

**SD1014-06**

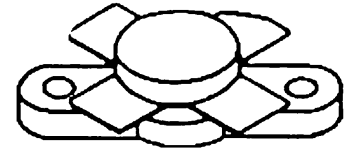
## RF & MICROWAVE TRANSISTORS VHF MOBILE APPLICATIONS

### Features

- 175 MHz
- 12.5 VOLTS
- $P_{OUT} = 15$  WATTS
- $G_P = 6.3$  dB MINIMUM
- COMMON EMITTER CONFIGURATION

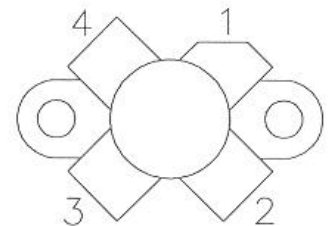
### DESCRIPTION:

The SD1014-06 is an epitaxial silicon NPN planar transistor designed primarily for VHF mobile communications. This device utilizes emitter ballasting for improved ruggedness and reliability.



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

### PIN CONNECTION



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

### ABSOLUTE MAXIMUM RATINGS

| Symbol     | Parameter                 | Value       | Unit |
|------------|---------------------------|-------------|------|
| $V_{CBO}$  | Collector-Base Voltage    | 36          | V    |
| $V_{CEO}$  | Collector-Emitter Voltage | 18          | V    |
| $V_{EBO}$  | Emitter-Base Voltage      | 4.0         | V    |
| $I_C$      | Device Current            | 2.5         | A    |
| $P_{DISS}$ | Power Dissipation         | 31          | W    |
| $T_J$      | Junction Temperature      | +200        | °C   |
| $T_{STG}$  | Storage Temperature       | -65 to +150 | °C   |

### THERMAL DATA

|               |                                  |     |      |
|---------------|----------------------------------|-----|------|
| $R_{TH(J-C)}$ | Junction-case Thermal Resistance | 5.6 | °C/W |
|---------------|----------------------------------|-----|------|

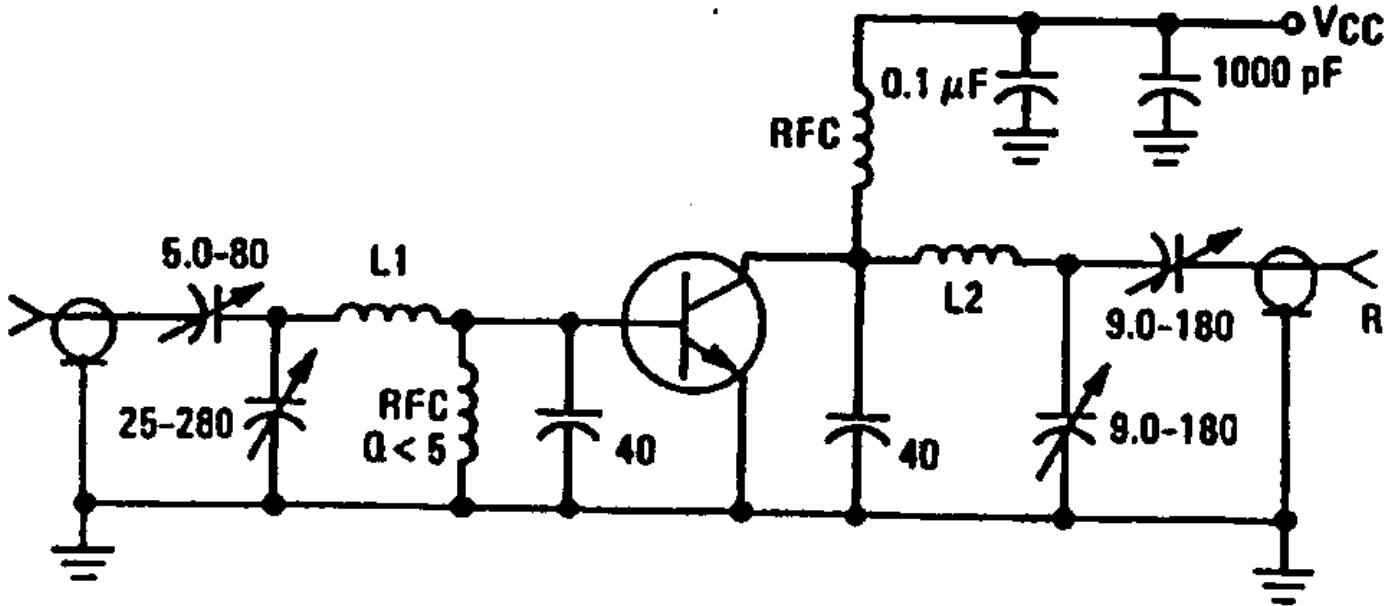
**ELECTRICAL SPECIFICATIONS (T<sub>case</sub> = 25°C)**
**STATIC**

| Symbol                  | Test Conditions   | Value      |      |            | Unit      |
|-------------------------|---|------------|------|------------|-----------|
|                         |   | Min.       | Typ. | Max.       |           |
| <b>BV<sub>CES</sub></b> | <b>I<sub>C</sub> = 10 mA</b> <b>V<sub>BE</sub> = 0 V</b>  | <b>36</b>  | ---  | ---        | <b>V</b>  |
| <b>BV<sub>CEO</sub></b> | <b>I<sub>C</sub> = 20 mA</b> <b>I<sub>B</sub> = 0 mA</b>  | <b>18</b>  | ---  | ---        | <b>V</b>  |
| <b>BV<sub>EBO</sub></b> | <b>I<sub>E</sub> = 2 mA</b> <b>I<sub>C</sub> = 0 mA</b>   | <b>4.0</b> | ---  | ---        | <b>V</b>  |
| <b>I<sub>CBO</sub></b>  | <b>V<sub>CB</sub> = 15 V</b> <b>I<sub>E</sub> = 0 mA</b>  | ---        | ---  | <b>0.5</b> | <b>mA</b> |
| <b>H<sub>FE</sub></b>   | <b>V<sub>CE</sub> = 5 V</b> <b>I<sub>C</sub> = 500 mA</b> | <b>5</b>   | ---  | <b>200</b> | ---       |

**DYNAMIC**

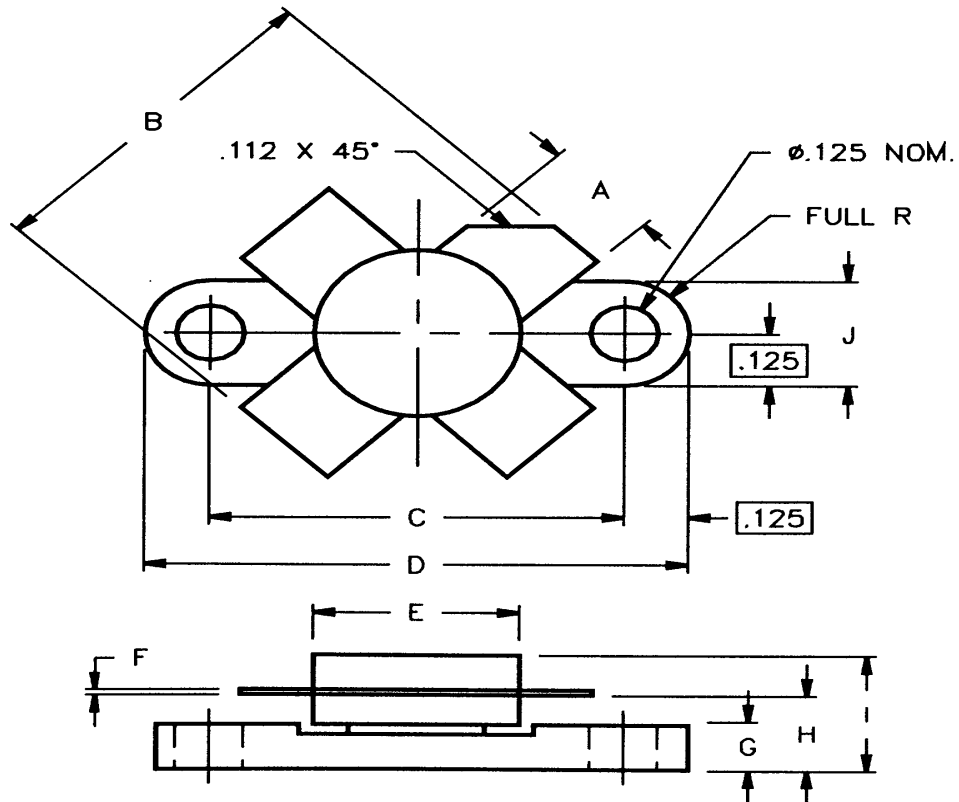
| Symbol                 | Test Conditions   | Value      |      |           | Unit      |
|------------------------|---|------------|------|-----------|-----------|
|                        |   | Min.       | Typ. | Max.      |           |
| <b>P<sub>OUT</sub></b> | <b>f = 175 MHz</b> <b>P<sub>IN</sub> = 3.5W</b> <b>V<sub>CE</sub> = 12.5V</b> | <b>15</b>  | ---  | ---       | <b>W</b>  |
| <b>η<sub>C</sub></b>   | <b>f = 175 MHz</b> <b>P<sub>IN</sub> = 3.5W</b> <b>V<sub>CE</sub> = 12.5V</b> | <b>60</b>  | ---  | ---       | <b>%</b>  |
| <b>G<sub>P</sub></b>   | <b>f = 175 MHz</b> <b>P<sub>IN</sub> = 3.5W</b> <b>V<sub>CE</sub> = 12.5V</b> | <b>6.3</b> | ---- | ---       | <b>dB</b> |
| <b>C<sub>OB</sub></b>  | <b>f = 1 MHz</b> <b>V<sub>CB</sub> = 15V</b>                                  | ---        | ---  | <b>85</b> | <b>pf</b> |

**TEST CIRCUIT**



- L1 : #14 AWG Wire, 1 3/8" Long
- L2 : 1 Turn, #14 AWG Wire, 3/8" Diameter  
1 1/2" Long

**PACKAGE MECHANICAL DATA**



|   | MINIMUM<br>INCHES/MM | MAXIMUM<br>INCHES/MM |   | MINIMUM<br>INCHES/MM | MAXIMUM<br>INCHES/MM |
|---|----------------------|----------------------|---|----------------------|----------------------|
| A | .220/5,59            | .230/5,84            | I |                      | .260/7,11            |
| B | .785/19,94           |                      | J | .240/6,10            | .255/6,48            |
| 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            |   |                      |                      |