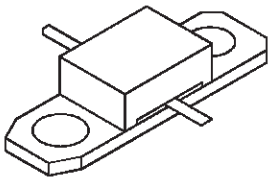
SGS-THOMSON MICROELECTRONICS

# SD1899

## RF & MICROWAVE TRANSISTORS SATELLITE COMMUNICATIONS APPLICATIONS

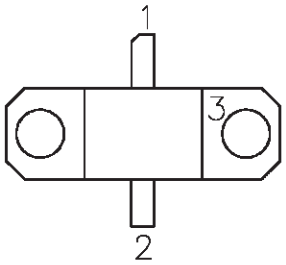
- REFRACTORY/GOLD METALLIZATION
- EFFICIENCY - 50% TYPICAL
- $P_{OUT}$ = 30 W MIN. WITH 9.3 dB GAIN



**.250 x .320 2LFL (M170)**
epoxy sealed

| ORDER CODE | BRANDING |
|---|---|
| SD1899 | SD1899 |

**PIN CONNECTION**




1. Collector
2. Emitter
3. Base

### DESCRIPTION

The SD1899 is a common base silicon NPN bipolar device optimized for 1.6 GHz SATCOM applications.

SD1899 offers superior gain and collector efficiency, making it an ideal choice for Class C power amplifiers used in portable as well as fixed SATCOM terminals.

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

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $V_{CBO}$ | Collector-Base Voltage | 45 | V |
| $V_{CES}$ | Collector-Emitter Voltage | 45 | V |
| $V_{EBO}$ | Emitter-Base Voltage | 3.0 | V |
| $I_C$ | Device Current | 3.5 | A |
| $P_{DISS}$ | Power Dissipation (+25°C) | 64.8 | 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 | 2.7 | °C/W |

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

STATIC

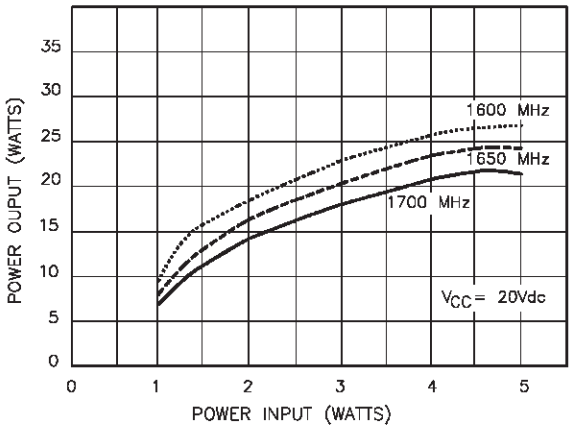
| Symbol | Test Conditions | | Value | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| $BV_{CBO}$ | IC = 8 mA | IE = 0 mA | 45 | — | — | V |
| $BV_{CES}$ | IC = 8 mA | VBE = 0 V | 45 | — | — | V |
| $BV_{EBO}$ | IE = 8 mA | IC = 0 mA | 3.0 | — | — | V |
| $I_{CBO}$ | VCB = 28 V | IE = 0 mA | — | — | 2 | mA |
| $h_{FE}$ | VCE = 5 V | IC = 1.6 A | 15 | — | 150 | — |

DYNAMIC

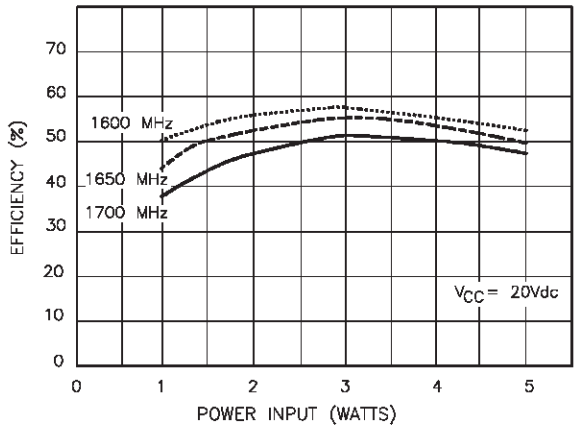
| Symbol | Test Conditions | | | Value | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| $P_{OUT}$ | f = 1650 MHz | VCC = 28 V | PIN = 3.5 W | 30 | 32 | — | W |
| $\eta_c$ | f = 1650 MHz | VCC = 28 V | PIN = 3.5 W | 45 | 50 | — | % |
| $P_G$ | f = 1650 MHz | VCC = 28 V | | 9.3 | — | — | dB |

## TYPICAL PERFORMANCE

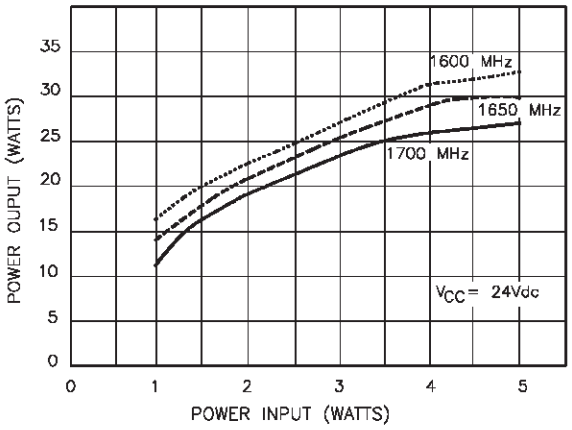
POWER INPUT vs POWER OUTPUT



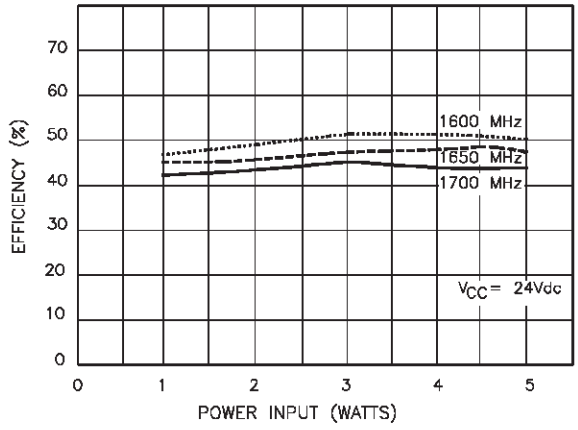

POWER INPUT vs EFFICIENCY



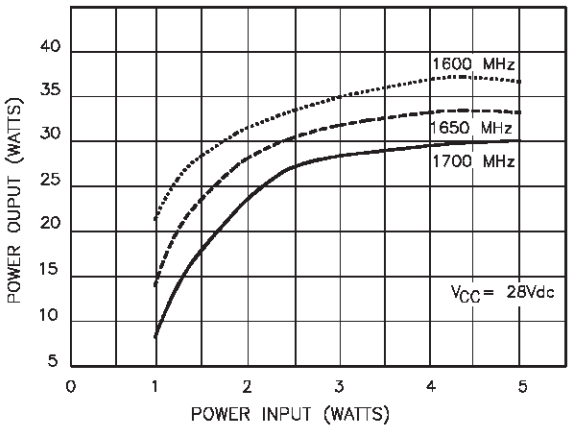

POWER INPUT vs POWER OUTPUT



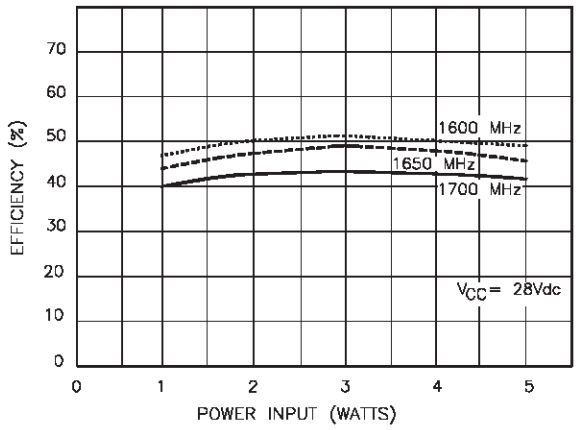

POWER INPUT vs EFFICIENCY



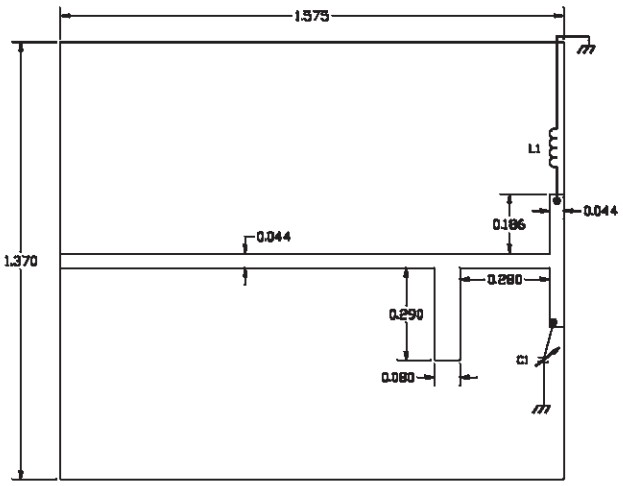

POWER INPUT vs POWER OUTPUT

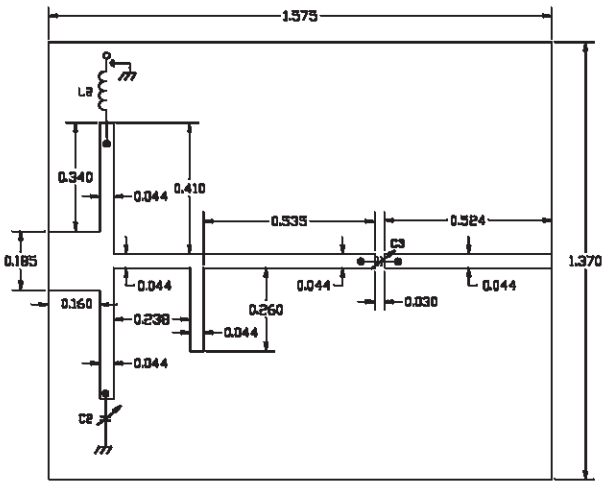



POWER INPUT vs EFFICIENCY



## TEST CIRCUIT



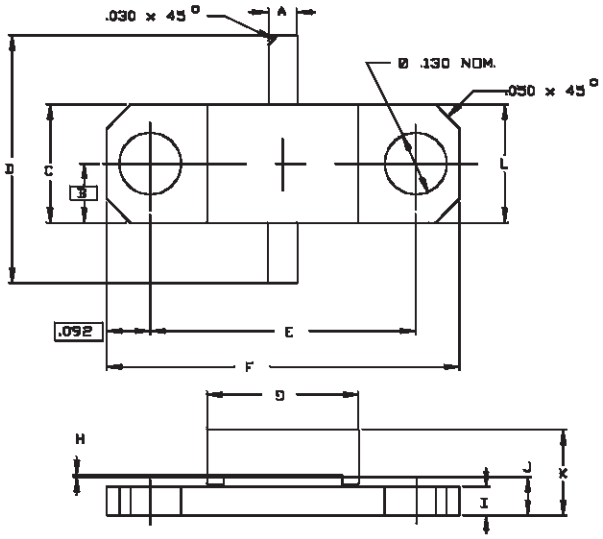

C1 : .3 - 1.2 pf Johanson Capacitor
C2 : .4 - 2.5 pf Johanson Capacitor #27283
C3 : 100 pf Chip Capacitor ATC 100 A101KCA 150
C4 : 15,000 pf EMI filter Murata/Erie 9900-381-6604

L1, L2 :4 Turn Choke #28 AWG .080" I.D.

Board Material:
EPSILAM 10, Er = 10.2, .050" Thick,
1Oz. Copper, SMA Launcher CDI (2 pieces)

## PACKAGE MECHANICAL DATA

Ref.: Dwg. No.:12-0170
UDCS No. 1010996 rev. B




| SGS-THOMSON MICROELECTRONICS | | |
|---|---|---|
| | MINIMUM Inches/mm | MAXIMUM Inches/mm |
| A | .055/1,40 | .065/1,65 |
| B | .124/3,15 | |
| C | .243/6,17 | .253/6,43 |
| D | .635/16,13 | .665/16,89 |
| E | .555/14,10 | .565/14,35 |
| F | .739/18,77 | .749/19,02 |
| G | .315/8,00 | .325/8,26 |
| H | .002/0,05 | .006/0,15 |
| I | .055/1,40 | .063/1,65 |
| J | .075/1,91 | .095/2,41 |

| CONT'D | | |
|---|---|---|
| | MINIMUM Inches/mm | MAXIMUM Inches/mm |
| K | | .190/4,83 |
| L | .245/6,22 | .255/6,48 |
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