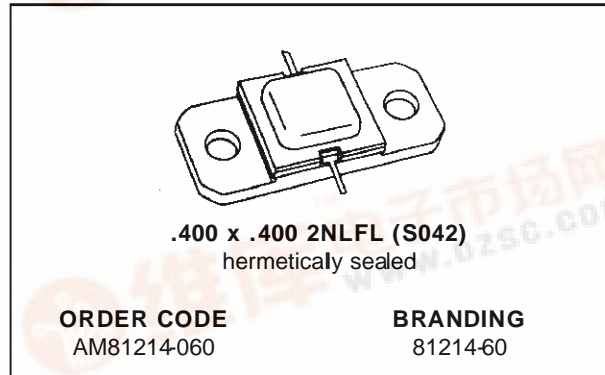




AM81214-060

RF & MICROWAVE TRANSISTORS L-BAND RADAR APPLICATIONS

- REFRACTORY/GOLD METALLIZATION
- EMITTER SITE BALLASTED
- RUGGEDIZED VSWR $\infty:1$
- LOW THERMAL RESISTANCE
- INPUT/OUTPUT MATCHING
- OVERLAY GEOMETRY
- METAL/CERAMIC HERMETIC PACKAGE
- $P_{OUT} = 55 \text{ W MIN. WITH } 6.6 \text{ dB GAIN}$

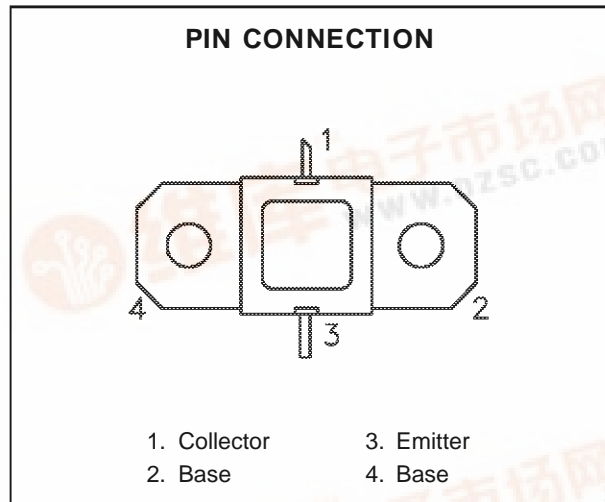


DESCRIPTION

The AM81214-060 device is a high power transistor specifically designed for L-Band radar pulsed output and driver applications.

The device is capable of operation over a wide range of pulse widths, duty cycles, and temperatures and is capable of withstanding $\infty:1$ output VSWR at rated RF conditions. Low RF thermal resistance and computerized automatic wire bonding techniques ensure high reliability and product consistency.

The AM81214-060 is supplied in the AMPAC™ Hermetic Metal/Ceramic package with internal Input/Output matching structures.



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

Symbol	Parameter	Value	Unit
P_{DISS}	Power Dissipation* ($T_C \leq 100^{\circ}\text{C}$)	107	W
I_C	Device Current*	5.0	A
V_{CC}	Collector-Supply Voltage*	32	V
T_J	Junction Temperature (Pulsed RF Operation)	250	$^{\circ}\text{C}$
T_{STG}	Storage Temperature	- 65 to +200	$^{\circ}\text{C}$

THERMAL DATA

$\theta_{PbTH(j-c)}$	Junction-Case Thermal Resistance*	1.4	$^{\circ}\text{C/W}$
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*Applies only to rated RF amplifier operation



AM81214-060

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

STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	$I_{\text{C}} = 20\text{mA}$	$I_{\text{E}} = 0\text{mA}$	55	—	—	V
BV_{EBO}	$I_{\text{E}} = 2\text{mA}$	$I_{\text{C}} = 0\text{mA}$	3.5	—	—	V
BV_{CER}	$I_{\text{C}} = 40\text{mA}$	$R_{\text{BE}} = 10\Omega$	55	—	—	V
I_{CES}	$V_{\text{BE}} = 0\text{V}$	$V_{\text{CE}} = 28\text{V}$	—	—	10	mA
h_{FE}	$V_{\text{CE}} = 5\text{V}$	$I_{\text{C}} = 2\text{A}$	15	—	150	—

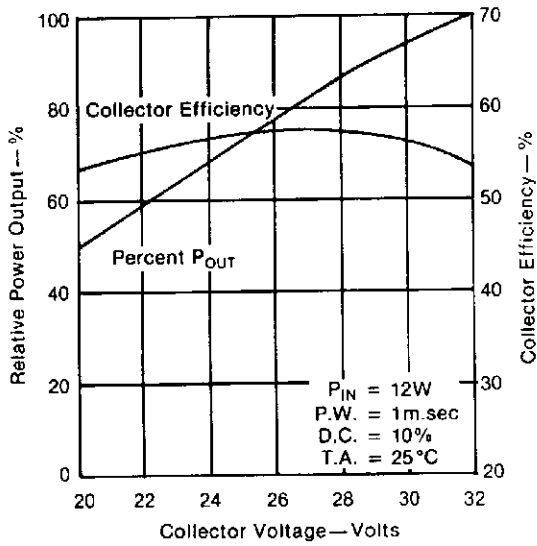
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	$f = 1215 - 1400\text{MHz}$	$P_{\text{IN}} = 12\text{W}$	$V_{\text{CC}} = 28\text{V}$	55	63	—	W
η_{C}	$f = 1215 - 1400\text{MHz}$	$P_{\text{IN}} = 12\text{W}$	$V_{\text{CC}} = 28\text{V}$	50	57	—	%
G_{P}	$f = 1215 - 1400\text{MHz}$	$P_{\text{IN}} = 12\text{W}$	$V_{\text{CC}} = 28\text{V}$	6.6	7.2	—	dB

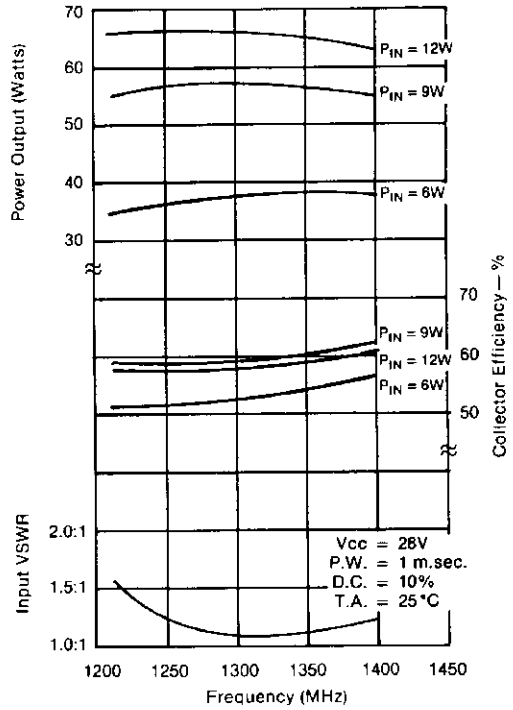
Note: Pulse Width = 1000 μs
Duty Cycle = 10%

TYPICAL PERFORMANCE

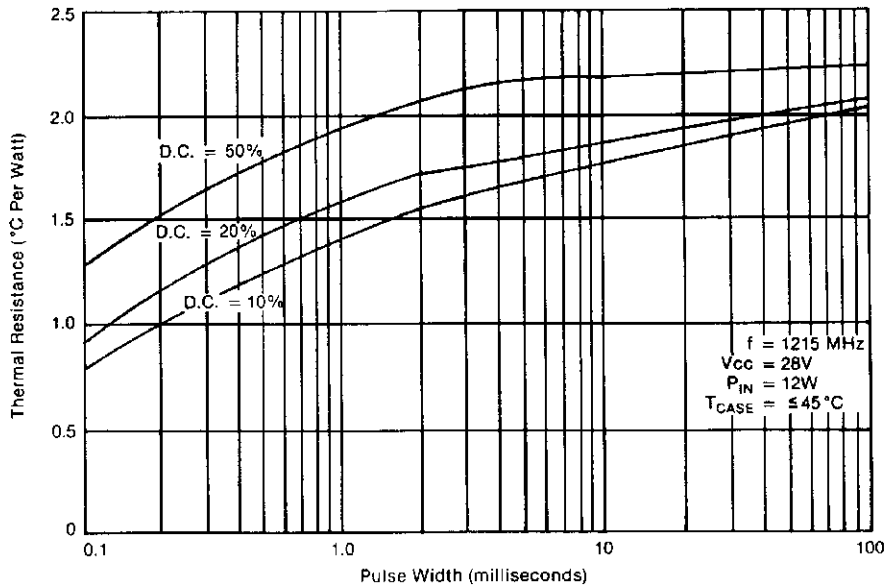
RELATIVE POWER OUTPUT & COLLECTOR EFFICIENCY vs COLLECTOR VOLTAGE



TYPICAL BROADBAND POWER AMPLIFIER

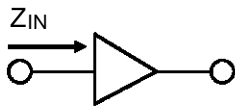


MAXIMUM THERMAL RESISTANCE vs PULSE WIDTH

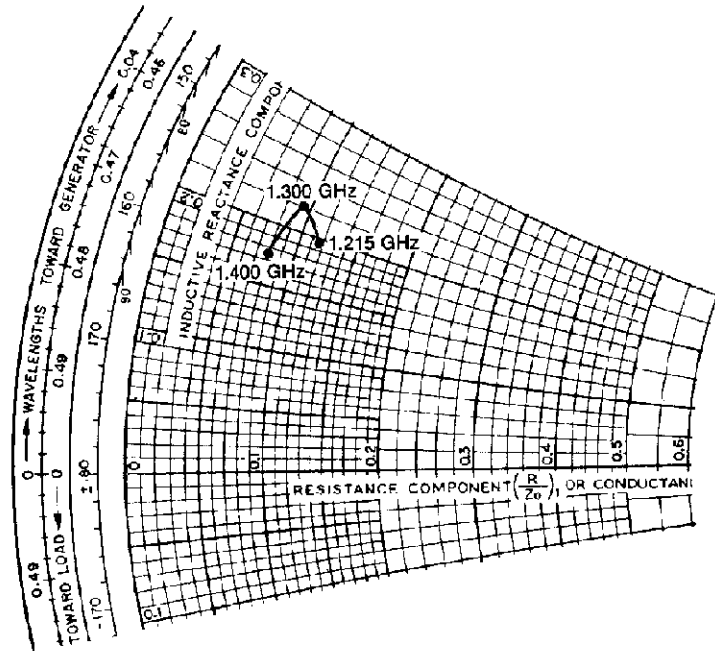


IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

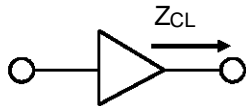


$P_{IN} = 12.0\text{ W}$
 $V_{CC} = 28\text{ V}$
 $Z_0 = 50\text{ ohms}$

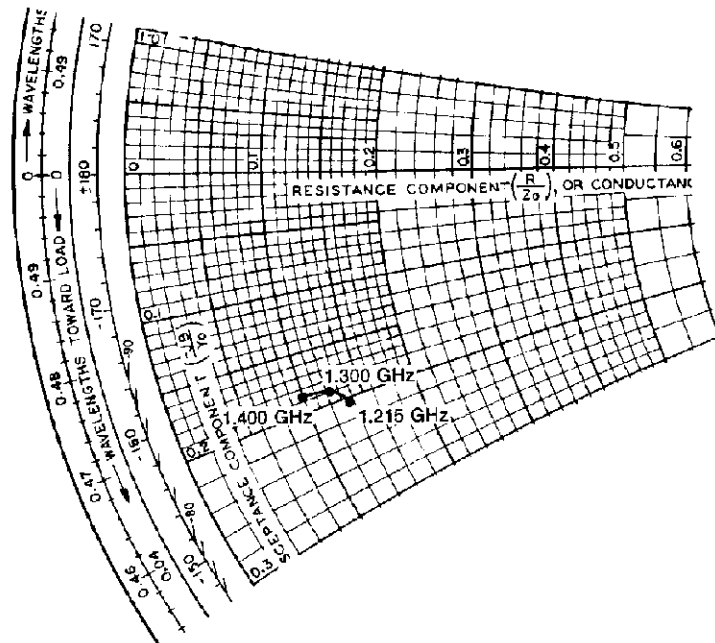


FREQ.	$Z_{IN} (\Omega)$	$Z_{CL} (\Omega)$
L = 1.2 GHz	$6.0 + j 10.0$	$7.0 - j 10.0$
M = 1.3 GHz	$4.5 + j 11.0$	$6.0 - j 9.5$
H = 1.4 GHz	$4.0 + j 9.0$	$5.0 - j 9.0$

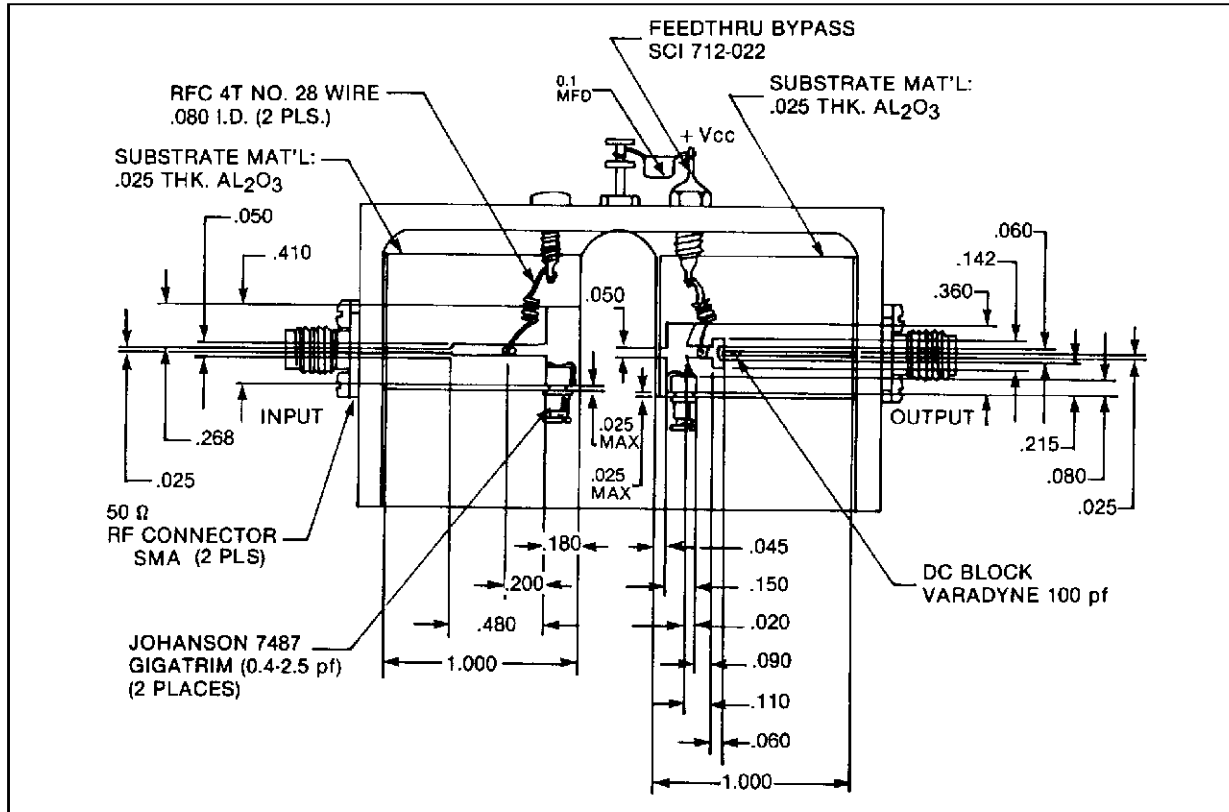
TYPICAL COLLECTOR LOAD IMPEDANCE



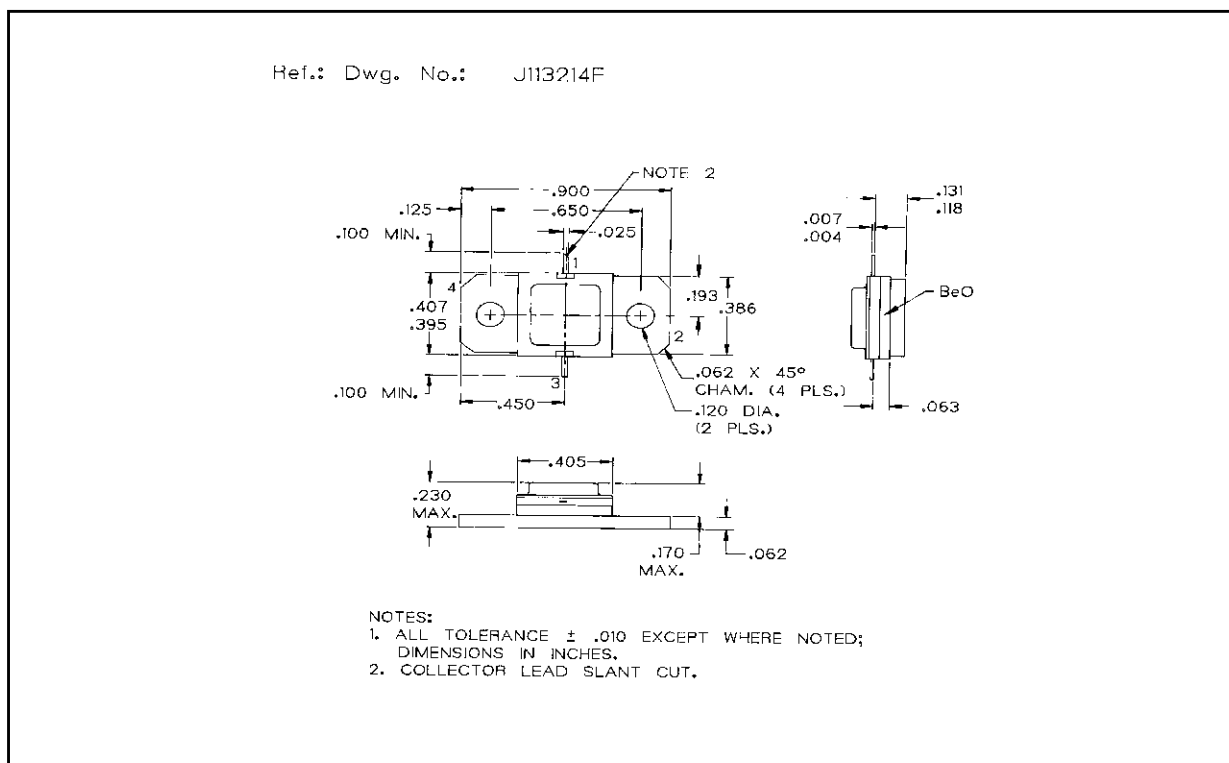
$P_{IN} = 12.0\text{ W}$
 $V_{CC} = 28\text{ V}$
 $Z_0 = 50\text{ ohms}$



TEST CIRCUIT



PACKAGE MECHANICAL DATA



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