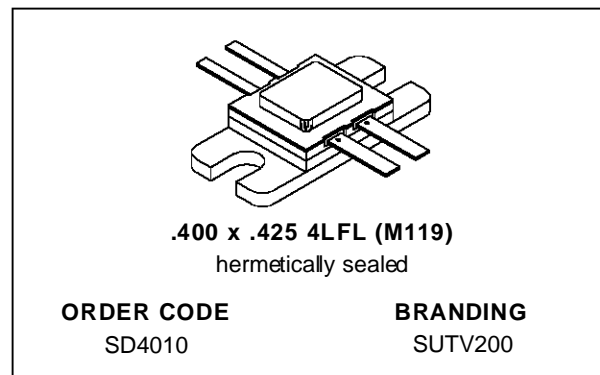
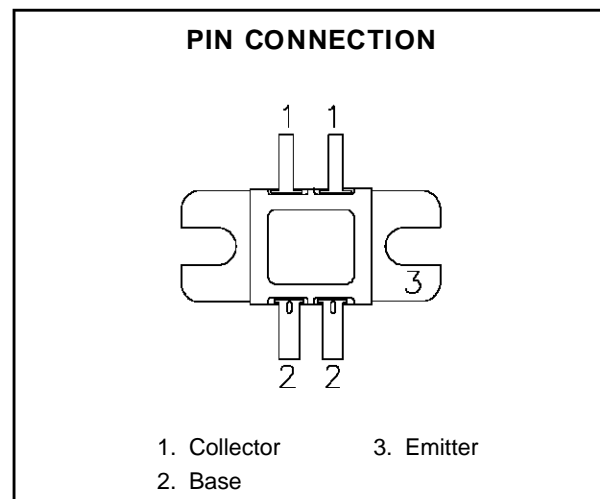


**RF & MICROWAVE TRANSISTORS
UHF TV LINEAR APPLICATIONS**

- 470-860 MHz
- 26.5 VOLTS
- GOLD METALLIZATION
- $P_{OUT} = 20.0W$ MIN. WITH 9.5 dB GAIN
- INTERNAL INPUT MATCHING
- DIFFUSED EMITTER BALLAST RESISTORS


DESCRIPTION

The SD4010 is a gold metallized epitaxial silicon NPN planar transistor using diffused emitter ballast resistors. The SD4010 is intended for use in linear applications up to 1GHz, including UHF television transmitters, transposers and cellular base stations.


ABSOLUTE MAXIMUM RATINGS ($T_{case} = 25^{\circ}C$)

| Symbol | Parameter | Value | Unit |
|------------|---------------------------|--------------|-------------|
| V_{CBO} | Collector-Base Voltage | 60.0 | V |
| V_{CES} | Collector-Emitter Voltage | 60.0 | V |
| V_{EBO} | Emitter-Base Voltage | 4.0 | V |
| I_C | Device Current (Maximum) | 11.0 | A |
| P_{DISS} | Power Dissipation | 88.8 | W |
| T_J | Junction Temperature | +200 | $^{\circ}C$ |
| T_{STG} | Storage Temperature | - 65 to +150 | $^{\circ}C$ |

THERMAL DATA

| | | | |
|---------------|----------------------------------|-----|---------------|
| $R_{TH(j-c)}$ | Junction-Case Thermal Resistance | 1.9 | $^{\circ}C/W$ |
|---------------|----------------------------------|-----|---------------|

SD4010

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

STATIC

| Symbol | Test Conditions | | Value | | | Unit |
|-------------------|-------------------------|----------------------|-------|------|------|------|
| | | | Min. | Typ. | Max. | |
| BV _{EBO} | I _E = 10mA | I _C = 0mA | 3.0 | 4.0 | — | V |
| BV _{CES} | I _C = 50mA | V _{BE} = 0V | 60.0 | 85.0 | — | V |
| BV _{CEO} | I _C = 50mA | I _B = 0mA | 28.0 | 30.0 | — | V |
| I _{CEO} | V _{CE} = 26.5V | I _E = 0mA | — | — | 5 | mA |
| h _{FE} | V _{CE} = 5V | I _C = 3A | 25 | 50 | 80 | — |

Tested Per Side

DYNAMIC

| Symbol | Test Conditions | | | Value | | | Unit |
|-------------------|-------------------------|-------------------------|------------------------|-------|------|------|------|
| | | | | Min. | Typ. | Max. | |
| P _{OUT} | f = 860MHz | V _{CE} = 26.5V | P _{IN} = 2.2W | 20.0 | 28.0 | — | W |
| G _P | f = 860MHz | V _{CE} = 26.5V | P _{OUT} = 20W | 9.5 | 10.5 | — | dB |
| IMD ₃ | P _{SYNC} = 20W | V _{CE} = 26.5V | (note 1) | — | -48 | -46 | dBc |
| IP ₃ | V _{CB} = 26.5V | P _{OUT} = 20W | PEP (note 2) | — | 55 | — | dBm |
| C _{OB} | f = 860MHz | V _{CB} = 26.5V | (note 3) | — | 25 | 36 | pF |
| Load* Mismatch | f = 860MHz | V _{CE} = 26.5V | P _{OUT} = 20W | 3:1 | 10:1 | — | VSWR |

I_{CQ} = I_C = 2.7A (1.35A per Side)

*VSWR tested for a minimum of 3:1 SWR at all phase angles.

Note 1: Three Tone IMD Testing (CCIR)

f₁ = 860.0MHz/ -8dB ref. to P_{SYNC} - Visual

f₂ = 863.5MHz/ -16dB ref. to P_{SYNC} - Color Subcarrier

f₃ = 864.5MHz/ -7dB ref. to P_{SYNC} - Aural

Note 2: IP₃ Calculated Based on Two-Tone IMD Testing:

f₁ = 900.0 MHz/ -6dB ref. to P_{OUT}

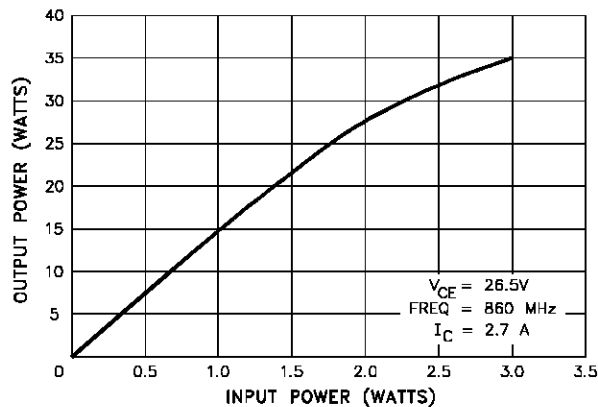
f₂ = 900.1 MHz/ -6dB ref. to P_{OUT}

IMD₃ (Typ) < -36dBc

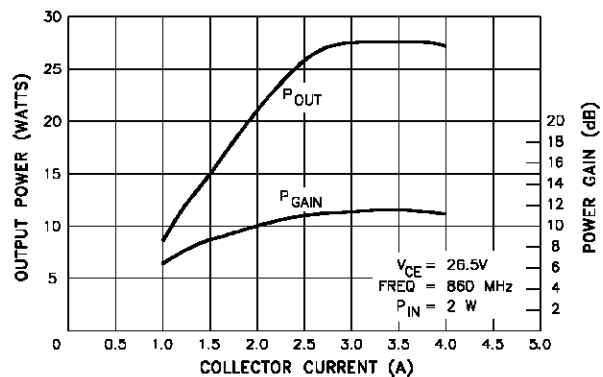
Note 3: Tested Per Side

TYPICAL PERFORMANCE

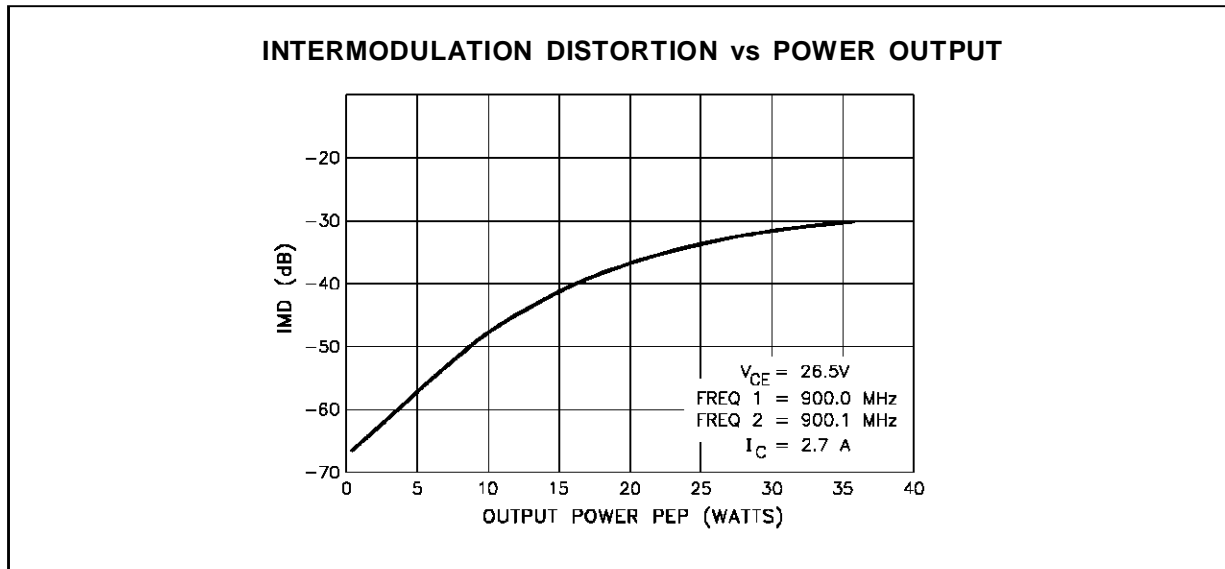
POWER OUTPUT vs POWER INPUT



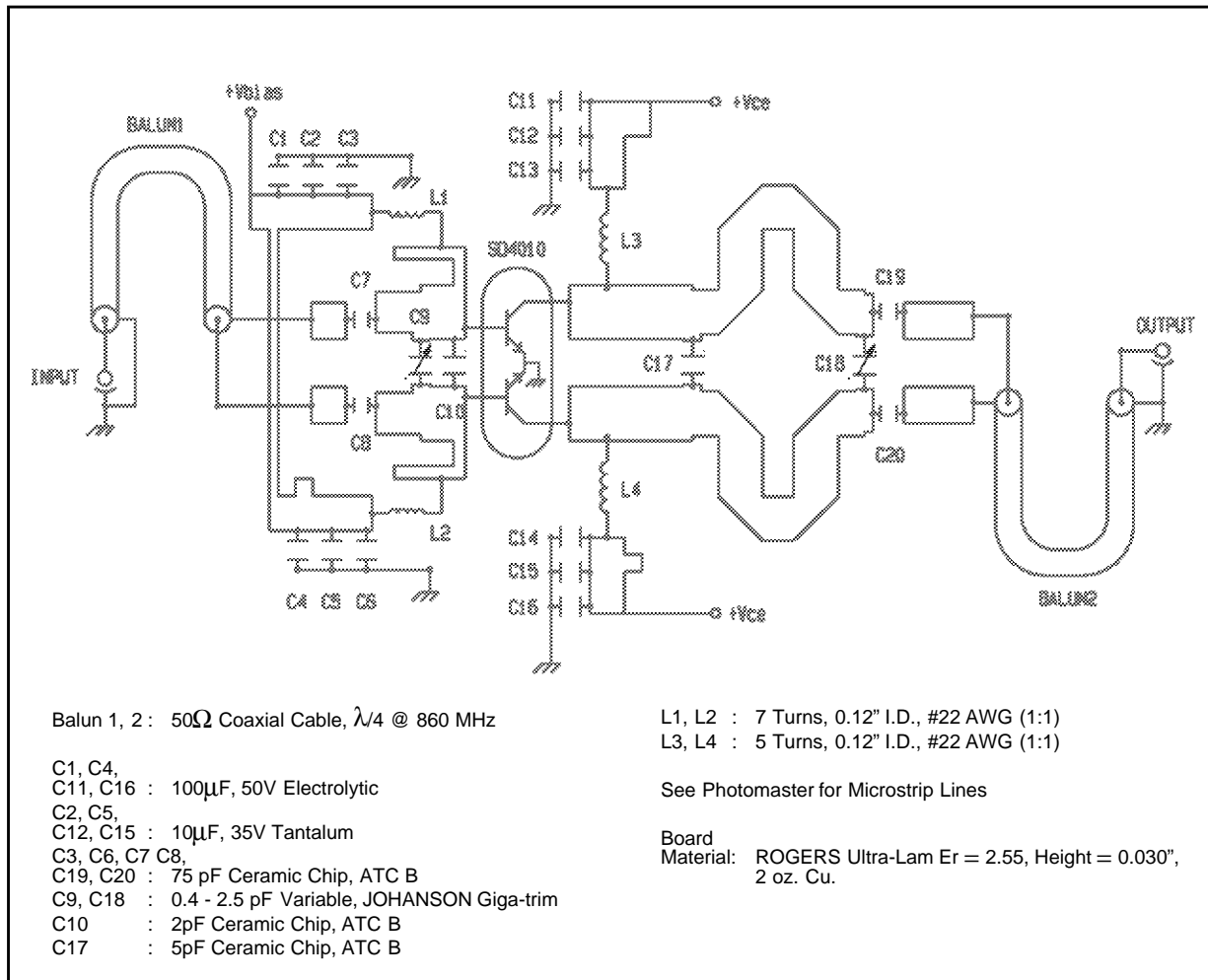
POWER OUTPUT & POWER GAIN vs TOTAL COLLECTOR CURRENT



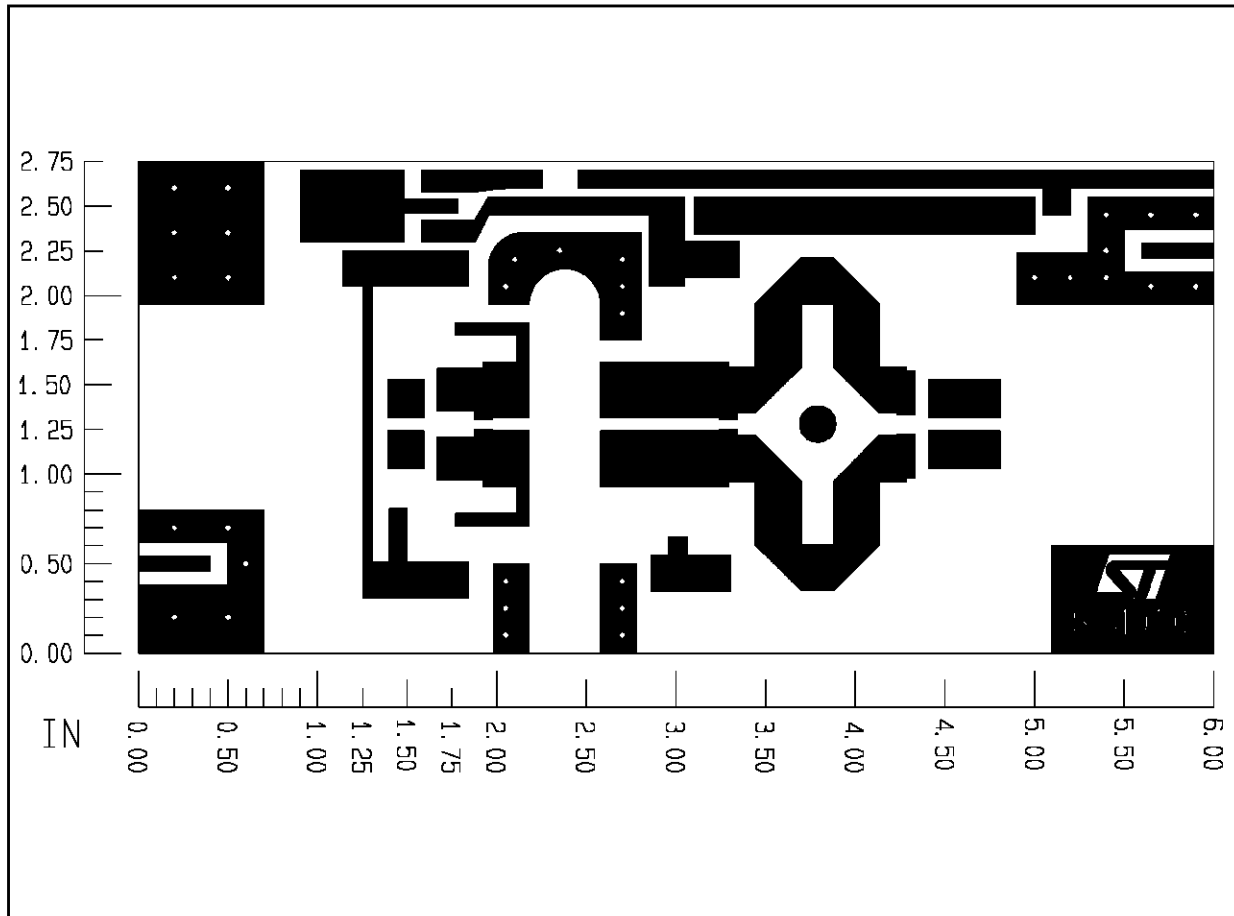
TYPICAL PERFORMANCE (cont'd)



TEST CIRCUIT SCHEMATIC

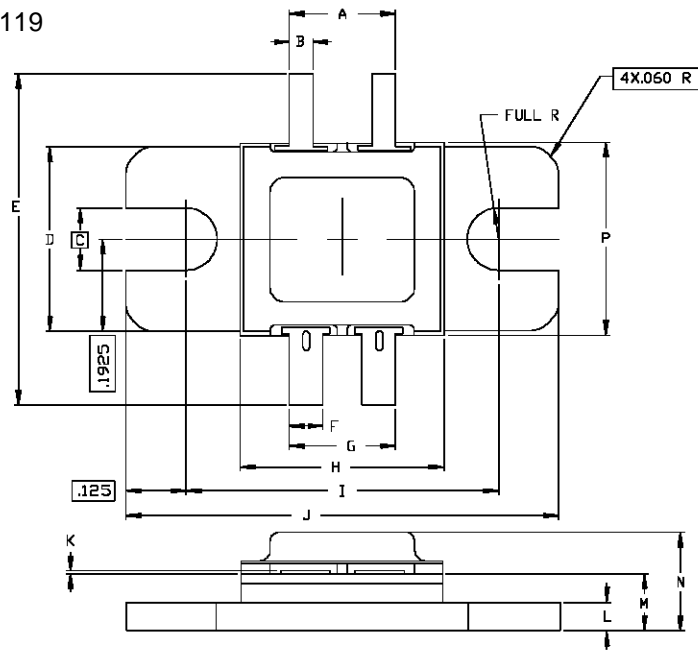


PHOTOMASTER OF TEST CIRCUIT



PACKAGE MECHANICAL DATA

Ref. Dwg. No.: 12-0119



| SGS-THOMSON MICROELECTRONICS | | CONT'D | | | |
|------------------------------|----------------------|----------------------|---|----------------------|----------------------|
| | MINIMUM Inches/mm | MAXIMUM Inches/mm | | MINIMUM Inches/mm | MAXIMUM Inches/mm |
| A | .210/5,33 | .230/5,84 | K | .002/0,05 | .006/0,15 |
| B | .045/1,14 | .055/1,40 | L | .058/1,47 | .065/1,65 |
| C | .130/3,30 | | M | .115/2,92 | .130/3,30 |
| D | .380/9,65 | .390/9,91 | N | ---- | .230/5,84 |
| E | .770/19,56 | .830/21,08 | P | .395/10,03 | .408/10,36 |
| F | .070/1,78 | .080/2,03 | | | |
| G | .215/5,46 | .235/5,97 | | | |
| H | .420/10,67 | .433/11,00 | | | |
| I | .645/16,38 | .655/16,64 | | | |
| J | .895/22,73 | .905/22,99 | | | |

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