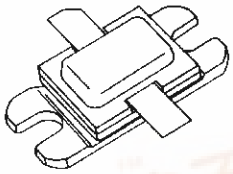
SGS-THOMSON MICROELECTRONICS

AM1214-300

RF & MICROWAVE TRANSISTORS L-BAND RADAR APPLICATIONS

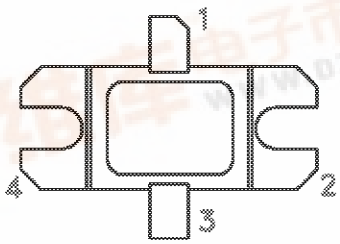
- REFRACTORY/GOLD METALLIZATION
- EMITTER SITE BALLASTED
- 5:1 VSWR CAPABILITY
- LOW THERMAL RESISTANCE
- INPUT/OUTPUT MATCHING
- OVERLAY GEOMETRY
- METAL/CERAMIC HERMETIC PACKAGE
- P_{OUT} = 270 W MIN. WITH 6.3 dB GAIN



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

ORDER CODE	BRANDING
AM1214-300	1214-300

PIN CONNECTION



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

DESCRIPTION

The AM1214-300 device is a high power transistor specifically designed for L-Band radar pulsed output and driver applications.

This device is designed for operation under moderate pulse width and duty cycle pulse conditions and is capable of withstanding 5:1 output VSWR at rated RF conditions. Low RF thermal resistance and computerized automatic wire bonding techniques ensure high reliability and product consistency.

The AM1214-300 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* ($T_C \leq 100°C$)	730	W
I_C	Device Current*	18.75	A
V_{CC}	Collector-Supply Voltage*	55	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*	0.24	°C/W

* Applies only to rated RF amplifier operation

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

STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	I_C = 50mA	I_E = 0mA	65	—	—	V
BV_{EBO}	I_E = 15mA	I_C = 0mA	3.0	—	—	V
BV_{CES}	IC = 50mA		65	—	—	V
I_{CES}	V_{CE} = 50V		—	—	30	mA
h_{FE}	V_{CE} = 5V	I_C = 5A	10	—	—	—

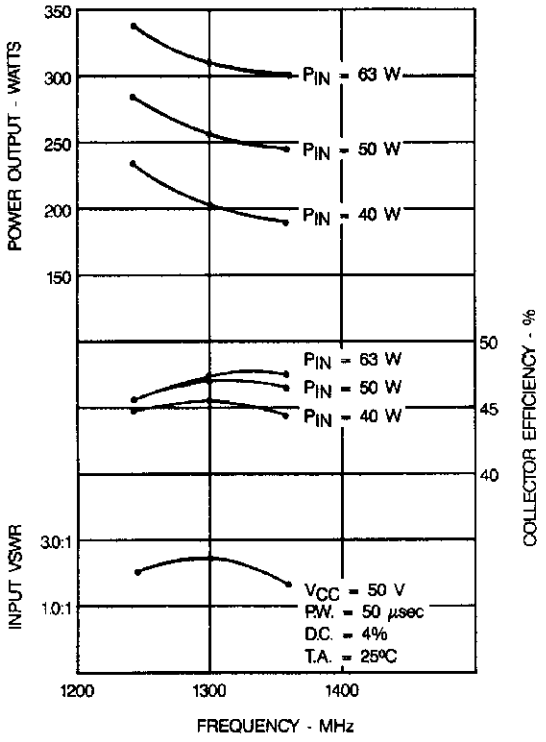
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 1235 — 1365MHz	P_{IN} = 63W	V_{CC} = 50V	270	300	—	W
η_c	f = 1235 — 1365MHz	P_{IN} = 63W	V_{CC} = 50V	40	45	—	%
G_P	f = 1235 — 1365MHz	P_{IN} = 63W	V_{CC} = 50V	6.3	6.8	—	dB

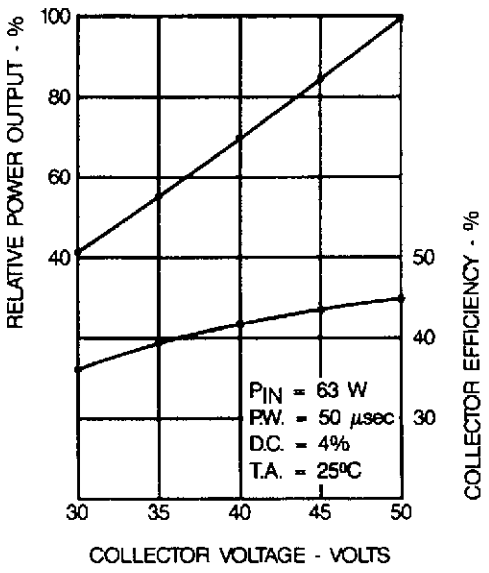
Note: Pulse Width = 50μSec
Duty Cycle = 4%

TYPICAL PERFORMANCE

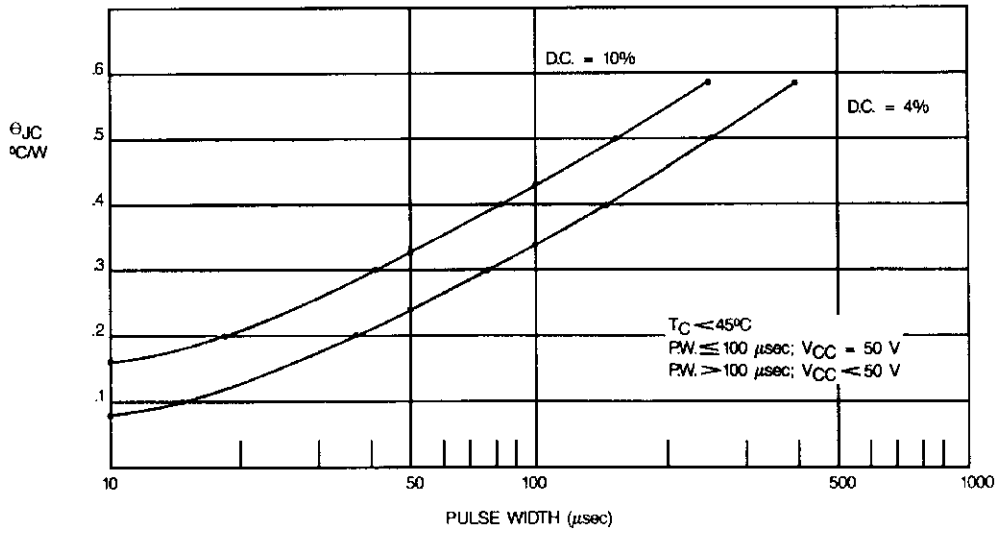
TYPICAL BROADBAND POWER AMPLIFIER



RELATIVE POWER OUTPUT & COLLECTOR EFFICIENCY vs COLLECTOR VOLTAGE

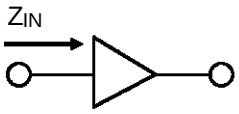


MAXIMUM THERMAL RESISTANCE vs PULSE WIDTH & PULSE CYCLE

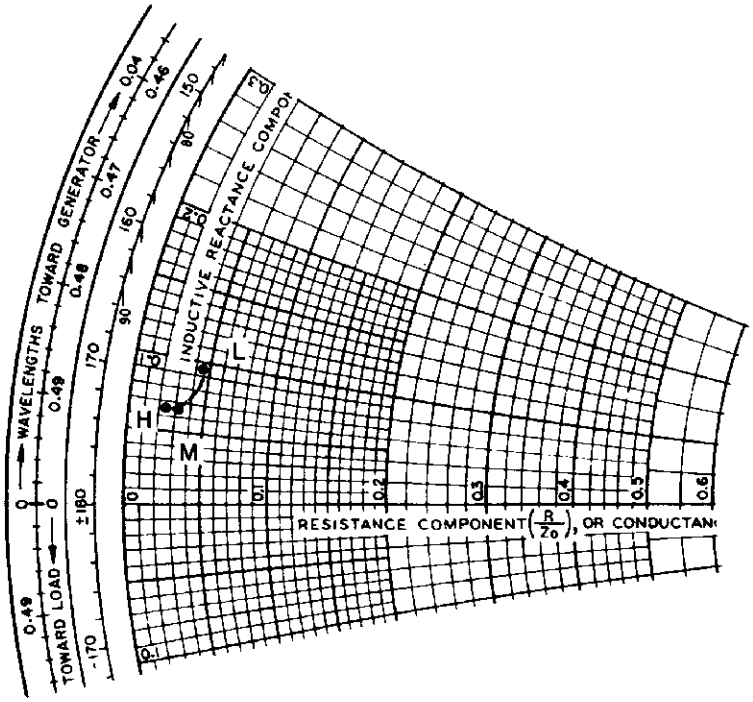


IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

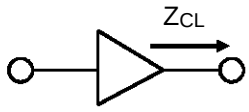


P_{IN} = 63 W
V_{CC} = 50 V
Z_0* = 50 ohms

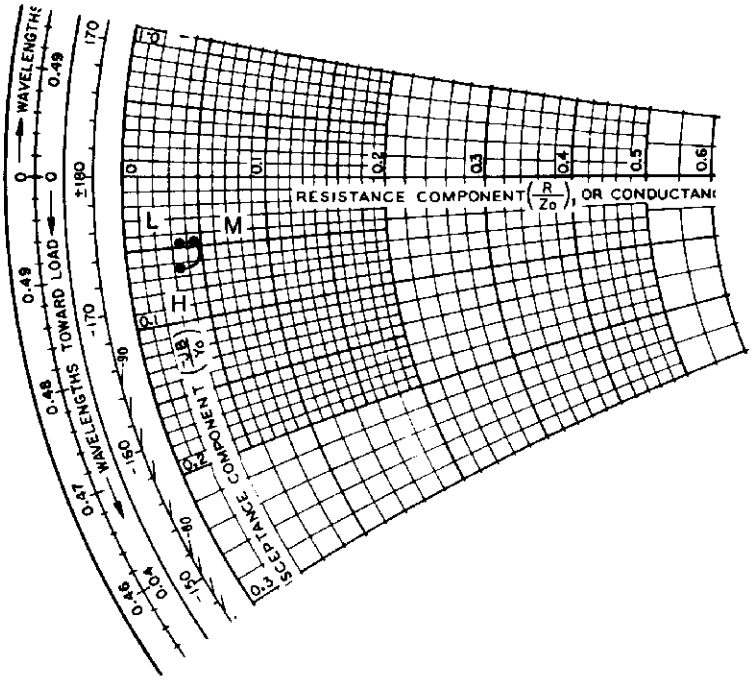


FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
L = 1235 MHz	2.5 + j 5.0	2.0 – j 2.5
M = 1300 MHz	1.5 + j 3.5	2.5 – j 2.5
H = 1365 MHz	1.0 + j 3.5	2.0 – j 3.0

TYPICAL COLLECTOR LOAD IMPEDANCE



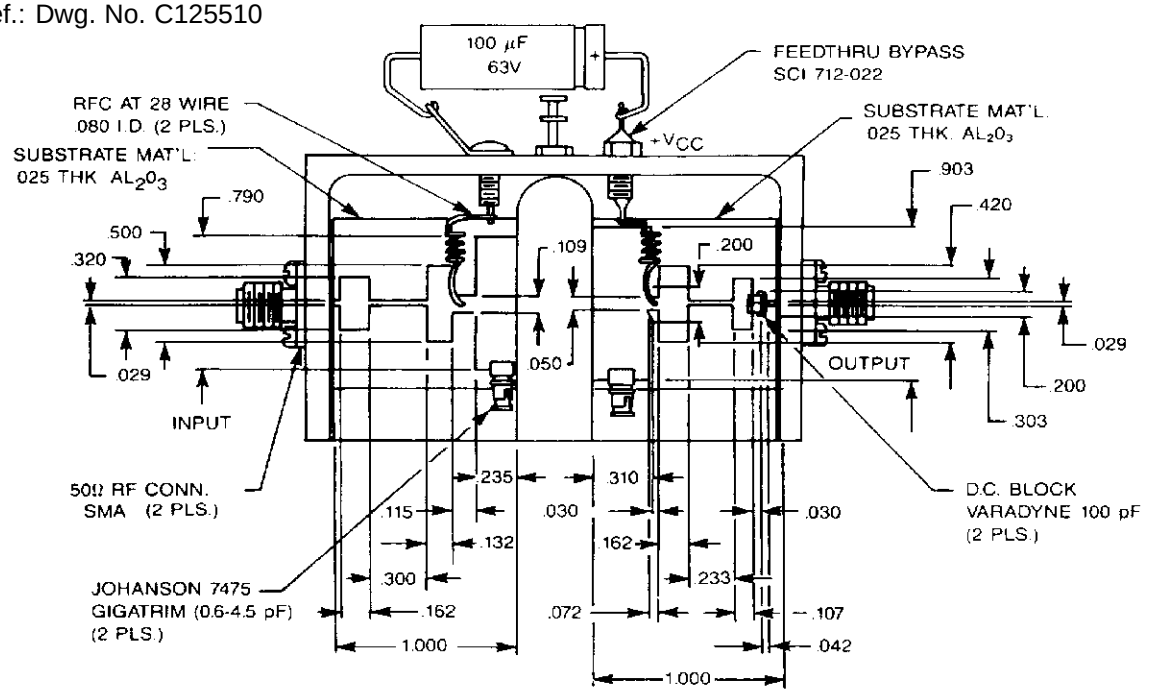
P_{IN} = 63 W
V_{CC} = 50 V
Z_0* = 50 ohms



*Normalized Impedance

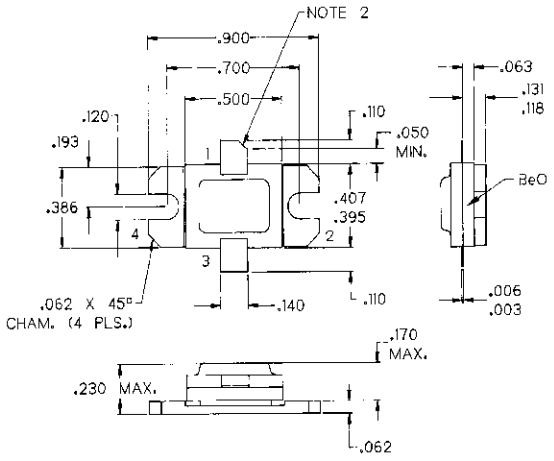
TEST CIRCUIT

Ref.: Dwg. No. C125510



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.