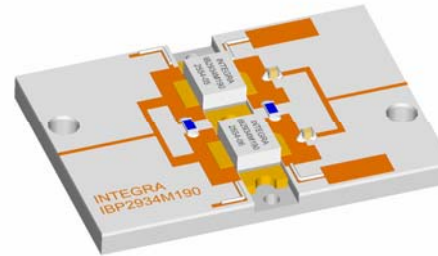


## S-Band Radar Pallet

Part number IBP2934M190 is a 50  $\Omega$  matched high power pulsed radar pallet amplifier for S-Band radar systems operating over the instantaneous bandwidth of 2.9-3.4 GHz. The pallet amplifier supplies a minimum of 190 watts of peak pulse power under the conditions of 100 $\mu$ s pulse width and 10% duty cycle. All devices are 100% screened for large signal RF parameters.



### Silicon Bipolar

- 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 50 $\Omega$

- Ease of Use

### Pallet Carrier

- Ni Plated Copper Carrier
- High Er PCB

### BeO Based Transistor Package

- Unmatched Thermal Reliability

### US Patent Number

- 6181200B1

### PRELIMINARY 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)	n <sub>c</sub> (%)	Droop (dB)
	2.90	36	38	-11	240	8.0	13.6	49	-0.2
	3.15	36	38	-15	230	7.8	14.2	45	-0.2
	3.40	36	38	-18	215	7.5	13.3	45	-0.1

Pulse Format = 100 $\mu$ s, 10%

Power measurements made using Boonton 4500 Peak Power Analyzer

**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	$I_C$	--	34.1	A	PW=PW1, DF=DF1.
BD	Continuous Power Dissipation, Peak	$P_D$	--	TBD	W	PW=PW1, DF=DF1, $T_F=25^{\circ}C$ .
BD	Storage Temperature Range	$T_{STG}$	-55	+150	$^{\circ}C$	--
BD	Operating Junction Temperature Range	$T_J$	-55	+200	$^{\circ}C$	--
Note	Screen 'BD' = parameter qualified By Design.					

**THERMAL CHARACTERISTICS**

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
BD	Thermal Resistance	$R_{TH(JC)}$	--	TBD	$^{\circ}C/W$	$V_{CC}=36V$ , Pulse format=100 $\mu s$ , 10%, $T_F=25\pm 5^{\circ}C$ , $P_{IN}=190W$ , $N_C=xx\%$
Note	Screen 'BD' = parameter qualified By Design.					

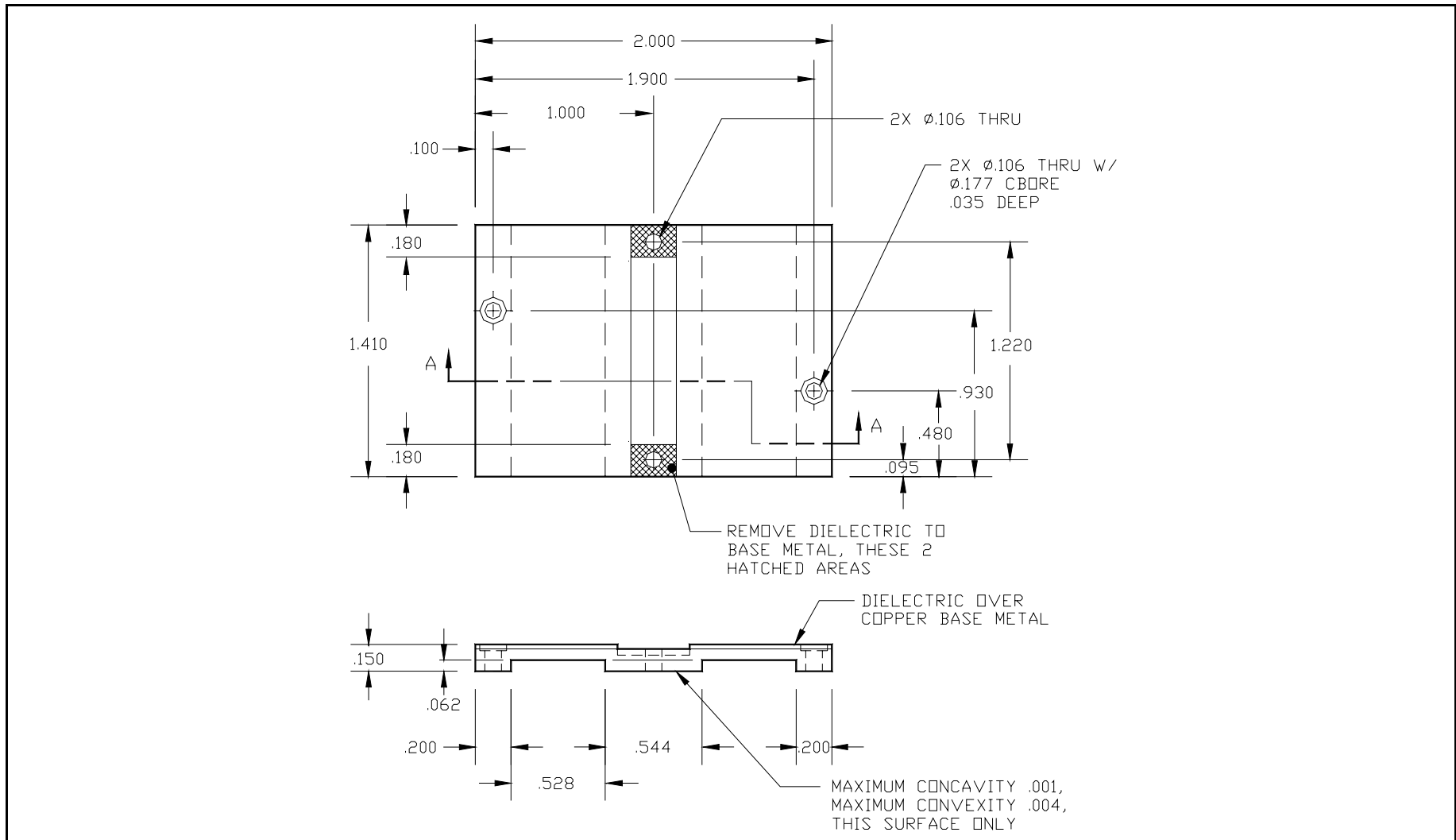
**PROCESSING SPECIFICATIONS**

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
100%	DC Wafer Probe	--	--	--	--	Per Integra specification.
Q1	Wafer DC and RF Qualification	--	--	--	--	Per Integra specification.
LM	Wire Bond Strength	--	--	--	--	Line monitor per Integra specification.
100%	Pre-cap visual inspection	--	--	--	--	Per Integra specification
100%	Gross leak test	--	--	--	--	MIL-STD-750D, Method 1071, Test Condition C
Note	Screen 'Q1' = parameter is qualified by assembly and test of 3 pieces minimum per wafer.					
Note	Screen 'LM' = parameter is qualified by assembly line monitor.					

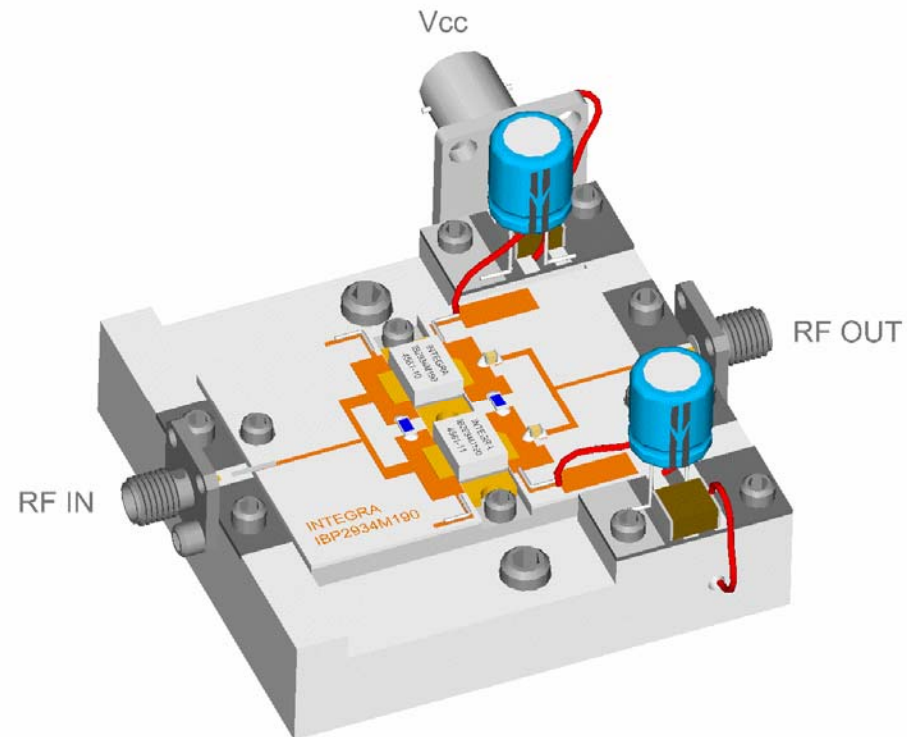
**RF ELECTRICAL CHARACTERISTICS**

Screen	Parameter	Symbol	Min	Max	Units	Test Conditions
100%	Input Return Loss	IRL	9		dB	$V_{CC}=36V, P_{OUT}=190W$ , Pulse = Note 2, $T_F=25\pm5^\circ C$ , F=F1
100%	Input Power	$P_{IN}$		38	W	$V_{CC}=36V, P_{OUT}=190W$ , Pulse = Note 2, $T_F=25\pm5^\circ C$ , F=F1
100%	Power Gain	$G_P$	7.5		dB	$V_{CC}=36V, P_{OUT}=190W$ , Pulse = Note 2, $T_F=25\pm5^\circ C$ , F=F1
100%	Collector Efficiency ( $P_O/I_C/V_{CC}$ )	$N_C$	40		%	$V_{CC}=36V, P_{OUT}=190W$ , Pulse = Note 2, $T_F=25\pm5^\circ C$ , F=F1
100%	Pulse Amplitude Droop	D		0.5	dB	$V_{CC}=36V, P_{OUT}=190W$ , Pulse = Note 2, $T_F=25\pm5^\circ C$ , F=F1
100%	Gain Flatness	GF		1.3	dB	Calculate from min/max gains
100%	Delta Insertion Phase Variation	$\Delta IP$	-20	+20	deg	$V_{CC}=36V, P_{OUT}=190W$ , Pulse = Note 2, $T_F=25\pm5^\circ C$ , F=F1
100%	Stability into 1.5:1 VSWR	VSWR-S	1.5:1	--	--	$V_{CC}=36V, P_{OUT}=190W$ , Pulse = Note 2, $T_F=25\pm5^\circ C$ , F=F1 Rotate 1.5:1 output VSWR through 360° phase. No oscillatory or pulse break-up characteristics allowed on detected output pulse.
100%	Stability at 1dB Input Power Overdrive	OD-S				$V_{CC}=36V, P_{OUT}=190W$ , Pulse = Note 2, $T_F=25\pm5^\circ C$ , F=F1 No oscillatory or pulse break-up characteristics allowed on detected output pulse.
100%	Load Mismatch Tolerance	LMT	2:1	--	--	$V_{CC}=36V, P_{OUT}=190W$ , Pulse = Note 2, $T_F=25\pm5^\circ C$ , F=F1 Rotate 3:1 output VSWR through 360° phase. Survival.
BD	Pulse Risetime	RT	--	100	ns	$V_{CC}=36V, P_{OUT}=190W$ , Pulse = Note 2, $T_F=25\pm5^\circ C$ , F=F1 Measure between 10% and 90% detected power points.
Note 1	F1 = 2.90/3.15/3.40 GHz.					
Note 2	Pulse format = 100µs, 10%					
Note 3	$T_F$ = Device flange temperature.					
Note 4	Screen 'BD' = parameter qualified By Design.					

**PALLET DIMENSIONAL OUTLINE DRAWING**



**50 OHM TEST FIXTURE**



**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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