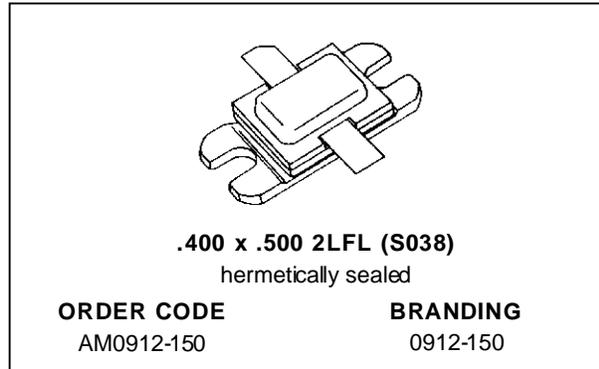


## RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

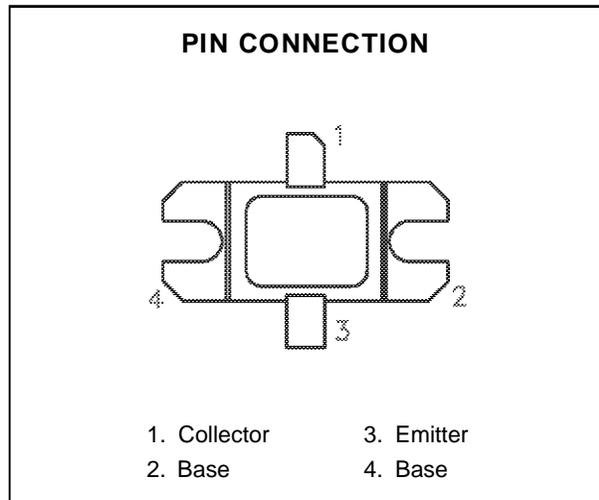
- REFRACTORY/GOLD METALLIZATION
- EMITTER SITE BALLASTED
- LOW THERMAL RESISTANCE
- INPUT/OUTPUT MATCHING
- OVERLAY GEOMETRY
- METAL/CERAMIC HERMETIC PACKAGE
- P<sub>OUT</sub> = 150 W MIN. WITH 7.5 dB GAIN
- BANDWIDTH = 255MHz



### DESCRIPTION

The AM0912-150 is designed for specialized avionics applications including Mode-S, TCAS and JTIDS, where power is provided under pulse formats utilizing short pulse widths and high burst or overall duty cycles.

The AM0912-150 is housed in the unique BIG-PAC™ Hermetic Metal/Ceramic package with internal Input/Output matching structures.



### ABSOLUTE MAXIMUM RATINGS (T<sub>case</sub> = 25°C)

Symbol	Parameter	Value	Unit
P <sub>DISS</sub>	Power Dissipation* (T <sub>c</sub> ≤ 100°C)	300	W
I <sub>c</sub>	Device Current*	16.5	A
V <sub>CC</sub>	Collector-Supply Voltage*	35	V
T <sub>J</sub>	Junction Temperature (Pulsed RF Operation)	250	°C
T <sub>STG</sub>	Storage Temperature	- 65 to +200	°C

### THERMAL DATA

R <sub>TH(j-c)</sub>	Junction-Case Thermal Resistance*	0.57	°C/W
----------------------	-----------------------------------	------	------

\*Applies only to rated RF amplifier operation

## AM0912-150

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

#### STATIC

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
$BV_{\text{CBO}}$	$I_{\text{C}} = 60\text{mA}$ $I_{\text{E}} = 0\text{mA}$	55	65	—	V
$BV_{\text{EBO}}$	$I_{\text{E}} = 10\text{mA}$ $I_{\text{C}} = 0\text{mA}$	3.5	—	—	V
$BV_{\text{CES}}$	$I_{\text{C}} = 100\text{mA}$	55	—	—	V
$I_{\text{CES}}$	$V_{\text{CE}} = 35\text{V}$	—	—	25	mA
$h_{\text{FE}}$	$V_{\text{CE}} = 5\text{V}$ $I_{\text{C}} = 5\text{A}$	20	—	—	—

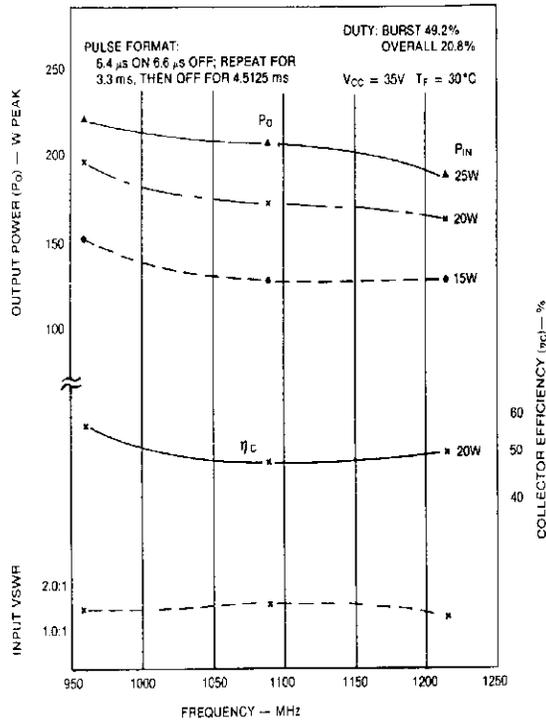
#### DYNAMIC

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
$P_{\text{OUT}}$	$f = 960 \text{ — } 1215\text{MHz}$ $P_{\text{IN}} = 26.7\text{W}$ $V_{\text{CC}} = 35\text{V}$	150	—	—	W
$\eta_{\text{c}}$	$f = 960 \text{ — } 1215\text{MHz}$ $P_{\text{IN}} = 26.7\text{W}$ $V_{\text{CC}} = 35\text{V}$	45	—	—	%
$G_{\text{P}}$	$f = 960 \text{ — } 1215\text{MHz}$ $P_{\text{IN}} = 26.7\text{W}$ $V_{\text{CC}} = 35\text{V}$	7.5	—	—	dB

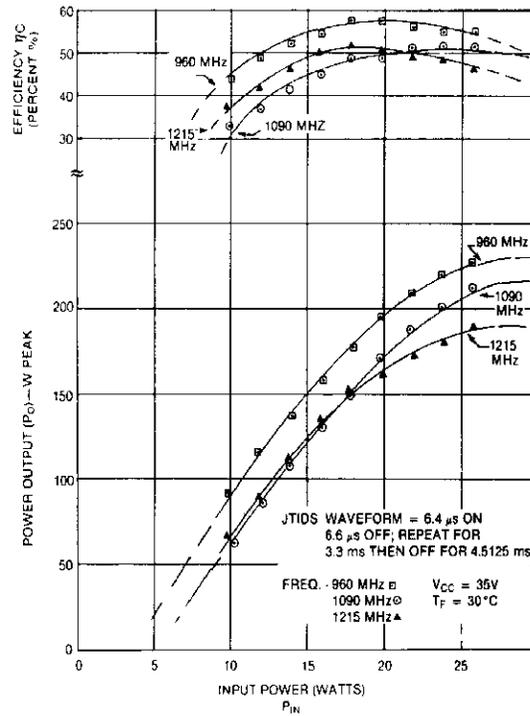
Note: Pulse Format: 6.4  $\mu\text{S}$  on 6.6  $\mu\text{S}$  off; repeat for 3.3 ms, then off for 4.5125 ms  
Duty Cycle: Burst 49.2% overall 20.8%

TYPICAL PERFORMANCE

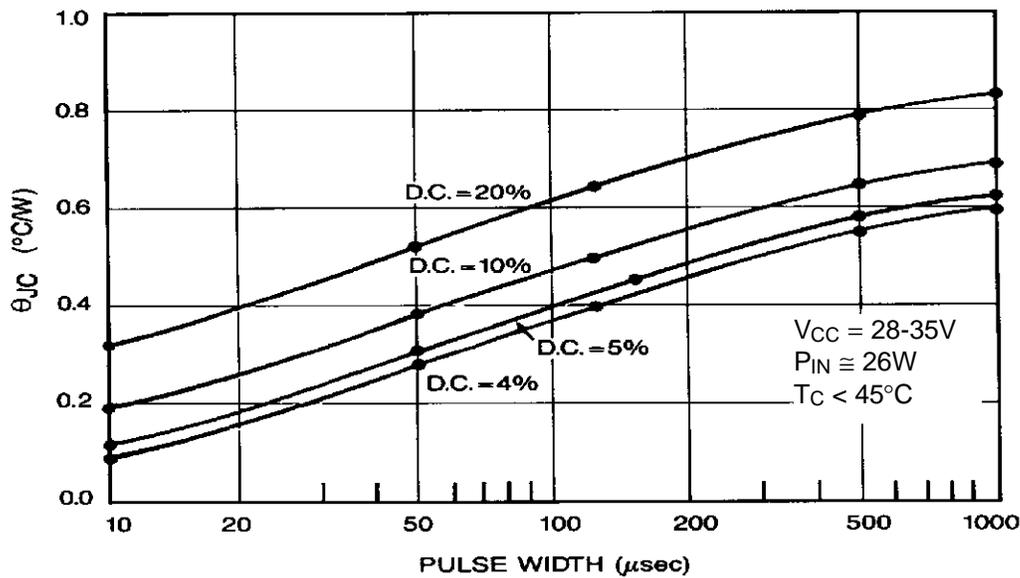
TYPICAL POWER INPUT, POWER OUTPUT & COLLECTOR EFFICIENCY vs FREQUENCY



POWER OUTPUT & COLLECTOR EFFICIENCY vs POWER INPUT

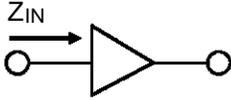


MAXIMUM THERMAL RESISTANCE vs PULSE WIDTH & DUTY CYCLE

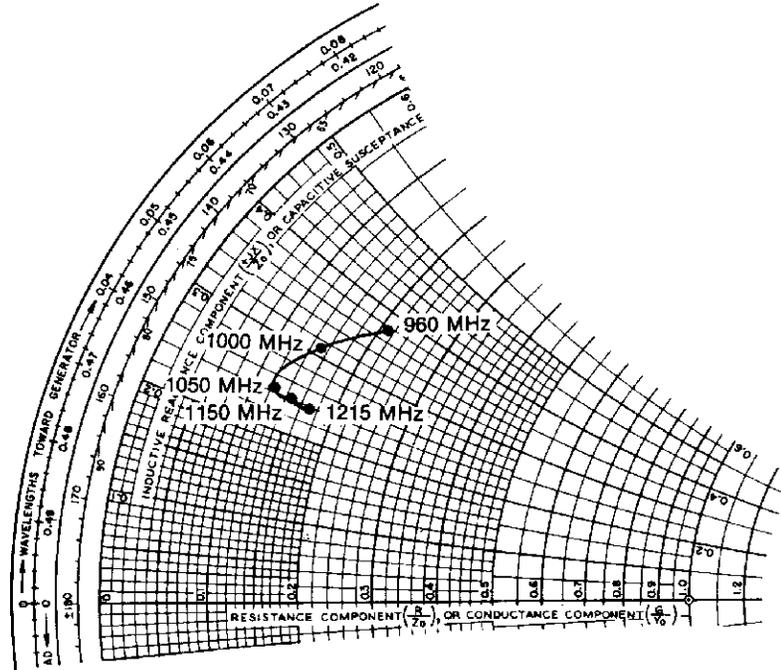


IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

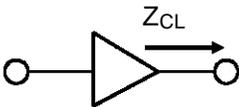


$P_{IN} = 26.7 \text{ W}$   
 $V_{CC} = 35 \text{ V}$   
 $Z_{O^*} = 10 \text{ ohms}$

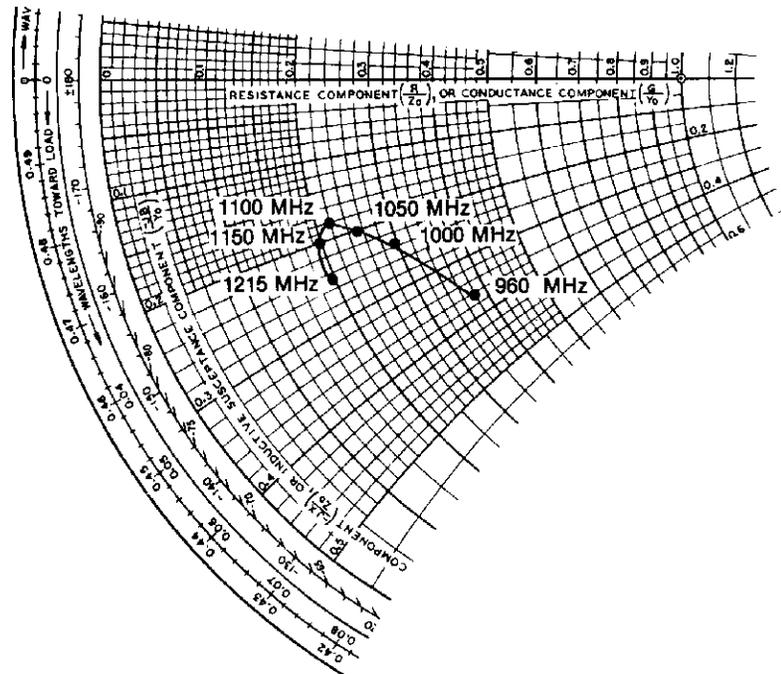


FREQ.	$Z_{IN} (\Omega)$	$Z_{CL} (\Omega)$
L = 960 MHz	$2.1 + j 3.8$	$3.8 - j 3.6$
• = 1000 MHz	$1.5 + j 3.1$	$3.0 - j 2.4$
M = 1050 MHz	$1.2 + j 2.5$	$2.5 - j 2.0$
• = 1150 MHz	$1.5 + j 2.4$	$2.0 - j 2.0$
H = 1215 MHz	$1.7 + j 2.4$	$2.0 - j 2.5$

TYPICAL COLLECTOR LOAD IMPEDANCE



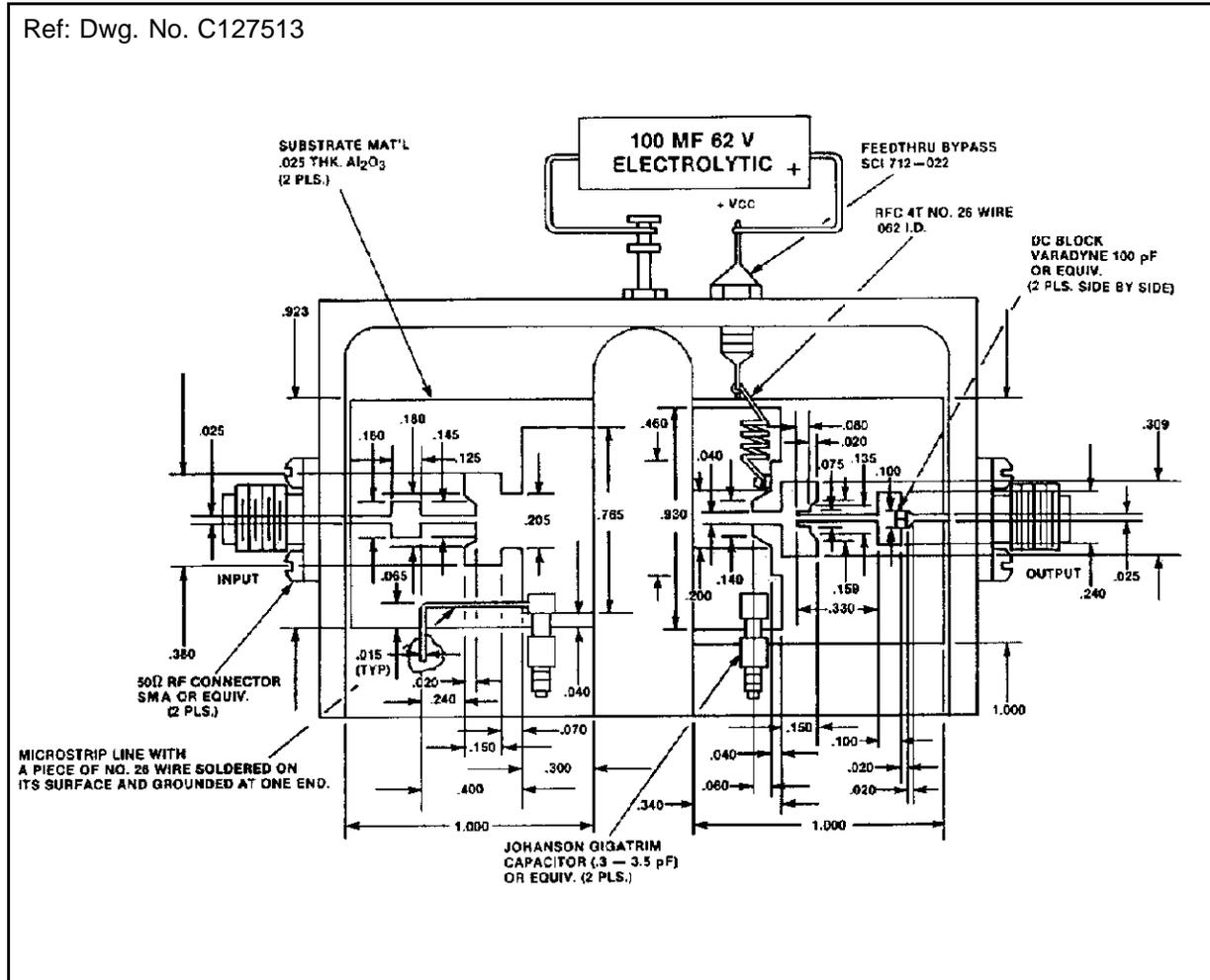
$P_{IN} = 26.7 \text{ W}$   
 $V_{CC} = 35 \text{ V}$   
 $Z_{O^*} = 10 \text{ ohms}$



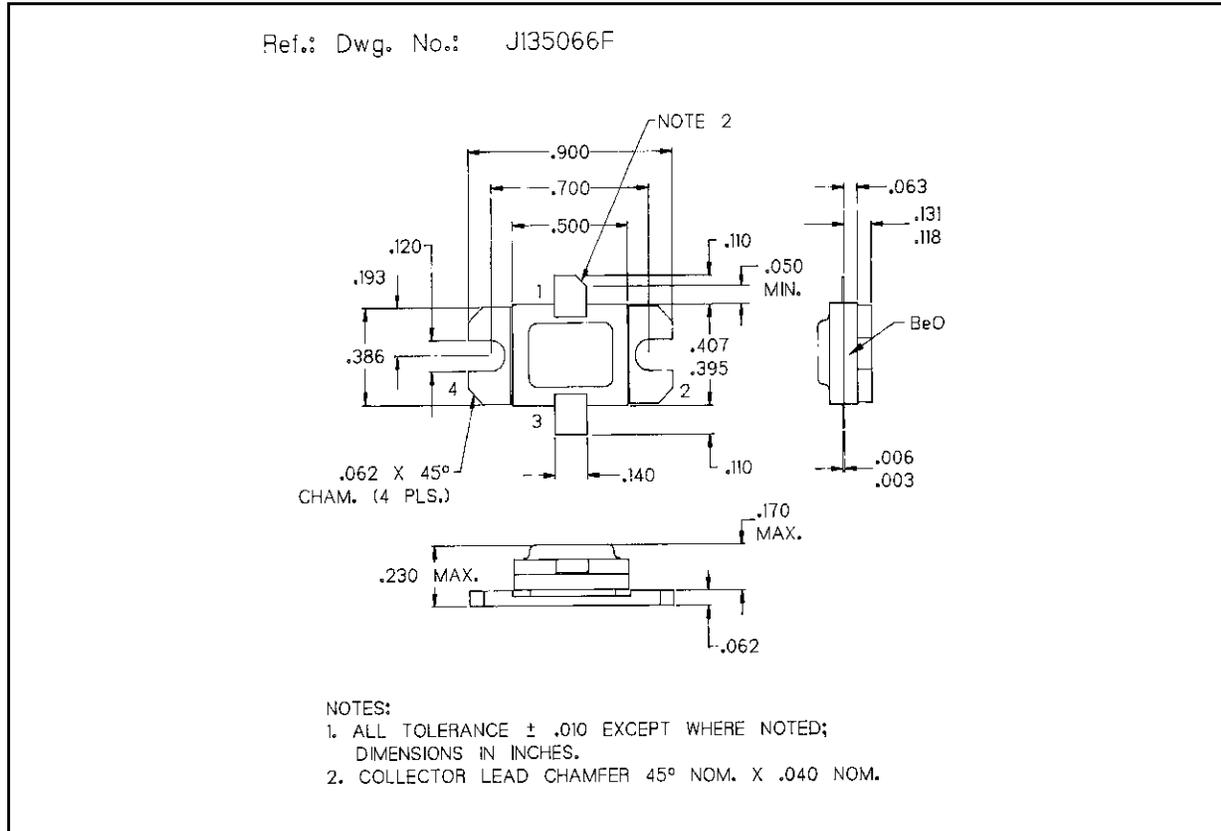
\*Normalized Impedance

TEST CIRCUIT

Ref: Dwg. No. C127513



PACKAGE MECHANICAL DATA



Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may results from its use. No license is granted by implication or otherwise under any patent or patent rights of SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectronics.

© 1994 SGS-THOMSON Microelectronics - All Rights Reserved

SGS-THOMSON Microelectronics GROUP OF COMPANIES  
Australia - Brazil - France - Germany - Hong Kong - Italy - Japan - Korea - Malaysia - Malta - Morocco - The Netherlands -  
Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A