

# 1214-110M

110 Watts - 50 Volts, 330 $\mu$ s, 10%  
Radar 1200 - 1400 MHz

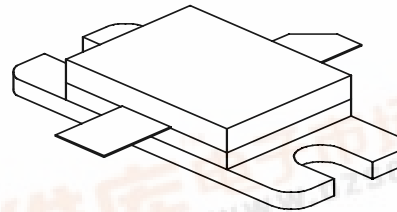
## GENERAL DESCRIPTION

The 1214-110M is an internally matched, COMMON BASE transistor capable of providing 110 Watts of pulsed RF output power at 330  $\mu$ s pulse width, 10% 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.

## ABSOLUTE MAXIMUM RATINGS

|                                    |                 |
|------------------------------------|-----------------|
| Maximum Power Dissipation @ 25°C   | 270 Watts       |
| <b>Maximum Voltage and Current</b> |                 |
| BVces Collector to Emitter Voltage | 75 Volts        |
| BVebo Emitter to Base Voltage      | 3.0 Volts       |
| Ic Collector Current               | 8 Amps          |
| <b>Maximum Temperatures</b>        |                 |
| Storage Temperature                | - 65 to + 200°C |
| Operating Junction Temperature     | + 200°C         |

## CASE OUTLINE 55KT, STYLE 1



## ELECTRICAL CHARACTERISTICS @ 25 °C

| SYMBOL            | CHARACTERISTICS           | TEST CONDITIONS           | MIN | TYP | MAX   | UNITS |
|-------------------|---------------------------|---------------------------|-----|-----|-------|-------|
| Pout              | Power Out                 | Freq = 1200 – 1400 MHz    | 110 |     | 170   | Watts |
| Pg                | Power Gain                | Vcc = 50 Volts            | 7.4 |     |       | dB    |
| $\eta_c$          | Collector Efficiency      | Pin = 20 Watts            | 50  | 55  |       | %     |
| RI                | Input Return loss         |                           | 10  |     |       | dB    |
| Droop             | Droop                     | Pulse Width = 330 $\mu$ s |     |     | 0.5   | dB    |
| Flatness          | Flatness                  | Duty Factor = 10%         |     |     | 1.25  | dB    |
| VSWR <sup>1</sup> | Load Mismatch Tolerance   |                           |     |     | 3:1   |       |
| VSWRs             | Load Mismatch - Stability |                           |     |     | 1.5:1 |       |

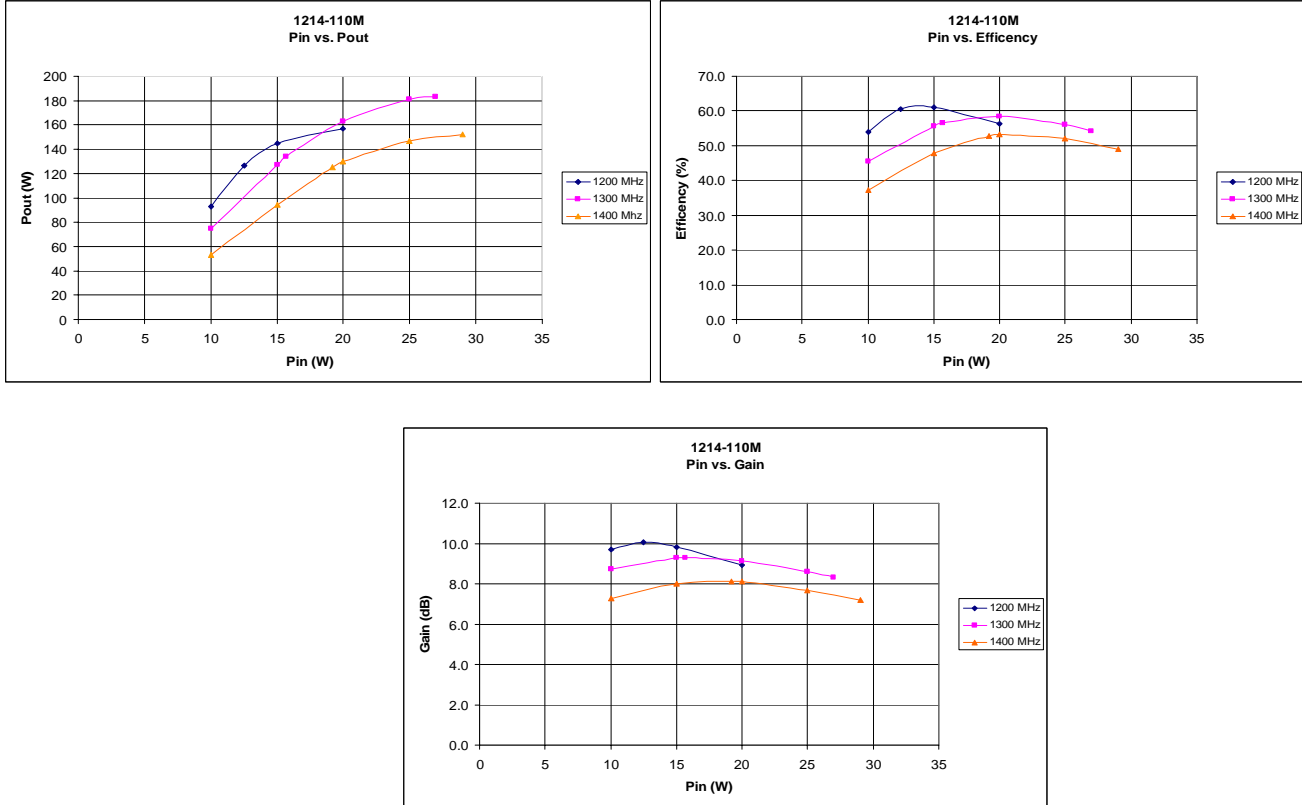
## FUNCTIONAL CHARACTERISTICS @ 25°C

|                 |                                |                       |    |  |      |       |
|-----------------|--------------------------------|-----------------------|----|--|------|-------|
| Bvces           | Collector to Emitter Breakdown | Ic = 100 mA           | 75 |  |      | Volts |
| Ices            | Collector to Emitter Leakage   | Vce = 50 Volts        |    |  | 10   | mA    |
| $\theta_{jc}^1$ | Thermal Resistance             | Rated Pulse Condition |    |  | 0.65 | °C/W  |

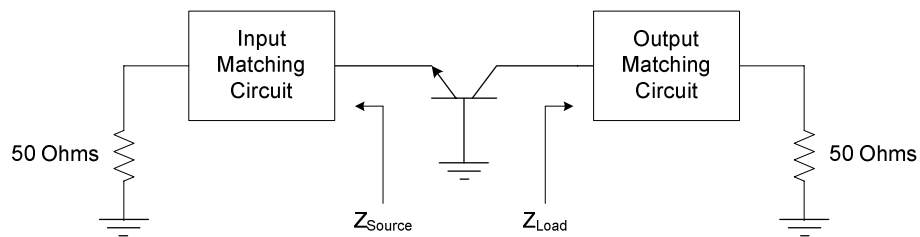
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## Performance Curves



## Impedance Information



| Frequencies (MHz) | $Z_{Source} (\Omega)$ | $Z_{Load} (\Omega)^2$ |
|-------------------|-----------------------|-----------------------|
| 1200              | 3.36-j3.12            | 4.97+j0.15            |
| 1300              | 3.5-j2.4              | 5.33-j2.86            |
| 1400              | 3.81-j1.3             | 2.88-j3.86            |

Note 2:  $Z_{Load}$  exclusive of bias circuit





# 1214-110M

| REVISIONS |            |                |        |                  |
|-----------|------------|----------------|--------|------------------|
| ZONE      | REV        | DESCRIPTION    | DATE   | APPROVED         |
|           |            |                |        |                  |
| DIM       | MILLIMETER | ± TOL          | INCHES | ±TOL             |
| A         | 10.16      | .13            | .400   | .005             |
| B         | 20.32      | .76            | .800   | .030             |
| C         | 9.78       | .13            | .385   | .005             |
| D         | 12.70      | .13            | .500   | .005             |
| E         | 1.52R      | .13            | .060R  | .005             |
| F         | 1.52R      | .13            | .060R  | .005             |
| G         | 3.81       | .13            | .150   | .005             |
| H         | 5.84       | MAX            | .230   | MAX              |
| I         | 1.52       | .13            | .060   | .005             |
| J         | 17.78      | .13            | .700   | .005             |
| K         | 22.86      | .13            | .900   | .005             |
| M         | 3.05       | .13            | .120   | .010             |
| N         | 0.08       | + .05<br>- .03 | .003   | + .002<br>- .001 |

**STYLE 1:**  
 PIN1 = COLLECTOR  
 2 = BASE  
 3 = EMITTER

**STYLE 2:**  
 PIN1 = COLLECTOR  
 2 = EMITTER  
 3 = BASE

|  |       |         |       |
|--|-------|---------|-------|
|  | CAGE  | DWG NO. | REV   |
|  | 0PJR2 | 55KT    | E     |
|  | SCALE | 2/1     | SHEET |