



SD2931

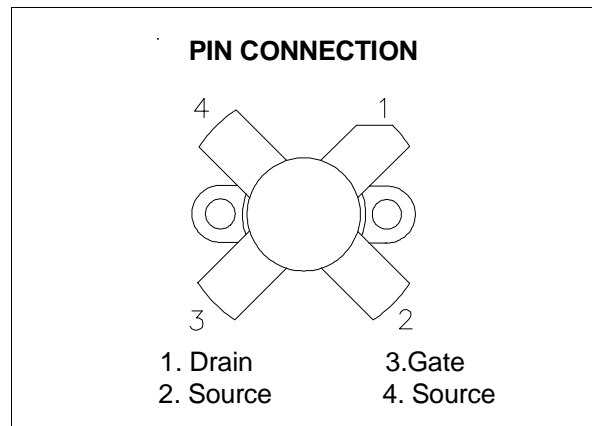
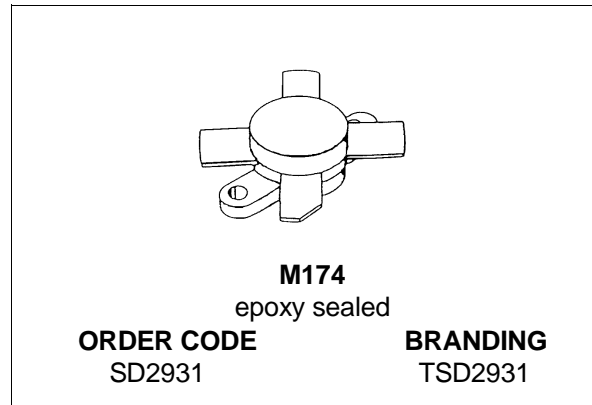
RF POWER TRANSISTORS HF/VHF/UHF N-CHANNEL MOSFETs

TARGET DATA

- GOLD METALLIZATION
- EXCELLENT THERMAL STABILITY
- COMMON SOURCE CONFIGURATION
- POUT = 150W MIN. WITH 14 dB GAIN @175 MHz

DESCRIPTION

The SD2931 is a gold metallized N-Channel MOS field-effect RF power transistor. The SD2931 is intended for use in 50V dc large signal applications up to 230 MHz



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

| Symbol | Parameter | Value | Unit |
|---------------|--|------------|--------------------|
| $V_{(BR)DSS}$ | Drain Source Voltage | 125 | V |
| V_{DGR} | Drain-Gate Voltage ($R_{GS} = 1M\Omega$) | 125 | V |
| V_{GS} | Gate-Source Voltage | ± 20 | V |
| I_D | Drain Current | 16 | A |
| P_{DISS} | Power Dissipation | 292 | W |
| T_j | Max. Operating Junction Temperature | 200 | $^{\circ}\text{C}$ |
| T_{STG} | Storage Temperature | -65 to 150 | $^{\circ}\text{C}$ |

THERMAL DATA

| | | | |
|---------------|------------------------------------|-----|-----------------------------|
| $R_{th(j-c)}$ | Junction-Case Thermal Resistance | 0.6 | $^{\circ}\text{C}/\text{W}$ |
| $R_{th(c-s)}$ | Case-Heatsink Thermal Resistance * | 0.2 | $^{\circ}\text{C}/\text{W}$ |

* Determined using a flat aluminum or copper heatsink with thermal compound applied (Dow Corning 340 or equivalent).

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

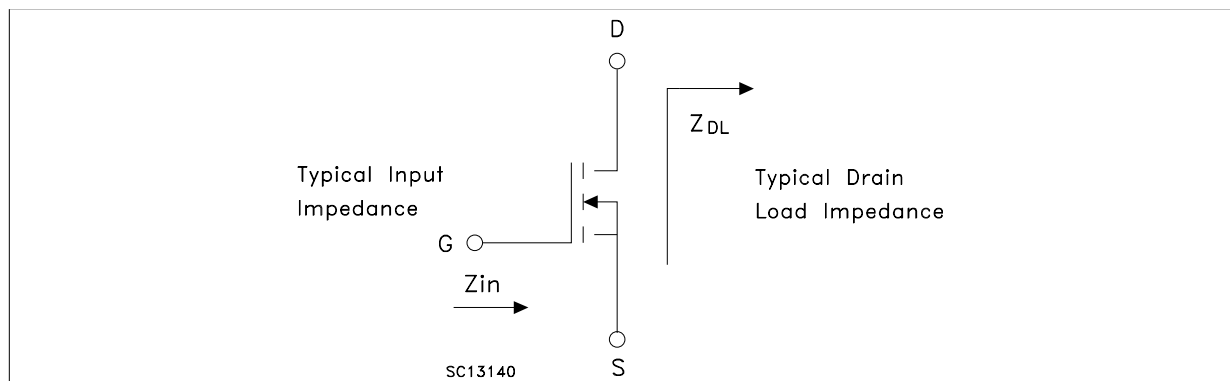
STATIC

| Symbol | Parameter | | Min. | Typ. | Max. | Unit |
|---------------|----------------|--------------------------|------|------|------|---------------|
| $V_{(BR)DSS}$ | $V_{GS} = 0V$ | $I_{DS} = 100\text{ mA}$ | 125 | | | V |
| I_{DSS} | $V_{GS} = 0V$ | $V_{DS} = 50\text{ V}$ | | | 5 | mA |
| I_{GSS} | $V_{GS} = 20V$ | $V_{DS} = 0\text{ V}$ | | | 5 | μA |
| $V_{GS(Q)}$ | $V_{DS} = 10V$ | $I_D = 250\text{ mA}$ | 2 | | 5 | V |
| $V_{DS(ON)}$ | $V_{GS} = 10V$ | $I_D = 10\text{ A}$ | | 2.7 | 3 | V |
| G_{FS} | $V_{DS} = 10V$ | $I_D = 5\text{ A}$ | 5 | | | mho |
| C_{ISS} | $V_{GS} = 0V$ | $V_{DS} = 50\text{ V}$ | | 480 | | pF |
| C_{OSS} | $V_{GS} = 0V$ | $V_{DS} = 50\text{ V}$ | | 180 | | pF |
| C_{RSS} | $V_{GS} = 0V$ | $V_{DS} = 50\text{ V}$ | | 15 | | pF |

DYNAMIC

| Symbol | Parameter | | Min. | Typ. | Max. | Unit |
|---------------|----------------------|--|------|------|------|------|
| P_{OUT} | $f = 175\text{ MHz}$ | $V_{DD} = 50\text{ V}$ $I_{DQ} = 250\text{ mA}$ | 150 | | | W |
| G_{PS} | $f = 175\text{ MHz}$ | $V_{DD} = 50\text{ V}$ $P_{out} = 150\text{ W}$ $I_{DQ} = 250\text{ mA}$ | 14 | 15 | | dB |
| η_D | $f = 175\text{ MHz}$ | $V_{DD} = 50\text{ V}$ $P_{out} = 150\text{ W}$ $I_{DQ} = 250\text{ mA}$ | 55 | 65 | | % |
| Load Mismatch | $f = 175\text{ MHz}$ | $V_{DD} = 50\text{ V}$ $P_{out} = 150\text{ W}$ $I_{DQ} = 250\text{ mA}$ All Phase Angles | 10:1 | | | VSWR |

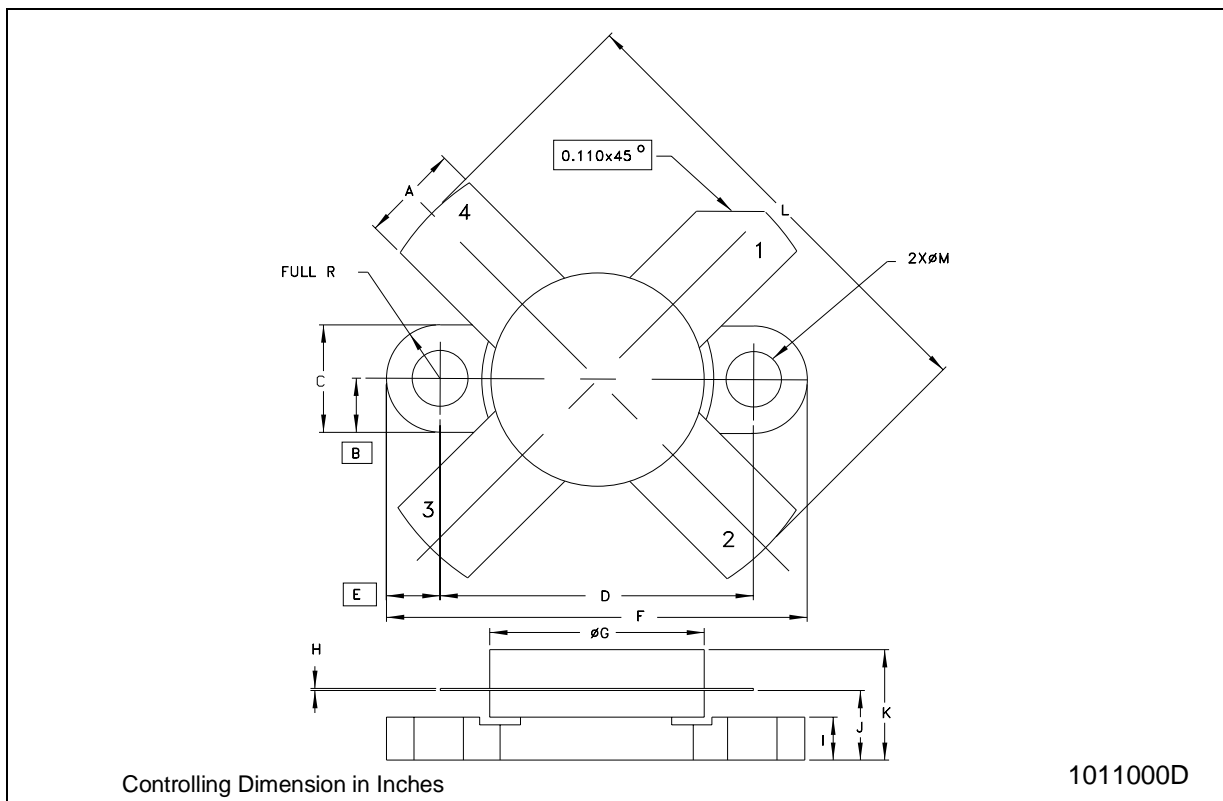
IMPEDANCE DATA



| FREQ. | $Z_{IN} (\Omega)$ | $Z_{DL} (\Omega)$ |
|---------|-------------------|-------------------|
| 30 MHz | $1.7 - j 5.7$ | $6.8 + j 0.9$ |
| 175 MHz | $1.2 - j 2.0$ | $2.0 + j 2.4$ |

M174 (.500 DIA 4L N/HERM W/FLG) MECHANICAL DATA

| DIM. | mm | | | inch | | |
|------|-------|------|-------|-------|-------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | 5.56 | | 5.84 | 0.219 | | 0.230 |
| B | | 3.18 | | | 0.125 | |
| C | 6.22 | | 6.48 | 0.245 | | 0.255 |
| D | 18.28 | | 18.54 | 0.720 | | 0.730 |
| E | | 3.18 | | | 0.125 | |
| F | 24.64 | | 24.89 | 0.970 | | 0.980 |
| G | 12.57 | | 12.83 | 0.495 | | 0.505 |
| H | 0.08 | | 0.18 | 0.003 | | 0.007 |
| I | 2.11 | | 3.00 | 0.083 | | 0.118 |
| J | 3.81 | | 4.45 | 0.150 | | 0.175 |
| K | | | 7.11 | | | 0.280 |
| L | 25.53 | | 26.67 | 1.005 | | 1.050 |
| M | 3.05 | | 3.30 | 0.120 | | 0.130 |



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