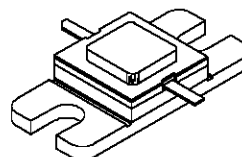


RF & MICROWAVE TRANSISTORS UHF PULSED APPLICATIONS

- 350 WATTS @ 10μSEC PULSE WIDTH, 10% DUTY CYCLE
- 300 WATTS @ 250μSEC PULSE WIDTH, 10% DUTY CYCLE
- 9.5 dB MIN. GAIN
- REFRACTORY GOLD METALLIZATION
- EMITTER BALLASTING AND LOW THERMAL RESISTANCE FOR RELIABILITY AND RUGGEDNESS
- INFINITE VSWR CAPABILITY AT SPECIFIED OPERATING CONDITIONS



.400 x .400 2LFL (M106)
hermetically sealed

ORDER CODE

SD1563

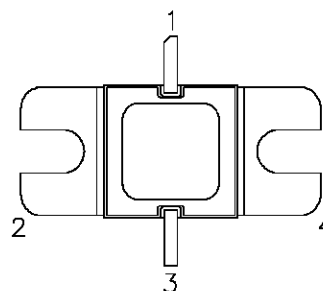
BRANDING

SD1563

DESCRIPTION

The SD1563 is a gold metallized silicon NPN pulse power transistor. The SD1563 is designed for applications requiring high peak power and low duty cycles within the frequency range of 400 - 500 MHz.

PIN CONNECTION



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

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

| Symbol | Parameter | Value | Unit |
|-------------------|---------------------------|--------------|------|
| V _{CBO} | Collector-Base Voltage | 65 | V |
| V _{CES} | Collector-Emitter Voltage | 65 | V |
| V _{EBO} | Emitter-Base Voltage | 3.5 | V |
| I _C | Device Current | 21.6 | A |
| P _{DISS} | Power Dissipation | 875 | 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 | 0.2 | °C/W |
|----------------------|----------------------------------|-----|------|

SD1563

ELECTRICAL SPECIFICATIONS ($T_{\text{case}} = 25^{\circ}\text{C}$)

STATIC

| Symbol | Test Conditions | | Value | | | Unit |
|------------|------------------------|-----------------------|-------|------|------|------|
| | | | Min. | Typ. | Max. | |
| BV_{CBO} | $I_C = 50\text{ mA}$ | $I_E = 0\text{ mA}$ | 65 | — | — | V |
| BV_{CES} | $I_C = 50\text{ mA}$ | $V_{BE} = 0\text{ V}$ | 65 | — | — | V |
| BV_{CEO} | $I_C = 50\text{ mA}$ | $I_B = 0\text{ mA}$ | 28 | — | — | V |
| BV_{EBO} | $I_E = 10\text{ mA}$ | $I_C = 0\text{ mA}$ | 3.5 | — | — | V |
| I_{CES} | $V_{CE} = 30\text{ V}$ | $I_E = 0\text{ mA}$ | — | — | 7.5 | mA |
| h_{FE} | $V_{CE} = 5\text{ V}$ | $I_C = 5\text{ A}$ | 10 | — | 100 | — |

DYNAMIC

| Symbol | Test Conditions | | | Value | | | Unit |
|-----------|----------------------|--------------------------|------------------------|-------|------|------|------|
| | | | | Min. | Typ. | Max. | |
| P_{OUT} | $f = 425\text{ MHz}$ | $P_{IN} = 33.5\text{ W}$ | $V_{CE} = 40\text{ V}$ | 300 | — | — | W |
| P_G | $f = 425\text{ MHz}$ | $P_{OUT} = 300\text{ W}$ | $V_{CE} = 40\text{ V}$ | 9.5 | — | — | dB |
| η_C | $f = 425\text{ MHz}$ | $P_{IN} = 25\text{ W}$ | $V_{CE} = 40\text{ V}$ | 55 | — | — | % |

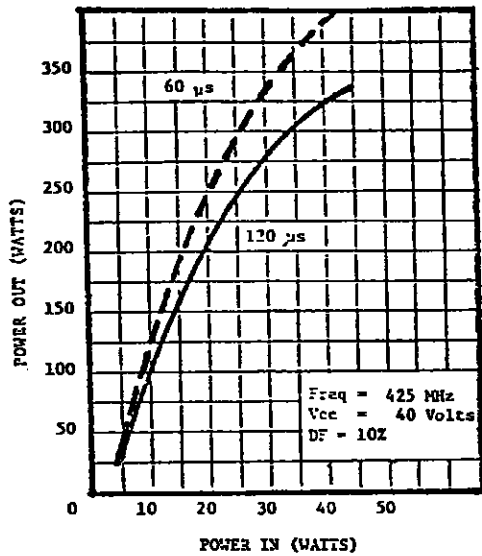
Note: Pulse Width = 250 μ Sec, Duty Cycle = 10%

TYPICAL PERFORMANCE

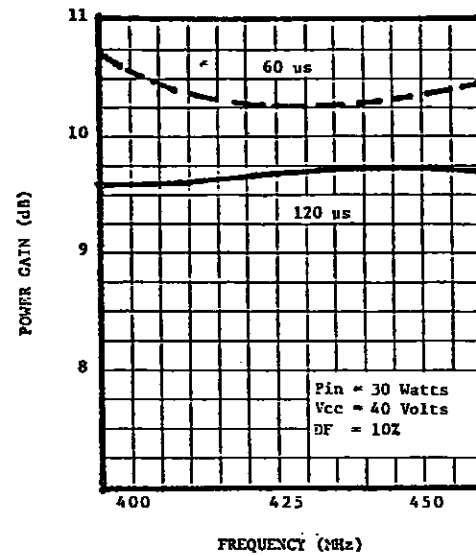
| P_{OUT} (W) | P.W. (μ Sec) | D.C. (%) | T_J ($^{\circ}\text{C}$ max.) | V_{CC} |
|---------------|-------------------|----------|----------------------------------|----------|
| 360 | 10 | 10 | 150 | 40 |
| 350 | 20 | 10 | 150 | 40 |
| 325 | 100 | 10 | 150 | 40 |
| 310 | 500 | 10 | 150 | 40 |
| 300 | 1000 | 10 | 150 | 40 |

TYPICAL PERFORMANCE (P.W. = 120 μ Sec)

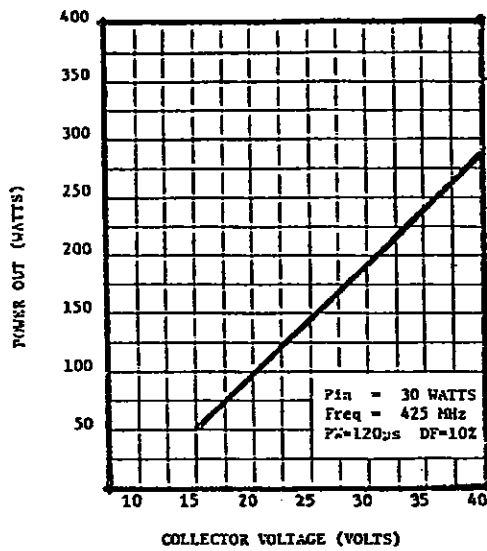
POWER OUTPUT vs POWER INPUT



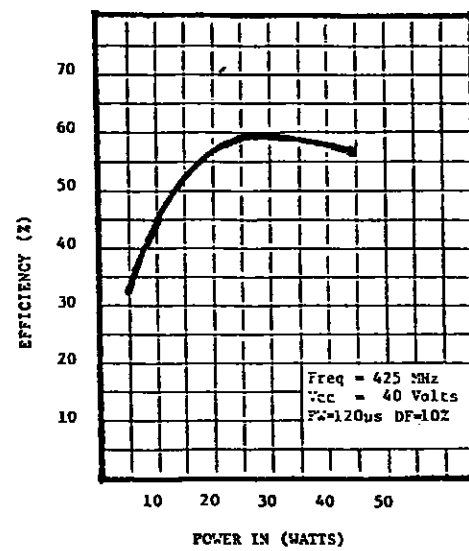
POWER GAIN vs FREQUENCY

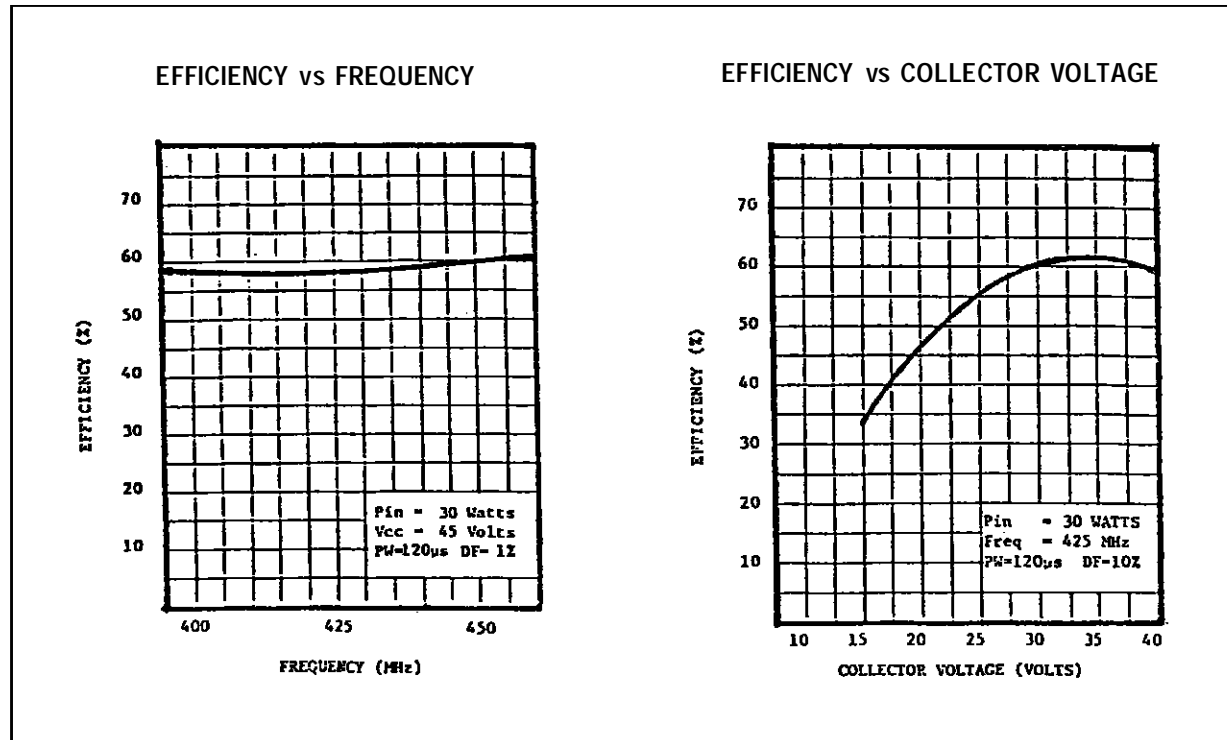
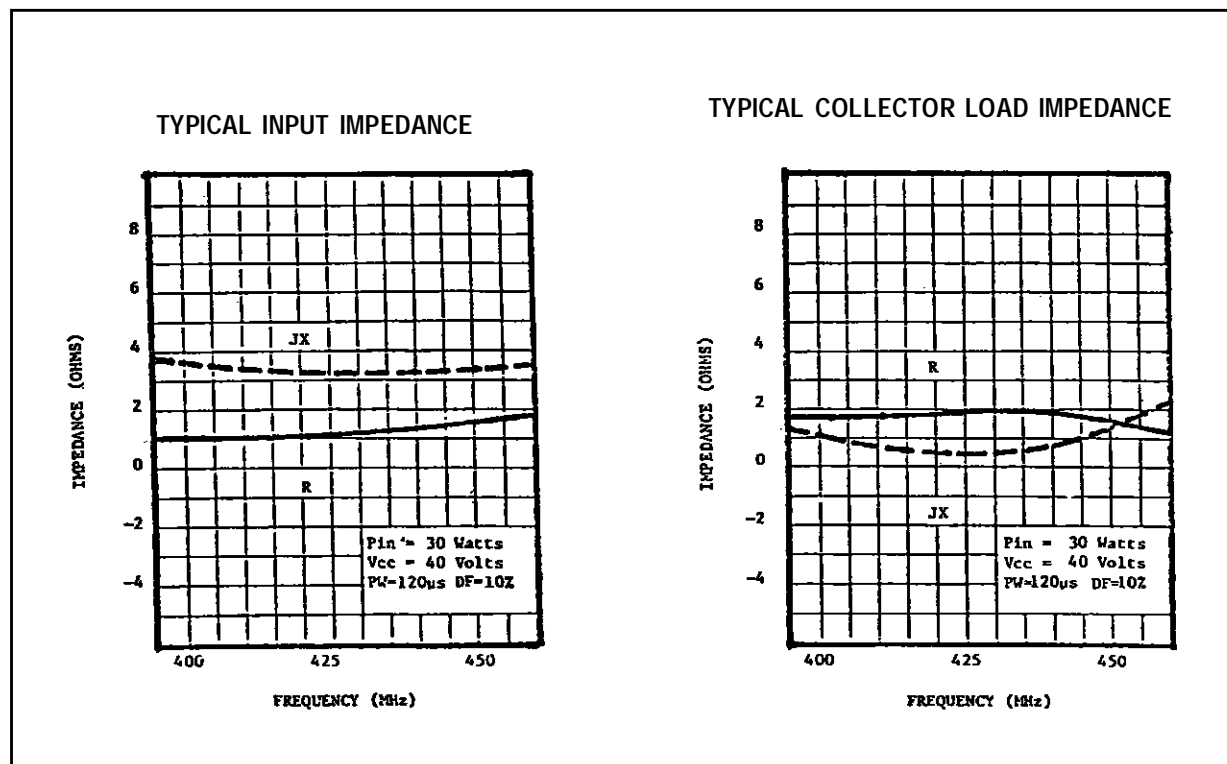


POWER OUTPUT vs COLLECTOR VOLTAGE



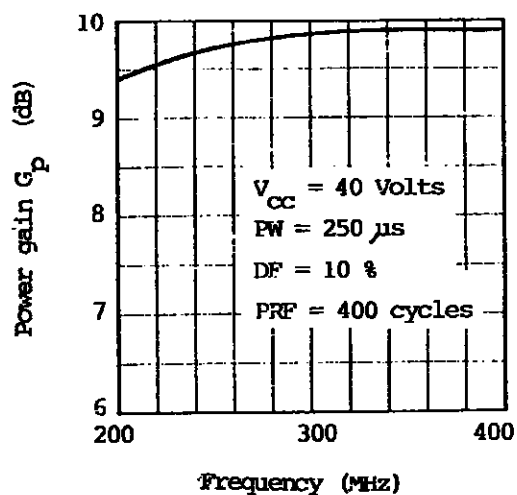
EFFICIENCY vs POWER INPUT



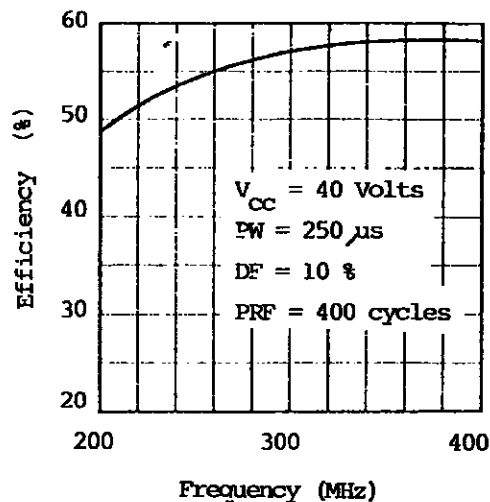
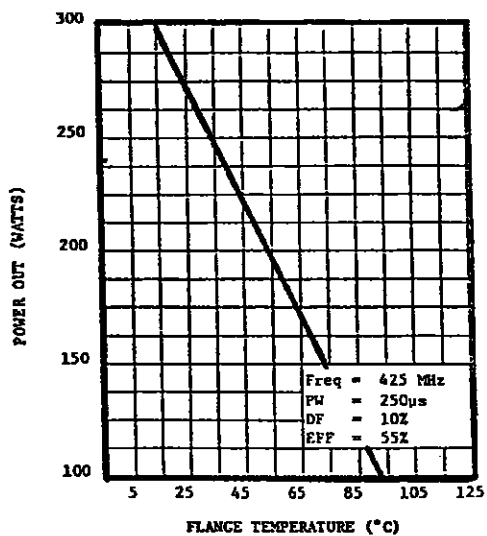
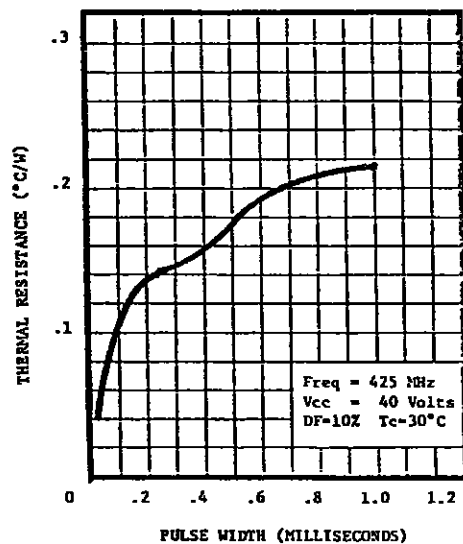
TYPICAL PERFORMANCE (P.W. = 120 μ Sec)IMPEDANCE DATA (P.W. = 120 μ Sec)

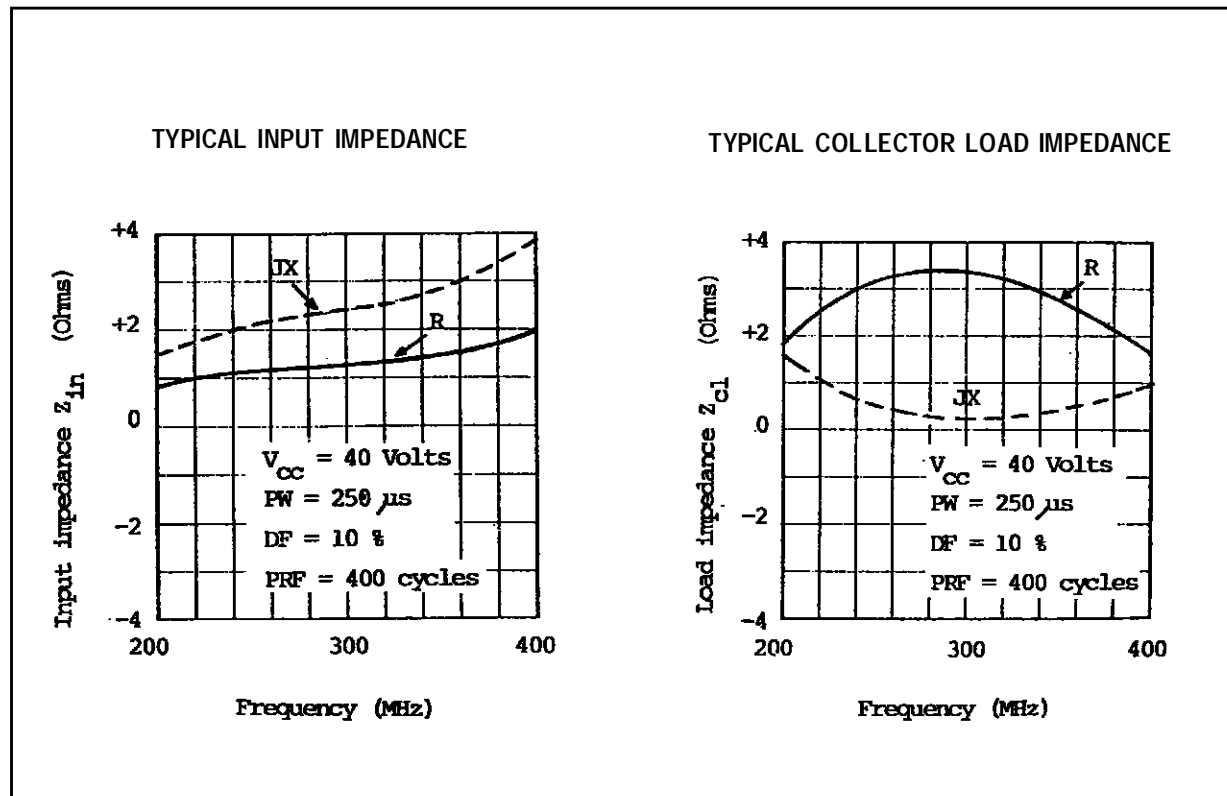
TYPICAL PERFORMANCE (P.W. = 250 μ Sec)

POWER GAIN vs FREQUENCY



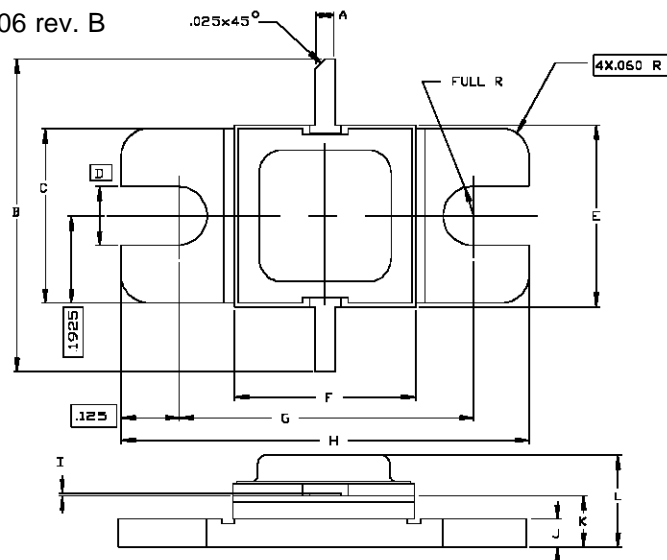
EFFICIENCY vs FREQUENCY

POWER OUTPUT vs FLANGE
 T_J @ CONSTANT 125°CTHERMAL RESISTANCE vs PULSE
WIDTH

IMPEDANCE DATA (P.W. = 250 μ Sec)

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0106 rev. B



| SGS-THOMSON MICROELECTRONICS | | | CONT'D | | |
|------------------------------|----------------------|----------------------|--------|----------------------|----------------------|
| | MINIMUM Inches/mm | MAXIMUM Inches/mm | | MINIMUM Inches/mm | MAXIMUM Inches/mm |
| A | .045/1,14 | .055/1,40 | K | .105/2,67 | .125/3,18 |
| B | .710/18,03 | | L | | .230/5,84 |
| C | .380/9,65 | .390/9,91 | | | |
| D | .130/3,30 | | | | |
| E | .392/9,96 | .402/10,29 | | | |
| F | .392/9,96 | .402/10,29 | | | |
| G | .645/16,38 | .655/16,64 | | | |
| H | .895/22,73 | .905/22,99 | | | |
| I | .002/0,05 | .006/0,15 | | | |
| J | .055/1,40 | .065/1,65 | | | |

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