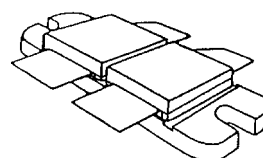


## RF & MICROWAVE TRANSISTORS TV/LINEAR APPLICATIONS

- 55 - 88 MHz
- 32 VOLTS
- COMMON EMITTER
- GOLD METALLIZATION
- INTERNAL INPUT MATCHING
- CLASS AB PUSH PULL
- HIGH SATURATED POWER CAPABILITY
- DIFFUSED EMITTER BALLAST RESISTORS
- DESIGNED FOR HIGH POWER LINEAR OPERATION
- $P_{OUT} = 240 \text{ W MIN. WITH } 12.0 \text{ dB GAIN}$



**2 x .437 x .450 2LFL (M165)**

epoxy sealed

**ORDER CODE**

SD1476

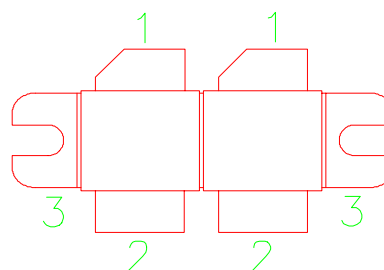
**BRANDING**

SD1476

### DESCRIPTION

The SD1476 is a gold metallized epitaxial silicon NPN planar transistor using diffused emitter ballast resistors for high linearity Class AB operation in VHF and Band I television transmitters and transposers.

### PIN CONNECTION



1. Collector

2. Base

3. Emitter

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

| Symbol     | Parameter                 | Value        | Unit               |
|------------|---------------------------|--------------|--------------------|
| $V_{CBO}$  | Collector-Base Voltage    | 70           | V                  |
| $V_{CEO}$  | Collector-Emitter Voltage | 40           | V                  |
| $V_{EBO}$  | Emitter-Base Voltage      | 4.0          | V                  |
| $I_C$      | Device Current            | 25           | A                  |
| $P_{DISS}$ | Power Dissipation         | 430          | 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 | 0.4 | $^{\circ}\text{C/W}$ |
|---------------|----------------------------------|-----|----------------------|

**SD1476****ELECTRICAL SPECIFICATIONS** ( $T_{case} = 25^{\circ}C$ )**STATIC**

| Symbol     | Test Conditions |                     | Value |      |      | Unit |
|------------|-----------------|---------------------|-------|------|------|------|
|            |                 |                     | Min.  | Typ. | Max. |      |
| $BV_{CBO}$ | $I_C = 50mA$    | $I_E = 0mA$         | 70    | —    | —    | V    |
| $BV_{CER}$ | $I_C = 50mA$    | $R_{BE} = 51\Omega$ | 68    | —    | —    | V    |
| $BV_{CEO}$ | $I_C = 100mA$   | $I_B = 0mA$         | 40    | —    | —    | V    |
| $BV_{EBO}$ | $I_E = 20mA$    | $I_C = 0mA$         | 4.0   | —    | —    | V    |
| $I_{CEO}$  | $V_{CE} = 30V$  | $I_E = 0mA$         | —     | —    | 10   | mA   |
| $I_{CBO}$  | $V_{CB} = 30V$  | $I_E = 0mA$         | —     | —    | 10   | mA   |
| $h_{FE}$   | $V_{CE} = 5V$   | $I_C = 7A$          | 10    | —    | 50   | —    |

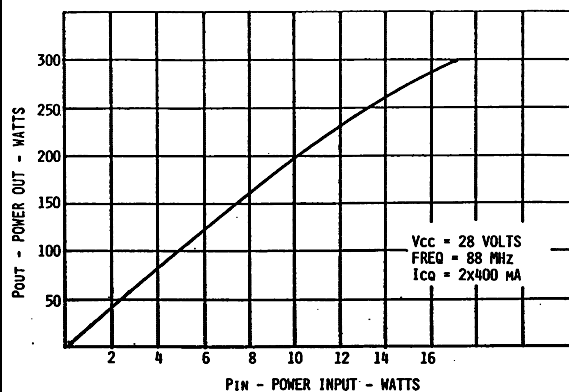
**DYNAMIC**

| Symbol      | Test Conditions     |                        |                           | Value |      |      | Unit |
|-------------|---------------------|------------------------|---------------------------|-------|------|------|------|
|             |                     |                        |                           | Min.  | Typ. | Max. |      |
| $P_{OUT}^*$ | $f = 88\text{ MHz}$ | $V_{CE} = 32\text{ V}$ | $I_{CQ} = 2 \times 400mA$ | 240   | —    | —    | W    |
| $G_P$       | $f = 88\text{ MHz}$ | $V_{CE} = 32\text{ V}$ | $I_{CQ} = 2 \times 400mA$ | 12    | —    | —    | dB   |
| $\eta_C$    | $f = 88\text{ MHz}$ | $V_{CE} = 32\text{ V}$ | $I_{CQ} = 2 \times 400mA$ | 50    | —    | —    | %    |
| $C_{OB}$    | $f = 1\text{ MHz}$  | $V_{CB} = 28\text{ V}$ |                           | —     | —    | 220  | pF   |

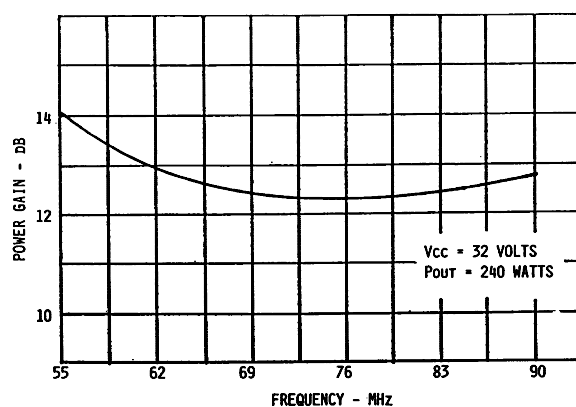
Note: \*1 dB Compression

## TYPICAL PERFORMANCE

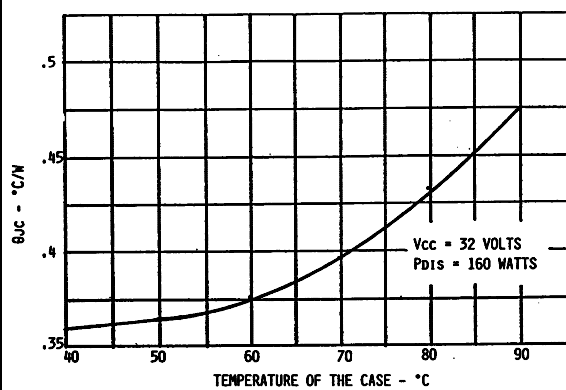
POWER OUTPUT vs POWER INPUT



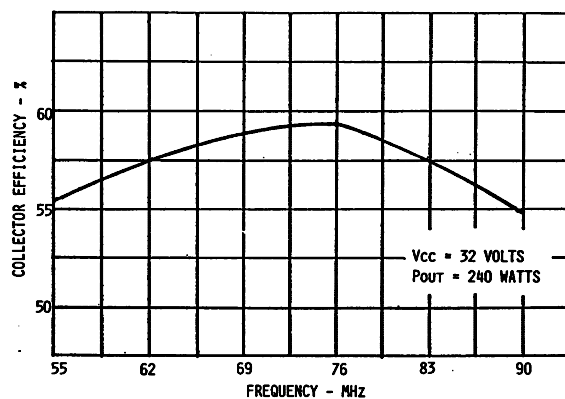
POWER GAIN vs FREQUENCY



THERMAL RESISTANCE vs CASE TEMPERATURE

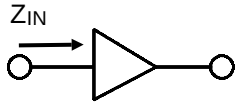


COLLECTOR EFFICIENCY vs FREQUENCY

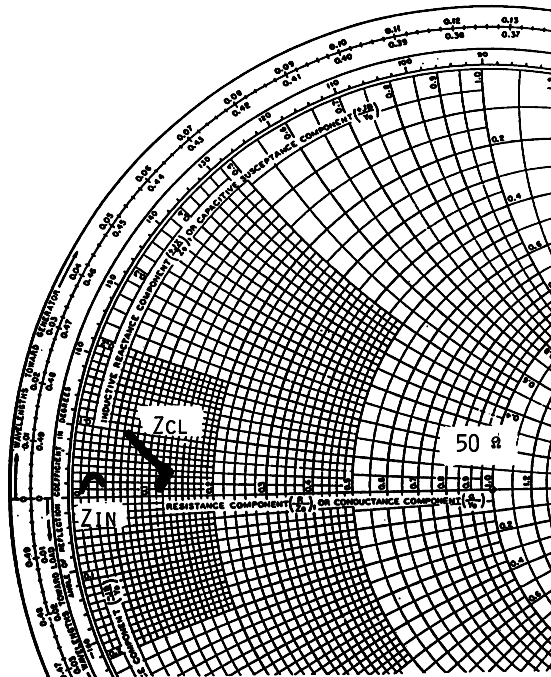
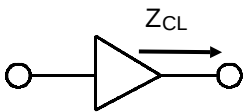


IMPEDANCE DATA

TYPICAL INPUT  
IMPEDANCE



TYPICAL COLLECTOR  
LOAD IMPEDANCE

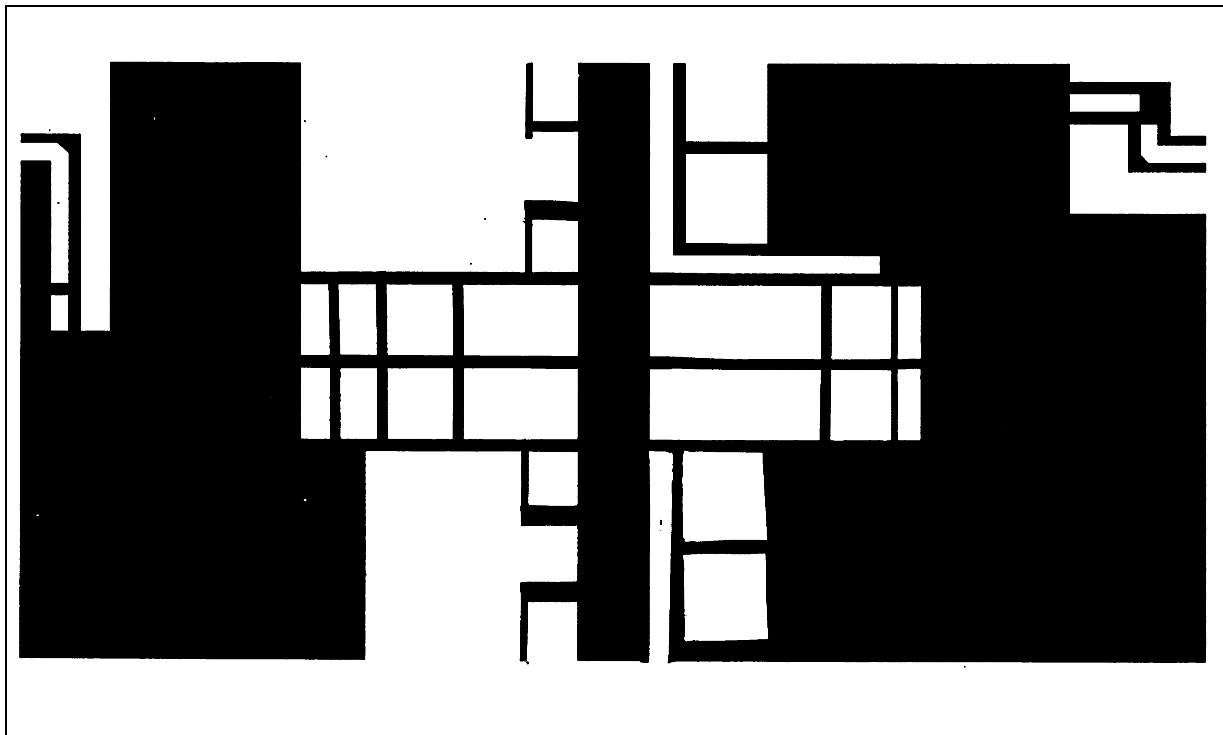


| FREQ.  | $Z_{IN} (\Omega)$ | $Z_{CL} (\Omega)$ |
|--------|-------------------|-------------------|
| 55 MHz | $1.7 - j 1.0$     | $6.1 + j 1.0$     |
| 65 MHz | $1.5 + j 1.3$     | $7.0 + j 2.1$     |
| 75 MHz | $1.0 + j 1.1$     | $6.2 + j 2.0$     |
| 90 MHz | $0.8 + j 0.4$     | $3.4 + j 4.4$     |

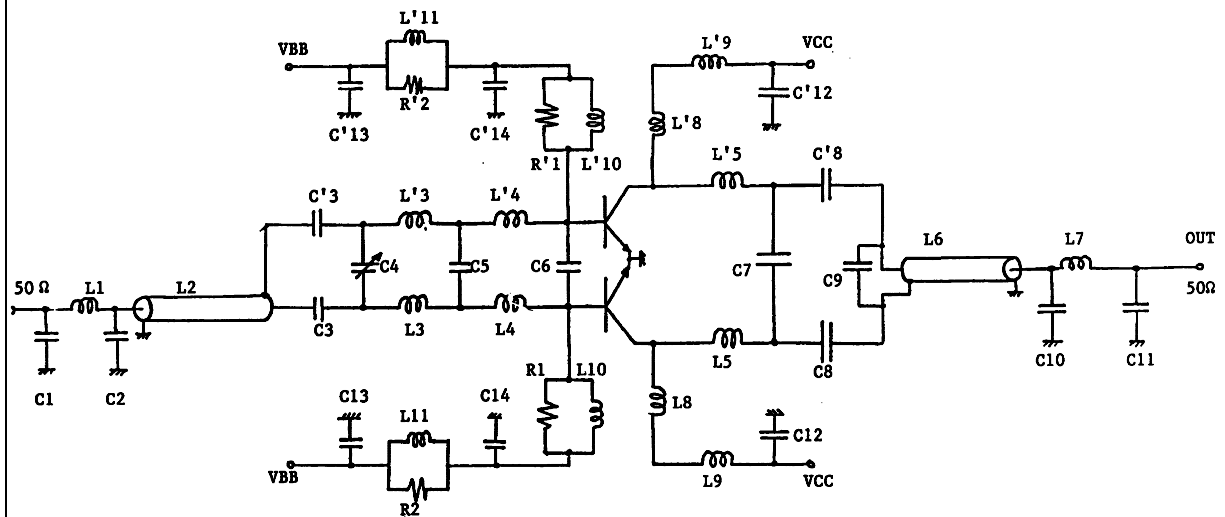
$P_{OUT} = 240 \text{ W}$

$V_{CC} = 32 \text{ V}$

## PRINTED CIRCUIT BOARD LAYOUT



## TEST CIRCUIT



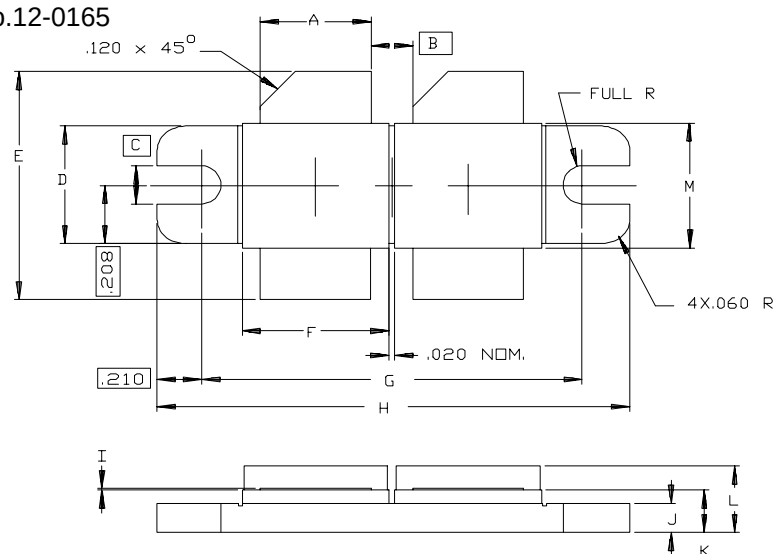
C1 : 10pF + 33pF, ATC 100B  
 C2 : 47pF, ATC 100B  
 C3, C'3 : 1.5nF + 2.2nF, ATC 100B  
 C4 : 4 - 60pF, Arco 404  
 C5 : 2 x 100pF + 47pF, ATC 100B  
 C6 : 2 x 330pF + 3 x 180pF + 270pF, ATC 100B  
 C7 : 150pF + 10pF, ATC 100B  
 C8, C'8 : 4.7nF, ATC 100B  
 C9 : 4 - 40pF, Arco 403  
 C10 : 10pF, ATC 100B  
 C11 : 43pF, ATC 100B  
 C12, C'12 : 1μF 63V, LCC CPM13B  
 C13, C'13 : 82nF 100V, LCC 745  
 C14, C'14 : 270nF 63V, LCC7950

L1, L7 : 4 Turns Diameter 7mm, Wire Diameter 1.5mm  
 L2 : 7 Turns Diameter 25mm, Coaxial Cable  $Z_c = 25\Omega$   
 L3, L'3 : 2 Turns Diameter 2.5mm, Wire Diameter 0.8mm  
 L4, L'4 : Length 15mm, Wire Diameter 1.5mm  
 L5, L'5 : Length 30mm, Wire Diameter 1.5mm  
 L6 : 6 Turns Diameter 25mm, Coaxial Cable  $Z_c = 25\Omega$   
 L8, L'8 : 16 Turns Diameter, Wire Diameter 1.5mm  
 L9, L'9 : 1 Turn, Wire Diameter 1.5mm in Ferrite (stackpole 57 33 12)  
 L10, L'10 : 14 Turns, Wire Diameter 0.6mm Around Resistor 1W  
 R1, R'1 : 180Ω, 1W  
 R2, R'2 : 180Ω, 1W

Material : Epoxy 63 mil,  $\epsilon_r = 2.55$

## PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0165



| SGS-THOMSON MICROELECTRONICS |                      |                      | CONT'D |                      |                      |
|------------------------------|----------------------|----------------------|--------|----------------------|----------------------|
|                              | MINIMUM<br>Inches/mm | MAXIMUM<br>Inches/mm |        | MINIMUM<br>Inches/mm | MAXIMUM<br>Inches/mm |
| A                            | .373/9,47            | .385/9,78            | K      | .135/3,43            | .155/3,94            |
| B                            | .122/3,10            |                      | L      |                      | .250/6,35            |
| C                            | .125/3,18            |                      | M      | .425/10,80           | .435/11,05           |
| D                            | .411/10,44           | .421/10,69           |        |                      |                      |
| E                            | .825/20,96           | .865/21,97           |        |                      |                      |
| F                            | .495/12,57           | .505/12,83           |        |                      |                      |
| G                            | 1.255/31,88          | 1.265/32,13          |        |                      |                      |
| H                            | 1.675/42,55          | 1.685/42,80          |        |                      |                      |
| I                            | .002/0,05            | .006/0,15            |        |                      |                      |
| J                            | .095/2,41            | .105/2,67            |        |                      |                      |

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