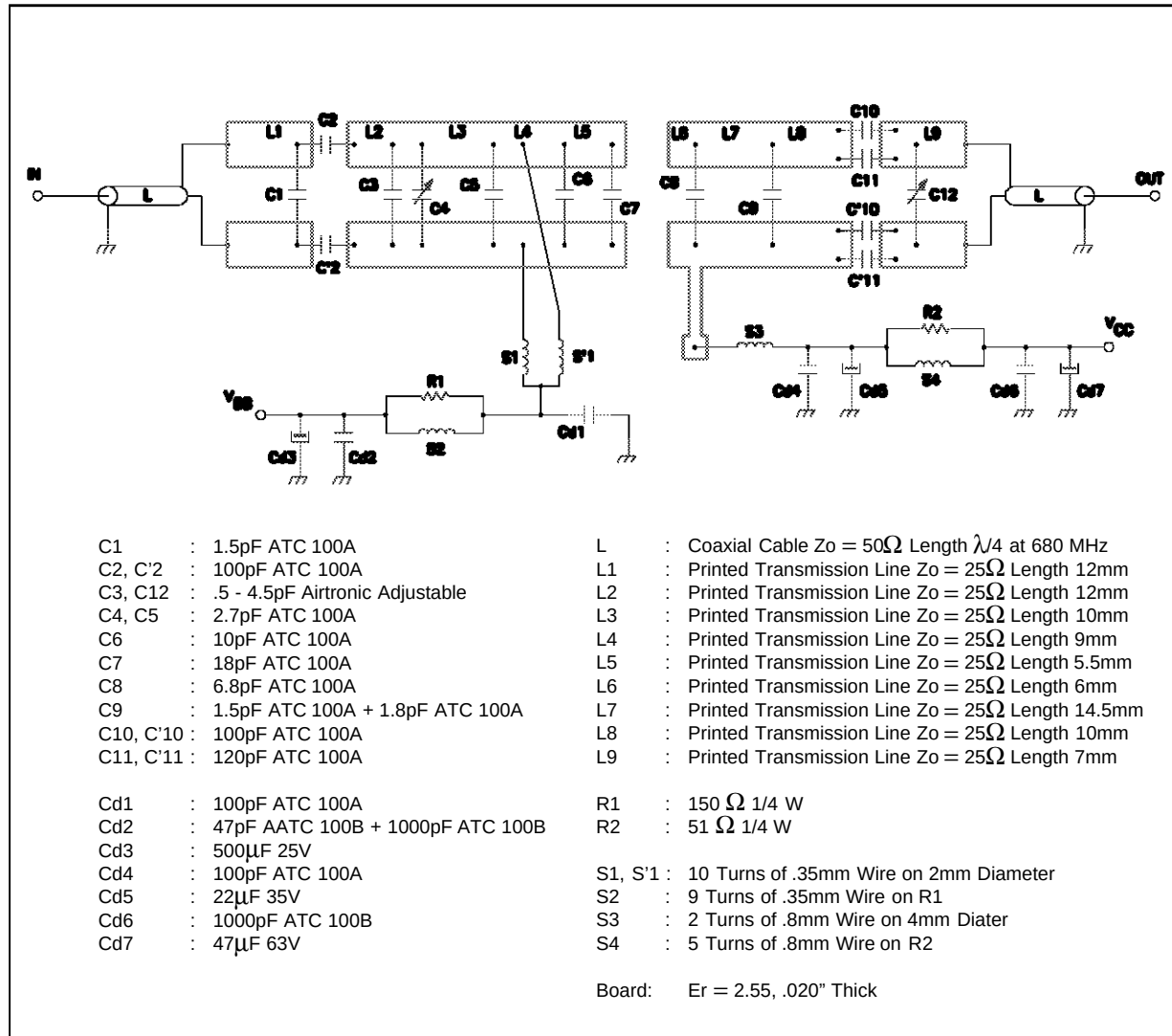
$P_{OUT} = 25 \text{ W}$

$V_{CC} = 25 \text{ V}$

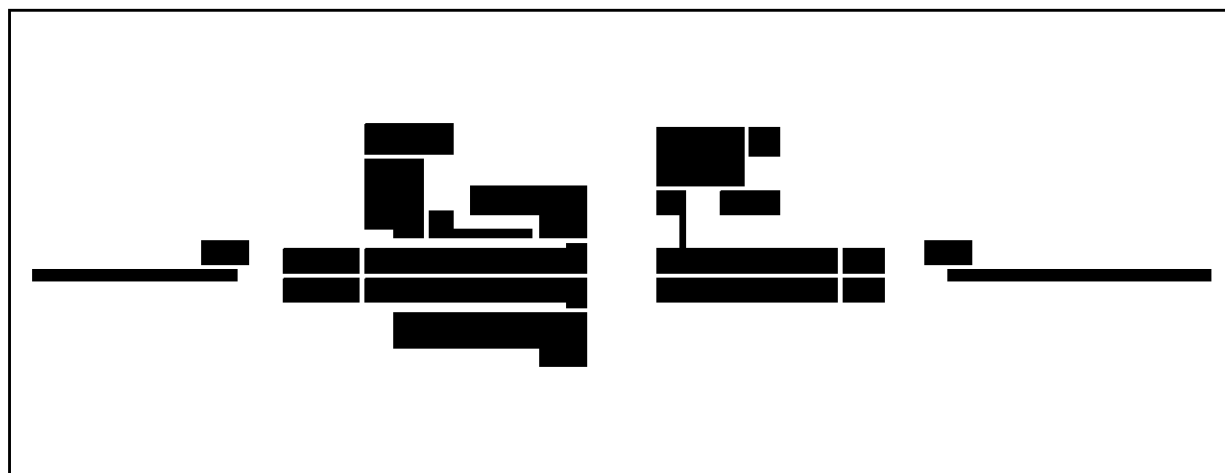
$I_C = 3.2 \text{ A}$

Normalized to 50 Ohms

## TEST CIRCUIT

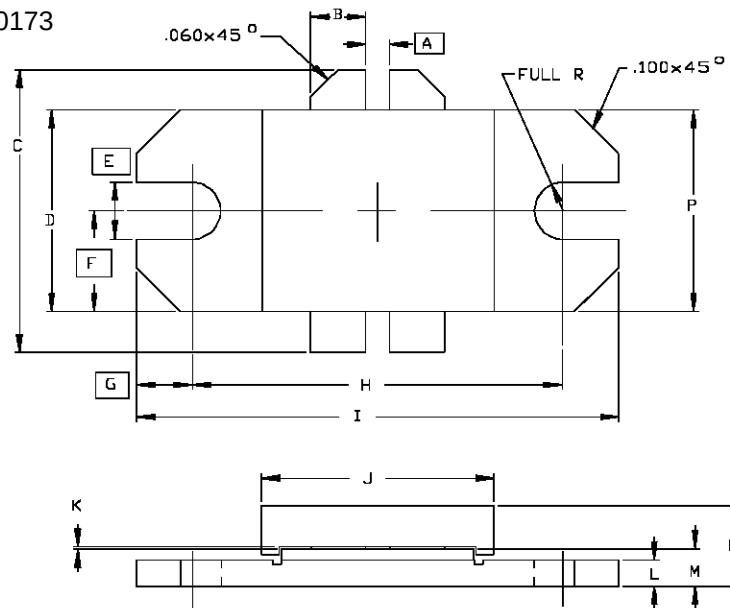


## TEST CIRCUIT LAYOUT



## PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0173



| SGS-THOMSON MICROELECTRONICS |                      |                      | CONT'D |                      |                      |
|------------------------------|----------------------|----------------------|--------|----------------------|----------------------|
|                              | MINIMUM<br>Inches/mm | MAXIMUM<br>Inches/mm |        | MINIMUM<br>Inches/mm | MAXIMUM<br>Inches/mm |
| A                            | .055/1,40            |                      | K      | .002/0,05            | .006/0,15            |
| B                            | .120/3,05            | .130/3,30            | L      | .055/1,40            | .065/1,65            |
| C                            |                      | .785/19,94           | M      | .080/2,03            | .095/2,41            |
| D                            | .455/11,56           | .465/11,81           | N      |                      | .195/4,95            |
| E                            | .125/3,18            |                      | P      | .455/11,56           | .465/11,81           |
| F                            | .230/5,84            |                      |        |                      |                      |
| G                            | .128/3,25            |                      |        |                      |                      |
| H                            | .838/21,28           | .850/21,59           |        |                      |                      |
| I                            | 1.095/27,81          | 1.105/28,07          |        |                      |                      |
| J                            | .525/13,34           | .535/13,59           |        |                      |                      |

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 results 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