

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

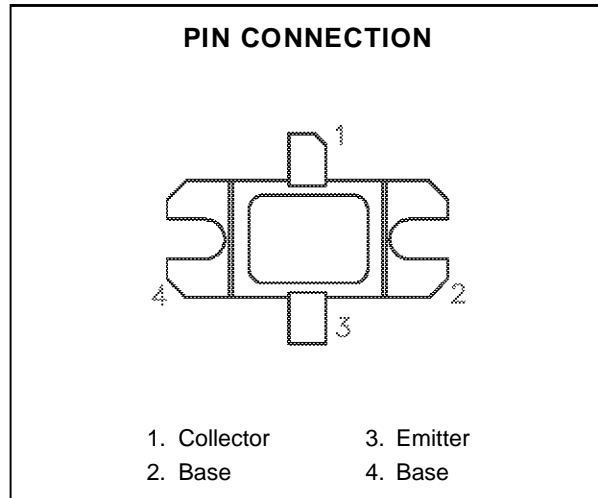
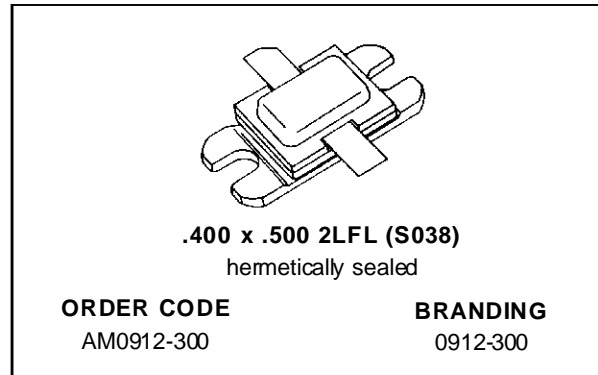
DESCRIPTION

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.



ABSOLUTE MAXIMUM RATINGS ($T_{case} = 25^{\circ}C$)

Symbol	Parameter	Value	Unit
P_{DISS}	Power Dissipation* ($T_C \leq 100^{\circ}C$)	940	W
I_C	Device Current*	24	A
V_{CC}	Collector-Supply Voltage*	50	V
T_J	Junction Temperature (Pulsed RF Operation)	250	$^{\circ}C$
T_{STG}	Storage Temperature	- 65 to +200	$^{\circ}C$

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance*	0.16	$^{\circ}C/W$
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*Applies only to rated RF amplifier operation

AM0912-300

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

STATIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
BV_{CBO}	$I_{\text{C}} = 50\text{mA}$	$I_{\text{E}} = 0\text{mA}$	65	80	—	V	
BV_{EBO}	$I_{\text{E}} = 15\text{mA}$	$I_{\text{C}} = 0\text{mA}$	3.0	—	—	V	
BV_{CER}	$I_{\text{C}} = 50\text{mA}$	$R_{\text{BE}} = 10\Omega$	65	—	—	V	
I_{CES}	$V_{\text{CE}} = 50\text{V}$		—	—	30	mA	
h_{FE}	$V_{\text{CE}} = 5\text{V}$	$I_{\text{C}} = 5\text{A}$	10	—	—	—	

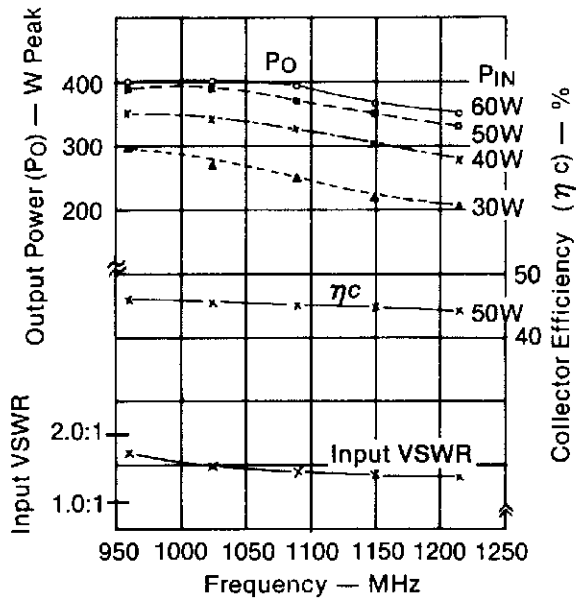
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	$f = 960 - 1215\text{MHz}$	$P_{\text{IN}} = 60\text{W}$	$V_{\text{CC}} = 50\text{V}$	300	330	—	W
η_{C}	$f = 960 - 1215\text{MHz}$	$P_{\text{IN}} = 60\text{W}$	$V_{\text{CC}} = 50\text{V}$	38	45	—	%
G_{P}	$f = 960 - 1215\text{MHz}$	$P_{\text{IN}} = 60\text{W}$	$V_{\text{CC}} = 50\text{V}$	7.0	7.4	—	dB

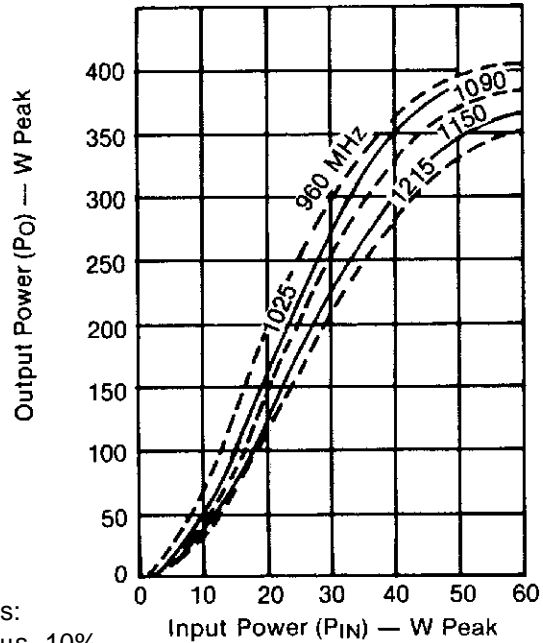
Note: Pulse Width = $10\mu\text{Sec}$
Duty Cycle = 10%

TYPICAL PERFORMANCE

TYPICAL BROADBAND RESPONSE

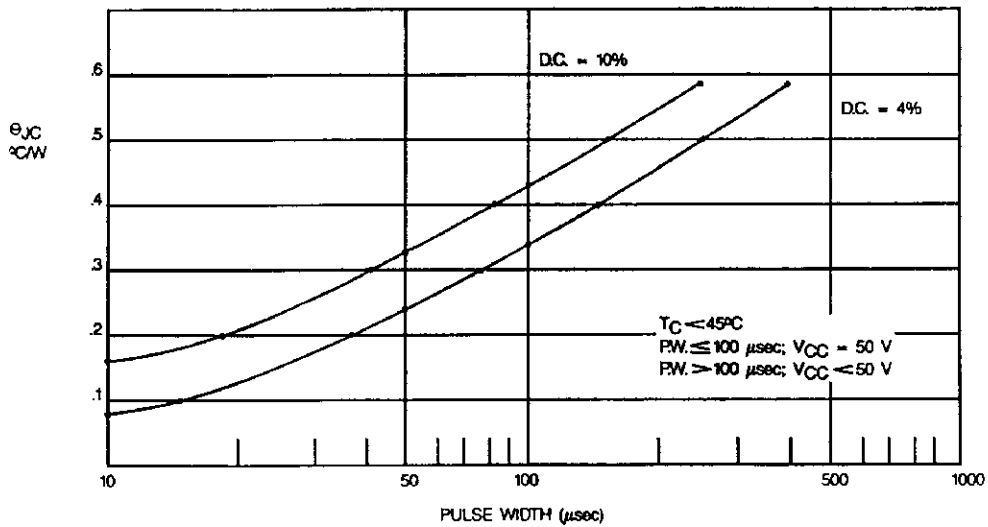


TYPICAL POWER OUTPUT vs POWER INPUT



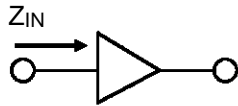
Conditions:
 PW = 10 μ s, 10%
 V_{CC} = 50 V

MAXIMUM THERMAL RESISTANCE vs PULSE WIDTH & DUTY CYCLE

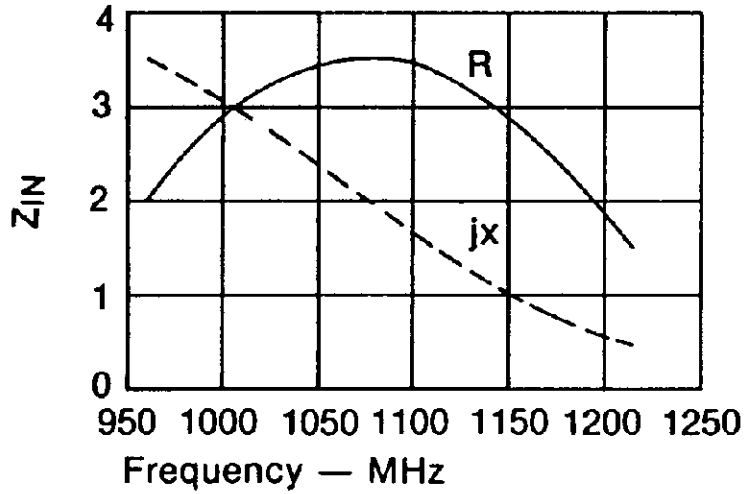


IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

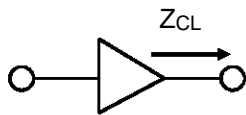


$P_{IN} = 60\text{ W}$
 $V_{CC} = 50\text{ V}$
 $Z_O = 50\text{ ohms}$

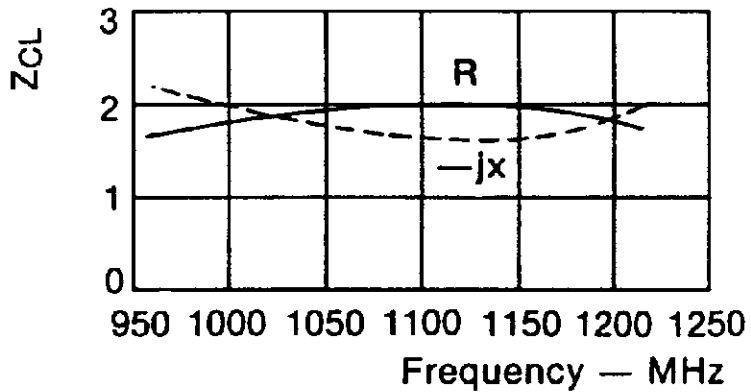


FREQ.	$Z_{IN} (\Omega)$	$Z_{CL} (\Omega)$
L = 960 MHz	$2.0 + j 3.6$	$1.7 - j 2.2$
M = 1090 MHz	$3.5 + j 1.7$	$2.0 - j 1.7$
H = 1215 MHz	$1.6 + j 0.5$	$1.8 - j 2.0$

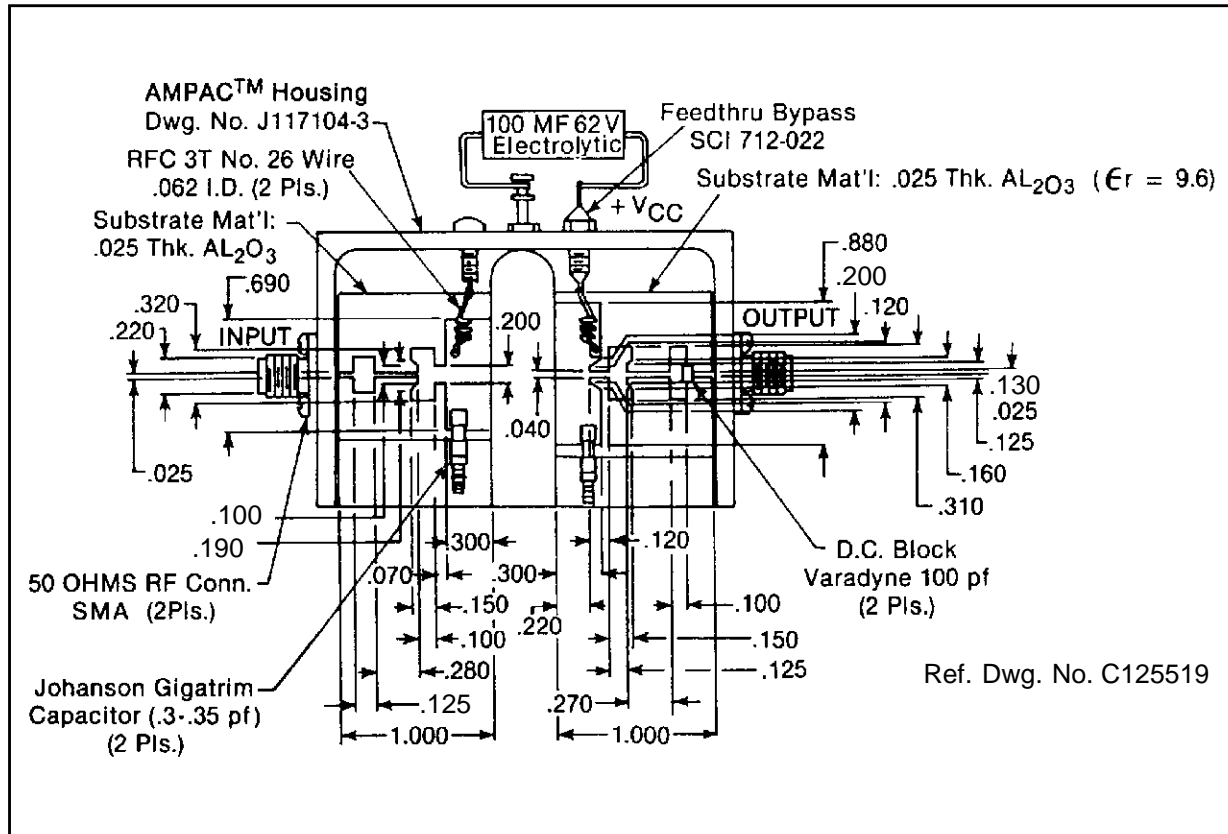
TYPICAL COLLECTOR LOAD IMPEDANCE



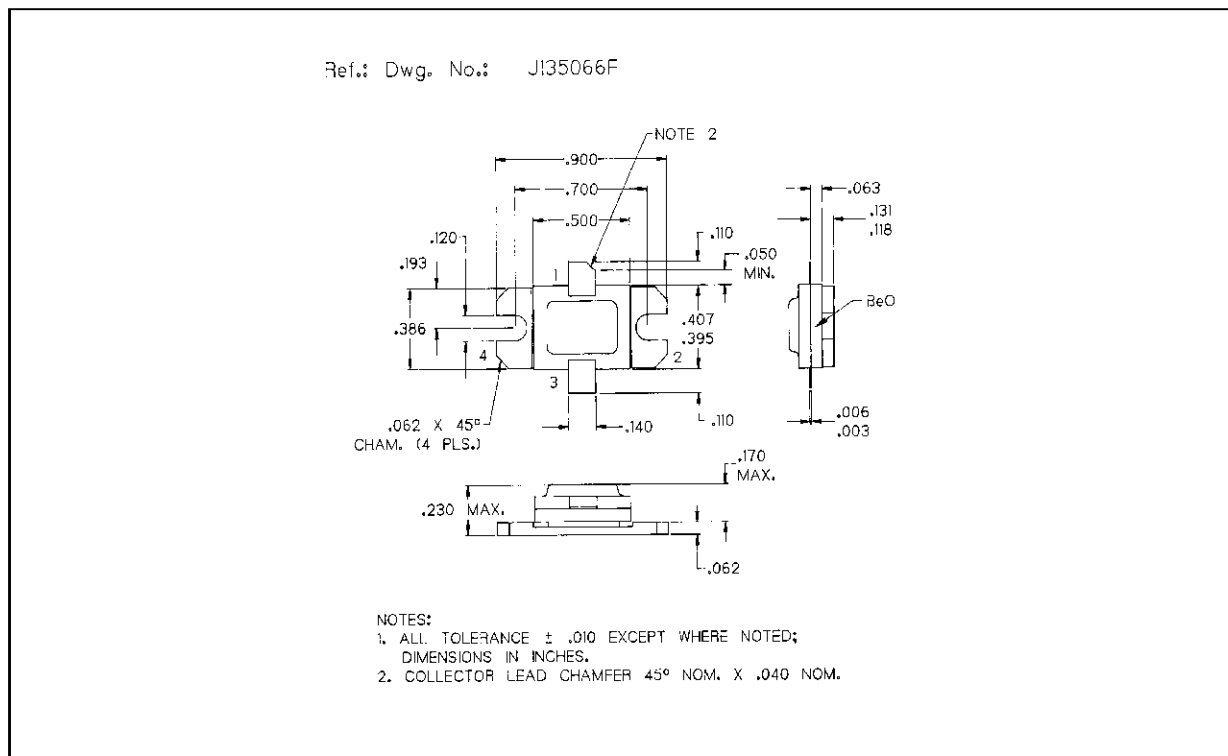
$P_{IN} = 60\text{ W}$
 $V_{CC} = 50\text{ V}$
 $Z_O = 50\text{ ohms}$



TEST CIRCUIT



PACKAGE MECHANICAL DATA



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