

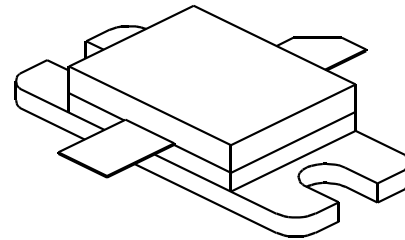
# TCS450

450 Watts, 45 Volts, Pulsed  
Avionics 1030 MHz

## GENERAL DESCRIPTION

The TCS450 is 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 capability. Low thermal resistance package reduces junction temperature, extends life.

## CASE OUTLINE 55KT Style 1



## ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation @ 25°C <sup>2</sup>	1166 Watts
<b>Maximum Voltage and Current</b>	
BVces Collector to Base Voltage	55 Volts
BVebo Emitter to Base Voltage	3.5 Volts
Ic Collector Current	40 Amps
<b>Maximum Temperatures</b>	
Storage Temperature	- 65 to + 200°C
Operating Junction Temperature	+ 200°C

## ELECTRICAL CHARACTERISTICS @ 25 °C

SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
<b>P<sub>out</sub></b>	Power Out	F = 1030 MHz	450			Watts
<b>P<sub>in</sub></b>	Power Input	V <sub>cc</sub> = 45 Volts			100	Watts
<b>P<sub>g</sub></b>	Power Gain	PW = 32 μsec	6.2			dB
<b>η<sub>c</sub></b>	Collector Efficiency	DF = 1%		45		%
<b>P<sub>d</sub></b>	Pulse Droop	F = 1030MHz		0.25		dB
<b>V<sub>SWR</sub></b>	Load Mismatch Tolerance				6:1	

<b>BVebo<sup>1</sup></b>	Emitter to Base Breakdown	I <sub>e</sub> = 30 mA	3.5			Volts
<b>BVces</b>	Collector to Emitter Breakdown	I <sub>c</sub> = 30 mA	55			Volts
<b>C<sub>ob</sub></b>	Capacitance Collector to Base	V <sub>cb</sub> = 50 Volts				pF
<b>h<sub>FE</sub><sup>1</sup></b>	DC - Current Gain	I <sub>c</sub> = 500 mA, V <sub>ce</sub> = 5 V	10			
<b>θ<sub>jc</sub><sup>2</sup></b>	Thermal Resistance				0.15	°C/W

Note 1: Not measurable due to internal DC Return.

Note 2: At rated pulse conditions

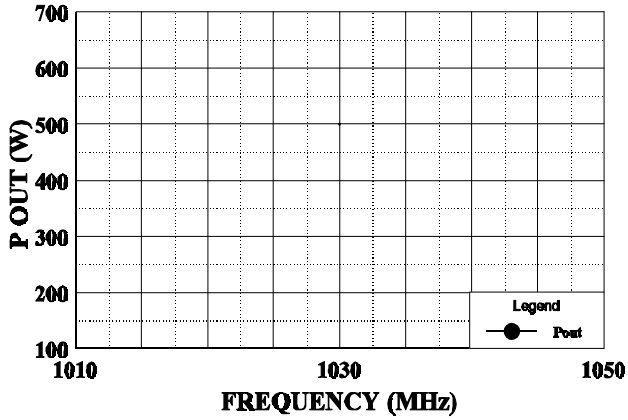
Revision 2, July 7, 1997

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GHz Technology Inc. 3000 Oakmead Village Drive, Santa Clara, CA 95051-0808 Tel. 408 / 986-8031 Fax 408 / 986-8120

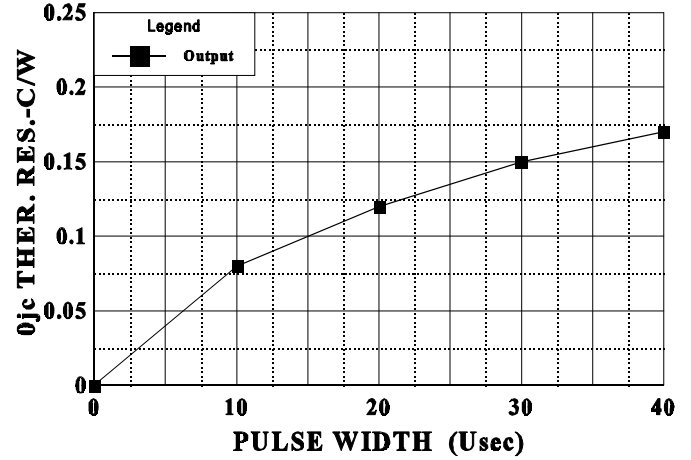
**POWER OUTPUT VS FREQUENCY**

Vcc = 45 V, Pin = 100 W



**THERMAL RESISTANCE VS PULSE WIDTH**

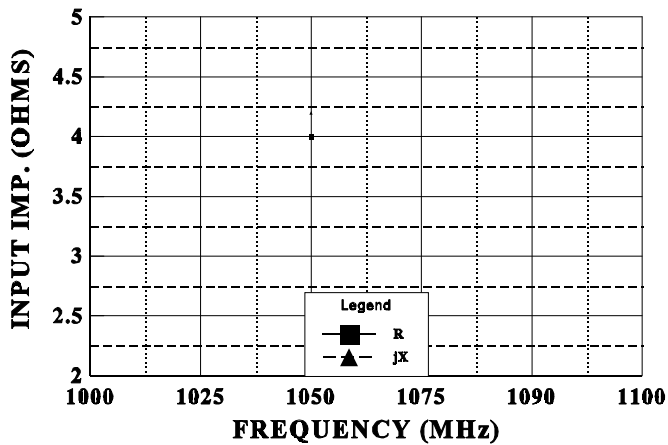
Vcc - 45 V, Tf = 30 C



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

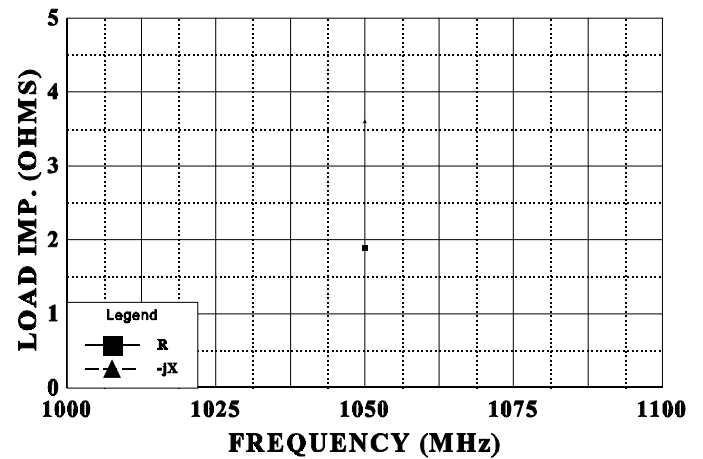
**SERIES INPUT IMPEDANCE VS FREQUENCY**

Vcc = 45 V, Po = 450 W



**SERIES LOAD IMPEDANCE VS FREQUENCY**

Vcc = 45 V, Po = 450 W



July 7, 1997

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