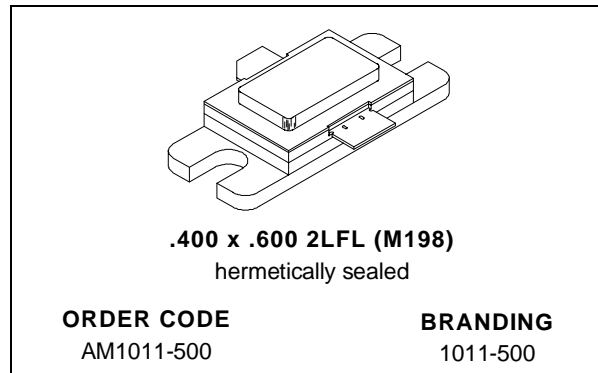


## RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

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

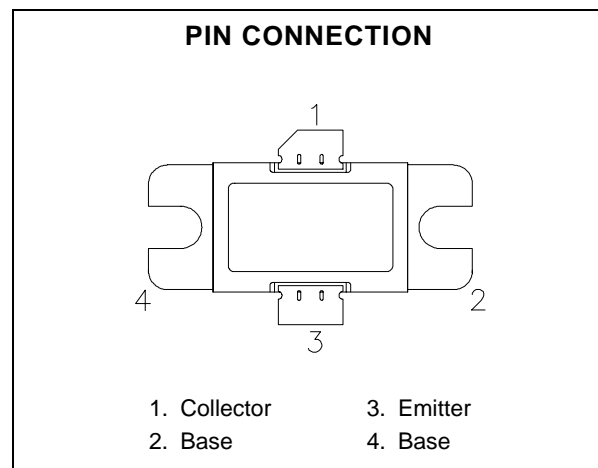


### DESCRIPTION

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

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<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>EBO</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	—

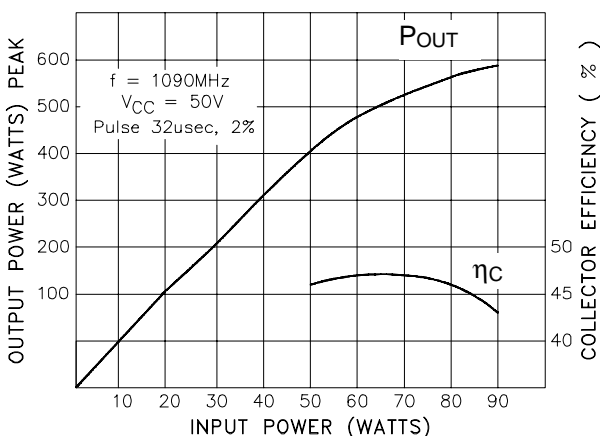
DYNAMIC

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 F = 1090MHz V <sub>CC</sub> = 50 V	VSWR = 10:1, 10μS, 1% Duty VSWR = 5:1, 32μS, 2% Duty		No Degradation in Output Power			

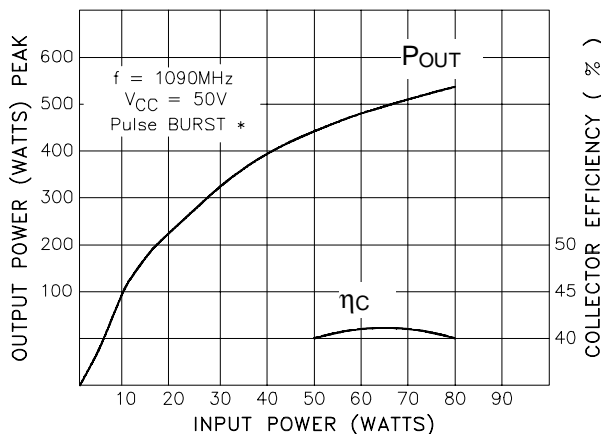
Note: Pulse Width = 32μSec, Duty Cycle = 2%

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.

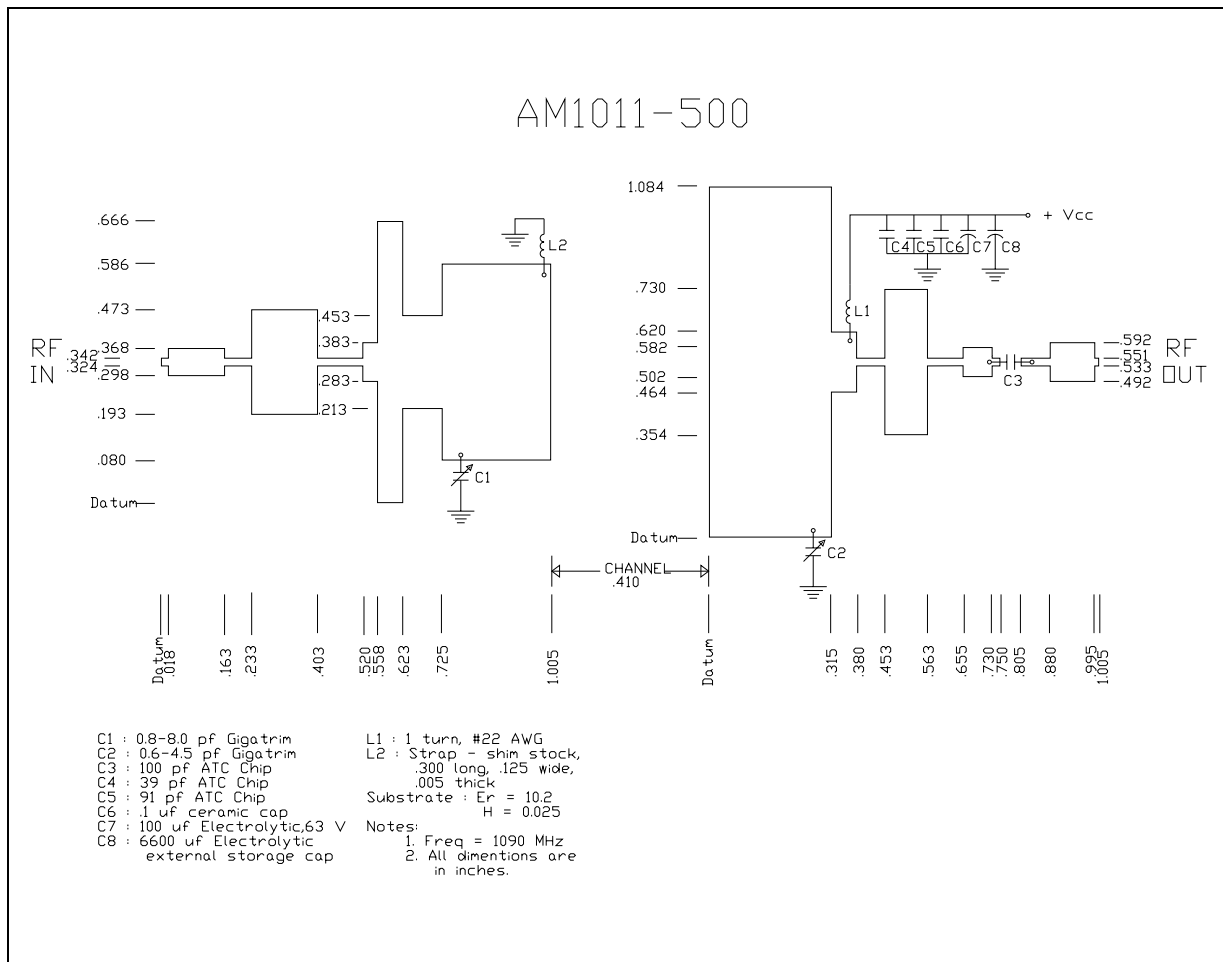
IMPEDANCE DATA

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

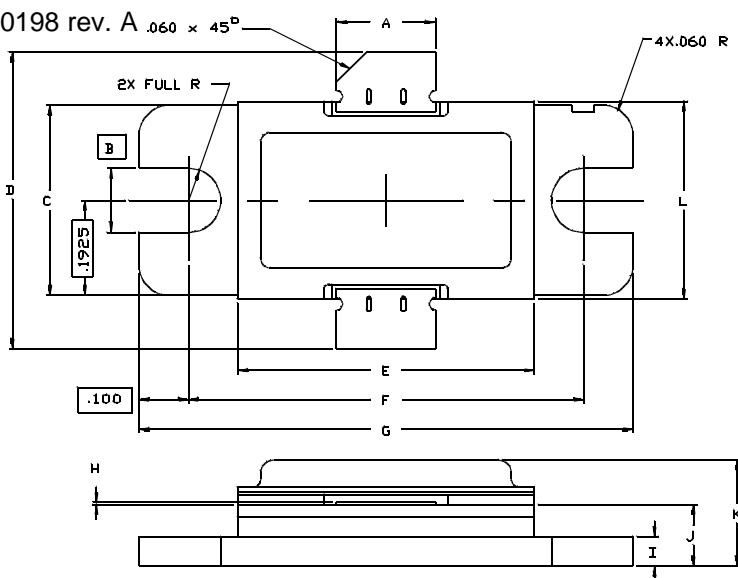
V<sub>CC</sub> = 50V

TEST CIRCUIT



PACKAGE MECHANICAL DATA

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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