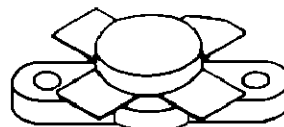


## RF & MICROWAVE TRANSISTORS HF/VHF APPLICATIONS

- 50 MHz
- 12.5 VOLTS
- EFFICIENCY 55%
- COMMON EMITTER
- GOLD METALLIZATION
- $P_{OUT} = 70 \text{ W MIN. WITH } 10 \text{ dB GAIN}$



**.380 4LFL (M113)**  
epoxy sealed

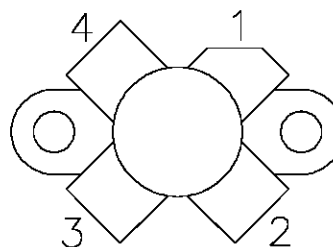
**ORDER CODE**  
SD1446

**BRANDING**  
SD1446

### DESCRIPTION

The SD1446 is a 12.5 V Class C epitaxial silicon NPN planar transistor designed primarily for land mobile transmitter applications. This device utilizes emitter ballasting and is extremely stable and capable of withstanding high VSWR under operating conditions.

### 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    | 36           | V                  |
| $V_{CEO}$  | Collector-Emitter Voltage | 18           | V                  |
| $V_{EBO}$  | Emitter-Base Voltage      | 3.5          | V                  |
| $I_C$      | Device Current            | 12.0         | A                  |
| $P_{DISS}$ | Power Dissipation         | 183          | 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 | 1.05 | $^{\circ}\text{C/W}$ |
|---------------|----------------------------------|------|----------------------|

## SD1446

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

#### STATIC

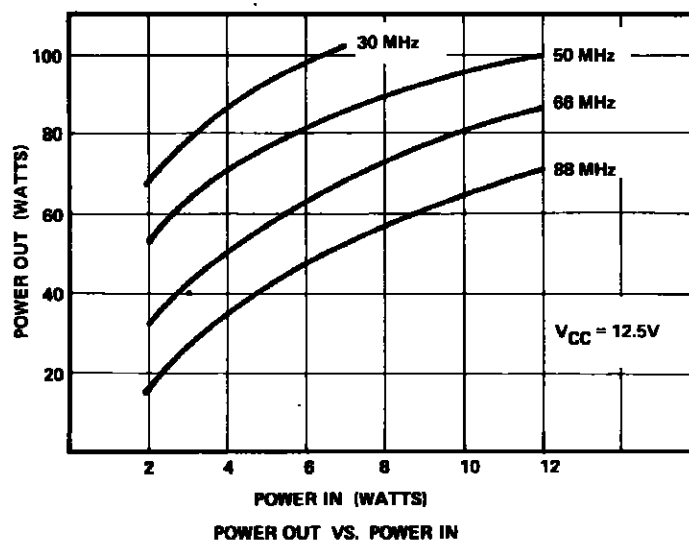
| Symbol            | Test Conditions               |                             | Value |      |      | Unit |
|-------------------|-------------------------------|-----------------------------|-------|------|------|------|
|                   |                               |                             | Min.  | Typ. | Max. |      |
| $BV_{\text{CBO}}$ | $I_{\text{C}} = 50\text{mA}$  | $I_{\text{E}} = 0\text{mA}$ | 36    | —    | —    | V    |
| $BV_{\text{CES}}$ | $I_{\text{C}} = 100\text{mA}$ | $V_{\text{BE}} = 0\text{V}$ | 36    | —    | —    | V    |
| $BV_{\text{CEO}}$ | $I_{\text{C}} = 50\text{mA}$  | $I_{\text{B}} = 0\text{mA}$ | 18    | —    | —    | V    |
| $BV_{\text{EBO}}$ | $I_{\text{E}} = 10\text{mA}$  | $I_{\text{C}} = 0\text{mA}$ | 3.5   | —    | —    | V    |
| $I_{\text{CES}}$  | $V_{\text{CE}} = 15\text{V}$  | $I_{\text{E}} = 0\text{mA}$ | —     | —    | 10   | mA   |
| $h_{\text{FE}}$   | $V_{\text{CE}} = 5\text{V}$   | $I_{\text{C}} = 5\text{A}$  | 10    | —    | —    | —    |

#### DYNAMIC

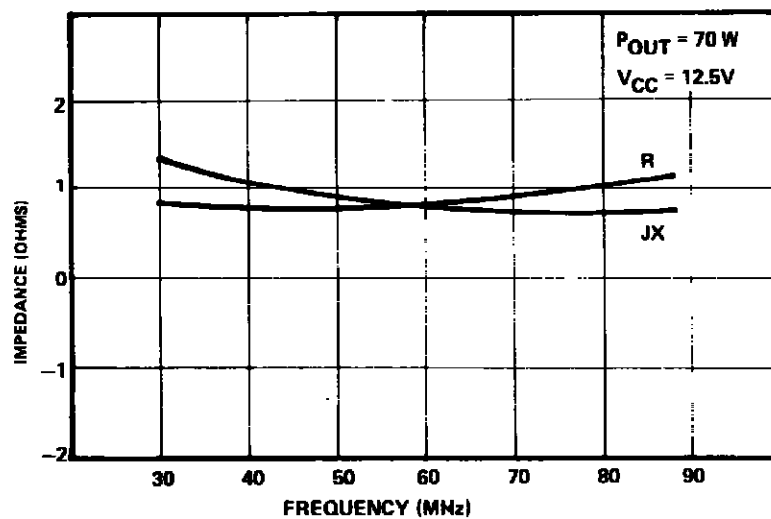
| Symbol            | Test Conditions     |                                |                                 | Value |      |      | Unit |
|-------------------|---------------------|--------------------------------|---------------------------------|-------|------|------|------|
|                   |                     |                                |                                 | Min.  | Typ. | Max. |      |
| $P_{\text{OUT}}$  | $f = 50\text{ MHz}$ | $P_{\text{IN}} = 7\text{ W}$   | $V_{\text{CE}} = 12.5\text{ V}$ | 70    | —    | —    | W    |
| $G_{\text{P}}$    | $f = 50\text{ MHz}$ | $P_{\text{IN}} = 7\text{ W}$   | $V_{\text{CE}} = 12.5\text{ V}$ | 10    | —    | —    | dB   |
| $\eta_{\text{C}}$ | $f = 50\text{ MHz}$ | $P_{\text{IN}} = 7\text{ W}$   | $V_{\text{CE}} = 12.5\text{ V}$ | —     | 55   | —    | %    |
| $C_{\text{OB}}$   | $f = 1\text{ MHz}$  | $V_{\text{CB}} = 12.5\text{V}$ |                                 | —     | —    | 300  | pF   |

#### TYPICAL PERFORMANCE

##### POWER OUTPUT vs POWER INPUT



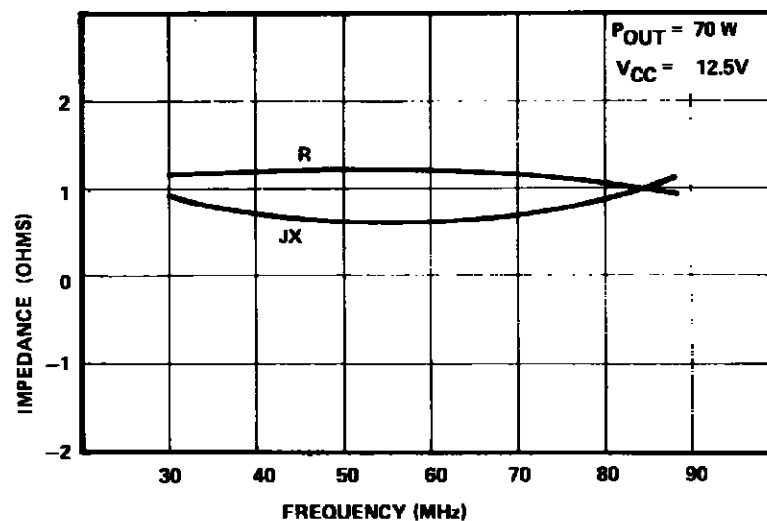
## IMPEDANCE DATA

TYPICAL INPUT  
IMPEDANCE

SERIES SOURCE IMPEDANCE

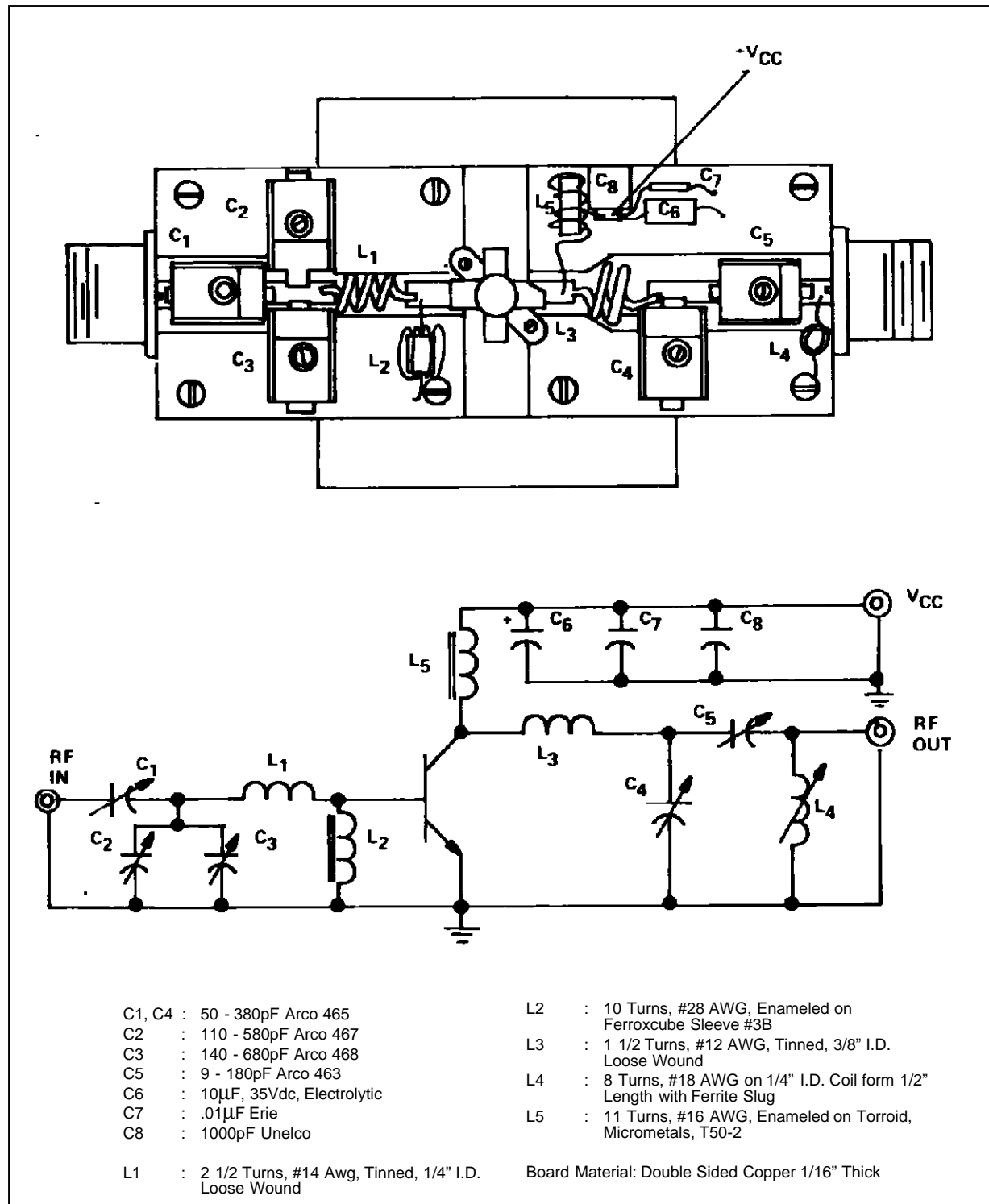
| FREQ.  | $Z_{IN} (\Omega)$ | $Z_{CL} (\Omega)$ |
|--------|-------------------|-------------------|
| 50 MHz | $0.8 + j\ 0.9$    | $1.2 + j\ 0.6$    |

$P_{OUT} = 70\text{ W}$   
 $V_{CE} = 12.5\text{ V}$

TYPICAL COLLECTOR  
LOAD IMPEDANCE

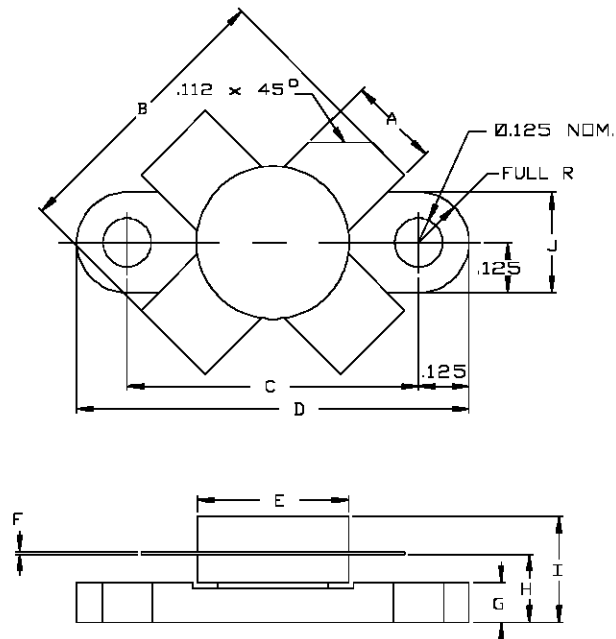
SERIES COLLECTOR LOAD IMPEDANCE

## TEST CIRCUIT



## PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0113



| SGS-THOMSON MICROELECTRONICS |                      |                      |
|------------------------------|----------------------|----------------------|
|                              | MINIMUM<br>Inches/mm | MAXIMUM<br>Inches/mm |
| A                            | .220/5,59            | .230/5,84            |
| B                            | .785/19,94           |                      |
| C                            | .720/18,29           | .730/18,54           |
| D                            | .970/24,64           | .980/24,89           |
| E                            |                      | .385/9,78            |
| F                            | .004/0,10            | .006/0,15            |
| G                            | .085/2,16            | .105/2,67            |
| H                            | .160/4,06            | .180/4,57            |
| I                            |                      | .280/7,11            |
| J                            | .240/6,10            | .255/6,48            |

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

This datasheet has been download from:

[www.datasheetcatalog.com](http://www.datasheetcatalog.com)

Datasheets for electronics components.