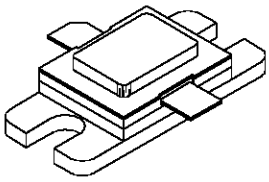
SGS-THOMSON MICROELECTRONICS

AM1214-200

RF & MICROWAVE TRANSISTORS L-BAND RADAR APPLICATIONS

PRELIMINARY DATA

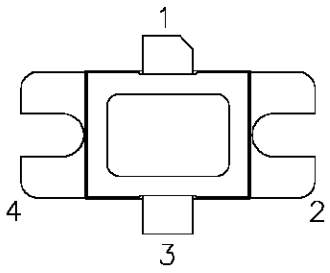
- REFRACTORY/GOLD METALLIZATION
- EMITTER SITE BALLASTED
- LOW THERMAL RESISTANCE
- INPUT/OUTPUT MATCHING
- OVERLAY GEOMETRY
- METAL/CERAMIC HERMETIC PACKAGE
- P_{OUT} = 200 W MIN. WITH 7.0 dB GAIN



.400 x .500 2LFL (M205)
hermetically sealed

ORDER CODE	BRANDING
AM1214-200	1214-200

PIN CONNECTION



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

DESCRIPTION

The AM1214-200 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 wiil tolerate severe mismatch and overdrive conditions. Low RF thermal resistance and computerized automatic wire bonding techniques ensure high reliability and product consistency.

AM1214-200 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* ($T_C \leq 100°C$)	575	W
I_C	Device Current*	16	A
V_{CC}	Collector-Supply Voltage*	40	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*	0.26	°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	70	—	—	V
BV_{EBO}	I_E = 30mA	I_C = 0mA	3.0	—	—	V
BV_{CES}	IC = 50mA	V_{BE} = 0V	70	—	—	V
I_{CES}	V_{BE} = 0V	V_{CE} = 40V	—	—	30	mA
h_{FE}	V_{CE} = 5V	I_C = 500mA	10	—	—	—

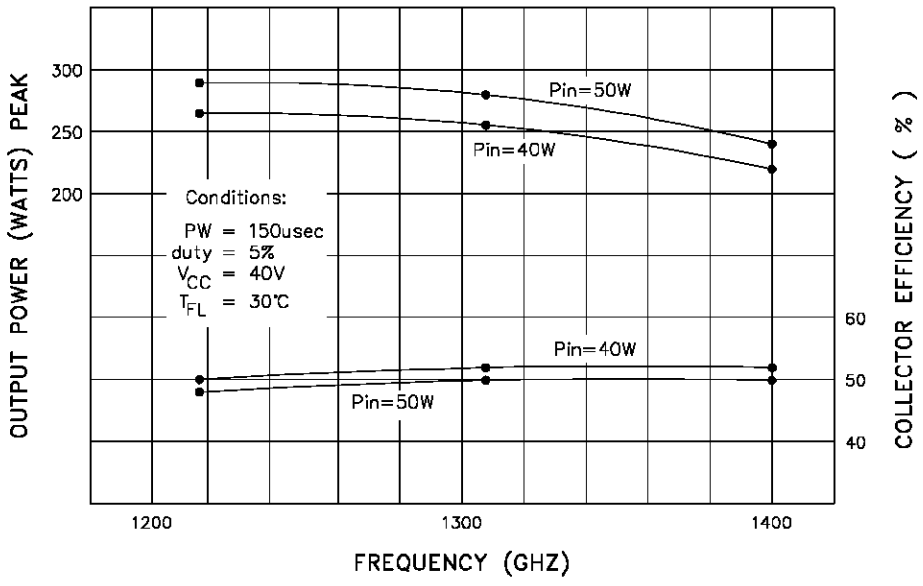
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 1215 — 1400MHz	P_{IN} = 40W	V_{CC} = 40V	200	—	—	W
ηc	f = 1215 — 1400MHz	P_{IN} = 40W	V_{CC} = 40V	45	—	—	%
G_P	f = 1215 — 1400MHz	P_{IN} = 40W	V_{CC} = 40V	7.0	—	—	dB

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

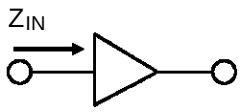
TYPICAL PERFORMANCE

POWER OUTPUT & COLLECTOR EFFICIENCY vs FREQUENCY

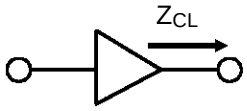


IMPEDANCE DATA

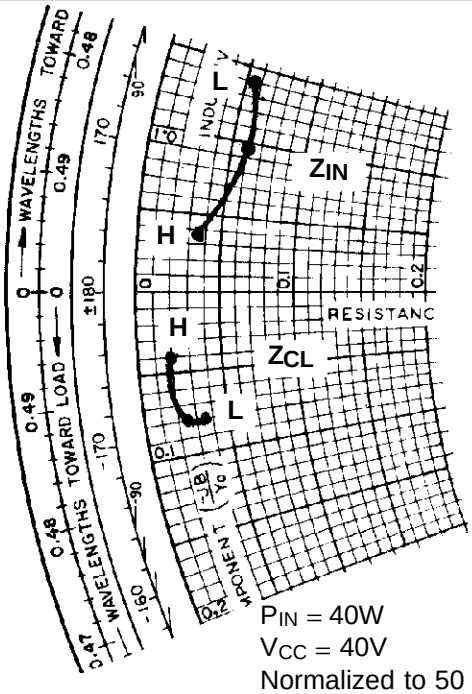
TYPICAL INPUT IMPEDANCE



TYPICAL COLLECTOR LOAD IMPEDANCE

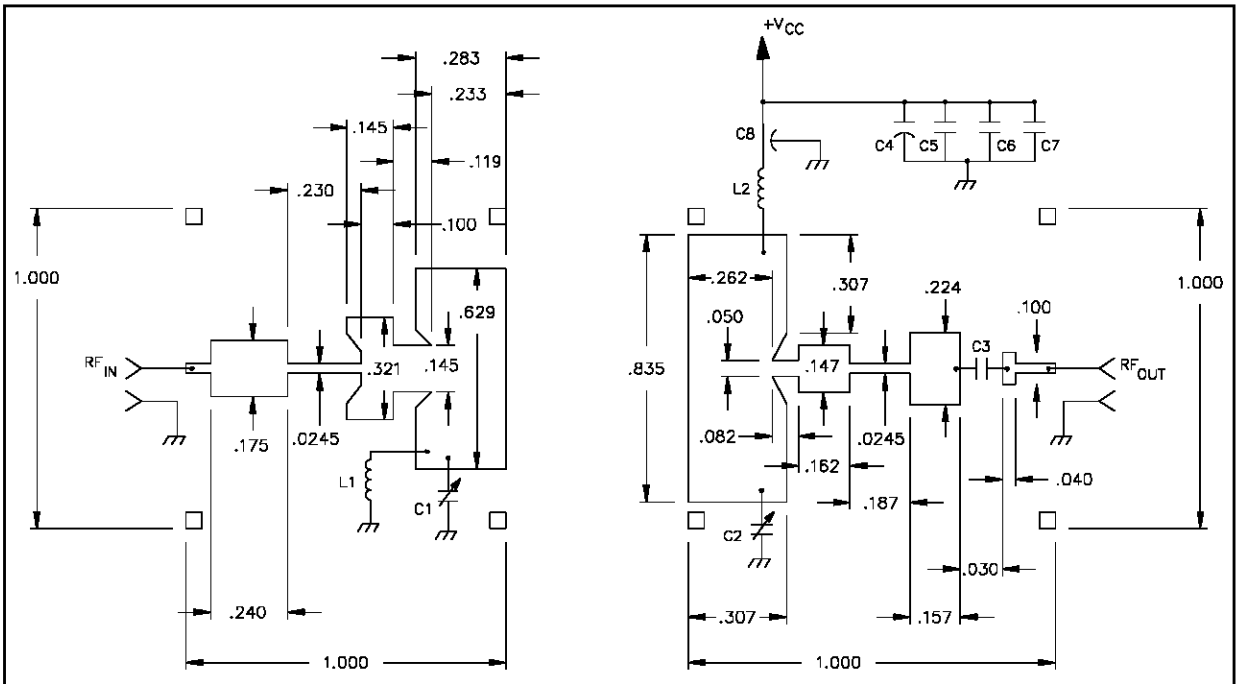


FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
L = 1215 MHz	2.7 + j 7.0	1.7 – j 4.0
M = 1300 MHz	3.0 + j 4.8	1.4 – j 4.0
H = 1400 MHz	1.8 + j 1.7	1.0 – j 2.0



P_{IN} = 40W
V_{CC} = 40V
Normalized to 50 ohms

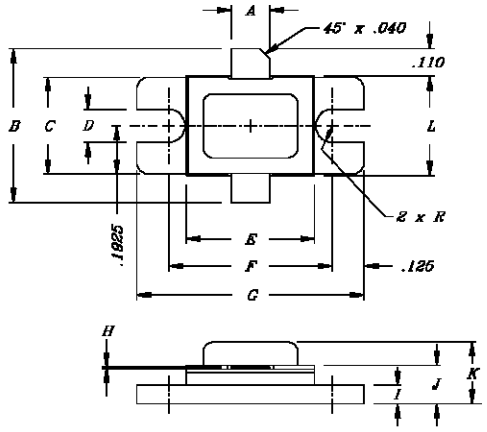
TEST CIRCUIT



All dimensions are in millimeters.
Substrate 0.025" Thick AL_2O_3 (Er = 9.8)

C1,C2: 0.6 - 4.5 pF Johanson 7475 Variable Capacitor
C3 : 100 pF Case B Chip Capacitor
C4 : 100 µF, 63V Electrolytic Capacitor
C5 : 68 pF Case B Chip Capacitor
C6 : 620 pF Case B Chip Capacitor
C7 : 0.1 µF Ceramic Capacitor
C8 : Feedthru bypass 1200 pF
L1 : .018" OD Wire - Placement is Critical
L2 : 4 Turn .018" OD Inductor

PACKAGE MECHANICAL DATA



SGS–THOMSON MICROELECTRONICS		
	MINIMUM Inches / mm	MAXIMUM Inches / mm
A	.145 / 3.68	.155 / 3.93
B	.600 / 15.24	
C	.380 / 9.65	.390 / 9.91
D	.130 / 3.30	
E	.495 / 12.57	.507 / 12.88
F	.640 / 16.26	.655 / 16.64
G	.890 / 22.61	.910 / 23.11
H	.002 / 0.05	.006 / 0.15
I	.055 / 1.40	.065 / 1.65
J	.115 / 2.92	.135 / 3.43
K		.230 / 5.84
L	.395 / 10.03	.407 / 10.34