

# 2SC4989

NPN EPITAXIAL PLANAR TYPE

## DESCRIPTION

2SC4989 is a silicon NPN epitaxial planar type transistor specifically designed for high power amplifiers in UHF band.

## FEATURES

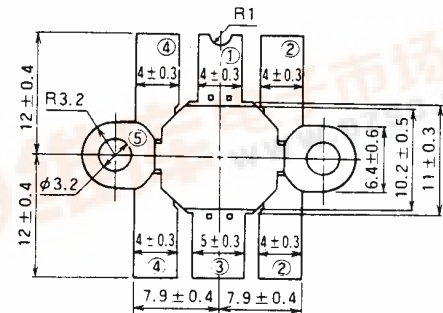
- High power output and high gain :  $P_o \geq 65W$ ,  $G_{pe} \geq 5.1dB$ ,  
@  $V_{cc} = 12.5V$ ,  $f = 520MHz$ ,  $P_{in} = 20W$
- Emitter ballasted construction.
- Load mismatch : Ability to withstand more than 8 : 1 load VSWR when operated at  $V_{cc} = 15.2V$ ,  $P_o = 65W$ ,  
 $f = 520MHz$ ,
- High reliability due to gold metalization die.
- Flange type ceramic package.

## APPLICATIONS

For output stage of 50W power amplifiers in UHF band.

## OUTLINE DRAWING

Dimension in mm



PIN :

- ① COLLECTOR
- ② EMITTER (FLANGE)
- ③ BASE
- ④ EMITTER (FLANGE)
- ⑤ FIN (EMITTER)

T-40E

## ABSOLUTE MAXIMUM RATINGS (T<sub>c</sub> = 25°C unless otherwise noted)

Symbol	Parameter	Conditions	Ratings	Unit
V <sub>CB0</sub>	Collector-base voltage		35	V
V <sub>EB0</sub>	Emitter-base voltage		4	V
V <sub>CEO</sub>	Collector-emitter voltage	R <sub>BE</sub> = ∞	17	V
I <sub>c</sub>	Collector current		20	A
P <sub>c</sub>	Collector dissipation		150	W
T <sub>j</sub>	Junction temperature		175	°C
T <sub>stg</sub>	Storage temperature		- 55 to 175	°C

Note. Above parameters are guaranteed independently.

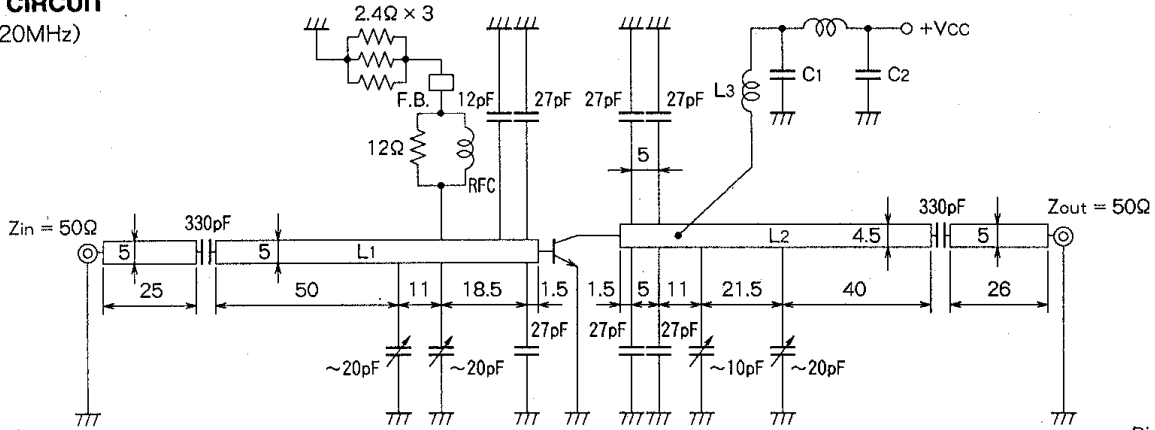
## ELECTRICAL CHARACTERISTICS (T<sub>c</sub> = 25°C unless otherwise noted)

Symbol	Parameter	Test conditions	Limits		Unit
			Min	Max	
V <sub>(BR)CBO</sub>	Collector-base breakdown voltage	I <sub>c</sub> = 20mA, I <sub>E</sub> = 0	35		V
V <sub>(BR)EBO</sub>	Emitter-base breakdown voltage	I <sub>E</sub> = 20mA, I <sub>c</sub> = 0	4		V
V <sub>(BR)CEO</sub>	Collector-emitter breakdown voltage	I <sub>c</sub> = 100mA, R <sub>BE</sub> = ∞	17		V
I <sub>CB0</sub>	Collector cutoff current	V <sub>CB</sub> = 15V, I <sub>E</sub> = 0		5	mA
I <sub>EB0</sub>	Emitter cutoff current	V <sub>EB</sub> = 3V, I <sub>c</sub> = 0		5	mA
h <sub>FE</sub>	DC forward current gain	V <sub>CE</sub> = 5V, I <sub>c</sub> = 5A	10	180	-
P <sub>o</sub>	Output power	V <sub>cc</sub> = 12.5V, f = 520MHz, P <sub>in</sub> = 20W	65		W
η <sub>c</sub>	Collector efficiency		55		%

Note. Above parameters, ratings, limits and conditions are subject to change.



**TEST CIRCUIT**  
(f = 520MHz)

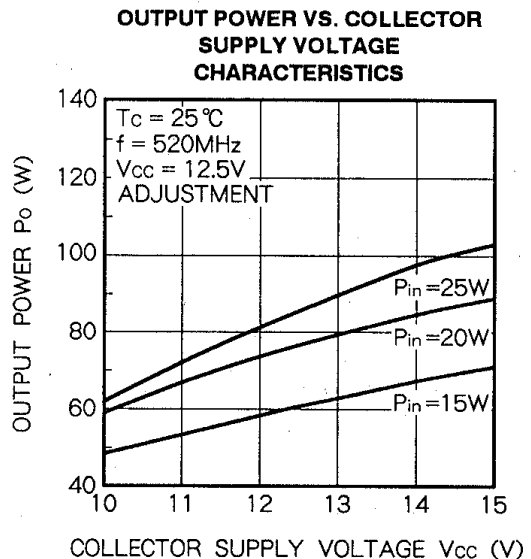
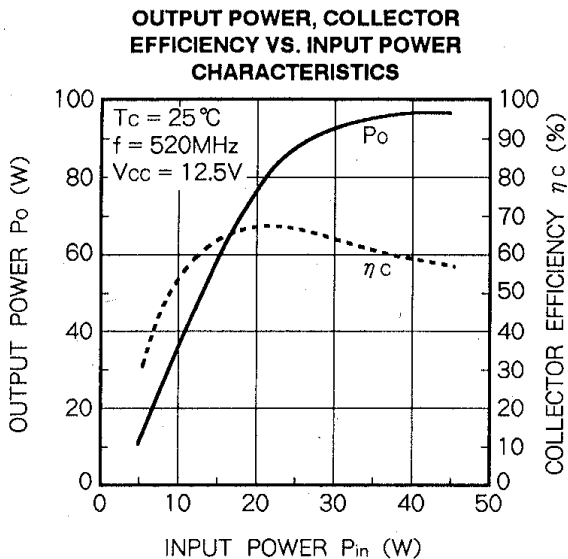
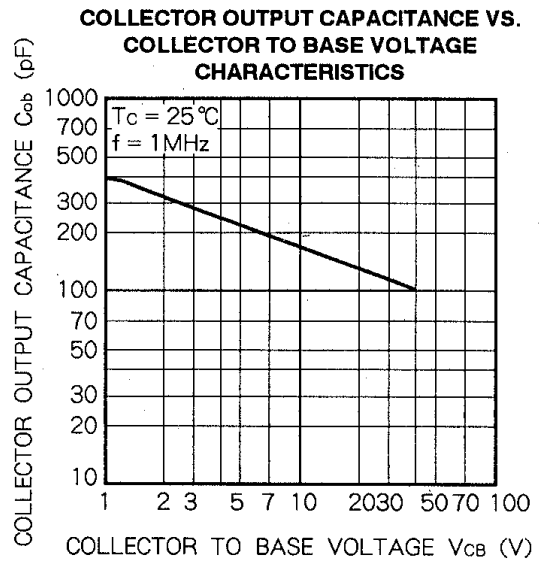
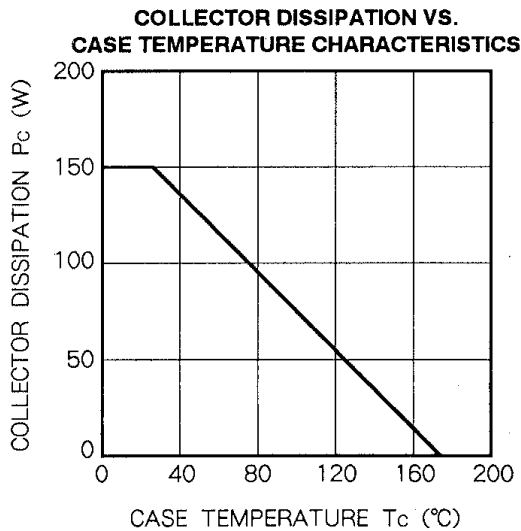


Dimensions in mm

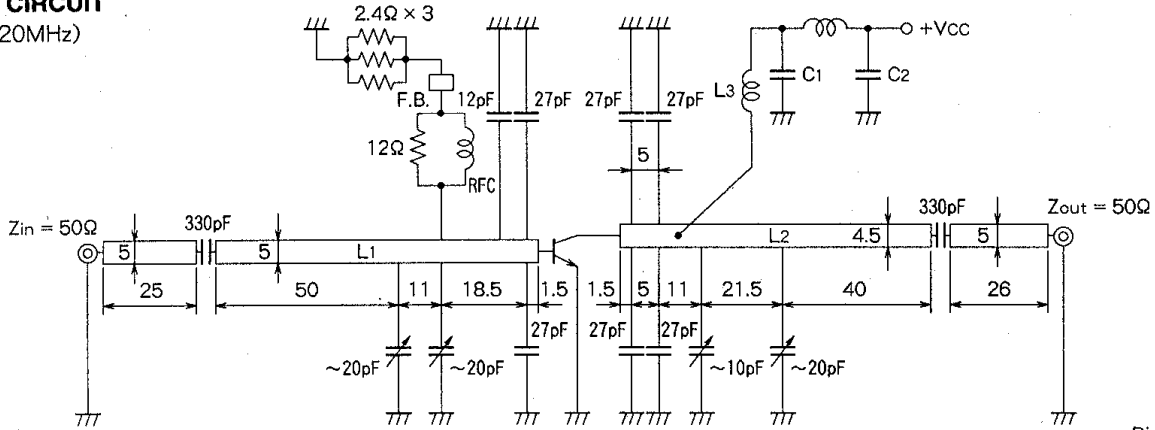
L1, L2 : Microstrip : Board material 1.6mm thick, glass-epoxy  $\epsilon_r = 2.6$   
 L3 : 5D, 2Turn, 1P,  $\phi 1.6$ mm silver plated copper wire  
 L4 : 5D, 5Turn, 1P,  $\phi 1.6$ mm silver plated copper wire  
 RFC : 5D, 8Turn, 1P,  $\phi 0.7$ mm enameled wire

F.B : Ferrite Bead  
 C1 : 47pF, 2200pF, 22000pF, 2200 $\mu$ F in Paralleled  
 C2 : 47pF, 2200pF, 22000pF, 2200 $\mu$ F, 100 $\mu$ F

**TYPICAL PERFORMANCE DATA**



**TEST CIRCUIT**  
(f = 520MHz)



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