

**RF & MICROWAVE TRANSISTORS  
 S-BAND RADAR APPLICATIONS**

PRELIMINARY DATA

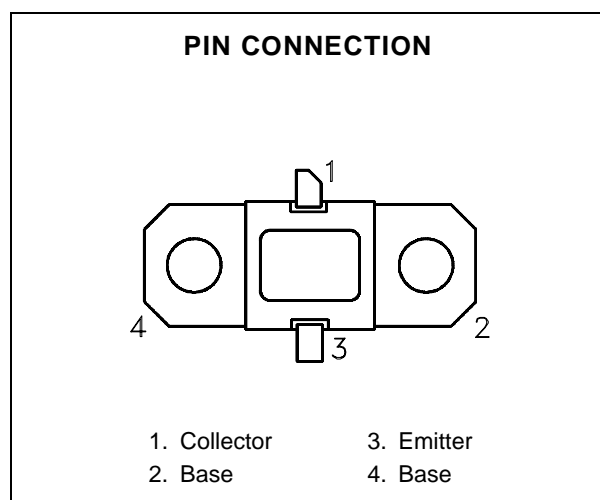
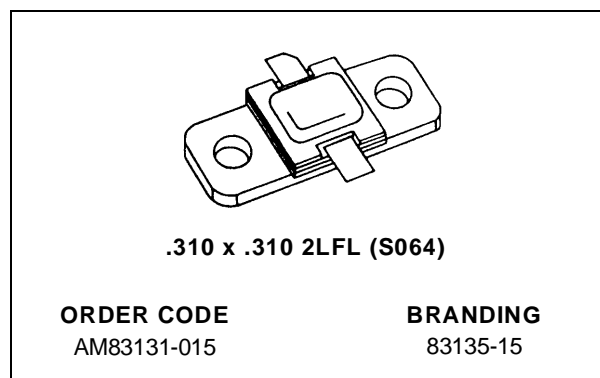
- REFRACTORY/GOLD METALLIZATION
- EMITTER SITE BALLASTED
- LOW THERMAL RESISTANCE
- INPUT/OUTPUT MATCHING
- OVERLAY GEOMETRY
- METAL/CERAMIC HERMETIC PACKAGE
- $P_{OUT} = 15$  W MIN. WITH 5.2 dB GAIN

**DESCRIPTION**

The AM83135-015 device is a high power silicon bipolar NPN transistor specifically designed for S-Band radar pulsed output and driver applications.

This device is characterized at 100 $\mu$ sec pulse width and 10% duty cycle, but is capable of operation over a range of pulse widths, duty cycles, and temperatures, and can withstand a 3:1 output VSWR with a + 1 dB input overdrive. Low RF thermal resistance, refractory/gold metallization, and computerized automatic wire bonding techniques ensure high reliability and product consistency (including phase characteristics).

The AM83135-015 is supplied in the IMPAC™ Hermetic Metal/Ceramic package with internal Input/Output impedance matching circuitry, and is intended for military and other high reliability applications.


**ABSOLUTE MAXIMUM RATINGS** ( $T_{case} = 25^{\circ}C$ )

Symbol	Parameter	Value	Unit
$P_{DISS}$	Power Dissipation* ( $T_C \leq 50^{\circ}C$ )	71	W
$I_C$	Device Current*	3.0	A
$V_{CC}$	Collector-Supply Voltage*	46	V
$T_J$	Junction Temperature (Pulsed RF Operation)	250	$^{\circ}C$
$T_{STG}$	Storage Temperature	- 65 to +200	$^{\circ}C$

**THERMAL DATA**

$R_{TH(j-c)}$	Junction-Case Thermal Resistance*	2.8	$^{\circ}C/W$
---------------	-----------------------------------	-----	---------------

\*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.	
$BV_{\text{CBO}}$	$I_{\text{C}} = 10 \text{ mA}$	$I_{\text{E}} = 0 \text{ mA}$	55	—	—	V	
$BV_{\text{EBO}}$	$I_{\text{E}} = 2 \text{ mA}$	$I_{\text{C}} = 0 \text{ mA}$	3.5	—	—	V	
$BV_{\text{CER}}$	$I_{\text{C}} = 10 \text{ mA}$	$R_{\text{BE}} = 10 \Omega$	55	—	—	V	
$I_{\text{CES}}$	$V_{\text{BE}} = 0 \text{ V}$	$V_{\text{CE}} = 40 \text{ V}$	—	—	8	mA	
$h_{\text{FE}}$	$V_{\text{CE}} = 5 \text{ V}$	$I_{\text{C}} = 1 \text{ A}$	30	—	300	—	

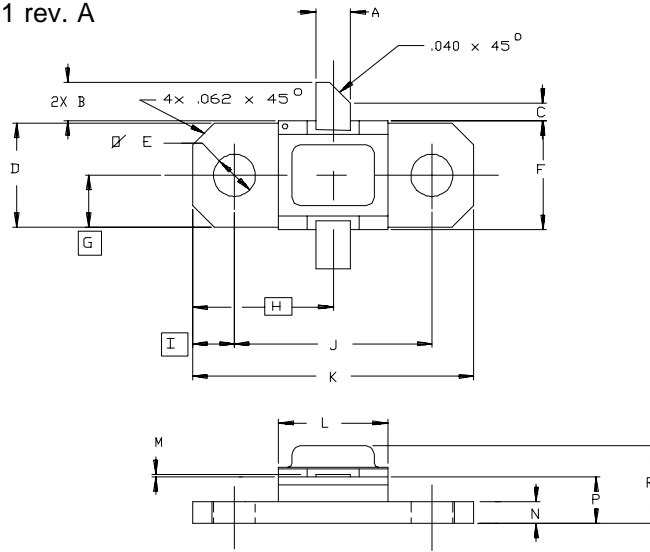
## DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
$P_{\text{OUT}}$	$f = 3.1 - 3.5 \text{ GHz}$	$P_{\text{IN}} = 4.5 \text{ W}$	$V_{\text{CC}} = 40 \text{ V}$	15	—	—	W
$\eta_{\text{C}}$	$f = 3.1 - 3.5 \text{ GHz}$	$P_{\text{OUT}} = 15 \text{ W}$	$V_{\text{CC}} = 40 \text{ V}$	30	—	—	%
$P_{\text{G}}$	$f = 3.1 - 3.5 \text{ GHz}$	$P_{\text{OUT}} = 15 \text{ W}$	$V_{\text{CC}} = 40 \text{ V}$	5.2	—	—	dB

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

**PACKAGE MECHANICAL DATA**

Ref.: Dwg. No. 12-0221 rev. A



SGS-THOMSON MICROELECTRONICS			CONT'D	
	MINIMUM Inches/mm	MAXIMUM Inches/mm	MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.095/2,41	.105/2,67	K	.790/20,07
B	.100/2,54	.120/3,05	L	.300/7,62
C	.050/1,27		M	.003/0,08
D	.286/7,26	.306/7,77	N	.052/1,32
E	.110/2,79	.130/3,30	P	.118/3,00
F	.306/7,77	.318/8,08	R	.230/5,84
G	.148/3,76			
H	.400/10,16			
I	.119/3,02			
J	.552/14,02	.572/14,53		

Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectronics.

©1994 SGS-THOMSON Microelectronics - All Rights Reserved

SGS-THOMSON Microelectronics GROUP OF COMPANIES

Australia - Brazil - France - Germany - Hong Kong - Italy - Japan - Korea - Malaysia - Malta - Morocco - The Netherlands - Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A.