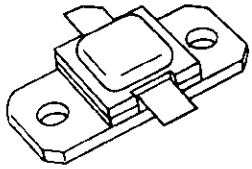
SGS-THOMSON MICROELECTRONICS

AM1011-075

RF & MICROWAVE TRANSISTORS L-BAND AVIONICS APPLICATIONS

- REFRACTORY/GOLD METALLIZATION
- EMITTER SITE BALLASTED
- 10:1 VSWR CAPABILITY
- LOW THERMAL RESISTANCE
- INPUT/OUTPUT MATCHING
- OVERLAY GEOMETRY
- METAL/CERAMIC HERMETIC PACKAGE
- P_{OUT} = 75 W MIN. WITH 9.2 dB GAIN



.400 x .400 2LFL (S036)
hermetically sealed

ORDER CODE	BRANDING
AM1011-075	1011-75

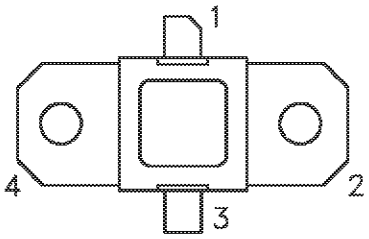
DESCRIPTION

The AM1011-075 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 10:1 output VSWR at rated RF conditions. Low RF thermal resistance and computerized automatic wire bonding techniques ensure high reliability and product consistency.

The AM1011-075 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* ($T_C \leq 100°C$)	175	W
I_C	Device Current*	5.4	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*	0.86	°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 = 10mA	I_E = 0mA	65	—	—	V
BV_{EBO}	I_E = 4mA	I_C = 0mA	3.5	—	—	V
BV_{CER}	IC = 20mA	R_{BE} = 10Ω	65	—	—	V
I_{CES}	V_{CE} = 50V		—	—	6	mA
h_{FE}	V_{CE} = 5V	I_C = 1mA	10	—	—	—

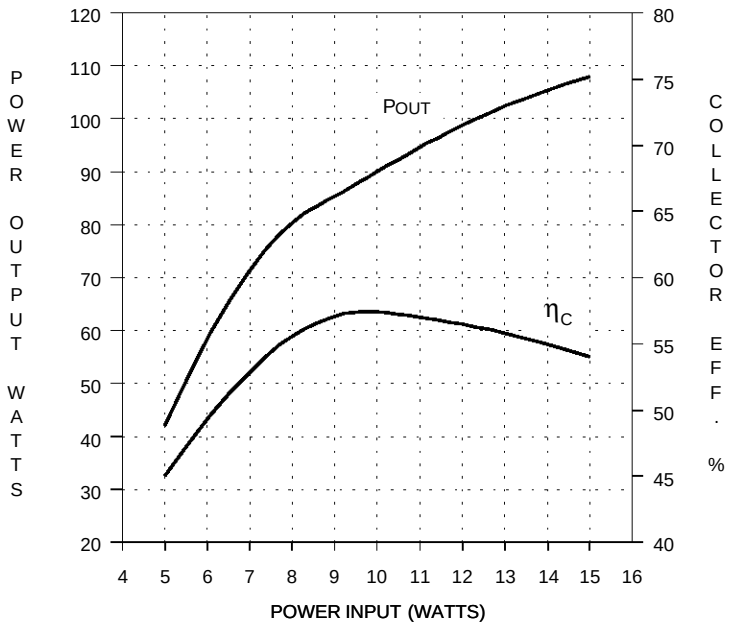
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 1090MHz	P_{IN} = 9W Peak	V_{CC} = 50V	75	84	—	W
ηc	f = 1090MHz	P_{IN} = 9W Peak	V_{CC} = 50V	48	56	—	%
G_P	f = 1090MHz	P_{IN} = 9W Peak	V_{CC} = 50V	9.2	9.7	—	dB

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

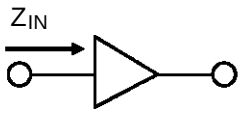
TYPICAL PERFORMANCE

TYPICAL POWER OUTPUT & COLLECTOR EFFICIENCY vs POWER INPUT

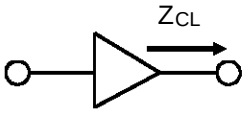


IMPEDANCE DATA

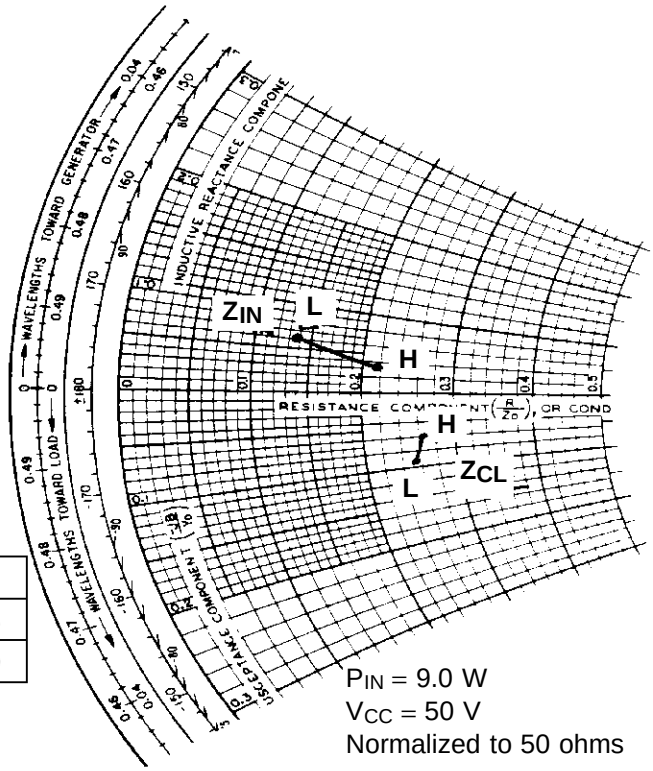
TYPICAL INPUT IMPEDANCE



TYPICAL COLLECTOR LOAD IMPEDANCE

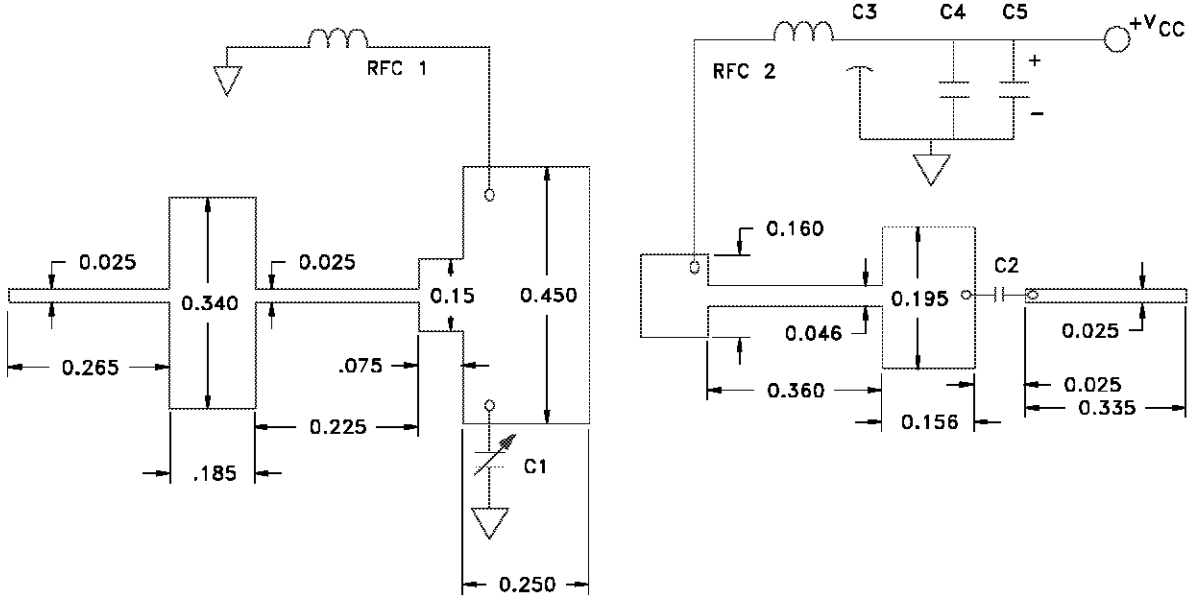


FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
L = 1030 MHz	7.0 + j 3.0	12.5 – j 4.5
H = 1090 MHz	11.0 + j 1.5	13.0 – j 3.0



P_{IN} = 9.0 W
V_{CC} = 50 V
Normalized to 50 ohms

TEST CIRCUIT

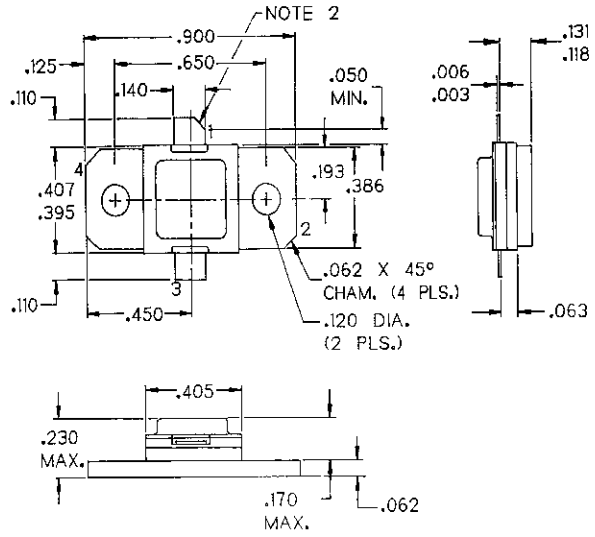


All dimensions are in inches.
Substrate material: .025 thick Al_2O_3

C1 : 0.8—8.0 pF Johanson Gigatrim Capacitor
C2 : 100 pF Chip Capacitor
C3 : 1500 pF Filtercon Feedthru
C4 : 1 µF, Ceramic Capacitor
C5 : 100 µF, Electrolytic Capacitor
RFC 1: Au Plated Ni Strap
0.280 Long x 0.035 Wide x 0.005 Thick
RFC 2: #26 Wire, 4 Turn 1/16 I.D.

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.: J133102E



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