GHz TECHNOLOGY
RF·MICROWAVE SILICON POWER TRANSISTORS

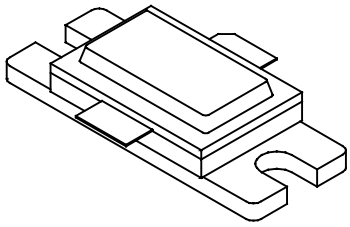
TCS800

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[1]	1944	W

Maximum Voltage and Current

Collector to Base Voltage (BV_{ces})	65	V
Emitter to Base Voltage (BV_{ebo})	3.5	V
Collector Current (I_c)	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_{out}	Power Out	F = 1030 MHz	800			W
P_{in}	Power Input	V_{CC} = 50 Volts			120	W
P_g	Power Gain	PW = 32 μsec	8.0	9.0		dB
η_c	Collector Efficiency	DF = 1%		45		%
R_L	Input Return Loss			-12		dB
Pd	Pulse Droop			0.5		dB
VSWR	Load Mismatch Tolerance	F = 1030 MHz			4:1	

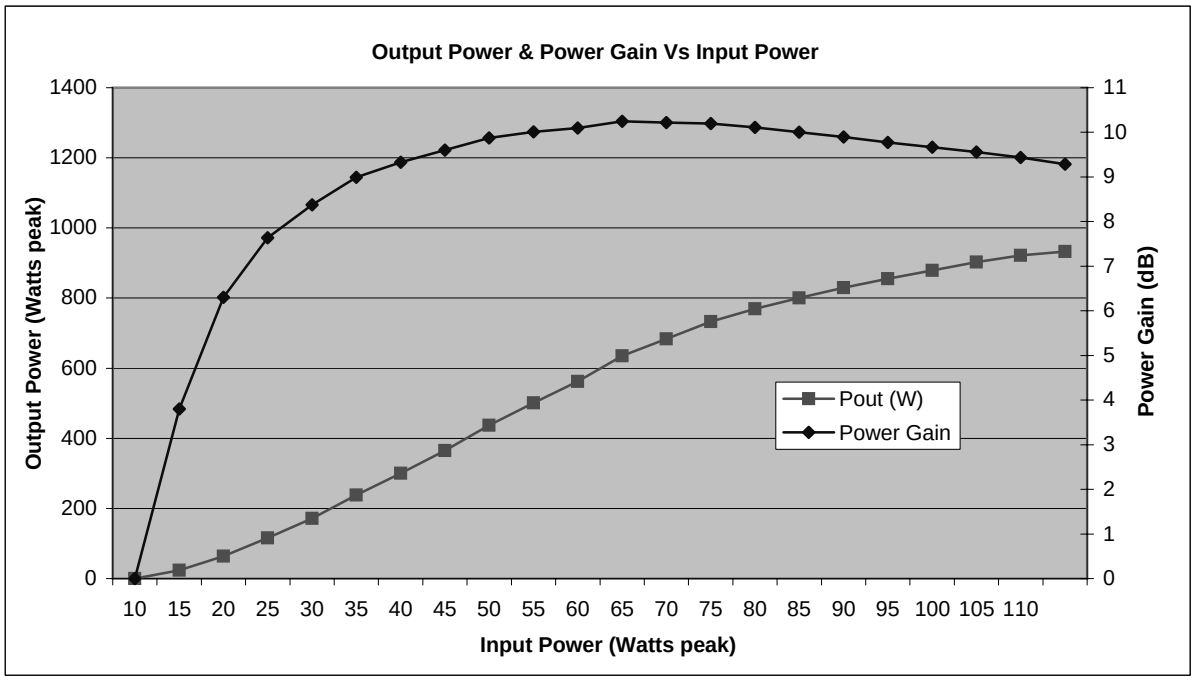
FUNCTIONAL CHARACTERISTICS @ 25°C

BV_{ebo}*	Emitter to Base Breakdown	Ie = 70 mA	3.5			V
BV_{ces}	Collector to Emitter Breakdown	Ic = 100 mA	65			V
h_{FE}*	DC – Current Gain	Vce = 5V, Ic = 5A	20			
θjc[1]	Thermal Resistance				0.09	°C/W

NOTE 1: At rated output power and pulse conditions.
*: Not measureable due to internal EB returns

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

TCS800


Output Power & Power Gain Vs Input Power
Output Power (Watts peak)
Power Gain (dB)
Input Power (Watts peak)
Pout (W)
Power Gain
0
200
400
600
800
1000
1200
1400
0
1
2
3
4
5
6
7
8
9
10
11
10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110