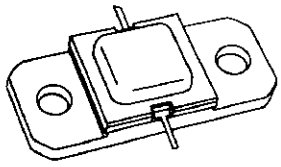
SGS-THOMSON MICROELECTRONICS

AM1011-070

RF & MICROWAVE TRANSISTORS L-BAND AVIONICS APPLICATIONS

- REFRACTORY/GOLD METALLIZATION
- EMITTER SITE BALLASTED
- LOW THERMAL RESISTANCE
- INPUT/OUTPUT MATCHING
- OVERLAY GEOMETRY
- METAL/CERAMIC HERMETIC PACKAGE
- P_{OUT} = 70 W MIN. WITH 6.7 dB GAIN



.400 x .400 2NLFL (S042)
hermetically sealed

ORDER CODE	BRANDING
AM1011-70	1011-70

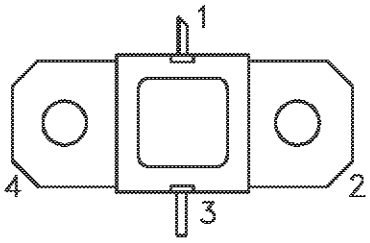
DESCRIPTION

The AM1011-070 device is a high power Class C transistor specifically designed for L-Band Avionics transponder/interrogator pulsed output and driver applications.

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

The AM1011-070 is supplied in the AMPAC™ Hermetic Metal/Ceramic package with internal 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* ($T_C \leq 100°C$)	200	W
I_C	Device Current*	8.0	A
V_{CC}	Collector-Supply Voltage*	32	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*	0.68	°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 = 25mA	I_E = 0mA	55	—	—	V
BV_{EBO}	I_E = 10mA	I_C = 0mA	3.5	—	—	V
BV_{CER}	IC = 25mA	R_{BE} = 10Ω	55	—	—	V
I_{CES}	V_{CE} = 35V		—	—	20	mA
h_{FE}	V_{CE} = 5V	I_C = 2mA	20	—	200	—

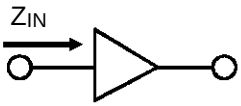
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 1090 MHz	P_{IN} = 15W	V_{CC} = 28V	70	—	—	W
ηc	f = 1090 MHz	P_{IN} = 15W	V_{CC} = 28V	45	—	—	%
G_P	f = 1090 MHz	P_{IN} = 15W	V_{CC} = 28V	6.7	—	—	dB

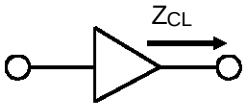
Note: Pulse Width = 100µSec
Duty Cycle = 2%

IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE



TYPICAL COLLECTOR LOAD IMPEDANCE

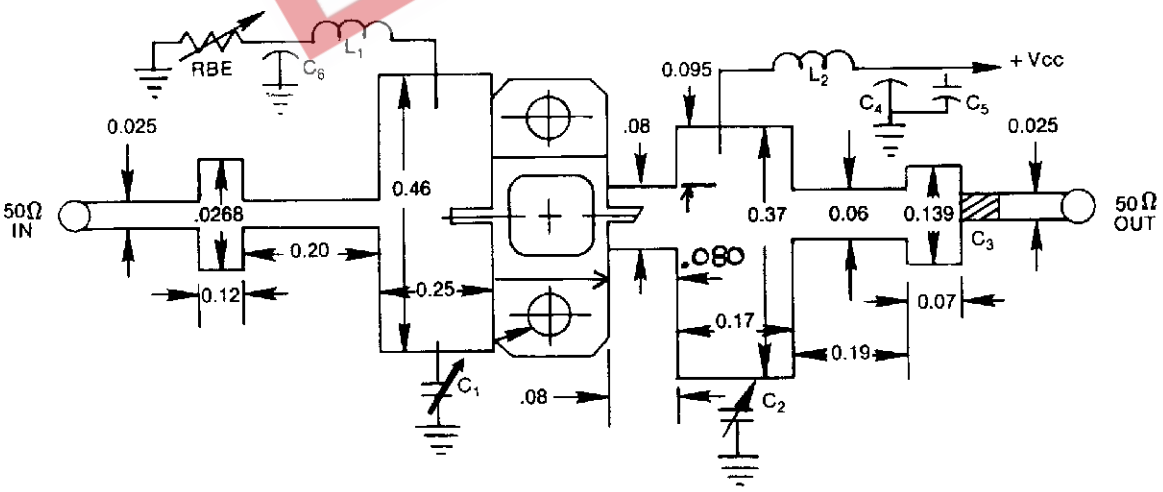


P_{IN} = 15 W
V_{CC} = 28 V
Normalized to 50 ohms

FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
L = 1025 MHz	4.7 + j 4.7	3.6 + j 4.3
H = 1090 MHz	4.7 + j 3.9	3.3 + j 4.4

TEST CIRCUIT

Ref. Dwg. No. J313119

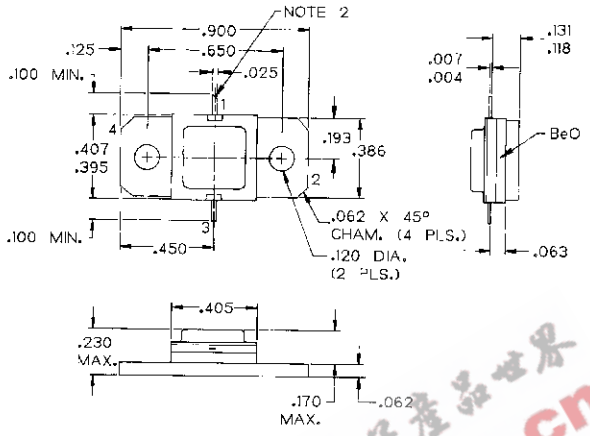


All dimensions are in inches.
Substrate material: .025 thick Al_2O_3

C1 : 0.3—3.5 pF Johanson Gigatrim Capacitor
C2 : 0.3—3.5 pF Johanson Gigatrim Capacitor
C3 : 100 pF Chip Capacitor
C4 : 1500 pF Erie Feedthru, or Equiv.
C5 : 100 MF Electrolytic Capacitor, 50V
C6 : 1500 pF Erie Feedthrough, or Equiv.
L1 : #32 Wire, 4 Turn .062 I.D.
L2 : #32 Wire, 4 Turn .062 I.D.
RBE : 0 — 1.0 Ohm

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.: J113214F



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