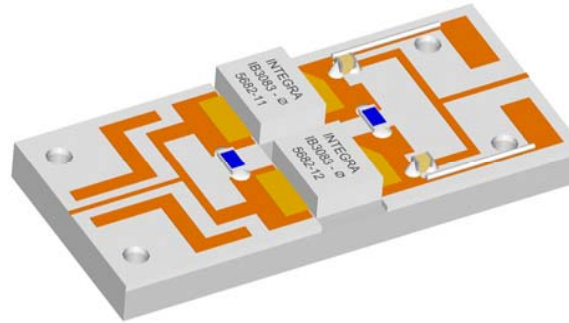


**S-Band Radar Pallet Amplifier**

Part number IBP3135M150 is a 50 Ω matched high power pulsed radar pallet amplifier for S-Band radar systems operating over the instantaneous bandwidth of 3.1-3.5 GHz. The pallet amplifier supplies a minimum of 150 watts of peak pulse power under the conditions of 100μs pulse width and 10% duty cycle. All devices are 100% screened for large signal RF parameters.



- Silicon Bipolar Technology
  - Ultra-high  $f_T$
- Class C Operation
  - High Efficiency
- Common Base Configuration
  - Single Power Supply
- Gold Metal
  - Maximum Reliability
- Emitter Ballasting
  - Optimum Thermal Distribution
- Impedance Matched to 50Ω
  - Ease of Use
- Pallet Carrier
  - Soft PC Board
  - Ni Plated Cu Carrier
- BeO Based Transistor Package
  - Unmatched Thermal Reliability
- US Patent Number
  - 6181200B1

**TYPICAL DATA**

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Device	Freq (GHz)	V <sub>CC</sub> (V)	P <sub>IN</sub> (W)	IRL (dB)	P <sub>OUT</sub> (W)	G <sub>P</sub> (dB)	I <sub>c</sub> (A)	η <sub>c</sub> (%)	Droop (dB)	VSWR 1.5:1	OD-S
D1981-4	3.10	36	27.0	-14.0	241	9.56	12.4	54.0	-0.1	s	s
	3.25	36	27.0	-13.5	228	9.34	12.3	51.5	-0.1	s	s
	3.40	36	27.0	-15.0	186	8.47	10.8	47.9	-0.1	s	s

**NOTES:** OD-S = Stability with 1dB overdrive.

**MAXIMUM RATINGS**

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
BD	Collector-Emitter Voltage	$V_{CES}$	--	70	V	$V_{BE}=0V$ .
BD	Emitter-Base Voltage	$V_{EBO}$	--	3.5	V	--
BD	Collector Current, Peak	$I_C$	--	23.2	A	$PW=PW1, DF=DF1$ .
BD	Continuous Power Dissipation, Peak	$P_D$	--	712	W	$PW=PW1, DF=DF1, T_F=25^{\circ}C$ .
BD	Storage Temperature Range	$T_{STG}$	-20	+125	$^{\circ}C$	--
BD	Operating Junction Temperature Range	$T_J$	-20	+200	$^{\circ}C$	--
Note	Screen 'BD' = parameter qualified By Design.					

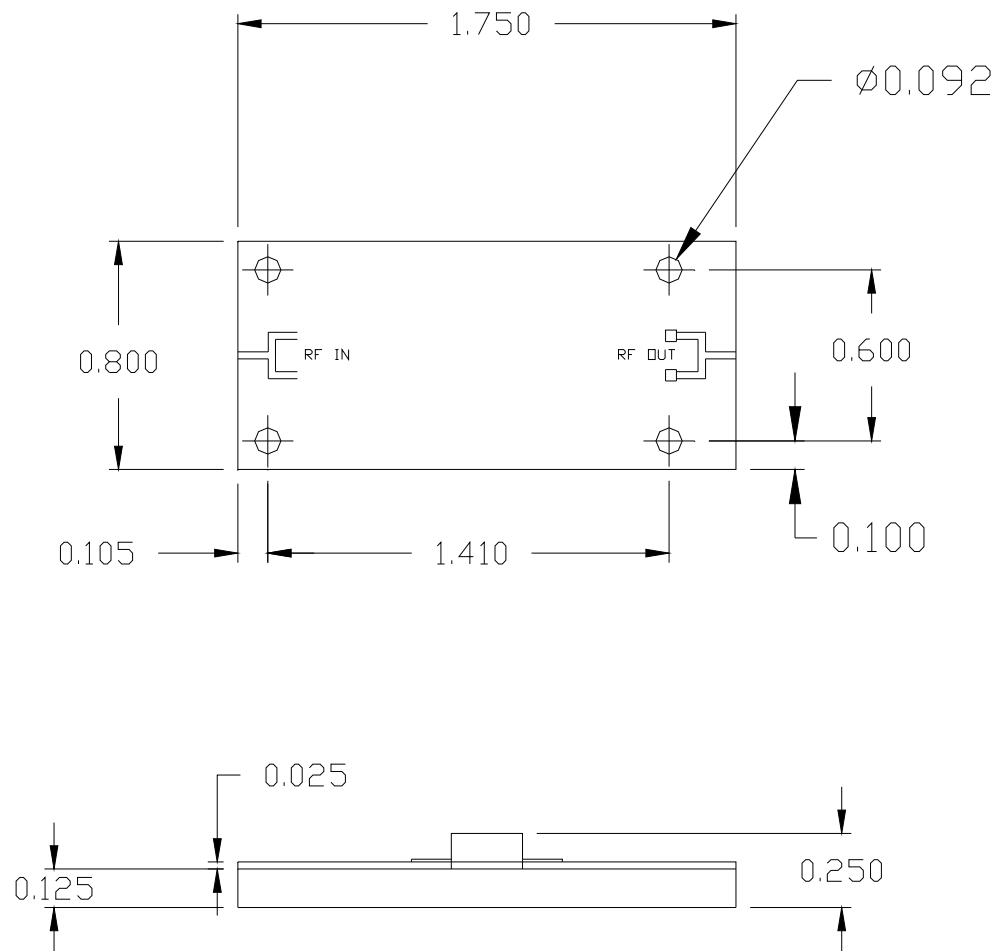
**THERMAL CHARACTERISTICS**

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
BD	Thermal Resistance per Device	$R_{TH(JC)}$	--	0.45	$^{\circ}C/W$	$V_{CC}=V1, PW=PW1, DF=DF1, T_F=25\pm 5^{\circ}C, P_{OUT}= 150W$ . Per transistor.
Note	Screen 'BD' = parameter qualified By Design.					

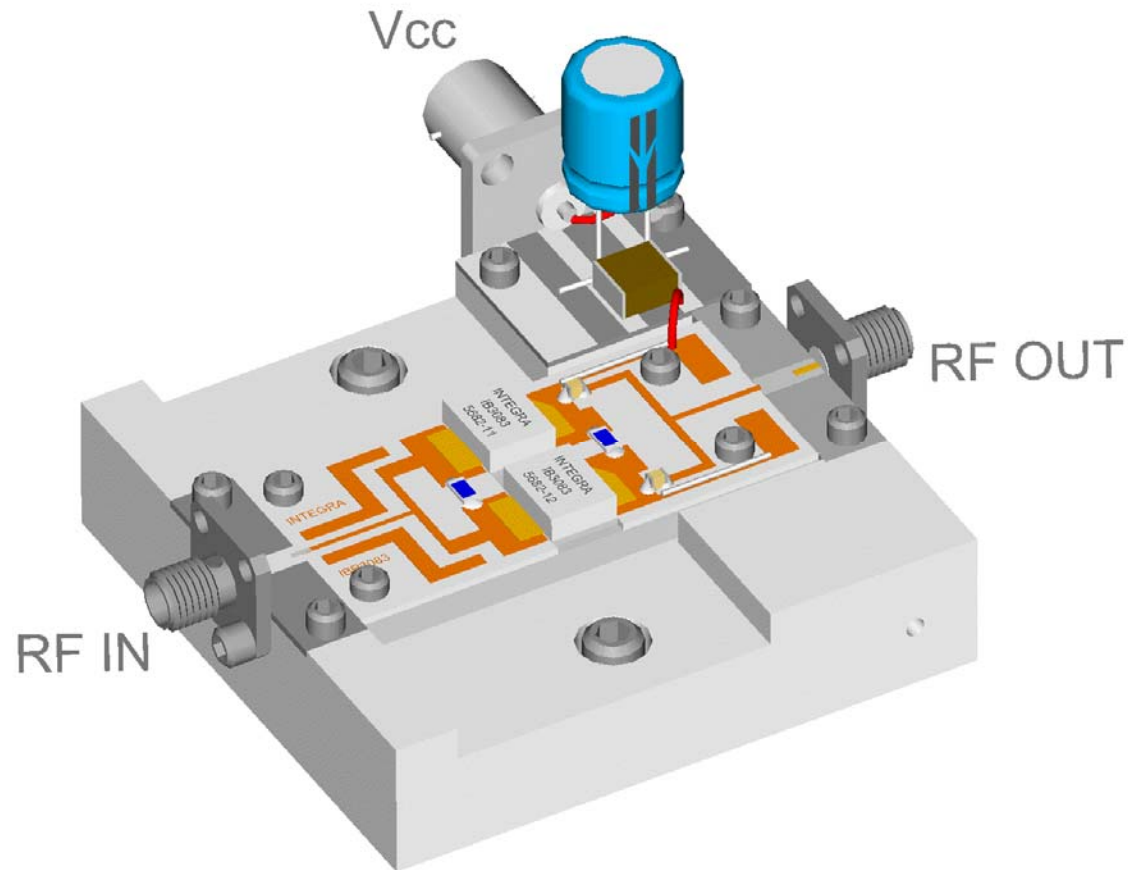
**RF ELECTRICAL CHARACTERISTICS**

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
100%	Input Return Loss	IRL	8	--	dB	$V_{CC}=V1$ , $PW=PW1$ , $DF=DF1$ , $T_F=25\pm5^\circ\text{C}$ , $P_{IN}=27\text{W}$ , $F=F1$ , $F2$ , $F3$ .
100%	Output Power	$P_O$	150	--	W	$V_{CC}=V1$ , $PW=PW1$ , $DF=DF1$ , $T_F=25\pm5^\circ\text{C}$ , $P_{IN}=27\text{W}$ , $F=F1$ , $F2$ , $F3$ .
100%	Power Gain	$G_P$	7.45	--	dB	$V_{CC}=V1$ , $PW=PW1$ , $DF=DF1$ , $T_F=25\pm5^\circ\text{C}$ , $P_{IN}=27\text{W}$ , $F=F1$ , $F2$ , $F3$ .
100%	Collector Efficiency ( $P_O/I_C/V_{CC}$ )	$N_C$	35	--	%	$V_{CC}=V1$ , $PW=PW1$ , $DF=DF1$ , $T_F=25\pm5^\circ\text{C}$ , $P_{IN}=27\text{W}$ , $F=F1$ , $F2$ , $F3$ .
100%	Pulse Amplitude Droop	D	--	1.0	dB	$V_{CC}=V1$ , $PW=PW1$ , $DF=DF1$ , $T_F=25\pm5^\circ\text{C}$ , $P_{IN}=27\text{W}$ , $F=F1$ , $F2$ , $F3$ .
100%	Gain Flatness	GF	--	1.5	dB	Calculate from min/max gains at frequencies $F1$ , $F2$ and $F3$ .
100%	Delta Insertion Phase Variation	d-IP	-20	+20	Deg	$V_{CC}=V1$ , $PW=PW1$ , $DF=DF1$ , $T_F=25\pm5^\circ\text{C}$ , $P_{IN}=27\text{W}$ , $F=F3$ .
100%	Stability into 1.5:1 VSWR	VSWR-S	--	--	--	$V_{CC}=V1$ , $PW=PW1$ , $DF=DF1$ , $T_F=25\pm5^\circ\text{C}$ , $P_{IN}=27\text{W}$ , $F=F1$ , $F2$ , $F3$ . Rotate 1.5:1 output VSWR through 360° phase. No oscillatory or pulse break-up characteristics allowed on detected output pulse. All non-harmonically related signals must be at least -50 dBc.
100%	Stability with + 1dB Input Power Overdrive	OD-S	--	--	--	$V_{CC}=V1$ , $PW=PW1$ , $DF=DF1$ , $T_F=25\pm5^\circ\text{C}$ , $P_{IN}=34\text{W}$ , $F=F1$ , $F2$ , $F3$ . No oscillatory or pulse break-up characteristics allowed on detected output pulse.
Note	$V1 = 36\text{V}$ ; $PW1 = 100\mu\text{s}$ ; $DF1 = 10\%$ ; $F1 = 3.10\text{ GHz}$ , $F2 = 3.30\text{ GHz}$ , $F3 = 3.50\text{ GHz}$ .					
Note	$T_F$ = Device flange temperature.					
Note	Screen 'BD' = parameter qualified By Design.					

**PALLET DIMENSIONAL OUTLINE DRAWING**



**50Ω RF TEST FIXTURE**



HEATSINK NOT SHOWN  
DRAWINGS AVAILABLE UPON REQUEST

**DEFINITIONS**

<b>Data Sheet Status</b>	
Proposed Specification	This data sheet contains proposed specifications.
Preliminary Specification	This data sheet contains specifications based on preliminary measurements and data.
Product Specification	This data sheet contains final product specifications.
<b>Maximum Ratings</b>	
Stress above one or more of the maximum ratings may cause permanent damage to the device. These are maximum ratings only and operation of the device at these or at any other conditions above those given in the characteristics sections of the specification is not implied. Exposure to maximum values for extended periods of time may affect device reliability.	

**WARNING**

<b>Product and environmental safety - toxic materials</b>
This product contains beryllium oxide. The product is entirely safe provided that the BeO base is not damaged. All persons who handle, use or dispose of this product should be aware of its nature and of the necessary safety precautions. After use, dispose of as chemical or special waste according to the regulations applying at the location of the user. It must never be thrown out with general or domestic waste.

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