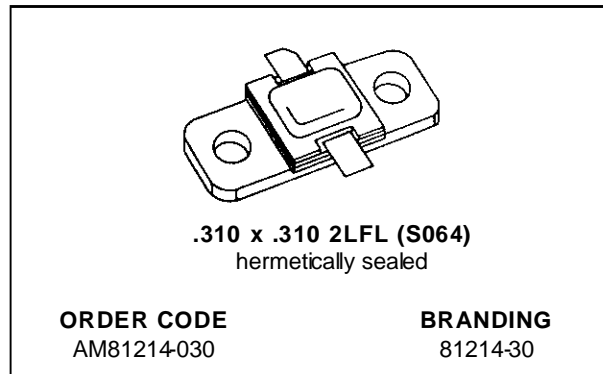


## RF & MICROWAVE TRANSISTORS L-BAND RADAR APPLICATIONS

- REFRACTORY/GOLD METALLIZATION
- EMITTER SITE BALLASTED
- RUGGEDIZED VSWR  $\infty:1$
- LOW THERMAL RESISTANCE
- INPUT/OUTPUT MATCHING
- OVERLAY GEOMETRY
- METAL/CERAMIC HERMETIC PACKAGE
- $P_{OUT} = 26$  W MIN. WITH 7.2 dB GAIN

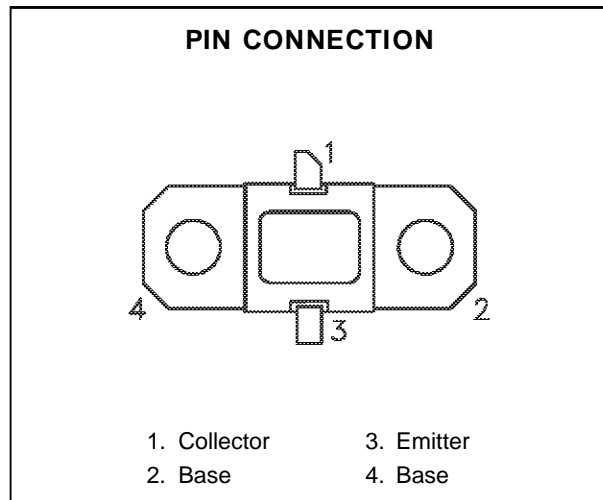


### DESCRIPTION

The AM81214-030 device is a high power transistor specifically designed for L-Band Radar pulsed 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 AM81214-030 is supplied in the IMPAC™ 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* ( $T_C \leq 100^{\circ}C$ )	63	W
$I_C$	Device Current*	2.75	A
$V_{CC}$	Collector-Supply Voltage*	32	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*	2.4	$^{\circ}C/W$
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\*Applies only to rated RF amplifier operation

## AM81214-030

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

#### STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
$BV_{\text{CBO}}$	$I_{\text{C}} = 10\text{mA}$	$I_{\text{E}} = 0\text{mA}$	55	—	—	V
$BV_{\text{EBO}}$	$I_{\text{E}} = 1\text{mA}$	$I_{\text{C}} = 0\text{mA}$	3.5	—	—	V
$BV_{\text{CER}}$	$I_{\text{C}} = 20\text{mA}$	$R_{\text{BE}} = 10\Omega$	55	—	—	V
$I_{\text{CES}}$	$V_{\text{BE}} = 0\text{V}$	$V_{\text{CE}} = 28\text{V}$	—	—	5	mA
$h_{\text{FE}}$	$V_{\text{CE}} = 5\text{V}$	$I_{\text{C}} = 1\text{A}$	15	—	150	—

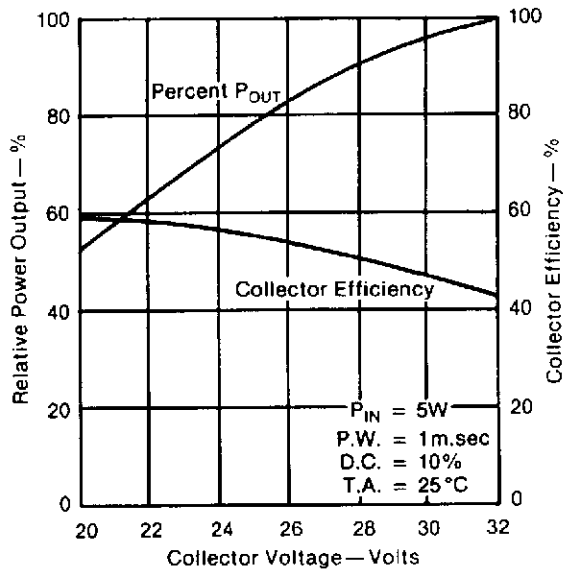
#### DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
$P_{\text{IN}}$	$f = 1215 - 1400\text{MHz}$	$P_{\text{IN}} = 5\text{W Peak}$	$V_{\text{CC}} = 28\text{V}$	26	36	—	W
$\eta_{\text{C}}$	$f = 1215 - 1400\text{MHz}$	$P_{\text{IN}} = 5\text{W Peak}$	$V_{\text{CC}} = 28\text{V}$	45	49	—	%
$G_{\text{P}}$	$f = 1215 - 1400\text{MHz}$	$P_{\text{IN}} = 5\text{W Peak}$	$V_{\text{CC}} = 28\text{V}$	7.2	8.5	—	dB

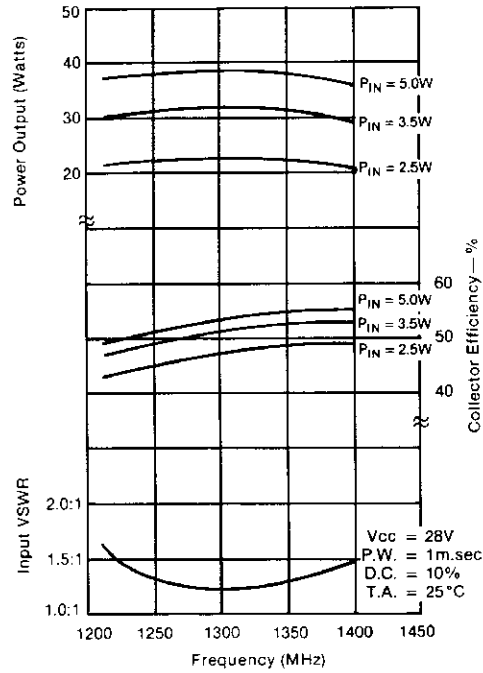
Note: Pulse Width =  $1000\mu\text{S}$   
Duty Cycle = 10%

TYPICAL PERFORMANCE

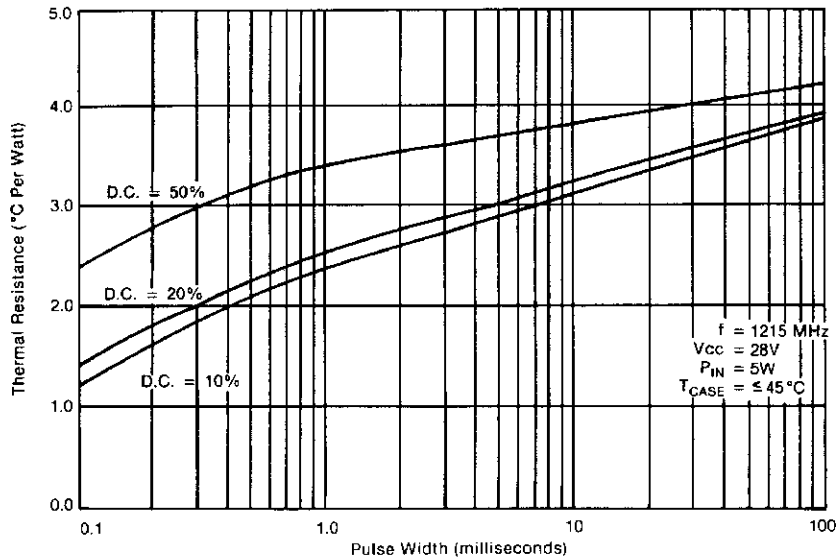
RELATIVE POWER OUTPUT & COLLECTOR EFFICIENCY vs COLLECTOR VOLTAGE



TYPICAL BROADBAND POWER AMPLIFIER

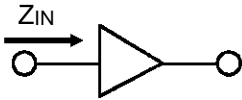


MAXIMUM THERMAL RESISTANCE vs PULSE WIDTH

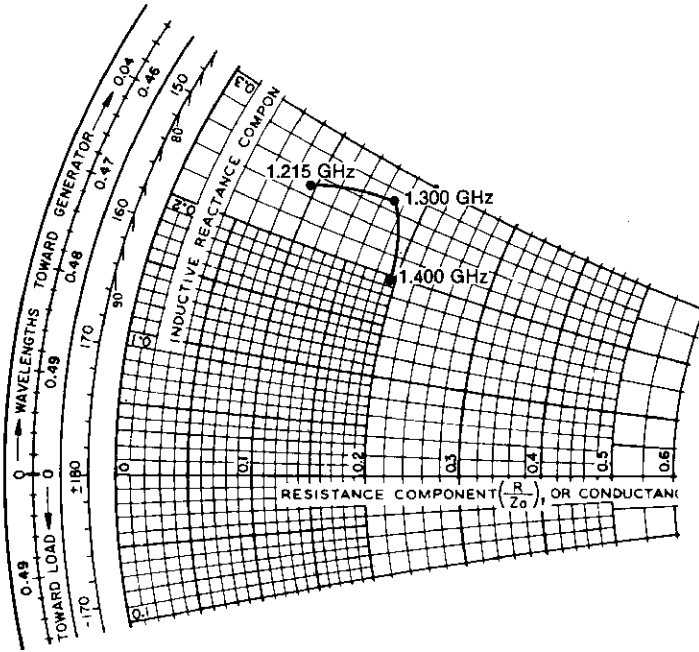


IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

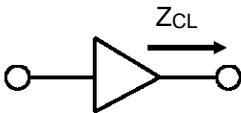


$P_{IN} = 5.0 \text{ W}$   
 $V_{CC} = 28 \text{ V}$   
 $Z_0 = 50 \text{ Ohms}$

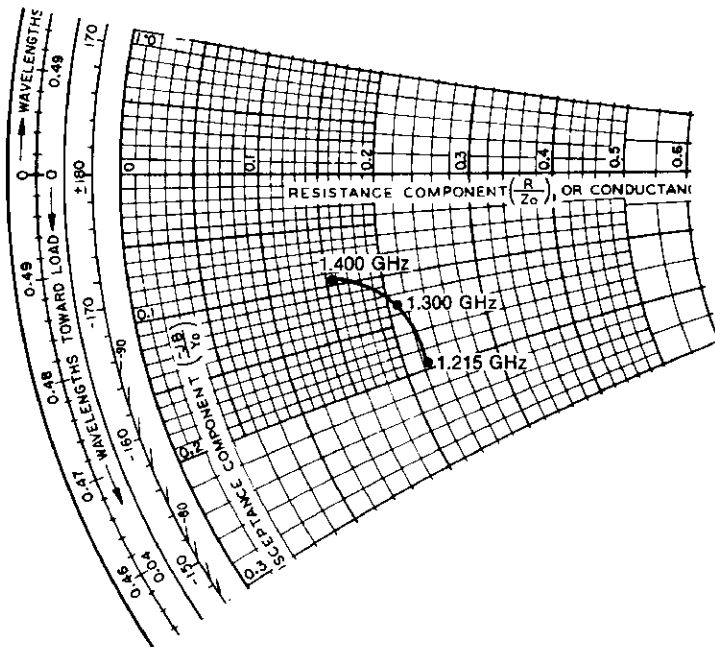


FREQ.	$Z_{IN} (\Omega)$	$Z_{CL} (\Omega)$
L = 1.215 GHz	$4.5 + j 12.5$	$11.0 - j 10.0$
M = 1.300 GHz	$8.5 + j 13.5$	$10.5 - j 6.5$
H = 1.400 GHz	$9.5 + j 10.0$	$8.0 - j 5.0$

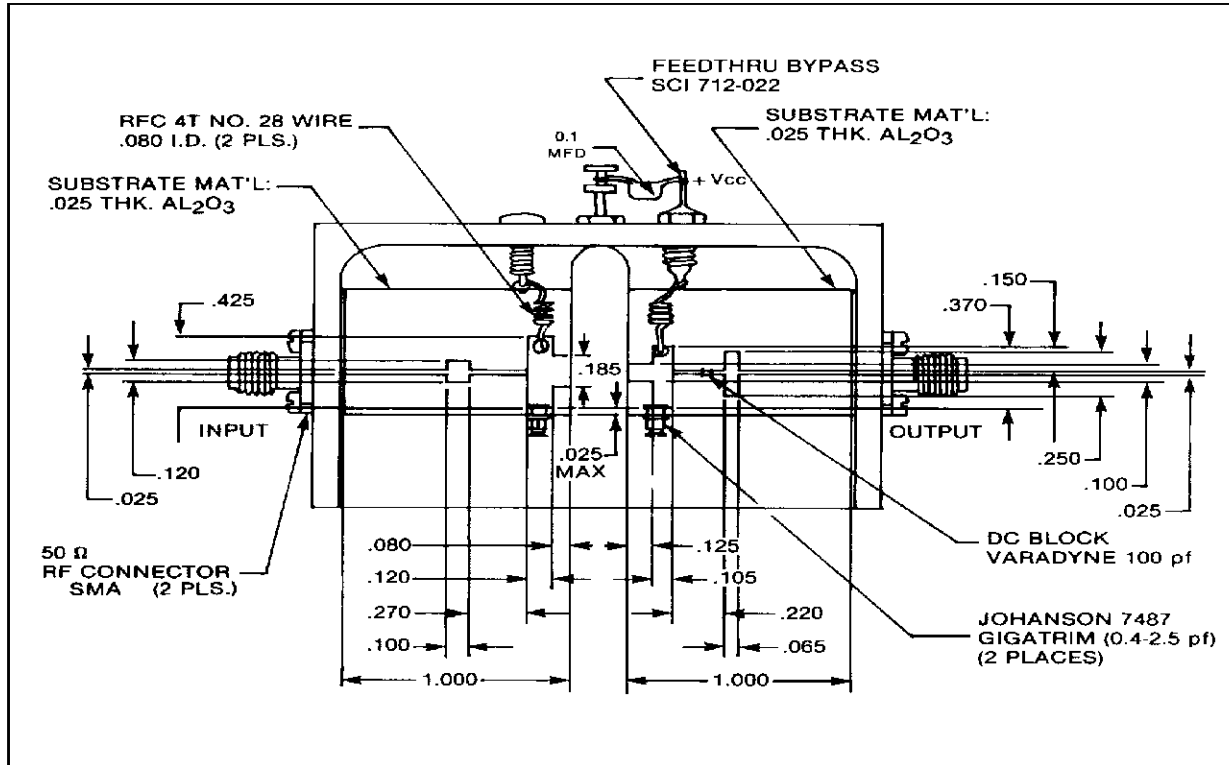
TYPICAL COLLECTOR LOAD IMPEDANCE



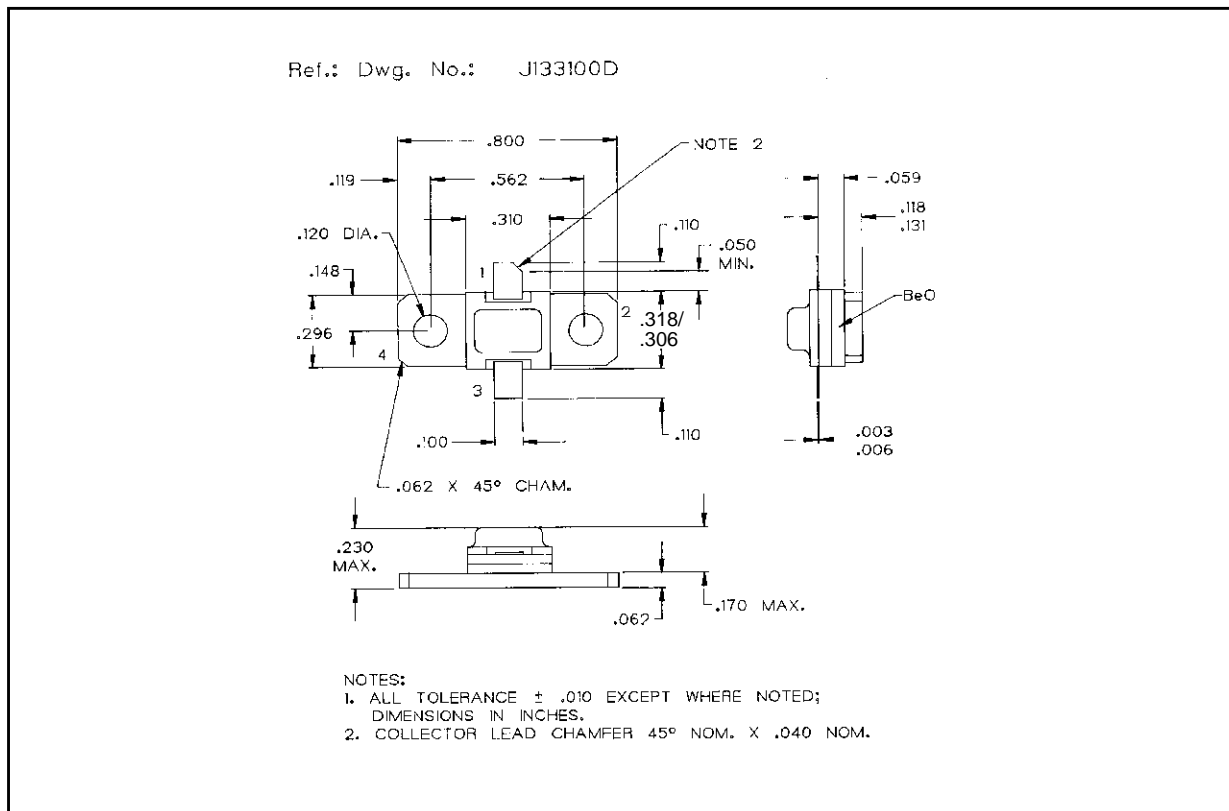
$P_{IN} = 5.0 \text{ W}$   
 $V_{CC} = 28 \text{ V}$   
 $Z_0 = 50 \text{ Ohms}$



TEST CIRCUIT



PACKAGE MECHANICAL DATA



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