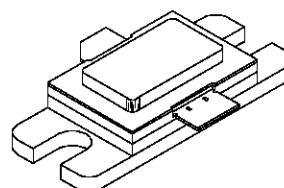


## RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

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



**.400 x .600 2LFL (M198)**  
hermetically sealed

**ORDER CODE**

AM1011-500

**BRANDING**

1011-500

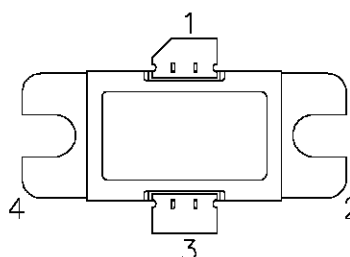
### DESCRIPTION

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.

### PIN CONNECTION



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

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

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

### THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance*	0.11	$^{\circ}\text{C/W}$
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\*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.	
$BV_{\text{CBO}}$	$I_{\text{C}} = 50 \text{ mA}$ $I_{\text{E}} = 0 \text{ mA}$	70	—	—	V
$BV_{\text{EBO}}$	$I_{\text{E}} = 30 \text{ mA}$ $I_{\text{C}} = 0 \text{ mA}$	3.0	—	—	V
$BV_{\text{CES}}$	$I_{\text{C}} = 50 \text{ mA}$ $V_{\text{BE}} = 0 \text{ V}$	70	—	—	V
$I_{\text{CES}}$	$V_{\text{BE}} = 0 \text{ V}$ $V_{\text{CE}} = 50 \text{ V}$	—	—	40	mA
$h_{\text{FE}}$	$V_{\text{CE}} = 5 \text{ V}$ $I_{\text{C}} = 1.0 \text{ A}$	10	—	200	—

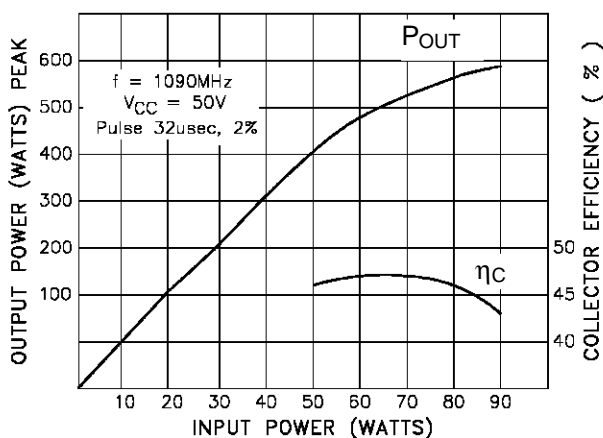
## DYNAMIC

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
$P_{\text{OUT}}$	$f = 1090 \text{ MHz}$ $P_{\text{IN}} = 70 \text{ W}$ $V_{\text{CC}} = 50 \text{ V}$	500	—	—	W
$h_{\text{c}}$	$f = 1090 \text{ MHz}$ $P_{\text{OUT}} = 500 \text{ W}$ $V_{\text{CC}} = 50 \text{ V}$	40	—	—	%
$G_{\text{P}}$	$f = 1090 \text{ MHz}$ $P_{\text{OUT}} = 500 \text{ W}$ $V_{\text{CC}} = 50 \text{ V}$	8.5	—	—	dB
Load Mismatch	$P_{\text{OUT}} = 500 \text{ W Peak}$ $V_{\text{SWR}} = 10:1, 10\mu\text{S}, 1\% \text{ Duty}$ $F = 1090\text{MHz}$ $V_{\text{SWR}} = 5:1, 32\mu\text{S}, 2\% \text{ Duty}$ $V_{\text{CC}} = 50 \text{ V}$	No Degradation in Output Power			

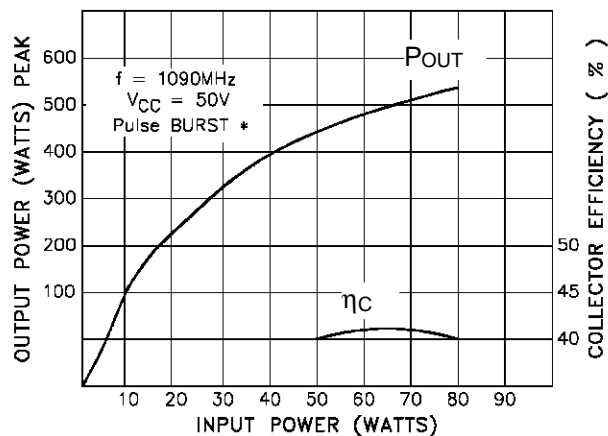
Note: Pulse Width = 32 $\mu$ Sec, Duty Cycle = 2%

## TYPICAL PERFORMANCE

**POWER OUTPUT & COLLECTOR EFFICIENCY vs POWER INPUT**



**POWER OUTPUT & COLLECTOR EFFICIENCY vs POWER INPUT**



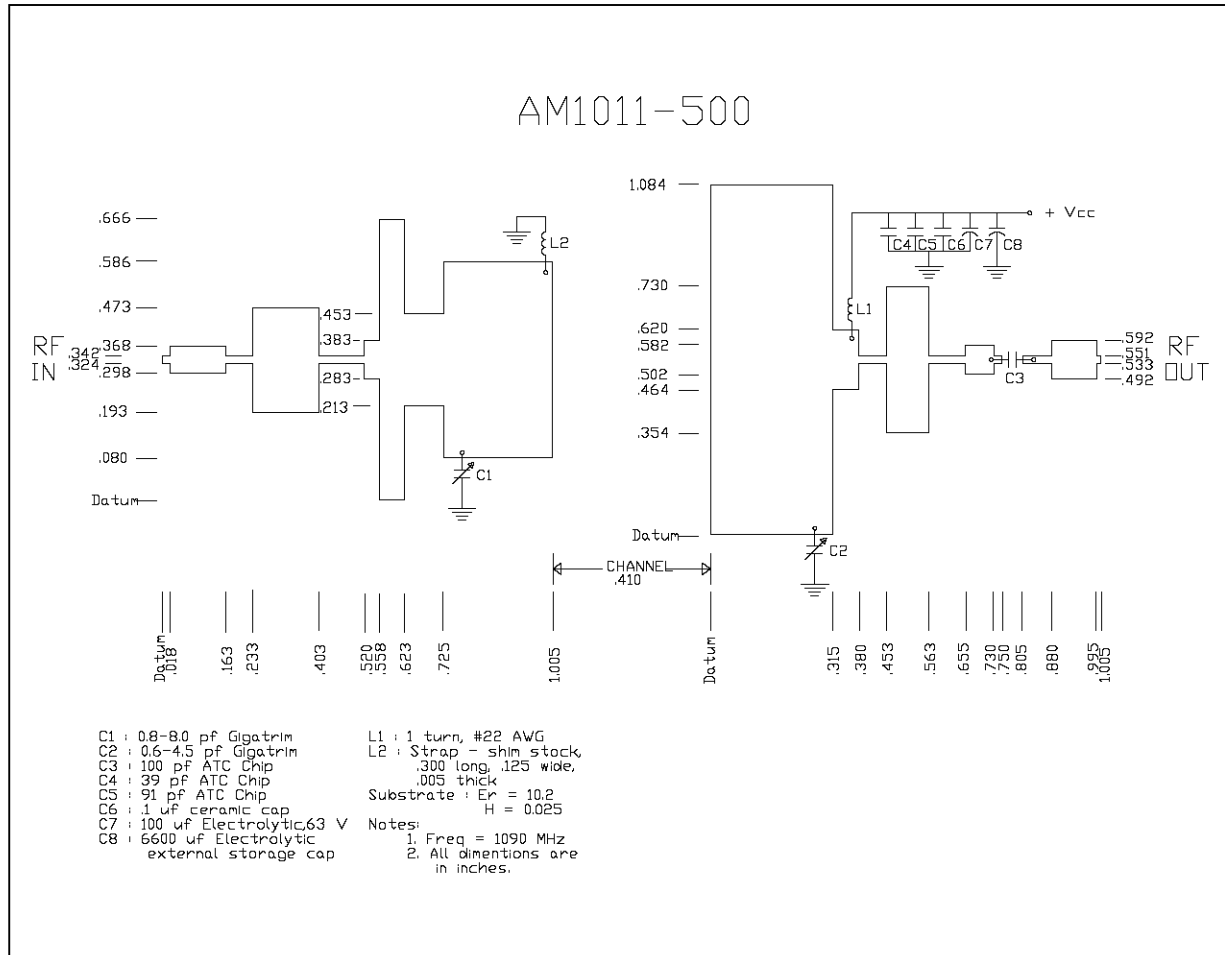
\* Pulse Burst conditions:  
128  $\mu\text{Sec}$  train, 0.5  $\mu\text{Sec}$  on,  
0.5  $\mu\text{Sec}$  off; with a period of 6.4 msec.

# IMPEDANCE DATA

FREQ.	$Z_{IN}(\Omega)$	$Z_{CL}(\Omega)$
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	$4.69 + j 2.95$	$1.3 - j 4.97$

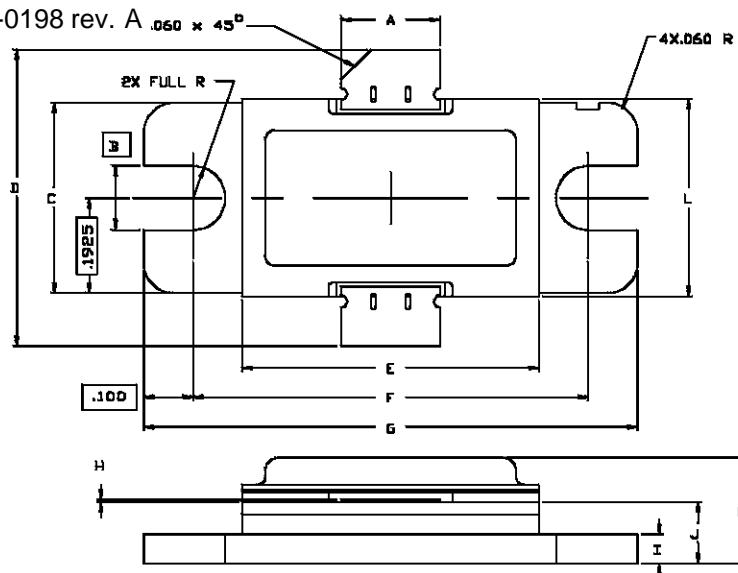
 $P_{IN} = 70W$ 
 $V_{CC} = 50V$ 

# TEST CIRCUIT



## PACKAGE MECHANICAL DATA

Ref.: Dwg. No. 12-0198 rev. A



SGS-THOMSON MICROELECTRONICS			CONT'D		
	MINIMUM Inches/mm	MAXIMUM Inches/mm		MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.195/4,95	.205/5,21	K		.230/5,84
B	.130/3,30		L	.393/9,98	.407/10,34
C	.380/9,65	.390/9,91			
D	.570/14,48				
E	.593/15,06	.607/15,42			
F	.790/20,07	.810/20,57			
G	.995/25,27	1.005/25,53			
H	.002/0,05	.006/0,15			
I	.055/1,40	.065/1,65			
J	.110/2,79	.130/3,30			

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