



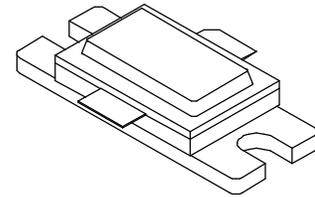
# TCS800

800 Watts, 50 Volts, Pulsed  
Avionics 1030 MHz

## GENERAL DESCRIPTION

The TCS800 is a high power COMMON BASE bipolar transistor. It is designed for pulsed systems in the frequency band 1030 MHz, with the pulse width and duty required for TCAS applications. The device has gold thin-film metallization and diffused ballasting for proven highest MTTF. The transistor includes input and output prematch for broadband capability. Low thermal resistance package reduces junction temperature, extends life.

## CASE OUTLINE 55SM Style 1



## ABSOLUTE MAXIMUM RATINGS

### Maximum Power Dissipation

Device Dissipation @25°C<sup>1</sup> 1944 W

### Maximum Voltage and Current

Collector to Base Voltage (BV<sub>ces</sub>) 65 V

Emitter to Base Voltage (BV<sub>ebo</sub>) 3.5 V

Collector Current (I<sub>c</sub>) 50 A

### Maximum Temperatures

Storage Temperature -65 to +200 °C

Operating Junction Temperature +230 °C

## ELECTRICAL CHARACTERISTICS @ 25°C

| SYMBOL           | CHARACTERISTICS         | TEST CONDITIONS            | MIN | TYP | MAX | UNITS |
|------------------|-------------------------|----------------------------|-----|-----|-----|-------|
| P <sub>out</sub> | Power Out               | F = 1030 MHz               | 800 |     |     | W     |
| P <sub>in</sub>  | Power Input             | V <sub>CC</sub> = 50 Volts |     |     | 126 | W     |
| P <sub>g</sub>   | Power Gain              | PW = 32 μsec               | 8.0 | 9.0 |     | dB    |
| η <sub>c</sub>   | Collector Efficiency    | DF = 1%                    |     | 45  |     | %     |
| R <sub>L</sub>   | Input Return Loss       |                            |     | -12 |     | dB    |
| Pd               | Pulse Droop             |                            |     | 0.5 |     | dB    |
| VSWR             | Load Mismatch Tolerance | F = 1030 MHz               |     |     | 4:1 |       |

## FUNCTIONAL CHARACTERISTICS @ 25°C

|                              |                                |   |     |  |      |      |
|------------------------------|--------------------------------|---|-----|--|------|------|
| BV <sub>ebo</sub> *          | Emitter to Base Breakdown      | I <sub>e</sub> = 70 mA                    | 3.5 |  |      | V    |
| BV <sub>ces</sub>            | Collector to Emitter Breakdown | I <sub>c</sub> = 100 mA                   | 65  |  |      | V    |
| h <sub>FE</sub> *            | DC – Current Gain              | V <sub>ce</sub> = 5V, I <sub>c</sub> = 5A | 20  |  |      |      |
| θ <sub>jc</sub> <sup>1</sup> | Thermal Resistance             |   |     |  | 0.09 | °C/W |

NOTE 1: At rated output power and pulse conditions.

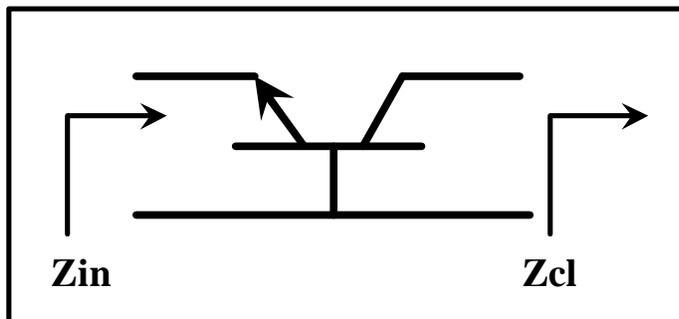
\*: Not measurable due to internal EB returns

Rev B – Sept. 2005

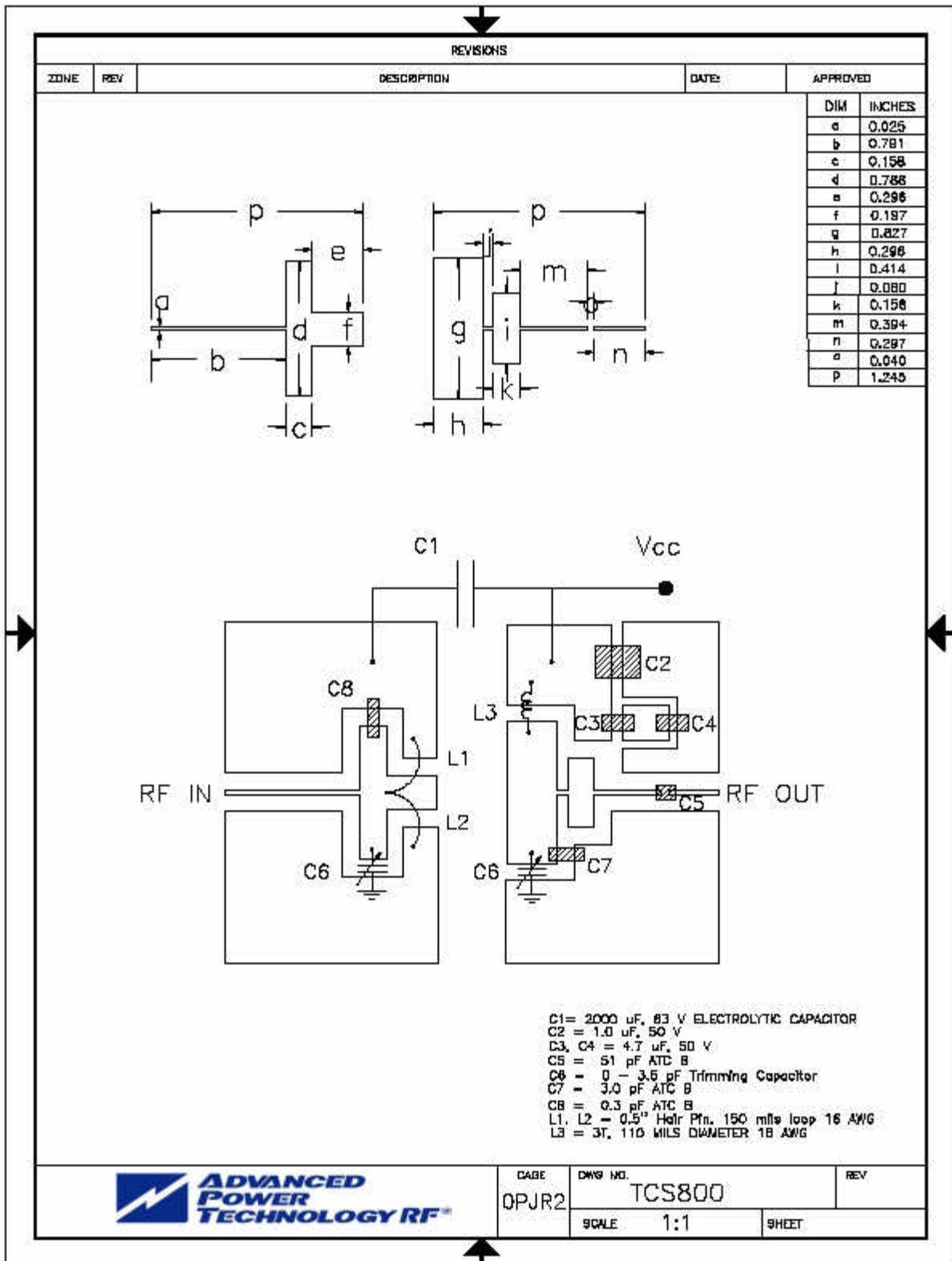
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# TCS800

| Freq (MHz) | Zin        | Zcl        |
|------------|------------|------------|
| 1030       | 1.63+j1.59 | 0.47-j1.14 |



# TCS800



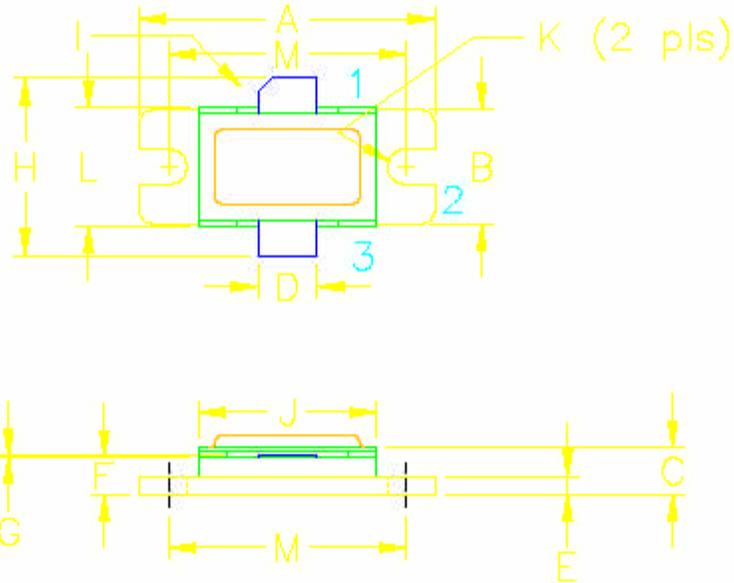
CAGE  
QPJR2

DWG NO.  
TCS800

REV

SCALE 1:1

SHEET



| DIM | MILLIMETER | TOL         | INCHES   | TOL           |
|-----|------------|-------------|----------|---------------|
| A   | 25.40      | .25         | 1.000    | .010          |
| B   | 9.78       | .25         | .385     | .010          |
| C   | 4.87       | .19         | .192     | .007          |
| D   | 5.08       | .13         | .200     | .005          |
| E   | 1.53       | .13         | .060     | .005          |
| F   | 3.18       | .13         | .125     | .005          |
| G   | 0.08       | +0.06/-0.00 | .003     | +0.002/-0.000 |
| 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

