

## RF & MICROWAVE TRANSISTORS S-BAND RADAR APPLICATIONS

PRELIMINARY DATA

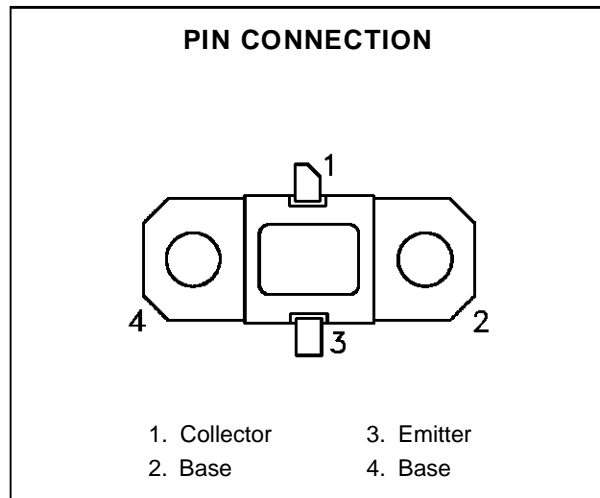
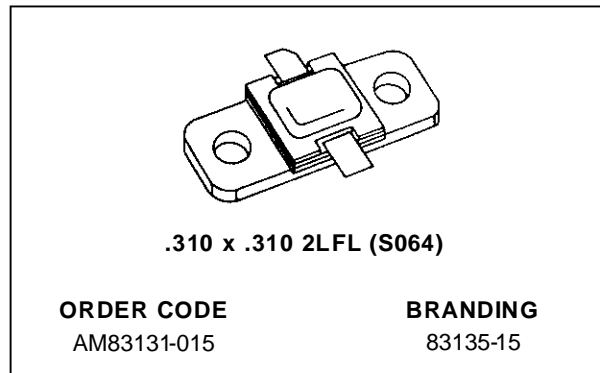
- REFRACTORY/GOLD METALLIZATION
- EMITTER SITE BALLASTED
- LOW THERMAL RESISTANCE
- INPUT/OUTPUT MATCHING
- OVERLAY GEOMETRY
- METAL/CERAMIC HERMETIC PACKAGE
- $P_{OUT} = 15$  W MIN. WITH 5.2 dB GAIN

### 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	$^{\circ}C/W$
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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.	
$BV_{\text{CBO}}$	$I_{\text{C}} = 10 \text{ mA}$	$I_{\text{E}} = 0 \text{ mA}$		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

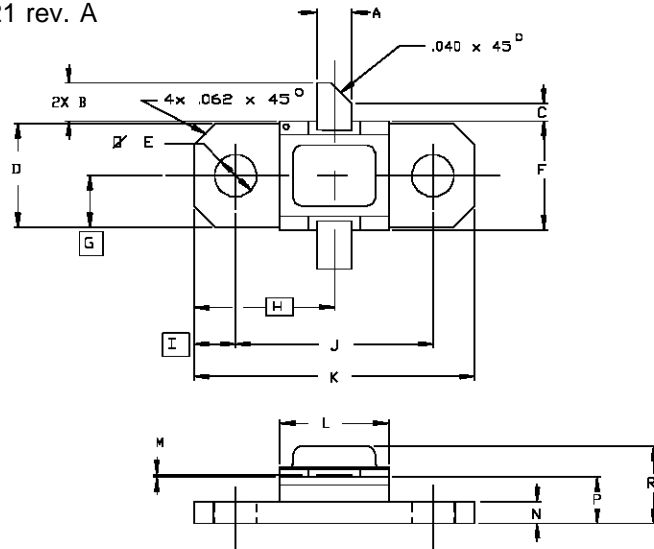
Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
$P_{\text{OUT}}$	$f = 3.1 - 3.5 \text{ GHz}$	$P_{\text{IN}} = 4.5 \text{ W}$	$V_{\text{CC}} = 40 \text{ V}$	15	—	—	W
$\eta_{\text{C}}$	$f = 3.1 - 3.5 \text{ GHz}$	$P_{\text{OUT}} = 15 \text{ W}$	$V_{\text{CC}} = 40 \text{ V}$	30	—	—	%
$P_{\text{G}}$	$f = 3.1 - 3.5 \text{ GHz}$	$P_{\text{OUT}} = 15 \text{ W}$	$V_{\text{CC}} = 40 \text{ V}$	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			
A	.095/2,41	.105/2,67	K	.790/20,07	.810/20,57
B	.100/2,54	.120/3,05	L	.300/7,62	.320/8,13
C	.050/1,27		M	.003/0,08	.006/0,15
D	.286/7,26	.306/7,77	N	.052/1,32	.072/1,83
E	.110/2,79	.130/3,30	P	.118/3,00	.131/3,33
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			

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