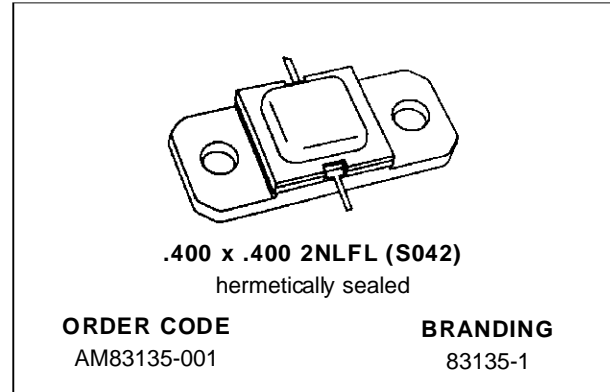


## RF & MICROWAVE TRANSISTORS S-BAND RADAR APPLICATIONS

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

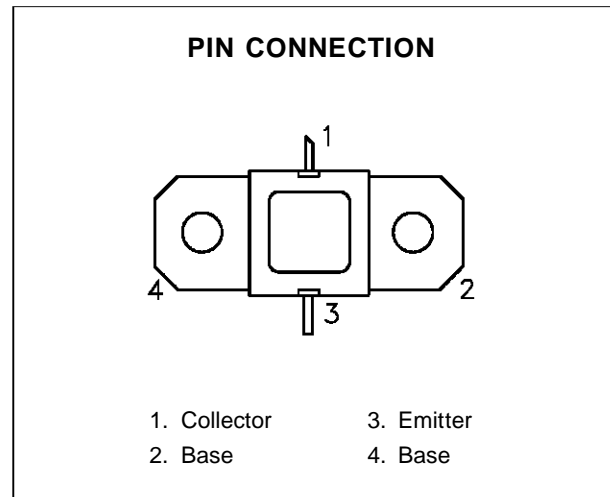


### DESCRIPTION

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



### ABSOLUTE MAXIMUM RATINGS (T<sub>case</sub> = 25°C)

Symbol	Parameter	Value	Unit
P <sub>DISS</sub>	Power Dissipation* (T <sub>C</sub> ≤ 100°C)	11.5	W
I <sub>C</sub>	Device Current*	0.45	A
V <sub>CC</sub>	Collector-Supply Voltage*	34	V
T <sub>J</sub>	Junction Temperature (Pulsed RF Operation)	250	°C
T <sub>STG</sub>	Storage Temperature	- 65 to +200	°C

### THERMAL DATA

R <sub>TH(j-c)</sub>	Junction-Case Thermal Resistance*	13.0	°C/W
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\*Applies only to rated RF amplifier operation

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

## STATIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
$BV_{\text{CBO}}$	$I_{\text{C}} = 1\text{mA}$	$I_{\text{E}} = 0\text{mA}$		45	—	—	V
$BV_{\text{EBO}}$	$I_{\text{E}} = 1\text{mA}$	$I_{\text{C}} = 0\text{mA}$		3.5	—	—	V
$BV_{\text{CER}}$	$I_{\text{C}} = 1\text{mA}$	$R_{\text{BE}} = 10\Omega$		45	—	—	V
$I_{\text{CES}}$	$V_{\text{BE}} = 0\text{V}$	$V_{\text{CE}} = 30\text{V}$		—	—	1	mA
$h_{\text{FE}}$	$V_{\text{CE}} = 5\text{V}$	$I_{\text{C}} = 100\text{mA}$		10	—	—	—

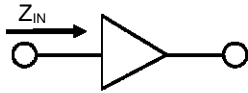
## DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
$P_{\text{OUT}}$	$f = 3.1 - 3.5\text{GHz}$	$P_{\text{IN}} = 0.3\text{W}$	$V_{\text{CC}} = 30\text{V}$	1.0	1.4	—	W
$\eta_{\text{C}}$	$f = 3.1 - 3.5\text{GHz}$	$P_{\text{IN}} = 0.3\text{W}$	$V_{\text{CC}} = 30\text{V}$	27	35	—	%
$G_{\text{P}}$	$f = 3.1 - 3.5\text{GHz}$	$P_{\text{IN}} = 0.3\text{W}$	$V_{\text{CC}} = 30\text{V}$	5.2	6.7	—	dB

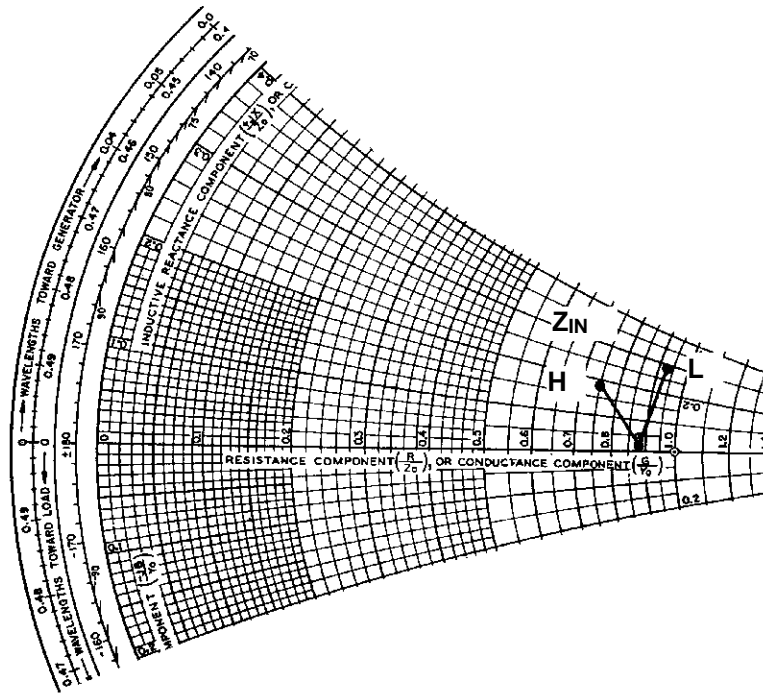
Note: Pulse Width = 100  $\mu\text{S}$   
Duty Cycle = 10%

IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

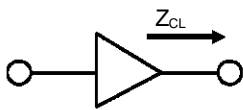


$P_{IN} = 0.3 \text{ W}$   
 $V_{CC} = 30 \text{ V}$   
 $Z_0 = 50 \text{ ohms}$

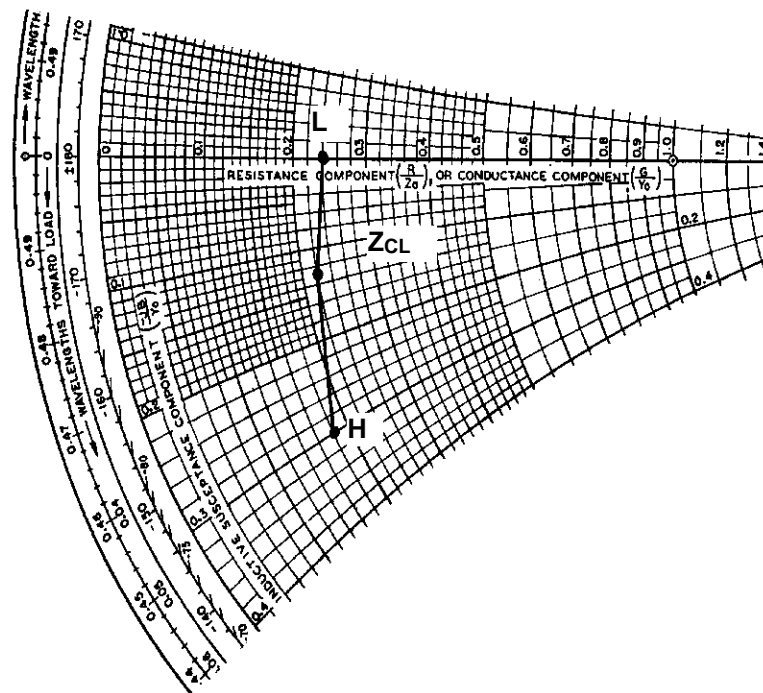


FREQ.	$Z_{IN} (\Omega)$	$Z_{CL} (\Omega)$
L = 3.1 GHz	$46.0 + j 14.5$	$12.0 - j 0.0$
M = 3.3 GHz	$43.0 + j 10.0$	$11.0 - j 6.5$
H = 3.5 GHz	$38.0 + j 10.0$	$9.0 - j 15.0$

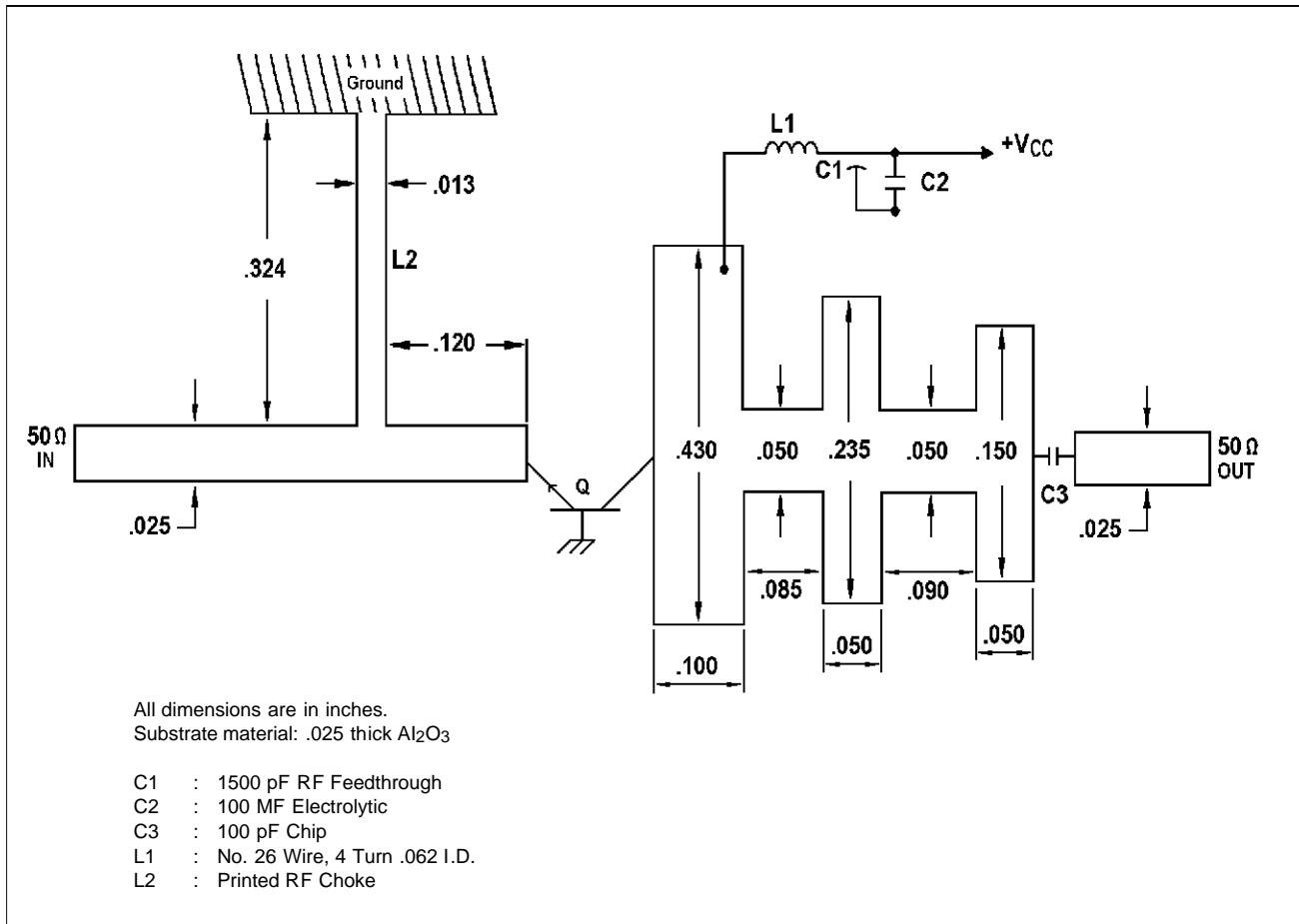
TYPICAL COLLECTOR LOAD IMPEDANCE



$P_{IN} = 0.3 \text{ W}$   
 $V_{CC} = 30 \text{ V}$   
 $Z_0 = 50 \text{ ohms}$

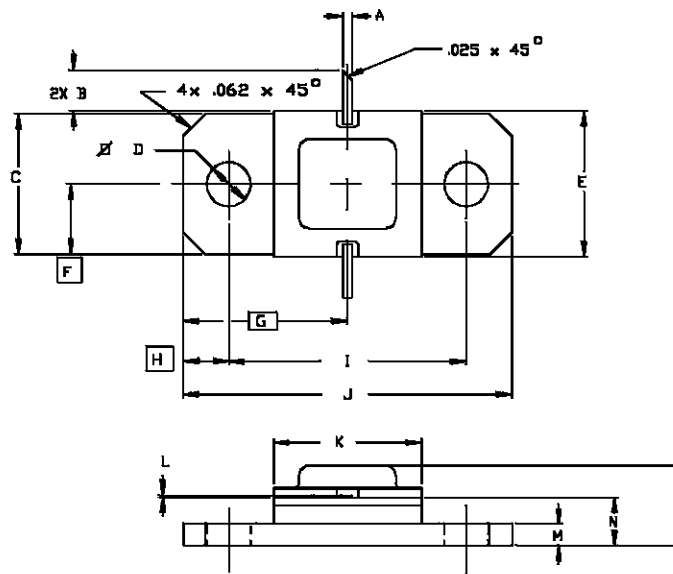


TEST CIRCUIT



**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			

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