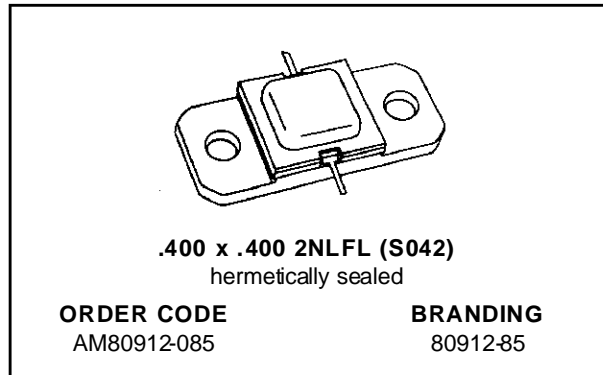


## RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

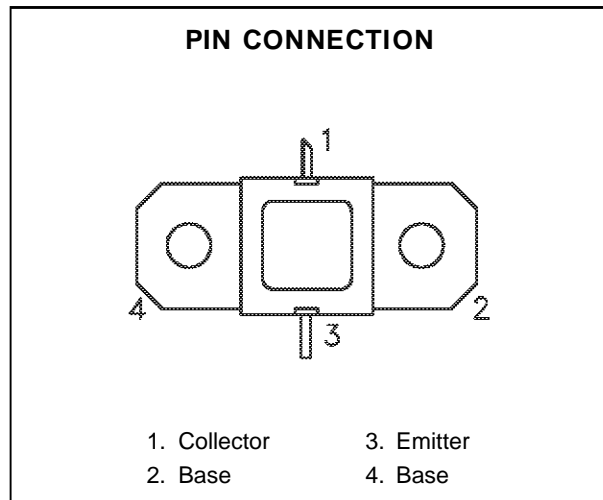
- REFRACTORY/GOLD METALLIZATION
- EMITTER SITE BALLASTED
- 5:1 VSWR CAPABILITY
- LOW THERMAL RESISTANCE
- INPUT/OUTPUT MATCHING
- OVERLAY GEOMETRY
- METAL/CERAMIC HERMETIC PACKAGE
- P<sub>OUT</sub> = 85 W MIN. WITH 7.5 dB GAIN



### DESCRIPTION

The AM80912-085 is designed for specialized avionics applications including JTIDS, where power is provided under pulse formats utilizing short pulse widths and high burst or overall duty cycles.

The AM80912-085 is housed in a unique BIG-PAC™ Hermetic Metal/Ceramic package with in-



### ABSOLUTE MAXIMUM RATINGS (T<sub>case</sub> = 25°C)

| Symbol            | Parameter                                   | Value        | Unit |
|-------------------|---|--------------|------|
| P <sub>DISS</sub> | Power Dissipation* (T <sub>C</sub> ≤ 100°C) | 300          | W    |
| I <sub>C</sub>    | Device Current*                             | 8.0          | A    |
| V <sub>CC</sub>   | Collector-Supply Voltage*                   | 40           | V    |
| T <sub>J</sub>    | Junction Temperature (Pulsed RF Operation)  | 250          | °C   |
| T <sub>STG</sub>  | Storage Temperature                         | - 65 to +200 | °C   |

### THERMAL DATA

|                      |                                   |      |      |
|----------------------|-----------------------------------|------|------|
| R <sub>TH(j-c)</sub> | Junction-Case Thermal Resistance* | 0.75 | °C/W |
|----------------------|-----------------------------------|------|------|

\*Applies only to rated RF amplifier operation

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

## STATIC

| Symbol            | Test Conditions              |                              | Value |      |      | Unit |
|-------------------|------------------------------|------------------------------|-------|------|------|------|
|                   |                              |                              | Min.  | Typ. | Max. |      |
| $BV_{\text{CBO}}$ | $I_{\text{C}} = 25\text{mA}$ | $I_{\text{E}} = 0\text{mA}$  | 55    | —    | —    | V    |
| $BV_{\text{EBO}}$ | $I_{\text{E}} = 10\text{mA}$ | $I_{\text{C}} = 0\text{mA}$  | 3.5   | —    | —    | V    |
| $BV_{\text{CER}}$ | $I_{\text{C}} = 25\text{mA}$ | $R_{\text{BE}} = 10\Omega$   | 55    | —    | —    | V    |
| $I_{\text{CES}}$  | $V_{\text{BE}} = 0\text{V}$  | $V_{\text{CE}} = 35\text{V}$ | —     | —    | 20   | mA   |
| $h_{\text{FE}}$   | $V_{\text{CE}} = 5\text{V}$  | $I_{\text{C}} = 2\text{A}$   | 20    | —    | 200  | —    |

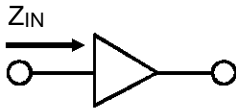
## DYNAMIC

| Symbol            | Test Conditions            |                              |                              | Value |      |      | Unit |
|-------------------|----------------------------|------------------------------|------------------------------|-------|------|------|------|
|                   |                            |                              |                              | Min.  | Typ. | Max. |      |
| $P_{\text{OUT}}$  | $f = 960 - 1215\text{MHz}$ | $P_{\text{IN}} = 15\text{W}$ | $V_{\text{CC}} = 35\text{V}$ | 85    | —    | —    | W    |
| $\eta_{\text{c}}$ | $f = 960 - 1215\text{MHz}$ | $P_{\text{IN}} = 15\text{W}$ | $V_{\text{CC}} = 35\text{V}$ | 40    | —    | —    | %    |
| $G_{\text{P}}$    | $f = 960 - 1215\text{MHz}$ | $P_{\text{IN}} = 15\text{W}$ | $V_{\text{CC}} = 35\text{V}$ | 7.5   | —    | —    | dB   |

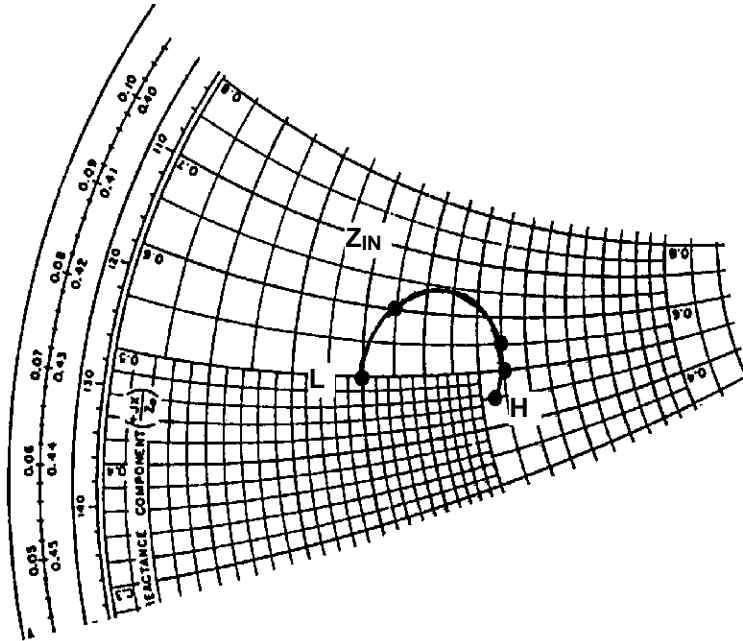
Note: Pulse format: 6.4  $\mu\text{S}$  on 6.6  $\mu\text{S}$  off, repeat for 3.3 ms, then off for 4.5125 ms  
Duty Cycle: Burst 49.2%, overall 20.8%

IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

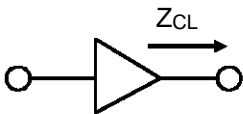


$P_{IN} = 15\text{ W}$   
 $V_{CC} = 35\text{ V}$   
 Normalized to 10 ohms

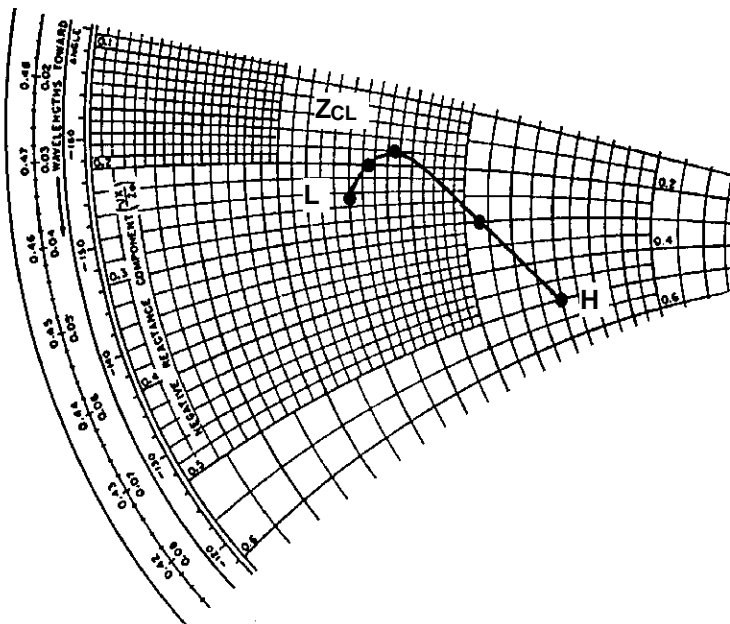


| FREQ.        | $Z_{IN}(\Omega)$ | $Z_{CL}(\Omega)$ |
|--------------|------------------|------------------|
| L = 960 MHz  | $3.0 + j 5.0$    | $7.0 - j 5.0$    |
| • = 1025 MHz | $3.5 + j 6.0$    | $5.3 - j 3.0$    |
| M = 1090 MHz | $5.5 + j 5.5$    | $3.7 - j 1.8$    |
| • = 1150 MHz | $5.5 + j 5.0$    | $3.3 - j 2.0$    |
| H = 1215 MHz | $5.3 + j 4.5$    | $3.0 - j 2.5$    |

TYPICAL COLLECTOR LOAD IMPEDANCE

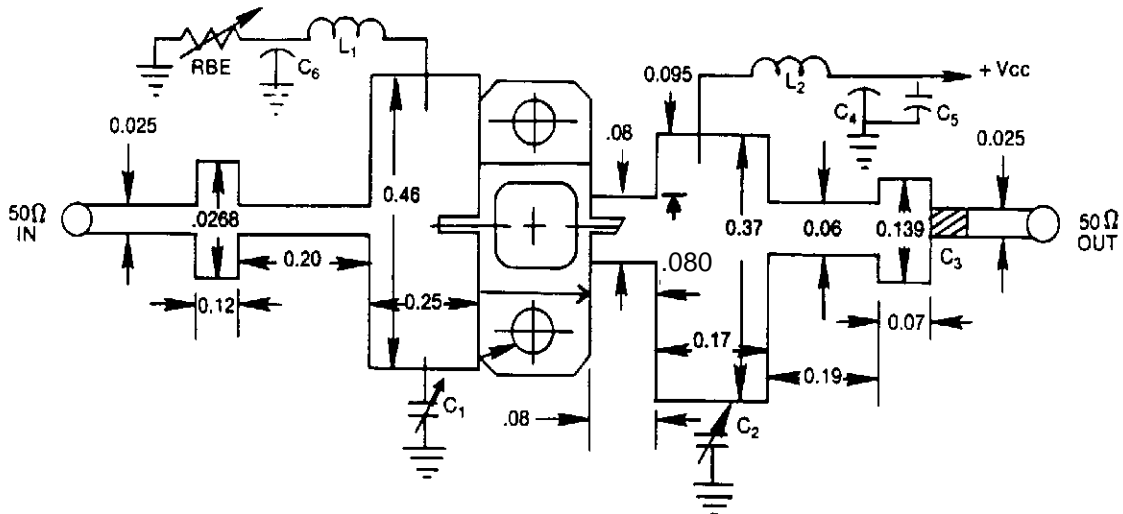


$P_{IN} = 15\text{ W}$   
 $V_{CC} = 35\text{ V}$   
 Normalized to 10 ohms



TEST CIRCUIT

Ref. Dwg. No. J-313119

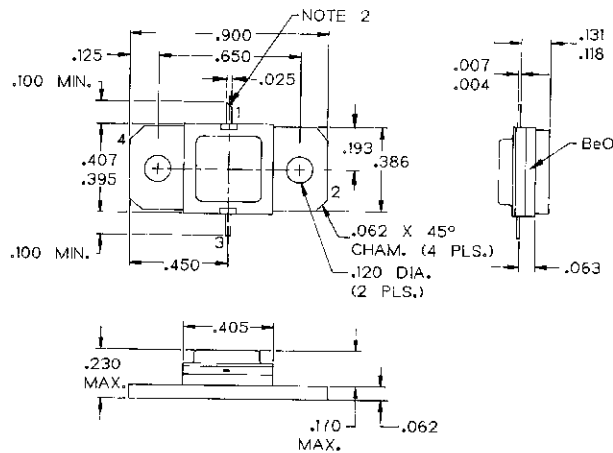


All dimensions are in inches.  
Substrate material: .025 thick Al<sub>2</sub>O<sub>3</sub> (Er = 9.6)

- |   |   |
|---|---|
| C1 : 0.3—3.5 pF Variable Johanson Capacitor or Equiv. | C5 : 100 MF, Electrolytic Capacitor, 50V    |
| C2 : 0.3—3.5 pF Variable Johanson Capacitor or Equiv. | C6 : 1500 pF Erie RF Feedthrough, or Equiv. |
| C3 : 100 pF Chip Capacitor                            | L1 : No. 32 Wire, 4 Turns 1/16" I.D.        |
| C4 : 1500 pF Erie RF Feedthrough, or Equiv.           | L2 : No. 32 Wire, 4 Turns 1/16" I.D.        |

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.: J113214F



- NOTES:
1. ALL TOLERANCE ± .010 EXCEPT WHERE NOTED; DIMENSIONS IN INCHES.
  2. COLLECTOR LEAD SLANT CUT.

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