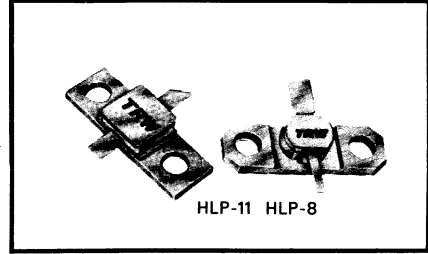


Microwave Power Transistors

- TRW 2001 1 W, 9 dB
- TRW 2003 3 W, 8 dB
- TRW 2005 5 W, 8 dB
- TRW 2010 10 W, 6 dB
- TRW 2015 15 W, 6 dB
- TRW 2020 20 W, 5.2 dB
- ∞ VSWR



The TRW « Super 2 GHz » series is the first group of GHz, common base devices offering unqualified tolerance of **complete mismatch** (∞ VSWR, any phase) conditions. This feature is particularly desirable in military and space applications where multi million dollar investments (and even human lives) can be jeopardized by device failure. The « Super 2 GHz » series is characterized to 2.3 GHz and is priced to be attractive in industrial service. All units are **gold metalized** for

longevity and resistance to metal migration. They are emitter ballasted with heat sinked, diffused, rather than deposited metal resistors. This series is housed in TRW's true hermetic, MIL acceptable, HLP package. The package is available with or without flange. The « Super 2 GHz » series can be adapted readily to circuits designed around older, less reliable devices with a minimum of circuit adjustment. They are mechanically interchangeable with other similar 2 GHz devices.



Electrical Characteristics (T_{CASE} = 25 °C)

Mechanical Specifications

The following are mechanical specifications for this transistor.

Dimensions : Per outline drawing.

Solderability : Per MIL-STD-750.

Marking : Per MIL-S-19500, « TRW », 4-digit date code, type number.

Hermeticity : Per MIL-STD-750, 10⁻⁷ atmospheres gross

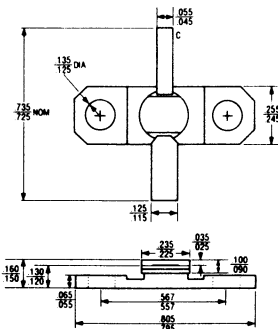
and fine leak. (Available on special order screened to 10⁻⁸ atmospheres.)

Acceleration : Per MIL-STD-750, 20,000 G in any plane.

Bond Pull : Per MIL-STD-750, 3 grams min.

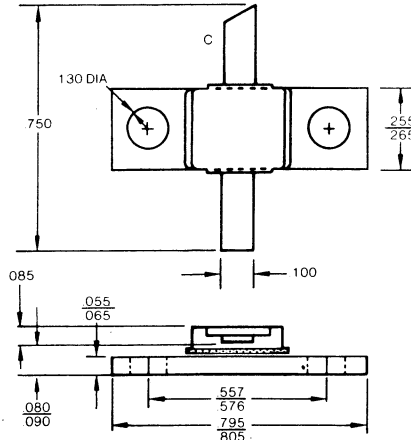
Package : A glass-free, brazed ceramic package assuring long-term integrity of hermetic seals. Leads of KOVAR base material with minimum 60 micro-inches of gold plating.

HLP-8 Normal Package



**Flangeless HLP-8
Specify « F » Suffix**

HLP-11 Package



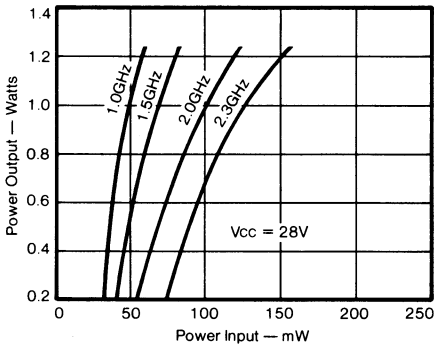
**Flangeless HLP-11
Specify « F » Suffix**

TRW 2001

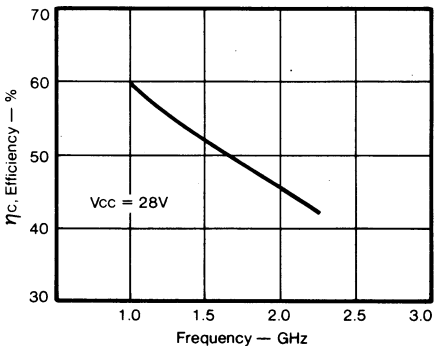
Electrical Characteristics (T_{flange} = 25°C)

| Symbol | Characteristic | Condition | Value |
|-----------------------------------|---|--|---------------|
| BVCER | Collector-Base Breakdown Voltage R _{BE} = 10Ω | I _C = 10mA | 50V Min |
| BVEBO | Emitter-Base Breakdown Voltage | I _E = 1mA I _C = 0 | 4.0V Min |
| I _{CBO} | Collector Cutoff Current | V _{CB} = 28V I _E = 0 V _{CB} = 45V | 500μA |
| I _C | Continuous Collector Current (Max) | V _{CE} = 4V | 1mA 0.250A |
| h _{FE} | Forward Current Transfer Ratio | V _{CE} = 5V I _C = 100mA | 10-120 |
| θ _F | Thermal Resistance (Junction to Flange) | — | 28°C/W |
| C _{oB} | Collector-Base Capacitance (Max) | V _{CB} = 28V | 3.0pF |
| P _o | Power Output @ 2000MHz | P _{in} = 0.125W | 1W Min |
| P _{o(sat)} | Power Output @ 2300MHz | V _{CE} = 28Vdc | 1.0W (Typ) |
| | Power Output @ 1500MHz | | 1.2W (Typ) |
| | Power Output @ 1000MHz | | 1.3W (Typ) |
| P _{gain} | Power Gain (dB) @ 2000MHz | P _o = 1.0W | 9dB Min |
| VSWR | Mismatch Tolerance @ V _{cc} = 28V | P _o = 1.0W f = 2.0GHz | ∞ |
| MTTF | Mean-Time-to-Metal Failure (Hrs x Amps ²) | T _J = 150°C | 4.661 |
| η _c | Collector Efficiency (Min) | P _o = 1.0W f = 2.0GHz | 40% |
| T _J & T _{stg} | Max Junction and Storage Temperatures | | -65 to 200°C |

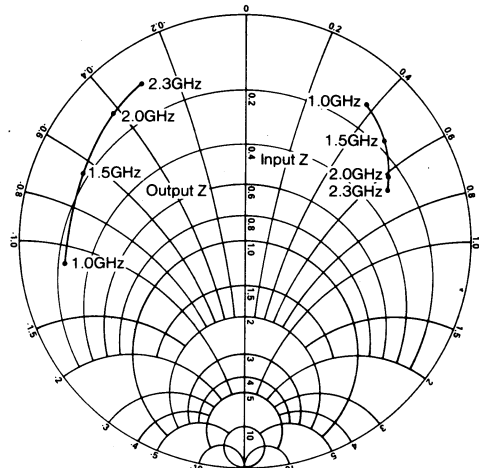
Typical Transfer Characteristics
Versus Frequency



Typical η_c
Versus Frequency

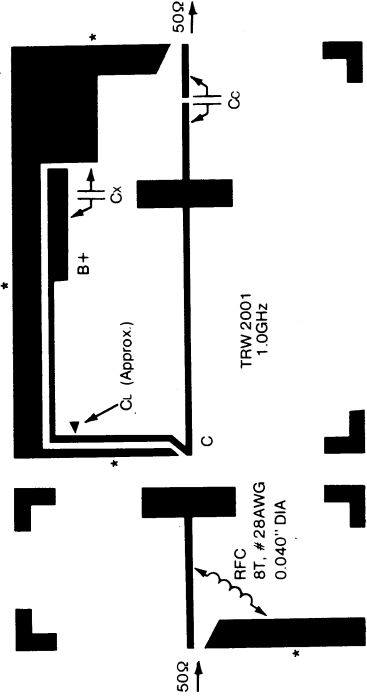


Impedance Data
V_{cc} = 28V

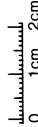


PC BOARD LAYOUT FOR TRW 2001 TEST CIRCUITS

- RFC = 1000MHz 8 turns, # 28AWG, 0.040 dia
- RFC = 1500MHz 6 turns, # 28AWG, 0.040 dia
- RFC = 2000 and 2300MHz 4 turns, # 28AWG, 0.040 dia

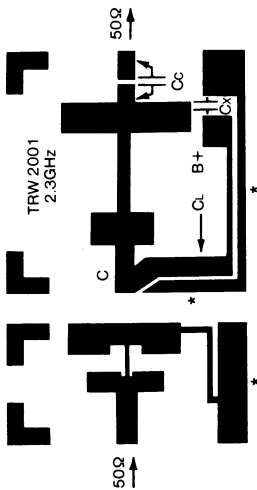


Board Material = 0.020" Glass-Teflon $\epsilon_r = 2.55$

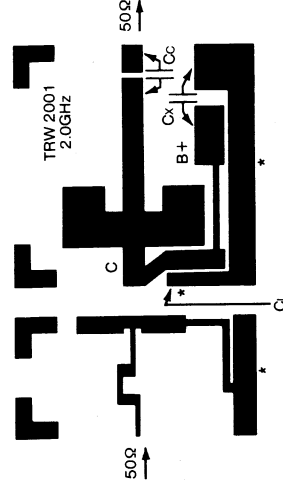
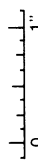


PART DETAILS

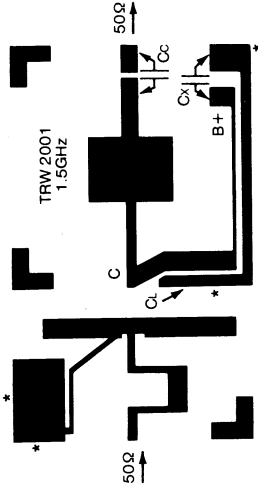
- * = Foil-wrap asterisked edge to ground plane
- Cc = 220pF chip on all circuits
- Cx := A combination of two 220pF chips, one 0.1 chip and a 25 μ F tantalum capacitor (35V min)
- Cl = Used as an AC bypass on the shunt inductor line (220pF chip) whose position can be varied



Board Material = 0.062" Glass-Teflon $\epsilon_r = 2.55$



Board Material = 0.062" Glass-Teflon $\epsilon_r = 2.55$



Board Material = 0.062" Glass-Teflon $\epsilon_r = 2.55$

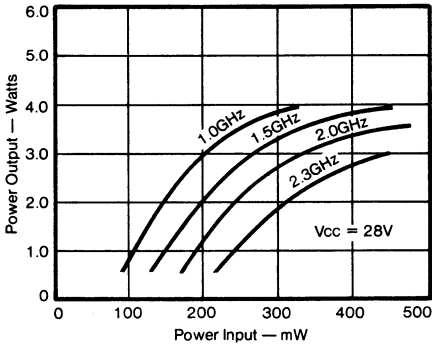


TRW 2003

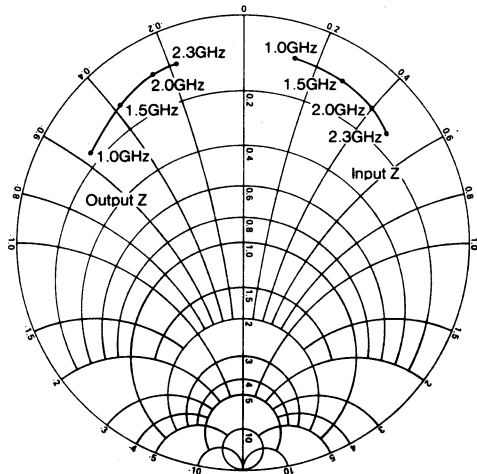
Electrical Characteristics (T_{flange} = 25°C)

| Symbol | Characteristic | Condition | Value |
|-----------------------------------|---|--|--------------|
| BVCER | Collector-Base Breakdown Voltage R _{BE} = 10Ω | I _c = 20mA | 50V Min |
| BVEBO | Emitter-Base Breakdown Voltage | I _E = 0.25mA I _C = 0 | 3.5V Min |
| I _{CBO} | Collector Cutoff Current | V _{CB} = 28V I _E = 0 | 500μA |
| I _C | Continuous Collector Current (Max) | V _{CB} = 45V V _{CE} = 4V | 1mA 0.50A |
| hFE | Forward Current Transfer Ratio | V _{CE} = 5V I _C = 100mA | 10-100 |
| θ _{JF} | Thermal Resistance (Junction to Flange) | — | 15°C/W |
| COB | Collector-Base Capacitance (Max) | V _{CB} = 28V | 5.0pF |
| P _o | Power Output @ 2000MHz | P _{in} = 0.47W | 3.0W Min |
| P _{o(sat)} | Power Output @ 2300MHz | V _{CE} = 28Vdc | 3.0W (Typ) |
| | Power Output @ 1500MHz | | 3.7W (Typ) |
| | Power Output @ 1000MHz | | 4.0W (Typ) |
| P _{gain} | Power Gain (dB) @ 2000MHz | P _o = 3.0W | 8dB Min |
| VSWR | Mismatch Tolerance @ V _{cc} = 28V | P _o = 3.0W f = 2.0GHz | ∞ |
| MTTF | Mean-Time-to-Metal Failure (Hrs x Amps ²) | T _J = 150°C | 20,300 |
| η _C | Collector Efficiency (Min) | P _o = 3.0W f = 2.0GHz | 40% |
| T _J & T _{stg} | Max Junction and Storage Temperatures | -65 to 200°C | |

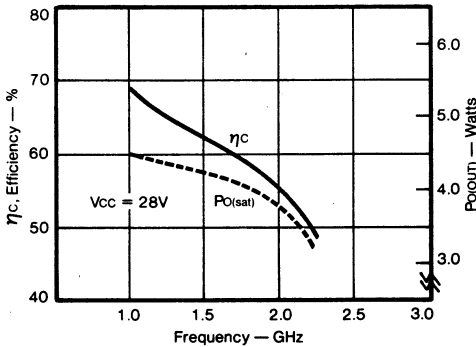
Typical Transfer Characteristics
Versus Frequency



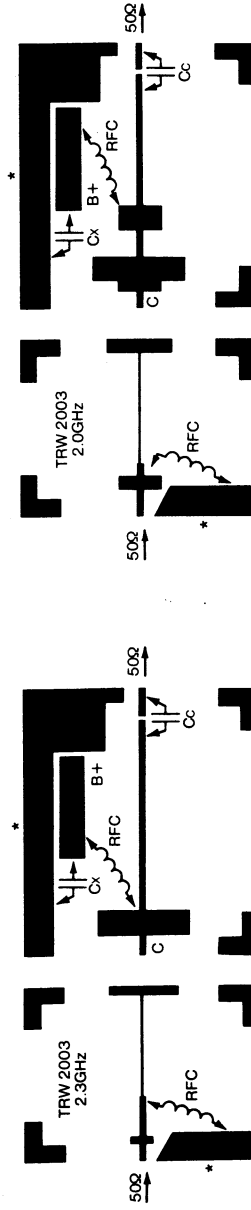
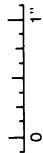
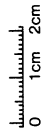
Impedance Data
V_{cc} = 28V



Typical η_C, Power Output
Versus Frequency



PC BOARD LAYOUT FOR TRW 2003
TEST CIRCUITS



Board Material = 0.020" Glass-Teflon $\epsilon_r = 2.55$

See page 3 for parts details

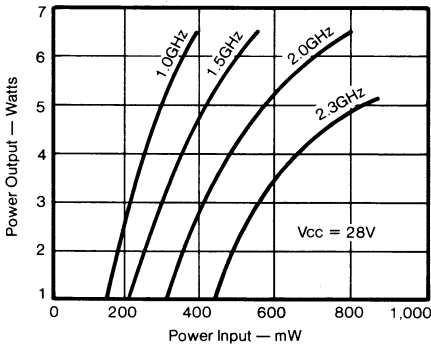


TRW 2005

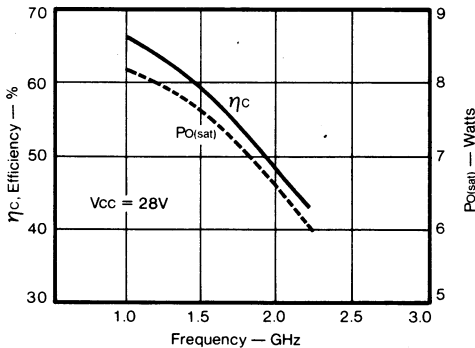
Electrical Characteristics ($T_{flange} = 25^{\circ}C$)

| Symbol | Characteristic | Condition | Value |
|-------------------|---|---|------------------------|
| BVCER | Collector-Base Breakdown Voltage $R_{BE} = 10\Omega$ | $I_C = 40mA$ | 50V Min |
| BVEBO | Emitter-Base Breakdown Voltage | $I_E = 0.5mA$ $I_C = 0$ | 3.5V Min |
| ICBO | Collector Cutoff Current | $V_{CB} = 28V$ $I_E = 0$ $V_{CB} = 45V$ | 500 μ A 2mA |
| Ic | Continuous Collector Current (Max) | $V_{CE} = 4V$ | 1.0A |
| hFE | Forward Current Transfer Ratio | $V_{CE} = 5V$ $I_C = 200mA$ | 10-100 |
| θ_{FJ} | Thermal Resistance (Junction to Flange) | — | 8.5 $^{\circ}C/W$ |
| COB | Collector-Base Capacitance (Max) | $V_{CB} = 28V$ | 7.0pF |
| Po | Power Output @ 2000MHz | $P_{in} = 0.80W$ | 5W Min |
| Po(sat) | Power Output @ 2300MHz | $V_{CE} = 28Vdc$ | 5.0W (Typ) |
| | Power Output @ 1500MHz | | 6.5W (Typ) |
| | Power Output @ 1000MHz | | 7.5W (Typ) |
| Pgan | Power Gain (dB) @ 2000MHz | $P_o = 5.0W$ $f = 2.0GHz$ | 8dB Min |
| VSWR | Mismatch Tolerance @ $V_{CC} = 28V$ | $P_o = 5.0W$ $f = 2.0GHz$ | ∞ |
| MTTF | Mean-Time-to-Metal Failure (Hrs x Amps ¹) | $T_J = 150^{\circ}C$ | 81,200 |
| η_c | Collector Efficiency (Min) | $P_o = 5.0W$ $f = 2.0GHz$ | 40% |
| T_J & T_{stg} | Max Junction and Storage Temperatures | | -65 to 200 $^{\circ}C$ |

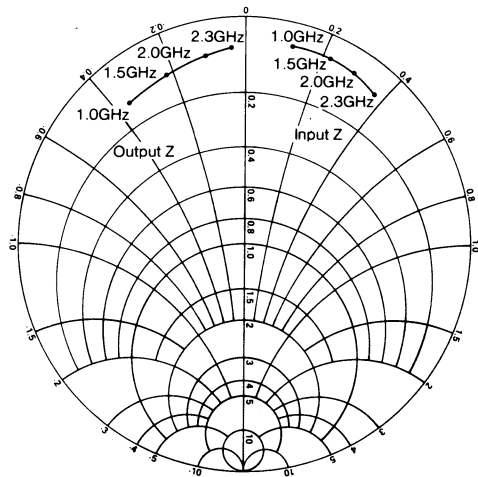
Typical Transfer Characteristics Versus Frequency



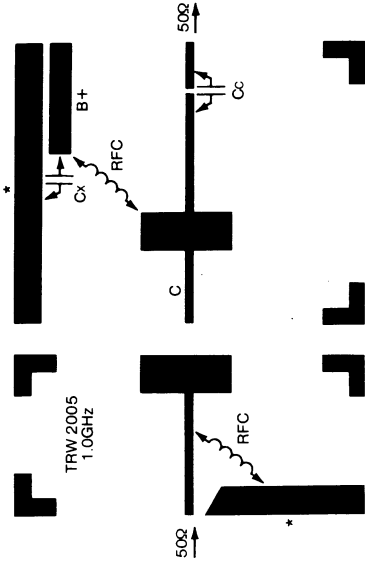
Typical η_c , Power Output Versus Frequency



Impedance Data $V_{CC} = 28V$

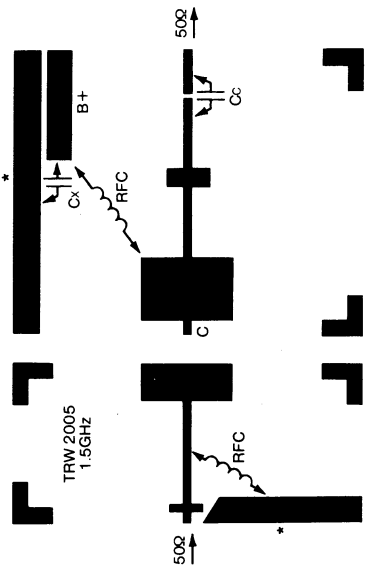


PC BOARD LAYOUT FOR TRW 2005
TEST CIRCUITS



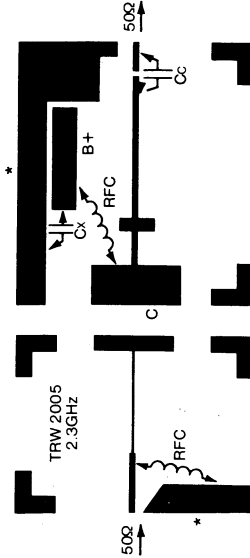
TRW 2005
1.0GHz

0 1cm 2cm



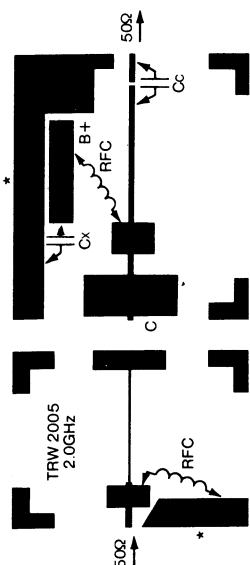
TRW 2005
1.5GHz

0 1cm



TRW 2005
2.3GHz

0 1cm 2cm



TRW 2005
2.0GHz

0 1cm

Board Material = 0.020" Glass-Teflon $\epsilon_r = 2.55$

See page 3 for parts details

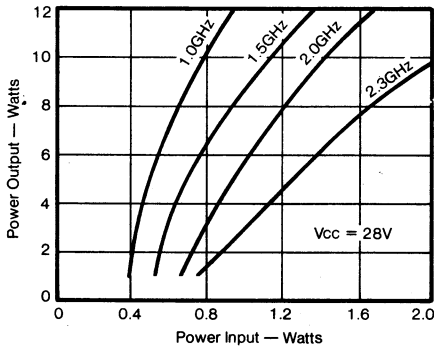


TRW 2010

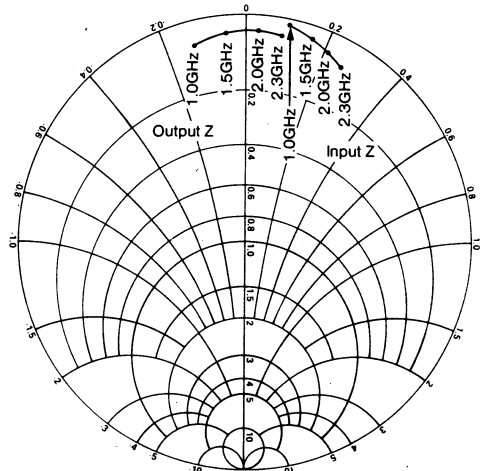
Electrical Characteristics (T_{flange} = 25°C)

| Symbol | Characteristic | Condition | Value |
|-----------------------------------|---|--|--------------|
| BV _{CER} | Collector-Base Breakdown Voltage R _{BE} = 10Ω | I _C = 80mA | 50V Min |
| BV _{EBO} | Emitter-Base Breakdown Voltage | I _E = 1.0mA I _C = 0 | 3.5V Min |
| I _{CBO} | Collector Cutoff Current | V _{CB} = 28V I _E = 0 V _{CB} = 45V | 500μA 4mA |
| I _C | Continuous Collector Current (Max) | V _{CE} = 4V | 2.0A |
| h _{FE} | Forward Current Transfer Ratio | V _{CE} = 5V I _C = 400mA | 10-100 |
| θ _F | Thermal Resistance (Junction to Flange) | — | 6°C/W |
| C _{OB} | Collector-Base Capacitance (Max) | V _{CB} = 28V | 12.0pF |
| P _o | Power Output @ 2000MHz | P _{in} = 2.5W | 10.0W Min |
| P _{o(sat)} | Power Output @ 2300MHz | V _{CE} = 28Vdc | 10.0W (Typ) |
| | Power Output @ 1500MHz | | 13.0W (Typ) |
| | Power Output @ 1000MHz | | 15.0W (Typ) |
| P _{gain} | Power Gain (dB) @ 2000MHz | P _o = 10W | 6dB Min |
| V _{SWR} | Mismatch Tolerance @ V _{CC} = 28V | P _o = 10.0W f = 2.0GHz | ∞ |
| MTTF | Mean-Time-to-Metal Failure (Hrs x Amps ²) | T _J = 150°C | 324,800 |
| η _c | Collector Efficiency (Min) | P _o = 10.0W f = 2.0GHz | 40% |
| T _J & T _{stg} | Max Junction and Storage Temperatures | | -65 to 200°C |

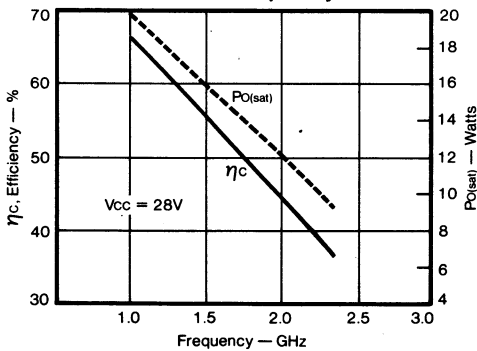
Typical Transfer Characteristics
Versus Frequency



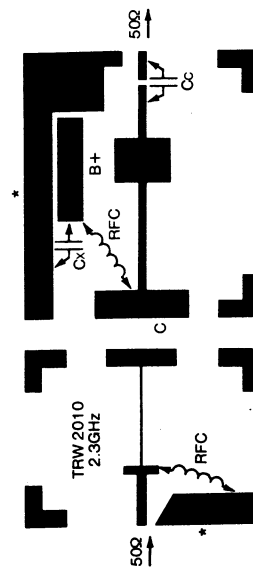
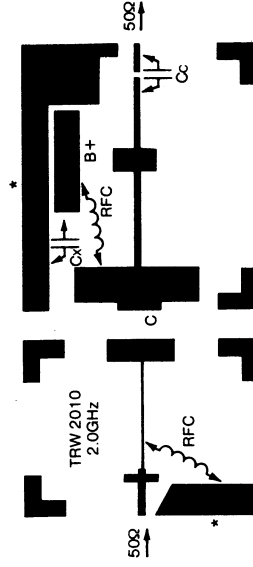
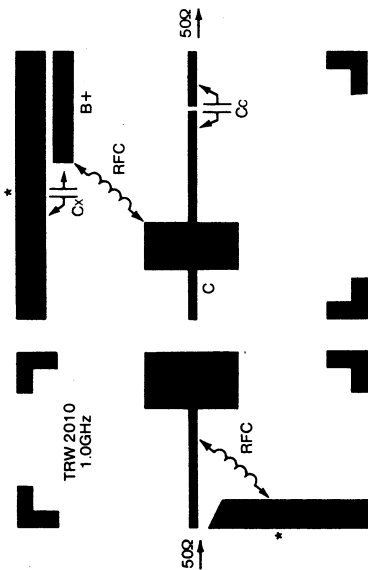
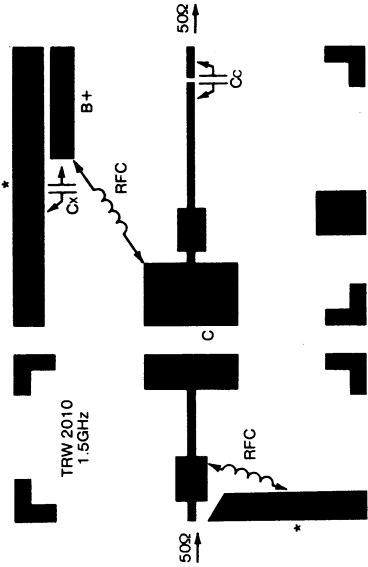
Impedance Data
V_{CC} = 28V



Typical η_c, Power Output
Versus Frequency



PC BOARD LAYOUT FOR TRW 2010
TEST CIRCUITS



See page 3 for parts details

Board Material = 0.020" Glass-Teflon $\epsilon_r = 2.55$

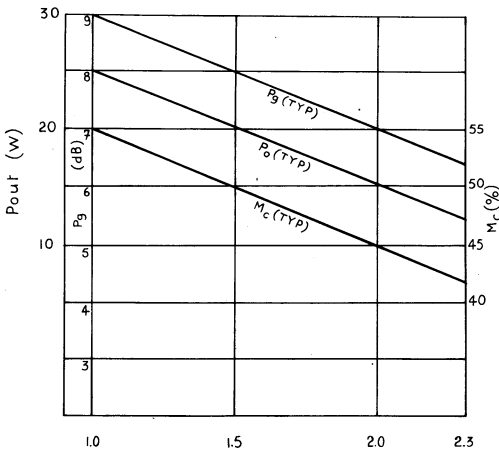


TRW 2015

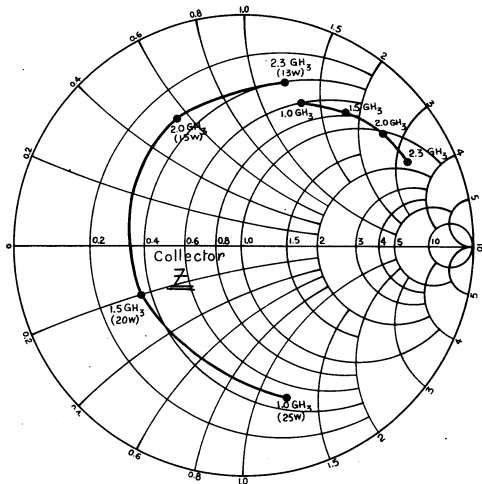
Electrical Characteristics (T_{FLANGE} = 25°C)

| Symbol | Characteristic | Condition | Value |
|-----------------------------------|--|--|------------|
| BV _{CER} | Collector-Base Breakdown Voltage R _{BF} = 10 Ω | I _C = 120 mA | 50 V Min |
| BV _{EBO} | Emitter-Base Breakdown Voltage | I _E = 1.5 mA I _C = 0 | 3.5 V Min |
| I _{CBO} | Collector Cutoff Current | V _{CB} = 28 V I _E = 0 | 1.0 mA Max |
| I _C | Continuous Collector Current (Max) | V _{CE} = 4 V | 3.0 A |
| h _{FE} | Forward Current Transfer Ratio | V _{CE} = 5 V I _C = 600 mA | 10-100 |
| θ _{JF} | Thermal Resistance (Junction to Flange) | — | 4 °C/W |
| C _{OB} | Collector-Base Capacitance (Max) | V _{CB} = 28 V | 21 pF |
| P _o | Power Output 2000 MHz | P _{in} = 3.75 W | 15.0 W Min |
| P _{o(sat)} | Power Output 1500 MHz | V _{CE} = 28 V | 22 W Typ |
| | Power Output 1000 MHz | | 30 W Typ |
| P _{gain} | Power Gain (dB) 2000 MHz | P _o = 15 W | 6 dB Min |
| VSWR | Mismatch Tolerance V _{CC} = 28 V | P _o = 15 W f = 2 GHz | ∞ |
| MTTF | Mean Time-to-Metal Failure (Hrs × Amps ²) | T _J = 150 °C | 780,000 |
| η _C | Collector Efficiency (Min) | P _o = 15 W f = 2 GHz | 40 % |
| T _J & T _{stg} | Max Junction and Storage Temperature | - 65 °C to + 200 °C | |

Typical Performance Characteristics



Impedance Data
V_{CC} = 28V Z_o = 5.0Ω



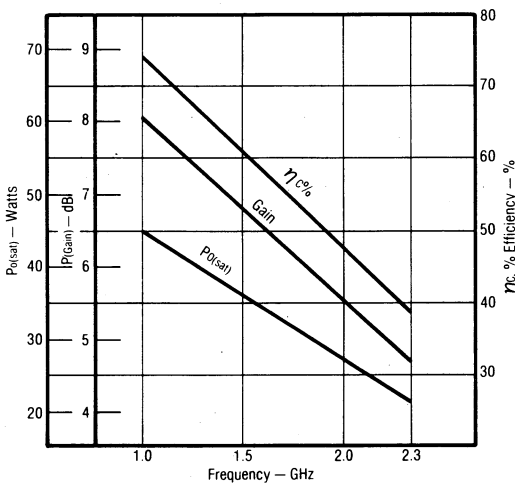
TRW 2020

Electrical Characteristics (T_{FLANGE} = 25°C)

| Symbol | Characteristic | Condition | Value |
|-----------------------------------|---|--|-------------|
| BV _{CER} | Collector-Base Breakdown Voltage R _{BE} = 10Ω | I _c = 160mA | 50V Min |
| BV _{EBO} | Emitter-Base Breakdown Voltage | I _e = 2.0mA I _c = 0 | 3.5V Min |
| I _{cBO} | Collector Cutoff Current | V _{CB} = 28V I _e = 0 | 1.0mA |
| I _c | Continuous Collector Current (Max) | V _{CB} = 45V | 8mA |
| I _c | Continuous Collector Current (Max) | V _{CE} = 4V | 4.0A |
| h _{FE} | Forward Current Transfer Ratio | V _{CE} = 5V I _c = 800mA | 10-100 |
| θ _F | Thermal Resistance (Junction to Flange) | — | 3°C/W |
| C _{OB} | Collector-Base Capacitance (Max) | V _{CB} = 28V | 24.0pF |
| P _o | Power Output @ 2000MHz | P _{in} = 6.0W | 20.0W Min |
| P _{o(sat)} | Power Output @ 1500MHz | V _{CE} = 28Vdc | 30.0W (Typ) |
| | Power Output @ 1000MHz | | 40.0W (Typ) |
| P _{gain} | Power Gain (dB) @ 2000MHz | P _o = 20W | 5.2dB Min |
| VSWR | Mismatch Tolerance @ V _{cc} = 28V | P _o = 20.0W f = 2.0GHz | ∞ |
| MTTF | Mean-Time-to-Metal Failure (Hrs x Amps ²) | T _j = 150°C | 1,588,000 |
| η _c | Collector Efficiency (Min) | P _o = 20.0W f = 2.0GHz | 40% |
| T _j & T _{stg} | Max Junction and Storage Temperature | -65 to 200°C | |

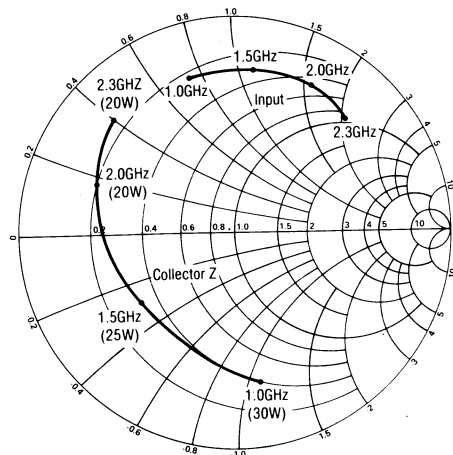


Typical Performance Characteristics



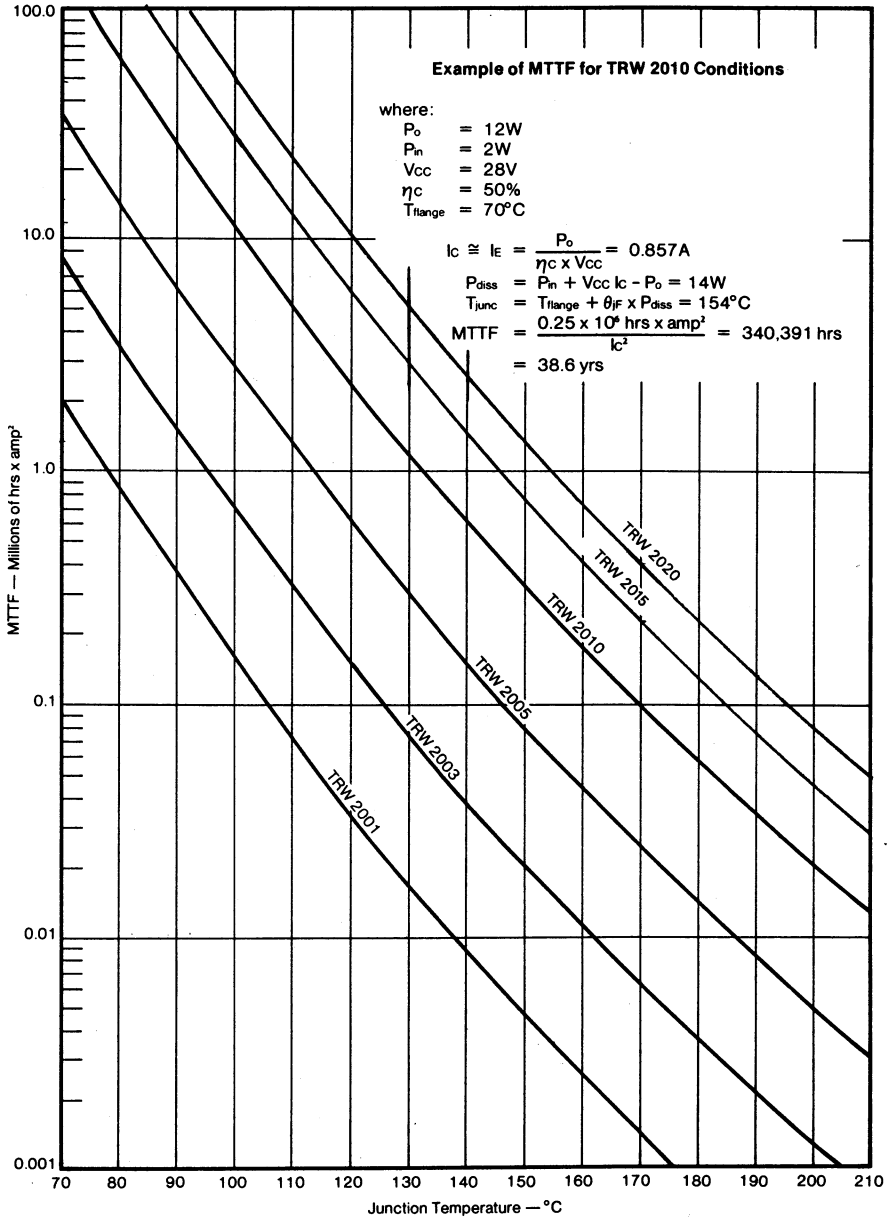
Impedance Data

V_{cc} = 28V Z_o = 5.0Ω



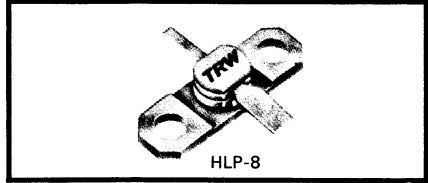
MTTF FACTOR (Normalized to 1 ampere² Continuous Duty)

The graph shown below displays MTTF in hours x ampere² emitter current for each of the "Super 2GHz" devices. Life tests at elevated temperatures have correlated to better than ±10% to the theoretical prediction for metal failure. Sample MTTF calculations based on operating conditions are included on the graph.



Microwave Power Transistor

- 1.5 W
- 20 V
- 2.3 GHz
- ∞ VSWR



HLP-8

Latest in the TRW « Super 2 GHz » Series, the TRW 2301 offers a sturdy transistor which is ideally suited to space, military, radio relay and other applications in the 1 to 3.0 GHz region.

The device is capable of withstanding any mismatch load condition at any phase angle up to, and including, open and short circuit (∞ VSWR) under full rated conditions. The unit is **gold metallized**, thereby eliminating metal migration pro-

blems common with aluminum parts (metal failure predictions are included herein). Further, the transistor is emitter ballasted with **diffused silicon resistors** rather than deposited metal film resistors for reliability and ruggedness.

The TRW 2301 is housed in the HLP-8, glass-free, **full hermetic** package which is available with or without mousing flange. Full mechanical specifications are guaranteed.

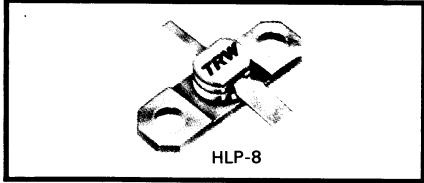


Electrical Characteristics (T_{flange} = 25 °C)

| | Symbol | Characteristics | Condition | Value |
|-----------|-----------------------------------|--|---|----------------------|
| D C Tests | BV _{CER} | Collector-Base Breakdown Voltage R _{BE} = 10 Ω | I _C = 50 mA | 42 V Min |
| | BV _{EBO} | Emitter-Base Breakdown Voltage | I _E = 1.0 mA I _C = 0 | 3.5 V Min |
| | I _{CBO} | Collector Cutoff Current | V _{CB} = 22 V I _E = 0 | 0.5 mA |
| | h _{FE} | Forward Current Transfer Ratio | V _{CE} = 5 V I _C = 100 mA | 10-120 |
| R F Tests | C _{OB} | Collector-Base Capacitance (Max) | V _{CB} = 20 V | 4 pF |
| | P _o | Power Output | f = 2.3 GHz V _{CE} = 20 V V _{CE} = 24 V | 1.5 W Min 2 W Typ |
| | P _{gain} | Power Gain (dB) | f = 2.3 GHz P _o = 1.5 W V _{CE} = 20 V | 8.0 dB Min |
| | VSWR | Mismatch Tolerance | P _o = 1.5 W f = 2.3 GHz V _{CE} = 20 V | ∞ |
| | η _C | Collector Efficiency | P _o = 1.5 W f = 2.3 GHz V _{CE} = 20 V | 40 % Min |
| Operating | T _J & T _{sig} | Max Junction and Storage Temperature | - 65 to + 200 °C | |
| | θ _{JF} | Thermal Resistance | | 35 °C/W |
| | I _C | Continuous Collector Current | V _{CE} = 5 V | 0.5 A Max |

Microwave Power Transistor

- 4 W
- 20 V
- 2.3 GHz
- ∞ VSWR



Latest in the TRW « Super 2 GHz » Series, the TRW 2304 offers a sturdy transistor which is ideally suited to space, military, radio relay and other applications in the 1 to 3.0 GHz region.

The device is capable of withstanding any mismatch load condition at any phase angle up to, and including, open and short circuit (∞ VSWR) under full rated conditions. The unit is **gold metalized**, thereby eliminating metal migration

problems common with aluminum parts (metal failure predictions are included herein). Further, the transistor is emitter ballasted with **diffused silicon resistors** rather than deposited metal film resistors for reliability and ruggedness.

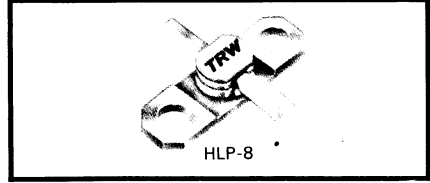
The TRW 2304 is housed in the HLP-8, glass-free, **full hermetic** package which is available with or without mounting flange. Full mechanical specifications are guaranteed.

Electrical Characteristics (T_{flange} = 25 °C)

| | Symbol | Characteristics | Condition | Value |
|-----------|-----------------------------------|--|---|--------------------|
| D C Tests | BV _{CER} | Collector-Base Breakdown Voltage R _{BE} = 10 Ω | I _C = 50 mA | 42 V Min |
| | BV _{EBO} | Emitter-Base Breakdown Voltage | I _E = 1.0 mA I _C = 0 | 3.5 V Min |
| | I _{CBO} | Collector Cutoff Current | V _{CB} = 22 V I _E = 0 | 0.75 mA |
| | h _{FE} | Forward Current Transfer Ratio | V _{CE} = 5 V I _C = 250 mA | 10-120 |
| R F Tests | C _{OB} | Collector-Base Capacitance (Max) | V _{CB} = 20 V | 7 pF |
| | P _o | Power Output | f = 2.3 GHz V _{CE} = 20 V V _{CE} = 24 V | 4 W Min 5 W Typ |
| | P _{gain} | Power Gain (dB) | f = 2.3 GHz P _o = 4 W V _{CE} = 20 V | 8.0 dB Min |
| | VSWR | Mismatch Tolerance | P _o = 4 W f = 2.3 GHz V _{CE} = 20 V | ∞ |
| | η _C | Collector Efficiency | P _o = 4 W f = 2.3 GHz V _{CE} = 20 V | 40 % Min |
| Operating | T _j & T _{sig} | Max Junction and Storage Temperature | — 65 to + 200 °C | |
| | θ _{JF} | Thermal Resistance | | 17 °C/W |
| | I _C | Continuous Collector Current | V _{CE} = 5 V | 1.5 A Max |

Microwave Power Transistor

- 7 W
- 20 V
- 2.3 GHz
- ∞VSWR



Latest in the TRW « Super 2 GHz » Series, the TRW 2307 offers a sturdy transistor which is ideally suited to space, military, radio relay and other applications in the 1 to 3.0 GHz region.

The device is capable of withstanding any mismatch load condition at any phase angle up to, and including, open and short circuit (∞VSWR) under full rated conditions. The unit is **gold metalized**, thereby eliminating metal migration

problems common with aluminum parts (metal failure predictions are included herein). Further, the transistor is emitter ballasted with **diffused silicon resistors** rather than deposited metal film resistors for reliability and ruggedness.

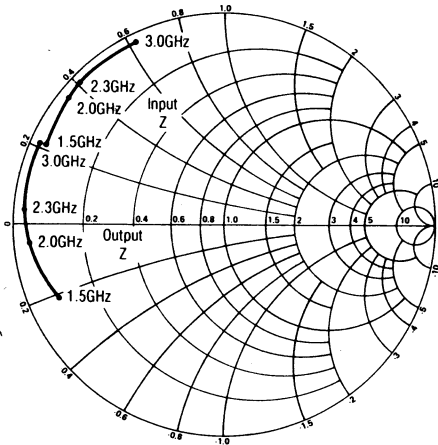
The TRW 2307 is housed in the HLP-8, glass free, **full hermetic** package which is available with or without mounting flange. Full mechanical specifications are guaranteed.



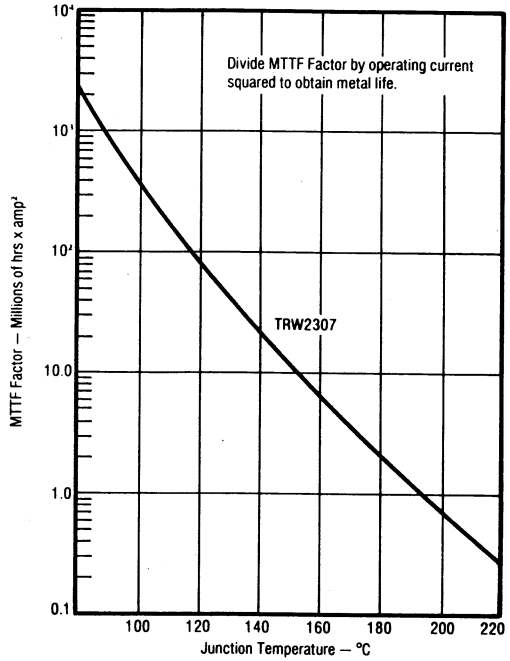
Electrical Characteristics (T_{range} = 25 °C)

| | Symbol | Characteristics | Condition | Value |
|-----------|----------------------|--|--|------------------------|
| D C Tests | BV _{CER} | Collector-Base Breakdown Voltage R _{BE} = 10 Ω | I _C = 50 mA | 42 V Min |
| | BV _{EBO} | Emitter-Base Breakdown Voltage | I _E = 1.0 mA I _C = 0 | 3.5 V Min |
| | I _{CBO} | Collector Cutoff Current | V _{CB} = 22 V I _E = 0 V _{CB} = 38 V | 1.25 mA 2.5 mA |
| | h _{FE} | Forward Current Transfer Ratio | V _{CE} = 5 V I _C = 500 mA | 10-120 |
| R F Tests | C _{OB} | Collector-Base Capacitance (Max) | V _{CB} = 20 V | 10 pF |
| | P _o | Power Output | f = 2.3 GHz V _{CE} = 20 V V _{CE} = 24 V | 7.0 W Min 9.0 W Min |
| | P _{gain} | Power Gain (dB) | f = 2.3 GHz P _o = 7.0 W V _{CE} = 20 V | 8.4 dB Min |
| | VSWR | Mismatch Tolerance | P _o = 7.0 W f = 2.3 GHz V _{CE} = 20 V | ∞ |
| | η _C | Collector Efficiency | P _o = 7.0 W f = 2.3 GHz V _{CE} = 20 V | 40 % Min |
| Operating | T & T _{sig} | Max Junction and Storage Temperature | - 65 to + 200 °C | |
| | θ _{JF} | Thermal Resistance | | 8.5 °C/W |
| | I _C | Continuous Collector Current | V _{CE} = 5 V | 2.5 A Max |

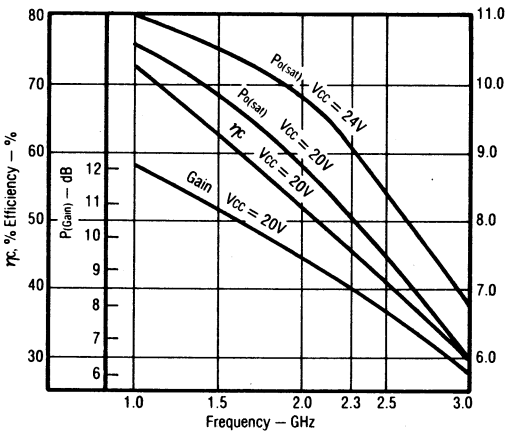
Impedance Data
Vcc = 20V



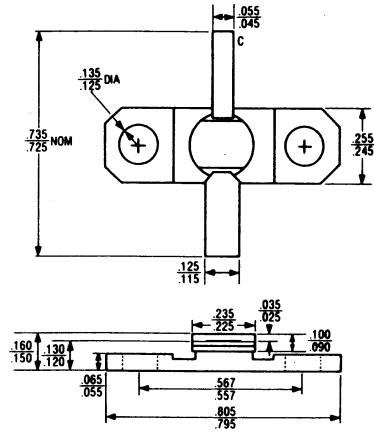
Metal Failure



Typical Performance Characteristics



HLP-8 Package



Mechanical Specifications

The following are mechanical specifications for this transistor.

Dimensions: Per outline drawing.

Solderability: Per MIL-STD-750.

Marking: Per MIL-S-19500, "TRW," 4-digit date code, type number.

Hermeticity: Per MIL-STD-750, 10⁻⁷ atmospheres gross and

fine leak. (Available on special order screened to 10⁻⁸ atmospheres.)

Acceleration: Per MIL-STD-750, 20,000G in any plane.

Bond Pull: Per MIL-STD-750, 3 grams min.

Package: A glass-free, brazed ceramic package assuring long-term integrity of hermetic seals. Leads of HLP-8, KOVAR base material with minimum 60 microinches of gold plating.