

### DESCRIPTION

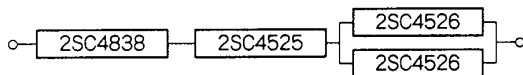
2SC4838 is a silicon NPN epitaxial planar type transistor specifically designed for RF power amplifiers in 1.65GHz.

### FEATURES

- High power gain :  $G_{pb} \geq 9.3\text{dB}$ ,  $P_o \geq 6\text{W}$   
@  $V_{cc} = 28\text{V}$ ,  $f = 1.65\text{GHz}$ ,  $P_{in} = 0.7\text{W}$
- Emitter ballasted construction.
- High reggedness : Ability to withstand 16 : 1 load VSWR when operated at  $V_{cc} = 28\text{V}$ ,  $P_o = 6\text{W}$ ,  $f = 1.65\text{GHz}$ .
- High reliability due to gold metalization die.
- Flange type ceramic package.
- Common base configuraion.

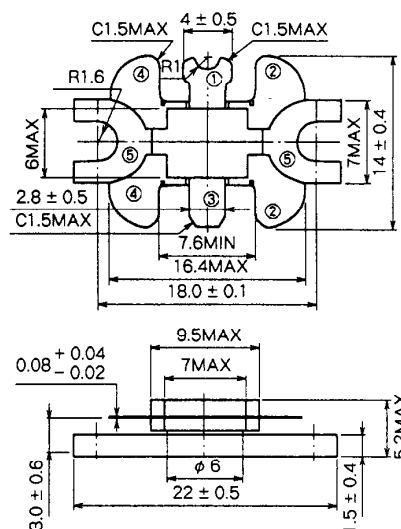
### APPLICATIONS

For pre-amplifier stage of 50W, 1.65GHz, 28V.



### OUTLINE DRAWING

Dimension in mm



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

T-31B

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

Symbol	Parameter	Conditions	Ratings	Unit
V <sub>cb0</sub>	Collector-base voltage		50	V
V <sub>eb0</sub>	Emitter-base voltage		4	V
V <sub>ces</sub>	Collector-emitter voltage	R <sub>BE</sub> = 0	45	V
I <sub>c</sub>	Collector current		2	A
P <sub>c</sub>	Collector dissipation		17.5	W
T <sub>j</sub>	Junction temperature		175	°C
T <sub>stg</sub>	Storage temperature range		- 55 to 175	°C

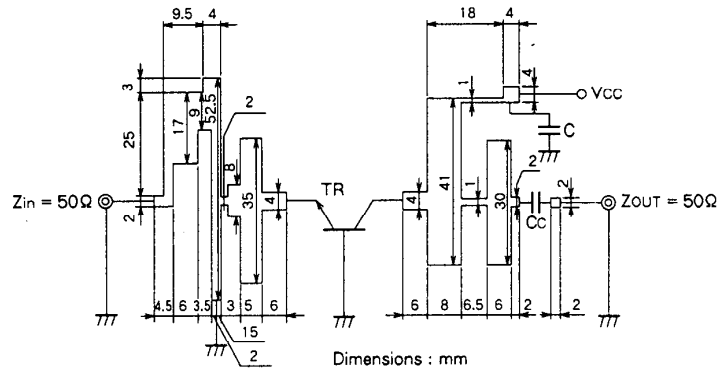
Note. Above parameters are guaranteed independently.

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

Symbol	Parameter	Test conditions	Limits			Unit
			Min	T <sub>yp</sub>	Max	
V <sub>(BR)EBO</sub>	Emitter-base breakdown voltage	I <sub>E</sub> = 5mA, I <sub>C</sub> = 0	4.0			V
V <sub>(BR)CBO</sub>	Collector-base breakdown voltage	I <sub>C</sub> = 10mA, I <sub>E</sub> = 0	50			V
V <sub>(BR)CES</sub>	Collector-emitter breakdown voltage	I <sub>C</sub> = 10mA, R <sub>BE</sub> = 0	45			V
I <sub>cBO</sub>	Collector cutoff current	V <sub>CB</sub> = 25V, I <sub>E</sub> = 0			1000	μA
h <sub>FE</sub>	DC forward current gain *	V <sub>CE</sub> = 5V, I <sub>C</sub> = 1A	10	50	180	-
P <sub>o</sub>	Output power	V <sub>cc</sub> = 28V, P <sub>in</sub> = 0.7W, f = 1.65GHz	6.0	7.0		W
η <sub>c</sub>	Collector efficiency		45	50		%

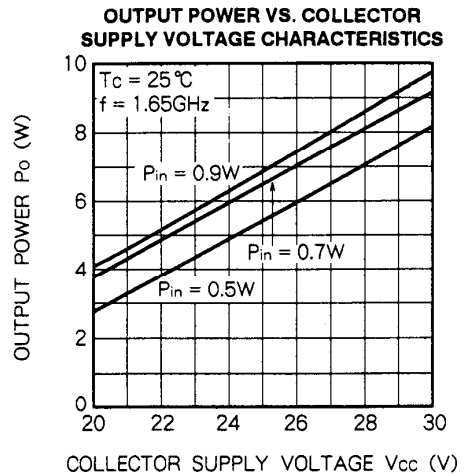
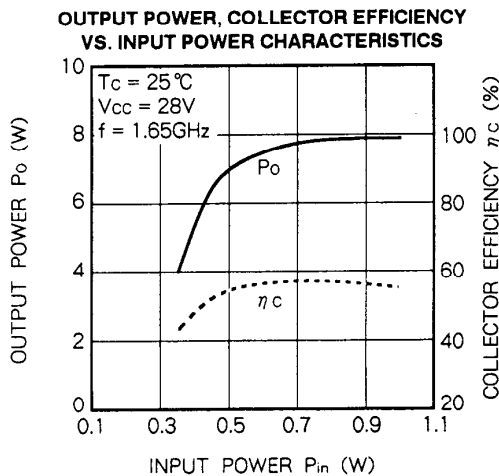
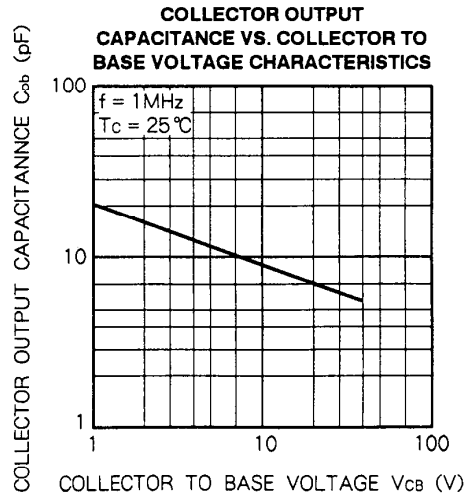
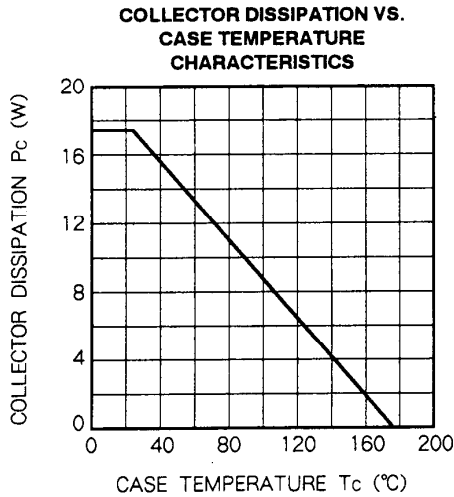
Note. Above parameters, ratings, limits and conditions are subject to change.

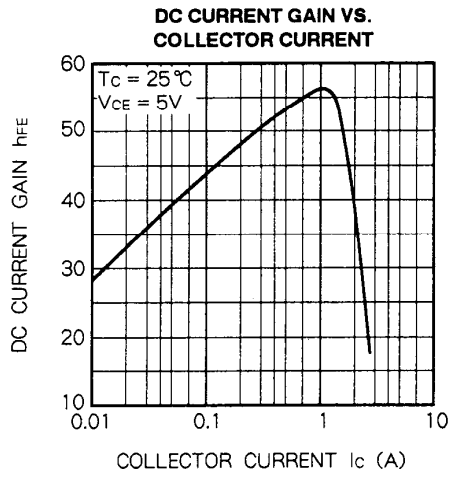
TEST CIRCUIT (f=1.65GHz)



CC : 47pF Chip capacita  
 C : 49pF, 2200pF, 22000pF, 100 μ F  
 Board Material : Tefron-Glass h = 0.8mm

TYPICAL PERFORMANCE DATA

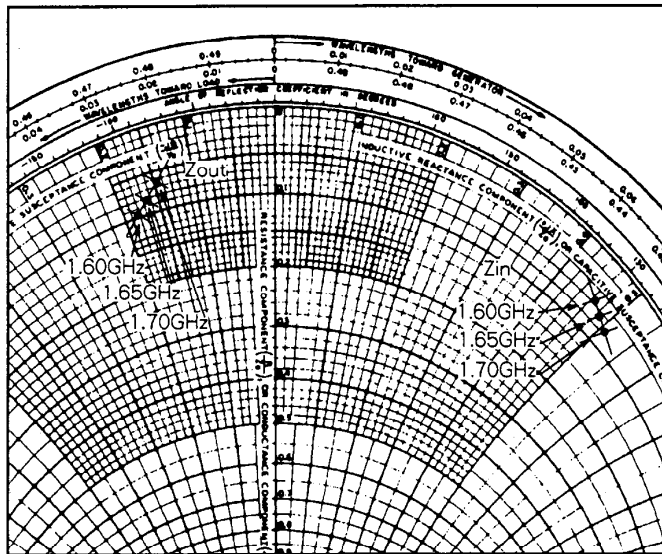




f (GHz)	$Z_{in}$ ( $\Omega$ )	$Z_{out}$ ( $\Omega$ )
1.60	$2.86 + j23.31$	$4.39 - j8.99$
1.65	$3.30 + j24.41$	$4.13 - j8.24$
1.70	$3.47 + j25.56$	$3.09 - j7.19$

CONDITIONS :  $V_{cc} = 28V$ ,  $f = 1.6 \sim 1.7GHz$   
 $P_o = 6W$  CW

$Z_o = 50 \Omega$



INPUT AND OUTPUT SERIES IMPEDANCE 2SC4838