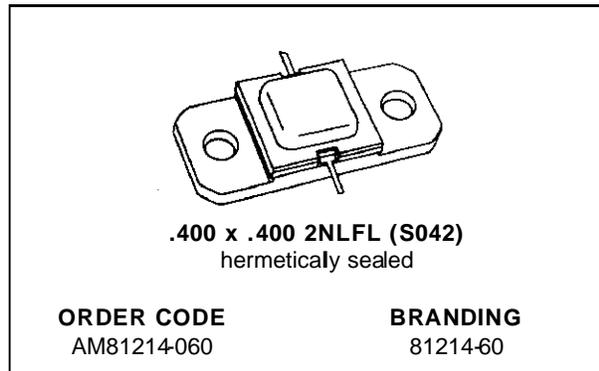


## RF & MICROWAVE TRANSISTORS L-BAND RADAR APPLICATIONS

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

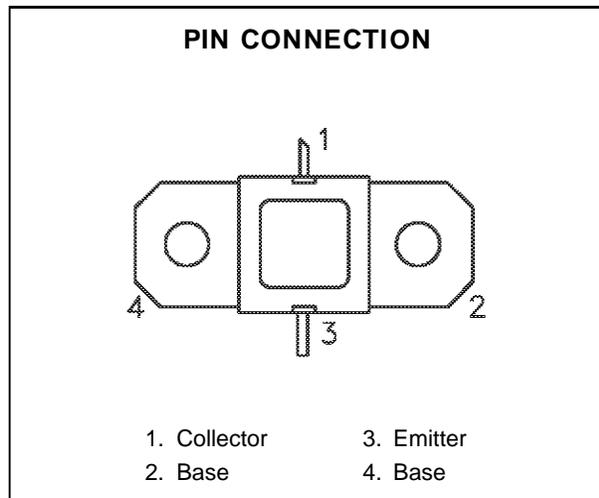


### DESCRIPTION

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

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

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

## STATIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
BV <sub>CBO</sub>	I <sub>C</sub> = 20mA	I <sub>E</sub> = 0mA	55	—	—	V	
BV <sub>EBO</sub>	I <sub>E</sub> = 2mA	I <sub>C</sub> = 0mA	3.5	—	—	V	
BV <sub>CER</sub>	I <sub>C</sub> = 40mA	R <sub>BE</sub> = 10Ω	55	—	—	V	
I <sub>CES</sub>	V <sub>BE</sub> = 0V	V <sub>CE</sub> = 28V	—	—	10	mA	
h <sub>FE</sub>	V <sub>CE</sub> = 5V	I <sub>C</sub> = 2A	15	—	150	—	

## DYNAMIC

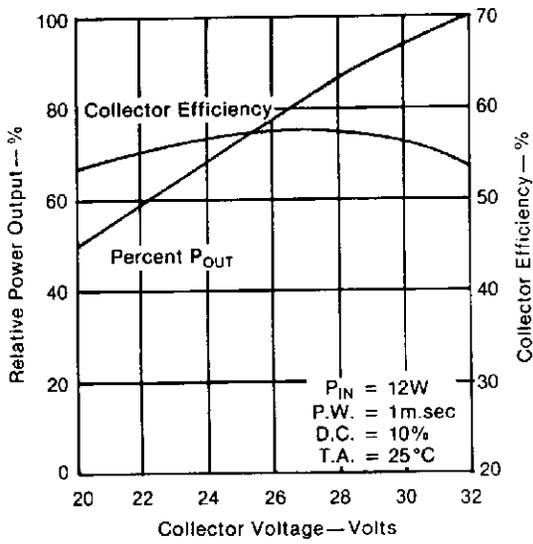
Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P <sub>OUT</sub>	f = 1215 — 1400MHz	P <sub>IN</sub> = 12W	V <sub>CC</sub> = 28V	55	63	—	W
η <sub>C</sub>	f = 1215 — 1400MHz	P <sub>IN</sub> = 12W	V <sub>CC</sub> = 28V	50	57	—	%
G <sub>P</sub>	f = 1215 — 1400MHz	P <sub>IN</sub> = 12W	V <sub>CC</sub> = 28V	6.6	7.2	—	dB

Note: Pulse Width = 1000μS

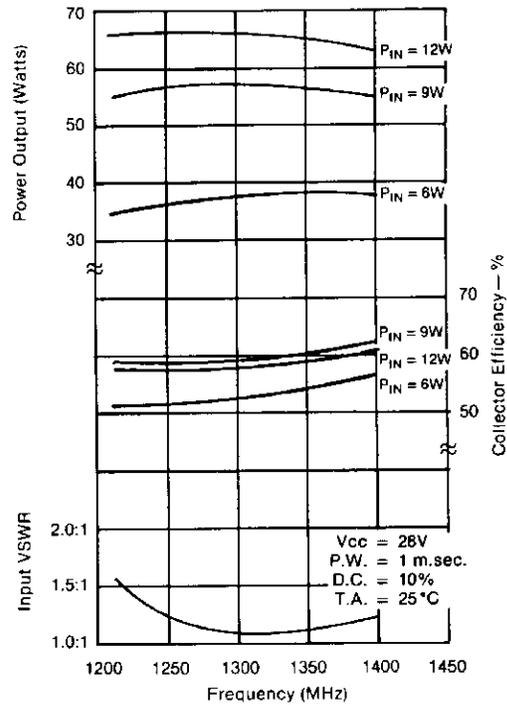
Duty Cycle = 10%

TYPICAL PERFORMANCE

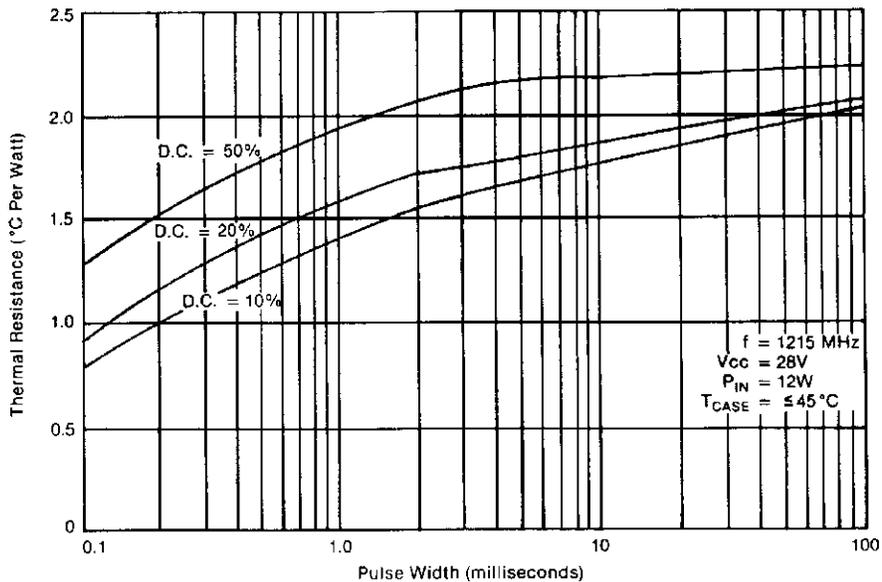
RELATIVE POWER OUTPUT & COLLECTOR EFFICIENCY vs COLLECTOR VOLTAGE



TYPICAL BROADBAND POWER AMPLIFIER

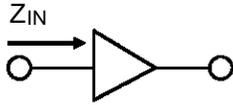


MAXIMUM THERMAL RESISTANCE vs PULSE WIDTH

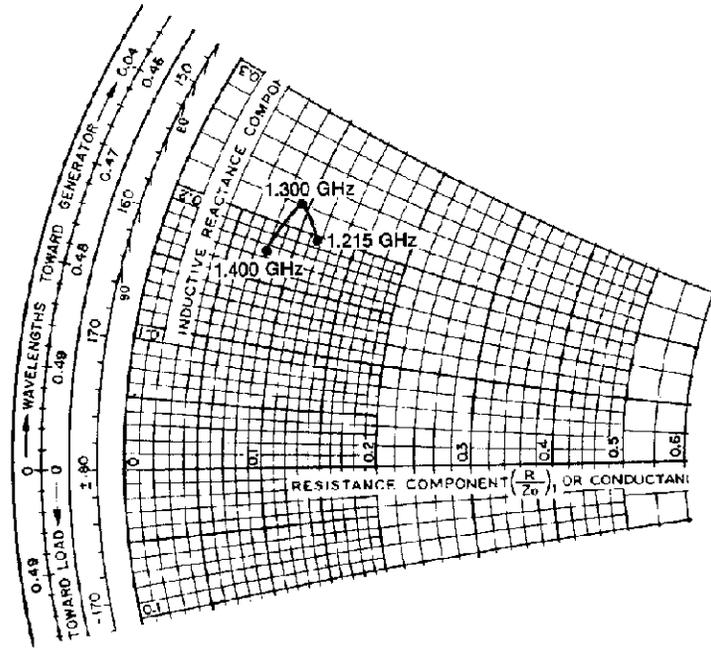


IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

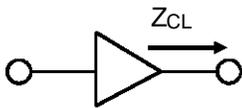


$P_{IN} = 12.0\text{ W}$   
 $V_{CC} = 28\text{ V}$   
 $Z_0 = 50\text{ ohms}$

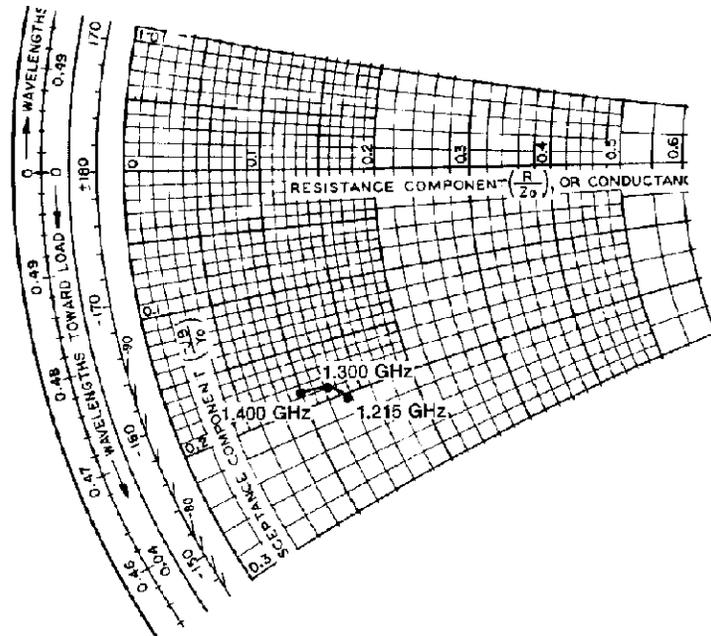


FREQ.	$Z_{IN} (\Omega)$	$Z_{CL} (\Omega)$
L = 1.2 GHz	$6.0 + j 10.0$	$7.0 - j 10.0$
M = 1.3 GHz	$4.5 + j 11.0$	$6.0 - j 9.5$
H = 1.4 GHz	$4.0 + j 9.0$	$5.0 - j 9.0$

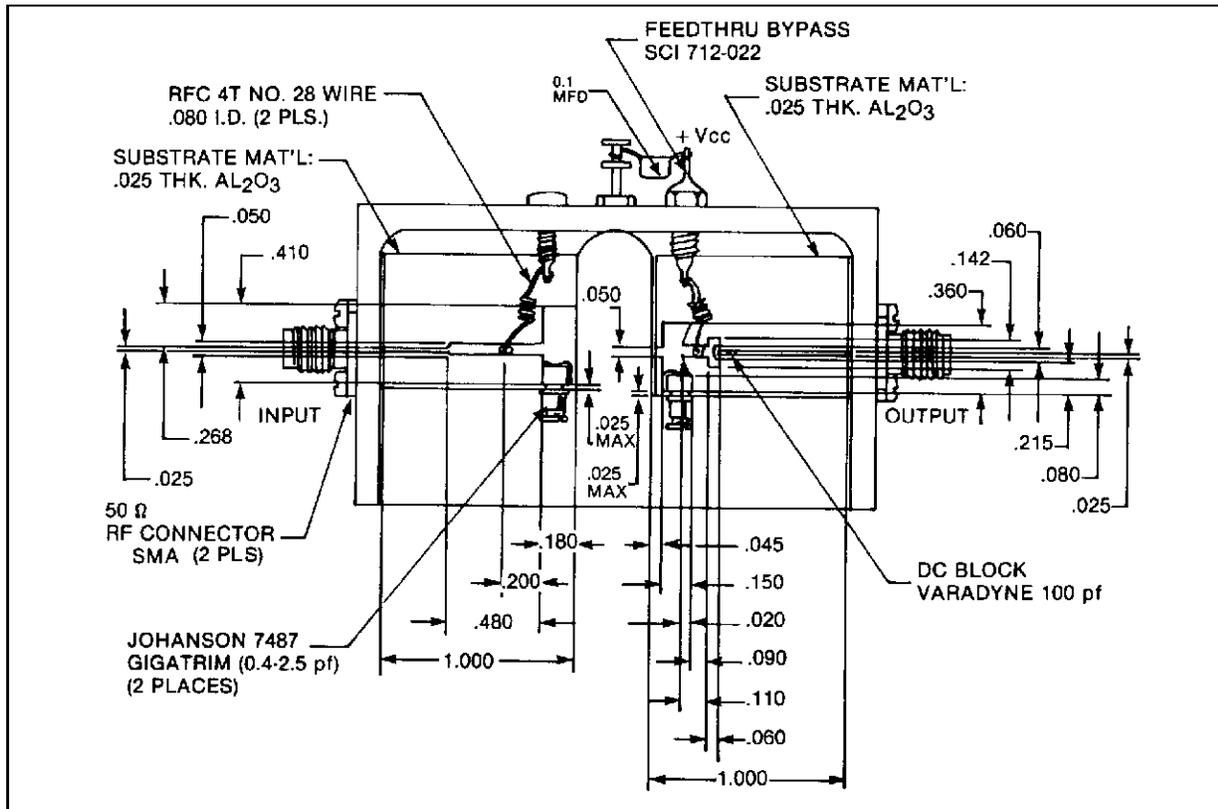
TYPICAL COLLECTOR LOAD IMPEDANCE



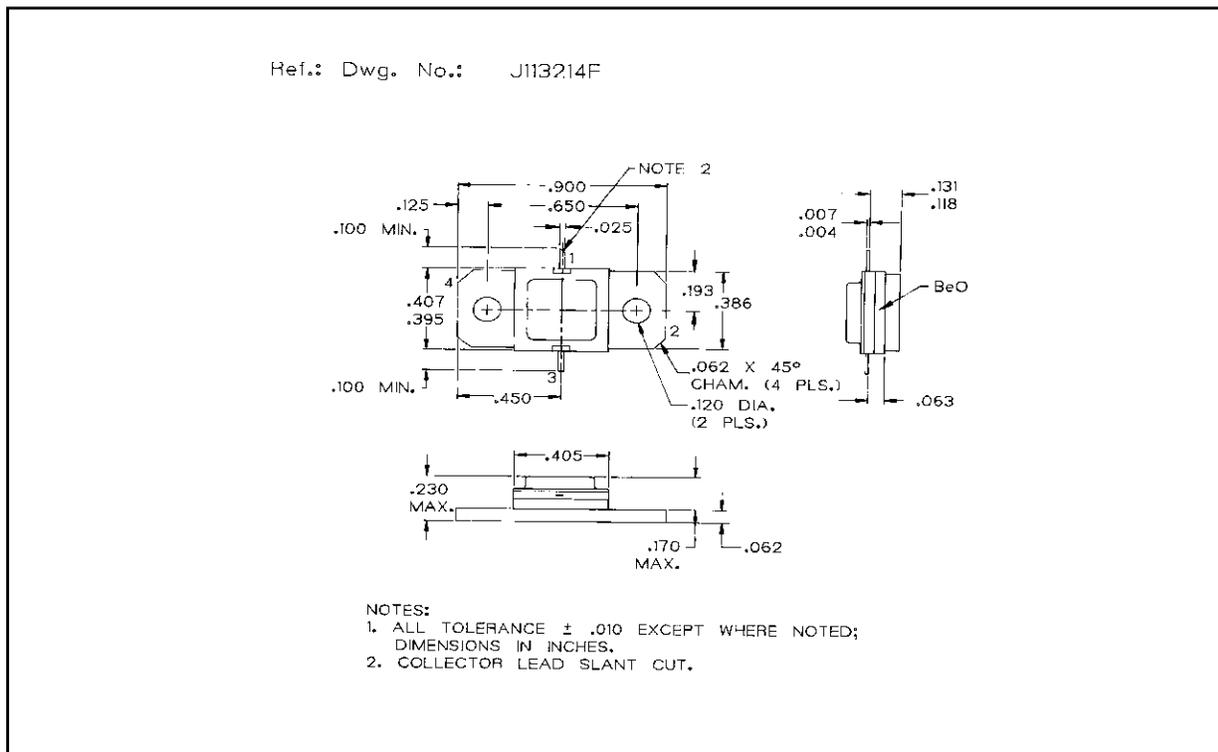
$P_{IN} = 12.0\text{ W}$   
 $V_{CC} = 28\text{ V}$   
 $Z_0 = 50\text{ ohms}$



TEST CIRCUIT



PACKAGE MECHANICAL DATA



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