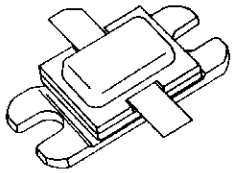
SGS-THOMSON MICROELECTRONICS

AM0912-300

RF & MICROWAVE TRANSISTORS 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} = 300 W MIN. WITH 7.0 dB GAIN
- BANDWIDTH 255 MHz



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

ORDER CODE	BRANDING
AM0912-300	0912-300

DESCRIPTION

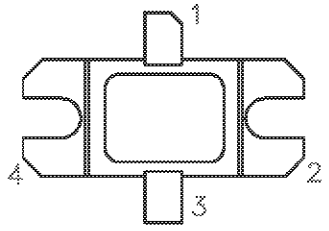
The AM0912-300 avionics power transistor is a broadband, high peak pulse power device specifically designed for avionics applications requiring broad bandwidth with moderate duty cycle and pulse width constraints such as ground/ship based DME/TACAN.

The AM0912-300 is also designed for specialized applications where reduced power is provided under pulse formats utilizing short pulse widths and high burst or overall duty cycles.

This device is capable of withstanding 15:1 VSWR mismatch load condition at any phase angle under full rated conditions.

The AM0912-300 is housed in the unique BIG-PAC™ 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* ($T_C \leq 100°C$)	940	W
I_C	Device Current*	24	A
V_{CC}	Collector-Supply Voltage*	50	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*	0.16	°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	80	—	V
BV_{EBO}	I_E = 15mA	I_C = 0mA	3.0	—	—	V
BV_{CER}	IC = 50mA	R_{BE} = 10Ω	65	—	—	V
I_{CES}	V_{CE} = 50V		—	—	30	mA
h_{FE}	V_{CE} = 5V	I_C = 5A	10	—	—	—

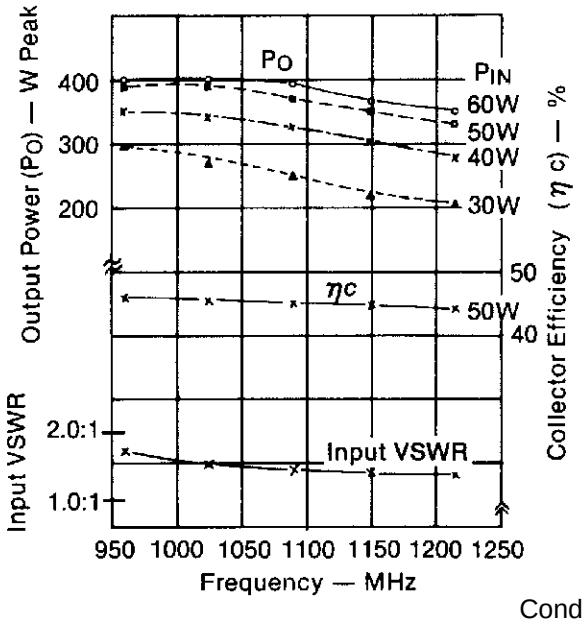
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 960 — 1215MHz	P_{IN} = 60W	V_{CC} = 50V	300	330	—	W
ηc	f = 960 — 1215MHz	P_{IN} = 60W	V_{CC} = 50V	38	45	—	%
G_P	f = 960 — 1215MHz	P_{IN} = 60W	V_{CC} = 50V	7.0	7.4	—	dB

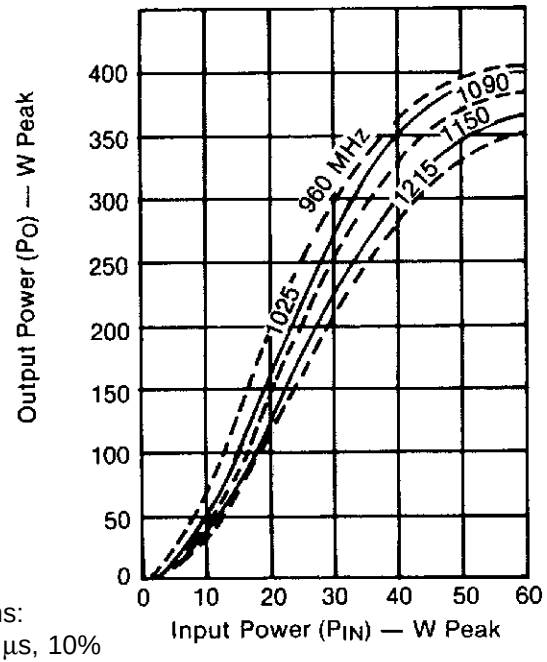
Note: Pulse Width = 10μSec
Duty Cycle = 10%

TYPICAL PERFORMANCE

TYPICAL BROADBAND RESPONSE

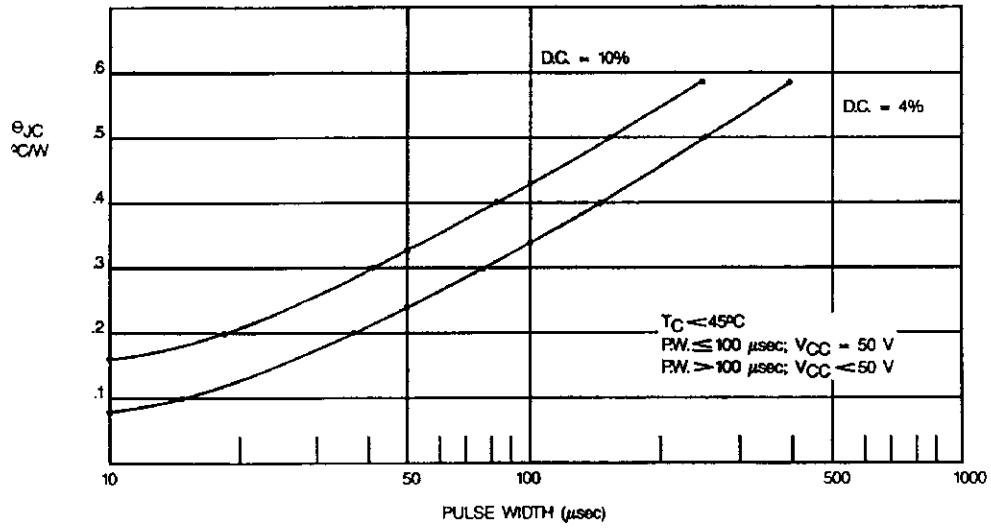


TYPICAL POWER OUTPUT vs POWER INPUT



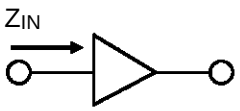
Conditions:
PW = 10 µs, 10%
V_{CC} = 50 V

MAXIMUM THERMAL RESISTANCE vs PULSE WIDTH & DUTY CYCLE

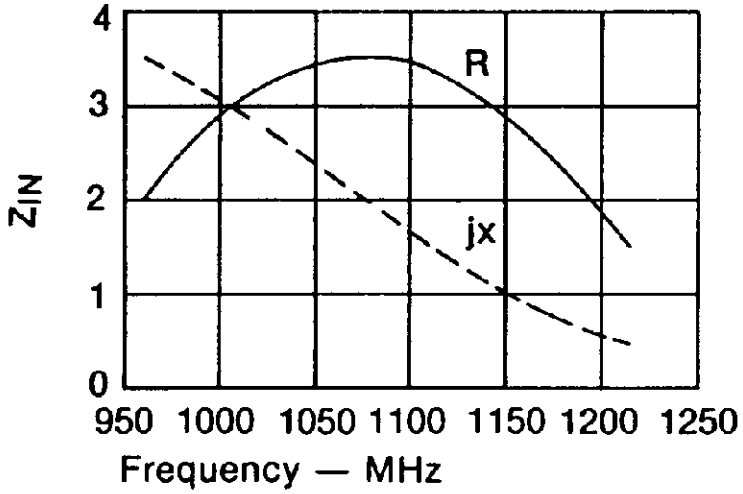


IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

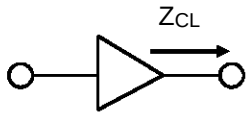


P_{IN} = 60 W
V_{CC} = 50 V
Z_O = 50 ohms



FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
L = 960 MHz	2.0 + j 3.6	1.7 – j 2.2
M = 1090 MHz	3.5 + j 1.7	2.0 – j 1.7
H = 1215 MHz	1.6 + j 0.5	1.8 – j 2.0

TYPICAL COLLECTOR LOAD IMPEDANCE



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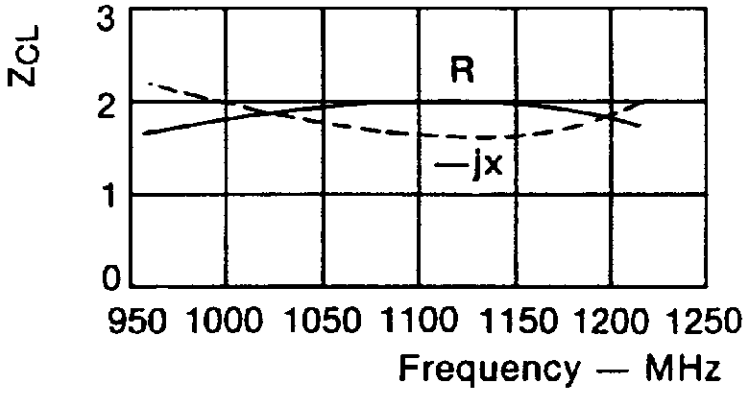
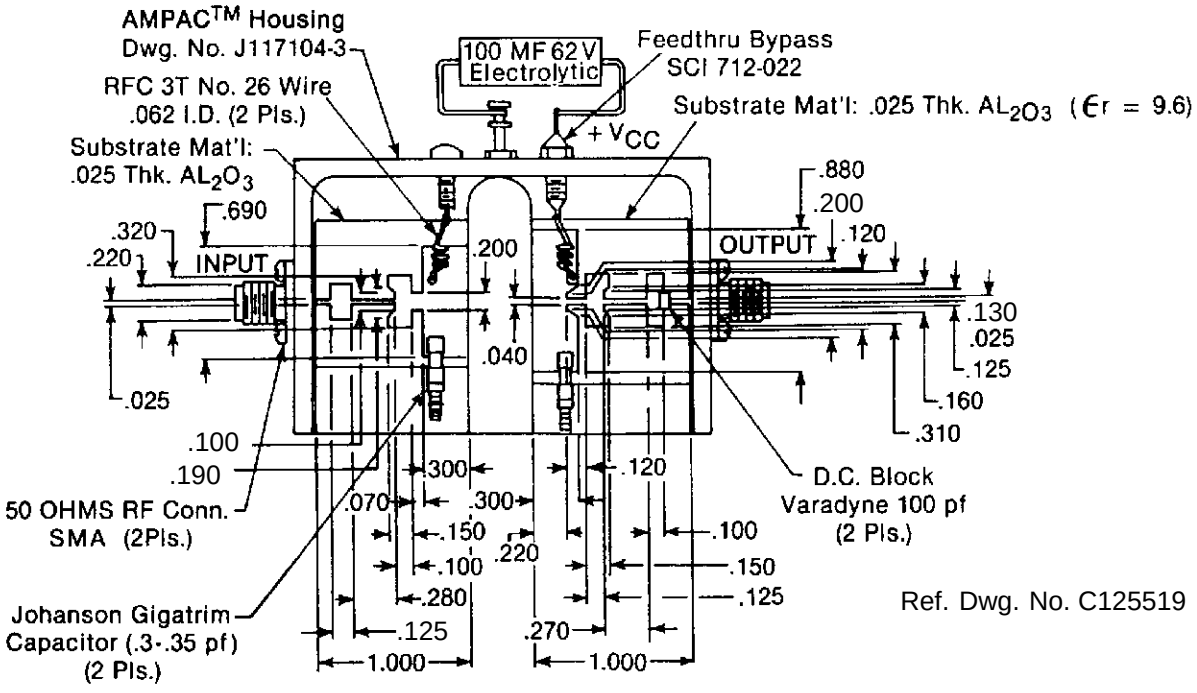
Z_O = 50 ohms



TEST CIRCUIT



PACKAGE MECHANICAL DATA