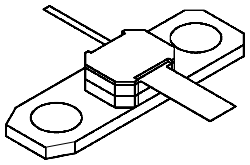
SGS-THOMSON MICROELECTRONICS

# SD1528-08

## RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

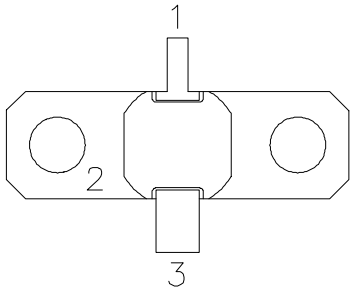
- DESIGNED FOR HIGH POWER PULSED IFF, DME, TACAN APPLICATIONS
- 20 WATTS (typ.) IFF 1030 - 1090 MHz
- 15 WATTS (min.) DME 1025 - 1150 MHz
- 15 WATTS (typ.) TACAN 960 - 1215 MHz
- 10 dB MIN. GAIN
- REFRACTORY GOLD METALLIZATION
- EMITTER BALLASTING AND LOW THERMAL RESISTANCE
- 20:1 LOAD VSWR CAPABILITY AT SPECIFIED OPERATING CONDITIONS
- INPUT MATCHED, COMMON BASE CONFIGURATION



**.250 SQ. 2LFL (M105)**
hermetically sealed

| ORDER CODE | BRANDING |
|---|---|
| SD1528-08 | 1528-8 |

**PIN CONNECTION**




1. Collector
2. Base
3. Emitter

### DESCRIPTION

The SD1528-08 is a gold metallized, silicon NPN power transistor. The SD1528-08 is designed for applications requiring high peak power and low duty cycles such as IFF, DME and TACAN. The SD1528-08 is packaged in the .250" input matched hermetic stripline flange package resulting in improved broadband performance and a low thermal resistance.

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

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $V_{CBO}$ | Collector-Base Voltage | 65 | V |
| $V_{CEO}$ | Collector-Emitter Voltage | 65 | V |
| $V_{EBO}$ | Emitter-Base Voltage | 3.5 | V |
| $I_C$ | Device Current | 1.5 | A |
| $P_{DISS}$ | Power Dissipation | 87.5 | 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 | 2.0 | °C/W |

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

STATIC

| Symbol | Test Conditions | | Value | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| $BV_{CBO}$ | $I_C$ = 10mA | $I_E$ = 0mA | 65 | — | — | V |
| $BV_{CES}$ | $I_C$ = 25mA | $V_{BE}$ = 0V | 65 | — | — | V |
| $BV_{EBO}$ | $I_E$ = 1mA | $I_C$ = 0mA | 3.5 | — | — | V |
| $I_{CES}$ | $V_{CE}$ = 50V | $I_E$ = 0mA | — | — | 2 | mA |

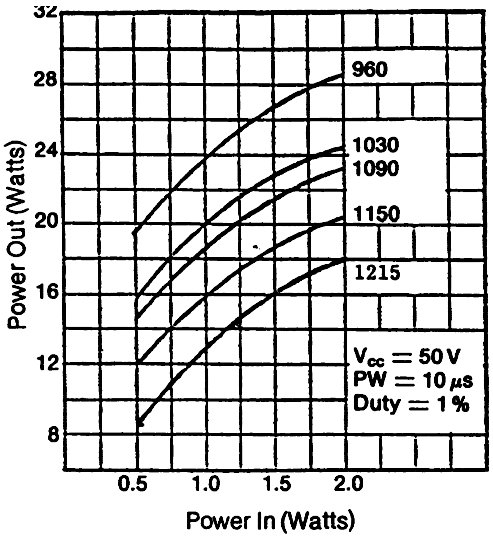
DYNAMIC

| Symbol | Test Conditions | | | Value | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| $P_{OUT}$ | f = 1025 — 1150MHz | $P_{IN}$ = 1.5 W | $V_{CE}$ = 50 V | 15 | — | — | W |
| $G_P$ | f = 1025 — 1150MHz | $P_{IN}$ = 1.5 W | $V_{CE}$ = 50 V | 10 | — | — | dB |
| $\eta_C$ | f = 1025 — 1150MHz | $P_{IN}$ = 1.5 W | $V_{CE}$ = 50 V | 30 | — | — | % |

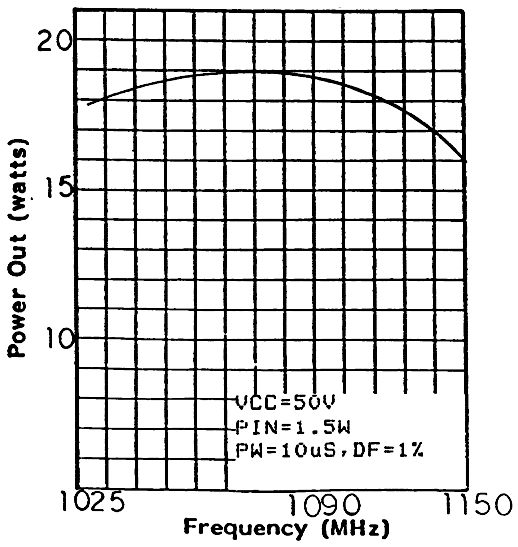
Note: Pulse Width = 10μSec, Duty Cycle = 1%

## TYPICAL PERFORMANCE

**POWER OUTPUT vs POWER INPUT**

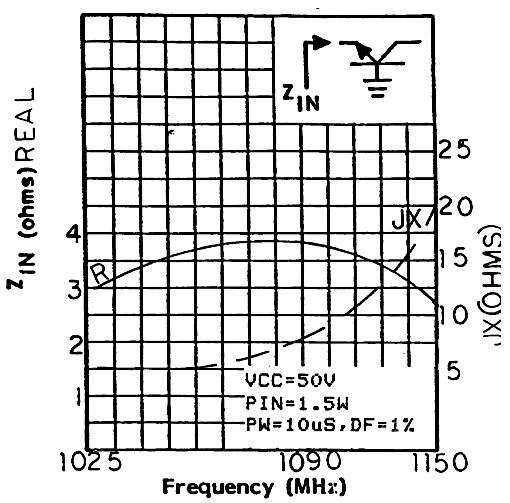



**POWER OUTPUT vs FREQUENCY**

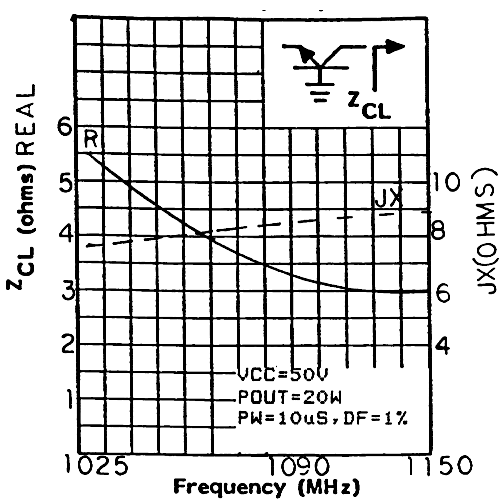


## IMPEDANCE DATA

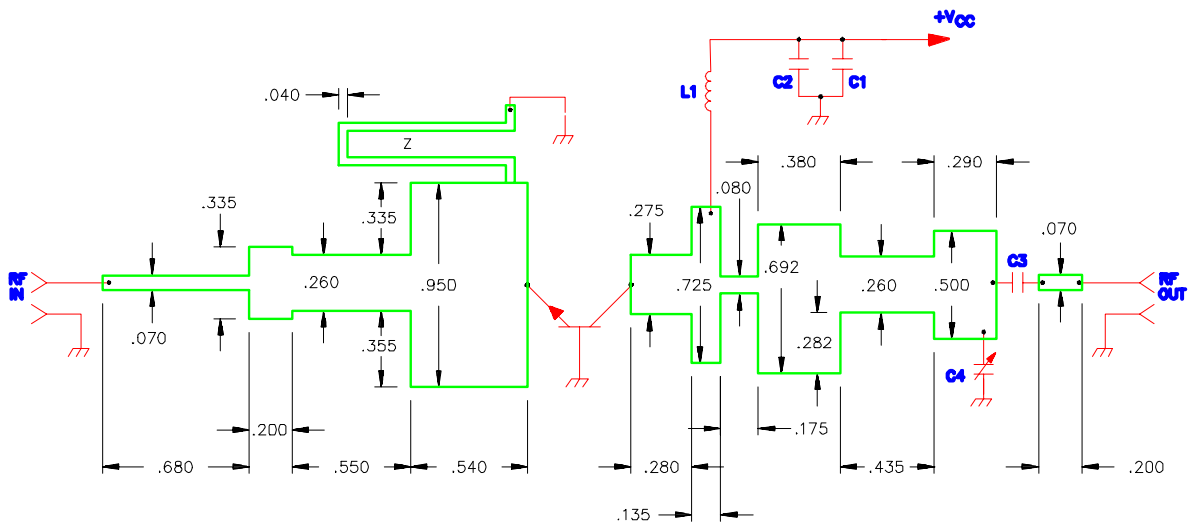
### TYPICAL INPUT IMPEDANCE




### TYPICAL COLLECTOR LOAD IMPEDANCE




## TEST CIRCUIT



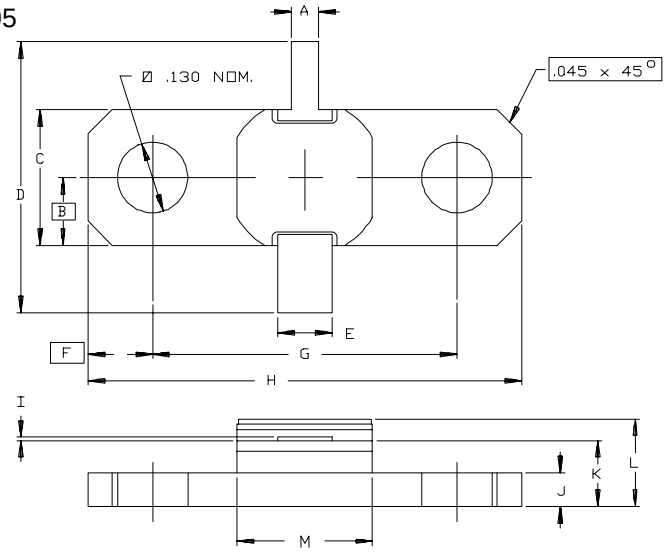

C1 : 1000µF Electrolytic
C2 : 680pF Chip Capacitor
C3 : 120pF Chip Capacitor
C4 : 0.6 - 4.5pF Johanson Gigatrim

L1 : 6 1/2 Turns, #22 AWG on a #30 Drill Bit
Z : Printed Transmission Line, Length = 1.91"

Board : Er = 2.5, .034" Thick
All Dimensions are in Inches.

## PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0105




| SGS-THOMSON MICROELECTRONIC | | |
|---|---|---|
| | MINIMUM Inches/mm | MAXIMUM Inches/mm |
| A | .045/1,14 | .055/1,40 |
| B | .125/3,18 | |
| C | .245/6,22 | .255/6,48 |
| D | 1.235/31,37 | |
| E | .095/2,41 | .105/2,67 |
| F | .120/3,05 | |
| G | .557/14,15 | .567/14,40 |
| H | .795/20,19 | .805/20,45 |
| I | .002/0,05 | .006/0,15 |
| J | .057/1,45 | .067/1,70 |

| CONT'D | | |
|---|---|---|
| | MINIMUM Inches/mm | MAXIMUM Inches/mm |
| K | .112/2,84 | .132/3,35 |
| L | | .175/4,45 |
| M | .245/6,22 | .257/6,53 |
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