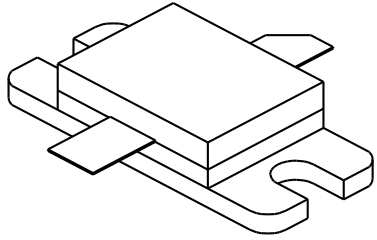


# 1214 - 300

300 Watts - 50 Volts, 100 $\mu$ s, 10%  
Radar 1200 - 1400 MHz

|   |   |                              |          |       |                         |           |    |                   |         |                     |                 |                                |         |  |
|---|---|------------------------------|----------|-------|-------------------------|-----------|----|-------------------|---------|---------------------|-----------------|--------------------------------|---------|--|
| <p><b>GENERAL DESCRIPTION</b><br/>The 1214-300 is an internally matched, COMMON BASE transistor capable of providing 300 Watts of pulsed RF output power at one hundred microseconds pulse width, ten percent duty factor across the band 1200 to 1400 MHz. This hermetically solder-sealed transistor is specifically designed for L-Band radar applications. It utilizes gold metalization and diffused emitter ballasting to provide high reliability and supreme ruggedness.</p>  | <p><b>CASE OUTLINE</b><br/><b>55KT, STYLE 1</b></p>  |                              |          |       |                         |           |    |                   |         |                     |                 |                                |         |  |
| <p><b>ABSOLUTE MAXIMUM RATINGS</b><br/>Maximum Power Dissipation @ 25°C <span style="float: right;">1458 Watts</span></p> <p><b>Maximum Voltage and Current</b></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 15%;">BVces</td> <td style="width: 55%;">Collector to Emitter Voltage</td> <td style="width: 30%; text-align: right;">65 Volts</td> </tr> <tr> <td>BVebo</td> <td>Emitter to Base Voltage</td> <td style="text-align: right;">3.5 Volts</td> </tr> <tr> <td>Ic</td> <td>Collector Current</td> <td style="text-align: right;">17 Amps</td> </tr> </table> <p><b>Maximum Temperatures</b></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 60%;">Storage Temperature</td> <td style="text-align: right;">- 65 to + 200°C</td> </tr> <tr> <td>Operating Junction Temperature</td> <td style="text-align: right;">+ 200°C</td> </tr> </table> | BVces   | Collector to Emitter Voltage | 65 Volts | BVebo | Emitter to Base Voltage | 3.5 Volts | Ic | Collector Current | 17 Amps | Storage Temperature | - 65 to + 200°C | Operating Junction Temperature | + 200°C |  |
| BVces   | Collector to Emitter Voltage  | 65 Volts                     |          |       |                         |           |    |                   |         |                     |                 |                                |         |  |
| BVebo   | Emitter to Base Voltage   | 3.5 Volts                    |          |       |                         |           |    |                   |         |                     |                 |                                |         |  |
| Ic  | Collector Current   | 17 Amps                      |          |       |                         |           |    |                   |         |                     |                 |                                |         |  |
| Storage Temperature   | - 65 to + 200°C   |                              |          |       |                         |           |    |                   |         |                     |                 |                                |         |  |
| Operating Junction Temperature  | + 200°C   |                              |          |       |                         |           |    |                   |         |                     |                 |                                |         |  |

## ELECTRICAL CHARACTERISTICS @ 25 °C

| SYMBOL                  | CHARACTERISTICS         | TEST CONDITIONS           | MIN | TYP | MAX  | UNITS |
|-------------------------|-------------------------|---------------------------|-----|-----|------|-------|
| <b>Pout</b>             | Power Out ( Note 2)     | F = 1200-1400 MHz         | 270 |     |      | Watts |
| <b>Pin</b>              | Power Input             | Vcc = 50 Volts            |     |     | 42.7 | Watts |
| <b>Pg</b>               | Power Gain              | Pulse Width = 100 $\mu$ s | 8.0 |     |      | dB    |
| $\eta_c$                | Collector Efficiency    | Duty = 10 %               |     | 45  |      | %     |
| <b>VSWR<sup>1</sup></b> | Load Mismatch Tolerance | F = 1400MHz, Po = 270W    |     |     | 3:1  |       |

|                 |                                |                       |     |    |      |       |
|-----------------|--------------------------------|-----------------------|-----|----|------|-------|
| <b>BVces</b>    | Collector to Emitter Breakdown | Ic = 50 mA            | 65  |    |      | Volts |
| <b>BVebo</b>    | Emitter to Base Breakdown      | Ie = 25 mA            | 3.0 |    |      | Volts |
| <b>Hfe</b>      | DC Current Gain                | Vce = 5 V, Ic = 5 mA  | 10  | 45 |      |       |
| $\theta_{jc}^1$ | Thermal Resistance             | Rated Pulse Condition |     |    | 0.25 | °C/W  |

Note 1: Pulse condition of 100 $\mu$ sec, 10%.

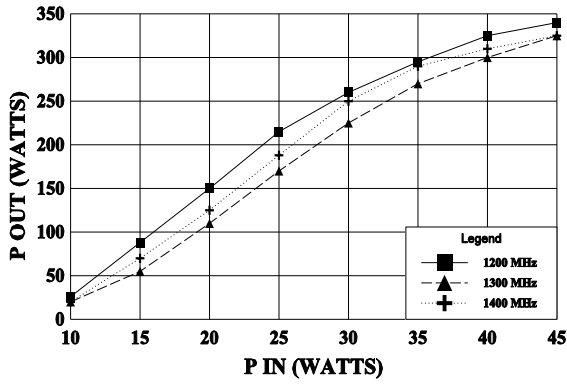
Note 2: Product Selected to 300 Watt minimum is available, please contact the factory for details.

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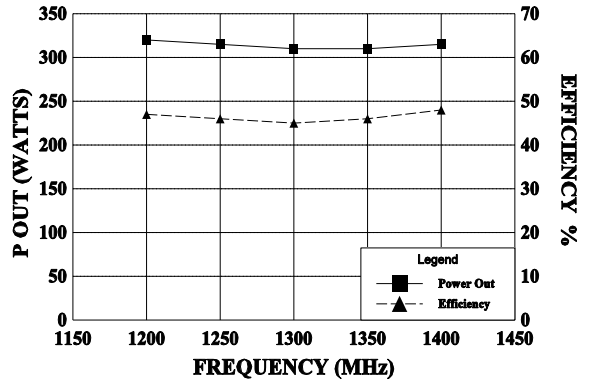
**POWER OUTPUT vs POWER INPUT**

Vcc = 50 V, PW = 100 us, 10%



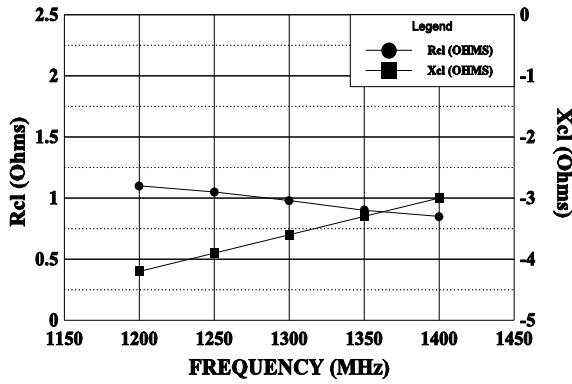
**POWER OUTPUT AND EFF. vs FREQUENCY**

Vcc = 50 V, Pin = 40 W, 100 us, 10%



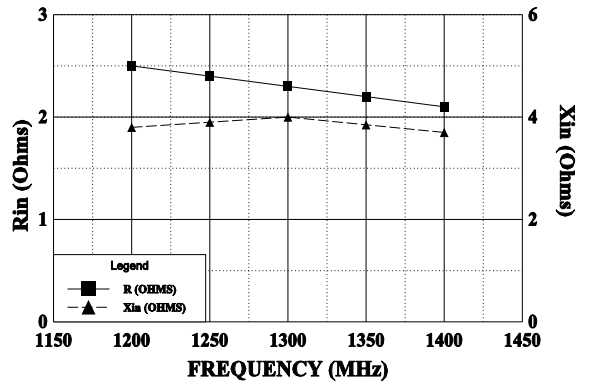
**LOAD IMPEDANCE vs FREQUENCY**

Zcl = Rcl - jXcl (Vcc = 50V, Po = 300W)



**INPUT IMPEDANCE vs FREQUENCY**

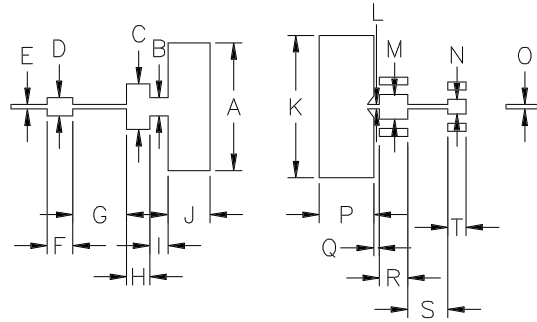
Zin = R + jX (Vcc = 50V, Po = 300W)



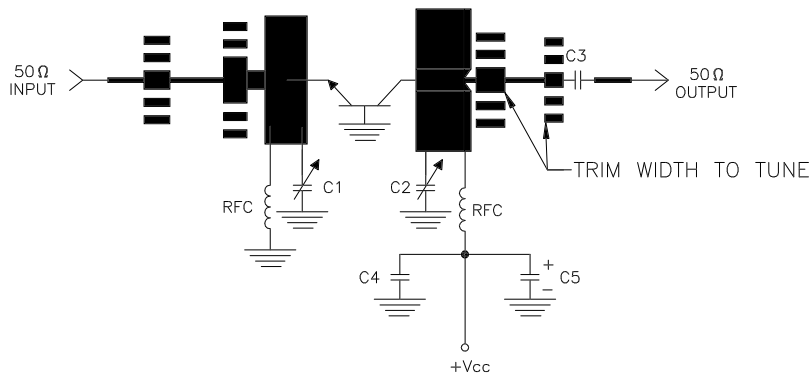
REVISIONS

| ZONE | REV | DESCRIPTION | DATE | APPROVED |
|------|-----|-------------|------|----------|
|------|-----|-------------|------|----------|

| DIM | INCHES |
|-----|--------|
| A   | .700   |
| B   | .100   |
| C   | .250   |
| D   | .100   |
| E   | .025   |
| F   | .140   |
| G   | .295   |
| H   | .127   |
| I   | .100   |
| J   | .230   |
| K   | .780   |
| L   | .025   |
| M   | .135   |
| N   | .080   |
| O   | .025   |
| P   | .300   |
| Q   | .030   |
| R   | .155   |
| S   | .220   |
| T   | .100   |



1214-300 TEST CIRCUIT



— = Microstrip on 0.025" Epsilam 10, Er=10  
 C1,C2 = 0.35-3.5pF JOHANSON trimmer  
 C3,C4 = ATC Chip 82pF  
 C5 = 220MF, 63V.



|               |                     |          |
|---------------|---------------------|----------|
| CAGE<br>OPJR2 | DWG NO.<br>1214-300 | REV<br>A |
|               | SCALE<br>1/1        | SHEET    |