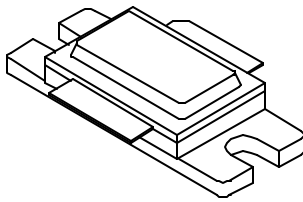


# 1214 – 220M

220 Watts - 40 Volts, 150µs, 10%  
Radar 1200 - 1400 MHz

Final Proof

|   |   |                              |          |      |                         |      |    |                   |         |                     |                 |                                |         |  |
|---|---|------------------------------|----------|------|-------------------------|------|----|-------------------|---------|---------------------|-----------------|--------------------------------|---------|--|
| <p><b>GENERAL DESCRIPTION</b></p> <p>The 1214-220M is an internally matched, COMMON BASE transistor capable of providing 220 Watts of pulsed RF output power at one hundred fifty 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 metallization and diffused emitter ballasting to provide high reliability and supreme ruggedness.</p>   | <p style="text-align: center;"><b>CASE OUTLINE</b><br/><b>55ST, STYLE 1</b></p>  |                              |          |      |                         |      |    |                   |         |                     |                 |                                |         |  |
| <p><b>ABSOLUTE MAXIMUM RATINGS</b></p> <p>Maximum Power Dissipation @ 25°C <span style="float: right;">700 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: 45%;">Collector to Emitter Voltage</td> <td style="width: 40%; text-align: right;">70 Volts</td> </tr> <tr> <td>Iebo</td> <td>Emitter to Base Voltage</td> <td style="text-align: right;">5 mA</td> </tr> <tr> <td>Ic</td> <td>Collector Current</td> <td style="text-align: right;">20 Amps</td> </tr> </table> <p><b>Maximum Temperatures</b></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 45%;">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 | 70 Volts | Iebo | Emitter to Base Voltage | 5 mA | Ic | Collector Current | 20 Amps | Storage Temperature | - 65 to + 200°C | Operating Junction Temperature | + 200°C |  |
| BVces   | Collector to Emitter Voltage  | 70 Volts                     |          |      |                         |      |    |                   |         |                     |                 |                                |         |  |
| Iebo  | Emitter to Base Voltage   | 5 mA                         |          |      |                         |      |    |                   |         |                     |                 |                                |         |  |
| Ic  | Collector Current   | 20 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 1)       | Vcc=40V, Pin=40W, f = 1.2, 1.3, 1.4 GHz | 220 |     | 290 | Watts |
| <b>Pg</b>               | Power Gain                | Vcc=40V, Pin=40W, f = 1.2, 1.3, 1.4 GHz | 7.4 |     |     | dB    |
| <b>hc</b>               | Collector Efficiency      | Vcc=40V, Pin=40W, f = 1.2, 1.3, 1.4 GHz | 45  | 50  |     | %     |
| <b>RI</b>               | Input Return loss         | Vcc=40V, Pin=40W, f = 1.2, 1.3, 1.4 GHz | 9   |     |     | dB    |
| <b>VSWR<sup>1</sup></b> | Load Mismatch Tolerance   | Vcc=40V, Pin=40W, f = 1.2 GHz           |     |     | 3:1 |       |
| <b>VSWRs</b>            | Load Mismatch - Stability | Vcc=40V, Pin=40W, f = 1.2 GHz           |     |     | 2:1 |       |

Note 1: Pulse condition of 150µsec, 10%.

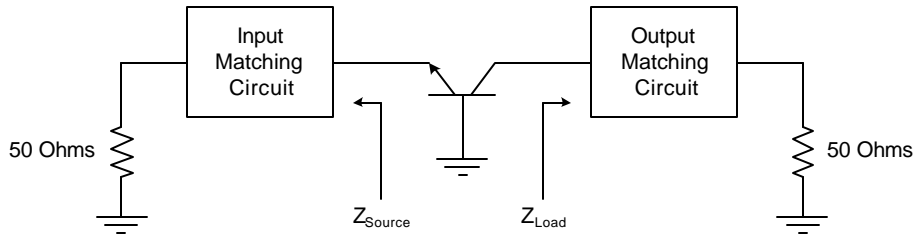
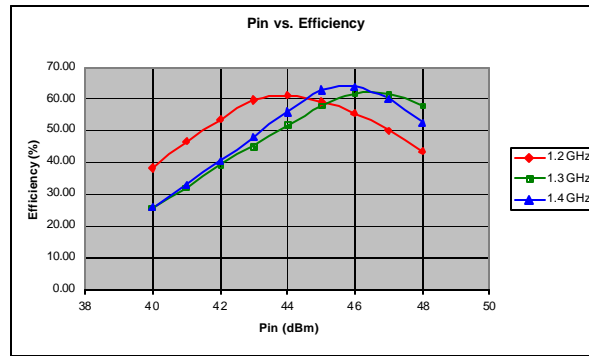
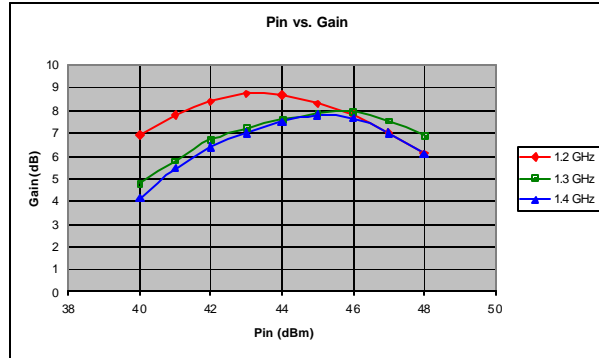
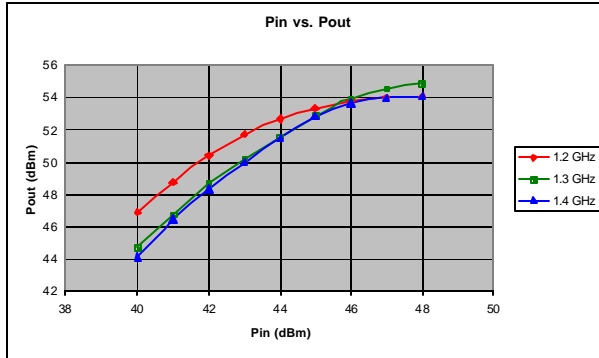
|                        |                                |                       |    |    |      |       |
|------------------------|--------------------------------|-----------------------|----|----|------|-------|
| <b>BVces</b>           | Collector to Emitter Breakdown | Ic = 100 mA           | 70 |    |      | Volts |
| <b>Ices</b>            | Collector to Emitter Leakage   | Vce = 40 Volts        |    |    | 10   | mA    |
| <b>Iebo</b>            | Emitter to Base Breakdown      | Veb = 3 Volts         |    |    | 5    | mA    |
| <b>Hfe</b>             | DC Current Gain                | Vce = 5 V, Ic = 1 A   | 10 | 45 |      |       |
| <b>qjc<sup>1</sup></b> | Thermal Resistance             | Rated Pulse Condition |    |    | 0.25 | °C/W  |

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# 1214 – 220M

## Performance Curves



## Impedance Information

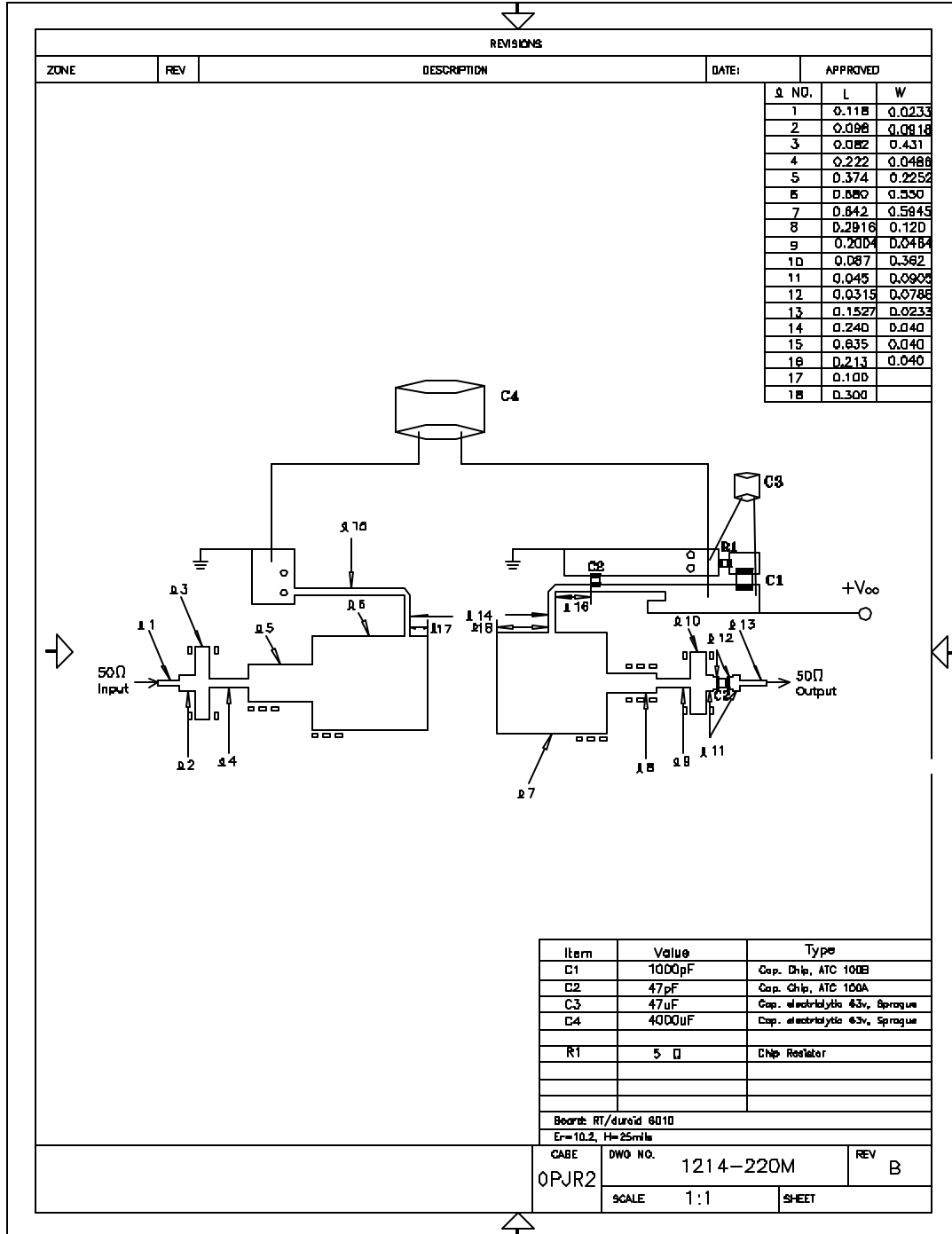
| Frequencies (MHz) | $Z_{Source} (\Omega)$ | $Z_{Load} (\Omega)$ |
|-------------------|-----------------------|---------------------|
| 1200              | $3.6 - j0.93$         | $2.96 - j1.86$      |
| 1300              | $2.7 - j1.27$         | $2.25 - j2.03$      |
| 1400              | $1.86 - j0.83$        | $1.51 - j1.66$      |

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## Test Circuit



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# 1214 – 220M

| DIM | MILLIMETER | ±TOL    | INCHES   | ±TOL      |
|-----|------------|---------|----------|-----------|
| A   | 25.40      | .25     | 1.000    | .010      |
| B   | 9.78       | .25     | .385     | .010      |
| C   | 4.00       | .19     | .142     | .007      |
| D   | 9.40       | .13     | .370     | .005      |
| E   | 1.53       | .13     | .060     | .005      |
| F   | 3.18       | .13     | .125     | .005      |
| G   | 0.08       | +08/-00 | .003     | +002/-000 |
| H   | 19.05      | 0.51    | .750     | .020      |
| I   | 45°        | 5°      | 45°      | 5°        |
| J   | 15.24      | .25     | .600     | .010      |
| K   | 3.05 DIA   | .13     | .120 DIA | .005      |
| L   | 10.15      | .13     | .400     | .005      |
| M   | 20.32      | .25     | .800     | .010      |

**STYLE 1:**  
 PIN 1 = COLLECTOR  
 2 = BASE  
 3 = EMITTER

**STYLE 2:**  
 PIN 1 = COLLECTOR  
 2 = EMITTER  
 3 = BASE

**CHz TECHNOLOGY**  
RF - MICROWAVE SILICON POWER TRANSISTORS

DWG NO

**55ST**

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