

### DESCRIPTION

2SC4624 is a silicon NPN epitaxial planar type transistor specifically designed for RF power amplifiers in 800-900 MHz band range.

### FEATURES

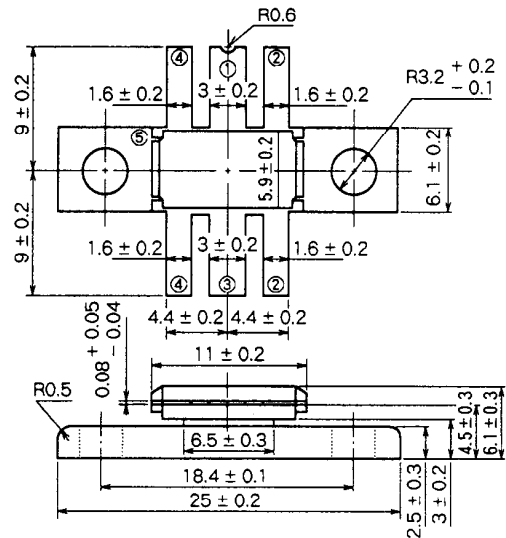
- High power gain :  $G_{pe} \geq 4.7\text{dB}$ ,  $P_o \geq 45\text{W}$   
@  $V_{cc} = 12.5\text{V}$ ,  $f = 900\text{MHz}$ ,  $P_{in} = 15\text{W}$
- Emitter ballasted construction.
- High ruggedness : Ability to withstand 20 : 1 load VSWR when operated at  $V_{cc} = 15.2\text{V}$ ,  $P_o = 45\text{W}$ ,  $f = 900\text{MHz}$ .
- High reliability due to gold metalization die.
- Flange type ceramic package.
- Common emitter configuraion.

### APPLICATIONS

RF power amplifiers in 800-900MHz band range, especially suitable for radio applications.

### OUTLINE DRAWING

Dimension in mm



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

T-44E

### ABSOLUTE MAXIMUM RATINGS ( $T_c = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Ratings	Unit
$V_{CBO}$	Collector-base voltage		35	V
$V_{EBO}$	Emitter-base voltage		2.5	V
$V_{CES}$	Collector-emitter voltage	$R_{BE} = \infty$	16	V
$I_c$	Collector current		15	A
$P_c$	Collector dissipation	$T_c = 25^\circ\text{C}$	110	W
$T_j$	Junction temperature		175	$^\circ\text{C}$
$T_{stg}$	Storage temperature range		- 55 to 175	$^\circ\text{C}$
$R_{th-c}$	Thermal resistance	Junction to case	1.36	W/ $^\circ\text{C}$

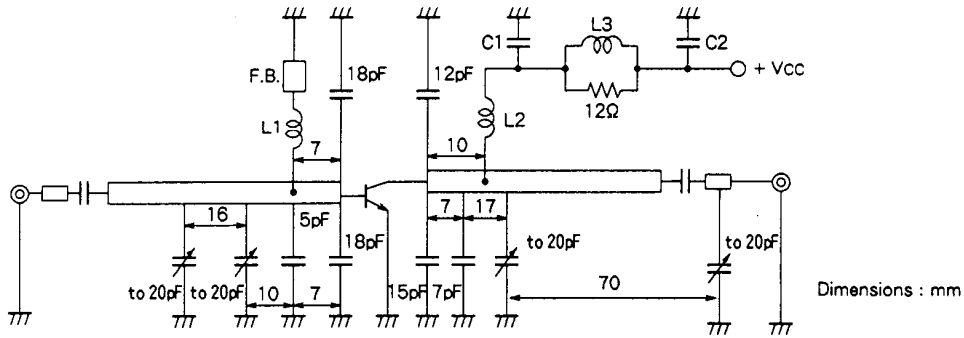
Note. Above parameters are guaranteed independently.

### ELECTRICAL CHARACTERISTICS ( $T_c = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
$V_{(BR)EBO}$	Emitter-base breakdown voltage	$I_E = 10\text{mA}$ , $I_c = 0$	2.5			V
$V_{(BR)CBO}$	Collector-base breakdown voltage	$I_c = 10\text{mA}$ , $I_E = 0$	35			V
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	$I_c = 100\text{mA}$ , $R_{BE} = \infty$	16			V
$I_{CBO}$	Collector cutoff current	$V_{CB} = 15\text{V}$ , $I_E = 0$			5000	$\mu\text{A}$
$I_{EBO}$	Emitter cutoff current	$V_{EB} = 2\text{V}$ , $I_c = 0$			5000	$\mu\text{A}$
$h_{FE}$	DC forward current gain *	$V_{CE} = 10\text{V}$ , $I_c = 1\text{A}$	10	50	180	-
$P_o$	Output power	$V_{cc} = 12.5\text{V}$ , $P_{in} = 15\text{W}$ , $f = 900\text{MHz}$	45	50		W
$\eta_c$	Collector efficiency		45	50		%

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

TEST CIRCUIT



Z1, Z2, Z3, Z4 : Microboard material 1.6mm thick glass-terflon  $\epsilon r = 2.6$  50 $\Omega$  - line  
 C1 : 100pF, 100pF, 1000pF, 22000pF in parallel  
 C2 : 1000pF, 22000pF, 100 $\mu$ F in parallel

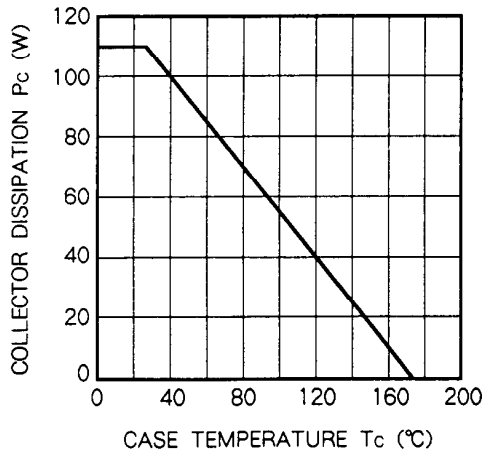
L1 : 2Turn, AWG # 13, 9.5mm I.D  
 L2 : 1Turn, AWG # 13, 9.5mm I.D  
 L3 : 6Turn, AWG # 20, 5mm I.D

F.B : Ferrite Bead

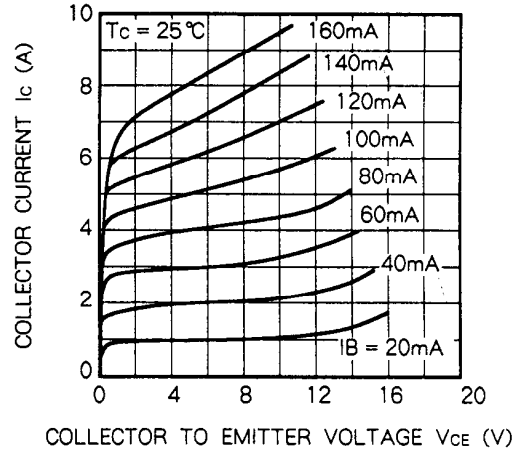
www.DataSheet4U.com

TYPICAL PERFORMANCE DATA

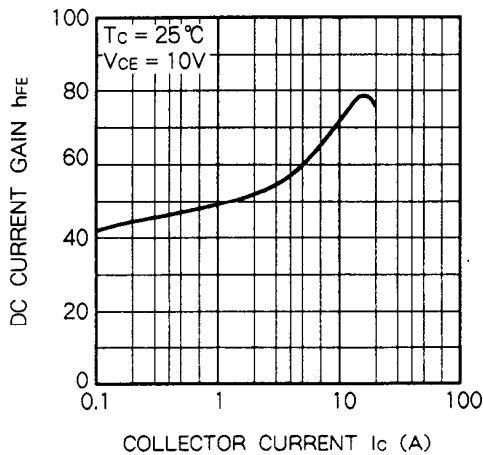
COLLECTOR DISSIPATION VS. CASE TEMPERATURE CHARACTERISTICS



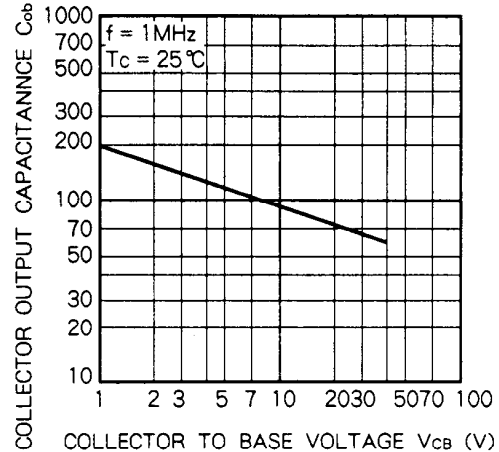
COLLECTOR CURRENT VS. COLLECTOR TO EMITTER VOLTAGE



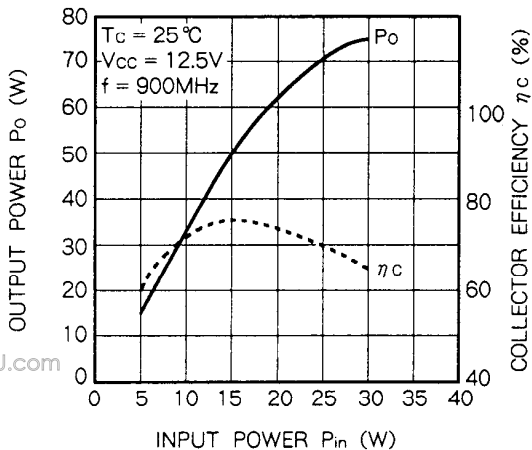
DC CURRENT GAIN VS. COLLECTOR CURRENT



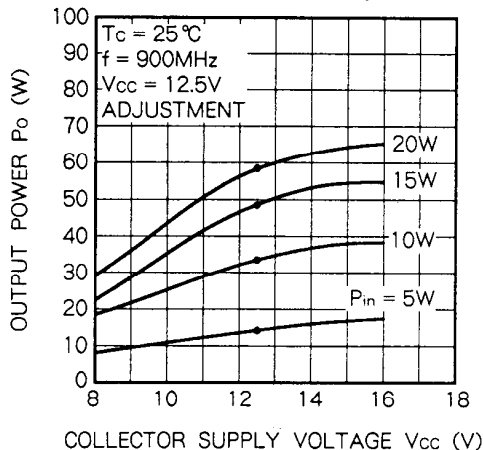
COLLECTOR OUTPUT CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE



OUTPUT POWER, COLLECTOR EFFICIENCY VS. INPUT POWER



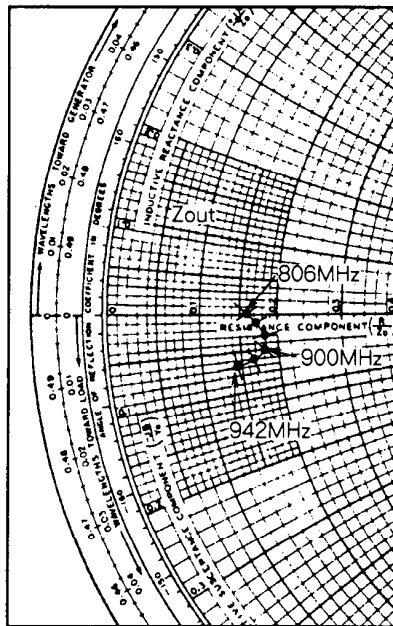
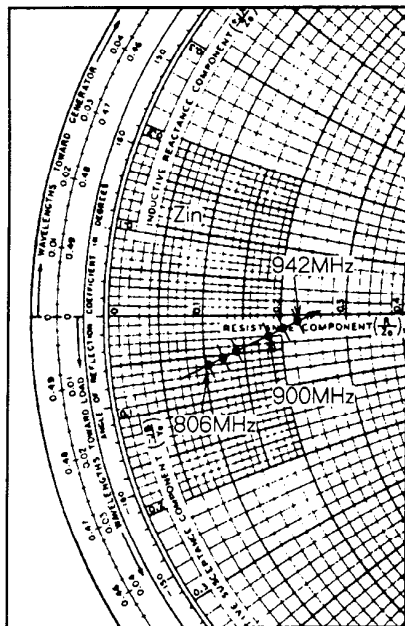
OUTPUT POWER VS. COLLECTOR SUPPLY VOLTAGE



www.DataSheet4U.com

INPUT AND OUTPUT SERIES IMPEDANCE VS. FREQUENCY CHARACTERISTICS

Zo = 10 Ω



f (GHz)	Zin (Ω)	Zout (Ω)
806	1.05 - j0.60	1.63 - j0.00
840	1.20 - j0.55	1.72 - j0.01
870	1.40 - j0.50	1.90 - j0.30
900	1.80 - j0.30	1.85 - j0.45
920	2.00 - j0.20	1.70 - j0.58
942	2.20 - j0.15	1.50 - j0.62

CONDITIONS : Vcc = 12.5V, Po = 45W