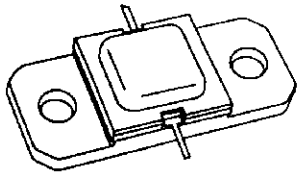
SGS-THOMSON MICROELECTRONICS

AM83135-001

RF & MICROWAVE TRANSISTORS S-BAND RADAR APPLICATIONS

- REFRACTORY/GOLD METALLIZATION
- EMITTER SITE BALLASTED
- 10:1 VSWR CAPABILITY
- LOW THERMAL RESISTANCE
- INPUT/OUTPUT MATCHING
- OVERLAY GEOMETRY
- METAL/CERAMIC HERMETIC PACKAGE
- P_{OUT} = 1.0 W MIN. WITH 5.2 dB GAIN



.400 x .400 2NLFL (S042)
hermetically sealed

ORDER CODE	BRANDING
AM83135-001	83135-1

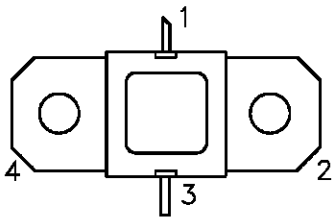
DESCRIPTION

The AM83135-001 device is a medium power silicon bipolar NPN transistor specifically designed for S-Band radar pulsed driver applications.

This device is capable of operation over a wide range of pulse widths, duty cycles and temperatures and can withstand a 10:1 output VSWR. Low RF thermal resistance, refractory/gold metallization, and automatic wire bonding techniques ensure high reliability and product consistency.

The AM83135-001 is supplied int the AMPAC™ Hermetic/Ceramic package with internal Input/Output impedance matching circuitry, and is intended for military and other high reliability ap-

PIN CONNECTION



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

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

Symbol	Parameter	Value	Unit
P_{DISS}	Power Dissipation* ($T_C \leq 100°C$)	11.5	W
I_C	Device Current*	0.45	A
V_{CC}	Collector-Supply Voltage*	34	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*	13.0	°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 = 1mA	I_E = 0mA	45	—	—	V
BV_{EBO}	I_E = 1mA	I_C = 0mA	3.5	—	—	V
BV_{CER}	I_C = 1mA	R_{BE} = 10Ω	45	—	—	V
I_{CES}	V_{BE} = 0V	V_{CE} = 30V	—	—	1	mA
h_{FE}	V_{CE} = 5V	I_C = 100mA	10	—	—	—

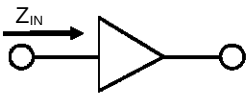
DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 3.1 — 3.5GHz	P_{IN} = 0.3W	V_{CC} = 30V	1.0	1.4	—	W
ηc	f = 3.1 — 3.5GHz	P_{IN} = 0.3W	V_{CC} = 30V	27	35	—	%
G_P	f = 3.1 — 3.5GHz	P_{IN} = 0.3W	V_{CC} = 30V	5.2	6.7	—	dB

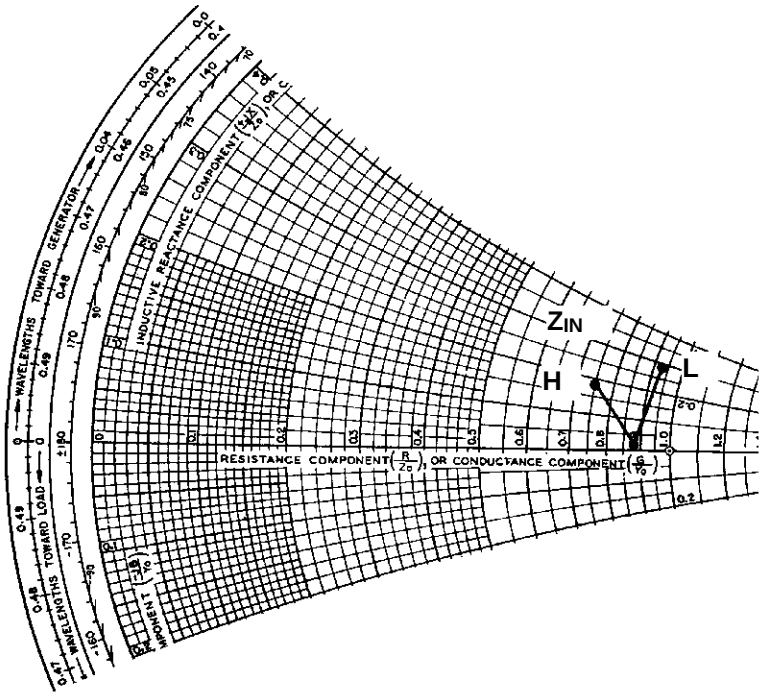
Note: Pulse Width = 100 µS
Duty Cycle = 10%

IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

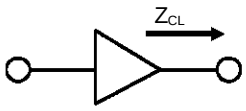


P_{IN} = 0.3 W
V_{CC} = 30 V
Z_O = 50 ohms

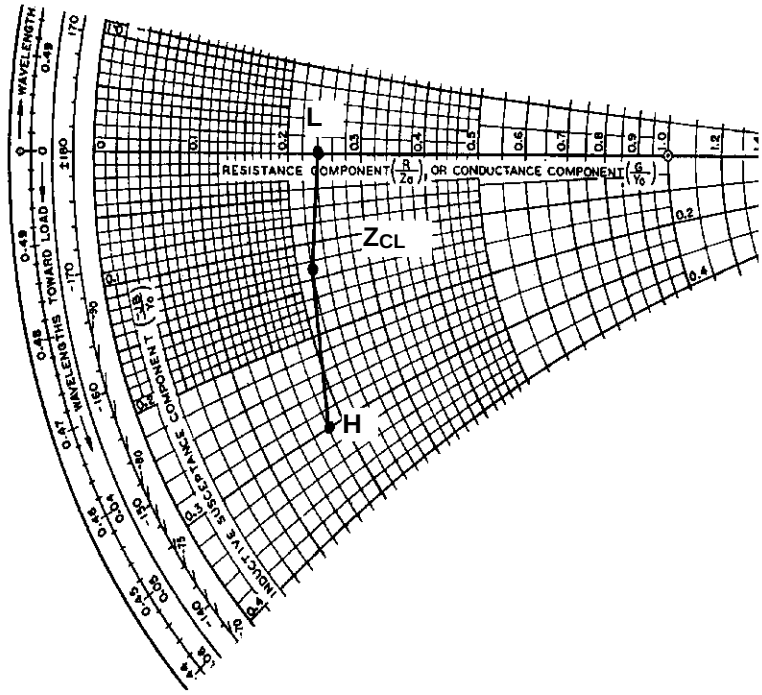


FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
L = 3.1 GHz	46.0 + j 14.5	12.0 – j 0.0
M = 3.3 GHz	43.0 + j 10.0	11.0 – j 6.5
H = 3.5 GHz	38.0 + j 10.0	9.0 – j 15.0

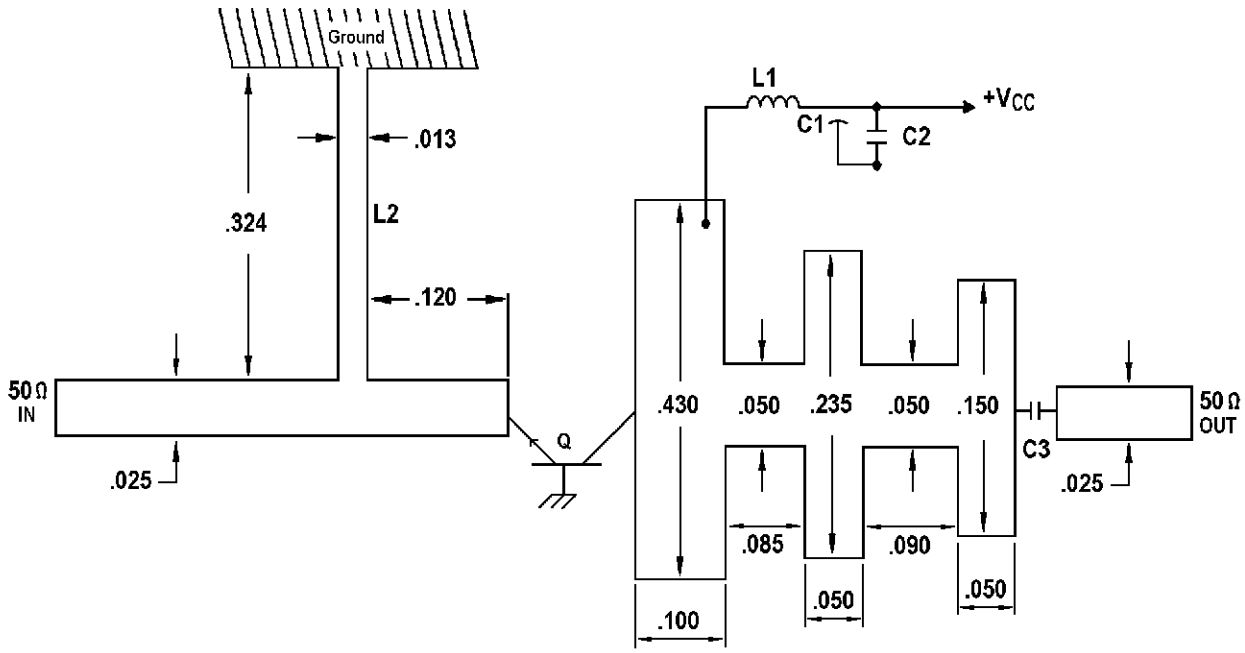
TYPICAL COLLECTOR LOAD IMPEDANCE



P_{IN} = 0.3 W
V_{CC} = 30 V
Z_O = 50 ohms



TEST CIRCUIT

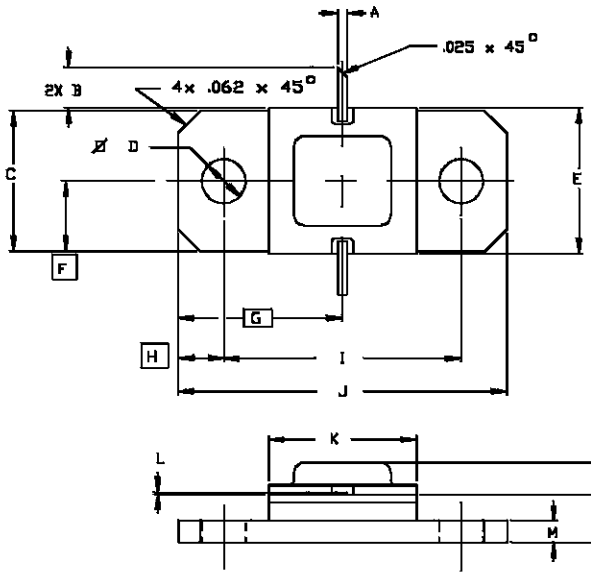


All dimensions are in inches.
Substrate material: .025 thick Al_2O_3

C1 : 1500 pF RF Feedthrough
C2 : 100 MF Electrolytic
C3 : 100 pF Chip
L1 : No. 26 Wire, 4 Turn .062 I.D.
L2 : Printed RF Choke

PACKAGE MECHANICAL DATA

Ref.: Dwg. No. 12-0213 rev. A
UDCS No. 1011416



SGS-THOMSON MICROELECTRONICS			CONT'D		
	MINIMUM Inches/mm	MAXIMUM Inches/mm		MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.020/0,51	.030/0,76	K	.395/10,03	.415/10,54
B	.100/2,54		L	.004/0,10	.006/0,18
C	.376/9,55	.396/10,06	M	.052/1,32	.072/1,83
D	.110/2,79	.130/3,30	N	.118/3,00	.131/3,33
E	.395/10,03	.407/10,34	P		.230/5,84
F	.193/4,90				
G	.450/11,43				
H	.125/3,18				
I	.640/16,26	.660/16,76			
J	.890/22,61	.910/23,11			