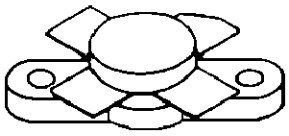
SGS-THOMSON MICROELECTRONICS

# SD1274-01

## RF & MICROWAVE TRANSISTORS VHF MOBILE APPLICATIONS

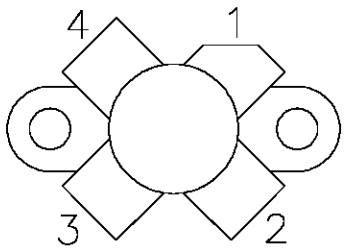
- 160 MHz
- 13.6 VOLTS
- COMMON EMITTER
- $P_{OUT}$ = 30 W MIN. WITH 10 dB GAIN



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

| ORDER CODE | BRANDING |
|---|---|
| SD1274-01 | SD1274-1 |

**PIN CONNECTION**




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

### DESCRIPTION

The SD1274-01 is a 13.6 V Class C epitaxial silicon NPN planar transistor designed primarily for VHF communications. The SD1274-01 utilizes an emitter ballasted die geometry to withstand severe load mismatch conditions.

### ABSOLUTE MAXIMUM RATINGS ($T_{case}$ = 25°C)

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $V_{CBO}$ | Collector-Base Voltage | 36 | V |
| $V_{CEO}$ | Collector-Emitter Voltage | 16 | V |
| $V_{CES}$ | Collector-Emitter Voltage | 36 | V |
| $V_{EBO}$ | Emitter-Base Voltage | 4.0 | V |
| $I_C$ | Device Current | 8.0 | A |
| $P_{DISS}$ | Power Dissipation | 70 | 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 | 1.2 | °C/W |

## ELECTRICAL SPECIFICATIONS ($T_{case}$ = 25°C)

STATIC

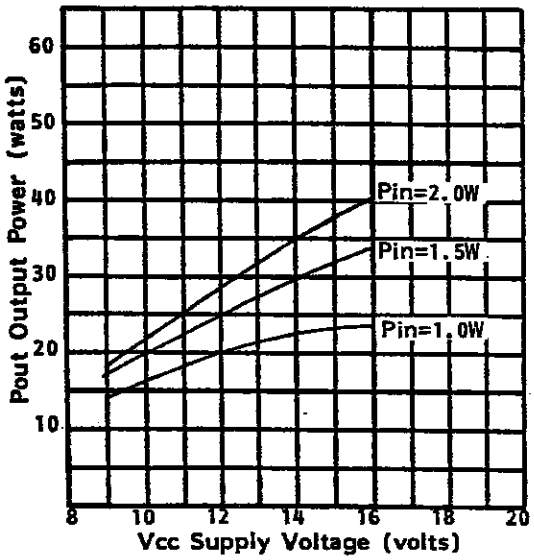
| Symbol | Test Conditions | | Value | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| $BV_{CES}$ | $I_C$ = 15mA | $V_{BE}$ = 0mA | 36 | — | — | V |
| $BV_{CEO}$ | $I_C$ = 50mA | $I_B$ = 0mA | 16 | — | — | V |
| $BV_{EBO}$ | $I_E$ = 5mA | $I_C$ = 0mA | 4.0 | — | — | V |
| $I_{CBO}$ | $V_{CB}$ = 15V | $I_E$ = 0mA | — | — | 5 | mA |
| $h_{FE}$ | $V_{CE}$ = 5V | $I_C$ = 250mA | 20 | — | — | — |

DYNAMIC

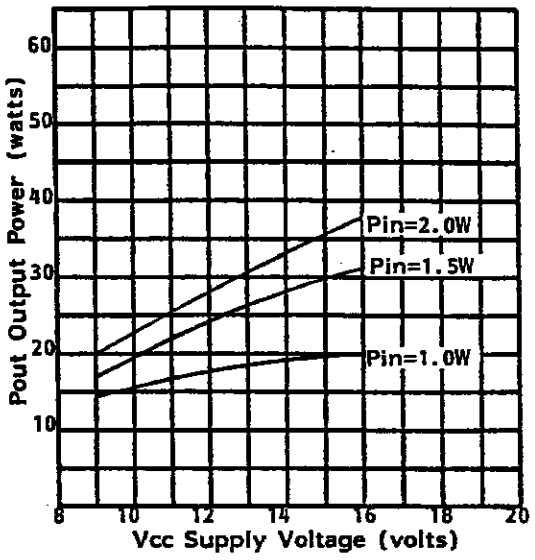
| Symbol | Test Conditions | | | Value | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| $P_{OUT}$ | f = 160 MHz | $P_{IN}$ = 3.0 W | $V_{CE}$ = 13.6 V | 30 | — | — | W |
| $G_P$ | f = 160 MHz | $P_{IN}$ = 3.0 W | $V_{CE}$ = 13.6 V | 10 | — | — | dB |
| $C_{OB}$ | f = 1 MHz | $V_{CB}$ = 15 V | | — | 95 | — | pF |

## TYPICAL PERFORMANCE

**POWER OUTPUT vs SUPPLY VOLTAGE (136 MHz)**

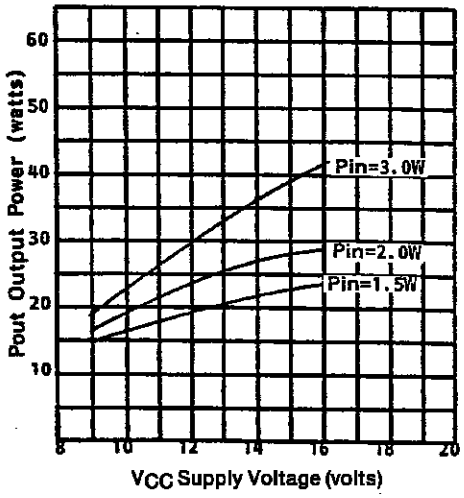



**POWER OUTPUT vs SUPPLY VOLTAGE (150 MHz)**

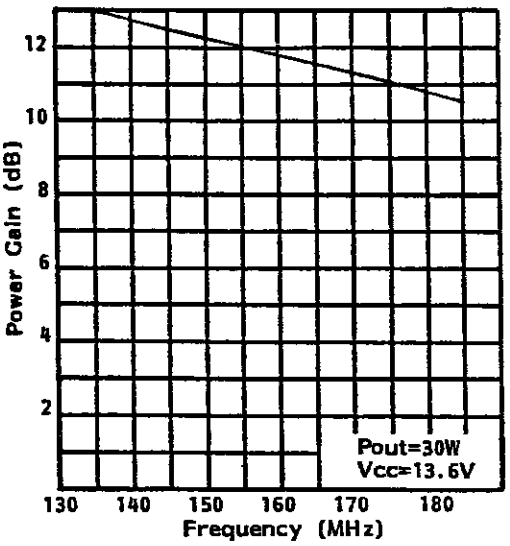


## TYPICAL PERFORMANCE (cont'd)

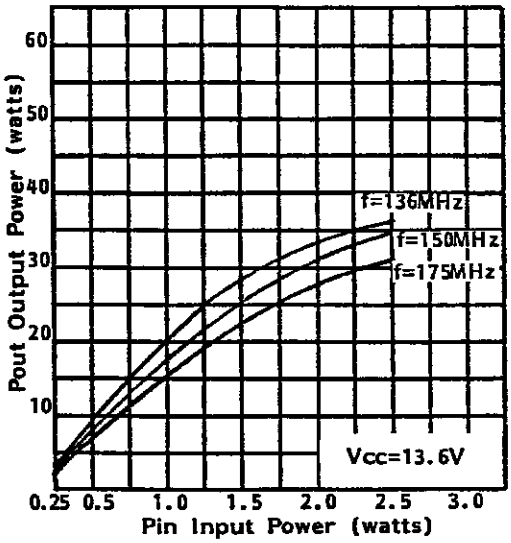
POWER OUTPUT vs SUPPLY VOLTAGE (175 MHz)




POWER GAIN vs FREQUENCY




POWER OUTPUT vs POWER INPUT



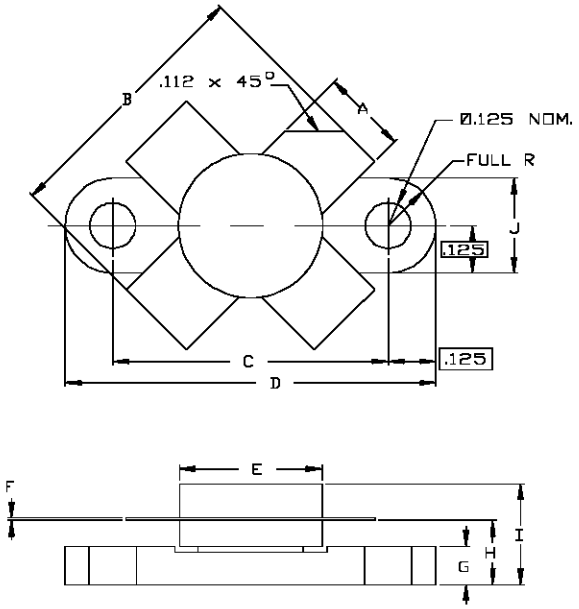

## IMPEDANCE DATA

| FREQ. | $Z_{IN}$ (Ω) | $Z_{CL}$ (Ω) |
|---|---|---|
| 175 MHz | 1.0 + j 0.4 | 2.3 + j 0.1 |

$P_{IN}$ = 3.0 W
$V_{CE}$ = 12.5 V

## PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0113




| SGS-THOMSON MICROELECTRONICS | | |
|---|---|---|
| | MINIMUM Inches/mm | MAXIMUM 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 |