GHz TECHNOLOGY
RF·MICROWAVE SILICON POWER TRANSISTORS

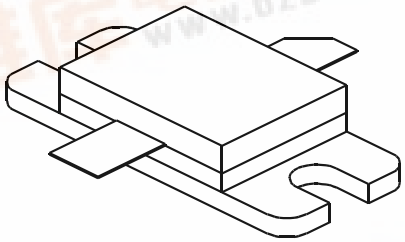
# TCS450

450 Watts, 45 Volts, Pulsed
Avionics 1030 MHz

## GENERAL DESCRIPTION

The TCS450 s a high power COMMON BASE bipolar transistor. It is designed for pulsed systems in the frequency band 1030-1090 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 prematch for broadband capaility. Low thermal resistance package reduces junction temperature, extends life.

## CASE OUTLINE
**55KT Style 1**



## ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation @ 25°C[2] 1166 Watts

**Maximum Voltage and Current**

| | | |
|---|---|---|
| BVces | Collector to Base Voltage | 55 Volts |
| BVebo | Emitter to Base Voltage | 3.5 Volts |
| Ic | Collector Current | 40 Amps |

**Maximum Temperatures**

| | |
|---|---|
| Storage Temperature | - 65 to + 200°C |
| Operating Junction Temperature | + 200°C |

## ELECTRICAL CHARACTERISTICS @ 25 °C

| SYMBOL | CHARACTERISTICS | TEST CONDITIONS | MIN | TYP | MAX | UNITS |
|---|---|---|---|---|---|---|
| **Pout** | Power Out | F = 1030 MHz | 450 | | | Watts |
| **Pin** | Power Input | Vcc = 45 Volts | | | 100 | Watts |
| **Pg** | Power Gain | PW = 32 µsec | 6.2 | | | dB |
| $\eta_c$ | Collector Efficiency | DF = 1% | | 45 | | % |
| **Pd** | Pulse Droop | F = 1030MHz | | 0.25 | | dB |
| **VSWR** | Load Mismatch Tolerance | | | | 6:1 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **BVebo**[1] | Emitter to Base Breakdown | Ie = 30 mA | 3.5 | | | Volts |
| **BVces** | Collector to Emitter Breakdown | Ic = 30 mA | 55 | | | Volts |
| **Cob** | Capacitance Collector to Base | Vcb = 50 Volts | | | | pF |
| $h_{FE}$[1] | DC - Current Gain | Ic = 500 mA, Vce = 5 V | 10 | | | |
| $\theta jc$[2] | Thermal Resistance | | | | 0.15 | °C/W |

Note 1: Not measureable due to internal DC Return.
2: At rated pulse conditions

Revision 2, July 7, 1997



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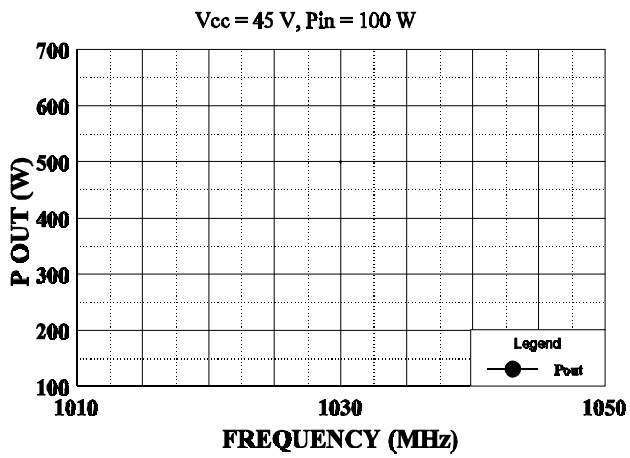
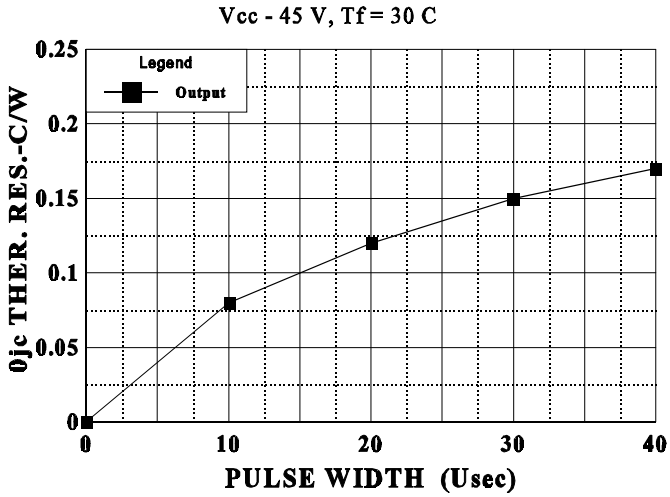
# *TCS450*

### *POWER OUPUT VS FREQUENCY*

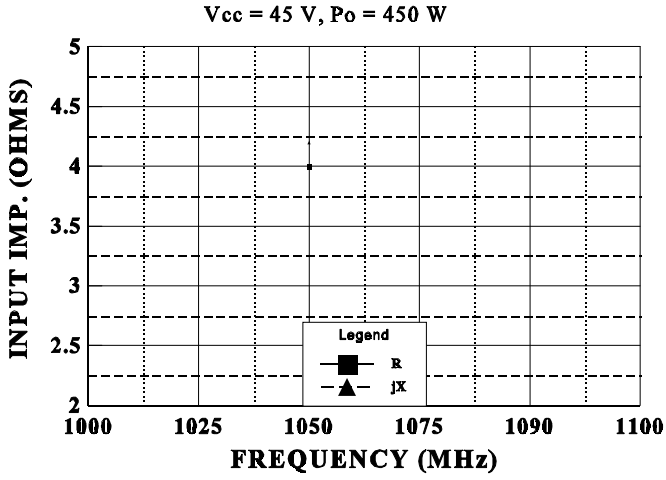



### *THERMAL RESISTANCE VS PULSE WIDTH*

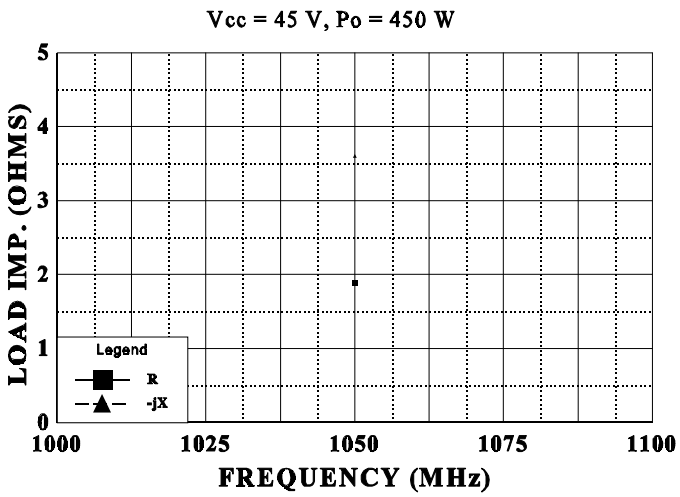



***Following Data is to be provided in the near future.***

### *SERIES INPUT IMPEDANCE VS FREQUENCY*




### *SERIES LOAD IMPEDANCE VS FREQUENCY*




*July 7, 1997*



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