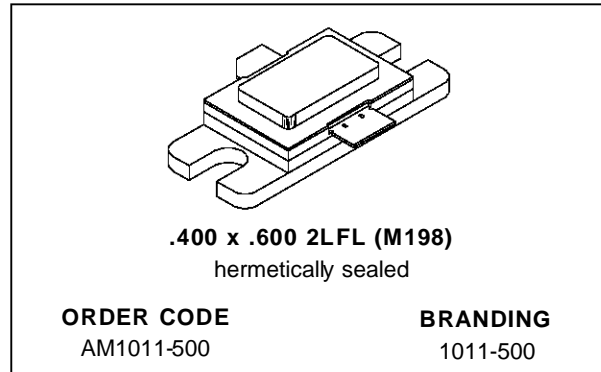


## RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

- $P_{OUT} = 500$  W MIN. WITH 8.5 dB MIN. GAIN
- 10:1 LOAD VSWR CAPABILITY @ 10 $\mu$ S., 1% DUTY
- SIXPAC™ HERMETIC METAL/CERAMIC PACKAGE
- EMITTER SITE BALLASTED OVERLAY GEOMETRY
- REFRACTORY/GOLD METALLIZATION
- LOW THERMAL RESISTANCE
- INTERNAL INPUT/OUTPUT MATCHING
- CHARACTERIZED UNDER 32 $\mu$ S., 2% DUTY CYCLE PULSE CONDITIONS

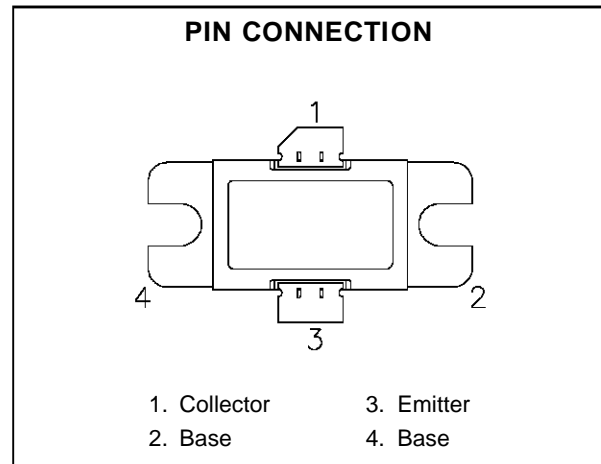


### DESCRIPTION

The AM1011-500 device is a high power Class C transistor specifically designed for L-Band Avionic applications involving high pulse burst duty cycles.

This device is capable of operation over a wide range of pulse widths, duty cycles, and temperatures. Low RF thermal resistance and computerized automatic wire bonding techniques ensure high reliability and product consistency.

The AM1011-500 is supplied in the SIXPAC™ Hermetic metal/ceramic package with internal input/output matching structures.



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

| Symbol     | Parameter                                      | Value        | Unit        |
|------------|--|--------------|-------------|
| $P_{DISS}$ | Power Dissipation* ( $T_C \leq 100^{\circ}C$ ) | 1,360        | W           |
| $I_C$      | Device Current*                                | 27           | A           |
| $V_{CC}$   | Collector-Supply Voltage*                      | 55           | V           |
| $T_J$      | Junction Temperature (Pulsed RF Operation)     | 250          | $^{\circ}C$ |
| $T_{STG}$  | Storage Temperature                            | - 65 to +200 | $^{\circ}C$ |

### THERMAL DATA

|               |                                   |      |               |
|---------------|-----------------------------------|------|---------------|
| $R_{TH(j-c)}$ | Junction-Case Thermal Resistance* | 0.11 | $^{\circ}C/W$ |
|---------------|-----------------------------------|------|---------------|

\*Applies only to rated RF amplifier operation

ELECTRICAL SPECIFICATIONS (T<sub>case</sub> = 25°C)

STATIC

| Symbol            | Test Conditions        |                        | Value |      |      | Unit |
|-------------------|------------------------|------------------------|-------|------|------|------|
|                   |                        |                        | Min.  | Typ. | Max. |      |
| BV <sub>CBO</sub> | I <sub>C</sub> = 50 mA | I <sub>E</sub> = 0 mA  | 70    | —    | —    | V    |
| BV <sub>EB0</sub> | I <sub>E</sub> = 30 mA | I <sub>C</sub> = 0 mA  | 3.0   | —    | —    | V    |
| BV <sub>CES</sub> | I <sub>C</sub> = 50 mA | V <sub>BE</sub> = 0 V  | 70    | —    | —    | V    |
| I <sub>CES</sub>  | V <sub>BE</sub> = 0 V  | V <sub>CE</sub> = 50 V | —     | —    | 40   | mA   |
| h <sub>FE</sub>   | V <sub>CE</sub> = 5 V  | I <sub>C</sub> = 1.0 A | 10    | —    | 200  | —    |

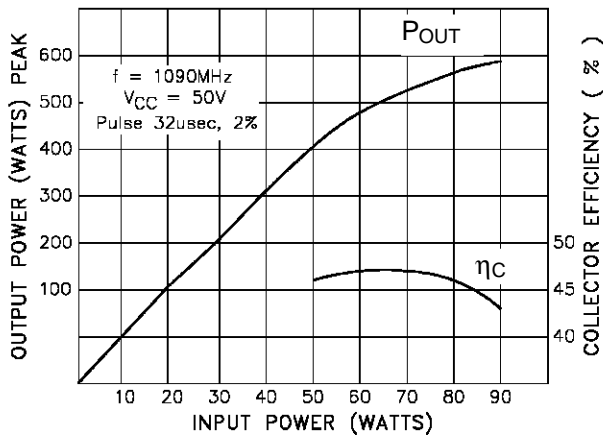
DYNAMIC

| Symbol           | Test Conditions  |   |                        | Value                          |      |      | Unit |
|------------------|--|---|------------------------|--------------------------------|------|------|------|
|                  |  |   |                        | Min.                           | Typ. | Max. |      |
| P <sub>OUT</sub> | f = 1090 MHz   | P <sub>IN</sub> = 70 W                                  | V <sub>CC</sub> = 50 V | 500                            | —    | —    | W    |
| hc               | f = 1090 MHz   | P <sub>OUT</sub> = 500 W                                | V <sub>CC</sub> = 50 V | 40                             | —    | —    | %    |
| G <sub>p</sub>   | f = 1090 MHz   | P <sub>OUT</sub> = 500 W                                | V <sub>CC</sub> = 50 V | 8.5                            | —    | —    | dB   |
| Load Mismatch    | P <sub>OUT</sub> = 500 W Peak<br>F = 1090MHz<br>V <sub>CC</sub> = 50 V | VSWR = 10:1, 10μS, 1% Duty<br>VSWR = 5:1, 32μS, 2% Duty |                        | No Degradation in Output Power |      |      |      |

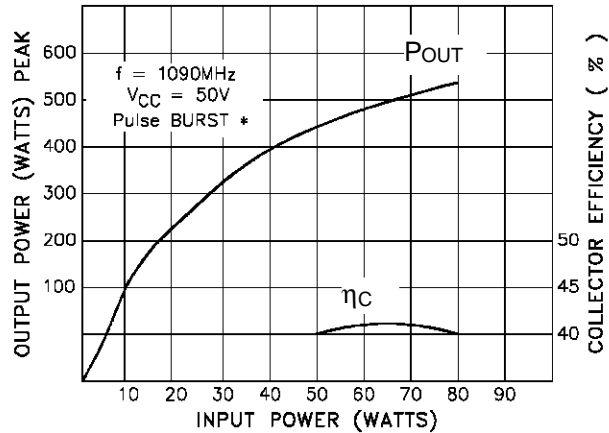
Note: Pulse Width = 32μSec, Duty Cycle = 2%

TYPICAL PERFORMANCE

POWER OUTPUT & COLLECTOR EFFICIENCY vs POWER INPUT



POWER OUTPUT & COLLECTOR EFFICIENCY vs POWER INPUT



\* Pulse Burst conditions:  
128 μSec train, 0.5 μSec on,  
0.5 μSec off; with a period of 6.4 msec.

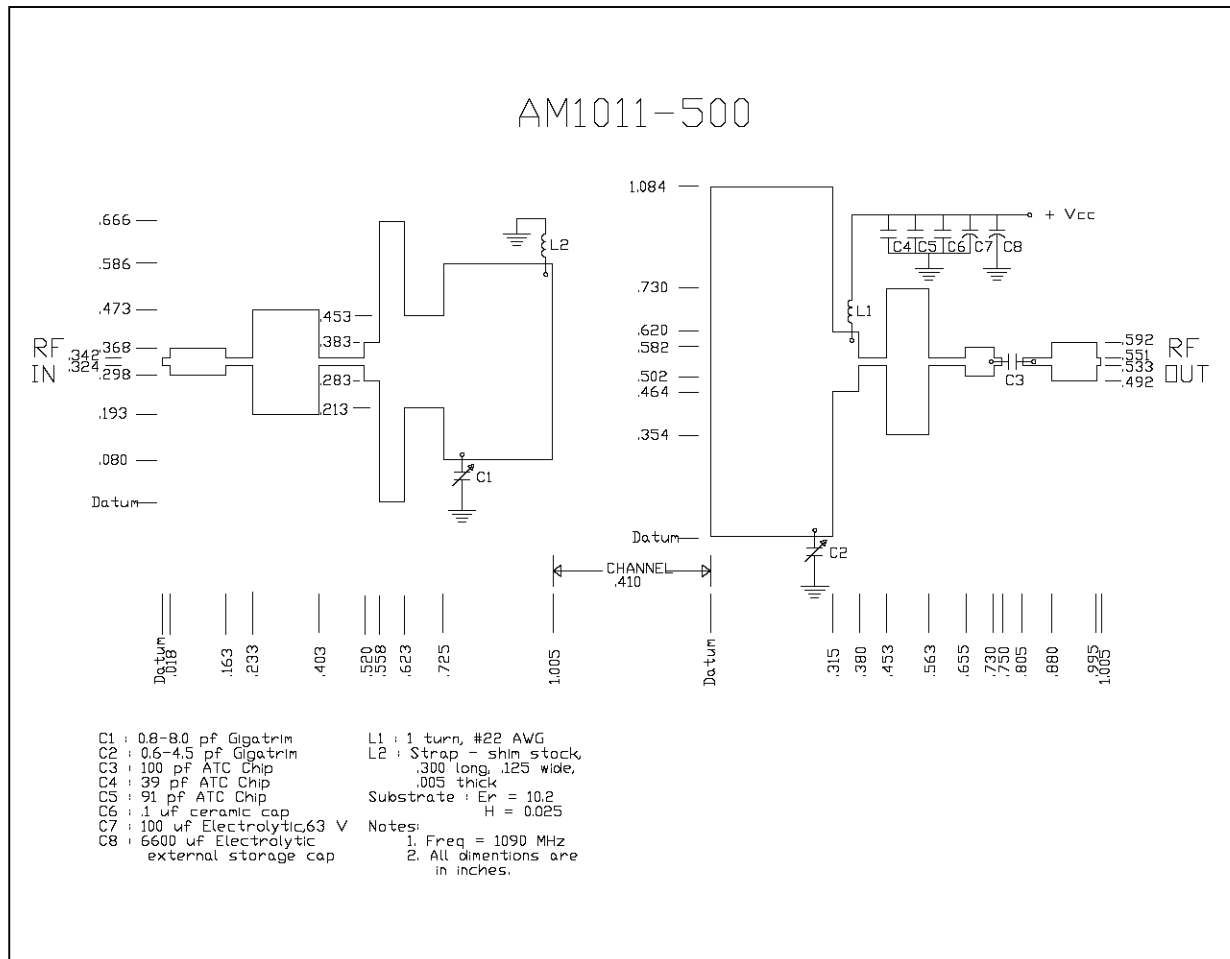
IMPEDANCE DATA

| FREQ.    | Z <sub>IN</sub> (Ω) | Z <sub>CL</sub> (Ω) |
|----------|---------------------|---------------------|
| 1030 MHz | 4.35 + j 6.97       | 1.38 - j 4.08       |
| 1090 MHz | 4.38 + j 2.75       | .874 - j 3.55       |
| 1120 MHz | 4.69 + j 2.95       | 1.3 - j 4.97        |

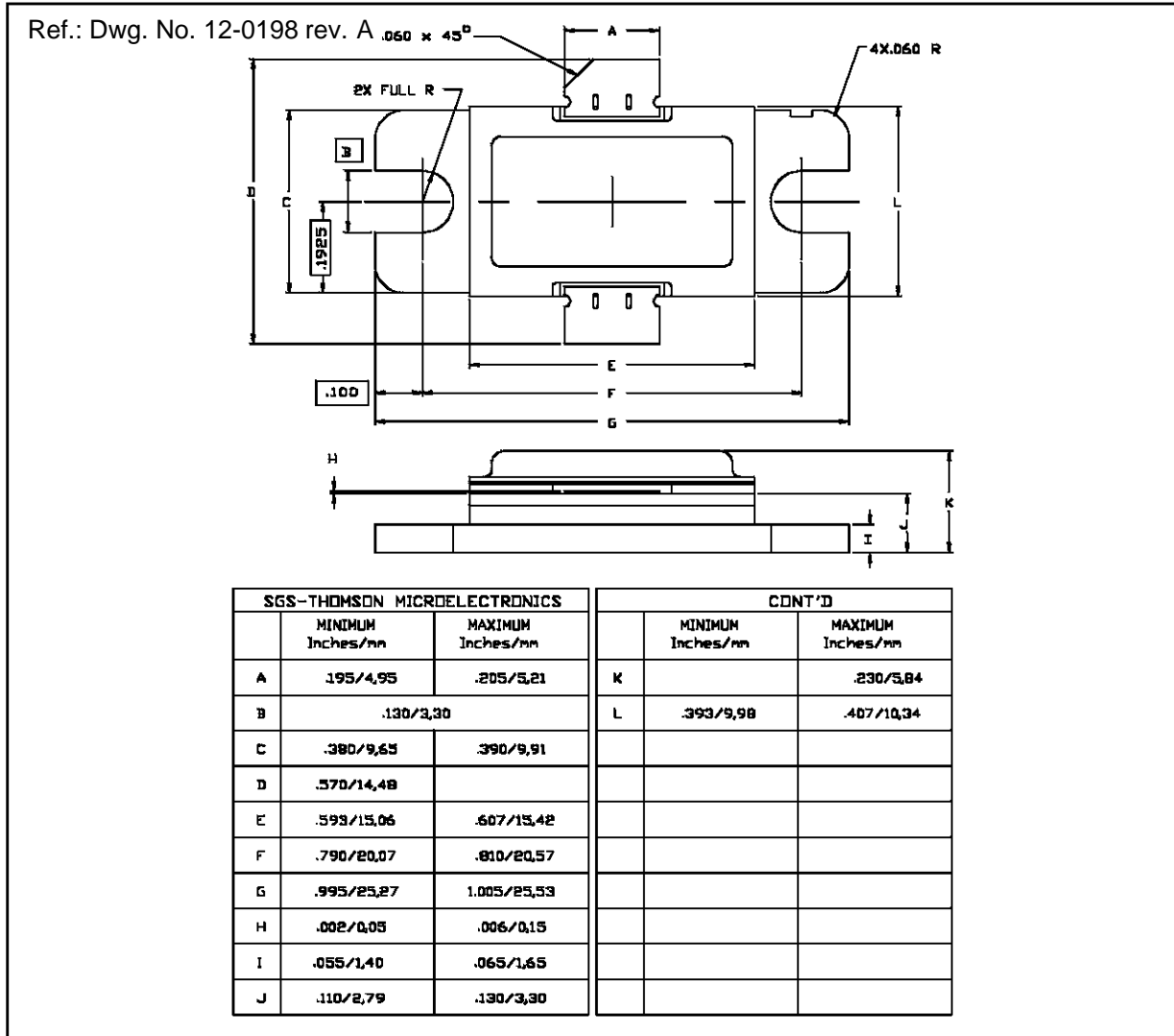
P<sub>IN</sub> = 70W

V<sub>CC</sub> = 50V

TEST CIRCUIT



PACKAGE MECHANICAL DATA



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