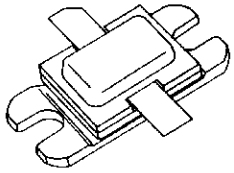
SGS-THOMSON MICROELECTRONICS

AM1011-400

RF & MICROWAVE TRANSISTORS L-BAND AVIONICS APPLICATIONS

- REFRACTORY/GOLD METALLIZATION
- EMITTER SITE BALLASTED
- 15:1 VSWR CAPABILITY
- LOW THERMAL RESISTANCE
- INPUT/OUTPUT MATCHING
- OVERLAY GEOMETRY
- METAL/CERAMIC HERMETIC PACKAGE
- P_{OUT} = 400 W MIN. WITH 8.0 dB GAIN



.400 x .500 2LFL (S038)
hermetically sealed

ORDER CODE	BRANDING
AM1011-400	1011-400

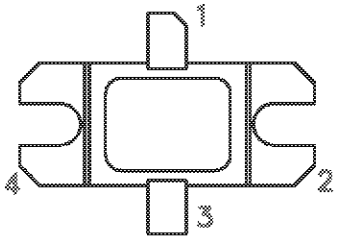
DESCRIPTION

The AM1011-400 device is a high power Class C transistor specifically designed for TCAS and Mode-S pulsed output and driver applications.

This device is designed for operation under moderate pulse width and duty cycle pulse conditions and is capable of withstanding 15:1 output VSWR at rated RF conditions. Low RF thermal resistance and computerized automatic wire bonding techniques ensure high reliability and product consistency.

The AM1011-400 is supplied in the BIGPAC™ Hermetic Metal/Ceramic package Input/Output matching structures.

PIN CONNECTION



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

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C)

Symbol	Parameter	Value	Unit
P_{DISS}	Power Dissipation* ($T_C \leq 100°C$)	880	W
I_C	Device Current*	24	A
V_{CC}	Collector-Supply Voltage*	55	V
T_J	Junction Temperature (Pulsed RF Operation)	250	°C
T_{STG}	Storage Temperature	– 65 to +200	°C

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance*	0.17	°C/W

*Applies only to rated RF amplifier operation

ELECTRICAL SPECIFICATIONS (T_{case} = 25°C)

STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	I_C = 50mA	I_E = 0mA	65	—	—	V
BV_{EBO}	I_E = 15mA	I_C = 0mA	3.5	—	—	V
BV_{CER}	IC = 50mA	R_{BE} = 10Ω	65	—	—	V
I_{CES}	V_{BE} = 50V	V_{CE} = 0V	—	—	30	mA
h_{FE}	V_{CE} = 5V	I_C = 5A	10	—	—	—

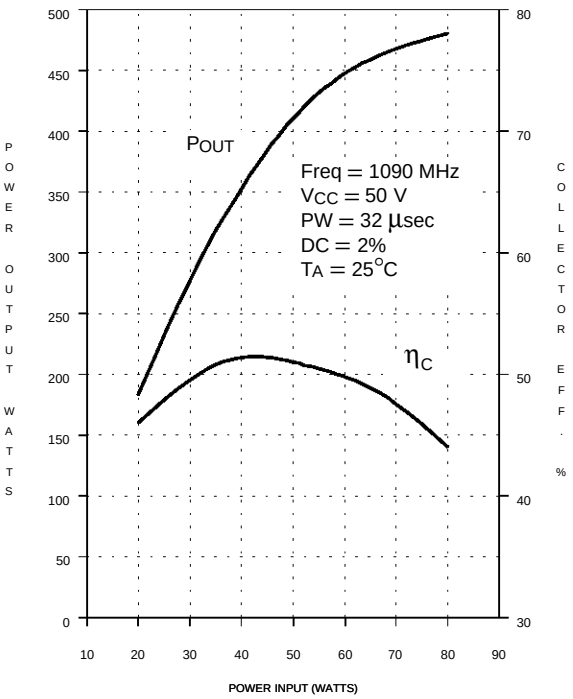
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 1090MHz	P_{IN} = 63W	V_{CC} = 50V	400	450	—	W
ηc	f = 1090MHz	P_{IN} = 63W	V_{CC} = 50V	45	50	—	%
G_P	f = 1090MHz	P_{IN} = 63W	V_{CC} = 50V	8.0	8.5	—	dB

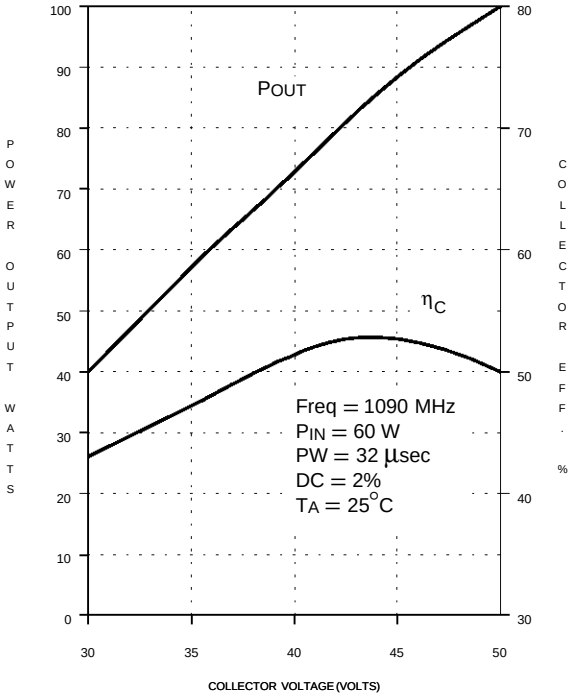
Note: Pulse Width = 32µSec
Duty Cycle = 2%

TYPICAL PERFORMANCE

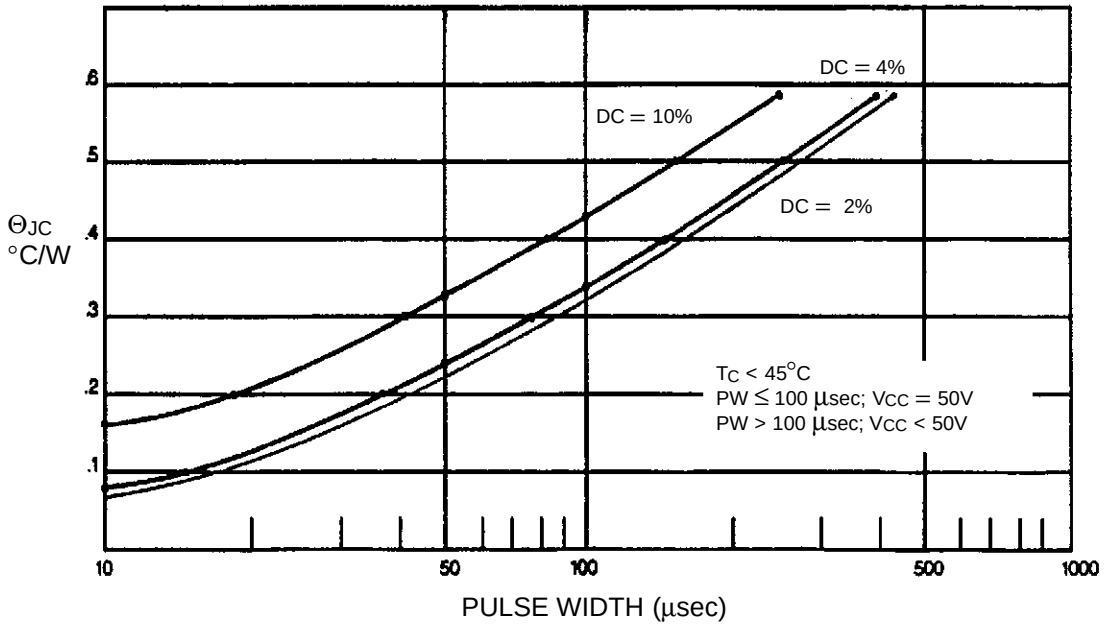
TYPICAL NARROWBAND POWER AMPLIFIER



TYPICAL RELATIVE OUTPUT POWER & COLLECTOR EFFICIENCY vs COLLECTOR VOLTAGE

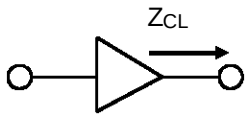


MAXIMUM THERMAL RESISTANCE vs PULSE WIDTH & DUTY CYCLE

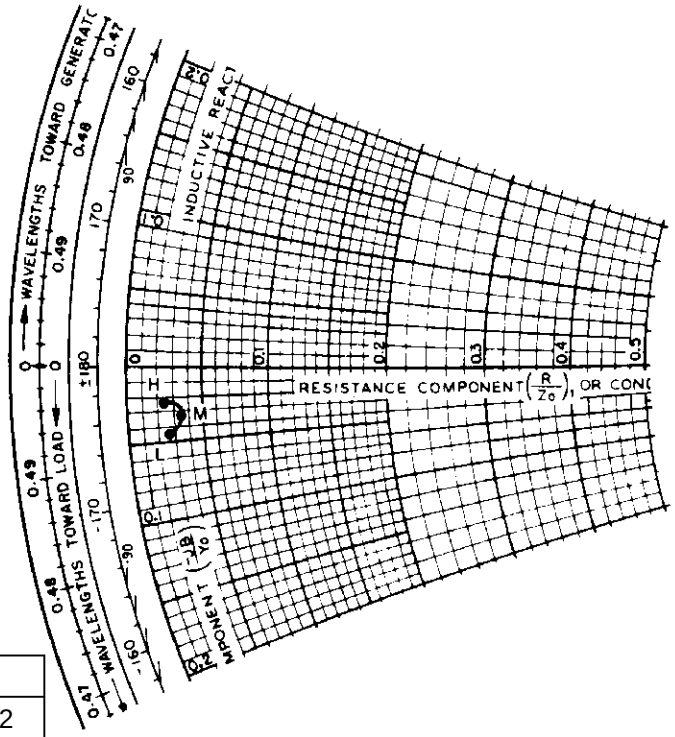


IMPEDANCE DATA

TYPICAL COLLECTOR LOAD IMPEDANCE

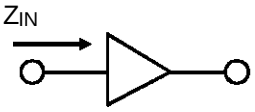


P_{IN} = 63 W
V_{CC} = +50 V
Z_O* = 50 Ω

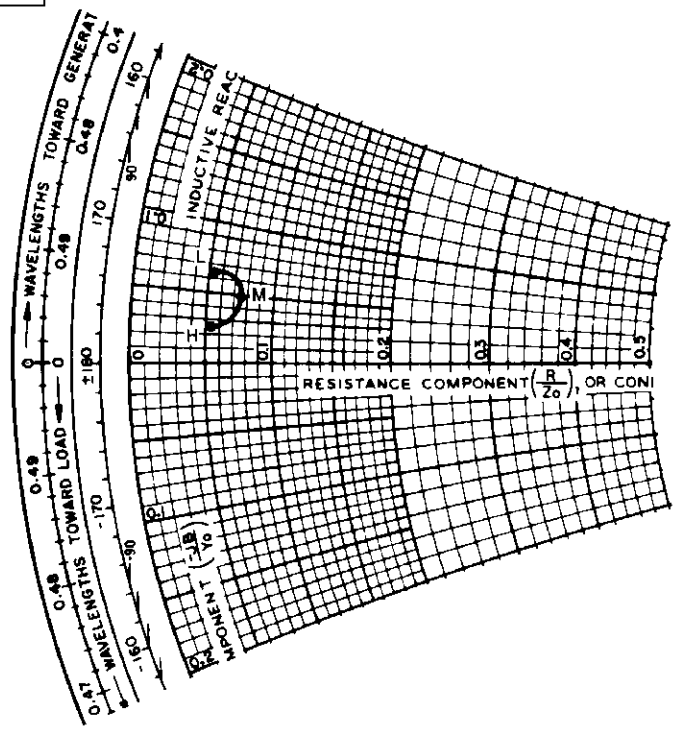


FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
L = 1025 MHz	2.4 + j 3.2	1.4 – j 2.2
M = 1090 MHz	3.8 + j 2.5	1.6 – j 1.6
H = 1150 MHz	2.3 + j 1.3	1.2 – j 1.1

TYPICAL INPUT IMPEDANCE

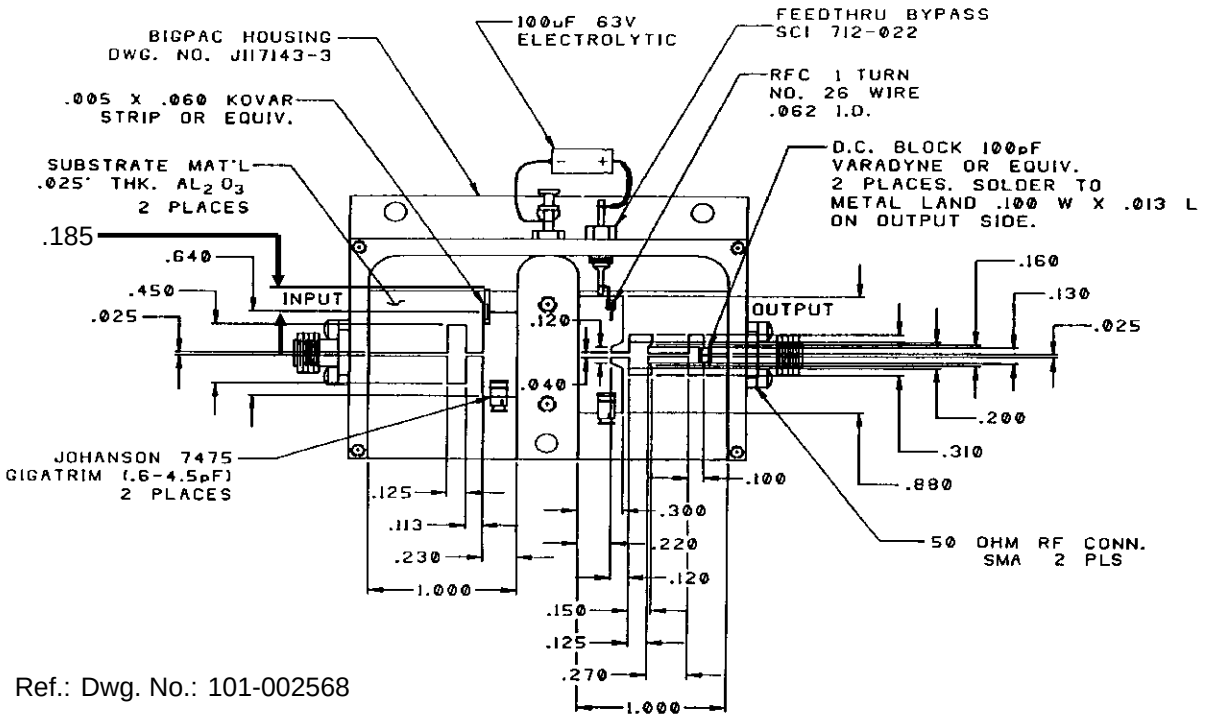


P_{IN} = 63 W
V_{CC} = +50 V
Z_O* = 50 Ω



*Normalized Impedance

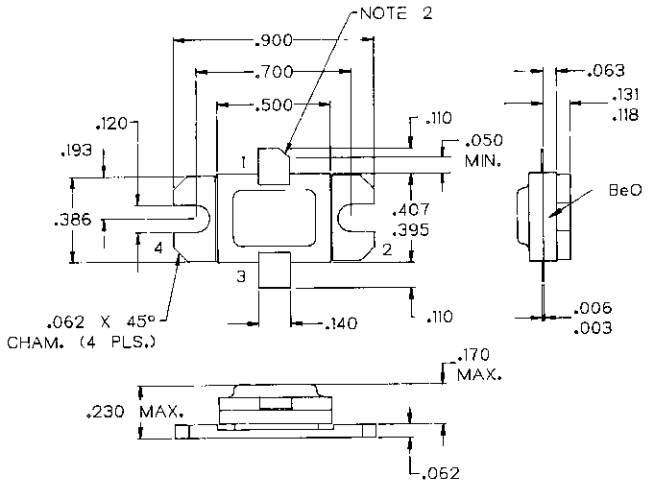
TEST CIRCUIT



Ref.: Dwg. No.: 101-002568

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.: J135066F



NOTES:
1. ALL TOLERANCE ± .010 EXCEPT WHERE NOTED; DIMENSIONS IN INCHES.
2. COLLECTOR LEAD CHAMFER 45° NOM. X .040 NOM.

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