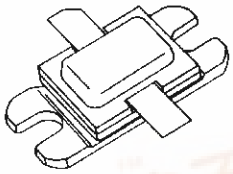
SGS-THOMSON MICROELECTRONICS

AM1214-175

RF & MICROWAVE TRANSISTORS L-BAND RADAR APPLICATIONS

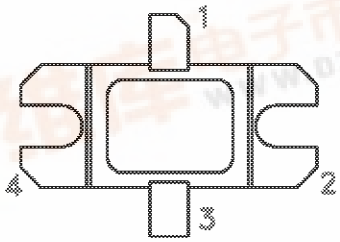
- REFRACTORY/GOLD METALLIZATION
- EMITTER SITE BALLASTED
- 3:1 VSWR CAPABILITY
- LOW THERMAL RESISTANCE
- INPUT/OUTPUT MATCHING
- OVERLAY GEOMETRY
- METAL/CERAMIC HERMETIC PACKAGE
- P_{OUT} = 160 W MIN. WITH 7.3 dB GAIN



.400 x .500 2LFL (S038)
hermetically sealed

ORDER CODE	BRANDING
AM1214-175	1214-175

PIN CONNECTION



1. Collector
2. Base
3. Emitter
4. Base

DESCRIPTION

The AM1214-175 device is a high power Class C transistor specifically designed for L-Band radar pulsed output and driver applications.

This device is capable of operation over a wide range of pulse widths, duty cycles and temperatures and is capable of withstanding 3:1 output VSWR at rated RF conditions. Low RF thermal resistance and computerized automatic wire bonding techniques ensure high reliability and product consistency.

The AM1214-175 is supplied in the BIGPAC™ Hermetic Metal/Ceramic package with internal Input/Output matching structures.

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C)

Symbol	Parameter	Value	Unit
P_{DISS}	Power Dissipation* ($T_C \leq 100°C$)	330	W
I_C	Device Current*	14	A
V_{CC}	Collector-Supply Voltage*	45	V
T_J	Junction Temperature (Pulsed RF Operation)	250	°C
T_{STG}	Storage Temperature	– 65 to +200	°C

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance*	0.45	°C/W

*Applies only to rated RF amplifier operation

AM1214-175

ELECTRICAL SPECIFICATIONS (T_{case} = 25°C)

STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	I_C = 60mA	I_E = 0mA	65	—	—	V
BV_{EBO}	I_E = 10mA	I_C = 0mA	3.5	—	—	V
BV_{CES}	IC = 100mA		65	—	—	V
I_{CES}	V_{CE} = 40V		—	—	25	mA
h_{FE}	V_{CE} = 5V	I_C = 5A	15	—	150	—

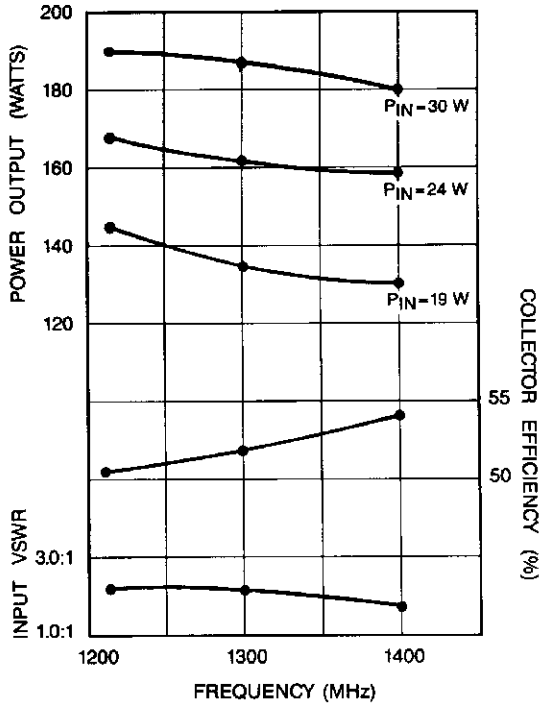
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 1215 — 1400MHz	P_{IN} = 30W	V_{CC} = 40V	160	180	—	W
ηc	f = 1215 — 1400MHz	P_{IN} = 30W	V_{CC} = 40V	45	50	—	%
G_P	f = 1215 — 1400MHz	P_{IN} = 30W	V_{CC} = 40V	7.3	7.8	—	dB

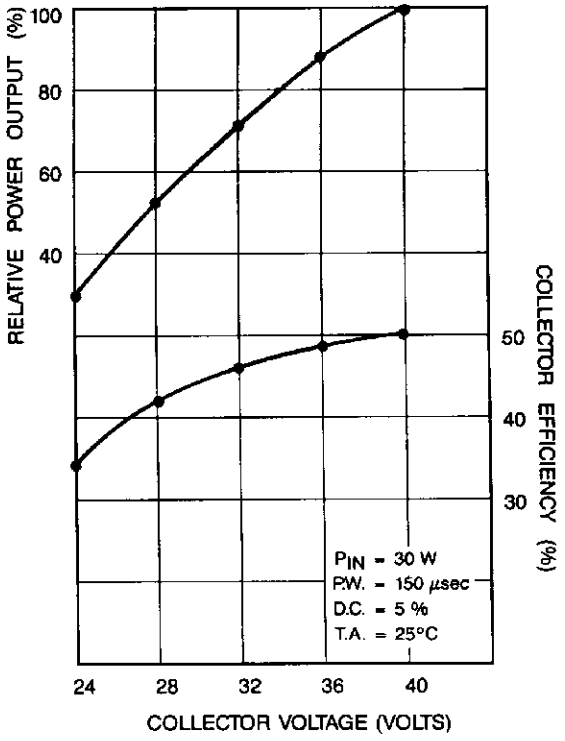
Note: Pulse Width = 150μS
Duty Cycle = 5%

TYPICAL PERFORMANCE

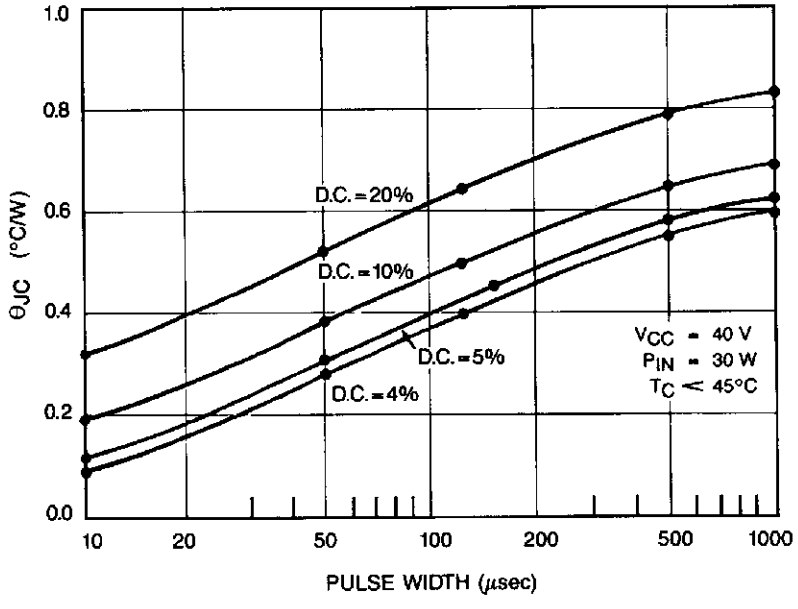
TYPICAL BROADBAND POWER AMPLIFIER



RELATIVE POWER OUTPUT AND COLLECTOR EFFICIENCY vs COLLECTOR VOLTAGE

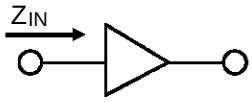


MAXIMUM THERMAL RESISTANCE vs PULSE WIDTH & DUTY CYCLE

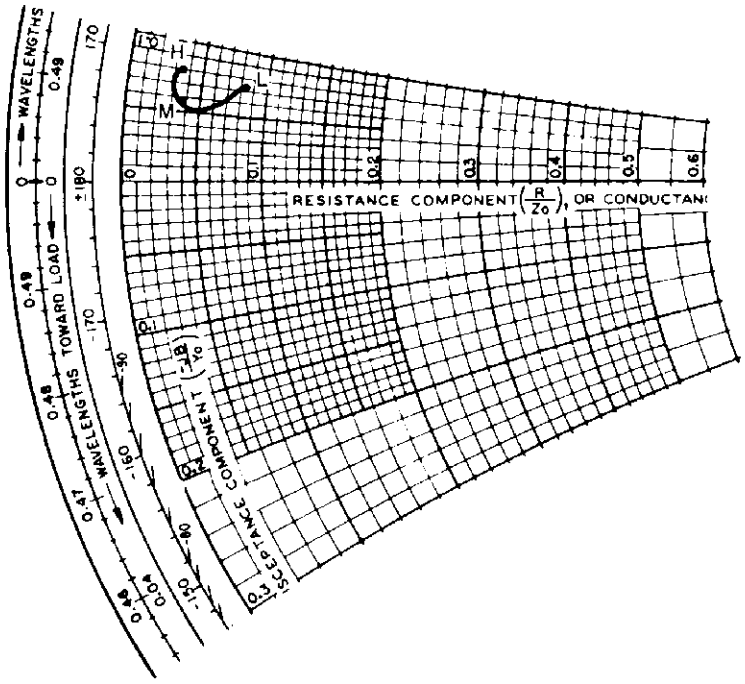


IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

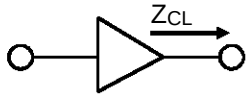


P_{IN} = 30 W
V_{CC} = 40 V
Z_0* = 50 ohms

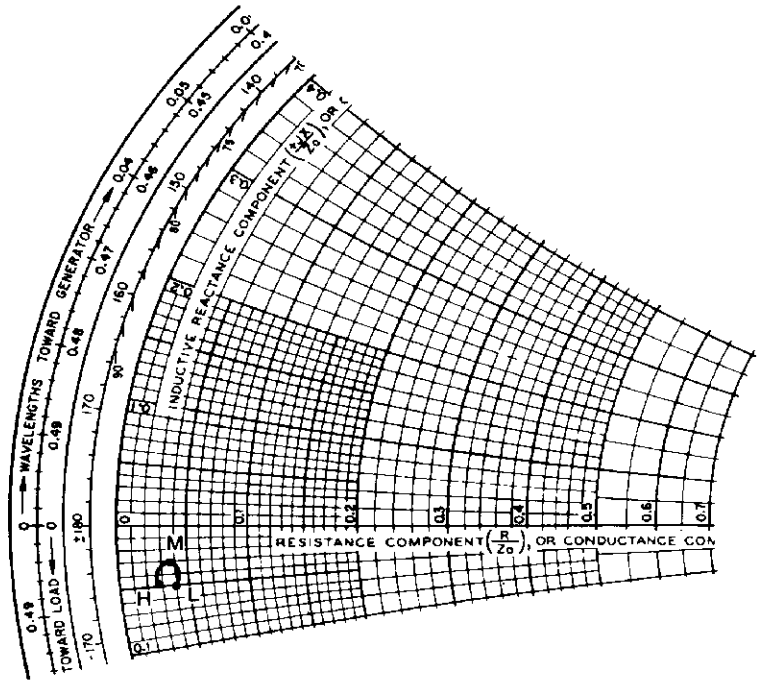


FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
L = 1215 MHz	4.0 + j 3.5	2.0 – j 2.5
M = 1300 MHz	2.0 + j 3.0	2.0 – j 1.5
H = 1400 MHz	1.5 + j 4.0	1.5 – j 2.5

TYPICAL COLLECTOR LOAD IMPEDANCE

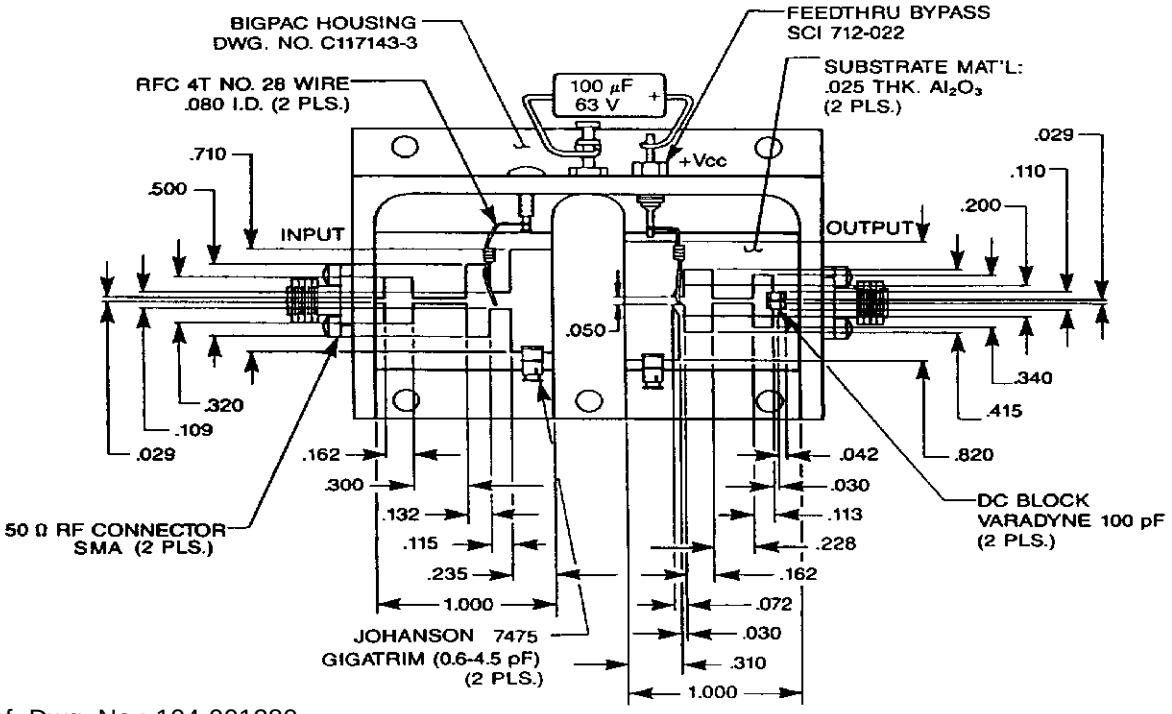


P_{IN} = 30 W
V_{CC} = 40 V
Z_0* = 50 ohms



*Normalized Impedance

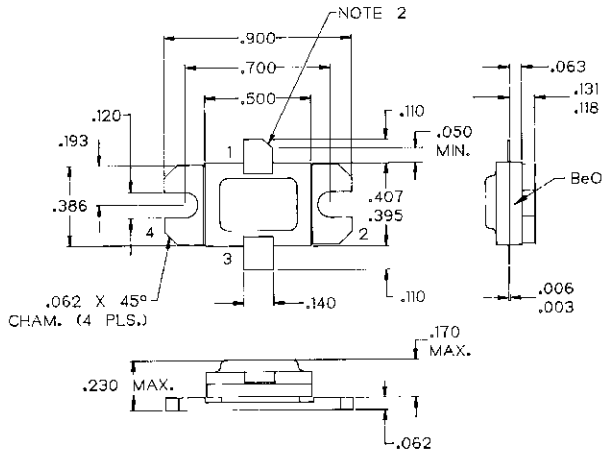
TEST CIRCUIT



Ref. Dwg. No.: 104-001280

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.: J135066F



NOTES:
1. ALL TOLERANCE ± .010 EXCEPT WHERE NOTED; DIMENSIONS IN INCHES.
2. COLLECTOR LEAD CHAMFER 45° NOM. X .040 NOM.