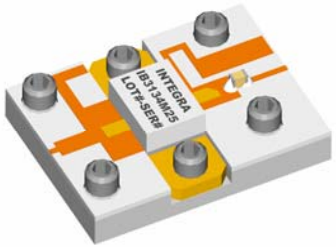
# Part Number: IBP3134M25

Integra
TECHNOLOGIES, INC.

## S-Band Radar Transistor

Part number IBP3134M25 is a 50 Ω matched high power pulsed radar pallet amplifier for S-Band radar systems operating over the instantaneous bandwidth of 3.1-3.4 GHz. Operating under the pulse conditions of 300μs pulse width and 10% duty cycle the pallet amplifier supplies a minimum of 25 watts of peak power over the frequency range of 3.1-3.4GHz. 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
  - Ni Plated Cu Carrier
- Be0 Based Transistor Package
  - Unmatched Thermal Reliability

## TYPICAL DATA TYPICAL DATA TYPICAL DATA TYPICAL DATA TYPICAL DATA

| Device | Freq (MHz) | $V_{CC}$ (V) | $P_{IN}$ (W) | IRL (dB) | $P_{OUT}$ (W) | $G_P$ (dB) | Ic (A) | Nc (%) | Droop (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 506445-2 | 3100 | 32.0 | 2.6 | -18 | 33.7 | 11.1 | 2.10 | 50 | -0.2 |
| | 3250 | 32.0 | 2.6 | -18 | 33.1 | 11.1 | 2.10 | 49 | -0.2 |
| | 3400 | 32.0 | 2.6 | -24 | 30.6 | 10.7 | 2.10 | 45 | -0.1 |

Pulse Format = 300μs, 10%



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## 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 | Storage Temperature Range | $T_{STG}$ | -55 | +150 | °C | -- |
| BD | Operating Junction Temperature Range | $T_J$ | -55 | +200 | °C | -- |
| | | | | | | |
| Note | Screen 'BD' = parameter qualified By Design. | | | | | |

## THERMAL CHARACTERISTICS

| Screen | Parameter | Symbol | Min | Max | Units | Test Conditions |
|---|---|---|---|---|---|---|
| BD | Thermal Resistance per Device | $R_{TH(JC)}$ | -- | 1.45 | °C/W | $V_{CC}$=V1, PW=PW1, DF=DF1, $T_F$=25±5°C, $P_{OUT}$= 25W, F=F3, Per transistor. |
| | | | | | | |
| Note | Screen 'BD' = parameter qualified By Design. | | | | | |



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## RF ELECTRICAL CHARACTERISTICS

| Screen | Parameter | Symbol | Min | Max | Units | Test Conditions |
|---|---|---|---|---|---|---|
| 100% | Input Return Loss | IRL | 10 | -- | dB | $V_{CC}$=V1, PW=PW1, DF=DF1, $T_F$=25±5°C, $P_{IN}$=$P_{IN}$, F=F1, F2, F3. |
| 100% | Output Power | $P_O$ | 25 | -- | W | $V_{CC}$=V1, PW=PW1, DF=DF1, $T_F$=25±5°C, $P_{IN}$=$P_{IN}$, F=F1, F2, F3. |
| 100% | Collector Efficiency ($P_O/I_C/V_{CC}$) | $N_C$ | 40 | -- | % | $V_{CC}$=V1, PW=PW1, DF=DF1, $T_F$=25±5°C, $P_{IN}$=$P_{IN}$, F=F1, F2, F3. |
| 100% | Pulse Amplitude Droop | D | -- | 0.5 | dB | $V_{CC}$=V1, PW=PW1, DF=DF1, $T_F$=25±5°C, $P_{IN}$=$P_{IN}$, F=F1, F2, F3. |
| 100% | Output Power Compression =10*LOG($P_{OC}/P_O$) | OPC | -0.2 | +0.70 | dB | $P_{OC}$ measured with $P_{IN}$ increased by 0.5dB at F=F1, F2, F3. |
| 100% | Output Power Flatness =10*LOG($P_{OMAX}/P_{OMIN}$) | OPF | -- | 1.0 | dB | Calculate from $P_O$ at each frequency F. |
| 100% | Stability into 1.5:1 VSWR | VSWR-S | -- | -- | -- | $V_{CC}$=V1, PW=PW1, DF=DF1, $T_F$=25±5°C, $P_{IN}$=$P_{IN}$, F=F1,F2,F3.<br>Rotate 1.5:1 output VSWR through 360° phase.<br>No oscillatory or pulse break-up characteristics allowed on detected output pulse. |
| 100% | 2:1 Load Mismatch Tolerance | LMT | -- | -- | -- | $V_{CC}$=V1, PW=PW1, DF=DF1, $T_F$=25±5°C, $P_{IN}$=$P_{IN}$, F=F1,F2,F3.<br>Rotate 2:1 output VSWR through 360° phase. |
| BD | Pulse Risetime | RT | -- | 150 | ns | $V_{CC}$=V1, PW=PW1, DF=DF1, $T_F$=25±5°C, $P_{IN}$=$P_{IN}$, F=F1,F2,F3.<br>Measure between 10% and 90% detected power points. |
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| | | | | | | |
| Note | V1 = 32V; PW1 = 300µs; DF1 = 10%; $P_{IN}$= 2.6W; F1 = 3.10 GHz, F2 = 3.25 GHz, F3= 3.40GHz. | | | | | |
| Note | $T_F$ = Device flange temperature. Screen 'BD' = parameter qualified By Design. | | | | | |



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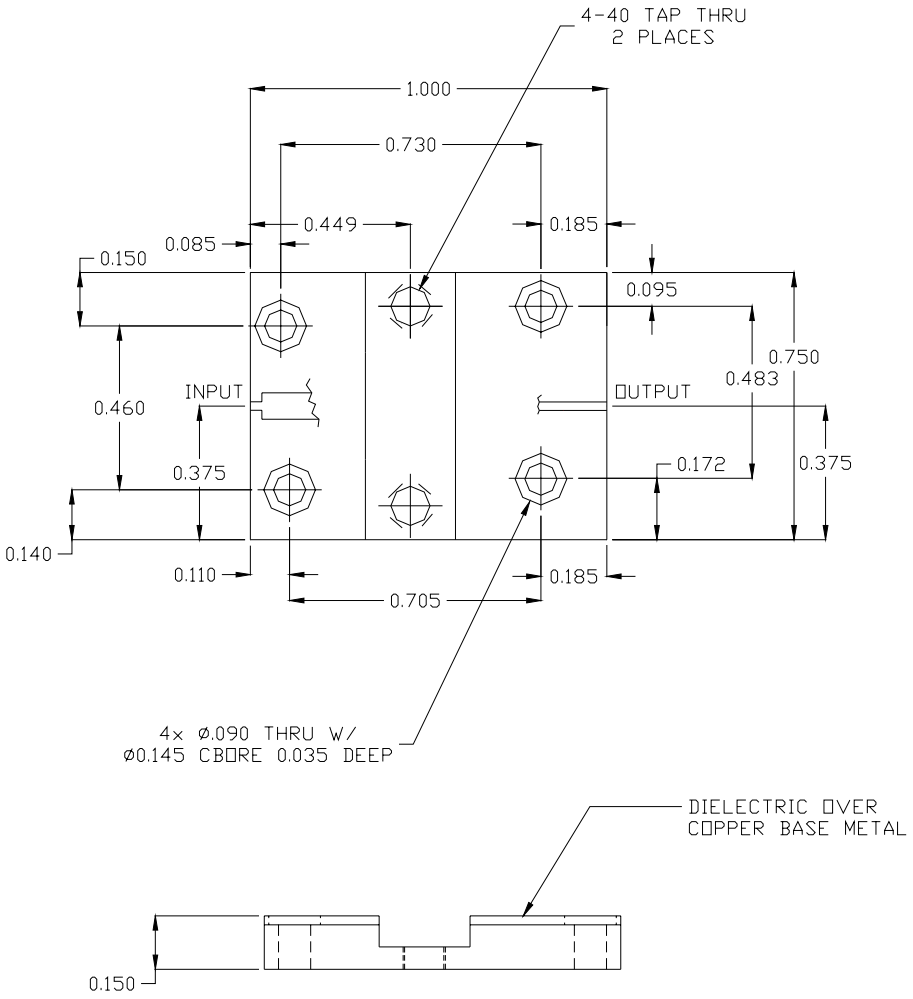
**PALLET DIMENSIONAL OUTLINE DRAWING**



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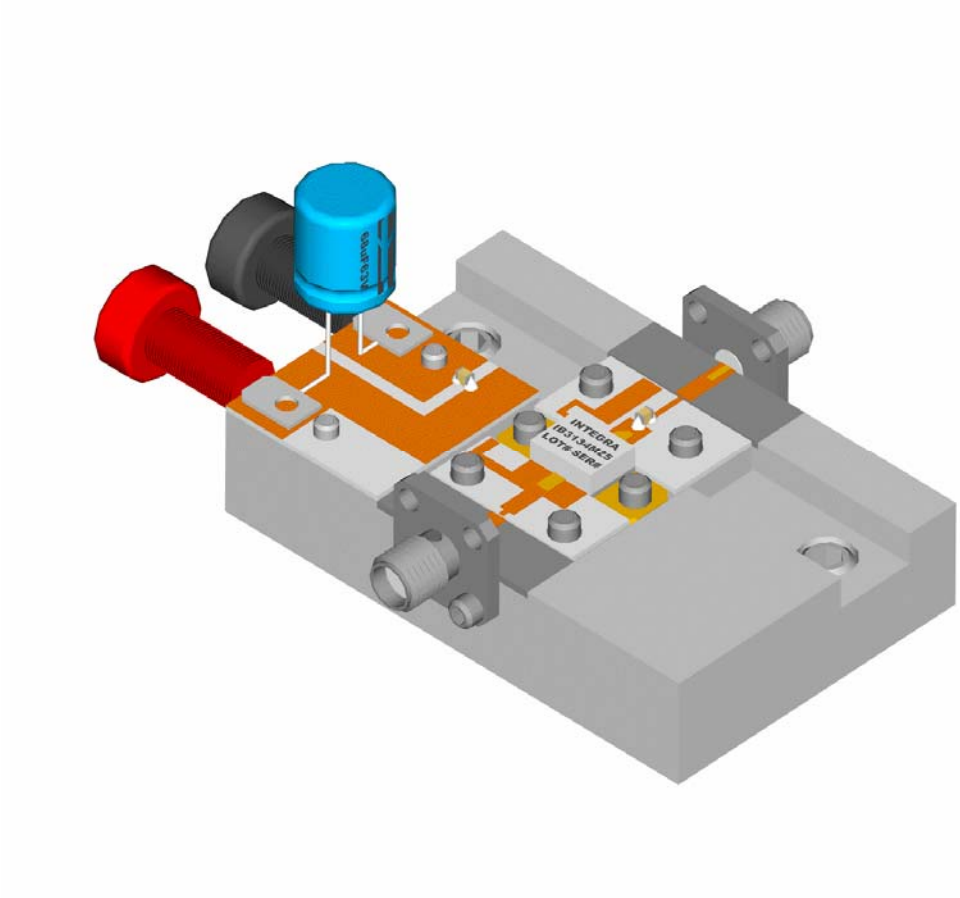
**50Ω RF TEST FIXTURE**



HEATSINK NOT SHOWN
DRAWINGS AVAILABLE UPON REQUEST



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## DEFINITIONS

| Data Sheet Status | |
|---|---|
| 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. |

**Maximum Ratings**

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

**Product and environmental safety - toxic materials**

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.

## DISCLAIMER

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